

RSM Program Update

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RSM Program Manager

Jeff McKee
HQ, Proponent
Navigation Business Line Manager

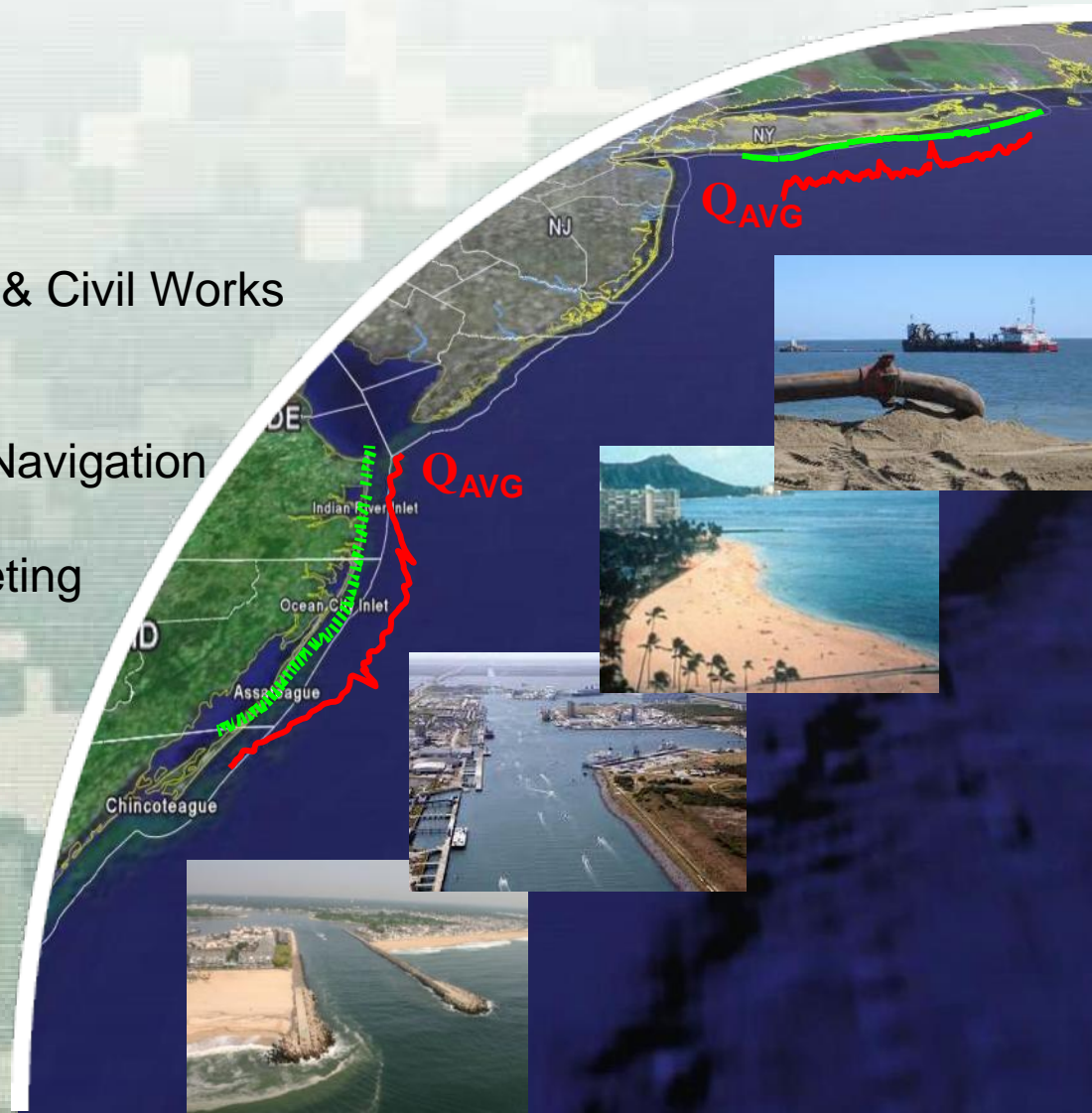
Jeff Lillycrop
ERDC Technical Director, Navigation & Civil Works

Eddie Wiggins
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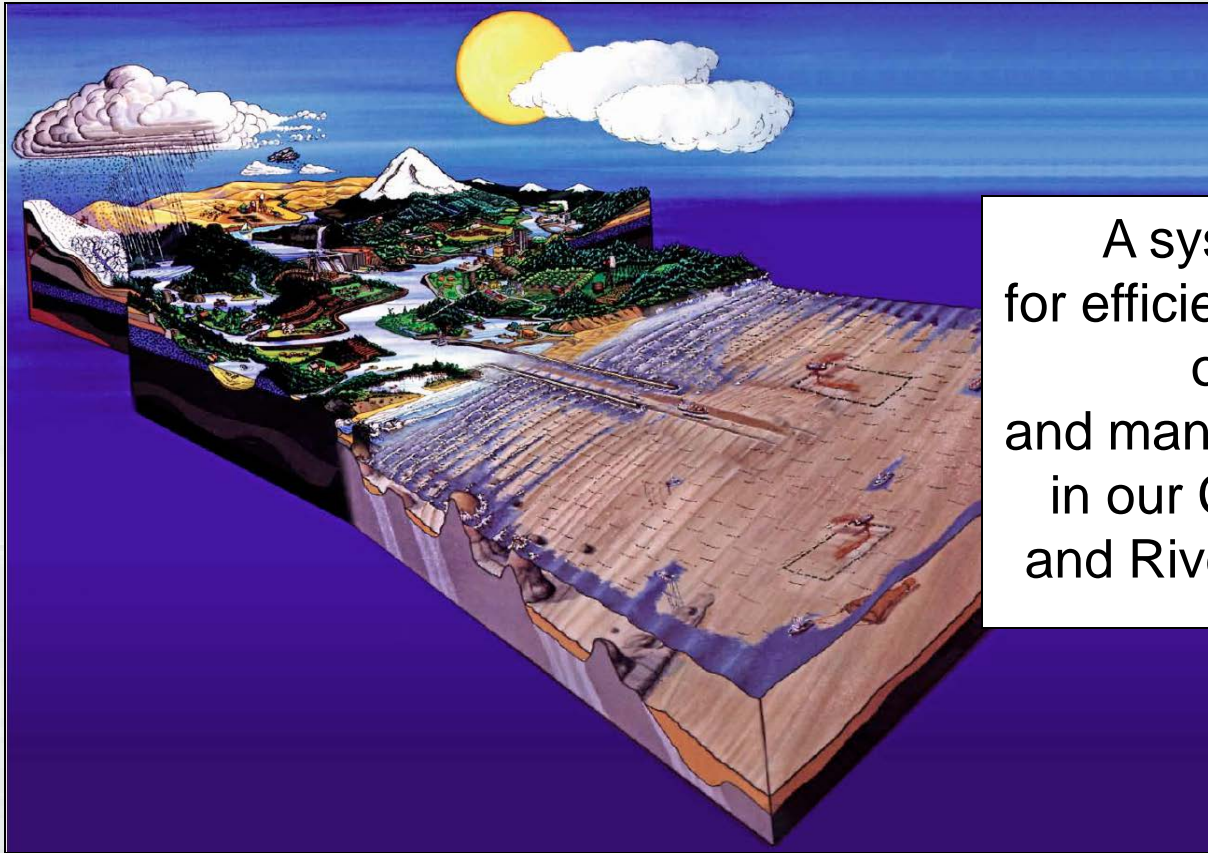
RSM and EWN IPR and Working Meeting
22-24 July 2014
Vicksburg, MS



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,
and Riverine environments



RSM = Sustainable Solutions for.....

