Re-Establishment of In-Bay Placement
Mobile Harbor

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NATURAL PROGRESSION

- Introduction to Mobile Harbor
- Problem Statement
- Establishment of IWG
- In-Bay Placement
- Impact to Navigation
- Culture Shift
Mobile Harbor

- Ranked in the top 10 Leading U.S. Port
- 65 Million Tons Domestic/Foreign
- 40 Miles of Main Channel
  - 4.5 Miles to -40 ft
  - 35.5 Mile to -45 ft
- Fed by the 4th Largest Watershed in U.S.
- Annual Shoaling Rate Approx 6.5 MCY
  - 1.2 MCY River
  - 4 MCY Bay
  - 1 MCY Theodore
  - 0.3 MCY Bar
Problem Statement

- Lack of disposal areas within the Bay system
- Backlog of maintenance material leading to depth/width restrictions
- WRDA 1986
  - Authorization for widening and deepening
  - Dredged material from Mobile Channel shall be disposed of in open water in the Gulf of Mexico
- WRDA 1996
  - May consider alternatives to disposal of dredged material in the Gulf of Mexico, including environmental acceptable alternatives for beneficial uses of dredged material and environmental restoration
Establishment of the IWG

- Built on existing RSM relationships and principles
- Presented the watershed study/sediment budget
- Challenged the team to look at the evidence and decide for themselves “Is it smart to continue removing 4 MCY from the Bay and hauling it to the Ocean?”
- IWG initiated several studies/demo projects to better understand the capabilities of fine grain sediments
  - Filling of Brookley Hole using channel material
  - Burlap Tubes demo for potential use in large BU site
Mobile Bay Interagency Working Group (IWG)

- Alabama State Port Authority (ASPA)
- USACE, Mobile District
- USACE, Engineering Research and Development Center (ERDC)
- Alabama Dept. of Conservation and Natural Resources (ADCNR), State Lands Division
- ADCNR, Marine Resources Division (MRD)
- ADCNR, Wildlife and Freshwater Fisheries Division (WAFF)
- Alabama Dept. of Environmental Management (ADEM)
- Geological Survey of Alabama (GSA)
- U.S. Fish and Wildlife Service (FWS)
- National Marine Fisheries Service (NMFS), Habitat Conservation Division
- Mobile Bay National Estuary Program (NEP)
- Environmental Protection Agency (EPA)
- Dauphin Island Sea Lab (DISL)
- The Nature Conservancy (TNC)
- Mobile County Environmental Department
- Mobile Bay Keeper
• Recommendation to pursue permitting processes to implement BU action
• Fill Options
  - Fill to some level of productivity
  - Fill to surrounding grade through successive dredging cycles
  - Combination of emergent feature w/ marsh vegetation grading into shallow submerged environment
• 1.2 MCY of initial fill from upper Mobile Bay Channel
• Monitoring results used to determine desired level of restoration
• Initial fill completed September 2012
• Leveraging other research programs (DOER)
  - Conducted baseline characterizations
  - Continued post-fill monitoring
BU of Dredged Material to Brookley Hole
Establishment of the IWG

- IWG agreed to consider In-Bay placement with the Corps commitment to a thin-layer demo and constant pursuit of other BU opportunities (i.e. large BU site)
- Corps spent $1M to model thin-layer demo
  - Sediment Profiling – SedFlume – Push Cores
- Results were amazingly informative and positive
- IWG had successfully fostered the efforts that would ultimately prevent approx. 2-3 MCY annually from leaving the Mobile Bay system.
- IWG team established their identity by shifting the culture of managing fine grain channel material.
Sediment Profiling Imagery

27 CM

15 CM

02-02

SWI

2 inches

15 CM

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Oxygenated Surface Layer
Reworked by Currents or Wave action

Sediment-water Interface

Dredged Material Layer

Buried Native Bed

Scale in cm
Modeling Conclusions

- Approximately 35% of the sediment that erodes from the designated disposal areas is transported and deposits in the navigation channel.
- The remaining 65% is widely dispersed throughout the bay by wind-, river-, and tide-driven currents.
- The dredge material placed in thin-layers is less erodible (~ 45%) than native sediment.
- Sediment becomes remobilized into Bay’s natural sediment system (Not transported along the bottom)
June 30, 2014 Received CZM and WQC for thin-layer placement in Mobile Bay

In-Bay placement fulfilled WRDA 96 standards “environmental acceptable alternatives for beneficial uses of dredged material and environmental restoration”
In-Bay Placement

- Alternating Site Use
- GPS Tracking System
- Material Placement on a 6 year cycle
Impact to Navigation

- $5-7/CY prior thin-layer permit
- $2-3/CY with thin-layer permit
- Reduced budget request approx. $6M/YR
- Gain flexibility to shop the dredge market
- Greater channel reliability
- Consistent customer relations
Culture Shift

- IWG proved that inherited perspectives need to be replaced with scientific facts
- Saving dredging dollars doesn’t always come at the expense of environmental stewardship
Keeping Our Commitments

- Submitted BU Site to RESTORE Federal Council
  - Bucket 2 Funded Priority List -- $2.5M
- RSM study to explore filling of Oyster Holes in Bay