

RSM FY12 IPR

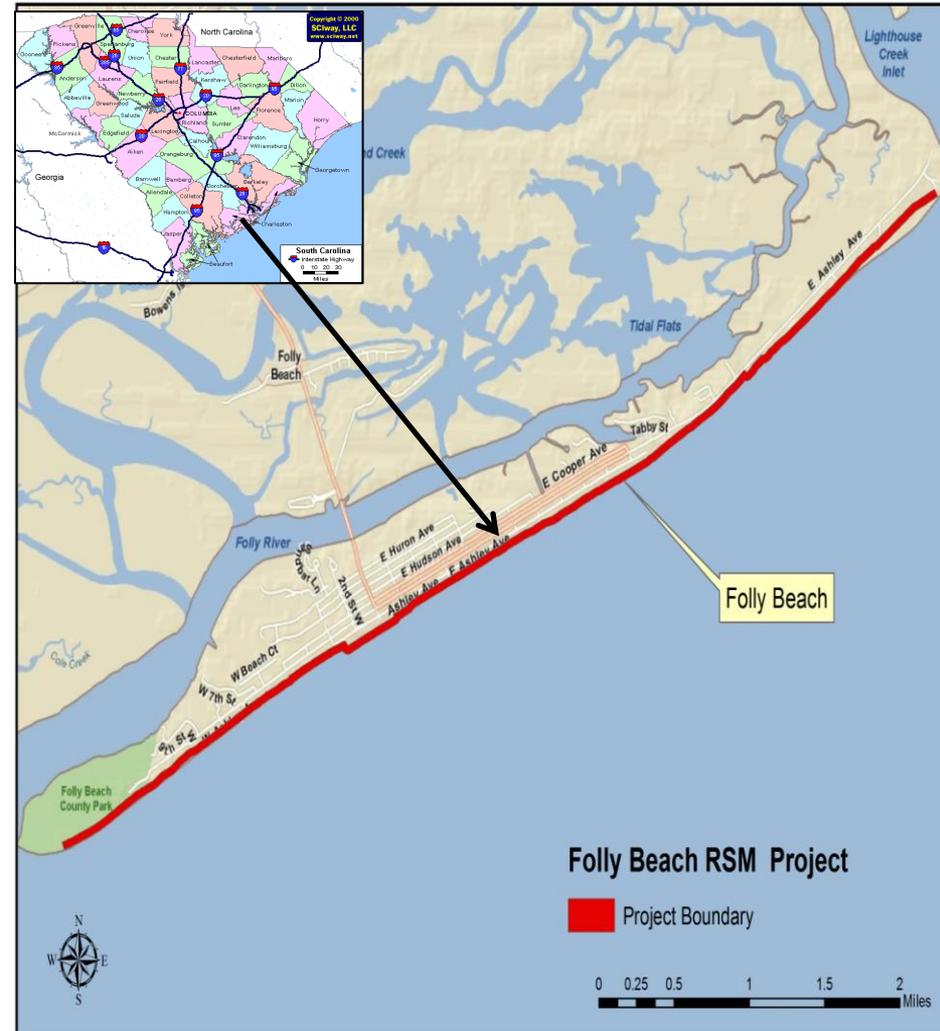
Charleston District, Folly Beach RSM Study, Phil Wolf

Description/Challenge

- Folly Beach is ~12 miles South of Charleston, South Carolina on Folly Island.
- The project is 28,200 linear feet (5.34 miles) of shoreline to provide storm damage protection
- Placed 2.7 MCY in 1993, 1.4 MCY in 2005, 486K in 2007-Hurricane Ophelia
- Challenge: Several datasets that are not spatially compliant and reside in various departments.
- Challenge: No access to data to perform GIS analysis
- Challenge: First shoreline protection dataset for CE Dredge (how to integrate?)

Goals

- Goal: All geospatial files to be in compliance (SDSFIE)
- Goal: Create services and or applications/tools into CE Dredge
- Goal: Integrate Folly Beach database into the eGIS system



BLUF: The goal is to centralize Folly Beach Storm Reduction Renourishment geospatial data into the Districts eGIS program and provide services and or data for the USACE CE Dredge Program.