Navigation/ Dredging



Flood Risk Management



Environmental Restoration

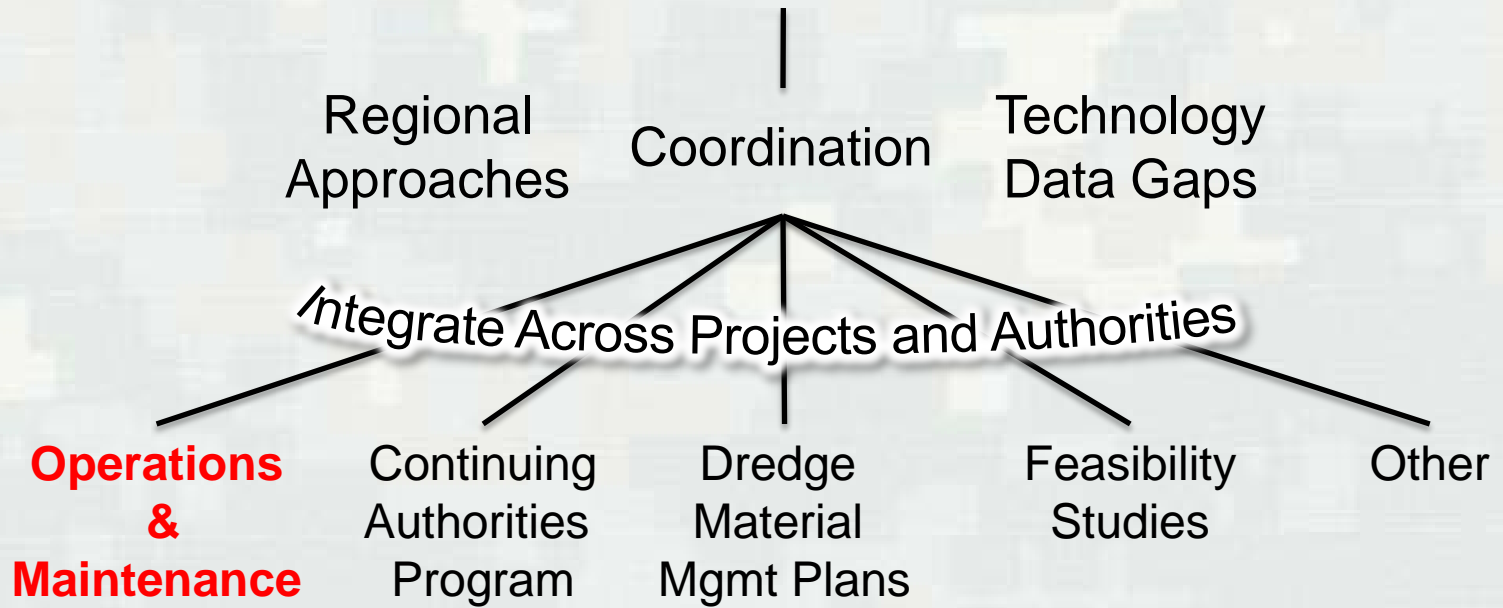


RSM Operating Principles

- Recognize sediment as a regional resource
- Balanced, economically viable, environmentally sustainable solutions
- Improve economic performance by linking multiple projects
- Optimize operational efficiencies & natural exchange of sediments
- Consider local & regional impacts (physical, environmental, social)
- Apply/develop technology & tools to optimize system
- Share information & data, reduce data duplication
- Coordinate/Communicate/Collaborate with stakeholders & partners



RSM Program



Construction



RSM Team

**USACE
Stakeholders and Partners**

**Share Successes
and
Lessons Learned**

**Identify Opportunities
and
Solutions**



**Take
Action**

**Decision
Making**

**Leveraging
Resources,
Data, Tools,
etc**

**Overcome
Obstacles**



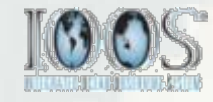
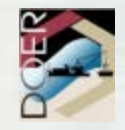
RSM Progress/Status



Historical RSM Participation (2000-2013)



25 Districts, 2 MSCs, ERDC, IWR/HEC



RSM FY14 Participation



RSM FY14: 21 Districts, 2 MSCs, ERDC, IWR/HEC

Initiatives: 20 District/MSD, 8 R&D (Tools/Databases), EWN



FY14 RSM

Districts

LRC IL North Shore Sediment Budget, RSM Strategy
NAB Atlantic Coast of MD Sediment Budget, RSM Strategy
POH West Maui Sediment Budget, RSM Strategy
SAJ Nassau & Duval Co RSM Strategies
SAJ N Coast Puerto Rico Sediment Budget, RSM Strategy
SAJ Fate of Fines/Ship to Shore
SAW Masonboro Inlet Sediment Budget, RSM Strategy
NAE Saco Bay-Scarborough Inlet RSM Strategy
NAN/POH Sandy Hook Channel Sediment Management
SWG Galveston Entrance Channel RSM
SWG Galveston Bay Placement Area Optimization
MVR Sangamon/Illinois River System Analysis
MVS Kaskaskia River Sedimentation Reduction
SAC Charleston Harbor Modeling/BU, RSM Strategy
NAO James River Navigation Channel, RSM Strategy
NWP Yaquina Jetty Sediment Stabilization-Sand Fencing
NAP Document Post Sandy/Irene RSM-EWN Strategies/Actions
LRE/LRB RSM PDT, Documentation
SPD/NWD Nearshore Placement Literature Review
NWO Inland RSM-EWN Workshop, RSM PDT/Coordination
NWK Inland RSM-EWN Workshop, Reservoir Sustainability
Engineering With Nature

R&D/Tech Transfer

Sediment Budget Analysis System
Defining Coastal Regions – Lidar
Data Management and Access
Nav Data Integration Framework
CE-Dredge Dredging Histories DB
Sediment Database/SAGA Web Tools
RSM Projects Database
RSM & CE-Dredge Viewer
Nearshore Placement Guidance/Tools
FRM-EWN Workshop
TN, TR, Journals, etc

DOTS Program:
CMS/PTM Training/Applications
POH BU Opportunities/Essayons
SAM RSM-EWN Documentation
Thin-Layer Placement Tool/Survey
Case Studies Information RSM-EWN

