

## Scott Boettcher

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**From:** Scott Boettcher  
**Sent:** Tuesday, July 3, 2018 7:19 AM  
**To:** 'Jessica Helsley'  
**Cc:** Rich Osborne; colronjanaverill@comcast.net  
**Subject:** RE: Coast Salmon Foundation - CBFA HWS Phase II Application

Thank you Jessica. Your proposal has been rec'd on time.  
Scott

Scott Boettcher, Staff  
Chehalis River Basin Flood Authority  
360/480-6600  
[scottb@sbgh-partners.com](mailto:scottb@sbgh-partners.com)

**From:** Jessica Helsley <jess@coastsalmonpartnership.org>  
**Sent:** Monday, July 2, 2018 2:34 PM  
**To:** Scott Boettcher <scottb@sbgh-partners.com>  
**Cc:** Rich Osborne <osborner@uw.edu>  
**Subject:** Coast Salmon Foundation - CBFA HWS Phase II Application

Scott-

Please find an application in response to the Local Flood Relief Project RFP attached. We appreciate the opportunity to propose continued collaborations with the Chehalis Basin Flood Authority. If you have any questions about the materials included in our proposal, please do not hesitate to contact myself or Rich Osborne.

We look forward to hearing back from you.

Cheers-

Jess

Jessica Helsley  
Executive Director  
Coast Salmon Foundation  
Coast Salmon Partnership

[jess@coastsalmonpartnership.org](mailto:jess@coastsalmonpartnership.org)  
[www.coastsalmonpartnership.org](http://www.coastsalmonpartnership.org)  
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"Let us pause, and listen, and gather our strength with grace, and move forward like water in all its manifestations: flat water, whitewater, rapids and eddies, and flood this country with an integrity of purpose and patience and persistence capable of cracking stone." - Terry Tempest Williams



**2019-21 Local Projects Recruitment Form  
Chehalis Basin Local Flood Relief**

**A. What are local flood relief projects?** -- In general, local projects provide predominantly localized, quantifiable benefit, are capable of being completed within the funding cycle, are supported by the jurisdiction within which the project is proposed, and are vetted and advanced through a public entity like a City, County, Conservation District, Port, etc. Local projects are additionally envisioned as helping with local flood relief (reducing flood damage and impacts), not adverse to fish, wildlife, or habitat, and (where possible) providers of multiple, quantifiable benefits (per Part IV below).

**B. What kinds of local flood relief projects are likely to be logical funding candidates for 2019-21?**

- Projects that complete an effort previously funded/started.
- Projects that advance improved emergency response.
- Projects that advance improved public infrastructure protection.
- Projects that advance improvements in local or community flood hazard reduction, including local flood proofing projects (e.g., elevations, buy-outs, foundation venting, etc.).
- Projects that advance Conservation District initiated flood hazard reduction (e.g., farm pads, evacuation routes, bank erosion/bank stabilization, etc.)
- Projects that demonstrate innovation (e.g., thinking beyond traditional bank stabilization techniques in favor of natural system designs), partnerships, cost-sharing/leveraging resources, multiple benefits, public engagement and community planning, and proactive vetting with agencies and tribes.
- Projects that demonstrate informed decision-making through hydraulic analysis/understanding.
- Projects that demonstrate early planning involvement, information exchange with regulatory agencies.
- Projects typically not in excess of \$3M for the stage/phase being funded.

**C. Are there projects that would not be good candidates?**

- Projects that seek to utilize State Capitol Budget dollars for uses not typically allowed (e.g., maintenance and repair work, cost-sharing under select circumstances, etc.).
- Projects likely to increase potential for flood damage upstream or downstream.
- Projects with unmitigable adverse environmental impacts, significant uncertainty regarding potential environmental impacts, or significant concerns about obtaining regulatory approval.
- Projects not sponsored by a public entity.
- Projects not located in the Chehalis Basin.
- Projects that do not show quantifiable benefit.

**Instructions:**

- a. Please submit project requests (via this form) to [scottb@sbgh-partners.com](mailto:scottb@sbgh-partners.com) no later than 5:00 p.m., 7/03/2018.
- b. Please submit one request form for each project proposed, even past projects previously or partially funded.
- c. Note: Parts III and IV [marked by "(\*\*)"] will be scored for review/evaluation. Parts I, II, and V will not be scored.
- d. See Appendix A for overview of 2019-21 Local Projects Recruitment Process (and schedule), or [https://www.ezview.wa.gov/site/alias\\_1492/37282/2019-21-Local-Projects-Recruitment-Process.aspx](https://www.ezview.wa.gov/site/alias_1492/37282/2019-21-Local-Projects-Recruitment-Process.aspx).

Part I General	
1. <b>Date:</b>	July 2 <sup>nd</sup> 2018
2. <b>Project Name:</b>	Chehalis Basin Habitat Work Schedule Implementation
3. <b>Project Location</b> -- Please identify location of the project as precisely as possible, including providing decimal degree latitude/longitude coordinates.	Online Database- Any restoration project within the Chehalis River Watershed
4. <b>Project Contact</b> -- Please identify who will be responsible for overseeing and managing the project (i.e., name, email, telephone number, etc.).	Jessica Helsley <a href="mailto:jess@coastsalmonpartnership.org">jess@coastsalmonpartnership.org</a> 360-532-9113
5. <b>Sponsor</b> -- Please identify the sponsor, lead organization, primary entity, etc. responsible for this project. Please identify key partners responsible for assisting in delivery or implementation of project.	Washington Coast Sustainable Salmon Foundation dba Coast Salmon Foundation 100 S "I" Street, Suite 103, Aberdeen, WA 98520.  <b>Key Partner:</b> UW Olympic Natural Resource Center, 1455 S. Forks Ave., Forks WA 98331

Part II Description, Timing, and Cost	
6. <b>Project Description</b> -- Please describe the project, what is intended to be accomplished, the benefits to be accrued (flood hazard reduction and otherwise) and to whom. Please also identify what phase/stage of the project funding is being sought for (e.g., planning, preliminary engineering, final design and permitting, construction, etc.).	The Coast Salmon Foundation, working with their Habitat Work Schedule (HWS) team at the UW Olympic Natural Resources Center, was contracted by the Chehalis Basin Flood Authority to work with Chehalis Basin interests including landowners, conservation districts, Washington Department of Fish and Wildlife (WDFW), the Flood Authority, the Office of Chehalis Basin, Tribes, and other stakeholders to comprehensively update project documentation in HWS. This approach is being applied in the Chehalis Basin as a pilot study and is anticipated to be expanded to other watersheds throughout the state where appropriate. Contracting for the first Phase of this project ended in December 2017. The final report on this first phase documents lessons learned and outlines next steps necessary for completion. These lessons include recommendations on setting up the initial project data framework, strategies for gathering the cooperation of multiple stakeholders that represent different agencies and organizations, and the issues that arise from trying to incorporate diverse project information that often varies in measurement and description. This final phase of the project will capture the large influx of new projects expected in the coming biennia, including agency data sets that will require new data illustration mechanisms for the end user. Following this final phase, the system should run on its own with baseline maintenance from a trained data technician.

<p>7. <b>Project Timeline</b> -- Please describe the timeline and phases for completion of the overall project and describe the timeline for completion of the phase to be funded by 19-21 funding.</p>	<p>Phase II of this project will continue to add new project data and update progress on active projects in HWS. However, the primary focus will be on integrating large agency data sets and improving the mapping and reporting interface for the end user. With those improvements in place, the Chehalis Basin HWS should only require adding new projects and updating active projects over time to remain functional and to achieve our objective of providing a tool to assess all factors of restoration projects across the landscape. An amended timeline (reflecting progress made to date) is attached.</p>
<p>8. <b>Project Cost and Funding</b> -- What is the cost of the overall project (or anticipated cost)? What is the cost of the phase to be funded by 19-21 funding? What are the on-going maintenance and operation requirements and costs? Is it clear who will be responsible for covering on-going maintenance and operation costs?</p>	<p>The final funding request for Phase II completion of this project is \$85,464.00? (See attached Budget for details). The original 2016 proposal was for 2 ½ years (October 2016 through June 2018) for \$130,914. We were able to complete Phase I of the project between January and December of 2017 for \$85,000.00. Funding for on-going maintenance by the project sponsor is identified, and has been in place supporting basic maintenance of the project during the one-year delay in Phase II implementation.</p>
<p>9. <b>Other Funding</b> -- Please explain the extent to which other funding sources, funding partners are available for this phase and any other phase of the project.</p>	<p>The Coast Salmon Foundation's commitment to maintaining the Habitat Work Schedule for all watersheds on the Washington Coast both precedes and will continue beyond the scope of this intensive Chehalis Basin Pilot Study. However, progress on implementing the full potential of HWS has been limited by available resources, and has subsequently only focused on salmon habitat projects. Baseline funding to support salmon habitat project data entry into HWS is provided to the Coast Salmon Foundation on an annual basis, and this basic support is expected to continue into the future. This has allowed us to have one part-time staff working on HWS continuously. The funding from the Phase I CBFA project allowed us to hire an additional 50% FTE to intensively research and compile other projects in the Chehalis Basin. This work would not have been possible without the effort of this Pilot Study. This new robust set of project data allows the HWS data management system to be utilized as the capital investment planning and documentation tool it was envisioned to be. It will be maintained for that value, and implemented across the Washington Coast Salmon Recovery Region by the Coast Salmon Foundation as resources allow.</p>

Part III (**) Completion, Doability, Alternatives, and Impacts	
10. <b>Project Completion</b> -- Does the funding requested complete, substantially complete, or continue a project already started? If so, please explain.	This project will complete Phase II of the originally proposed two-year project (funded for one year in 2017). This project as originally submitted was to be completed by August 2019, and then at that point it was recognized that the HWS portal would still require some baseline support from partners to accommodate data entry and tracking of new projects over the implementation life of the Chehalis Basin Strategy and beyond. Since then, we have maintained HWS work on this project (data entry) at a reduced level in anticipation of funding for the rest of the original proposal. If funded, this would be the final phase of funding to have the full HWS system running with all currently available project data. However, it will still require new project data entry and tracking beyond this funding period by interested partners.
11. <b>Project Doable</b> -- Can this project or the stage/phase for which funding is sought be completed by June 30, 2021? Please describe any circumstances with potential to impact the project's doability or timeline (e.g., permitting or regulatory unknowns, lack of availability of other cost-share funding resources, etc.). Please describe any advance coordination or vetting with agencies, tribes, other entities, etc. and the outcomes of that effort.	This final phase of the project is anticipated to be completed by October 31 <sup>st</sup> , 2019. After that date, new data entry and QA/QC will need to be maintained indefinitely to keep the information up-to-date. Support for this baseline maintenance into the future is anticipated to continue to come from the Coast Salmon Foundation and to be shared by the many partners already invested in the HWS system.
12. <b>Project Alternatives</b> -- Please describe alternatives to the project that were considered (including doing nothing), and the rationale for selecting the project described, proposed here.	Phase I of this project was approved and successfully completed in the last grant round as documented in a comprehensive report available on-line and attached to this proposal. The evolving product can be examined by anyone on the current HWS Web Portal ( <a href="http://hws.ekosystem.us/">http://hws.ekosystem.us/</a> ).
13. <b>Project Impacts Avoided, Mitigated</b> -- Please identify how project impacts will be avoided and mitigated, and if that mitigation will be accomplished by June 30, 2021?	As an on-line planning tool this project does not have direct landscape impacts that require mitigation.