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Charleston District, Folly Beach RSM Study

District PDT Members

- Sara Brown, Hydraulic Engineer, Engineering
- David Warren, O&M Project Manager, PM
- Greg Dreaper, GIS System Administrator, Engineering
- Caleb Brewer, GIS Analyst II, Operations
- Jeremy Smith, GIS Analyst I, Operations
- Phil Wolf, GIS Coordinator, Operations
- Krystle Miner, Student, Operations
- David Ruwadi, Student, Operations

Leveraging/Collaborative Opportunities

- The Storm Reduction for Folly Beach is expected to receive E&D funds for FY13.

Stakeholders and Partners

- No Stakeholders or Partners in FY12
- Town of Folly Beach in FY13
- South Carolina Division of Natural Resources in FY13
- Folly Beach Turtle Nesting Program in FY13

Milestones/Deliverables

- Data Collection and delivery, 8/27/12, 90% completed
- Meetings and Briefings, 9/30/12, 70 % completed
- Discuss future tools and or apply tools, 9/30/12, 50% completed

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Approach

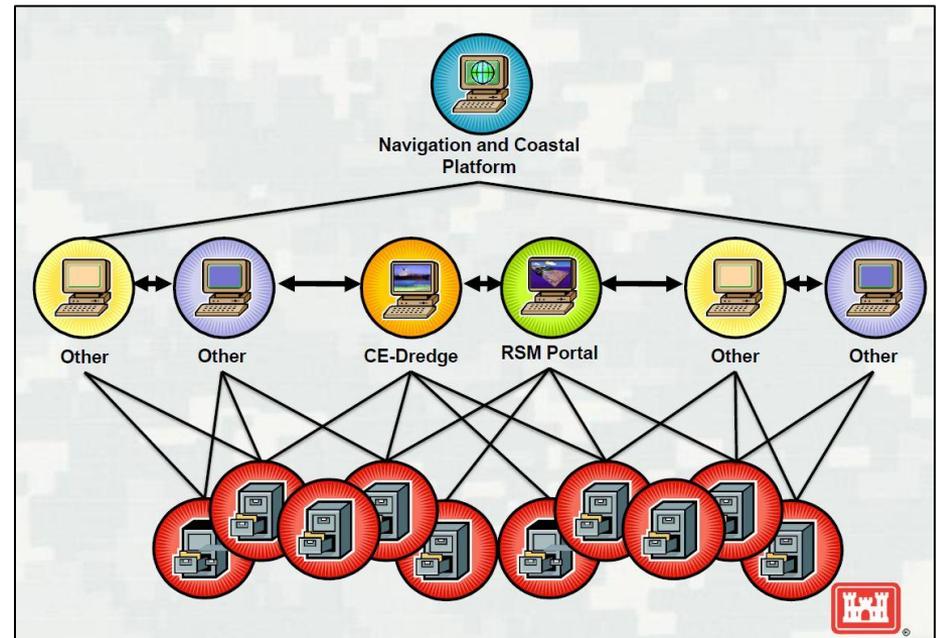
- Document search tool
- Collaborate with staff -searching for files
- Converting hard copy and digital files into compliant files
- Load into eGIS database
- Load CESAC Sediment Tool (borings/sediment testing)

Models, Tools, Databases, etc Used

- USACE SMS
- eGIS
- Python Scripts
- ArcGIS 10.0
- Micro station
- ERDAS
- Excel

Benefits to O&M, FRM, Environmental

- Centralize data for budgeting purposes
- Query data for environmental (turtle nests) and shoreline change analysis (erosion/ accretion)
- eGIS database (share across districts for shoaling rates and or sand placement)
- Import services into CE Dredge (share)
- Link to other databases (RMS,FEMS)



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Charleston District, Folly Beach RSM Study

Opportunities to take action:

- Implement a Project Management Document System (District wide)
- Track all documents spatial and non spatial
- Track the movement of the placed sand and analyze how it behaves in the natural system

Volume of Sediment Moved

- Placed 2.7 MCY in 1993
- Placed 1.4 MCY in 2005
- Placed 486K in 2007 (Hurricane Ophelia PL 84-99)

Accomplishments

- Received upper management support on the importance of this RSM effort
- Complaint with spatial standards
- District sees the value in centralizing the data
- First project into “ProjectWise” program-Link CADD, documents and GIS files
- Cultural shift with Operations and Engineering

