

**WETLAND CREATION IN WEST BAY, LOUISIANA,
USING DREDGE MATERIAL FROM
THE MISSISSIPPI RIVER HOPPER DREDGE DISPOSAL AREA**

**Prepared by the New Orleans District
Submitted to MVD as Proposed**

**DEPARTMENT OF THE ARMY
PROPOSAL
FOR COMPREHENSIVE PLAN FUNDED PRIORITIES
LIST OF PROJECTS AND PROGRAMS**

**For Consideration to be Submitted to
Gulf Coast Ecosystem Restoration (RESTORE) Council**

22 October 2014

1. COUNCIL MEMBER APPLICANT AND PROPOSAL INFORMATION SUMMARY SHEET

Council Member: Department of Army (New Orleans District)		Point of Contact: Mark Wingate	
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Project Identification			
Project Title: Wetland Creation in West Bay, LA, Using Dredge Material from Mississippi River Hopper Dredge Disposal Area			Project
State(s): Louisiana		County/City/Region: Plaquemines Parish – Lower Mississippi River	
General Location: <i>Projects <u>must</u> be located within the Gulf Coast Region as defined in RESTORE Act. (attach map or photos, if applicable)</i> Bird's foot delta of Lower Mississippi River at river mile 1 Above Head of Passes			
Project Description			
RESTORE Goals: <i>Identify all RESTORE Act goals this project supports. Place a P for Primary Goal, and S for secondary goals.</i>			
<u>P</u> Restore and Conserve Habitat		<u>S</u> Replenish and Protect Living Coastal and Marine Resources	
<u>S</u> Restore Water Quality		<u>S</u> Enhance Community Resilience	
<u>S</u> Restore and Revitalize the Gulf Economy			
RESTORE Objectives: <i>Identify all RESTORE Act objectives this project supports. Place a P for Primary Objective, and S for secondary objectives.</i>			
<u>P</u> Restore, Enhance, and Protect Habitats		<u>S</u> Promote Community Resilience	
<u>S</u> Restore, Improve, and Protect Water Resources		<u> </u> Promote Natural Resource Stewardship and	
<u>S</u> Protect and Restore Living Coastal and Marine Resources		Environmental Education	
<u>S</u> Restore and Enhance Natural Processes and Shorelines		<u>S</u> Improve Science-Based Decision-Making Processes	
RESTORE Priorities: <i>Identify all RESTORE Act priorities that this project supports.</i>			
<u>X</u> Priority 1: Projects that are projected to make the greatest contribution			
<u>X</u> Priority 2: Large-scale projects and programs that are projected to substantially contribute to restoring			
<u>X</u> Priority 3: Projects contained in existing Gulf Coast State comprehensive plans for the restoration			
<u>X</u> Priority 4: Projects that restore long-term resiliency of the natural resources, ecosystems, fisheries ...			
RESTORE Commitments: <i>Identify all RESTORE Comprehensive Plan commitments that this project supports.</i>			
<u>X</u> Commitment to Science-based Decision Making			
<u>X</u> Commitment to Regional Ecosystem-based Approach to Restoration			
<u>X</u> Commitment to Engagement, Inclusion, and Transparency			
<u>X</u> Commitment to Leverage Resources and Partnerships			
<u>X</u> Commitment to Delivering Results and Measuring Impacts			
RESTORE Proposal Type and Phases: <i>Please identify which type and phase best suits this proposal.</i>			
<u>X</u> Project <u> </u> Planning <u>X</u> Technical Assistance <u>X</u> Implementation <u> </u> Program			
Project Cost and Duration			
Project Cost Estimate:		Project Timing Estimate:	
Total :\$36,500,000		Date Anticipated to Start: <u>Jan/2015</u>	
		Time to Completion: <u>21</u> months	
		Anticipated Project Lifespan: <u>30</u> years	

2. EXECUTIVE SUMMARY

The proposed project will create/restore approximately 400 acres of emergent wetlands in the bird's foot delta of the Lower Mississippi River (LMR) by placing an estimated 5.7 million cubic yards (mcy) of sediment at an estimated total cost of \$36.5 million, for an average cost of \$93,000 per acre restored, at an estimated unit price of \$6.41 per cubic yard of material placed. The U.S. Army Corps of Engineers (USACE) New Orleans District (MVN) has a robust history of project-specific use of dredge material to create wetlands in coastal Louisiana. Since 1976, MVN has created over 31,000 acres of coastal habitat through the use of dredge material, including nearly 15,600 acres in the LMR delta. MVN has the largest Federal channel maintenance dredging program in the nation, and historically has used approximately 40 percent of available and suitable dredge material via existing MVN beneficial use efforts. RESTORE Council funding could be used to further MVN beneficial use efforts, to implement a comprehensive beneficial use program to restore additional coastal wetlands.

