Riverine Sand Mining/Scofield Island Restoration (BA-40)

Conference on Ecological and Ecosystem Restoration
Kenneth Bahlinger, CPRA Project Manager
July 31, 2014
## Recent & Future Barrier Island Projects

<table>
<thead>
<tr>
<th>Project</th>
<th>Funding Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Belle</td>
<td>CWPPRA</td>
</tr>
<tr>
<td>Caminada Headland I</td>
<td>CIAP/State Surplus</td>
</tr>
<tr>
<td>Caminada Headland II</td>
<td>NFWF</td>
</tr>
<tr>
<td>East Grand Terre</td>
<td>CWPPRA/CIAP</td>
</tr>
<tr>
<td>Chenier Ronquille</td>
<td>NRDA</td>
</tr>
<tr>
<td>Chaland Headland</td>
<td>CWPPRA</td>
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<tr>
<td>Bay Joe Wise</td>
<td>CWPPRA</td>
</tr>
<tr>
<td>Shell Island East</td>
<td>LCA/Berm to Barrier</td>
</tr>
<tr>
<td>Shell Island West</td>
<td>NRDA</td>
</tr>
<tr>
<td>Pelican Island</td>
<td>CWPPRA</td>
</tr>
<tr>
<td>Scofield Island</td>
<td>CWPPRA/Berm to Barrier</td>
</tr>
<tr>
<td>Grand Liard</td>
<td>CWPPRA</td>
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</tbody>
</table>

- **Constructed**
- **Funded for Construction**
- **Engineering & Design**
- **Under Construction**

*Note: All CWPPRA Projects are NOAA Sponsored*
Vicinity Map
Project Setting

- Plaquemines Parish
- 2.4 mile long barrier island
- Significant wetland loss
- Historical shoreline erosion rate ~ 16.5 ft/yr
- Lack of near shore sand to restore barrier islands; Mississippi River is source renewable resources (sand)
Unique Aspects of the Project

Scofield Island Restoration / Riverine Sand Mining (BA-40)

- First use of Mississippi River sand for barrier island dune
- Excavation in one of the nations busiest navigational waterways
- Delivery of riverine sediments over 22 miles
- A conveyance corridor that requires:
  - Jack and bore casing pipe installation under two highways
  - Crossing of 2 levees and a harbor canal
  - 4 booster pumps
- Long-term use of river and Empire Waterway for restoration;
- Work together with Navigation Industry, Coast Guard, and U.S. Army Corps of Engineers to ensure safety, open navigation channel, and river operations
Project Overview

- Total Project Budget: $58.9 million
- Marsh/Dune: 360/150 acres
- Construction Completion Date: August 2013
- Funding Program: CWPPRA /Berm to Barrier
Construction

Constructed by:

Great Lakes Dredge and Dock Company

committed to our coast
Unique Aspects of the Project

Project Overview

NOTES:
Project Needs for Construction

1. Landrights
2. Permits
3. Budget ($$$)
4. Budget (Available Sediment)
Project Timeline

NOAA/CWPPRA

- Plan Formulation commenced in 2004
- Feasibility Study initiated in 2007
- 30% Design Review in March 2010

BP Berm to Barrier Island

- Permits for construction were issued in July 2011
- Construction Contractor Notice to Proceed issued on May 1, 2012
- Construction Completed August 2013
Primary Objective

Transport sand from the Mississippi River to Scofield Island in the most efficient manner.
Engineering & Design

- Detailed screening analysis of multiple borrow areas (7), dredge methods (2), conveyance corridors (4), and conveyance methods (2)

- Selected 2 borrow areas / 2 dredge methods for flexibility and optimizing contractor bidding

- Impacts to river / levees

- 20 year design life
Primary Challenges

- Determine most efficient conveyance corridor considering technical, environmental, institutional, and fiscal parameters;
  - Corridor crosses about 60 pipelines

- Achieve consensus among diverse stakeholders especially Navigation Industry, U.S. Coast Guard, and U.S. Army Corps of Engineers;