Lessons Learned

- Changing our districts BMP’s with regards to document management
- Changing our eGIS BMP to centralize the spatial data.
- Improve departmental control of files (spatial and non-spatial)

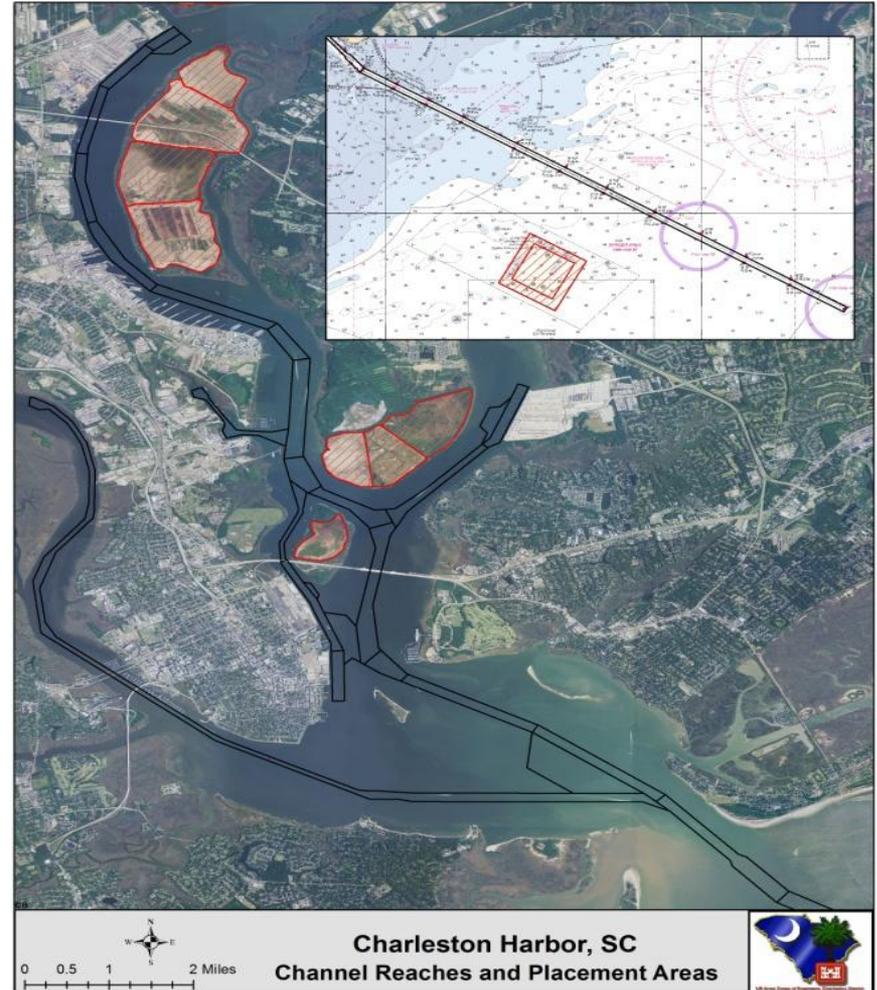
Charleston District, Charleston Harbor O&M Dredging SBAS Capture, Phil Wolf

Description/Challenge

- Maintenance dredging of Charleston Harbor removes ~2MCY of dredged material annually.
- Sediment is placed in upland and offshore disposal areas.
- Performed shoaling analysis using historical dredging records and reach level shoaling for deepening study

Goals

- Develop SBAS model representing sediment flows of each dredged area.
- Compare current O&M dredging to future dredging after harbor deepening
- Understand deepening effects on sedimentation rates and maintenance costs.



BLUF: Charleston District proposes to leverage ongoing effort in quantifying historical dredging activity in Charleston Harbor under harbor deepening feasibility study by developing SBAS model of sediment transfers.

