

Regional Sediment Management And Data Management

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**Bureau of Ocean Energy Management
Marine Minerals Program
Mid-Atlantic Sand Management
Working Group Webinar
14 December 2017**



ERDC
Engineer Research and
Development Center



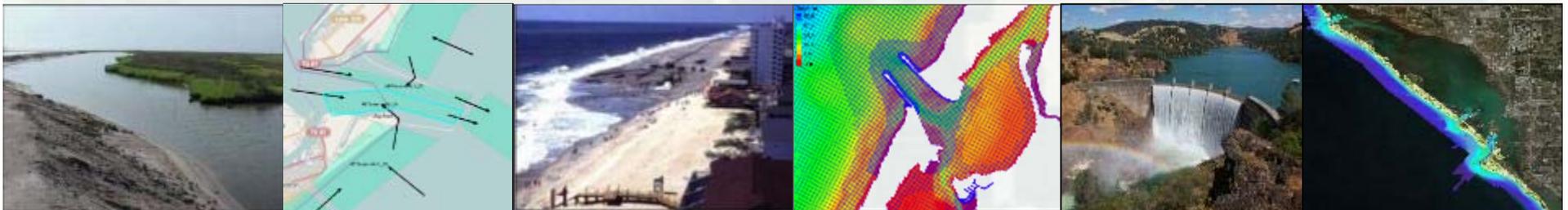


Regional Sediment Management...



...a systems approach using best management practices for more efficient and effective use of sediments in coastal, estuarine, and inland environments = Healthy Systems

- Economically viable & environmentally sustainable solutions
- Recognize sediment as a valuable resource (Regional & Local)
- Link and leverage across multiple projects and authorities
- Improve operational efficiencies & natural exchange of sediments
- Consider regional implications of local actions
- Adaptive management
- Enhance/share tools, technologies, lessons learned
- Improved relationships



RSM Goals and Strategies



Reduce Upland/CDF Disposal



Bypass Backpass Sediments



Reduce Erosion



Save Capacity



- Keep sediments in the system
- Mimic natural sediment processes
- Reduce unwanted sedimentation
- Environmental enhancement
- Maintain & protect infrastructure



Stabilize Structures

Reduce Channel Shoaling



Reduce Runoff



Ecosystem Habitat Restoration



RSM Process

4. TAKE ACTION

- Construct, monitor & adaptively manage
- Capture benefits & lessons learned
- Incorporate into standard practice



3. REGIONAL RSM STRATEGY

- Integrate projects into Regional Strategy
- ID authorities, funding, permit requirements, leveraging opportunities
- Prioritize: need, benefits, timelines



1. UNDERSTAND REGION

- Sediment sources, project needs, processes, gaps, engineering actions, ecological considerations
- Resources, challenges & requirements



2. EVALUATE RSM STRATEGIES (PROJECT SCALE)

- Efficient & effective use of sediments
- Project-level analysis (tools, models, technologies)
- RSM pilot projects

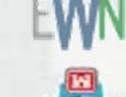


Communication, Collaboration, Innovation, Decision Making
Interagency, Stakeholders, Partners, Resource Agencies



National RSM Program Participation (2000-2018)

****Collaboration**



Tools & Technologies

Norfolk District: Lower James River

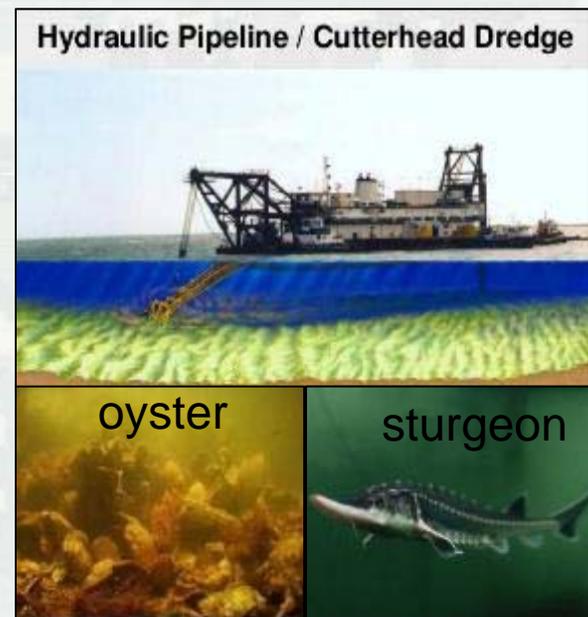
Issue:

- 1M CY dredged annually
- When dredging cannot occur, load restrictions on vessels results in economic losses

Objective:

Investigate channel shoaling in the area and determine potential methods to reduce dredging and/or dredging costs without increased risk.

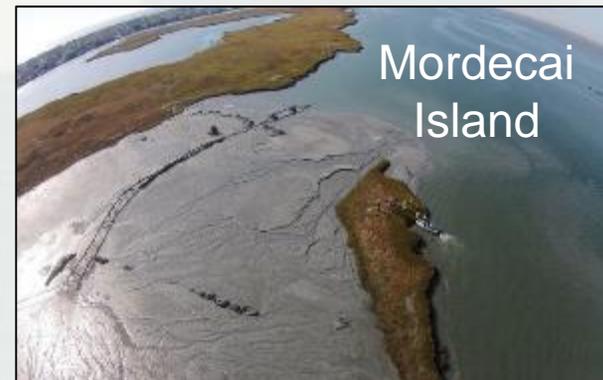
- Is the placed material going back into the channel?
- Is there significant risk to nearby species?
- ID potential placement strategies



Philadelphia District:

Nearshore Placement

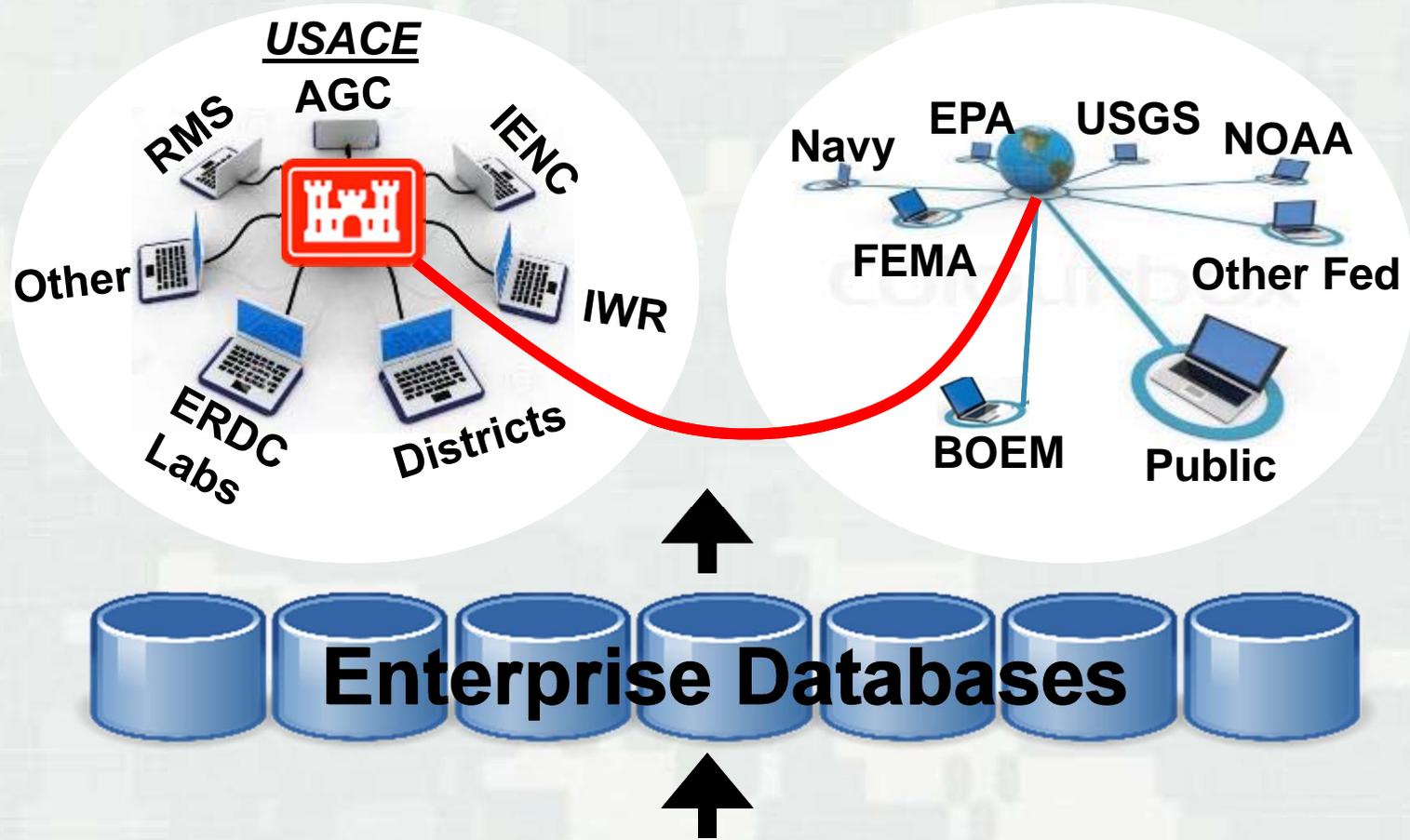
Ecosystem Restoration





Navigation Data Integration Framework (NDIF)

Data Management, Access, Integrated Tools



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http://navigation.usace.army.mil

Navigation
US Army Corps of Engineers

ABOUT EXPLORE NAVIGATION RESOURCE DISCOVERY HOME CONTACT LOGIN

USACE Navigation Portal

Note: To view additional information in each of the following categories, click the Login button.

- Dredging**
