



Repurposing CDFs for Contaminated Sediments. A Win-Win for Beneficial Use

Dredging Operations Environmental Research (DOER) Program

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Focus Area

Risk Management: Public Private Partnership - Innovative Technologies for Managing / Treating Contaminated Sediment to Expand Beneficial Use Opportunities

Problem

Confined disposal facilities (CDFs) that receive relatively clean dredged material and are close to capacity can serve as a source of granular material for construction, soil amendments, upland fill, and habitat restoration. By salvaging clean sediment from existing CDFs, those same CDFs can continue to receive dredged material, and can be repurposed for contaminated sediment management. When filled, whether with clean or contaminated sediment, CDFs can be capped and used beneficially as newly created uplands. The beneficial use of CDF material expands the use of existing CDFs, creating dual opportunities for sediment beneficial use. The first is to beneficially use clean material salvaged from existing CDFs, and the second is to use newly dredged material (including possibly contaminated material) as a foundation for new lands.

Study Description

The results of a Life-Cycle Analysis (LCA) will be used to identify opportunities for value creation through beneficial sediment use from CDFs and thus reserving CDF capacity for permanent contaminated-sediment (or clean sediment) disposal. The LCA will include a Cost Benefit Analysis (CBA) to overcome real and perceived cost barriers, including construction costs, sediment processing costs, cost offsets, and cost avoidance. The CBA also will examine societal costs associated with sediment and CDF management, addressing unseen costs (so-called cost externalities) that can positively or negatively impact project value. Value assessments that leverage the LCA and CBA are consistent with the Water Resources Development Act (WRDA) 2020.



Figure 1. Current dredged material placement methods. Highlighted Placement Locations are within Detroit District. Confined Disposal Facilities within Detroit District are the focus of this study. (Source: USACE Detroit District website)

Products

Ramboll will prepare a Technical Report that summarizes the state of the practice for Beneficial Use and CDFs in the Detroit District.

Summary

This project will perform an LCA that includes a Cost Benefit Analysis (CBA), for select Detroit District CDFs as a model for value creation through beneficial sediment use from CDFs, and using remaining or created CDF capacity for permanent contaminated-sediment disposal. When filled, CDFs with contaminated sediment can be capped and used beneficially as newly created uplands. Combined, the beneficial use of CDF sediment, repurposing CDFs for contaminated sediment, and beneficial use of contaminated sediment through new land creation are inherently circular and sustainable.



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