

Regional Sediment Management And Engineering With Nature

ERDC
Engineer Research and
Development Center

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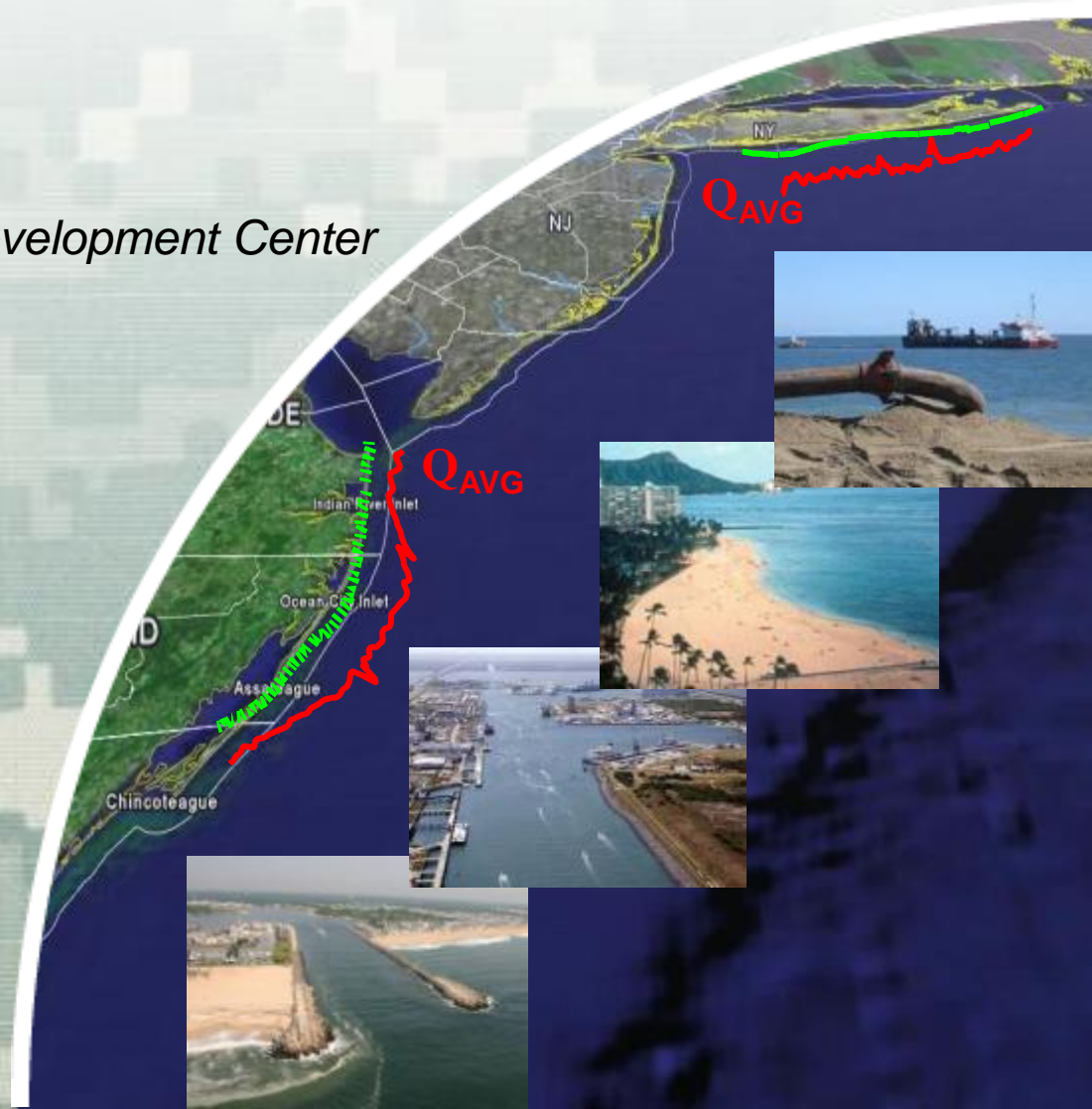
*US Army Engineer Research and Development Center
Coastal and Hydraulics Laboratory*

