



Expanding Potential Sand Sources for Shore Protection Projects

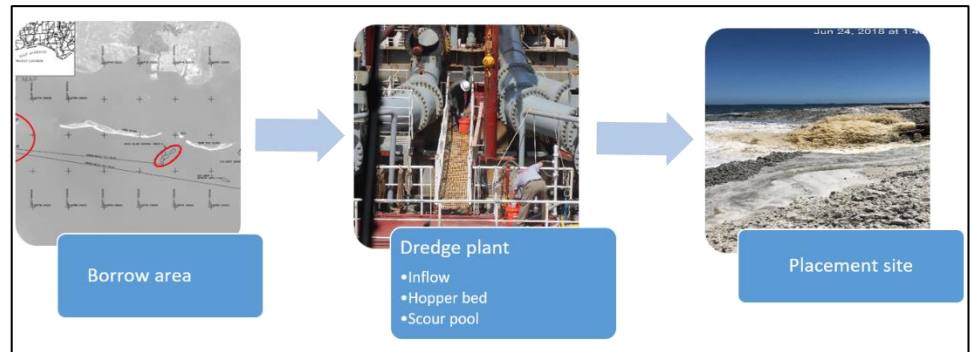
ERDC Dredging Operations Technical Support Program (DOTS)

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG®

Response Summary:

The USACE Jacksonville District (SAJ) requested ERDC personnel to participate in a workshop addressing dredging and sediment related issues in southeast Florida. Part of the workshop focused on the feasibility and limiting factors for expanding or seeking alternative borrow sources for shore protection projects. A limiting factor in the available volume of proximal, beach quality material for shore protection



projects is related to compatibility regulations, which are necessary to maintain the engineering, aesthetic, and environmental character of the beach. In particular, the regulations specify thresholds for fine sediment content and sediment lightness (Munsell Value). These regulations are based on experiential knowledge and are enforced at the borrow source. However, fine sediment losses occur through the intentional discharge of supernatant water via hopper overflow at the dredge (economic loading) and through outwash at the discharge pipe. These processes effectively clarify the sediment, though previously determined loss rates and loss points had not been well constrained. Observations have also shown that beach fill will lighten over time after placement, yet the responsible mechanisms were speculative and not well quantified. However, recently completed work by ERDC researchers, in cooperation with the Bureau of Ocean Energy Management, CESAJ, and the Corp's Regional Sediment Management Program, have demonstrated that fine sediment losses, the fine sediment content delivered to the beach, and subsequent color shifts, may be predicted.

Period of Performance:

May 01, 2019 – May 03, 2019

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

Expansion of borrow source volumes by re-evaluation of compatibility requirements. Development of predictive tools to estimate fine sediment losses and resulting color change or beach fill. Communication of the research findings to the SAJ and the regulatory community resulted in follow-up discussions and partnership with the Florida Department of Environmental Protection. The future work and collaboration between researchers and resource agencies will allow for a more scientifically defensible management of limited sediment resources, while minimizing dredging costs and impacts to sensitive environments.

Deliverable:

Oral presentation of research findings and discussion of the broader applications and implications for sediment management. Presentation delivered as part of the USACE Southeast Florida Dredging and Sediment Workshop, May 2-3, 2019, Jacksonville District, Florida.

Additional contacts: S. Jarrell Smith, CHL, Jarrell.Smith@usace.army.mil; Clay A. McCoy, SAJ, Clay.A.McCoy@usace.army.mil; Katherine E. Brutsché, CHL, Katherine.E.Brutsche@usace.army.mil



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

Anthony M. Priestas
CHL • Anthony.M.Priestas@usace.army.mil

DOTS ID: DOTS-19-R38