The proposed project consists of restoring coastal wetland habitat through the placement of dredged material from the Head of Passes Hopper Dredge Disposal Area (HDDA) in the bird's foot delta of the Lower Mississippi River. Approximately 5.7 mcy of material would be dredged from the HDDA using a cutterhead dredge and hydraulically pumping to environmentally cleared placement site(s) within West Bay, creating approximately 400 acres of emergent wetlands, at an estimated cost of \$36.5 million, or an average of \$93,000 per acre. The bird's foot delta area experienced extensive damage from Hurricane Katrina and experienced oiling during the Deep Water Horizon Oil Spill. In addition, coastal Louisiana wetlands are eroding at a rapid rate and the proposed action would mitigate the on-going loss of wetland habitat by converting open shallow water habitat into more desirable coastal wetlands, providing productive bird and fisheries habitat.

A. Comprehensive Plan Goals and Objectives

Comprehensive Plan Goals - The primary goal of this project is to Restore Habitat – specifically, to rapidly restore 400 acres of emergent wetlands through the placement of readily available dredge material. The project will enable USACE to improve its utilization of Mississippi River sediment and will contribute to maximizing the use of dredge material for effective and sustainable habitat restoration.

The emergent wetlands to be created by the project will, amongst other things, provide a barrier to the progression of saltwater intrusion into freshwater marsh, provide habitat for wildlife and waterfowl, provide higher quality essential fish habitat for recreation and commercially important fish and shellfish species, and support storm surge risk reduction to the Mississippi River and nearby infrastructure and communities. In doing so, in addition to supporting the Plan's primary goal, the project will also support several other Comprehensive Plan goals, including: Restore Water Quality; Replenish and Protect Living Coastal and Marine Resources; Enhance Community Resilience; and Restore and Revitalize the Gulf Economy.

Comprehensive Plan Objectives - The primary Comprehensive Plan Objective supported by the proposed project is to “Restore, Enhance, and Protect Habitats” by restoring approximately 400 acres of coastal wetland habitat through the placement of dredged material.

In addition to supporting the primary objective, the project will support most of the remaining Comprehensive Plan objectives. The project supports the restoration of water

resources by abating saltwater intrusion into the historically freshwater /brackish wetlands. The project would replenish and protect healthy, diverse, and sustainable living coastal habitat essential for juvenile fish species and beneficial to terrestrial, semi-aquatic, and avian wildlife species. The project would support maintenance of the existing shorelines of the Mississippi River and restore a portion of the estuary to its historical marsh-open water configuration. The project would promote community resilience by supporting the multiple lines of defense strategy and the ongoing battle against coastal retreat, dampening storm surge, and reducing storm damages to lower Plaquemines Parish oil and gas, marine transportation and fishing industries, and communities. Using lessons learned, the project will build upon well-established science and practices to improve the science-based decision-making processes used by the Council.

B. Project Implementation - Sediment will be dredged from the HDDA using a cutterhead dredge and hydraulically pumped, via temporary pipeline, to designated placement sites in West Bay. The material will be pumped unconfined, to an elevation of 3.0 to 3.5 feet North American Vertical Datum of 1988 (NAVD88) in a manner to create emergent wetlands in accordance with the existing environmental compliance documentation. The placement sites will consist of four peninsulas with an approximate crown width of 500 feet and length of 4,600 feet. Project design, which would be finalized upon receipt of funding, could result in revised location, size, and configuration of placement sites. Project planning, design, right-of-entry acquisition, and construction contract award is anticipated to take approximately 6 to 9 months upon receipt of funding. The construction duration is estimated at 12 months from construction contract award. The construction schedule must consider high water conditions on the Mississippi River and the timing of other dredging projects that have proposed using material from the HDDA. The temporary pipeline from the HDDA to the placement site cannot be installed during high water conditions, which could delay the initiation of dredge activities if the contract is awarded during such conditions. In addition, in order to work in concert with Mississippi River navigation, only one cutterhead dredge is anticipated to operate within the HDDA at any time. Other projects, namely the Mississippi River O&M project and LCA BUDMAT, have proposed using material from HDDA. Collaboration and synchronization of the schedules of these potential projects will need to occur in the event all projects receive funding.