- Quantify potential impacts of mining riverine sand sources on river hydrodynamics;

- Consideration of cultural resources along river.
Stakeholder Meetings (2007-2011)

- Plaquemines Parish Government
- U.S. Army Corps of Engineers (USACE)
- Louisiana State Historic Preservation Office
- Ancil Taylor
- Plaquemines Parish Government Coastal Zone Management Meeting
- Maritime Navigation Safety Association
- Mississippi River Maintenance Forum
- Louisiana Department of Transportation and Development
- Louisiana State Historic Preservation Office
- USACE – New Orleans District
- Empire Waterway users local interest meeting
- Maritime Navigation Safety Association
- United States Coast Guard
- Plaquemines Parish Government Coastal Zone Management
- Mississippi River Maintenance Forum
- Lower Mississippi River Waterway Safety Advisory Committee
- Crescent City River Pilots
- Gulf States Maritime Association
- USACE – New Orleans District
- Louisiana State Historic Preservation Officers
- Maritime Navigation Safety Association
- USACE – New Orleans District
- Maritime Navigation Safety Association
- Mississippi River Maintenance Forum
- Maritime Navigation Safety Association
**Borrow Area Screening Analysis**

<table>
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<tr>
<th>Borrow Area</th>
<th>Total</th>
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<tbody>
<tr>
<td>MR-B</td>
<td>4.41</td>
</tr>
<tr>
<td>MR-E</td>
<td>3.76</td>
</tr>
<tr>
<td>MR-G</td>
<td>4.85</td>
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## Scofield Island Construction Parameters

<table>
<thead>
<tr>
<th>FILL VOLUMES</th>
<th></th>
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<tbody>
<tr>
<td>BEACH/DUNE FILL TOTAL</td>
<td>1,632,000 yd³</td>
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<tr>
<td>MARSH FILL TOTAL</td>
<td>1,762,000 yd³</td>
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<tr>
<td>CONTAINMENT DIKE FILL TOTAL</td>
<td>525,000 yd³</td>
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<table>
<thead>
<tr>
<th>LINEAR FEET</th>
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<tbody>
<tr>
<td>BEACH/DUNE FILL TOTAL</td>
<td>13,100 ft</td>
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<tr>
<td>CONTAINMENT DIKE FILL TOTAL</td>
<td>15,600 ft</td>
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<tr>
<td>FLOTATION CHANNEL (REQUIRED)</td>
<td>14,100 ft</td>
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</table>

<table>
<thead>
<tr>
<th>ACRES</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>BEACH/DUNE TOTAL</td>
<td>240 ac</td>
</tr>
<tr>
<td>MARSH TOTAL</td>
<td>400 ac</td>
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</tbody>
</table>
Scofield Island
Scofield Island

A - A'

LEGEND:
- BEACH / DUNE FILL
- MARSH FILL
- CONTAINMENT DIKE
- FLOTATION CHANNEL / CONTAINMENT DIKE BORROW AREA
- 2010 SURVEY
- DESIGN

PROJECT DESIGN & BENEFITS

DIKE EL. +4.9'
TARGET MARSH EL. +3.0'
TARGET BEACH EL. +4.0'
SLOPE 1V:4H
SLOPE 1V:4H
TARGET DUNE EL. +6.0'
MLW +5.52'

DIKE EL. +4.9'
CHANNEL EL. +6.0' MAX.
26' MIN.

EXISTING
GRADE.

25' MIN.

SCOFIELD PASS

SKIPJACK BAY

GULF OF MEXICO

TROUVE BAYOU
Acknowledgements

DESIGN TEAM

ARCHAEOLOGICAL RESEARCH, INC.

COASTAL ENGINEERING CONSULTANTS INC.

ALPINE OCEAN SEISMIC SURVEY, INC.

SJB GROUP, LLC

COASTAL TECH

COASTAL TECHNOLOGY CORPORATION

QUESTIONS?