Part IV (**) Benefits Stated and Quantified	
14. <b>Emergency Response Benefits</b> -- Please describe (and quantify) how this project enhances emergency response in a flood emergency (e.g., does it keep critical access roads and transportation facilities open/functional, does it enable easy movement of cattle, equipment and farm chemicals out of harm's way, is it part of a larger hazard mitigation plan, etc.).	This project provides emergency responders an on-line record of current and past landscape actions that have occurred in any drainage in the Chehalis Basin where they could face an emergency assessment or response. This immediate and up-to-date information on habitat conditions and structures in drainages has the potential to support planning for many human activities in these watersheds, as well as providing guidance on

	environmental conditions. However it is not known how broadly HWS is utilized for planning outside of the infrastructure and habitat restoration communities directly associated with these on-the-ground projects.
15. <b>Essential Infrastructure Protection Benefits --</b> Please describe (and quantify) how this project protects essential infrastructure and the risks or consequences of not acting this funding cycle.	This project supports essential infrastructure as a new one stop planning tool for planners and engineers developing new infrastructure projects. It allows them to see the recent history of actions in the landscape and drainages where they are designing the infrastructure. The informational nature of this project over the entire basin is not easily quantifiable in terms of dollars, jobs or landscape metrics but to not undertake it at this time, after already facing a one-year slow down, would miss properly documenting and coordinating the on-going implementation of the Chehalis Basin Strategy and associated programs.
16. <b>Public Health, Safety and Welfare Benefits --</b> Please describe (and quantify) how this project protects public health, safety, and welfare.	HWS demonstrates early planning involvement and information exchange with regulatory agencies and stakeholders. This type of planning information is critical to the development of public health, safety and welfare programs and projects in their early planning stages, and again during implementation. The informational nature of this project over the entire basin is not easily quantifiable in terms of dollars, jobs or landscape metrics because one of its primary values is in preemptively avoiding hazards and expenses associated with a lack of coordination between public agencies, professionals, and private interests.
17. <b>Residential, Commercial and/or Agricultural Protection Benefits --</b> Please describe (and quantify) how this project protects residential communities, commercial, and/or agricultural interests and benefits of acting (or consequences of not acting) this funding cycle. Consider factors like number of structures and people at risk, historic frequency of flood damage, magnitude of benefit for the cost, etc.	HWS provides services in the planning and information exchange stages of programs with regulatory agencies and other stakeholders. This type of planning information is critical to the development of public programs and both public and commercial projects in their early planning stages, again during implementation when tracking progress, and in the end by documenting outcomes. Hence, the informational nature of this project over the entire basin, and over time is not easily quantifiable in terms of dollars, jobs or landscape metrics but has value in what it avoids, and the unseen opportunities it illuminates.
18. <b>Habitat Benefits –</b> Please describe (and quantify) how this project benefits or improves existing or future habitat conditions.	This project benefits habitat by documenting all the cumulative restoration actions recorded in all Chehalis Basin watersheds, and allowing this history to be accounted for in all future planning and restoration actions in one comprehensive web portal. The consequences of not receiving funding this round would be failure to complete the second year of a two-year proposed project that is actively supporting the various programs of the broader Chehalis Basin Strategy. This project is meant to keep up with documenting all the

	landscape actions being undertaken by the Strategy. As these actions are projected to ramp up over the coming biennium, it is critical that we continue our efforts to incorporate large agency datasets and to capture the related on the ground project actions within the Chehalis Basin into HWS.
<p>19. <b>Costs and Benefits</b> – Project funders (and the public they represent) value cost-effective, sound funding decisions. To that end, please describe (and quantify) in general terms benefits gained for funds requested and frequency, time-scale benefits will be realized. Please also describe (and quantify):</p> <ul style="list-style-type: none"> <li>a. Funds requested.</li> <li>b. Costs avoided if funded (and on what frequency, time-scale).</li> <li>c. Costs incurred if funded (and on what frequency, time-scale).</li> <li>d. Benefits gained if funded (and on what frequency, time-scale).</li> <li>e. Impacts incurred if funded (and on what frequency, time-scale).</li> <li>f. Impacts and implications of not funding (and on what frequency, time-scale).</li> </ul> <p>Guidance Note (1): For this question, it will be helpful to think in terms of what will be the dollar value of assets protected, dollar value of impacts avoided, dollar value of monies retained or recouped, etc. for the amount of public monies invested.</p> <p>Guidance Note (2): Part V is intended to help project reviewers concisely summarize, compare funding requests. Answers here (and in related questions on this form) should be consistent with Part V.</p>	<p>The cost/benefit advantages of this proposal are many but as has been emphasized throughout this proposal, they are not easily quantified by the usual metrics. In terms of a time reduction benefit, a comprehensive HWS system assists with basin-wide project identification and development for project planners, permitting agencies, engineers, elected officials, and the concerned public. It becomes a one-stop online data portal focused on the Chehalis. This saves practitioner's time in all aspects of project development and tracking. In terms of task redundancy savings, the transparency of locations, jurisdictions, data methodologies and outcomes being publicly accessible provides the basis to avoid redundancies across the board. It eliminates the likelihood for repeat sampling by multiple agencies, multiple land-owner contacts for similar information, and the loss of institutional knowledge on program histories and outcomes. It is a transparent display of investments from federal, state, and private partners that has the ability to show long term gain (ecologically) through critical investments. Where else is there a framework in development that identifies habitat restoration need, then captures the completed project, and over time can then be compared to other databases to show marked ecological improvement/risk reduction (or lack thereof). HWS is tracking the development of a suite of conceptual projects in the early action starter reaches for the ASRP, and will follow their progress through implementation. In the longer term, this record of landscape actions will allow the actual effects of these combined projects to be identified as measurable outcomes in flood reductions within and between basins that have USGS or equivalent gauges.</p>
<p>20. <b>Other Project Benefits</b> -- Please describe (and quantify) any other project benefits not already discussed. This could include how this project compliments, leverages, or implements another project or planning process already underway.</p>	<p>The primary purpose of this project is to enhance and expand other project benefits by identifying all of them with records and providing a one-stop web public portal with a snapshot of their costs and benefits. We benefit all agencies and their planners and engineers that have or plan on putting down a project footprint on the landscape.</p>
<p>21. <b>Anything Else</b> -- Please offer any additional information (e.g., photos, maps, video, drawings, drone, etc.) that would help to better understand the</p>	<p>Attached is a detailed Budget, the Final Report from Phase I, and an updated timeline incorporating the present funding opportunity.</p>

scope, timing, and benefits of this project.	
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<b>Part V</b> <b>Summary of Benefits, Impacts, Costs</b>			
	22. <b>Benefits</b> – Please summarize, tally project economic and non-economic benefits as described.	23. <b>Impacts</b> -- Please summarize, tally project economic and non-economic impacts as described.	24. <b>Costs</b> -- Please summarize, tally project economic and non-economic costs as described.
<b>Quantify</b>	N.A.  This is a project focused on early planning involvement and information exchange with regulatory agencies.	N.A.  This is a project focused on early planning involvement and information exchange with regulatory agencies.	N.A.  This is a project focused on early planning involvement and information exchange with regulatory agencies.
<b>Describe</b>	It facilitates the identification, planning, design and tracking of new projects in the spatial temporal context of past projects. It tracks the cumulative outcomes of individual projects, as well as suites of related projects. It reduces redundant monitoring and administration among agencies, and provides public transparency on tax dollar expenditures and outcomes.	There are not any physical or administrative impacts from this project. This project only processes existing information and makes it available in one place.	

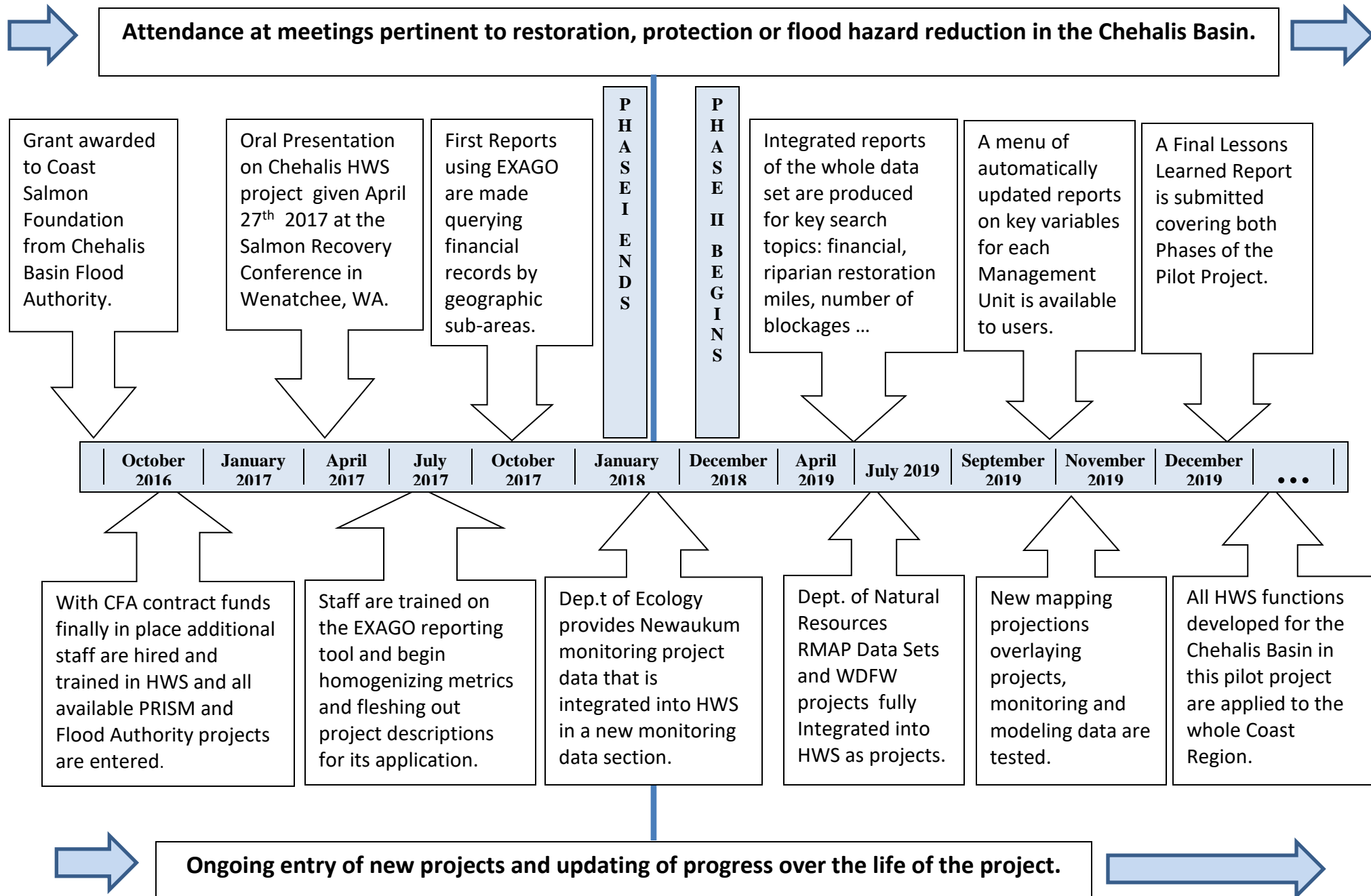
## Appendix A

<b>Process/Schedule Overview</b> (current as of 6-12-2018)	
June 12, 2018	<ul style="list-style-type: none"> <li>• Post and distribute local projects recruitment request.</li> <li>• Allow three weeks for project proposals/submittals (i.e., due no later than 5:00 p.m., Tuesday, July 3, 2018).</li> <li>• Due to Scott Boettcher, <a href="mailto:scottb@sbgh-partners.com">scottb@sbgh-partners.com</a>.</li> </ul>
July 3, 2018	<ul style="list-style-type: none"> <li>• Receive proposals/submittals.</li> </ul>
July 5, 2018 (or July 12, 2018)	<ul style="list-style-type: none"> <li>• Update Chehalis Basin Board on numbers received, types of projects received, distribution, dollar value, etc.</li> </ul>
July 19, 2018 (or August 16, 2018)	<ul style="list-style-type: none"> <li>• Update Flood Authority on numbers received, types of projects received, distribution, dollar value, etc.</li> </ul>
September 20, 2018	<ul style="list-style-type: none"> <li>• Update Flood Authority on status of Projects Committee's effort to review, rank, discuss with Tribes, discuss with agencies, sort and rank, etc.</li> <li>• Review/discuss PRELIMINARY DRAFT ranked and prioritized list.</li> </ul>
October 4, 2018	<ul style="list-style-type: none"> <li>• Update Chehalis Basin Board on status of Projects Committee's effort to review, rank, discuss with Tribes, discuss with agencies, sort, and rank, etc.</li> <li>• Review/discuss DRAFT ranked and prioritized list.</li> </ul>
October 18, 2018 (SPECIAL MEETING)	<ul style="list-style-type: none"> <li>• Seek Flood Authority approval of FINAL ranked and prioritized list.</li> </ul>
November 8, 2018	<ul style="list-style-type: none"> <li>• Seek Chehalis Basin Board approval of FINAL ranked and prioritized list.</li> </ul>
June 2018 through November 2018	<ul style="list-style-type: none"> <li>• Work with agency, OCB, and CBB technical staff on refining and finalizing recruitment instrument, scoring criteria, scoring instrument, categorization, and ranking, developing draft and final lists, etc.</li> </ul>