C. Monitoring and Measures of Success - The placement sites restored by this project will be monitored similar to all USACE beneficial use projects, including: 1) post-construction survey to document the quantity of wetlands created; and 2) annual infrared aerial photography to identify changes in land area. The success of the project will be measured by the acres of emergent wetland restored (400 acres), the cost of delivering the sediment to deposition sites (\$36.5 million), the average cost per acre created (\$93,000), and the length of time required to build the wetlands (21 months for planning/design/construction from receipt of funding).

D. Risk and Uncertainty - The science and practice of coastal ecosystem restoration through the placement of dredge material are well tested as illustrated by over 31,000 acres of coastal habitat MVN has restored/created since 1976. As such, risk and uncertainty associated with the proposed project is anticipated to be minimal and should be limited to uncertainty associated with costs, availability of needed equipment, scheduling with other proposed projects using material from the HDDA, previously unencountered obstacles in obtaining right-of-entry, and unforeseen events, and circumstances that may impact operations on the river.

3. PROPOSAL NARRATIVE

A. Project Overview

1) Description of Project

The proposed project will create/restore approximately 400 acres of emergent wetlands in the bird's foot delta of the Lower Mississippi River by placing an estimated 5.7 mcy of sediment at a total estimated cost of \$36.5 million, for an average cost of \$93,000 per acre restored, at an estimated unit price of \$6.41 per cubic yard of material placed. The proposed project consists of placement of material from the Head of Passes HDDA in the bird's foot delta of the Lower Mississippi River into West Bay to restore emergent wetlands in currently shallow open water habitat. The proposed project includes technical assistance (planning and design) and implementation (construction and monitoring) activities. Approximately 5.7 mcy of material would be dredged from the HDDA and vicinity, and placed

Summary

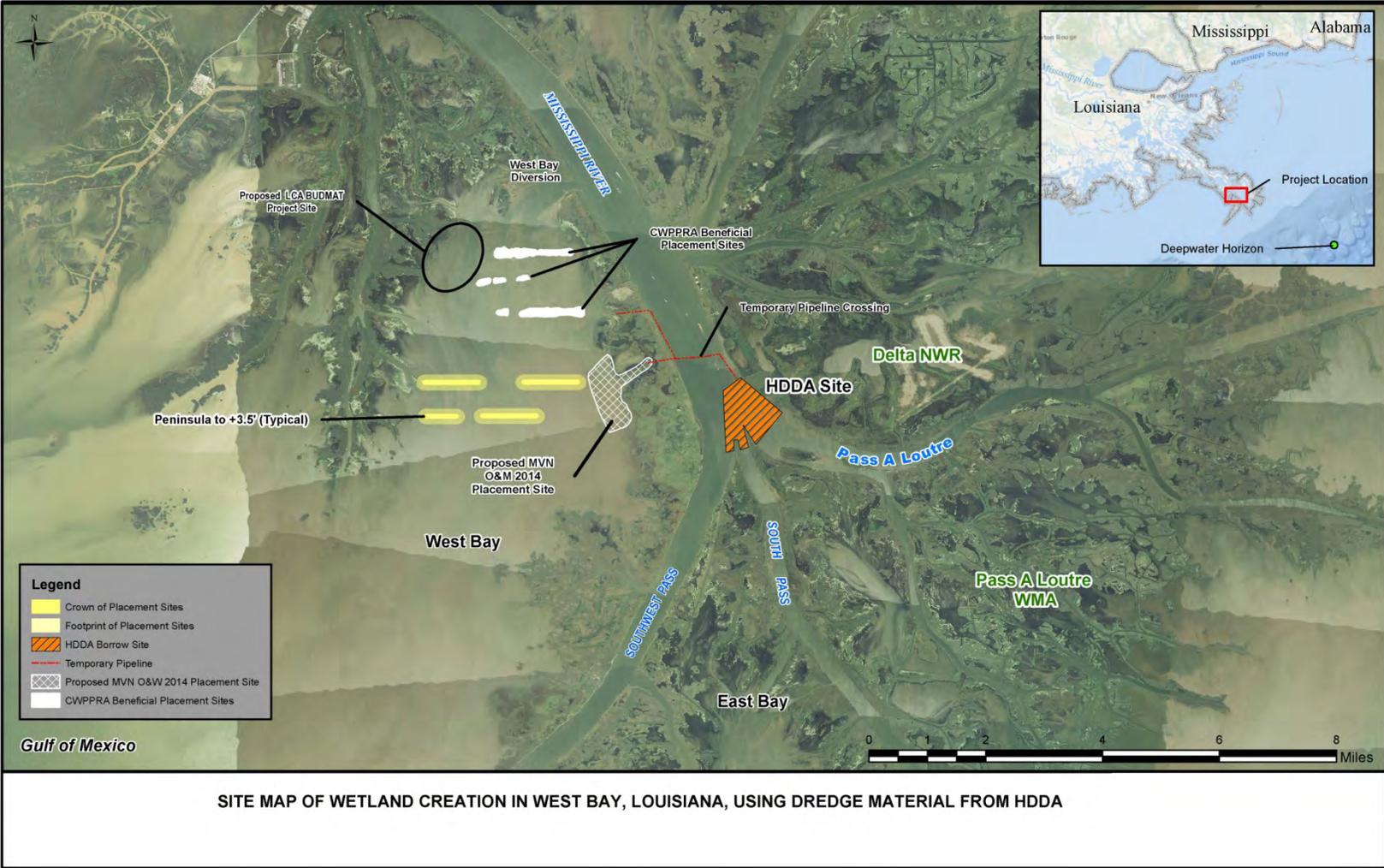
- \$36.5 Million Total Cost
- 400 Acres of Wetlands Created
- \$93,000 Average Cost Per Acre
- 5.7 Million Cubic Yards of Material Placed
- \$6.41 Average Cost per Cubic Yard Placed
- Location - West Bay, Louisiana
- Material Source - Hopper Dredge Disposal Area
- FONSI signed 22 Nov 13
- Preliminary Planning/Design Completed

