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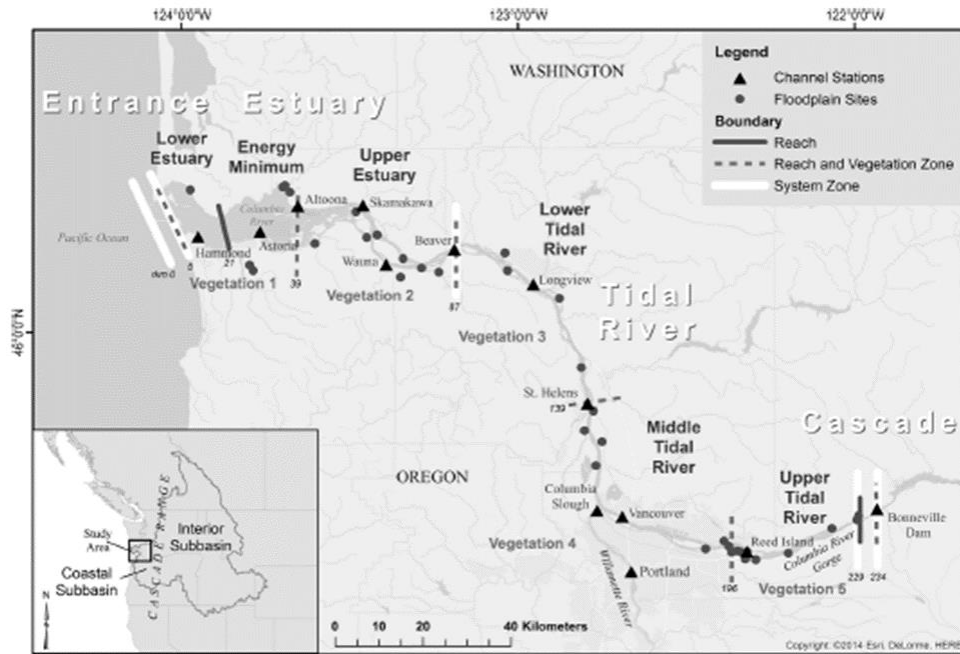
National Regional Sediment Management Program Portland District (NWP):



Lower Columbia River Regional Sediment Management Plan: Application of Reach-based Strategies for Beneficial Use of Dredged Material in the Estuary at Three Placement Sites

Description

NWP will select and develop conceptual design plans at three specific sites using beneficial use of dredged material (BUDM) to create or enhance intertidal and floodplain habitat and provide additional capacity for dredged material routinely placed in the flow lane and off-channel areas of the Lower Columbia River (LCR). In order to determine the design plan for each site, NWP will collaborate with state and federal regulatory agency partners to discuss the application of different BUDM strategies at the three specific sites. The sites and conceptual designs produced under this RSM proposal will then be incorporated into inter-related programs including navigation, the pile dike rehabilitation program, and ecosystem restoration programs on the Columbia River. All of this information will directly feed into the overall RSM Plan (RSMP) and Dredged Material Management Plan (DMMP) for the LCR.



Lower Columbia River

Issue/Challenge To Address

For years the Portland District has been working with local experts and stakeholders to develop a regional framework to inform the beneficial use of dredged material in the LCR. This RSM project will leverage lessons learned from years of collaboration to produce conceptual design plans for three selected dredged material placement sites in the LCR. Through an iterative process with stakeholders and external resource agencies, we aim to build on existing beneficial use strategy site maps (developed in the draft DMMP) and create design plans that can be implemented as part of the LCR RSMP. The RSMP will provide a roadmap for strategic dredged material placement that benefits both navigation and ecosystem restoration missions and combines the efforts of federal and non-federal



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stakeholders, with the added benefit of reducing environmental permitting costs. One of the highest risks for successful implementation of the LCR federal navigation channel (FNC) DMMP is receiving the environmental clearances necessary to maintain the FNC over the 20-year DMMP planning horizon. The LCR RSMP will manage this risk by enabling the cohort to collectively provide input and design dredged material placement sites that meet the missions of all stakeholders and make these sites available for the LCR FNC DMMP. While the effort described herein is limited to three placement sites, the partnership, trust, and insight gained during this exercise will support beneficial use of dredged material along the entire river.

Successes Lessons Learned

Work accomplished to-date through this RSMP development of GIS tools for screening potential sites, literature review (DOTS), stakeholder outreach to provide common understanding of organizational needs and missions (e.g., USACE navigation), and identifying constraints. Coordination efforts have facilitated a common understanding between the Corps and stakeholders on overarching BUDM principles to achieve habitat benefits and prioritize strategies to meet ecological goals, including: (1) create and/or expand intertidal and emergent islands; (2) use velocity shadows to expand intertidal and emergent wetlands; (3) build bar and scroll topography and (4) place material for targeted dispersal. Related work identifying potential placement sites and compiling 10 years of historical data on channel shoaling and existing placement sites within the Columbia River has also been accomplished through the LCR DMMP.