### Legend:

Chehalis Basin Board	Flood Authority
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# Chehalis Basin Habitat Work Schedule (HWS) Implementation Timeline



**Coast Salmon Foundation (CSF)****Chehalis Basin Habitat Work Schedule Implementation Proposal****Chehalis Basin Flood Authority (CBFA)****BUDGET**

	<b>SHORT TITLE:</b>	CSF -Flood Authority Phase II		
	<b>SPONSOR:</b>	Coast Salmon Foundation (formerly WCSSF)		
	<b>PI NAME:</b>	Helsley		
	<b>PROJECT PERIOD:</b>	December 1 2018-October 2019		
		11 months		
	<b>UW ONRC HWS Team</b>			
	Salaries & Benefits			
			FTE	CBFA Request
		Osborne	10%	\$29,102.00
		Brooks	30%	\$9,678.00
		Clark	50%	\$36,327.00
	Travel	Supplemental to funds of joint-mission meetings from other grants.		\$1,200.00
			Sub-total	\$ 76,307.00
			12% Indirect	\$9,157.00
				\$85,464.00



# **Chehalis Basin Habitat Work Schedule**

## **Phase 1 Final Report**

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### Building the Project Data Archive

Rich Osborne

**3/20/2018**

The Coast Salmon Foundation, working with their Habitat Work Schedule (HWS) team at the UW Olympic Natural Resources Center, was contracted by the Chehalis Basin Flood Authority to work with Chehalis Basin interests including landowners, conservation districts, Washington Department of Fish and Wildlife (WDFW), the Flood Authority, the Office of Chehalis Basin, Tribes, and other stakeholders to comprehensively update project documentation in HWS. The project objective was to extend and utilize HWS as a capital budget coordination, planning, and development tool for the Chehalis Basin. This approach was applied in the Chehalis Basin as a pilot study and is anticipated to be expanded to other watersheds throughout the state where appropriate. This report documents lessons learned from the first phase pilot effort of setting up project data framework and incorporating project information from multiple sources into HWS.

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## Chehalis Basin Habitat Work Schedule Phase 1 Final Report:

### Building the Project Data Archive

#### PROJECT DESCRIPTION

*The Coast Salmon Foundation, working with their Habitat Work Schedule (HWS) team at the University of Washington Olympic Natural Resources Center, was contracted by the Chehalis Basin Flood Authority to work with Chehalis Basin interests including landowners, conservation districts, Washington Department of Fish and Wildlife (WDFW), the Flood Authority, the Office of the Chehalis Basin, Tribes, and other stakeholders to comprehensively update project documentation in HWS. The project objective is to extend and utilize HWS as a capital budget coordination, planning, and development tool for the Chehalis Basin. This approach will be applied in the Chehalis Basin as a pilot project and then expanded to other watersheds throughout the state where appropriate.*



#### INTRODUCTION:

Substantial investment has been made on watershed restoration in the Pacific Northwest in an effort to increase fish populations (Roni et al. 2002). This project explored a mechanism to track the key data of all landscape actions in a river basin and manage them on a single public planning platform for future comprehensive analysis. The public platform software utilized for this task, Panoramic, has successfully been applied in several analogous applications in the past. This project explores utilization of the newer version the Habitat Work Schedule (HWS).

Data for specific habitat restoration projects is often housed in databases owned and operated by the funding source. Thus, exploration of habitat restoration (i.e. total restoration completed across a watershed, total restoration investment, etc.) at a larger landscape scale is challenging. Locating and compiling data from myriad agencies with myriad data collection methodologies is a challenging endeavor. As an organization with an extensive geographic focus, the Coast Salmon Foundation has sought a mechanisms that: 1) clearly shows all the historical modification and mitigations in a watershed on a single map, 2) clearly links to all of the relevant details of the project associated with that action on the landscape, and 3) that actually incorporates project data from all public, private and tribal programs. This mechanism will be beneficial for planning, public education, and strategic analysis of current progress. Numbers 1 and 2 above are clearly obtainable using modern Geographical Info. Systems (GIS), and Panoramic (Figure 1) which has a proven web-based user interface, following ten years of continual improvement as a result of the long term support made available through continual Federal and State funding of the program licenses (<https://www.rco.wa.gov/documents/manuals&forms/HowToSRFBAppHWS.pdf>).

In this report we will start by explaining why HWS was chosen as the platform for this effort, as well as the pros and cons of using that tool then we will explain the many lessons we learned as we began our project, and will conclude with recommendations for next steps. These lessons include everything from setting up the initial project data framework, to gathering the cooperation of multiple stakeholders that represent different agencies and organizations, to the issues that arise from trying to incorporate diverse project information that often varies in the ways it is measured and described, and in the objectives for why the specific project was undertaken in the first place.

### The Tool: Habitat Work Schedule





#### Habitat Work Schedule

Panoramic tracks data and manages the public portal for the Pacific Coastal Salmon Recovery Fund.










Initiated in 2006, Citizens can access reports from State agencies and local organizations.


Agencies collaborate, share data, and report their successes in salmon recovery.



### What is Panoramic ?

Panoramic is a Program Knowledge Organizer designed to track and share information about projects and programs.

-  Transparent and accountable
-  Turn-key, cloud-based, platform
-  Publishes your program data to the web
-  Reports on your data
-  Connects to and summarizes data from partners
-  Provides real-time collaboration
-  Standardizes and validates data
-  Manages your portfolio of projects
-  Maps your projects and places



**Figure 1:** Habitat Work Schedule is a Panoramic Program Knowledge Organizer produced by Paladin Data Systems.

### Habitat Work Schedule as the Tool

As part of Washington State’s comprehensive salmon habitat restoration initiative launched in 1999 in response to federal ESA listings of some of Washington State’s salmon stocks, the state in partnership with the US Fish and Wildlife Service (USFWS) purchased Panoramic HWS licenses from Paladin Data Systems for use by all the state’s salmon Lead Entities. The HWS training of Lead Entity staff and Salmon Recovery Funding Board (SRFB) project sponsors was initiated in 2006, with the idea that all project sponsors would enter and maintain their records in HWS with oversight by Lead Entity Coordinators. It was hoped this on-line data entry would be seen as just another step for sponsors in reporting on their funding contract’s progress over the life of the project; similar to the information already required by the Recreation and Conservation Office (RCO) on-line PRISM system for SRFB grant applications and contract financial management.

Unfortunately, the rather ad-hoc way the HWS was originally added to on-going salmon recovery efforts resulted in inconsistent use by salmon Lead Entities and Regions in terms of platform structured, which metrics were used in tracking projects, and the types of projects added. Early on there was very little guidance from the State on how a Lead Entity structured their site, and which metrics they used to describe and track the project. HWS is actually very flexible on its requirements for metrics structure and structure, but without that prescription users can go in many directions on how they set it up. The only annual requirement from SRFB was for all Salmon Recovery Funding Board projects to be entered and mapped on the platform. Although it was also encouraged to enter restoration projects accomplished by outside (non-SRFB) funding sources, entering data into HWS was only tied to SRFB funding, so project sponsors could not be expected to enter data for projects outside the current funding window. Thus, the task of entering historical records and active projects from other agencies was at the will of Lead Entity staff. Unfortunately, identifying past projects from multiple funding sources, securing their records, and translating them into common metrics is very time-consuming and extremely difficult for funding-limited Lead Entity staff to accomplish.

Despite the lack of initial guidance and resources from the State, some salmon recovery Regions and Lead Entities took the initiative to utilize HWS in a concise manner to track project progress, restoration progress in

watersheds, and as a reporting tool that included more than just SRFB projects. These independent efforts have proven that HWS can be a very valuable tool if strategically implemented. Notable in this regard are the HWS sites from the Upper Columbia (UCSRB, 2017; <http://hws.ekosystem.us/site/290>), Snake River (<http://hws.ekosystem.us/site/320>), and Hood Canal Regions (<http://hws.ekosystem.us/site/170>), and several of the Puget Sound Lead Entities (<http://hws.ekosystem.us/site/280> ; <http://hws.ekosystem.us/site/200>). The Lower Columbia Region had already developed a similar project and reporting system called *Salmon Port* prior to the adoption of HWS in 2006, and has successfully employed it to do all or most of what HWS does (<https://www.lowercolumbiasalmonrecovery.org/landingpage#b>).

