

**ProjectID: 30004**

Blind Slough Restoration Project - Brownsmead, Oregon

**Sponsor:** CREST

**Province:** Columbia Estuary

**Subbasin:** Columbia Estuary

**FY03 Request:** \$173,550

**5YR Estimate:** \$193,550

**Short Description:** Restoration of tidal exchange between the Columbia River Estuary and Blind Slough in the community of Brownsmead, Oregon. BPA funds will be used to match U.S. Army Corps Section 1135 funding for 25% of the total project costs.

**Response Needed?** Yes

**NOTE: ISRP Comments/Questions are Underlined**

*CREST Responses are in Italics*

**ISRP Preliminary Recommendation and Comments:**

This project is to restore tidal exchange between the Columbia River estuary and Blind Slough. BPA funds will be used to cost-share USACE funding, as well as to pay for project planning, design, and effectiveness monitoring. Blind Slough is in an important area for reconnection because of its proximity to a biologically productive island network and its location in the oligohaline zone where young salmon acclimate to salt water. Proposed activities under this project are connected to needs identified in other programs and documents. The project is tied to other projects on juvenile salmonid behavior and builds on some locally initiated reconnection projects. It was evident that the project has excellent local involvement and support.

The objectives of the project are to conduct feasibility studies, restore connectivity of the Slough in seven places, and to conduct both pre-and post-project monitoring to evaluate changes in water quality and level of fish use for rearing, foraging and spawning. Overall, the objectives and tasks seem appropriate to the goal, but more information could be provided about how and why the seven reconnection sites were chosen and whether these seven reconnection sites are expected to be sufficient.

*These seven sites were prioritized according to the best feasible opportunities for reconnecting remnant slough channels to the Estuary. The proposed components of the Blind Slough project were presented to various forums and organizations for their comments. The components of the project were discussed as part of a Habitat Workshop attended by estuarine scientists from around the country. Blind Slough project sites have also been discussed among members of OWEB's Technical Review Team for the North Coast and to members of LCREP's Science Work Group. These sites were also presented by the local diking improvement company at numerous community meetings and prioritized based on landowner's willingness to participate. The company voted in unanimous support of the current sites proposed.*

*If during the planning, engineering, and design phase other opportunities arise they will be scoped out for feasibility and community support and then incorporated into future phases of this*

*project. As effectiveness of the project become clearer other sites could be scoped out for implementation.*

The monitoring is hypothesis driven, but hypothesis 2 isn't really testable in this form. This hypothesis needs to be written in a more testable way. The proposal recognizes the value of effectiveness monitoring but should likely solicit statistical advice on survey designs before monitoring begins and establish sampling methods and protocols. For the response, proponents should refer to the programmatic section of this report, specifically on monitoring and evaluation.

*A rigorous effectiveness monitoring plan will be developed through the recruitment of several key scientific resources available to CREST. This plan will incorporate method, sampling, and statistical recommendations from ongoing monitoring projects administered by NMFS on salmonid fish use of the Columbia River Estuary. Additional input for the monitoring plan will be sought from other organizations conducting and/or proposing monitoring in the Estuary. Coordination with these existing efforts include the participation of University of Washington (WETLAND ECOSYSTEM TEAM), Oregon Department Fish and Wildlife (BPA proposal #30018), Sea Resources (BPA proposal # 30006), USFWS (BPA proposal #30009) and the LCREP Science Workgroup for use in their long-term monitoring strategy for the Columbia River Estuary. Furthermore, plan development should consider incorporating the efforts and resources elsewhere in the basin including Project No. 199801600 in the Columbia Plateau (Jim Ruzycki and Richard Carmichael, ODFW, "Monitor Natural Escapement and Productivity of John Day Basin Spring Chinook Salmon") and data collection protocols in Johnson, et. al. (2001) Through coordination with the appropriate agencies, the Blind Slough area could support larger scale monitoring efforts in the region allowing statistical inferences to be made for anadromous fish distribution and abundance in the Columbia River Estuary.*

*Hypothesis #2 is being worked into a more measurable objective that will be presented to the above groups for their comment and input on recommended sampling design plans in the Blind Slough area. (see changes below)*

Hypothesis #2-Fish Use: Increasing the level of connectivity between Blind Slough's channel network and the Columbia River Estuary raises the probability of anadromous fish use for rearing, foraging, and spawning.