Maintenance of inland, intracoastal, and coastal waterways, channels, ports, and harbors
- Surveying & Mapping**
Hydrographic Surveying, National Channel Framework (NCF), and Inland Electronic Navigational Charts (IENC)
- Marine Transportation System**
Performance measures, including economic benefits, safety & security, environmental stewardship, system performance
- e-Navigation**
Coming Soon
Harmonized navigation information resources (including lock operations and marine safety) for US inland, intracoastal, and coastal waterways and
- Sediment & Ecosystem Management**
Regional Sediment Management and Engineering With Nature
- Infrastructure & Asset Management**
Coming Soon
Engineering, design, operation, monitoring, maintenance, and repair of coastal and inland structures



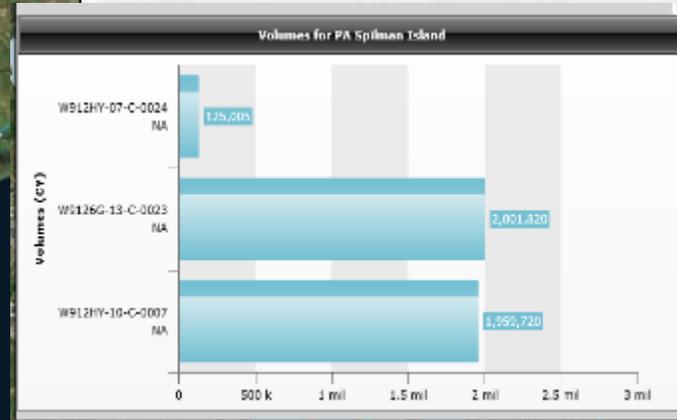
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CE-Dredge Dredging Manager

When, Where, How much was historically dredged/placed?
 What are placement area remaining capacities?
 How have I managed the Placement Areas?



