This document serves as a response to initial SRFB Technical Review Panel comments for the Willow Creek Daylighting project, and is an addendum to the 2011 SRFB/PSAR Project Pre-proposal. The original pre-proposal included scoping for feasibility and initial design work. This addendum addresses the need to re-scope the proposal to focus on initial feasibility regarding Chinook access and use of the project area. The project team has addressed this need by refining the scope of work for the feasibility study into the five tasks outlined below.

SRFB Technical Review Panel Comments:

*The application should emphasize the project's potential benefits to Chinook salmon. Providing a copy of the Pentec assessment in PRISM might help provide more details in this regard. A great deal of uncertainty exists with regard to several issues that may limit the project's benefits to salmon recovery. One of the primary concerns about the project relate to water elevations within the Edmonds Marsh and the likelihood of juvenile chinook use within the project area. Given the amount of siltation within the marsh, how much saltwater habitat is likely to be accessible for any significant amount of time and how much might be drained out during low tides? What type of hydrological monitoring and modeling is being proposed for the project? Another concern relates to the use of the marsh for stormwater management, which may not be consistent with restoration of more natural channel and tidal processes. Finally, the nearshore drift goes from south to north at this location and may lead to blockages at the outlet of the tidal channel. While the review panel understands that the feasibility study is being proposed to investigate some of these issues, a high level of uncertainty exists about whether a project implemented at this site can provide significant benefits to salmon recovery. The project may also be premature given the uncertainty surrounding the clean-up activities on the old Chevron property and its transference to Washington State Ferries.*

*Project Sponsor Response:*

*A case for restoration:*

Research indicates that barrier estuary habitats, such as Edmonds Marsh, are an important habitat type for Pacific juvenile Chinook salmon (Fresh, 2006; Beamer, 2006). Significant losses of this particular habitat type have occurred along the WRIA 8 shoreline (Williams et al, 2001; Leschine, T. and AW Petersen, 2007). Brennan et al, 2004 recommends restoration of a diverse array of marine nearshore habitat types, and several studies specifically call out the need for restoration of barrier estuary complexes (Redman, S, 2005; Beamer, 2006). Reconnection of Edmonds Marsh to allow juvenile Chinook access to rearing habitat represents a unique opportunity to increase the diversity of nearshore habitat types available to juvenile Chinook along the highly degraded WRIA 8 shoreline.

*Project specific considerations:*

Project partners understand that concerns exist regarding the ability for juvenile Chinook salmon to access rearing habitat within Edmonds Marsh, and whether the physical characteristics (hydrology and elevation) of that habitat will support functional biotic factors allowing for rearing success.

The goal of this proposal is to utilize SRFB/PSAR funding to explore the feasibility of maximizing Chinook salmon rearing habitat in Edmonds Marsh. This would be accomplished through the following tasks:

1. Scoping options for daylighting Willow Creek to connect directly to Puget Sound;

2. Conducting surveys to determine hydrology of a restored marsh system that identifies the freshwater and saltwater hydrology signal, average water elevation, maximum and minimum water levels and hydroperiod during daily tidal fluctuations;

3. Determining sediment elevation and expected rates of accretion or erosion within the identified rearing habitat area;

4. Addressing concerns over the ability for a daylighted channel located on the beach south of the marina to remain open given wide southern fetch, high winds and current and net northward littoral drift; and

5. Address stormwater concerns by identifying outlets that drain the surrounding area into Edmonds Marsh, determine average and maximum water volumes, and determine quality of stormwater runoff entering the marsh system.

Additional information by task:

1. Project partners recognize that the proposal to daylight Willow Creek across the beach south of the Marina is not the most direct connection route, relies on deep, narrow ditches of low habitat value and is constrained by the uncertainties on adjacent properties such as ownership, future development, and potential legacy contamination. Two available studies identify options for daylighting Willow Creek and provide initial assessment of habitat benefits, impacts and other project considerations. Although neither of these studies was focusing on enhancing juvenile Chinook rearing habitat value, they provide initial data to inform this current proposal and feasibility study.

