**EM-5 Preservation and Restoration of Barrier Islands**

1. OBJECTIVE

To preserve and restore barrier islands in order to protect environmental and economic resources.

1. BACKGROUND

Louisiana’s barrier shoreline is one of the fastest eroding shorelines in the world. The barrier islands of the BTES are eroding rapidly and since the 1880’s, barrier islands of the BTES have lost ~1.6 billion m3 in sediment from the shoreface, and retreated landward up to 3 km. The cross-sectional area of the tidal inlets has more than tripled during this time. Storm-induced currents are a major driver of these changes (Miner et al., 2009).This erosion and shoreline retreat has been a contributing factor to the land loss within the BTES. These islands need to be elevated and widened to provide habitat for living resources and to prevent breaching and overwash. These problems can be addressed by the importation of sediments.

The restoration of Louisiana’s barrier islands and barrier island systems has been a priority for a number of restoration programs over the past several decades, and more than 30 barrier island projects have been constructed to date (including xx in the BTES: see Table 1). These projects consist of a combination of restoration techniques including beach nourishment, back barrier marsh creation, shoreline protection, vegetative plantings, and sand fencing.

Since the barrier islands serve as vital nesting area for wading birds and sea birds and a resting area for migratory birds, unnecessary disruptions by humans should be avoided whenever possible. Shore parallel canals which have been dredged on or immediately adjacent to the barrier islands lead to the breakup of the island. These canals should be filled to the height of the barrier island when the need for the canal has ceased. Navigation canal protection jetties should have a regular program of sediment by-passing, or should be shortened or removed, so that the natural flow of sediments to adjacent flanking barrier islands is not disrupted.

An offshore sediment analysis is currently being conducted. Expansion of availability of sediment from Ship Shoal is a possibility, but the shoal’s importance as a hypoxia refuge for snapper, crabs, and possibly other species might complicate this issue.

1. DESCRIPTION

This action will preserve and restore barrier islands by pumping sand to elevate dunes, narrow tidal inlets, and provide greater island width. This action will also provide for building of back-island salt marshes and filling abandoned oil and gas canals. The two main technologies to be used are beach nourishment – the addition of sediment (sand) to a beach to replace that which has been lost to erosion – and island restoration by material addition – the use of imported sediment to repair island damage or reduce future degradation by heightening and widening an island. In addition, some of the tools described in the action plan regarding *Shoreline Stabilization and Induced Sediment Deposition (EM-6)* will be utilized on the barrier islands as appropriate.

The Louisiana Coastal Protection and Restoration Authority (CPRA) is currently developing a barrier island Breach Management Program to address both breach prevention and response to breaches when they occur. This program will help to minimize the acceleration of island disintegration that commonly occurs after a breach. Prompt repair of storm-induced damages will extend the life expectancy and integrity of Louisiana’s barrier shorelines.

 D. LOCATION

Dredged material should be used to nourish beaches on the BTES shoreline at all possible locations with available technology whenever it is cost effective to do so. In addition, breach repair should be performed promptly whenever storms create breaches in barrier shorelines.

1. LEAD AGENCY RESPONSIBLE FOR IMPLEMENTATION

**State of Louisiana - Coastal Protection and Restoration Authority (CPRA)**

The State of Louisiana currently has a “2012 Comprehensive Master Plan for a Sustainable Coast.” The plan includes barrier island/headland restoration projects proposed for Isles Derniers, Timbalier Islands, Barataria Pass to Sandy Point, and Belle Pass to Caminada Pass.

**U.S. Army Corps of Engineers (USACE or Corps), New Orleans District**

The Corps dredges navigation channels in the BTES, and where bar channels and the lower reaches of the channels are dredged in the vicinity of barrier islands, the dredged material is often used for beach nourishment or marsh creation on the bay side of barrier islands, such as Grand Terre.
Currently, approximately 38 percent of the suitable/available material dredged under the O&M program is used beneficially. Due to either the physical characteristics or the location of the dredged material, not all of the material dredged by the Corps is available for beneficial placement in the coastal ecosystem. However, if funding were made available, there is the potential to use much of this material for barrier island or headland restoration.