Dredging Contracts

Drag a column header and drop it here to group by that column

Status	Contract Delivery	Location	Project Name	Contract Amount	Completion Date	Contract
View	✓	W9126G-13-C-0023 NA	Houston Ship Channel	Barbours Cut Terminal, Houston Ship Ch	\$5,927,250.00	
View	✗	W9126G-13-C-0030 NA	South Padre Island / Port Isabel	PY13 Brownsite Ship Ch & USGS Dredging	\$1,024,973.45	20 Jan 2014
View	✗	W9126G-13-C-0031 NA	Brazoria County, Texas	Freeport Entrance and Jetty Canal	\$5,024,594.40	22 Oct 2013
View	✓	W9126G-11-C-0041 NA		Galveston Harbor Deepening	\$10,711,042.00	
View	✗	W9126G-13-C-0042 NA	Port Arthur, Texas	SRW, Neches River Channel	\$22,721,024.85	
View	✗	W9126G-13-C-0047 NA	DTW, High Island to Port Bolivar	DTW - High Island to Bolivar	\$4,095,581.15	11 Feb 2014
View	✗	W9126G-13-C-0099 NA	Freeport Harbor, TX	Freeport Harbor, Inner Channel & TB	\$1,626,200.00	

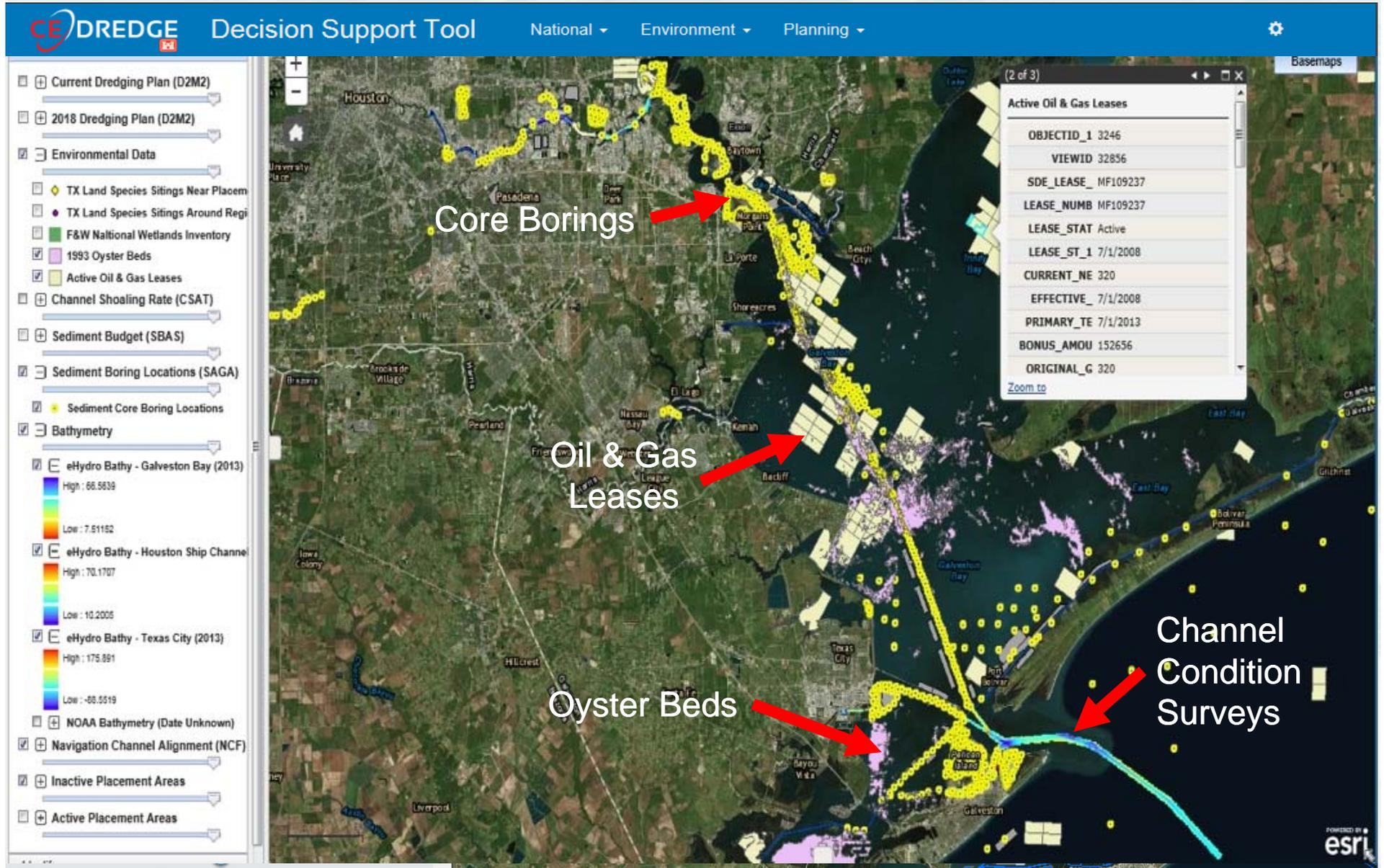