In 1998, the Port of Edmonds contracted Pentec Environmental to conduct an evaluation of daylighting Willow Creek into the Edmonds Marina (Pentec report provided on PRISM). Pentec conducted field reconnaissance to evaluate existing habitats within the marsh complex from existing channel opening to upper watershed, reviewed available information of surface drainage into marsh, assessed existing pathways for tidal exchange and assessed benefits and impacts associated with daylighting Willow Creek into the marina.

In 2004, City of Edmonds and WDOT release the Final Environmental Impact Statement for the SR 104 Edmonds Crossing (referred to as FEIS herein) ferry terminal project. This new ferry terminal, which would be located south of Edmonds Marsh on the adjacent Chevron property, identified dayligthing Willow Creek with a channel opening across the public beach south of the Marina (chapters 3 and 4 of the FEIS are provided on PRISM). The FEIS provides some data that is referred to under the following tasks. It is also important to note that the results of the FEIS Willow Creek daylighting proposal was utilized by Sound Transit to site the recently installed bridge crossings under the railroad tracks that, in part, met mitigation requirements for adding a second rail line through Edmonds.

1. We propose to address uncertainties regarding Chinook access to and utilization of rearing habitat in Edmonds Marsh, and potential for expansion of useable rearing habitat in the system. Hydrology and topography are thought to be the primary variables that will drive ecosystem response to restoration of this system. We propose to identify hydroperiod of a restored marsh system that includes freshwater and tidal input, mean daily water levels, and maximum levels. This will likely be done through a consultant who will conduct a topographic survey and generate a digital elevation model (DEM) utilizing available LiDAR data, aerial photography and possibly survey data.

Both Shellabarger and Willow Creek watersheds discharge into the Marsh as they have done historically. These watersheds are composed almost entirely of residential land use, primarily single-family. According to the City’s Public Works Dept Geographic Information System (GIS), the Willow Creek watershed is approximately 393 acres (majority drains from the Town of Woodway) and the Shellabarger Creek watershed is approximately 440 acres.  The total from both those basins that discharge into the Marsh is approximately 833 acres. In addition, the Port of Edmond’s Harbor Square property, a small part of the Antique Mall/former Safeway site, part of Dayton St. and part State Hwy 104 also drain into the Marsh totaling about another 23 acres (these areas were historically part of the marsh).  The initial grand total for the Edmonds Marsh watershed is about 856 acres (j. Shuster, email comm., 3/24/10).The City of Edmonds Public Works department will assist with determining freshwater inputs to the system.

Few similar projects have been conducted in Puget Sound, however studies from other macro-tidal estuaries have been reviewed (Bowron, et al, 2009). Project partners will continue to work with local restoration managers in an effort to gather local information regarding restoration of similar size and type barrier estuary systems and Chinook access and usage of such systems.

1. Site topography affects hydrology of the Edmonds Marsh system. To date, no topographic surveys of the marsh exist. We propose a full topographic survey of the marsh, which we will pair with hydroperiod analysis to determine expected rates of erosion or accretion within the identified rearing habitat areas. In addition, this will inform average and maximum water depths within both rearing habitats and migration corridors through the marsh. The goal of this effort is to quantify juvenile Chinook ability to utilize rearing habitat within the marsh once access is restored.
2. Creating a self-sustaining channel opening for a daylighted creek is an important factor for project success and functionality. Design of the channel opening must take into account net littoral drift, wind and wave energy to determine sustainability of the opening and year round access for juvenile salmon. Some information on marine hydrology, wind, wave and current data have been collated in the FEIS (Chapter 3.2.5). Findings show the beach area south of the Marina identified as an option for a daylighted channel opening has a net northward littoral drift and is subjected to high wind and wave energy. Studies reported in the FEIS found south quadrant winds associated with storm events to be 55% higher and north-quadrant winds to be 15% higher than the beach north of the Edmonds Marina.

We propose to use available data to inform a hydrologic model of the system specific to determining the year round self-sustainability of a channel opening at all proposed alternatives and recommendations for armoring to ensure an open channel and related maintenance of such structures.