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FY13/14 Program Publications – 15 Technical Notes, 5 in-review/pub

Published			
CHETN-XIV-26	Evaluation of RSM Actions Using Government Shallow Draft Dredges	NAD/ NAP	R. Thorsen and M. Chasten
CHETN-XIV-27	Identification of RSM opportunities on the Upper Texas Coast through Sediment Budget Analysis	CHL	S.Willey, T. Campbell, S. Lambert, A.Morang, D. King, R. Thomas
CHETN-XIV-28	A Review of Innovative Sediment Delivery Systems	POH	T. Smith
CHETN-XIV-29	RSM Principles in Flood Recovery: Incorporating RSM after the 2011 Missouri River Flood	NWO	P. Boyd
CHETN-XIV-30	Creation of Island Habitat in Jacksonville Harbor, FL	SAJ	S. Groleau
CHETN-XIV-31	Hawaii RSM: Application of SBAS for ArcGIS©10 to develop Regional Sediment Budgets for the Island of Maui, HI	POH	J. Podoski
CHETN-XIV-32	Hawaii RSM: Regional Sediment Budget for the Kekaha Region of Kauai, HI	POH	J. Podoski
CHETN-XIV-33	Hawaii RSM: Regional Sediment Budget for the Poipu Region of Kauai, HI	POH	J. Podoski
CHETN-XIV-34	Sediment as a Regional Resource in the Low-Commercial-Use Navigation Program, Mathews County, VA	NAB	D. Stamper, J. Swallow, D. Milligan S. Hardaway
CHETN-XIV-35	RSM for Atlantic Coast of Maryland and Assateague Island Seashore (Assateague By-Pass Project)	NAB	R. Blama, M. Gomez, and T. Laczó
CHETN-XIV-36	Regional Sediment Management (RSM) Modeling Tools: Integration of Advanced Sediment Transport Tools into HEC-RAS	NWO IWR-HEC	P. Boyd, S. Gibson
CHETN-XIV-37	Potential Regional Sediment Management (RSM) Projects in the Haleiwa Region, Oahu, Hawaii	POH	T. Smith
CHETN-XIV-38	Regional Sediment Budgets for the Haleiwa Region, Oahu, Hawaii	POH	J. Podoski
CHETN-XIV-39	The Atlantic Coast of Maryland Sediment Budget Update	NAB	J. Reed
TN-EWN-14-1	2012 USACE RSM and EWN Workshop Summary	EL	Banks, Gerhardt-Smith

FY13/14 RSM Program Publications

- 3 Technical Reports, 2 in-publication
- 1 Magazine Article
- 3 Manuals/Guides

Published			
ERDC/CHL-TR-13-10	Regional Sediment Management Studies of Matagorda Ship Channel and Matagorda Bay System, Texas	CHL SWG	Lambert, Willey, Campbell, Thomas, Li, Lin, Welp
ERDC/CHL-TR-14-	Hawaii Sediment Needs Assessment	POH	Smith, T.
ERDC/EL-14-	Development of Landscape Metrics to Support Process-Driven Ecological Modeling	EL	Reif, Swannack

Other			
Inland Port Magazine	Physical Modeling of Nearshore Placed Dredged Material	CHL/LRB	Permenter, Smith, Mohr, Chader
Manuals			
User Manual	CE-Dredge Dredging Histories Viewer Quick Reference		
User Manual	Sediment Sampling Database Quick Reference		
User Manual	Users Manual: Bank Stability and Toe and Erosion Model In HEC-RAS	HEC	S. Gibson



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 Lillycrop, ERDC-CHL

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

RSM Technical Notes, Reports, Manuals, Conference Papers



Bi-Monthly RSM Conference Calls Webinars

Technical Webinars with Districts
 CE-Dredge Dredging Manager
 Sediment Sampling Database
 Sediment Analysis and GeoApp
 Sediment Budget Analysis System



DOTS: Training, technical assistance, case studies



RSM R&D and Tech-transfer

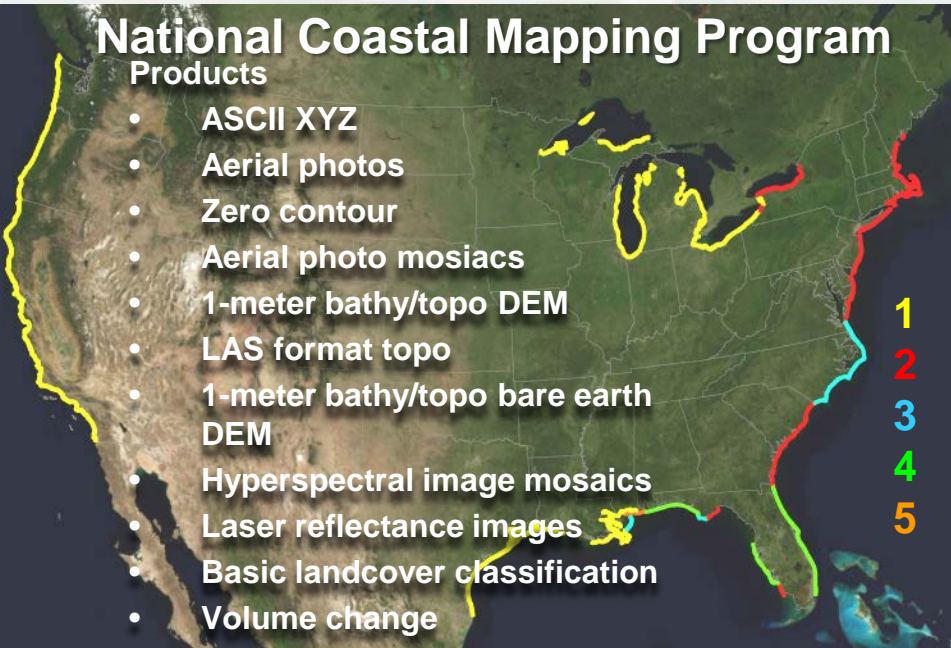




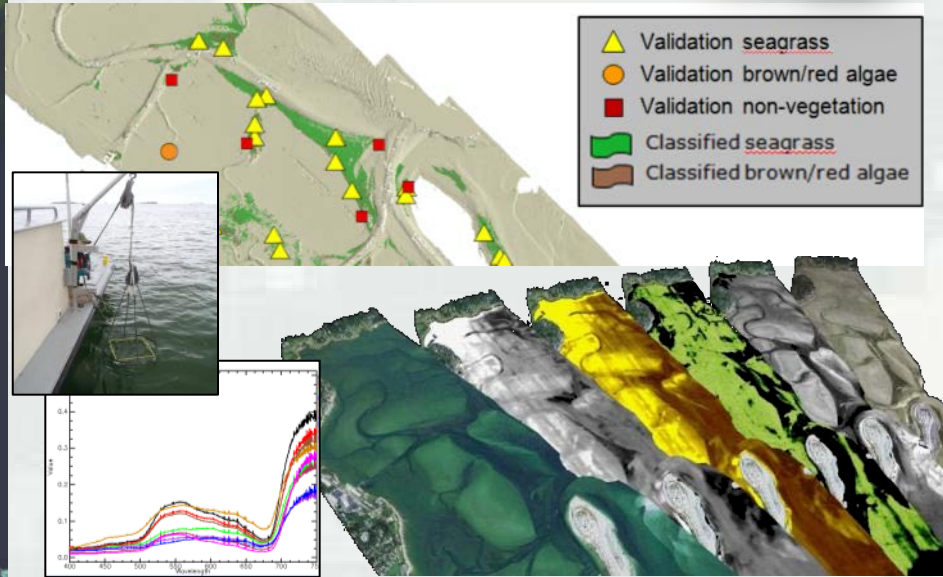
JALBTCX – National Coastal Mapping Program