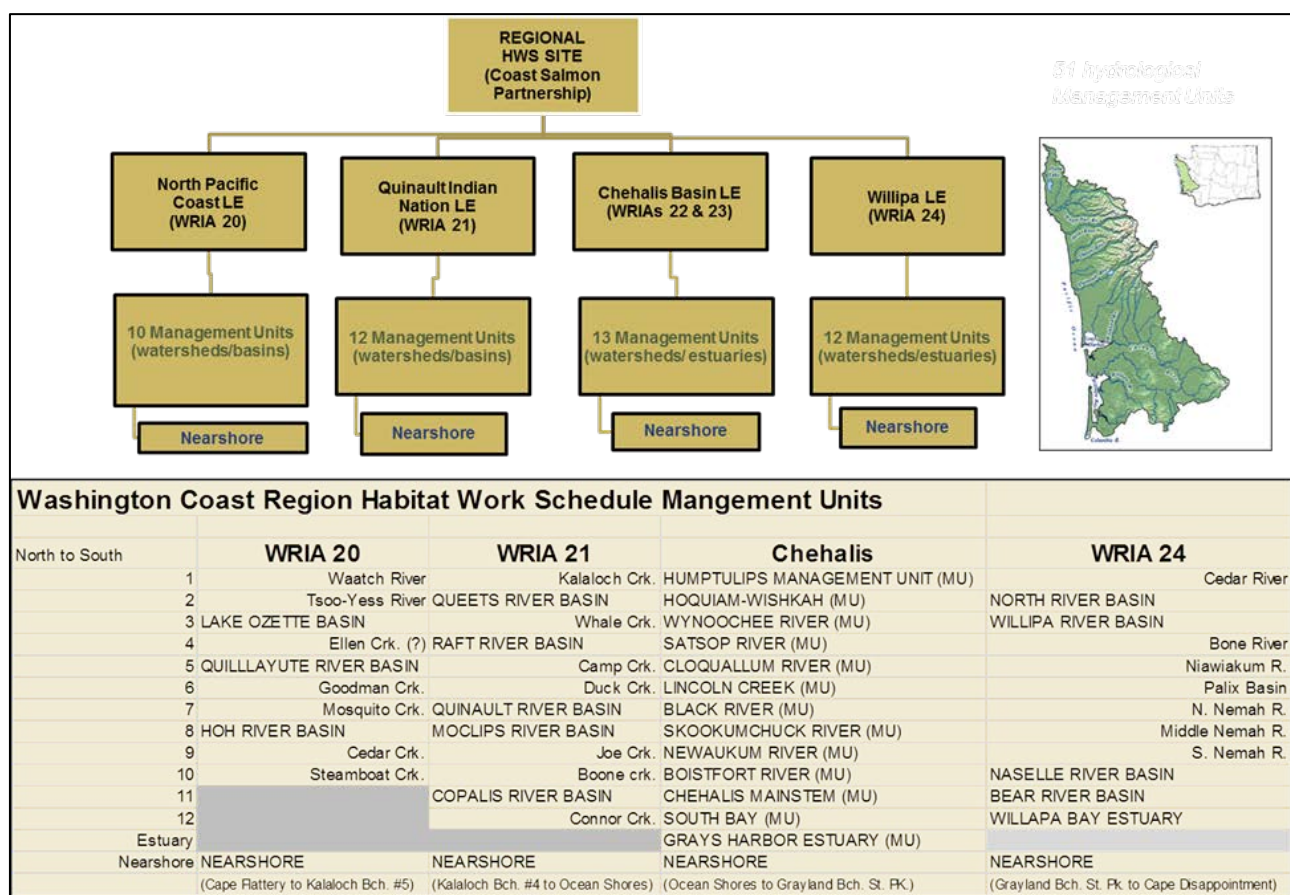
The Coast Region and its four Lead Entities had only formed as a Region in 2007 and did not complete their Regional Plan until 2013 (WCSSP, 2013). Without the guidance of a Regional Plan the four Lead Entities on the Coast initially independently entered only SRFB projects into HWS, some more consistently than others, and each Lead Entity did it using somewhat different structures. In 2013 when the Washington Coast Sustainable Salmon Plan (*Sustainability Plan*; WCSSP, 2013) was finished, the region had the basis for creating a consistent HWS structure, and could learn from the pioneering efforts of those entities that had preceded.

### **HWS Structure on the Washington Coast**

Following completion of the Sustainability Plan in 2013, the Washington Coast Sustainable Salmon Partnership (WCSSP) moved forward on formation of a non-profit sister organization as a means to increase funding capacity, and also initiated the restructure of HWS so it would be homogeneous across all four Lead Entities of the coast. The goal was to incorporate a geographic hierarchy that interfaces with the existing Lead Entity strategies, as well as the new region-wide Sustainability Plan (WCSSP 2013). The hope was to use HWS as the vehicle to implement the Sustainability Plan in concert with the data base management system MIRADI (<https://www.miradi.org/>) but in the end it was found that HWS on its own could serve this purpose.

It was realized immediately that this effort would require dedicated staff uniformly working on data entry across all four lead Entity HWS sites. So technical staff was hired and trained and we began to manage the four Lead Entity HWS sites centrally at the Regional Organization instead of relying on project sponsors or Lead Entity Coordinators to do this. Then we re-built all four HWS sites into a uniform structure based upon watersheds. Fortunately, all the Lead Entities had strategies that had been developed around sequential watershed drainages, so the existing SRFB project data was geographically binned in a manner that eased data transfer.

The core framework of the Coast Region's HWS site identifies watersheds from North to South and the nearshore in each Lead Entity as Management Units (Figure 2). Each Management Unit corresponds with a geographic drainage identified and described in terms of restoration priorities in that Lead Entity's Restoration Strategy. The scale of These Management Units can vary between HUC 10 and HUC 12, even within a Lead Entity because they were originally designated to accommodate natural configurations, rather than a specific scale. The Nearshore Management Units are defined by the coast shoreline extent of a Lead Entity's WRIA boundary out to the State of Washington limit of three miles. Estuaries such as Grays Harbor and Willapa Bay are designated as their own Management Units.



**Figure 2:** Washington Coast Region Structure for Habitat Work Schedule based upon watersheds.

Management Units are generally representative of the primary river systems, lake basins and estuaries on the Coast, so they all include the many independent tributaries and wetlands that feed them. The primary tributaries within each Management Unit are identified in the Coast's HWS hierarchy as Level 2, and individual projects are identified as Level 3 (Figures 3). An unfortunate peculiarity of HWS is that when entering a new project HWS automatically places the project at Level 3 in the system. So all HWS hierarchies throughout the State, no matter which Region or Lead Entity, have their individual "projects" at Level 3. It is how the hierarchy is built out from level 3 to level 2 and Level 1 in HWS that varies between Regions and Lead Entities.

As seen in Figure 3, the Coast Region has "projects" at **Level 3**, "tributaries" or "sub-basins" at **Level 2**, and "Management Units" at **Level 1**. Then above "Management Units" are two additional hierarchic levels identified in Figure 3 that are awkwardly titled as **Level 0** and **Level -1**; due to the unfortunate issue of projects being bound at **Level 3** in HWS. **Level 0** identifies the three types of restoration actions we are tracking in HWS, and that are automatically provided in HWS from a menu of six potential types of projects to track. These are *Habitat Protection and Restoration*, *Research, Monitoring and Evaluation*, and *Outreach and Education* (Figure 3). **Level -1** identifies the Lead Entity at its WRIA boundary. Therefore there are four Level -1 categories corresponding to the four Lead Entities of the Coast Region: North Pacific Coast, Quinault Indian Nation, Chehalis Basin, and Willapa Lead Entities.

## Washington Coast Region Habitat Work Schedule Hierarchy

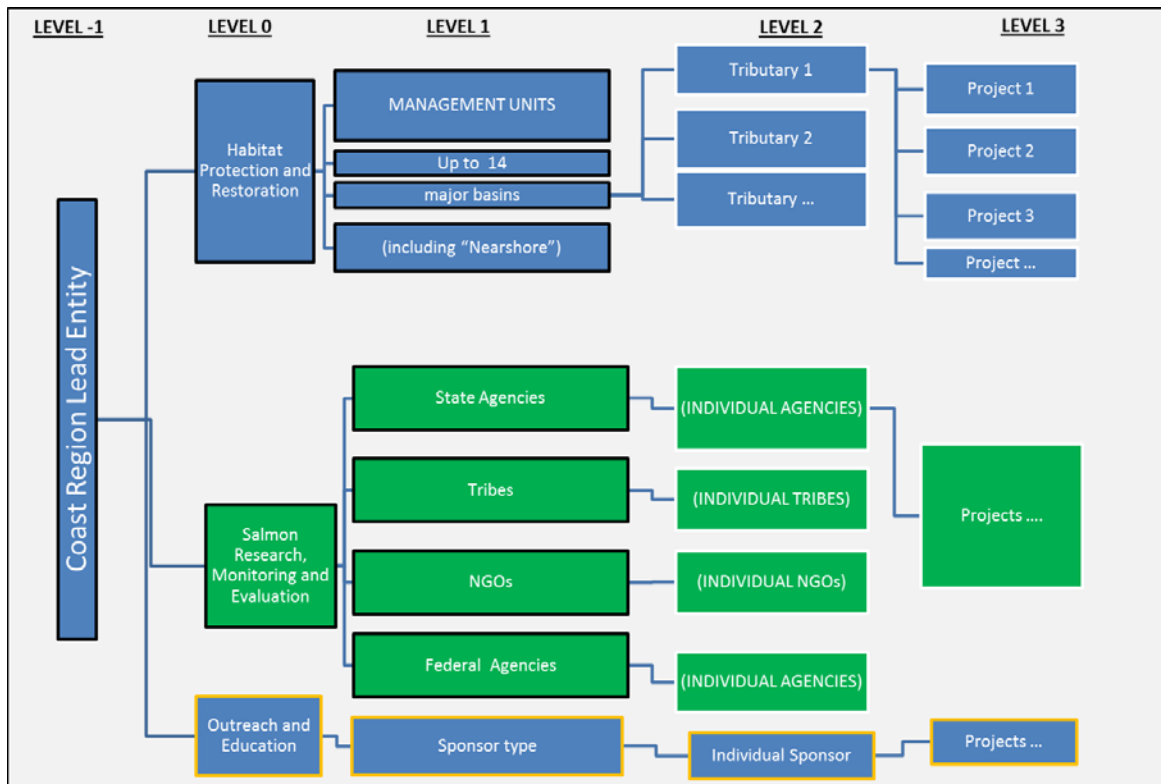


Figure 3: Washington Coast Region Structure for Habitat Work Schedule hierarchy.

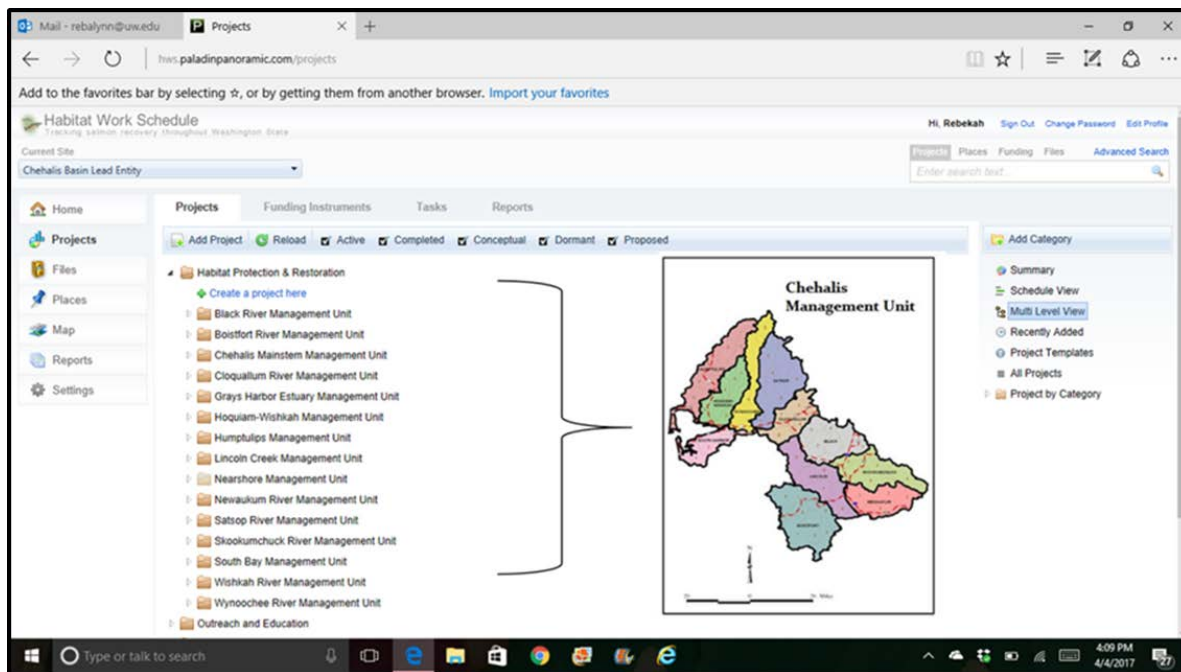


Figure 4: Example Chehalis Basin Habitat Work Schedule hierarchy.