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CE-Dredge Decision Support Tool

Integrated, Comprehensive Approach for Strategic Dredged Material Management



Sediment Analysis and GeoApp (SAGA)

<http://navigation.usace.army.mil/SEM/Analysis>

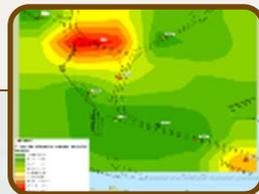
- Mapped Sites**
 - Show distribution of sampling sites
 - Filter sites based on sediment characterization testing
 - View navigation channels or placements areas
- Tools**
 - Compute Grain Size statistics with data not yet stored in SAGA
- Site Details**
 - Retrieve testing results
 - View documents
 - Access stratigraphy



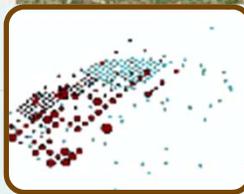
SAC, SPN, MVD



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Visualize distribution of detected chemicals



Symbolize sites based on average grain size



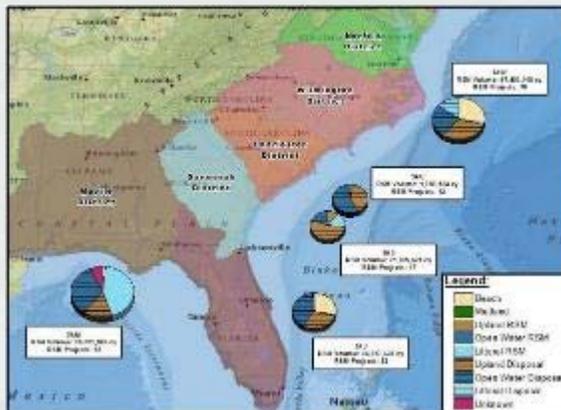
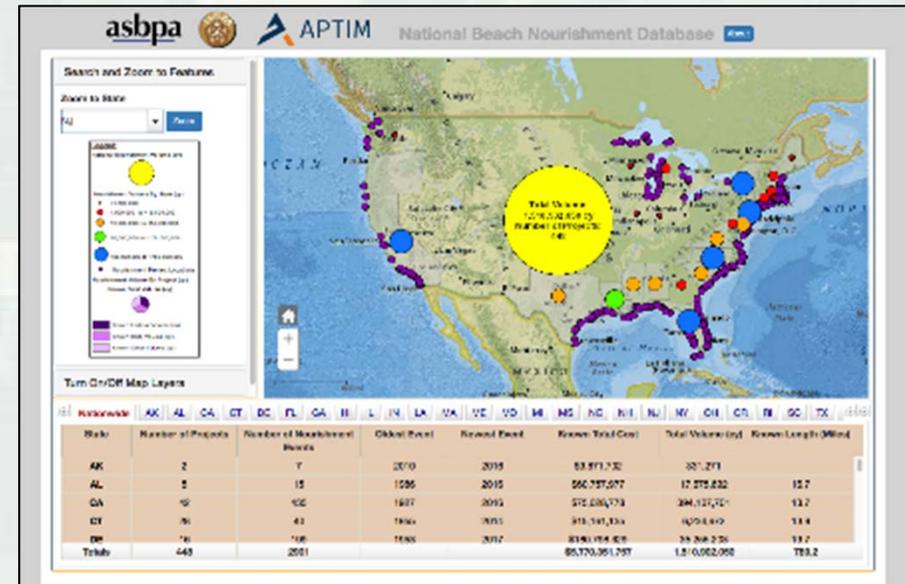
Isolate sites based on attributes