National Coastal Mapping Program Products

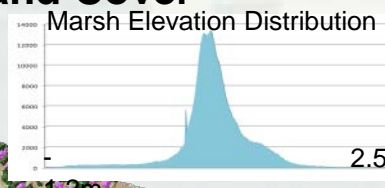
- ASCII XYZ
- Aerial photos
- Zero contour
- Aerial photo mosaics
- 1-meter bathy/topo DEM
- LAS format topo
- 1-meter bathy/topo bare earth DEM
- Hyperspectral image mosaics
- Laser reflectance images
- Basic landcover classification
- Volume change



Submerged Aquatic Vegetation



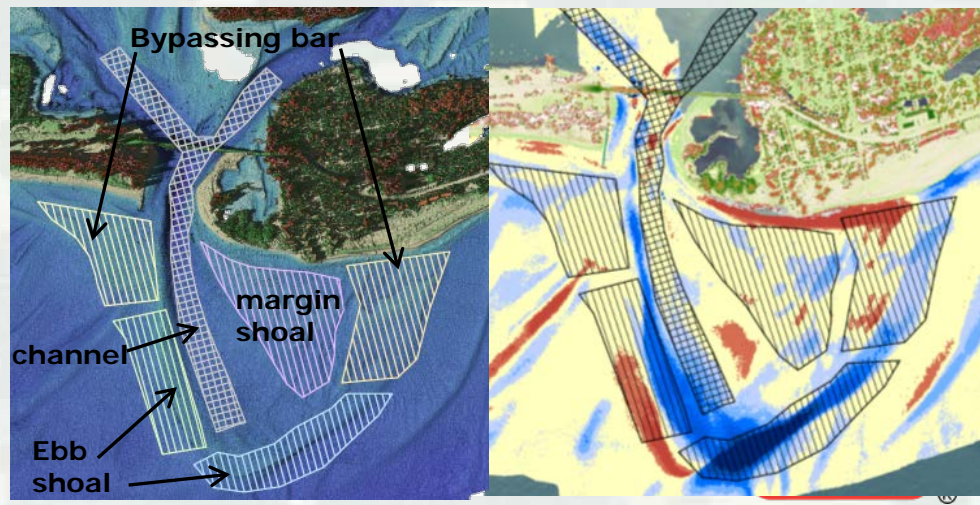
Coastal Land Cover



Landcover type	Manning n Value
bare/open	0.04
buildings/structures	0.07
grass/lawn	0.034
marsh	0.04
road/impervious	0.012
sand/beach	0.04
shrub	0.05
trees/forested	0.12
water	0.02



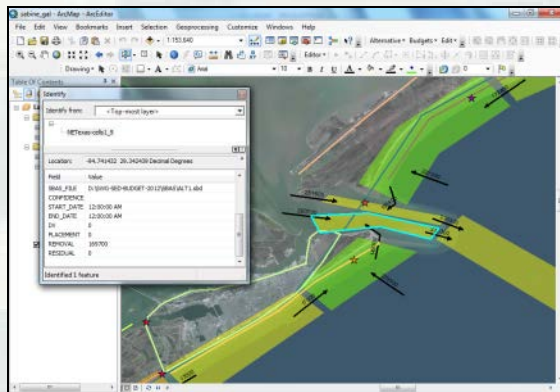
Sediment Budgets



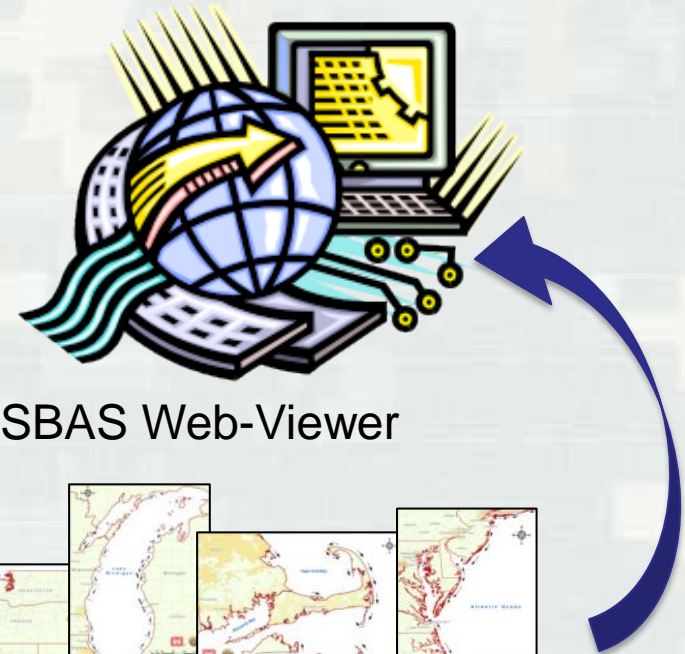
Regional Sediment Budgets



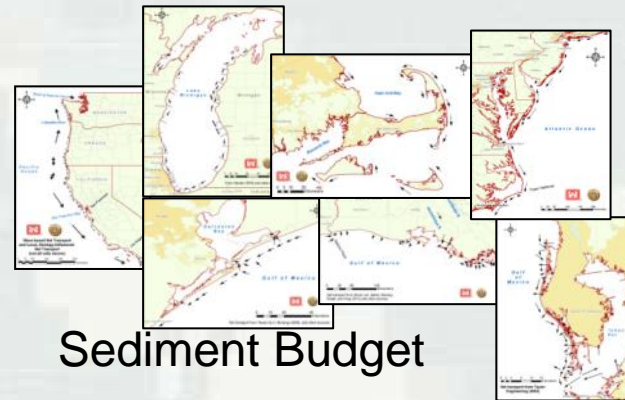
- Sediment Budget Analysis System (SBAS) – GIS
- Sediment Budget Repository
- Sediment Budget Viewer
- *Regional Process and Analysis Tool (RPAT)