## Chehalis Basin as the Pilot Project Area

The geographic extent of the Chehalis Basin Lead Entity spans from the headwaters of the South Fork Chehalis, and the Newaukum watershed in the Cascade foothills, to the eastern drainages of the Willipa Hills, the western drainages of the Black Hills, and the southern drainages of the Olympics. It is the second largest river basin in Washington State outside of the Columbia, encompassing both WRIA 22 and WRIA 23. The selection of the Chehalis as the “Case Study” for this effort with HWS stems from the plethora of new initiatives being implemented under the umbrella of the Chehalis Basin Strategy (<http://chehalisbasinstrategy.com/>) along with the existing complimentary programs of the SRFB, Aquatic Species Restoration Plan, Bank Protection Strategy, Fish Barrier Removal Board, Washington Coast Restoration Initiative, Department of Natural Resources (DNR) Road Maintenance and Abandonment Plans (RMAP), Family Forest Fish Passage Programs, and Chehalis Basin Flood Authority. This unprecedented focus for multi-agency planning and funding represents a unique opportunity to restore and protect the region’s largest and historically most productive river system.

The Chehalis Basin Strategy also provides an opportunity to test the HWS data management system as the capital investment planning and documentation tool it was originally envisioned to be. As the Chehalis Basin Strategy is implemented it is going to be critically important to track all active and conceptual restoration actions so that their effectiveness can be evaluated and assessed as a comprehensive treatment of the watersheds within the basin. When fully operable with all available project data sets, HWS can provide this real-time data management portal for all projects submitted for consideration within the context of what has preceded and what managers see is needed next.

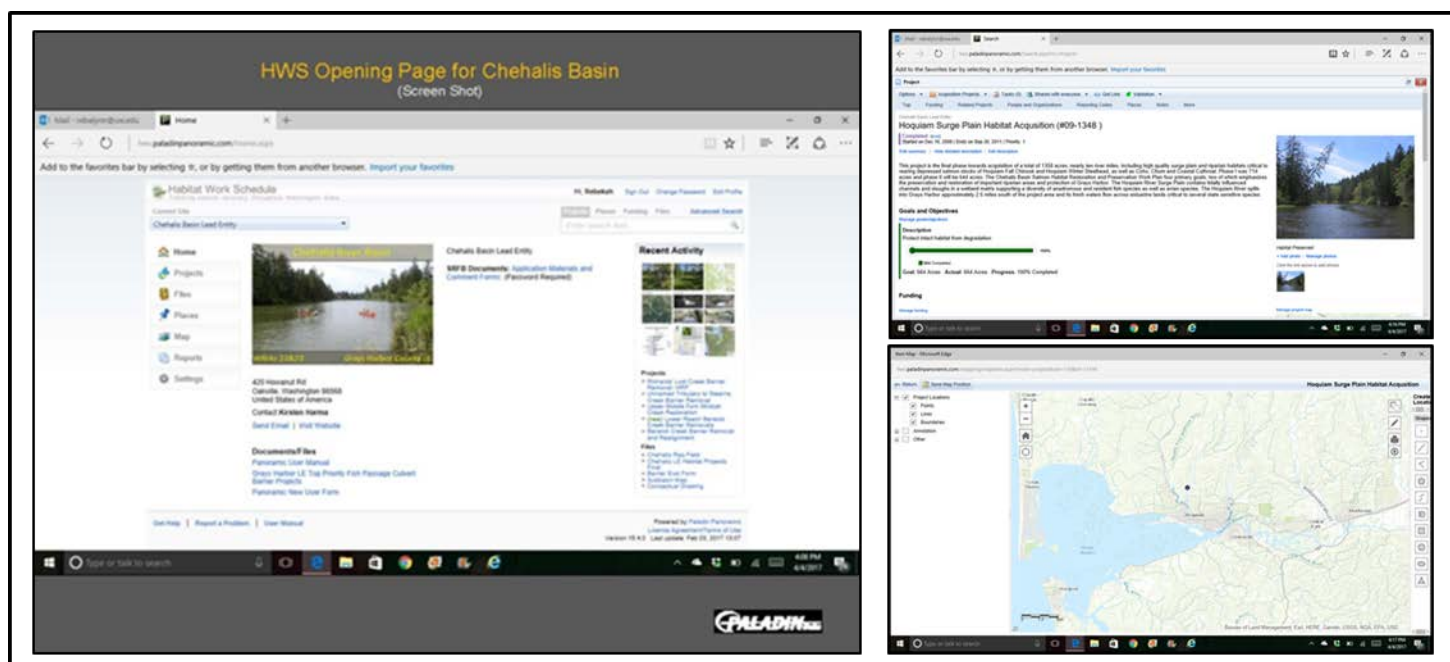


Figure 5: Example Chehalis Basin pages in Habitat Work Schedule.

## Building the Project Data Archive

Using HWS as a central platform to house the records for all restoration and flood hazard reduction projects inherently requires some level of coordination for data compilation, data entry, and ongoing management. Utilizing a common sub-set of metrics to track these projects brings them together for comparison, automatically providing a cursory assessment of the cumulative changes in the landscape from the efforts of all these projects in relation to the common metric(s). Bringing the information into a central platform also creates an inventory of all the environmental engineering already in place in a watershed, allowing it to be considered in planning strategies before engineering the landscape further.

### Assembling all Players

Gathering the cooperation of multiple stakeholders that represent different agencies and organizations is notoriously difficult. Often there is not enough capacity at these organizations to provide staff participation at meetings, disallowing participation outside of targeted email and phone solicitations that are often ignored. Additionally there are sometimes turf wars between agencies or between jurisdictions that can contribute to less than full cooperation in the assembling of project information. Actually achieving active stakeholder participation in a process like this is critical to the project's success. To be successful, the on-line data management system cannot be just another interactive website tracking isolated projects of a government agency or non-profit organization. Single initiative project sites do not provide the necessary context of the other outside projects in the same geography that is required for comprehensive restoration planning. Having an on-line system that actually tracks the full context of all known landscape actions affecting restoration and mitigation projects over time requires broad cooperation. In order to accomplish this, all restoration managers working in that geographic location must participate in providing their restoration contributions so that the full effects of restoration on the landscape will be included.

The existing "Washington Way" of salmon recovery incorporates key components of effective stakeholder participation by providing year-round standing committees of seasoned stakeholders focused on watershed-based landscape restoration. In its fundamental structure and operations the SRFB's Regional and Lead Entity process brings almost all players to the table in well-oiled working groups that are eager to support the compilation of information on watersheds they have personal investments in. Without these stakeholder groups already in place, the cooperative data sharing effort that we have initiated with this project would probably not be possible. Lead Entities provide a standing working group of local tribes, governments, non-government organizations and landowners who are skilled in the process of scientific project prioritization and who already have well-established networking. The incredible value of these stakeholder groups should never be underestimated.

For the purposes of this project, over 32 groups have been engaged just in the context of the Chehalis Basin Lead Entity and Habitat Work Group on 22 occasions over the 12 months of this contract period (Appendix A). At these meetings the types of data each group collects is regularly shared in relation to the core mission of the Lead Entity to identify new restoration projects recommended by local land owners and land managers, and to cooperatively guide the scientific design and prioritization of these projects for multiple benefits. The scientific data and the history of landscape actions undertaken by each of the groups participating in the salmon Lead Entity is unique by providing one stop shopping for all the data necessary to populate HWS to maximum capacity. The next core step of the process is the transfer of data. This requires: 1) engaging the participation of the data-

holders at these organizations, 2) receiving the data sets in a form that can actually be utilized, 3) hopefully receiving large data sets in mass so each project doesn't have to be individually entered, and 4) building the project reporting codes with a common set of metrics as they go into the HWS database.

### Uniform Metrics

When HWS was originally introduced to salmon recovery efforts in Washington State, some areas of the state had federally listed species required to be tracked with specific NOAA metrics, other areas without listed species used metrics generated by the Department of Fish and Wildlife or Department of Natural Resources, and some were even newly invented. HWS was initially allowed to be extremely flexible to accommodate both federal listing metrics as well as others. However, it was quickly realized this made it nearly impossible to query the HWS data outside the metrics of each Lead Entity or Regional HWS site. This inconsistency of reporting codes precluded state-wide assessments across HWS sites and defeated one of the primary purposes of having the HWS system in the first place. In 2015, after extensive consultation among salmon restoration entities, the Governor's Salmon Recovery Office addressed this problem by requiring a core set of metrics for HWS. The Coast Region immediately reviewed these metrics with its Lead Entities and settled on ten of them (Figure 6). We then began building them into existing project data in HWS as well as incorporating them into all new projects.


#### Washington Coast Region HABITAT WORK SCHEDULE Metrics

METRICS	UNIT	EXAMPLES
Number of instream structures added	count	Log structures, dolos, rip-rap, hard-point structures ...
Number of barriers removed.	count	Culvert upgrades & replacements, road abandonments, channel fills ...
Stream miles opened up.	miles	Stream miles of new fish access.
In-stream miles treated.	miles	Instream habitat treated.
Riparian stream miles treated.	miles	Improvement of riparian stream miles within the active flood plain.
Riparian acres treated.	acres	Improvement of riparian conditions encompassing the entire historic floodplain including off-channel water bodies.
Upland acres treated.	acres	Improvement of off-channel habitat feeding the stream network.
Upland acres opened up.	acres	Off-channel fish habitat re-connected to the stream network.
Estuary acres treated.	acres	Improvement of estuary habitat supporting the stream network.
Estuary acres opened up.	acres	Estuary acres re-connected with fish habitat.

**Figure 6:** Coast Region Core Metrics in Habitat Work Schedule

The other device we have utilized to build uniformity of newly imported project data has been to distribute “Conceptual Project Forms” as the application template for submitting new projects into HWS. The Coast Region originally developed a simplified Conceptual Project Form in 2015 as part of setting up the original structure of the Coast Region HWS, but expanded to the new Chehalis Basin form developed by the Chehalis Basin Lead Entity Coordinator, Kirsten Harma, after settling on our ten core metrics and to address the need to incorporate flood protection projects and restoration actions for more than just salmon (Figure 7).

### Chehalis Basin HWS Conceptual Project Form



**CHEHALIS BASIN  
RIVERBANK PROTECTION & HABITAT RESTORATION  
CONCEPTUAL PROJECT FORM**

PROJECT INFORMATION	
Project Name	
Landowner (name, phone number and/or email)	
Project Type (bank protection/restoration/acquisition/etc.)	
Project Sponsor or Primary Contact (name, phone number and/or email)	
Brief Project Description	
Current Land Ownership (private, public, other)	
Approximate Scale of Project to be Restored/Protected, if known (linear feet, acreage, etc.)	
Project Location	
River or creek name, road crossing, nearest street address, if applicable	
Latitude/longitude	
Stream	
Sub-Basin	
Chehalis Basin Management Unit	
(Management Units: Black River, Bostfort, Chehalis Mainstem, Cowlitz, Grays Harbor Estuary, Hoquiam, Wishkah, Humpulips, Lincoln Creek, Newaham, Satsop, Shookumchuck, South Bay, Wynoochee River)	
Find your management unit: <a href="http://www.chehalisleadentity.org/our-work/4The-Chehalis-Watershed">http://www.chehalisleadentity.org/our-work/4The-Chehalis-Watershed</a>	

ECOSYSTEM TYPE TO BE PROTECTED/RESTORED/ACQUIRED	
Estuary (River Delta)	Riparian (Stream side)
In-stream	Upland
Wetland	Off channel floodplain
Other	N/A

RESOURCE CONCERNS ADDRESSED (CHOOSE ALL THAT APPLY)	
Bank erosion	Infrastructure protection
Floodplain/flood control	Road maintenance
Stormwater runoff	Other

HABITAT LIMITING FACTOR ADDRESSED (CHOOSE ALL THAT APPLY)	
Habitat diversity	Channel stability
Habitat composition	Width
Floodplain connectivity/function	Water quantity/flow
Fish Passage	Water quality
Predation	Sedimentation
Food	Temperature
Non-habitat limiting factors	Unknown
Channel structure and complexity	Other

See The Chehalis Basin Salmon Habitat Restoration and Preservation Strategy for WMA 22 and 23 for more information: [http://www.co-grays-harbor.wa.us/info/pub\\_svcs/Lead\\_Entity/documents/2011\\_CBP\\_strategy\\_update\\_2011.pdf](http://www.co-grays-harbor.wa.us/info/pub_svcs/Lead_Entity/documents/2011_CBP_strategy_update_2011.pdf)

PRIMARY AQUATIC SPECIES BENEFITTING (CHOOSE ALL THAT APPLY)	
Bull Trout	Rainbow Trout
Chinook	Rocky
Chum	Steelhead
Coho	Cutthroat
Pacific lamprey	Mountain whitefish
Largemouth bass	Dace
Breidside shiner	Northern pike/minnow
Sculpin	Threespine stickleback
Olympic mudminnow	Northern red-legged frog
Northwestern salamander	Long-toed salamander
Pacific treefrog	Roughskin newt
Migratory birds	Other

Is any life-stage of a Depressed Stock addressed by this project? (see Lead Entity strategy, Table 1, page 18/9 for details)

ADDITIONAL INFORMATION	
DOES THIS PROJECT LINK TO ANY OTHER RECENTLY COMPLETED OR PROPOSED RESTORATION OR PROTECTION PROJECTS? (LIST ALL PROJECTS RELATED TO WATER QUALITY, QUANTITY, HABITAT, BARRIERS, ETC.)	