Determine volume of material at specified depths

RSM/Beneficial Placement of *Coastal Navigation Sediments

National Beach Nourishment Database



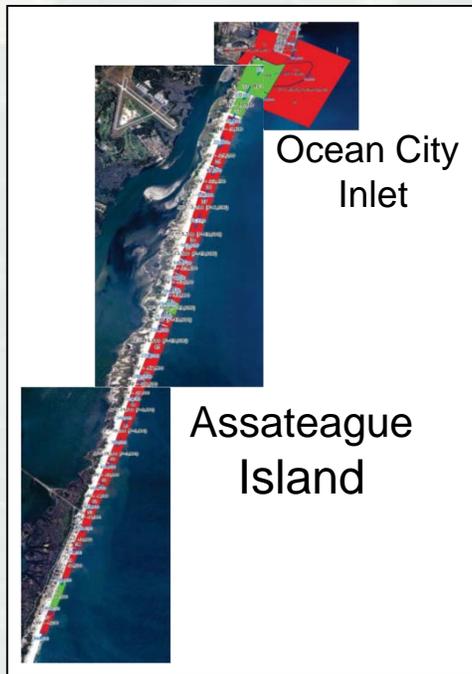
*Expand Inland 2017/2018



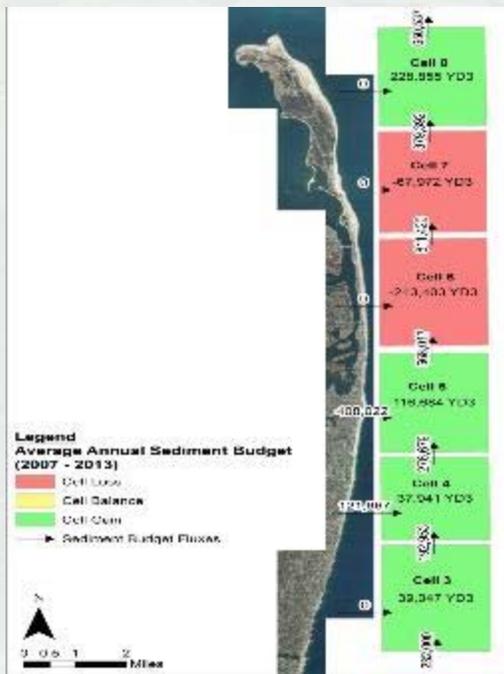
Sediment Budgets: Regional and Local

- ID Sediment sources, sinks, transport patterns and pathways
- ID sediment related challenges and gaps
- ID opportunities for beneficial uses of dredged material
- ID opportunities to improve sediment management