**Engineering With Nature
Galveston District
Collaborative Meeting**

**Galveston, TX
30 Sept - 1 Oct 2014**



US Army Corps of Engineers
BUILDING STRONG®



Regional Sediment Management



A systems approach
for efficient and effective use
of sediments
and management of projects
in our Coastal, Estuarine,
Riverine, and Watershed
environments



RSM = Sustainable Solutions for.....

Navigation/ Dredging



Flood Risk Management



Environmental Restoration

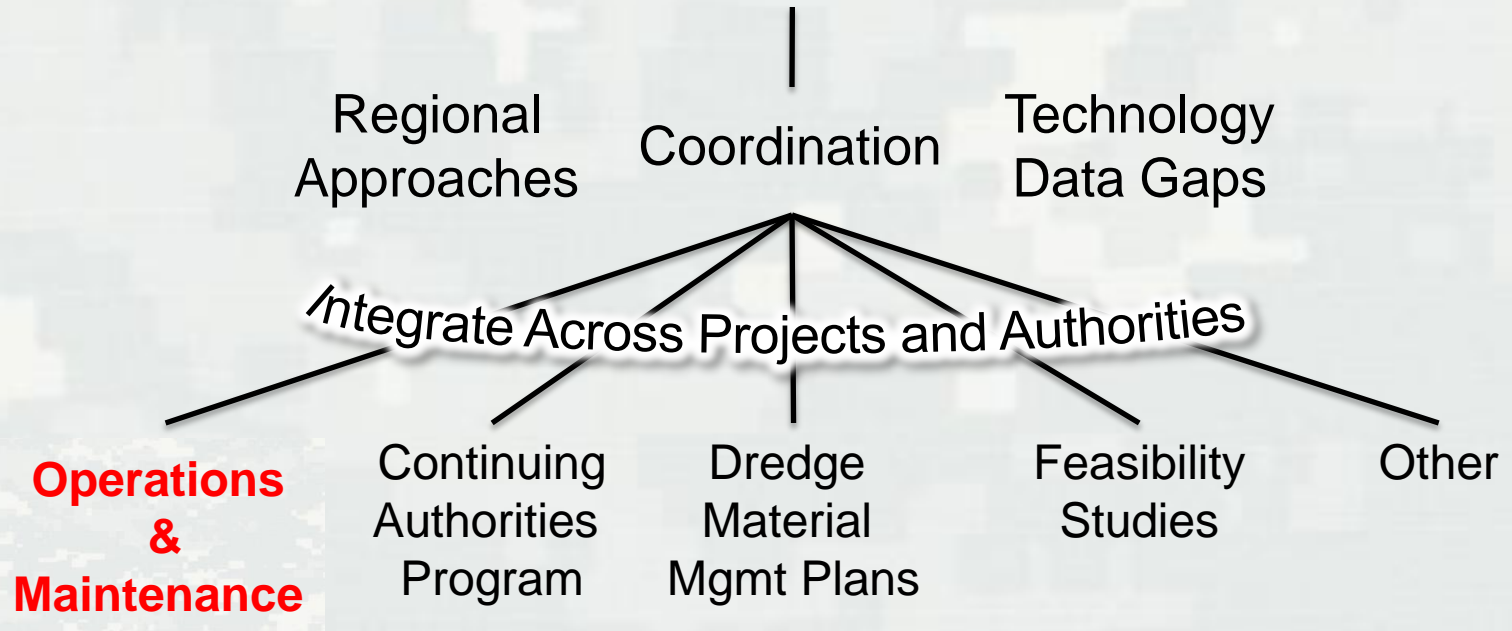


RSM Operating Principles:

- Recognize sediments as a regional resource; prioritize use
- Link and leverage across multiple projects, business lines, authorities
- Improve operational efficiencies & natural exchange of sediments
- Economically viable, environmentally sustainable solutions
- Local sediment actions which benefit the region, consider regional impacts
- Enhance technical knowledge/tools for regional approaches
- Share information and data
- Communicate and collaborate – USACE, Stakeholders, Partners



RSM Program



Construction



USACE RSM Participation (2000-2014)



CODS/CFDC

NCDB

MCNP

WOTS



7 Division, 25 Districts (20 Coastal/5 Inland), ERDC, IWR

Understand Region

- Sediment Budget
 - Beach Morphology
 - Landcover Type
 - Coastal/Inland Processes
- Holistic/Systems Approach*

Identify Gaps/Improve Knowledge

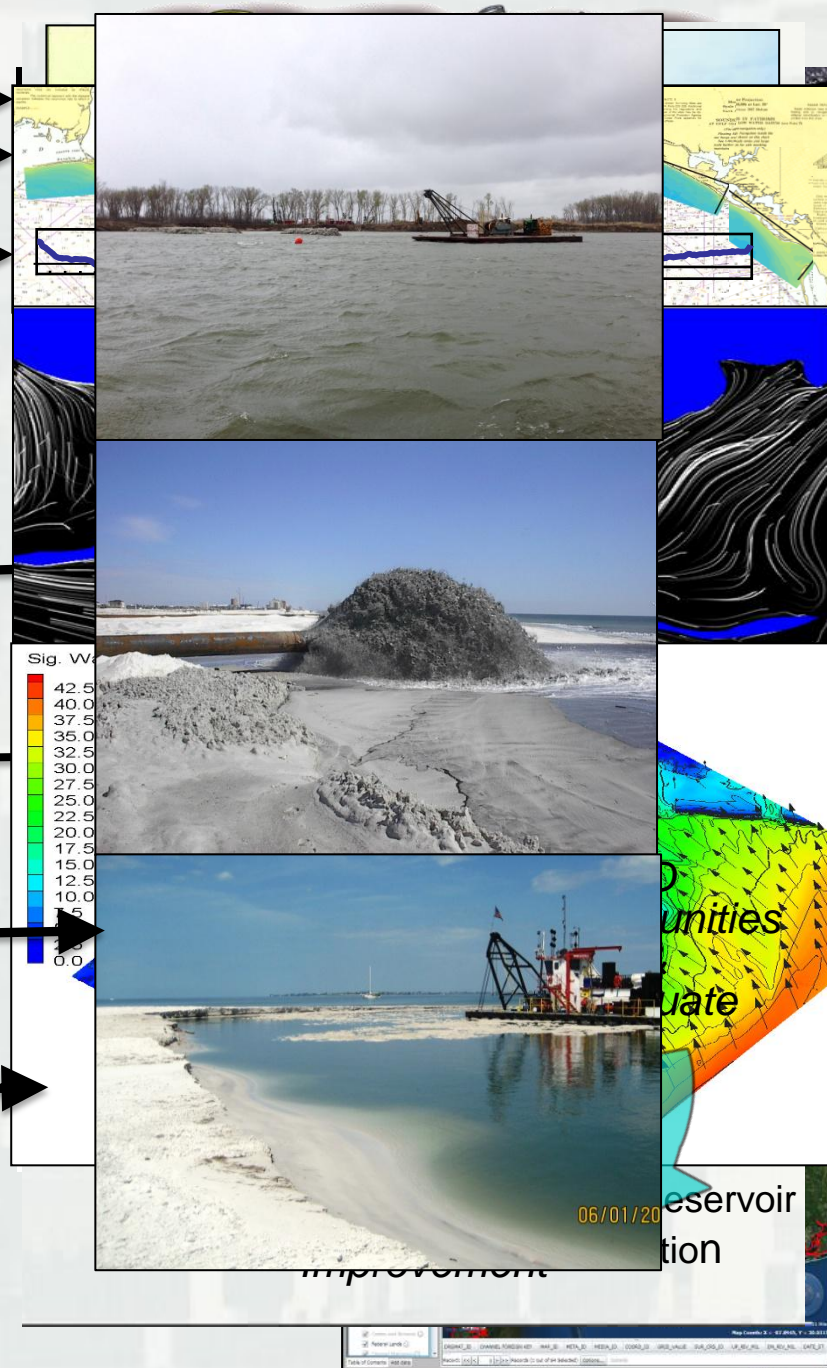
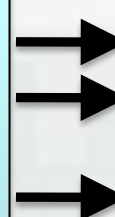
Data Management/Regional Tools
Collaborative w/Partners