Modified Hypothesis #2-Fish Use: Increasing the level of connectivity between Blind Slough's channel network and the Columbia River Estuary increases anadromous fish use in estuarine tidal sloughs.

The proposal shows good potential for benefits to fish and wildlife, but a response is requested on a few issues:

- 1) There was concern whether the tidegates are going to provide adequate access at both the upper and lower ends of the Slough. The Corps should seriously consider how they are

going to get enough flow and fish into the system. How will effectiveness of these gates be assessed?

*Hydrologic modeling conducted by Army Corps of Engineers is part of the planning, engineering and design phase of the project. Results from the modeling are applied to project planning, design and maintenance to ensure adequate flows are maintained in the system for water quality improvements and anadromous fish use.*

*CREST and the North Coast Watershed Councils have been evaluating alternative tidegate designs in the Columbia Estuary for fish passage and water quality. For example, fish monitoring data collected behind a slough with a manually-managed “slider” design demonstrated the effectiveness of these structures with respect to enhancing access for migrating salmonids. Field observations and literature has led to preliminary understanding of the effectiveness of various tidegate designs. Currently information is being compiled and studied by CREST to describe the existing range of tidegate designs and their effectiveness in the context of tidal conditions specific to the Columbia River Estuary. Similar “slider” designs with manual lifting devices are being proposed for the Blind Slough restoration project at the lower ends of the slough to increase tidal volume and access to habitat for fish into the slough system.*

*Aluminum tidegates designed for fish passage are being proposed to breach the Blind Slough dike. The effectiveness of these gates will be measured with appropriate metrics and monitoring protocols. Objective 3 scopes out a template for an experimental design strategy for both water quality and fish use. Fish use monitoring design will be implemented to measure pre- and post-project implementation fish population changes. Building on these results, modifications are made to future tidegate designs and restoration projects in the Estuary to further improve fish passage and water quality.*

- 2) Pre-project monitoring should address the current fish populations and in particular the predator populations. In these slow moving tidal environments this could be a significant limitation to the benefits of the program.

*Preliminary fish data exists for a few plots in the Blind Slough network. Monitoring plan development will build on these results through coordination with organizations currently conducting and/or proposing fish use monitoring in the Estuary. As mentioned in the proposal fish monitoring techniques need to be applied to capture pre-project fish population composition and resultant changes occurring from project implementation. Predation is a definite concern, but we feel it is outweighed by longer-term considerations of restoring access to historic habitat types that ultimately enhance long term, more sustainable anadromous fish populations.*

- 3) This proposal could be developed into an important habitat restoration experiment. Activities similar to this are likely to become increasingly important and would benefit from a well-executed study. The involvement of other research organizations could provide staff for monitoring and expansion of investigations. For example, the installation of PIT detection arrays at the inlet and outlet of the Slough could provide

important additional information on survival, duration of use, habitat use versus flow rates, etc.

*The recommendation of PIT detection arrays and associated protocols is an example of the type of input needed to build a rigorous habitat restoration experiment for the Blind Slough project. Monitoring plan development in conjunction with NFMS, ODFW, USFWS, and Sea Resources will address the feasibility of installing such devices at Blind Slough along with sampling design that captures probable migration windows of anadromous species in the Columbia River Estuary. Such expertise is useful for expanding on applied studies regarding juvenile residence time in tidal estuarine environments. Correlations such as habitat use versus flow are an important relationship that will be considered during monitoring plan development for both pre and post project implementation.*

- 4) If the objectives of the proposal are met and salmonids utilize the slough for rearing, the next step in this restoration would be the reconnection of land with the waterway. Is there any associated acquisition plan or program that could build on this initiative?

*The project as it is currently proposed restores 7 ½ miles of habitat previously removed from the Columbia River Estuary. Recent locally supported initiatives have proven successful in riparian and estuarine restoration along Blind Slough and in the Brownsmead area. As the Blind Slough restoration project moves forward, riparian restoration (plantings, fencing, off-channel watering, slough reconnections) projects will increase through the application of existing community based restoration programs. Conservation organizations like the Nature Conservancy, North Coast Lands Conservancy, and the Columbia Land Trust are exploring land acquisition opportunities and conservation incentives with private landowners and opportunities will continue to be pursued in cooperation with the LCREP/CREST Wetland Program in the Estuary including Brownsmead.*