Chehalis Basin River Bank Protection and Habitat Restoration Conceptual Project Form  
Stream and River Bank Edition

1

Chehalis Basin River Bank Protection and Habitat Restoration Conceptual Project Form  
Stream and River Bank Edition

2

IS THERE CURRENT OR FUTURE POTENTIAL LANDOWNER WILLINGNESS TO HAVE A PROJECT DONE ON THIS LAND?

WOULD THERE BE ANY EDUCATIONAL OPPORTUNITIES ASSOCIATED WITH THIS PROJECT?

DETAILED PROJECT INFORMATION (WHERE APPLICABLE)	
Problem Statement	<small>(What is the problem? What ecological concerns or limiting factors does the project address? For bank protection projects, what are the reach-work and site-specific causes of erosion (see Bank Erosion Strategy)? Are there any known potential constraints (infrastructure, access limitations, etc.) or other project considerations? Please include the chapter and section of the recovery plan as well as the recovery plan and in which the project relates.</small> <small>See The Chehalis Basin Salmon Habitat Restoration and Preservation Strategy for WMA 22 and 23 for more information: <a href="http://www.co-grays-harbor.wa.us/info/pub_svcs/Lead_Entity/documents/2011_CBP_strategy_update_2011.pdf">http://www.co-grays-harbor.wa.us/info/pub_svcs/Lead_Entity/documents/2011_CBP_strategy_update_2011.pdf</a></small>
Goals and Objectives	
Estimated Timeframe for Project Completion	
Rough Budget	
If applicable, Secured Funding and Sources	
Partner(s)	
Comments	

Draw the project site

What to include in your drawing: Rivers, creeks, land use around creek, roads or stream crossings, what you are proposing to do on this land

\*\*Optional: Attach photographs, maps, supporting documents

Chehalis Basin River Bank Protection and Habitat Restoration Conceptual Project Form  
Stream and River Bank Edition

3

Chehalis Basin River Bank Protection and Habitat Restoration Conceptual Project Form  
Stream and River Bank Edition

4

**Figure 7:** Chehalis Basin HWS Conceptual Project Form (see also Appendix B).

## Lessons Learned So Far

The primary deliverable of this pilot project was to, *“Compile records of currently submitted and proposed restoration, protection, or flood hazard mitigation projects in WRIAs 22-23, independent of their source program and enter them into the Habitat Work Schedule.”* To accomplish this we have engaged in a basin-wide coordinated approach to the collection, entry, and ongoing management of all restoration projects within the Chehalis Basin by engaging all the active personnel undertaking habitat restoration and flood hazard projects. This has been greatly facilitated utilizing the network of year-round standing committees already in place in the basin, including the Lead Entity and Habitat Work Group, the Conservation Districts, the Flood Authority, new Office of the Chehalis Basin, and the public outreach processes of the Chehalis Aquatic Species Restoration Plan. Actively engaging at these meetings and networking with the other individuals attending has provided the connections to obtain all the current project data, and established paths to obtain historical data sets.

### Bring all partners together face-to-face

Identifying a mechanism to robustly engage all the stakeholders working in a watershed or eco-region so information can be gathered on their combined landscape actions over time, is probably the most difficult part of successfully accomplishing projects that hope to provide a central on-line location for elected officials, stakeholders and the public. These interactive websites are usually hopelessly incomplete because they are missing so many of the other landscape actions from non-participating groups. So we consider the accomplishment of bringing all stakeholders into mutual communication the first and most important lesson. As described earlier, in the Chehalis Basin we have been very lucky to have a well-established, year-round, Lead Entity/Habitat Work Group to work with, and a large amount of public money available to beacon participation by every stakeholder in the region. This single factor allows the full success of this pilot project to actually be possible going forward; beyond where others have failed to include all partners working in the landscape.

### Select Uniform Metrics across all project data

Establishing a limited number of measurable variables, or metrics that will all be recorded in the same scale, and that will all be tracked and reportable for every project is fundamental to being able to create quantitative reports on the information in the database. As described earlier, in this project we adopted the core metrics coming out of a larger state-wide process of metric refinement. We then shared these final options with the regional stakeholder groups (Coastal Lead Entities) and settled on a consensus of ten metrics (Figure 6). These ten metrics now serve as the benchmark variables for setting restoration goals, tracking their accomplishment, and as common links to historical projects.

However, it should be kept in mind that not all projects will have all ten metrics. The goal is to make sure at least one of the metrics is universally common, especially for historical projects, but depending of the nature of the project only one or a few of these metrics may actually apply. Yet even with only one metric as a common indicator the cumulative landscape action of that metric can still be compared from multiple projects and be measured over time.

### Select an “independent” numbering system

Establishing an independent number for each project regardless of any institutional numbers that may come with the project is necessary for efficient tracking of projects. It keeps each project entry unique in an independent reference system. This facilitates the identification and sorting of sub-projects that are hidden within larger projects, and duplicate projects with different titles and differing starting dates and/or multiple funding sources. However, the independent numbering system should not replace any institutional numbers associated with the original project because they are your only reliable tie to the source data. All historical project numbers associated with a project need to be preserved in the database somehow. The independent number is just there for redundancy in sorting and tracking to help improve control of data quality. The independent numbering system developed for this application on the Coast HWS was designed to be simple yet flexible to expansion into unforeseen project arenas, and to be informative about individual project characteristics as much as possible.

The auxiliary numbering system we are using for the Coast Region HWS is a 3-4 part identifier beginning with: 1) the Washington state code for Watershed Resource Inventory Area, or WRIA, then 2) a 2-4 letter code sourcing the primary program or agency the project was sponsored from if it is known, 3) the starting year of the project, and 4) the count of projects with that WRIA and source code in that particular start year. So far this coding system has been working, and we are optimistic it will continue to serve us without a need to restructure it. In all cases any unique identification number previously associated with the project from other programs is retained.

### Coast Region HWS Auxiliary Numbering System

WRIA #	Source Code	Start Year	Project Count
20	WCRI	14	01
21	ECOL	15	02
22	RMAP	16	03
23	WDFW	17	04
24	NRCS	...	...

**Figure 8:** Coast Region HWS Numbering System.

## Find an “independent” Indicator of Past Projects

In order to insure that all landscape actions in a watershed have been reasonably accounted for it is helpful to have an independent way of tracking all landscape actions; some alternative reference point that is redundant but approaches the data of landscape actions from an alternative pathway. When large-scale modifications of the landscape are undertaken, some form of legal permitting is most often a requirement. Permits are often routine and well documented, and exist independent of who is conducting the project, how it is funded, or its over-all purpose. While permits rarely include enough information about the project for comprehensive landscape scale impacts analysis, they provide an opportunity to identify project locations across the landscape and can inform data gaps in landscape actions that were either unknown or lacked adequate project information. Depending upon the type of landscape scale analysis being conducted, permitting agencies are limited in the type and quantity of data that they collect. This results in the same conundrum of isolated and unconnected data sources that this project addresses.

The Coast Salmon Foundation is an organization focused on the protection and recovery of salmon populations. As such, obtaining access to the Hydraulic Project Approval (HPA) permit (Figure 9) database issued and maintained by the Washington State Department of Fish and Wildlife (WDFW) would provide a plethora of project data for work conducted in or immediately proximate to waters of the state. When acquired, inputting of this database into HWS will provide us with a very broad scale of historic project work across our landscapes of interest. Given the extensiveness of the database and our dependence upon WDFW staff for coordinated data transfer, we were unable to complete this task in the current phase of the project. However, we are currently exploring the most efficient way to obtain the records and package them for analysis, which we anticipate will be completed during the second phase of the project.

**WASHINGTON STATE**  
**Joint Aquatic Resources Permit**  
**Application (JARPA) Form<sup>1,2</sup>**  
USE BLACK OR BLUE INK TO ENTER ANSWERS IN THE WHITE SPACES BELOW.

**Part 1-Project Identification**  
 1. Project Name (A name for your project that you create. Examples: Smith's Dock or Seabrook Lane Development) [help](#)

**Part 2-Applicant**  
 The person and/or organization responsible for the project. [help](#)

2a. Name (Last, First, Middle)

2b. Organization (if applicable)

2c. Mailing Address (Street or PO Box)

2d. City, State, Zip

2e. Phone (1)    2f. Phone (2)    2g. Fax    2h. E-mail

\*Additional forms may be required for the following permits:  
 • If your project may qualify for Department of the Army authorization through a Regional General Permit (RGP), contact the U.S. Army Corps of Engineers for application information (206) 764-5696.  
 • If your project may impact a species listed under the Endangered Species Act, you will need to fill out a Specific Project Information Form (SPIF) or prepare a Biological Evaluation. Forms can be found at <http://www.wa.gov/department/fishwildlife/RegulatoryPermits/EndangeredSpecies.aspx>.  
 • Not all cities and counties accept the JARPA for their local Shoreline permits. If you need a Shoreline permit, contact the appropriate city or county government to make sure they accept the JARPA.

For access on online JARPA form with (help) screens, go to [http://www.spermits.wa.gov/fishwildlife\\_regulatorypermits/jarpa\\_form/00044arpa\\_form.aspx](http://www.spermits.wa.gov/fishwildlife_regulatorypermits/jarpa_form/00044arpa_form.aspx)

For other help, contact the Governor's Office for Regulatory Innovation and Assistance at (800) 917-0943 or [help@orla.wa.gov](mailto:help@orla.wa.gov)

ORCA-16-011    Page 1 of 14

**Figure 9:** HPA and JARPA Permit images required in Washington State for projects affecting aquatic bodies.

## Challenges Moving Forward

The intensified focus on the Chehalis Basin provides an opportunity to test the Habitat Work Schedule (HWS) data management system as a capital investment planning and documentation tool. We have made substantial progress during this phase of the project preparing the data management system for the upload of extensive databases and building cohesive relationships with agency personnel so that they become comfortable with our use of their data. Critical steps during the next phase of the project include the transfer and integration of the various agency datasets and improvement of the user interface in terms for easier mapping and reporting.

### Making Agency Data Sets Reportable

Perhaps the most exciting outcome of this effort so far has been the increasing participation of agencies at all levels of government willing to provide data. It was with this vision that the Chehalis Basin Flood Authority provided funding for this project in order to, *“utilize HWS as a capital budget coordination, planning, and development tool for the Chehalis Basin”*. This first year of partner building has brought in many WDFW and Department of Transportation projects, as well as the first sub-sets of historical monitoring data from the Department of Ecology, as well as the Department of Natural Resources Road Maintenance and Abandonment Plan (RMAP) data sets for commercial timber roadways. These data sets are currently being integrated into the system and will soon be map-able with all other project data incorporated into the Chehalis Basin HWS so far.

