The Use of Mississippi River Sediment for Restoration Projects in Louisiana

Russ J. Joffrion, P.E.

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CPRA Background

• ACT 8 of the 2005 Special Session

• Directed that the CPRA consider both "hurricane protection and the protection, conservation, restoration and enhancement of coastal wetlands and barrier shorelines."

• Merged the Louisiana DOTD Public Works and LDNR Office of Coastal Restoration.

• Expanded the membership, duties and responsibilities of the CPRA and charged the new Authority to develop and implement a comprehensive coastal protection plan, including both the Master Plan (revised every 5 years) and annual plans.
CPRA Organizational Structure

• Five Distinct Divisions of CPRA:
  • Executive Division
  • Planning Division
  • Project Management Division
  • Engineering Division
  • Operations Division
We Continue to Make Progress

159 miles of built or improved levees

19,405 acres of coastal habitats benefited

$17 billion in State & Federal funding for protection & restoration.
Nearly 400 Projects Evaluated Across the Coast
2012 Master Plan Highlights

Distribution of Funding by Project Type
(Approximately $50 Billion)

Funding by Project Type ($ Billions)

- Barrier Island
- Hydrologic Restoration
- Marsh Creation
- Nonstructural Protection
- Other Protection & Restoration Projects
- Sediment Diversion
- Structural Protection

Coastal Protection and Restoration Authority of Louisiana
Restoration Projects:

- Barrier Island Restoration
- Hydrologic Restoration
- Marsh Creation
- Oyster Barrier Reefs
- Shoreline Protection
- Bank Stabilization
- Channel Realignment
- Sediment Diversion
Sediment Diversion Projects
Keystone of the 2012 Master Plan:  
Reconnecting the Mississippi River by Maximizing Sediment Capture

- **Bayou Lafourche Diversion**  
  1,000 cfs maximum
- **West Maurepas Diversion**  
  5,000 cfs maximum
- **Central Wetland Diversion**  
  5,000 cfs maximum
- **Upper-Breton Diversion**  
  250,000 cfs maximum
- **Mid-Breton Diversion**  
  5,000 cfs maximum
- **Lower Breton Diversion**  
  50,000 cfs maximum
- **Atchafalaya River Diversion**  
  150,000 cfs maximum
- **Increased Atchafalaya Flow**  
  20,000 cfs maximum
- **Mid-Barataria Diversion**  
  50,000 / 250,000 cfs maximum
- **Lower Barataria Diversion**  
  50,000 cfs maximum
Mid-Barataria Sediment Diversion

Project Overview

• Diversion Location:
  • Plaquemines Parish; 8 mi E of Lafitte, LA
  • River Mile 60.7 (AHP)

• Sediment Diversion Size:
  • 75,000 cfs (max flow)

• Problems in Outfall Area:
  • Land Loss, Habitat Shift, Saltwater Intrusion, Subsidence, Hydrology alteration, Sediment deprivation

• Components of Project:
  • Inlet structure (Gate and Controls), Conveyance Channel, Guide Levees, Outlet Structure, Outfall Control

• Total Cost:
  • $571,000,000  E&D and Construction
Mid-Barataria Sediment Diversion
Marsh Creation Projects

Dedicated Dredging at the Barataria Landbridge
Lake Hermitage Marsh Creation

Project Overview

• Largest CPRA Marsh Creation Project to utilize Mississippi River sediment to date.

• Sediment dredged and pumped through over 9 miles of pipeline.