SBAS ArcMap
NCMP 3D Lidar



SBAS Web-Viewer



Sediment Budget
Repository



*SoN 2012-N-15 Automated Feature Extraction
for Sediment Budgets



Strategic Placement of Dredged Sediments

Advancing *Nearshore Berm* Research, Guidance & Tool Development

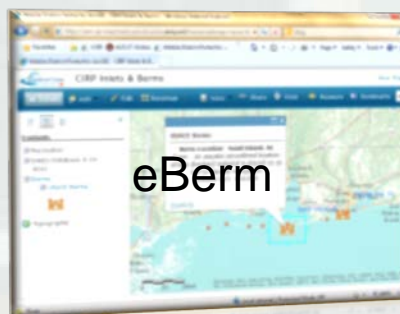


Objectives:

- Understand Corps challenges in placing NS Berms
- Literature Review – past efforts, challenges, successes *SPD/NWD
- Share Corpswide projects, information, lessons learned, etc
- ID current capabilities and R&D needs to address challenges
 - Tools to predict dispersion and movement of berms
 - Guidance for plan, design, and construction in varying environment



Workshop, March 2014

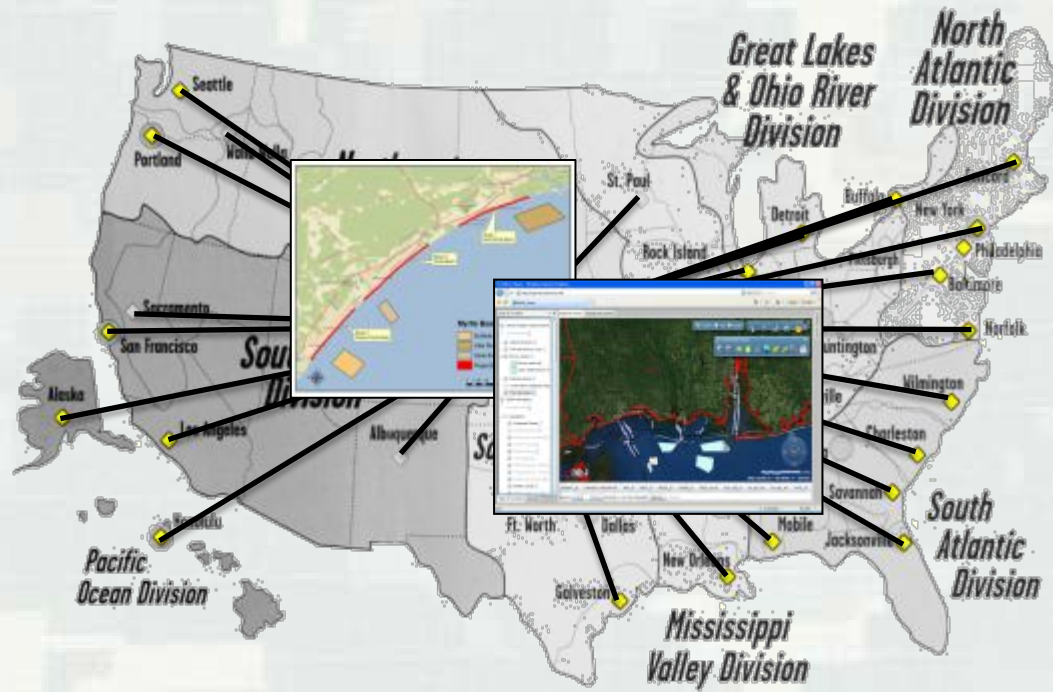


Ft. Myers, FL Nearshore Berm

SoN 2011-N-15 Design & Evaluation Tool for Nearshore Berm placement of Non-Beach Compatible Material
SoN 2011-N-19 Nearshore placement of Dredged Sediment Assessment



Web/GIS-Based CE-Dredge/RSM Viewers Access to Corps/Partner Data



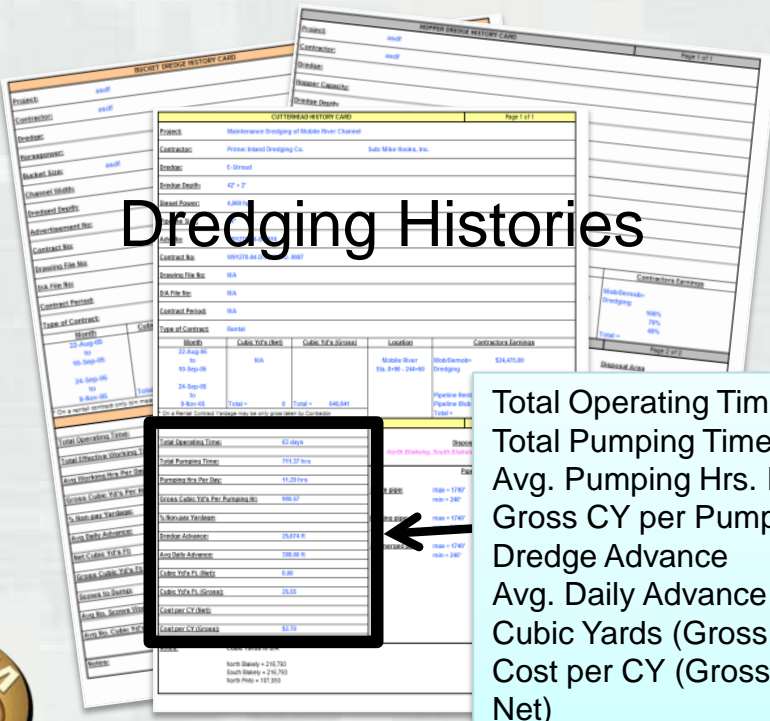
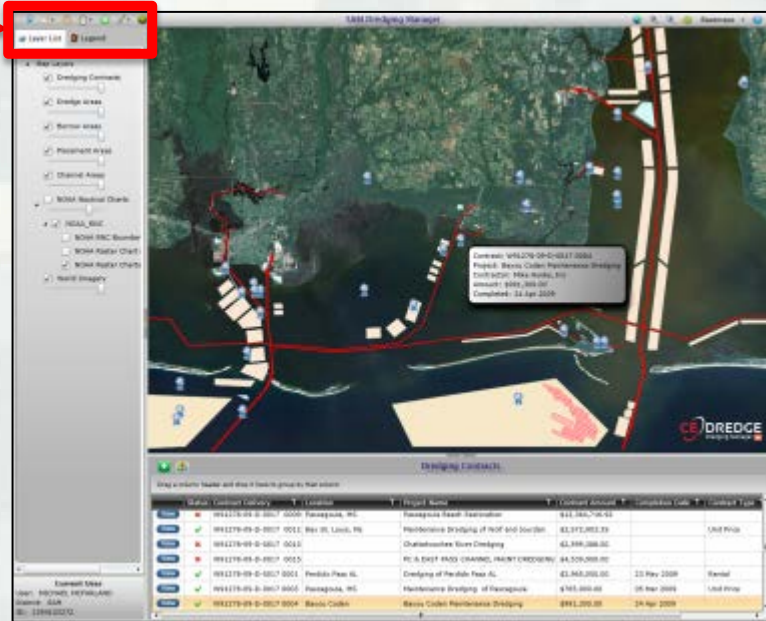
- Data management, visualization & analysis
- Access to Corps dredging & RSM data
- Improve decision making
- Facilitate sharing data & tools
- Protect our investments
- Retain Institutional knowledge



