



James River Federal Navigation Channel, Lower Reaches

Description

NAO requested ERDC develop a regional operational model for sediment transport to support sediment management in the entire lower James River initiative. A robust hydrodynamic and sediment transport framework using several USACE developed models was developed to help understand this system including: CDFATE, PTM, and GSMB. Each placement site within the area is being evaluated with an understanding that the system works together as a whole and that decision making must take the entire system into account.



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Issue/Challenge To Address

This work addresses several outstanding questions that if answered will support regional sediment management of the area. NAO would like to:

- Reduce O&M costs
- Reduce exposure/risk of critical environmental receptors during placement
- Determine migration of sediment from placement sites back into channels
- Optimize lifecycle management of placement sites
- Understand influence of aggregate transport on sediment management.

Understanding the fate of material placed at sites in the area will give vital information to the James River O&M team. The end result should help the James River O&M team optimize budget and prepare for future years of dredging as well as perform a risk assessment which may help reduce dredging costs significantly.

Successes Lessons Learned

- (1) Addressing sediment transport from each placement site as a regional concern in addition to local focus is essential.
- (2) Additional lessons learned will be compiled during this study and be provided in a document.

Projected Benefits Cost Savings Value Added

Economic benefits, cost savings
Dredging Operation efficiency and savings
Ultimate efficiency of time and money.

Expected Products

- Lower James River modeling results
- Documentation:
 - “Lower James River Sediment Transport Modeling – Tribell Shoals”
 - “Lower James River Sediment Transport Modeling – Jordan Point”
 - “Lower James River Sediment Transport Modeling – City Point”
 - “Lessons learned from James River Sediment Transport Modeling”
- Presentation at James River Partnership Meeting



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Stakeholders/Users

The James River Partnership is already formally organized and brought for the need to examine regional sediment management needs on the lower James. The partnership executive committee was briefed on the direction on the James River RSM effort. Stakeholder participation opportunities will be communicated through the partnership.

**Leveraging
Opportunities**

Partnering Program/Initiative	Leveraging Potential
Virginia Port Authority	Local sponsor is a cost sharing sponsor in dredged material placement; savings in placement costs mean more funds to accomplish much needed dredging
DOER	DOER program is supporting the aggregate study which serves as input for the life cycle study. In addition, previous tools created for erosion analysis through DOER are being used for Tribell Shoals study.
O&M General	Operations focused effort provides navigation benefits to the project, seeking to reduce O&M costs on individual components so that funds can be applied elsewhere to better achieve the navigation mission.

Points of Contact

Victor Roberts, NAO
Tahirih Lackey, Coastal and Hydraulics Laboratory

Partners

- City of Richmond
- T. Parker Host
- Virginia Maritime Association
- Virginia Pilots Association
- Virginia Port Authority