• Volume of Sediment: 4,516,522 CY

• Acres Created: 650 acres

• Cost: $32,697,879
Marsh Creation Restoration Projects

Key Design Components

- Delineated Borrow Area
  - Permitted Mississippi River Borrow Area
    - USACE MR permissible dredging criteria or global slope stability analyses.
  - Safe Dredging Operations for Navigation
    - Meet with MNSA and USACE Operations

- Dredge Pipeline Corridor
  - Dredge Pipeline Crossings
    - MR&T, highways, HPL, utilities, pipelines, navigation.
  - Booster Pump Locations
  - Equipment Access Dredging

- Marsh Fill Area
  - Delineated footprint
    - Dewatering locations
  - ECD Methodology & Layout
Lake Hermitage Marsh Creation

Pipeline Conveyance
Lake Hermitage Marsh Creation Construction
Lake Hermitage Marsh Creation

Construction
Barrier Island Restoration Projects

Pelican Island Restoration
Scofield Island Restoration

Project Overview—Under Construction

- Design Engineer: Coastal Engineering Consultants, Inc.
- Construction Contractor: Great Lakes Dredge and Dock Co.

- Acres Created/Restored: 640 acres.
- 20 Year Design Life
- Volume of Sediment: 3,393,500 CY
- Sediment dredged from the Mississippi River and pumped through dredge pipeline corridor.

- Cost: $46,482,913
Scofield Island Vicinity Map

- **Empire Waterway**
- **Buras Triumph**
- **Boothville Venice**
- **Southwest Pass**
- **Head of Passes**

Project Setting
Unique Aspects of the Project

• Excavation of riverine sediments in one of the nations busiest navigational waterways.
• Delivery of riverine sediments over 22 miles.
• A pipeline conveyance corridor that requires:
  ▪ Micro-tunneling casing pipe installation under two highways.
  ▪ Crossing of 2 levees and a harbor canal.
  ▪ Pipeline installation along 18 miles of the Empire Waterway.
  ▪ Providing 6 navigational crossings for commercial and recreational use over sediment pipeline.
Scofield Island Restoration
Construction - Project Layout
Scofield Island Restoration
Construction- Borrow MR-E Section View
Scofield Island Restoration

Construction- Beach/Dune
Scofield Island Restoration
Construction- California Dredge in MR-B
Scofield Island Restoration
Construction- Pipeline Corridor Crossings
Scofield Island Restoration

Construction- Pipeline Conveyance Corridor
Scofield Island Restoration

Construction- Pipeline Conveyance Corridor
Scofield Island Restoration

Construction- Pipeline Conveyance Corridor
Scofield Island Restoration
Construction-Micro-tunneling
Scofield Island Restoration
Construction-Land Based Pipeline Corridor
Scofield Island Restoration

Construction-750’ Welded Pipeline Run
Scofield Island Restoration

Construction- Venice Yard-Tug pulling pipeline run

09/17/2012
Scofield Island Restoration
Construction - Beach/Dune
Scofield Island Restoration

Construction - Beach/Dune
Scofield Island Restoration

Construction- Beach/Dune
Scofield Island Restoration
Construction-Beach/Dune
Scofield Island Restoration

Construction-Beach/Dune
Scofield Island Restoration
Construction- Beach/Dune
Scofield Island Restoration

Construction-ECD
Scofield Island Restoration

Construction- ECD
Scofield Island Restoration Construction
Scofield Island Restoration

Construction-ECD
Scofield Island Restoration
Construction
Implementation Summary

• Optimizing Sediment Diversions for Land Building.
  • Mid-Barataria Diversion RM 60.7 (AHP)
  • Lower Barataria Diversion
  • Lower Breton Diversion

• Building Large Scale Marsh Creation Projects Utilizing Mississippi River Sediment.
  • BA-39 Mississippi River Sediment Delivery-Bayou Dupont
  • BA-42 Lake Hermitage Marsh Creation
  • BA-43EB/BA-48 LDSP & Bayou Dupont Marsh and Ridge Creation

• Rebuilding Barrier Islands Utilizing Mississippi River Sediment.
  • BA-40 Riverine Sand Mining/Scofield Island Restoration
  • BA-110 Shell Island East
  • BA-111 Shell Island West

• Optimizing engineering design based on lessons learned during construction.
• There is no permanent pipeline system for restoration.
QUESTIONS