The 2007 Water Resources Development Act (WRDA) directed the Corps to integrate its work with coastal restoration efforts.

**Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA) Task Force**

CWPPRA has constructed numerous barrier island restoration projects, from Raccoon Island to Pelican Island, including breakwaters, shoreline protection, marsh creation, vegetation planting,

 F. TIMELINES AND/OR MILESTONES

Over the next 20 years, the State of Louisiana CPRA will be implementing its Comprehensive Master Plan for a Sustainable Coast, implementing several barrier island restoration projects.

Over the next 20 years, the Corps Beneficial Use of Dredged Material (BUDMAT) Program will be working to use the dredged material from channel maintenance for marsh creation and beach nourishment where feasible.

CWPPRA is currently authorized through 2017. It is anticipated that the program will be reauthorized for an additional 10 to 20 years. Projects will be built as they move through the public process.

 G. POSSIBLE RANGE OF COSTS AND SOURCES OF FUNDING

The State of Louisiana has plans for large scale marsh creation projects laid out in Louisiana’s Comprehensive Master Plan for a Sustainable Coast. It is envisioned that some portion of the $5 billion Gulf Coast Ecosystem Restoration Task Force funds will go toward this technique.

Additionally, The Natural Resource Damage Assessment (NRDA) process may also provide funding under the EPA Clean Water Act to repair damages caused by the Deepwater Horizon Oil Spill. Louisiana will receive approximately $500 million to implement projects for the coast under the State Master Plan. It is anticipated that a portion of these funds may be used in the BTES for this type of restoration.

The Corps Beneficial Use of Dredged Material (BUDMAT) Program objective is to cost effectively increase the beneficial use of material dredged from federally maintained waterways at a total cost of $100 million over a ten-year period. Some of this material would be used on barrier shorelines in the BTES. Implementation of the BUDMAT Program is authorized by the Water Resources Development Act (WRDA) of 2007 - Section 7006(d) within the Louisiana Coastal Area Program.

CWPPRA currently spends a large portion of its annual budget on barrier island projects. Projects are identified and funded based on a competitive wetlands value assessment. CWPPRA is currently authorized through 2017. It is anticipated that the program will be reauthorized for an additional 10 to 20 years. Funding for aforementioned projects will be available as the projects move through the public process.

 H. PERFORMANCE MEASURES

a. Possible Data Gathered:

1) the compilation of videography and photography of the 2005 hurricane impacts

2) the construction of a unified historic shoreline change database for the Louisiana coastal zone

3) the development of a historical bathymetric database with up-to-date 2006 bathymetric analysis that provides a current seafloor change for the shoreline extending from Sandy Point to Raccoon Island and the northern Chandeleur Islands

4) Light Detection and Ranging (LiDAR) surveys for the sandy shorelines of the coastal zone.

b. Monitoring:

The Barrier Island Comprehensive Monitoring program (BICM) has been developed as a framework for a coast-wide monitoring effort. This effort includes documenting the historically dynamic morphology of the Louisiana nearshore, shoreline, and backshore zones. This aspect of the program is designed to complement other more area-specific monitoring programs that are currently underway through the support of agencies such as the Louisiana Department of Natural Resources and U.S. Army Corp of Engineers.

BCIM will provide long-term morphological datasets on all of Louisiana's barrier islands and shorelines; rather than just those islands and areas that are slated for coastal engineering projects or have had construction previously completed. BICM also specifically provides a larger proportion of unified, long-term datasets that will be available to monitor constructed projects, plan and design future barrier island projects, develop operation and maintenance activities, and assess the range of impacts created by past and future tropical storms.

The US Army Corps of Engineers maintains completed reports on all BUDMAT activities.

CWPPRA maintains public reporting to keep track of barrier island restoration projects completed, as well as utilizing the Coastwide Reference Monitoring Stations (CRMS) for gathering water quality and vegetative cover data.

The State of Louisiana through CPRA keeps track of acres created or maintained.

i. Parties Responsible: Corps, CWPPRA, State of Louisiana

ii. Timetable for Gathering Data: Annual Reports

iii. How Data is Shared: Via Agency Websites

iv. Possible Data Gaps: None Identified

v. If Additional Funding is Needed: Yes, as available