1. The project team recognizes the concern over the use of the marsh for stormwater management (volume and contaminant transport). It is our position that the sedimentation in the Marsh is from poor stormwater management in the past. The big building boom in Edmonds during the 1960’s though the 1980’s most likely contributed to large sediment loads to the Marsh. Since 1995, the City of Edmonds has had stormwater management regulations with lower thresholds for flow control than required by our current State Municipal Phase II NPDES Stormwater Permit. Last year the City modified its stormwater regulations to allow and encourage Low Impact Development (LID) and are working on regulations that will make LID the norm. If the current sediment load in the Marsh can be removed to provide additional habitat, the current and planned future stormwater regulations should help prevent it stilting up again to its current extent. City staff will contribute to the effort of understanding freshwater input into the marsh system, including volumes draining from the surrounding properties and quality of water entering the system.

Additional information:

The project team recognizes the concern over liability issues (ownership and legacy contamination) as they relate to the adjacent property to the south of the marsh- the former Union Oil refinery. The project team discussed the potential that the now empty property represents to maximizing restoration efforts as they pertain to Chinook salmon access to the marsh and expanding rearing habitat. The project team will use this opportunity with SRFB/PSAR funding to work with both the current property owner, Chevron, and the likely future owner, WSDOT- Ferries Division to open discussions regarding the status of cleanup and remaining contaminants on the site, the unknown future ownership and use of the site and the potential for habitat restoration.

The project team has not procured a landowner acknowledgement letter from Washington State Ferries at this time. As of this date, WSDOT Ferries Division does not currently own the property to the south of the marsh. The property is currently owned by Chevron, with option to purchase held by WSDOT- Ferries Division, following required environmental clean up. The project team will continue to work with WSDOT- Ferries Division to update them on the proposed project and the potential value of the Chevron property to habitat restoration and will work towards obtaining a letter of acknowledgement from Ferries Division.

The project team is working on a refined budget that reflects the scope of work proposed in this addendum to the original pre-proposal. Few similar projects have been successfully completed in the Puget Sound, making budgeting more difficult. The project team will work with regional restoration managers in the coming weeks to develop a realistic and cost-effective budget that reflects the updated scope of work, which will be posted in PRISM.

References:

Beamer, EM, A McBride, R. Henderson, J. Griffith, K. Fresh, T. Zackey, R. Barsh, T. Wyllie-Echeverria, and K. Wolf. 2006. Habitat and Fish Use of Pocket Estuaries in the Whidbey Basin and North Skagit County Bays, 2004 and 2005. Skagit River System Cooperative Research Program.

Brennan, J. S., K. F. Higgins, J.R. Cordell, and V. A. Stamatiou. 2004. Juvenile Salmon Composition, Timing, Distribution, and Diet in Marine Nearshore Waters of Central Puget Sound in 2001-2002. King County Department of Natural Resources and Parks, Seattle, WA.

Fresh, K. 2006. Juvenile Pacific Salmon in Puget Sound: Puget Sound Nearshore Partnership Report No 2006-06. Published by Seattle District, U.S. Army Corps of Engineers, Seattle, WA.

Leschine, T.M., and A.W. Petersen. 2007. Valuing Puget Sound’s Valued Ecosystem

Components. Puget Sound Nearshore Partnership Report No. 2007-07. Published by

Seattle District, U.S. Army Corps of Engineers, Seattle, WA.

Redman, S., D. Myers, D. Averill. 2005. Regional Nearshore and Marine Aspects of Salmon Recovery in Puget Sound. Prepared for Shared Strategy for Puget Sound. Editors K. Fresh and B. Graeber.

Williams, G. D., R. M. Thom, J. E. Starkes, J. S. Brennan, J. P. Houghton, D. Woodruff, P.L. Striplin, M. Miller, M. Pedersen, A. Skillman, R. Kropp, A. Borde, C. Freeland, K. McArthur, V. Fagerness, S. Blanton, and L. Blackmore. 2001. Reconnaissance Assessment of the State of the Nearshore Ecosystem: Eastern Shore of Central Puget Sound, Including Vashon and Maury Island (WRIS’s 8 and 9). Report prepared for King County Department of Natural Resources, Seattle WA. J. S. Brennan, Editor.