Identify/Evaluate Opportunities to Optimize Use of
Sediments Across Multiple Projects
Innovative, Efficient/cost effective, Science-based

Take Action: Construct Pilot Projects
Collaborative w/Partners

Monitor: Evaluate Performance
Adaptive Management

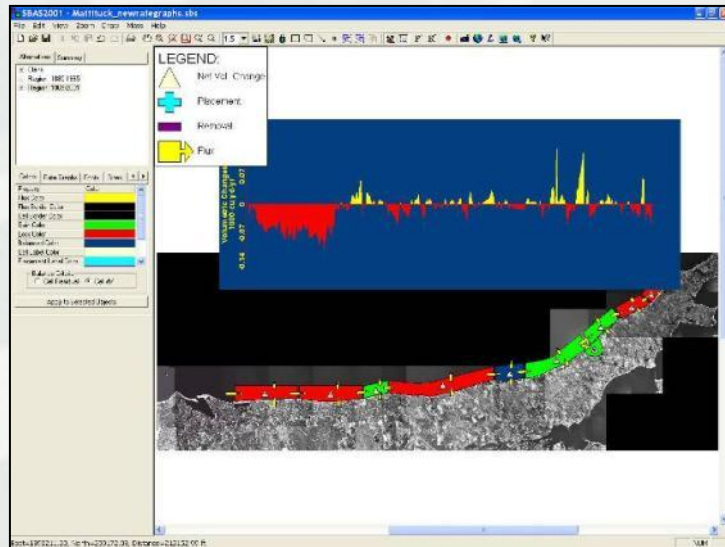
Incorporate Standard Practice
Sustainable



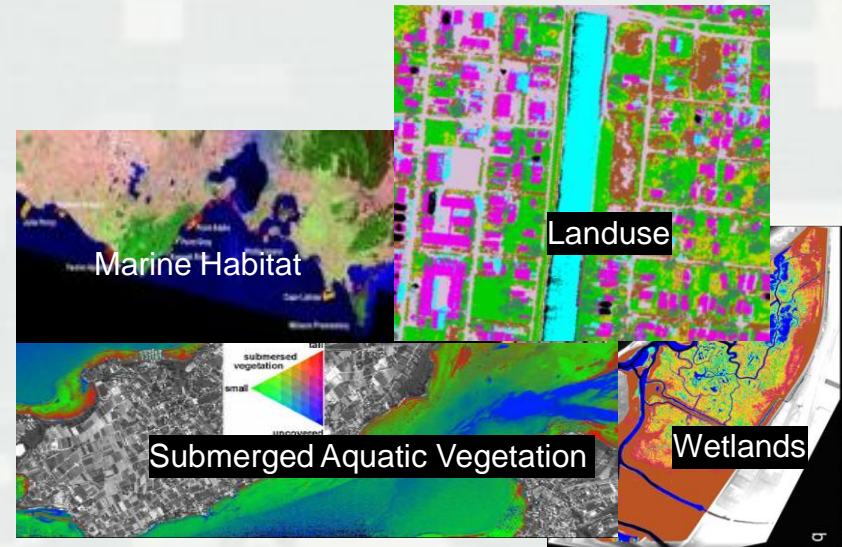
RSM Long-Term Goal

Link with Engineering With Nature

Bridge Regional Sediment Processes
with
Regional Environmental/Ecosystem Processes