CE-Dredge Dredging Manager

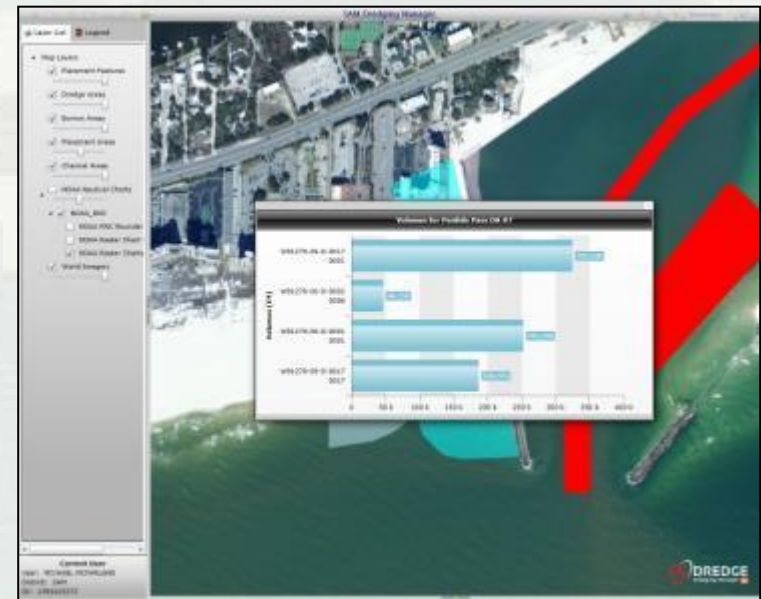
Dredging Activity Toolbar

- Dredging Contracts
- Daily Log of Operations
- Rental Timesheets
- History Cards
- Beneficial Usage Agreements
- Sediment Sampling
- Placement Area Management



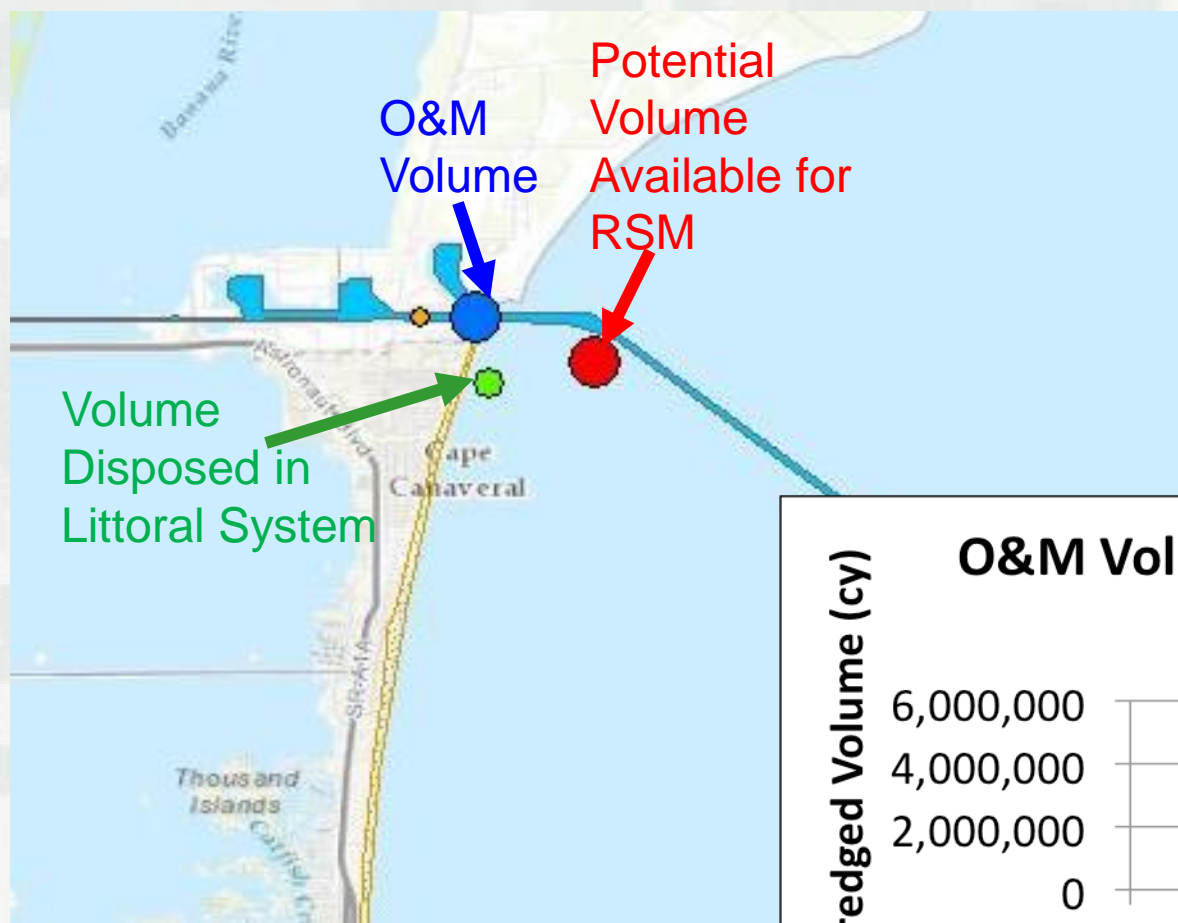
Dredging Histories

- Total Operating Time
- Total Pumping Time
- Avg. Pumping Hrs. Per Day
- Gross CY per Pumping Hour
- Dredge Advance
- Avg. Daily Advance
- Cubic Yards (Gross and Net)
- Cost per CY (Gross and Net)

