Utilization of Upper Mississippi River Dredged Sands for Beach Nourishment – Feasibility Study

Dredging Operations Environmental Research (DOER) Program

U.S. ARMY CORPS OF ENGINEERS BUILDING STRONG®

Focus Area

Dredge Material Management

Problem

Each year the Rock Island (MVR) and St. Paul (MVP) Districts dredge approximately 2MCY of clean, fine to medium grained sands collectively, with most of this dredged material is placed in upland and island placement facilities. USACE real estate policy requires that districts must own this land in fee title to place dredged material or request approval from Headquarters for a "Non-Standard Estate" waiver. A recent Non-Standard Estate for an existing soil manufacturing facility in MVP took multiple years of internal coordination among planning, real estate, office of council, and operations staff to get approved. As existing placement sites reach capacity, the districts must seek additional land acquisition alternatives to maintain 20 years of placement capacity as defined by the Dredge Material Management Plan (DMMP). These Districts are seeking beneficial use alternatives for this material to retain placement site capacity and reduce the need to acquire additional land. The largest limiting factor for finding beneficial uses is the cost of transporting sediment and cost limits defined by the Federal Standard. However, there may be opportunities to share transportation costs to support other large beach nourishment and coastal resilience projects. This study aims to identify beaches whose sand characteristics match that of the Upper Mississippi River and assess the costs associated with transporting material to these select beaches.

Study Description

ERDC will fully assess all costs associated with the current dredging program in the Upper Miss to get a true understanding of the actual unit costs of dredging and placement. ERDC will identify beaches across the nation with similar soil characteristics to the dredged material in the Upper Miss and review the total costs and recurrence associated with traditional beach nourishment projects at that site. An optimized transportation path will be created utilizing navigable waterways, rail, truck, or a combination of the transport modes, complete with estimated costs of loading, transport, and offloading to placement site. This total cost will be compared to that of the traditional combined programs to assess if this work can be done at or under the federal standard threshold. When looking at a long-term project (20 years or greater to be consistent with DMMP), the federal standard across the material supplying district and the gaining district could be realized with cost sharing opportunities. For districts that are nourishing their beaches with contracted hopper dredges, this approach could provide the districts with a similar amount of sand for a potentially less cost. If true, this would have long term benefits for both districts, nourishing beaches in need, and freeing up Hopper dredges for USACE Operations and Maintenance work.

Products

Technical Note describing the need for alternative beneficial use approaches and the efforts taken to date by both ERDC and the Districts that have led to this feasibility study.Technical Report and Journal Article detailing the approach and outcomes of this feasibility study

Summary

This research will evaluate the feasibility of transporting UMR sands to select beach nourishment projects across the country. If the Federal Standard can be maintained across both supplying and gaining districts, the UMR Districts could significantly change how they manage dredged sediments and increase BU opportunities across nation.

Balancing operational and environmental initiatives and meeting complex challenges of dredging and dredged material placement in support of the navigation mission.

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