Sediment/Engineering



Environmental/Ecosystem

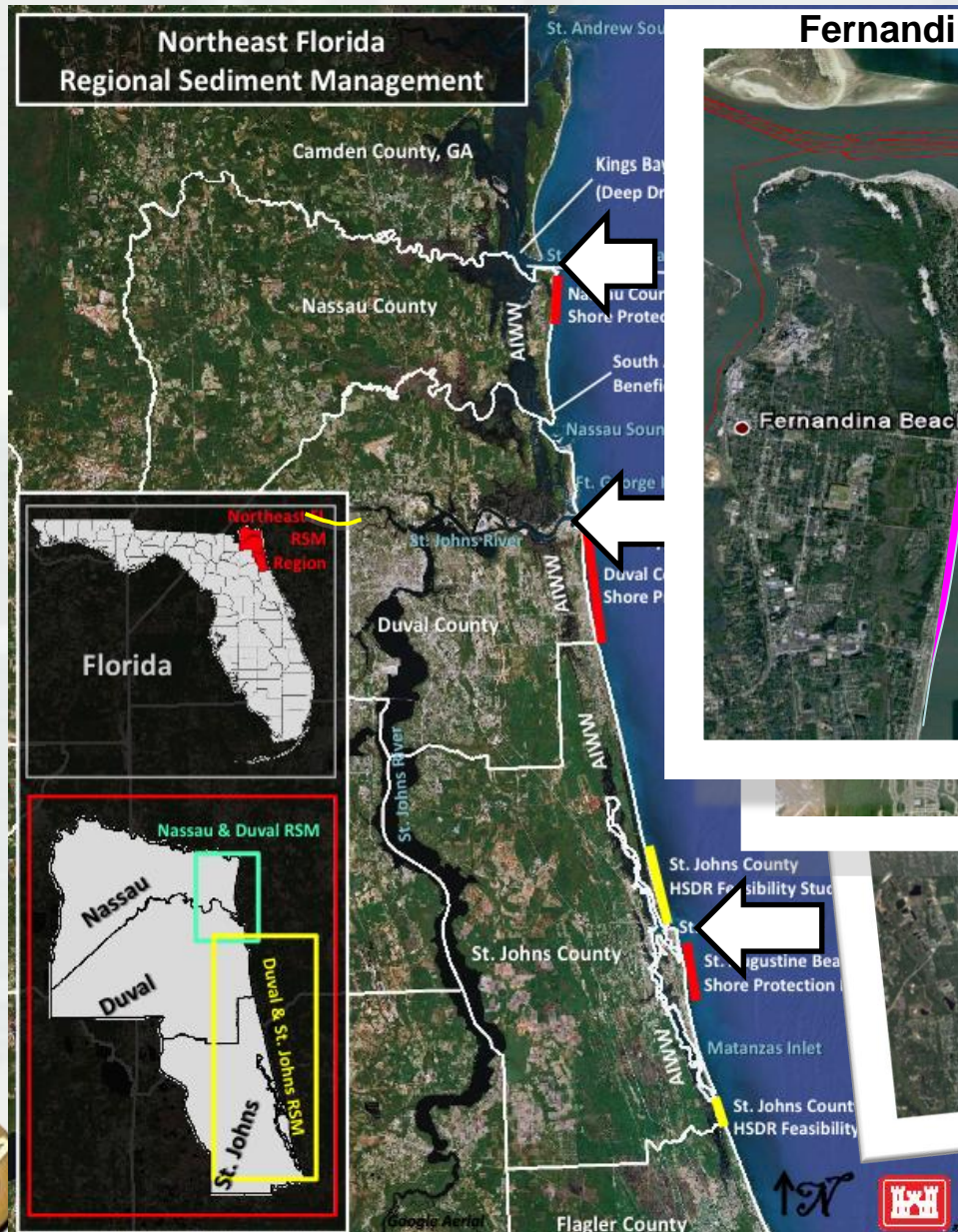


Jacksonville District Integrated Dredging Program

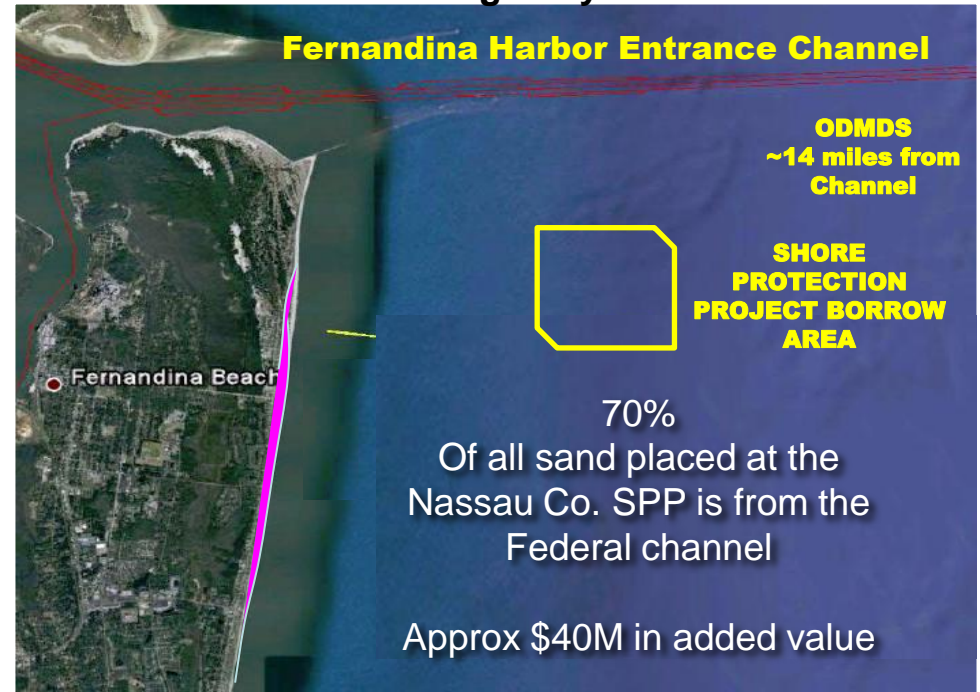
- Navigation Projects
- HSDR Projects



Jacksonville District - St Johns, Duval, Nassau Counties



Fernandina O&M/Kings Bay/Nassau Co SPP



Galveston, Gulf Intracoastal Waterway RSM

Challenges

- PA's along GIWW are eroding on the channel and bay sides due to currents, wind generated waves and ship wakes
