US Army Corps of Engineers®
Engineer Research and Development Center

National Regional Sediment Management Program Portland District (NWP):

Site Selection Framework: Placement of Dredged Material for Estuary Habitat Restoration

Description

This RSM project will develop site selection criteria for habitat creation in the Columbia River Estuary. Design criteria for the morphometry (elevation, shape, etc.) of habitat creation exist for the Lower Columbia River, but there has not been a comprehensive analysis of site selection factors. Use of recently developed sediment transport models, air photo analysis, and expert elicitation will define criteria for selecting sites where placement of dredged material can result in habitat creation without high risk of shoaling in the FNC. These site selection criteria will complement the existing design criteria and will serve as a programmatic criteria for habitat creation projects in the estuary. The criteria will be applicable to the full spectrum of projects in the area and will be incorporated in the DMMP / Channel Maintenance Plan that NWP is preparing.

Placement of material in the Columbia River. Showing upland (Streaked Horned Lark) and juvenile salmonid habitat created with dredged material.

Issue/Challenge To Address

Approximately 6.5MCY is removed from the Columbia and Lower Willamette River Federal Navigation Channel. In-water and upland placement sites for this material have been increasingly harder to find. Placement options that include the beneficial use of dredged material for habitat creation need to be explored in greater depth. We have both a large quantity available for use, and a need for habitat for both aquatic and terrestrial species.

This project represents an opportunity to fill a key gap in the regional framework for dredged material management. NWP is heavily invested in the Lower Columbia River, in terms of both channel maintenance (dredging and pile dikes) and ecosystem restoration. NWP has a robust understanding of sediment dynamics in the Lower Columbia River, and a sophisticated set of tools to optimize upland, flow lane, and nearshore placement, but has

not developed a systematic assessment of opportunities for shallow-water placement that could meet both navigation and ecosystem restoration objectives. In addition to prior and ongoing RSM efforts, NWP has also invested approximately $20M since 2000 in understanding and evaluating the Lower Columbia River ecosystem. That knowledge, coupled with USACE's relationships with key fish and wildlife stakeholders, represents a rich opportunity to "cross-pollinate" and achieve win-win-win outcomes for navigation, ecosystem restoration, and fiscal stewardship.

Successes Lessons Learned

Lessons learned will be compiled during the duration of this study. A CAP Section 204 project is in the planning stages and could benefit from the results of this RSM effort.

Expected Products

- Literature Review
- IPR Presentation
- Site Selection Factors
- Model Runs
- Tech Note
- Conference Presentation/Paper

Stakeholders/Users

NWP, Sponsor Ports, ERDC, ODFW, WDFW, NOAA, Pacific Northwest National Labs, BPA, Cowlitz Tribe, CREST, and others.

Projected Benefits Value Added

Real estate acquisition – if suitable lands are even available – and construction of setback levees are two primary cost drivers for ecosystem restoration projects in the Lower Columbia River estuary. Use of dredged material to create landforms that can evolve to form floodplain habitat mosaics would significantly reduce both the cost and the socioeconomic uncertainty of ecosystem restoration.

A program of strategic placement in shallow-water areas to create habitat would also expand the network of placement options for maintenance of the Federal navigation channel, and would also dovetail with efforts to rehabilitate pile dike networks.

Leveraging Opportunities

This RSM proposal leverages prior RSM studies, the aforementioned RM&E program, work products from a prior GI study, and partnerships with other Federal and State agencies and non-governmental organizations. This proposal would also complement an ongoing Section 204 Feasibility Study for habitat creation at Woodland Islands. In addition, NWP is updating the overall RM&E framework for the Lower Columbia River ecosystem restoration program, which would include identifying and resolving key uncertainties regarding use of dredged material to create habitat. Existing funding for the Lower Columbia River estuary program, on the order of $40K, would be leveraged to support his effort.

Points of Contact

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Participating Partners

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