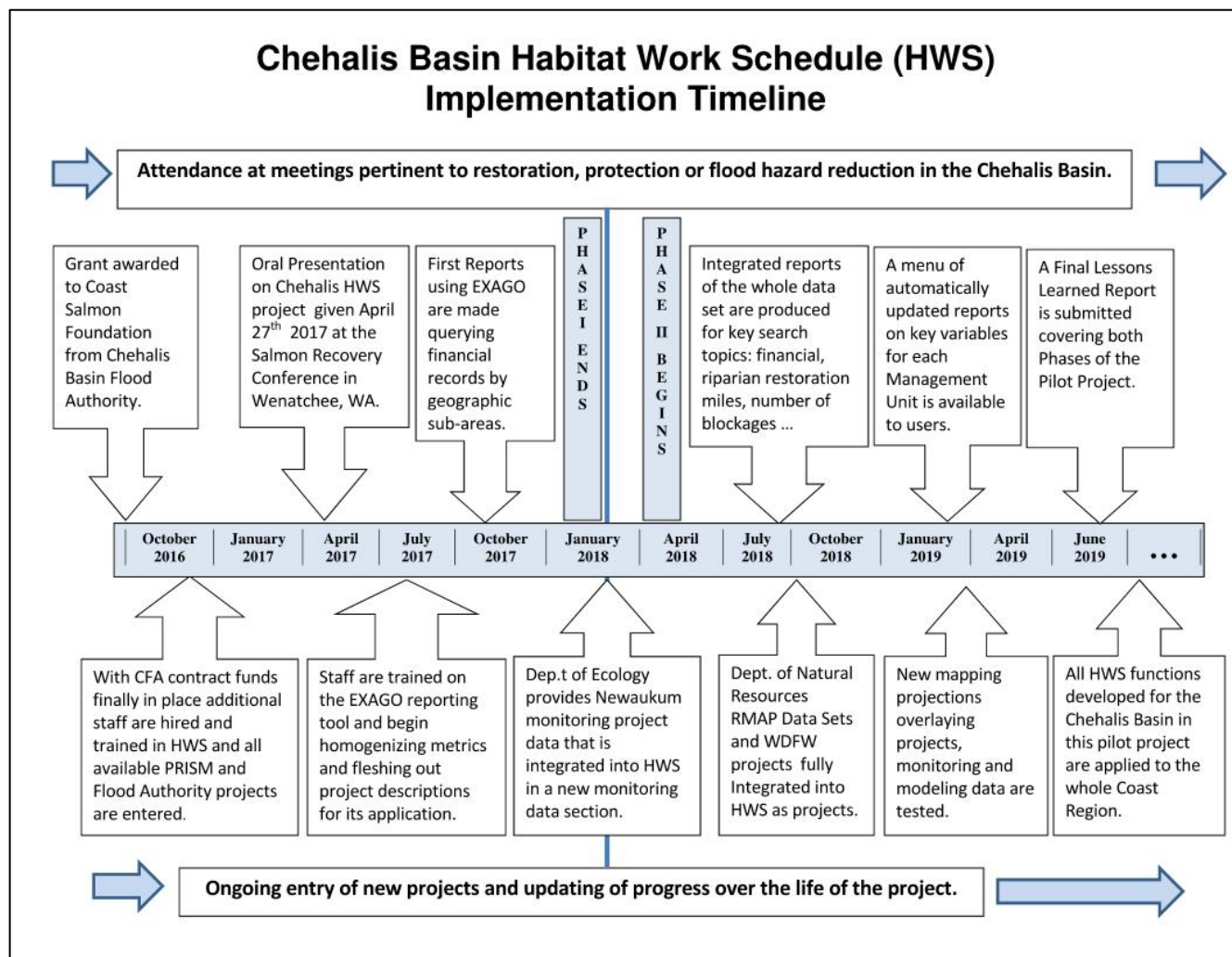
### Improving the Public Interface

The public usability of HWS is a critical consideration. Is the website engaging? Is exploration easy and efficient so as not to frustrate the user during their initial interactions? Exploring these issues and implementing solutions when available will be a major focus of the final phase of the project.

## Next Steps

Beyond the funding provided by this contract, the Coast Salmon Partnership manages all Coast Region data pertaining to landscape restoration efforts for salmon and other aquatic species and habitat efforts in the HWS. These efforts work to ensure that all Washington Coast restoration project information collected can be presented consistently with the existing geographic hierarchy and metrics that are comparable across programs.

The originally proposed timeline for this project, as submitted to the Chehalis Basin Flood Authority, ran from October 2016 through June 2019. It was initiated through available Flood Authority funds from the 2015-17 Biennium and was intended to continue with additional support during the 2017-19 Biennium. However, contracting for the project was not completed until January 2017, so the time window for the first part of the project was amended to extend to December 2017 with the same allocation of initial funds. Since December 2017, the Capitol Budget for this biennium has been passed and it is anticipated that this project will now be able to apply for additional funding to progress to the next project phase as outlined in the original proposal. Below is a diagram (Figure 10) showing the full anticipated timeline for this project up to this point and projected to the end of the current biennium.



**Figure 10:** Chehalis Basin HWS Pilot Project Timeline.

Phase II of this project will continue to add new projects and update progress on active projects, but the primary focus will be on integrating large agency data sets and improving the mapping and reporting interface for the end user. With those improvements in place, the Chehalis Basin HWS should only require adding new projects and updating active projects over the long-term to remain functional into the future and to achieve our objective of providing a tool to assess all factors of restoration projects across the landscape.

**REFERENCES**

1. Roni, P., Beechie, T. J., Bilby, R. E., Leonetti, F. E., & Pollock, M. M. (2002). A Review of Stream Restoration Techniques and a Hierarchical Strategy for Prioritizing Restoration in Pacific Northwest Watersheds. *North American Journal of Fisheries Management*, 22(1), 1-20. doi:10.1577/1548-8675(2002)022<0001:AROSRT>2.0.CO;2
2. Paladin Systems, LLC web link: <http://paladinpanoramic.com/>
3. Recreation and Conservation Office (RCO), HWS web link: [https://www.rco.wa.gov/documents/manuals&forms/How\\_To\\_SRFB\\_App\\_HWS.pdf](https://www.rco.wa.gov/documents/manuals&forms/How_To_SRFB_App_HWS.pdf)
4. Upper Columbia Region, HWS web link: <http://hws.ekosystem.us/site/290>
5. Snake River Region, HWS web link: <http://hws.ekosystem.us/site/320>
6. Hood Canal Region, HWS web link: <http://hws.ekosystem.us/site/170>
7. Skagit Watershed Council, HWS web link: <http://hws.ekosystem.us/site/280>
8. Island County Lead Entity, HWS web link: <http://hws.ekosystem.us/site/200>
9. Lower Columbia Region, Salmon Port web link: <https://www.lowercolumbiasalmonrecovery.org/landingpage#b>
10. Washington Coast Sustainable Salmon Partnership, 2013. Washington Coast Sustainable
11. MIRADI Adaptive Management Conservation Software, web link: <https://www.miradi.org/>

## APPENDIX A: Contract Deliverable Documentations

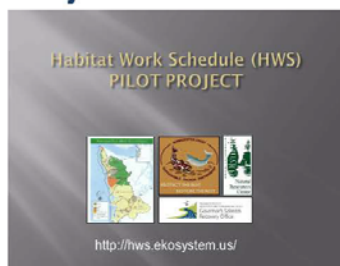
## PRISM Snapshot:



Project Snapshot  
PRISM Project #16-2787 (In Progress)

## Habitat Work Schedule Pilot Project

## Project Details



WA Coast Sust. Salmon Fdn., Habitat Work Schedule Pilot Project  
(#16-2787) Attachment #290800, HWS Pilot Project Pic

**Project Status:** Active since 02/22/2017  
**Planned Completion:** 12/31/2017  
*This project is in progress. Project scope, activities, and dollars may change.*

**Project Type:** Planning & Development  
**Project Sponsor:** WA Coast Sustainable Salmon Foundation  
**Funding Board:** Recreation and Conservation Office

## Funding

**Chehalis Basin Strategy:** \$84,999  
**Salmon State Projects:** \$1  
**Total RCO Grant:** \$85,000 (100%)  
**Total Agreement:** \$85,000 (100%)

## RCO Grant Status

**Total RCO Grant:** \$85,000.00  
**Paid To Date:** \$85,000.00 (100%)  
**Grant Balance:** \$0.00 (0%)

## Links

Original Project Agreement  
Amendments: 1  
Attachments: 11 files

## Project Description

The Foundation will work with Chehalis Basin interests including landowners, conservation districts, WDFW, the Flood Authority, the Office of Chehalis Basin, Tribes, and other stakeholders to comprehensively update project documentation in Habitat Work Schedule (HWS). The project work will extend and utilize HWS as a capital budget coordination, planning, and development tool for the Chehalis Basin. This approach will be applied in the Chehalis Basin first as a pilot and then in time, by others throughout the state. The sponsor will document lessons learned from the pilot in order to apply the results of the pilot statewide.

## Project Contacts

**Project Sponsor:** WA Coast Sustainable Salmon Foundation

**Project Contact:** Jessica Helsley  
jess@wcssp.org  
(360) 532-9113

**Funding Agency:** Recreation and Conservation Office

**Project Manager:** Alice Rubin  
alice.rubin@rco.wa.gov  
(360) 902-2635

## Project Location

**General Area:** HUC 6th Field  
**County:** Grays Harbor  
**Legislative Districts 2012:** 19  
**Congressional Districts 2012:** 06  
**Sections:** 09  
**Township:** T17NR09W  
**Coordinates:** 46.97560628  
-123.81714414

## Worksites

Worksite Name	Scope of Work	Proposed Development and Planning Cost
Coast Salmon Partnership Office (#1)	Flood hazard reduction through restoration planning	\$85,000
<b>Total</b>		<b>\$85,000</b>

## Properties

Worksite Name	Property Name	Landowner Type
Coast Salmon Partnership Office (#1)	Property 1 - Central Office	Private

Total

Permit information is available

## Project Permits

Permit Type	Applied Date	Received Date	Expiration Date	Permit Number
None - No permits Required				

## Project Milestones

Milestone Name	Target Date	Description
Project Start	01/02/2017	
Annual Project Billing Due	03/31/2017	
Construction Started	03/31/2017	n/a
Progress Report Due	06/05/2017	
Draft Plan/Study Report	10/31/2017	
Final Plan/Study Report	11/30/2017	
Final Report Due	12/28/2017	
Progress Report Due	12/29/2017	
Agreement End Date	12/31/2017	
Final Billing Due	01/31/2018	

NOTE: This data is subject to change.