- Once breached, material is deposited into GIWW
- Once they become submergent, they become potentially unavailable

Objectives

- Determine/Confirm Erosion of barrier islands
- Identify causes of erosion and erosion rates (sediment budget)
- Design/Evaluate methods to decrease erosion
- Integrate alternative into O&M

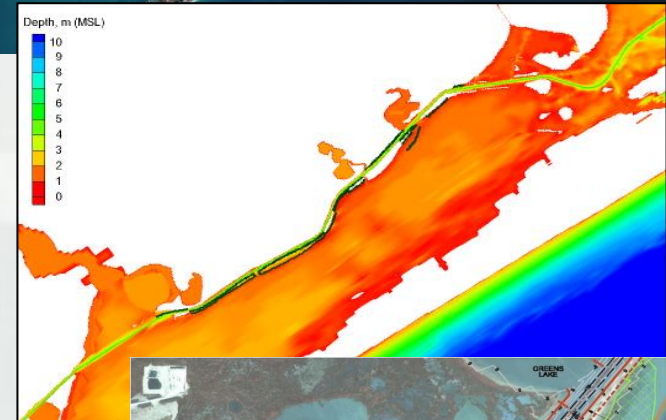
Opportunities to take action

Implement construction by phase: PA 62 through PA 64 - Phase 1, North of Greens Lake & PA 65 to Chocolate Bay - Phase 2.