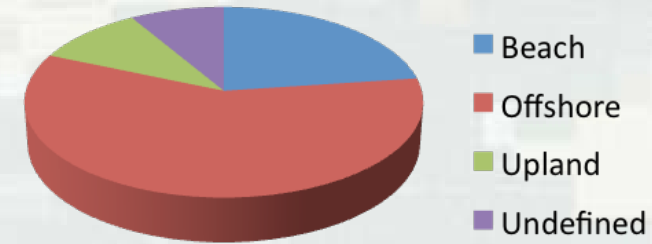


Inventory of existing RSM projects nationwide

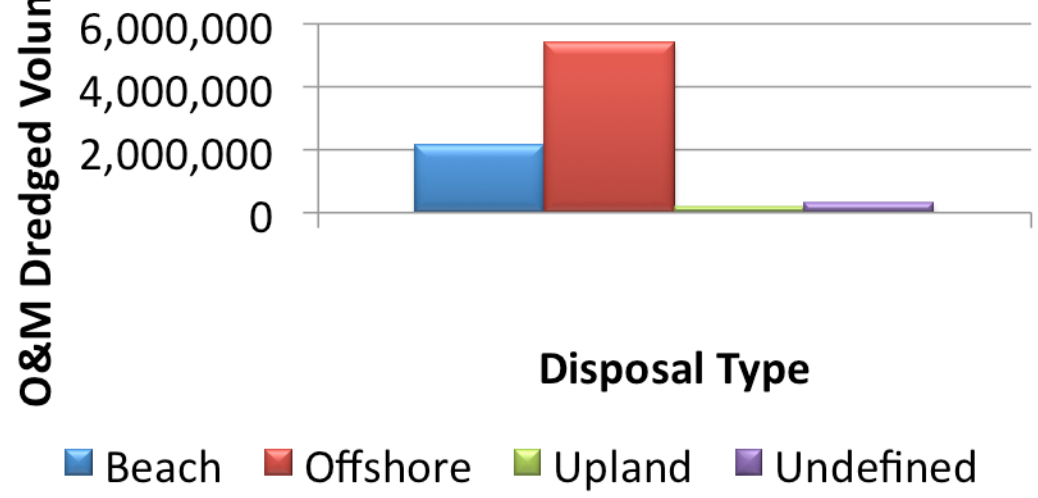
RSM Database: Port Canaveral (SAJ)



RSM Summary



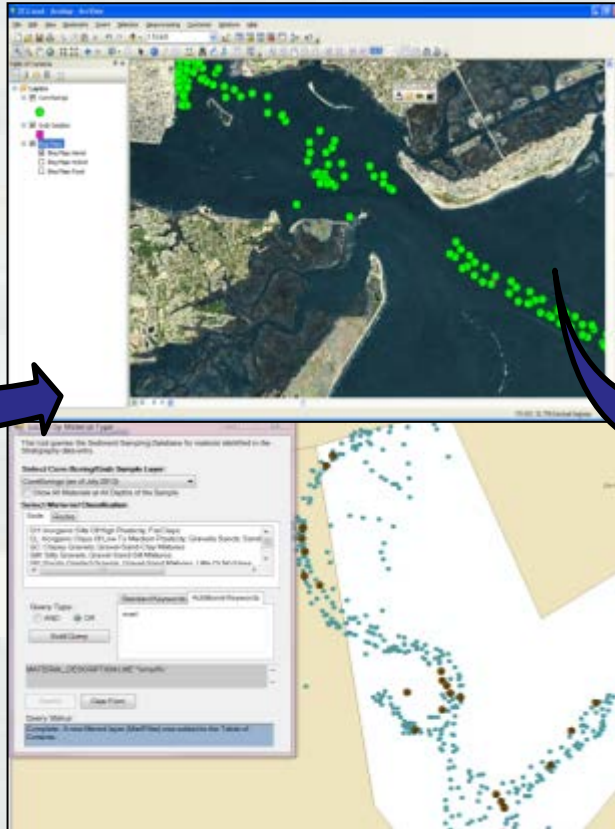
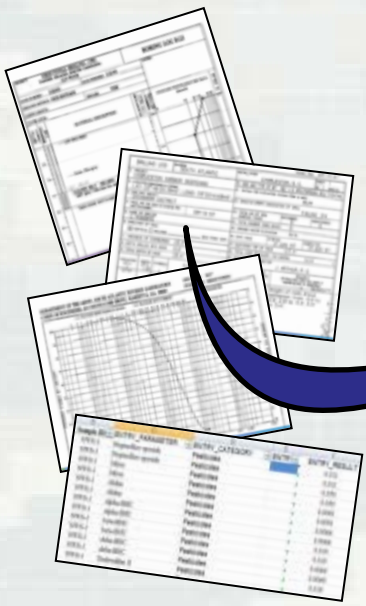
O&M Volume by Disposal Type (1998-2013)



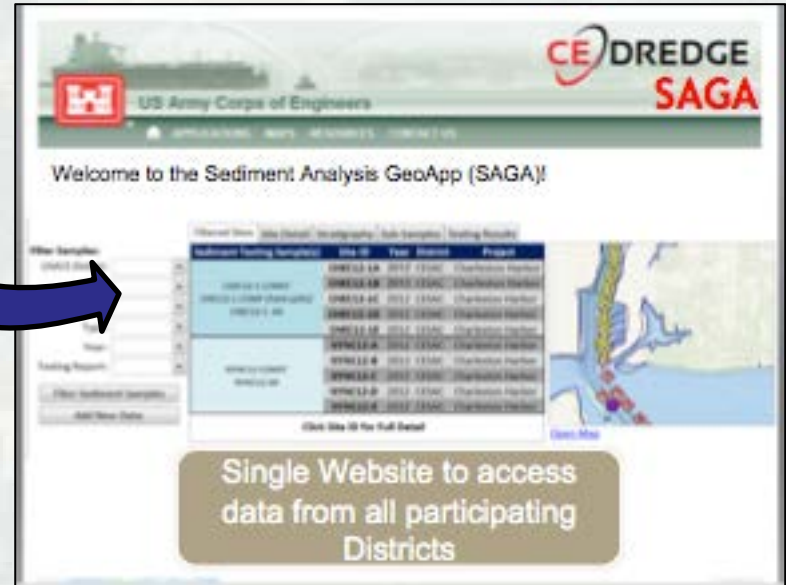
Sediment Sampling Tool & Sediment Database Sediment Analysis Geo-App (SAGA)



