RSM Program Update

Linda S. Lillycrop
RSM Program Manager

Jeff McKee
HQ, Proponent
Navigation Business Line Manager

Jeff Lillycrop
ERDC Technical Director, Navigation & Civil Works

Eddie Wiggins
ERDC Associate Technical Director, Navigation

RSM and EWN IPR and Working Meeting
22-24 July 2014
Vicksburg, MS
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…..

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

- Regional Approaches
- Coordination
- Technology Data Gaps
- Integrate Across Projects and Authorities
- Operations & Maintenance
- Continuing Authorities Program
- Dredge Material Mgmt Plans
- Feasibility Studies
- Other

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)
RSM FY14 Participation

RSM FY14: 21 Districts, 2 MSCs, ERDC, IWR/HEC
Initiatives: 20 District/MSC, 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

### 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
- …..
<table>
<thead>
<tr>
<th>Published</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHETN-XIV-26</td>
<td>Evaluation of RSM Actions Using Government Shallow Draft Dredges</td>
<td>NAD/ NAP</td>
</tr>
<tr>
<td>CHETN-XIV-27</td>
<td>Identification of RSM opportunities on the Upper Texas Coast through</td>
<td>CHL</td>
</tr>
<tr>
<td></td>
<td>Sediment Budget Analysis</td>
<td>S. Willey, T. Campbell, S. Lambert, A. Morang, D. King, R. Thomas</td>
</tr>
<tr>
<td>CHETN-XIV-28</td>
<td>A Review of Innovative Sediment Delivery Systems</td>
<td>POH</td>
</tr>
<tr>
<td>CHETN-XIV-29</td>
<td>RSM Principles in Flood Recovery: Incorporating RSM after the 2011</td>
<td>NWO</td>
</tr>
<tr>
<td></td>
<td>Missouri River Flood</td>
<td>P. Boyd</td>
</tr>
<tr>
<td>CHETN-XIV-30</td>
<td>Creation of Island Habitat in Jacksonville Harbor, FL</td>
<td>SAJ</td>
</tr>
<tr>
<td>CHETN-XIV-31</td>
<td>Hawaii RSM: Application of SBAS for ArcGIS©10 to develop Regional</td>
<td>POH</td>
</tr>
<tr>
<td></td>
<td>Sediment Budgets for the Island of Maui, HI</td>
<td>J. Podoski</td>
</tr>
<tr>
<td>CHETN-XIV-32</td>
<td>Hawaii RSM: Regional Sediment Budget for the Kekaha Region of Kauai,</td>
<td>POH</td>
</tr>
<tr>
<td></td>
<td>HI</td>
<td>J. Podoski</td>
</tr>
<tr>
<td>CHETN-XIV-33</td>
<td>Hawaii RSM: Regional Sediment Budget for the Poipu Region of Kauai,</td>
<td>POH</td>
</tr>
<tr>
<td></td>
<td>HI</td>
<td>J. Podoski</td>
</tr>
<tr>
<td>CHETN-XIV-34</td>
<td>Sediment as a Regional Resource in the Low-Commercial-Use Navigation</td>
<td>NAB</td>
</tr>
<tr>
<td></td>
<td>Program, Mathews County, VA</td>
<td>D. Stamper, J. Swallow, D. Milligan, S. Hardaway</td>
</tr>
<tr>
<td>CHETN-XIV-35</td>
<td>RSM for Atlantic Coast of Maryland and Assateague Island Seashore</td>
<td>NAB</td>
</tr>
<tr>
<td></td>
<td>(Assateague By-Pass Project)</td>
<td>R. Blama, M. Gomez, and T. Laczo</td>
</tr>
<tr>
<td>CHETN-XIV-36</td>
<td>Regional Sediment Management (RSM) Modeling Tools: Integration of</td>
<td>NWO IWR-HEC</td>
</tr>
<tr>
<td></td>
<td>Advanced Sediment Transport Tools into HEC-RAS</td>
<td>P. Boyd, S. Gibson</td>
</tr>
<tr>
<td>CHETN-XIV-37</td>
<td>Potential Regional Sediment Management (RSM) Projects in the Haleiwa</td>
<td>POH</td>
</tr>
<tr>
<td></td>
<td>Region, Oahu, Hawaii</td>
<td>T. Smith</td>
</tr>
<tr>
<td>CHETN-XIV-38</td>
<td>Regional Sediment Budgets for the Haleiwa Region, Oahu, Hawaii</td>
<td>POH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J. Podoski</td>
</tr>
<tr>
<td>CHETN-XIV-39</td>
<td>The Atlantic Coast of Maryland Sediment Budget Update</td>
<td>NAB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J. Reed</td>
</tr>
<tr>
<td>TN-EWN-14-1</td>
<td>2012 USACE RSM and EWN Workshop Summary</td>
<td>EL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Banks, Gerhardt-Smith</td>
</tr>
</tbody>
</table>
### FY13/14 RSM Program Publications

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

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

#### Other

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inland Port Magazine</td>
<td>Physical Modeling of Nearshore Placed Dredged Material</td>
</tr>
</tbody>
</table>

#### Manuals

<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Manual</td>
<td>CE-Dredge Dredging Histories Viewer Quick Reference</td>
</tr>
<tr>
<td>User Manual</td>
<td>Sediment Sampling Database Quick Reference</td>
</tr>
</tbody>
</table>
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

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

Coastal Land Cover

<table>
<thead>
<tr>
<th>Landcover type</th>
<th>Manning n Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>bare/open</td>
<td>0.04</td>
</tr>
<tr>
<td>buildings/structures</td>
<td>0.07</td>
</tr>
<tr>
<td>grass/lawn</td>
<td>0.034</td>
</tr>
<tr>
<td>marsh</td>
<td>0.04</td>
</tr>
<tr>
<td>road/impervious</td>
<td>0.012</td>
</tr>
<tr>
<td>sand/beach</td>
<td>0.04</td>
</tr>
<tr>
<td>shrub</td>
<td>0.05</td>
</tr>
<tr>
<td>trees/forested</td>
<td>0.12</td>
</tr>
<tr>
<td>water</td>
<td>0.02</td>
</tr>
</tbody>
</table>

Marsh Elevation Distribution

- 1.2m
- 2.5m

Submerged Aquatic Vegetation

- Validation seagrass
- Validation brown/red algae
- Validation non-vegetation
- Classified seagrass
- Classified brown/red algae

Sediment Budgets

- Bypassing bar
- Channel
- Margin shoal
- Ebb shoal
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

eBerm

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

SoN 2013-N-31 Data Integration Framework-Navigation Portal
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)

O&M Volume
Potential Volume Available for RSM
Volume Disposed in Littoral System

RSM Summary

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

Disposal Type
- Beach
- Offshore
- Upland
- Undefined
Sediment Sampling Tool & Sediment Database
Sediment Analysis Geo-App (SAGA)

SAGA Web application

Sediment Database & Desktop

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
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

rsm.usace.army.mil

Linda.S.Lillycrop@usace.army.mil