## Project Attachments

Attachment Type	Attachment Title	Attach Date
Agreement - State	Agreement.pdf	02/23/2017
Amendment - State	16-2787 Amend #1 Time Ext.pdf	06/13/2017
Application Review Report	Application Review Report, 16-2787C(compl 12/21/16 08:22:39).pdf	12/21/2016
Photo	HWS Pilot Project Pic - Copy.jpg	12/20/2016
Photo	HWS Pilot Project Pic.jpg	12/20/2016
Progress report	Progress Report, 16-2787 (accepted 02/01/18 13:25:49).pdf	02/01/2018
Progress report	New Progress Report.draft.docx.docx	01/02/2018
Progress report	Progress Report, 16-2787 (accepted 06/26/17 11:15:04).pdf	06/26/2017
Project Application Report	Application Report, 16-2787C (submitted 12/20/16 16:30:34).pdf	12/20/2016
Project Deliverables	3rdFINAL CSP-HWS SRC Presentation.pdf.pdf	01/02/2018
Project plan document	3rdFINAL CSP-HWS SRC Presentation.ppt.ppt	06/05/2017

Date of last change: 02/04/2018

Phase I Meetings attended by Staff on Behalf of the Contract

Rebekah Brooks (UW ONRC Data Steward), Kim Clark (UW ONRC Data Steward) and Rich Osborne (Coast Salmon Foundation Program Director) participated in the following HWS meetings, trainings, and conference calls during the contract period:

## Habitat Work Schedule Meetings:

<u>Date</u>	<u>Participants</u>	<u>Meeting</u>
January 5, 2017	R. Osborne, staff	HWS ONRC Tech Team Meeting
January 9, 2017	R. Osborne, staff	HWS Advisory Group Webex
February 13, 2017	R. Osborne, staff	HWS Advisory Group Webex
February 17, 2017	R. Osborne, staff	HWS ONRC Tech Team Meeting
April 3, 2017	R. Osborne, staff	HWS ONRC Tech Team Meeting
April 13, 2017	R. Osborne	Salmon Recovery Conf. preparation call w/RCO
April 25-27, 2017	R. Osborne, staff	Salmon Recovery Conf. and HWS presentation
July 10, 2017	R. Osborne, staff	HWS Advisory Group Webex
August 2, 2017	R. Osborne, staff	HWS meeting with ONRC Staff, GSRO at Paladin
September 13, 2017	R. Osborne, staff	HWS ONRC Tech Team Meeting
October 9, 2017	R. Osborne, staff	HWS Advisory Group Webex
November 17, 2017	R. Osborne, staff	HWS ONRC Tech Team Meeting
December 6, 2017	R. Osborne, staff	HWS ONRC Tech Team Meeting
December 11, 2017	R. Osborne, staff	HWS Advisory group Webex
December 13, 2017	R. Osborne, staff	HWS ONRC Tech Team Meeting
December 18, 2017	R. Osborne	HWS meeting with GSRO & Flood Authority

## Chehalis Basin Partner Meetings:

<u>Date</u>	<u>Participants</u>	<u>Chehalis Lead Entities &amp; LE Sub-Committees</u>
December 9, 2016	J. Helsley/R. Osborne	Chehalis Basin LE/Habitat Work Group
January 13, 2017	R. Osborne	Chehalis Basin LE/Habitat Work Group
January 18, 2017	R. Osborne	Chehalis- Culvert Prioritization Sub-Comm.
February 16, 2017	J. Helsley	Chehalis Basin Flood Authority
January 13, 2017	J. Helsley/R. Osborne	Chehalis Basin LE/Habitat Work Group
February 10, 2017	J. Helsley/R. Osborne	Chehalis Basin LE/Habitat Work Group
February 10, 2017	R. Osborne	Newaukum Sub-Committee
February 23, 2017	J. Helsley/R. Osborne	Quinault LE
March 10, 2017	J. Helsley/R. Osborne	Chehalis Basin LE/Habitat Work Group
April 14, 2017	J. Helsley/R. Osborne	Chehalis Basin LE/Habitat Work Group
June 9, 2017	J. Helsley/R. Osborne	Chehalis Basin LE/Habitat Work Group
June 22, 2017	J. Helsley/R. Osborne	Quinault LE
July 6, 2017	J. Helsley	Chehalis LE SRFB project review
July 14, 2017	J. Helsley/R. Osborne	Chehalis LE HWG
July 18, 2017	J. Helsley	Willapa Bay LE
August 1, 2017	J. Helsley	Willapa Bay LE
August 4, 2017	R. Osborne	Chehalis Basin LE HWG Call
August 11, 2017	J. Helsley/R. Osborne	Chehalis Basin LE /HWG Meeting
September 8, 2017	J. Helsley/R. Osborne	Chehalis LE HWG
October 2, 2017	J. Helsley/R. Osborne	Chehalis LE HWG
November 6, 2017	J. Helsley/R. Osborne	Chehalis LE HWG
December 4, 2017	J. Helsley/R. Osborne	Chehalis LE HWG

## APPENDIX B: Chehalis Basin HWS Conceptual Project Form



### CHEHALIS BASIN RIVERBANK PROTECTION & HABITAT RESTORATION CONCEPTUAL PROJECT FORM

PROJECT INFORMATION	
<b>Project Name</b>	
<b>Landowner</b> (name, phone number and/or email)	
<b>Project Type</b> (bank protection/ restoration/acquisition/etc.)	
<b>Project Sponsor or Primary Contact</b> (name, phone number and/or email)	
<b>Brief Project Description</b>	
<b>Current Land Ownership</b> (private, public, other)	
<b>Approximate Scale of Project to be Restored/Protected, if known</b> (linear feet, acreage, etc.)	
<b>Project Location</b>	
River or creek name, road crossing, nearest street address, if applicable	
Latitude/longitude	
Stream	
Sub-Basin	
Chehalis Basin Management Unit	
<b>(Management Units: Black River, Boistfort, Chehalis Mainstem, Cloquallum, Grays Harbor Estuary, Hoquiam-Wishkah, Humptulips, Lincoln Creek, Newaukum, Satsop, Skookumchuck, South Bay, Wynoochee River).</b>	
Find your management unit: <a href="http://www.chehalisleadentity.org/our-work/#The-Chehalis-Watershed">http://www.chehalisleadentity.org/our-work/#The-Chehalis-Watershed</a>	

ECOSYSTEM TYPE TO BE PROTECTED/RESTORED/ACQUIRED	
Estuary (River Delta)	Riparian (Stream side)
In-stream	Upland
Wetland	Off channel floodplain
Other _____	N/A

RESOURCE CONCERNS ADDRESSED (CHOOSE ALL THAT APPLY)	
Bank erosion	Infrastructure protection
Flooding/flood control	Road maintenance
Stormwater runoff	Other _____

HABITAT: LIMITING FACTOR ADDRESSED (CHOOSE ALL THAT APPLY)	
Habitat diversity	Channel stability
Habitat composition	Width
Floodplain connectivity/function	Water quantity/flow
Fish Passage	Water quality
Predation	Sedimentation
Food	Temperature
Non-habitat limiting factors	Unknown
Channel structure and complexity	Other _____

See The Chehalis Basin Salmon Habitat Restoration and Preservation Strategy for WRIA 22 and 23 for more information: [http://www.co.grays-harbor.wa.us/info/pub\\_svcs/Lead\\_Entity/documents/2011\\_CBP\\_strategy\\_update\\_2011.pdf](http://www.co.grays-harbor.wa.us/info/pub_svcs/Lead_Entity/documents/2011_CBP_strategy_update_2011.pdf)

PRIMARY AQUATIC SPECIES BENEFITTING (CHOOSE ALL THAT APPLY)	
Bull Trout	Rainbow Trout
Chinook	Sockeye
Chum	Steelhead
Coho	Cutthroat
Pacific lamprey	Mountain whitefish
Largescale sucker	Dace
Redside shiner	Northern pikeminnow
Sculpin	Threespine stickleback
Olympic mudminnow	Northern red-legged frog
Northwestern salamander	Long-toed salamander
Pacific Treefrog	Roughskin Newt
Migratory birds	Other _____

Is any life-stage of a Depressed Stock addressed by this project? (see Lead Entity strategy, Table 1, page 8&9 for details)

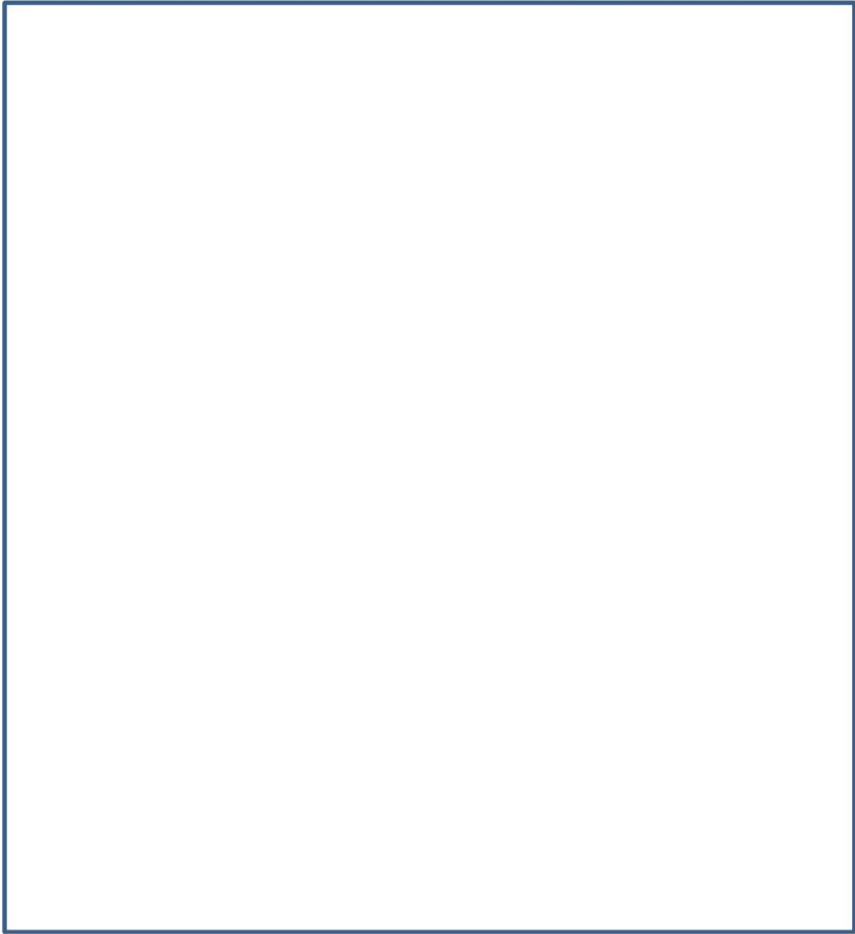
ADDITIONAL INFORMATION
DOES THIS PROJECT LINK TO ANY OTHER RECENTLY COMPLETED OR PROPOSED RESTORATION OR PROTECTION PROJECTS? (LIST ALL PROJECTS RELATED TO WATER QUALITY, QUANTITY, HABITAT, BARRIERS, ETC.)

<b>IS THERE CURRENT OR FUTURE POTENTIAL LANDOWNER WILLINGNESS TO HAVE A PROJECT DONE ON THIS LAND?</b>
<b>WOULD THERE BE ANY EDUCATIONAL OPPORTUNITIES ASSOCIATED WITH THIS PROJECT?</b>

<b>DETAILED PROJECT INFORMATION (WHERE APPLICABLE)</b>	
<b>Problem Statement</b>	<p><i>(What is the problem? What ecological concerns or limiting factors does the project address? For bank protection projects, what are the reach-scale and site specific causes of erosion (see Bank Erosion Strategy)? Are there any known potential constraints (infrastructure, access limitations, etc.) or other project considerations? Please include the chapter and section of the recovery plan as well as the recovery plan goal to which the project relates.</i></p> <p>See The Chehalis Basin Salmon Habitat Restoration and Preservation Strategy for WRIA 22 and 23 for more information: <a href="http://www.co.grays-harbor.wa.us/info/pub_svcs/Lead_Entity/documents/2011_CBP_strategy_update_2011.pdf">http://www.co.grays-harbor.wa.us/info/pub_svcs/Lead_Entity/documents/2011_CBP_strategy_update_2011.pdf</a></p>
<b>Goals and Objectives</b>	
<b>Estimated Timeframe for Project Completion</b>	
<b>Rough Budget</b>	
<b>If applicable, Secured Funding and Sources</b>	
<b>Partner(s)</b>	
<b>Comments</b>	

**Draw the project site**

What to include in your drawing: Rivers, creeks, land use around creek, roads or stream crossings, what you are proposing to do on this land



**\*\*Optional:** Attach photographs, maps, supporting documents