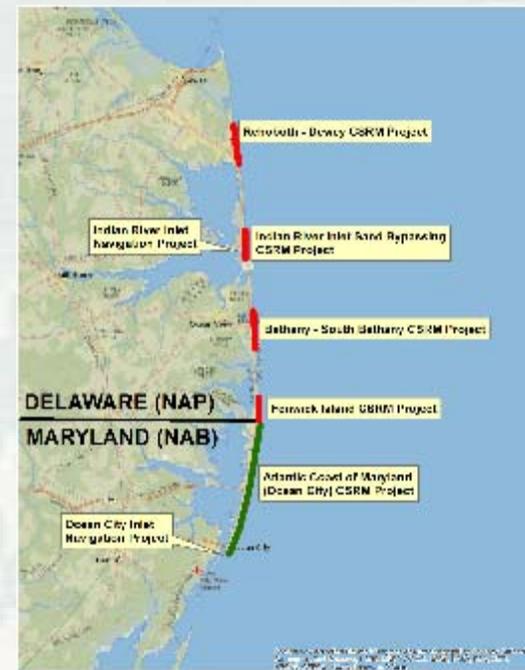
Baltimore District:
Atlantic Coast of MD



New York District:
Sandy Hook



Philadelphia District:
DE and MD Coasts

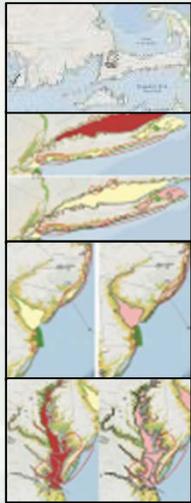
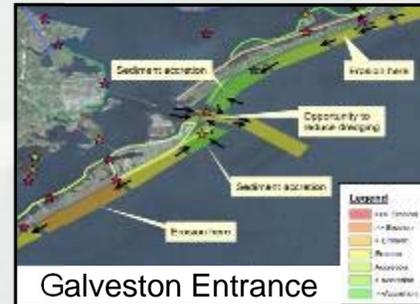
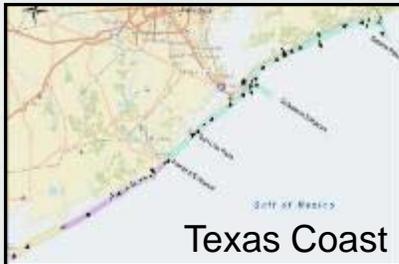


Sediment Budgets

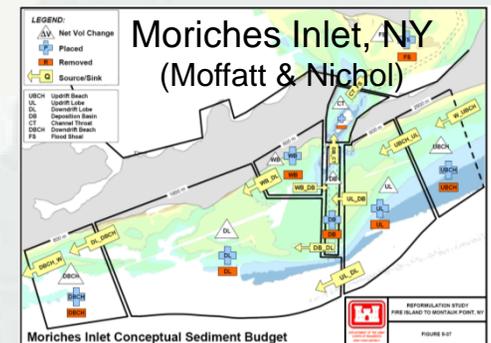
Sediment Budget Analysis System (SBAS)

Regional Scale

Project Scale



North Atlantic Coast Comprehensive Study





Regional Sediment Management = Resilient Healthy Systems



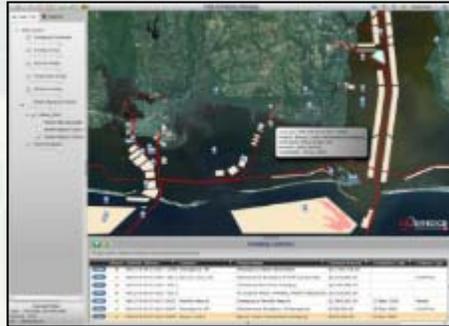
Regional Sediment Budgets
Local Actions=Regional Benefits

Regional Strategies

Nearshore Placement



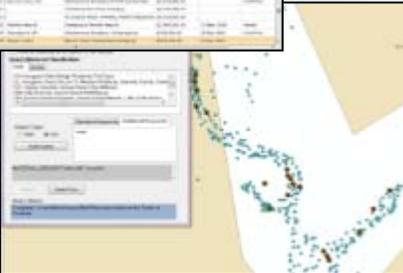
Thin-Layer Placement



Improved Relationships



Fine Sediment Losses



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Data Management and Access



Riverine & Reservoir Mgmt



Innovative solutions



Ecosystem Restoration