SAC, SPN, MVD



Sediment Database & Desktop



SAGA Web application

Single Website to access data from all participating Districts



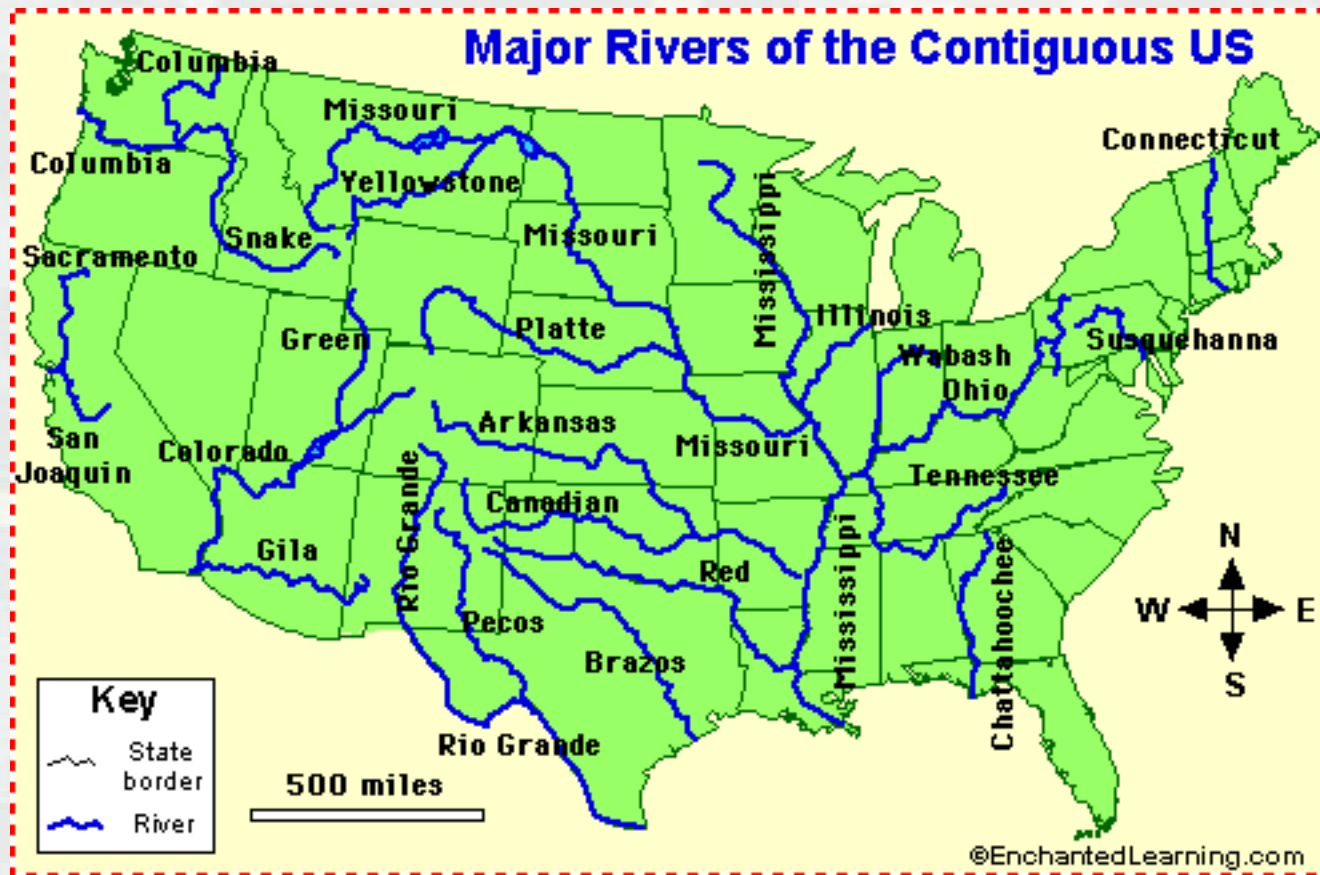
SoN 2013-N-25
Sediment Source Priority Tool



Framework to Expand RSM Inland RSM-EWN Workshop, 29 April – 1 May, Omaha



FRM-EWN Workshop, 10-11 June, Vicksburg



Identify Opportunities to Improve RSM Implementation



Inventory existing RSM projects nationwide

- ▶ Volume, material type, opportunities
- ▶ Success, challenges, etc.

Legislation relevant to RSM

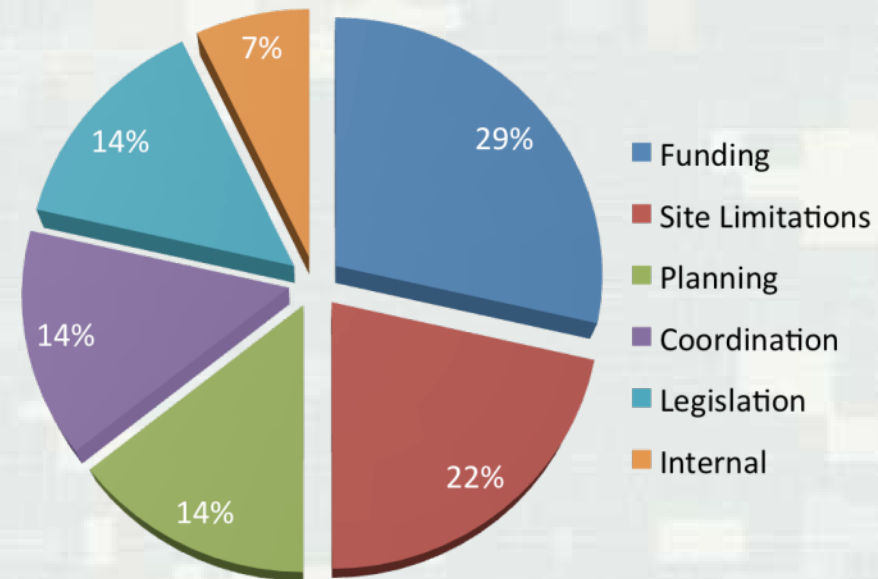
- ▶ Federal
- ▶ State
- ▶ Local

Design/populate RSM GIS database

- ▶ CE-Dredge
- ▶ RSM Project Data
- ▶ Channel/Harbor Project Data

Provide recommendations to implement RSM

Challenges Nationwide

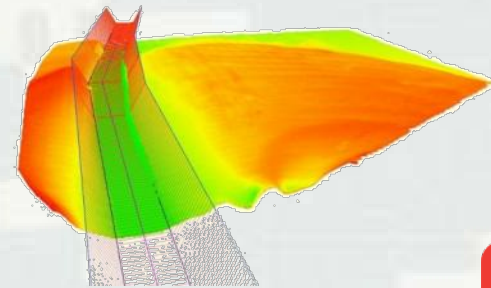
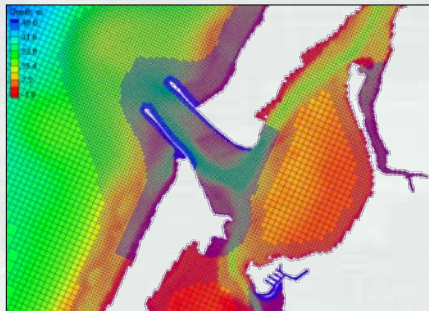


RSM Future Direction



RSM Program Goals

- Take Action – move sediments
- Multi-Project, Program, Partner Linking & Leveraging
- Collaboration with EWN
- Build Corps Capability for Sustainable RSM
- Expand Inland/FRM
- Establish RSM TCX



RSM FY11-15 Proposal Criteria

- Supports RSM and EWN Principles and Practices

- ~~Takes action to optimize and move sediment~~

Proposal Submittal deadline – Aug 8, 2014

Encourage collaboration across Districts: Breakout session

Revised Review Team: Coastal and Inland Representatives

RSM Website:

Request for Proposals

RSM Fact Sheets – Past Initiatives

- **Technical Transfer:**

- Communicate lessons learned / Publish results
- Demonstrates benefits
- Participation in Annual RSM IPR and Workshop

- **Completed Products and Milestones**



Thank you

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