Address each individual reach according to its designated priority - How rapid is channel shoaling and shoreline erosion?

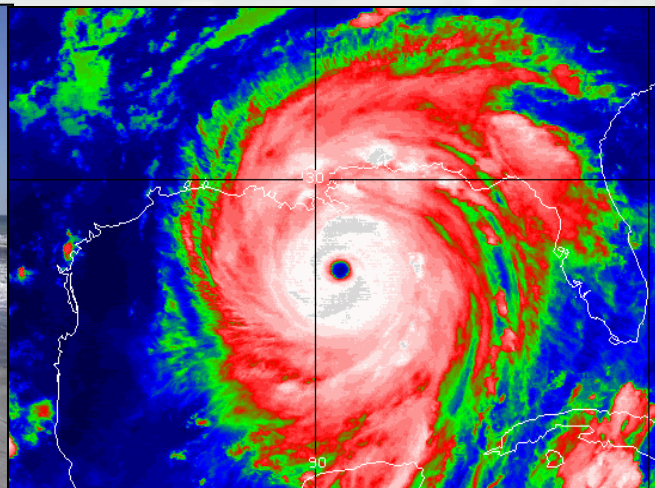
Recommend rip rap revetment on the channel side of the barrier islands based on cost, but ACB is more practical for this reach.

Recommend a combination of oyster castles, rip rap revetment, and sacrificial berms on the Bay side.



Why RSM is Important & Supports EWN

- Improve utilization of sediments - local & regional
- Link multiple projects & authorities, leverage funding, reduce timelines
- Increase benefits while reducing/maintaining costs
- Share data, tools, and capabilities
- Improve partnerships and collaboration
- Pilot Projects/Adaptive Management - Improve channel availability, shoreline erosion/flood protection, environmental habitat



Regional Sediment Management (RSM) Program

Managing sediment to benefit a region potentially saves money, allows use of natural processes to solve engineering problems, and improves the environment. As a management method, RSM:

- Includes the entire environment, from the watershed to the sea
- Accounts for the effect of human activities on sediment erosion as well as its transport in streams, lakes, bays, and oceans
- Protects and enhances the nation's natural resources while balancing national security and economic needs

The Corps of Engineers holds in trust and manages lands and waterways across the U.S. Using regional sediment management concepts will significantly improve the Corps' mission accomplishment. The Corps' engineers and scientists develop new technologies through research to make management decisions more accurate and efficient. Simultaneously, they evaluate RSM concepts through projects that highlight and improve sediment management activities.

What's New?

- [RSM/EWN Inland Working Meeting](#)
- [RSM/EWN In-progress Review and working meeting](#)
- [USACE Navigation R&D Strategic Vision Document](#)
- [FY14 Request for Proposals](#)
- [RSM Successes](#)
- [Technical Notes](#)
- [District Project Templates:](#)
 - [Fact Sheets](#)
 - [Quarterly Reports](#)
- [SBAS for ArcGIS 10 Addin \(.zip\)](#)
- [User's Guide \(.pdf\)](#)
- [RSM Calendar](#)

Partnering with EWN
ENGINEERING WITH NATURE

HQ USACE Oversight Navigation Business Line Manager
Jeffrey A. McKee

Technical Director, Navigation R&D
Jeff Laythrop, ERDC-CHL

RSM Program Manager,
[Linda Lillycrop](#), ERDC-CHL

RSM Technical Notes, Reports, Manuals, Conference Papers



Tools and Data

Sediment Budget Analysis System (SBAS)
CE-Dredge-RSM Dredging Manager & Viewer
Models and Databases
Etc...

