



Wisconsin Harbor Dredge Placement

ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

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Response Summary:

CHL performed this study in assistance to USACE Chicago District (LRC). Nine Wisconsin harbors (Figure 1) were analyzed for sediment mobility to determine appropriate nearshore placement of dredged material for beneficial use. The Sediment Mobility Tool (SMT) was run at 15 possible placement sites immediately north and south of the respective harbors based on suggestions provided by LRC. Due to issues connecting to the WIS database during updates, the SMT was run offline. Input data such as dredge volume, potential sediment placement sites, and sediment grain size (d_{50}) were provided by LRC. The nearshore berms at each placement site were set 100 feet offshore at a depth of 5 feet. These nearshore nourishment alternatives align with the goals of the USACE regional sediment management by keeping the sediment in the littoral system and Engineering With Nature principles by allowing the natural wave forcing to winnow fine material from the placement site and transport the coarser (sand) fraction towards the shoreline.

The SMT provided nearshore wave data, deflation rate, depths of closure (DoC), and mobility of sediment due to bed stress and near-bed velocity in the cross-shore direction. Different size sediments were also categorized by the percent that were mobile and accretionary compared to mobile and offshore. Sites with mobility scores lower than one were deemed stable while berms placed shallower than the Inner DoC and Outer DoC were determined to be active based on comparison to historical nearshore berms. Using these criteria, the three sites within Green Bay corresponding to Big Suamico, Oconto, and Pensaukee harbors were classified as stable, and the remaining 12 Lake Michigan sites were active.

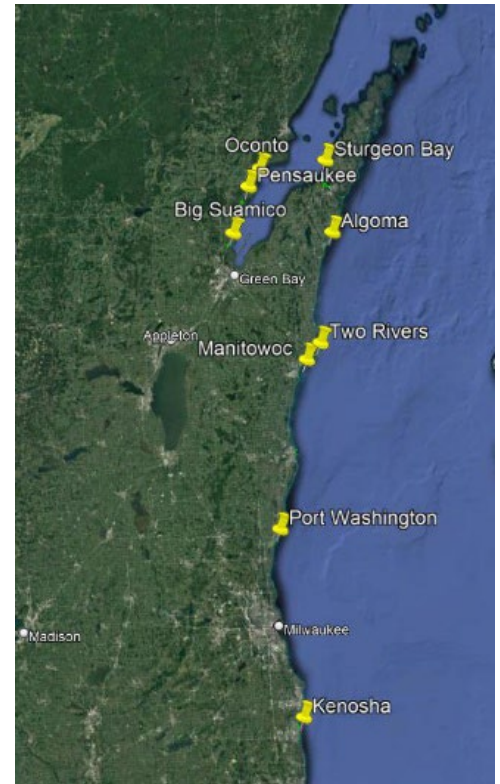


Figure 1: Wisconsin harbors studied

Period of Performance:

8/8/2022 – 8/26/2022

Benefits of the Response to the USACE Dredging/Navigation Program:

The nine harbors require a total of 375,000 cubic yards to be dredged, and this preliminary study conducted a scoping level analysis for opportunities to beneficially use the dredged sediment to nourish the beach profile with a nearshore nourishment. The SMT results allowed for a better understanding of nearshore wave characteristics at potential sites and the expected transport rate from the placement site. The results of this analysis will be used to discuss potential nourishment alternatives with the Wisconsin regulatory agencies and stakeholders.

Deliverable:

Results from the scoping level analysis of the 15 potential beneficial use placement sites were compiled into a draft report and returned to LRC. These results will be used in discussions with Wisconsin regulatory agencies and stakeholders, as well as be included in a future technical report that will detail a regional sediment management plan for the area to maximize the beneficial use of dredged sediment on the Wisconsin coast.



Providing environmental and engineering technical support to the U.S. Army Corps of Engineers
Operations and Maintenance navigation and dredging missions

Dylan Robinson
Coastal and Hydraulics Laboratory
Dylan.M.Robinson@usace.army.mil

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