Projected Benefits Cost Savings Value Added

Use of dredged material to create landforms that evolve to form and sustain floodplain habitats could significantly reduce both the cost and the socioeconomic uncertainty of ecosystem restoration in the short and long-term (e.g., as created features emulate natural landforms, our confidence in predicting site succession increases). A portfolio of reach-based strategies for the BUDM that has been coordinated with and vetted through our external stakeholders will directly support (and add value to) coincident work in the region, including navigation, the pile dike rehabilitation program and ecosystem restoration program. The sites and conceptual designs produced under this RSM proposal can be immediately incorporated into these inter-related programs. In addition, stakeholder participation and agreement on beneficial use strategies will simplify environmental coordination and consultation on both Corps and non-Corps dredging and placement sites, while ensuring that the conceptual designs can be permitted and constructed under real world regulatory constraints.

Expected Products

- BUDM site designs and associated design documentation for three sites.
- Workshop presentations and notes, including comments from internal and external agency partners integrated into a final table of pros and cons for consideration at each design site.
- Workshop presentations and notes, including comments and data from external permittees, in relation to the three selected placement sites. This can be further expanded in future efforts if found to be beneficial and practicable.



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- The USGS study (FY20 to FY23) will yield Scientific Investigations Report with data, statistical summaries, and other pertinent information. In-house labor is needed in FY21 to support and oversee the ongoing study.
- Technical Note

Stakeholders/Users

The RSM Team is composed of diverse stakeholders including: CENWP (ENC-HD, OD-NW, PM-F, PM-E and ENC-TG), Oregon Department of Fish and Wildlife, Oregon Department of State Lands, Oregon Department of Conservation and Development, Oregon Department of Water Quality, Washington Department of Fish and Wildlife, Washington Department of Ecology, Washington Department of Natural Resources, U.S. Fish and Wildlife Service, NOAA Fisheries, Department of Energy - Pacific Northwest National Laboratories (DOE-PNNL), Bonneville Power Administration (BPA), Cowlitz Indian Tribe, Columbia River Estuary Stakeholder Taskforce, and other non-governmental organizations (e.g., Whiting Environmental, LLC).

Leveraging Opportunities

This RSM project leverages knowledge gained from prior RSM initiatives, research, monitoring and evaluation (RME) studies, and existing partnerships in the LCR. NWP has invested in RME studies in the LCR for more than 15 years. Collectively, these RME studies support the use of dredged material to mimic naturally occurring physical and ecological processes and create functional wetland habitat. Notable results from these studies include metrics for evaluating the effectiveness of habitat restoration actions; characterization of the environmental factors controlling establishment of wetlands; and potential improvements to aquatic habitat through the strategic placement of dredged material.

Under a 2018-2019 RSM initiative, the Portland District developed regional sediment management strategies integrating physical, ecological and operational factors. Four of these strategies will be leveraged to progress our conceptual designs at the three proposed sites: (1) create and/or expand intertidal and emergent islands; (2) use velocity shadows to expand intertidal and emergent Wetlands; (3) build bar and scroll topography and (4) place material for targeted dispersal. One useful deliverable from that study is a GIS tool that helps screen and rank potential placement sites.

This RSM project also leverages and supports prior RSM and RME studies performed by the district to develop a RSMP for the LCR, currently in-development. It will set the holistic context for regional sediment management in the LCR, including operational, regulatory, navigation, life safety and ecological considerations. Information will feed into the 20-year DMMP, which will identify critical shoals where continued maintenance of the FNC will be needed. During the development of the DMMP, the Portland District identified over 200 potential placement sites for material dredged from the FNC. In combination with the regional sediment management strategies, this collection of sites provides a starting point from which to select the three sites to develop under this proposal. Choosing potential placement sites from the DMMP ensures that they are constructible and actually serve the navigational mission, which will increase their likelihood of being implemented. Furthering the conceptual placement design of those three sites in partnership with external stakeholders will maximize the beneficial use design for the LCR. In addition, the Ecosystem Management and Restoration Research Program is working in the LCR to evaluate environmental factors affecting submerged aquatic vegetation. Results from



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this study will be directly transferable to project development and design. Finally, this work complements current habitat creation projects in the LCR (e.g., at Woodland Island, constructed in 2020); and addresses critical uncertainties of RME studies in the LCR.

Points of Contact

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MSC RSM POC: Jarod Norton CENWD-PDS

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Participating Partners

Washington Department of Fish and Wildlife, Washington Department of Natural Resources, Washington Department of Ecology, Oregon Department of Fish and Wildlife, Oregon Department of State Lands, Oregon Department of Land Conservation and Development, Oregon Department of Water Quality, Columbia River Estuary Study Taskforce, Cowlitz Indian Tribe, Bonneville Power Administration, US Fish and Wildlife Service, NOAA Fisheries, and DOE-PNNL.