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Charleston District, Charleston Harbor O&M Dredging SBAS Capture

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Leveraging/Collaborative Opportunities

- Collaborating with District's Engineering and Operations sections
- O&M funds from Operations

Stakeholders and Partners

- South Carolina State Ports Authority

Milestones/Deliverables

- Feature class (location and sediment removal rate with metadata), 9/07/12, 95% completed
- SBAS file representing dredge and placement cells with sediment flows, 9/28/12, 50% completed
- Technical note documenting data, methodology, derived output and metadata, 9/28/12, 40% complete

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Charleston District, Charleston Harbor O&M Dredging SBAS Capture

Approach

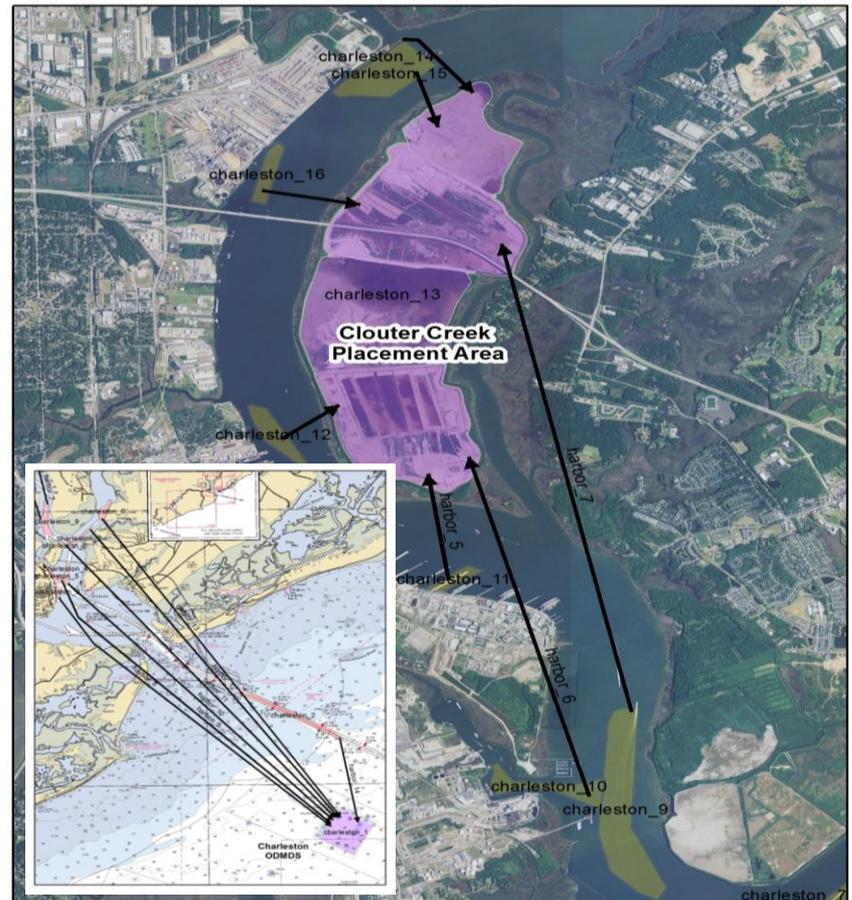
- Dredging activity records have been identified and compiled into a GIS database
- Shoaling analysis has been performed as part of an ongoing harbor deepening feasibility study
- Convert current shoaling rates by reach area to dredging rates by dredge location.

Benefits to O&M, FRM, Environmental

- Current maintenance dredging can be compared to future dredging following harbor deepening
- Aiding in understanding of deepening effects on sedimentation rates and maintenance costs.
- Increased understanding of shoaling phenomenon
- Serve as a direct input into Dredged Material Management Planning
- New ideas on Channel Design
- Use in conjunction with CESAC Sediment Tool

Models, Tools, Databases, etc Used

- SBAS
- USACE SMS
- eGIS
- ArcGIS 10.0 and Python Scripts



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Charleston District, Charleston Harbor O&M Dredging SBAS Capture

Opportunities to take action:

- Evaluate the shoaling rates using SBAS looking at each reach for loss or gain
- Fine tune shoaling rates for contracts and minimize errors

Accomplishments

- CESAC has developed a draft sediment budget for SC
- Utilizing current studies and permit applications to capture private dredging ops
- Increase collaborative efforts with other districts and RSM Coordinator
- Introduced new employees to the CESAC RSM PDT (new ideas)

Volume of Sediment Moved

- Maintenance dredging of 2 MCY of fine-grained sediment into upland or offshore disposal areas
- Material in the offshore and upland disposal area is to be mined for fill material for the SC State Port Authority

Lessons Learned

- Improve departmental control of files (spatial and non-spatial)
- Changing methods for the district and the nation