in environmentally cleared site(s) in West Bay, creating approximately 400 acres of emergent wetlands at an estimated cost of \$36.5 million, or an average cost of \$93,000 per acre (see Figure 1). Based on prevailing hydrologic conditions and physical characteristics of the sediments deposited in the HDDA, it is unlikely that contaminants would be present at the HDDA. The placement sites are designed to

promote retention of sediment delivered by the West Bay Sediment Diversion, thereby increasing the acreage of marsh that can be developed by the diversion per unit of time. The material would be placed unconfined within existing shallow open water habitat to an elevation of 3.0 to 3.5 feet NAVD88, with the expectation that the material would settle to a height of 1.5 to 2 feet NAVD88. The material would be placed to ensure the development of wetlands at varying elevations thereby providing substrate for the establishment of a variety of wetland plant species. The material would be placed to create emergent wetlands in accordance with the existing environmental compliance document. The placement sites consist of four peninsulas with an approximate crown width of 500 feet and length of 4,600 feet (see Figure 1). Project design, which would be finalized upon receipt of funding, could result in revised location, size, and configuration of placement sites, which could impact the quantity of wetlands created.

Consistent with other beneficial use projects in the area, it is anticipated that the placement site will naturally vegetate within one year of placement activities through colonization of species from adjacent vegetated areas, ranging from scrub/shrub vegetation, emergent aquatic vegetation, and submerged aquatic vegetation. These wetland plants, which are assumed to vegetate to some degree to -2.0 feet NAVD88, will aid in sediment trapping in the sediment-starved system. Preliminary engineering plans and corresponding cost estimates have been developed. However, the exact extent of emergent wetlands to be restored will be dependent on: the type of material dredged; the quantity of material placed; the location, size, and configuration of placement sites; and the depth of open water at the specific placement sites.

Figure 1. Site Map of Wetland Creation in West Bay, Louisiana, Using Dredge Material From HDDA



The 400 acres of wetlands stated as being create/restored by the proposed project is the amount of wetlands above -2.0 NAVD88, or two feet below the elevation of the water surface, the portions of the placement sites expected to generate benefits. Since material will be placed unconfined, the material at the fringe of the placement site will gently slope down to the existing water bottoms (at approximately -4.0 feet NAVD88), resulting in portions of the slide slope being below the water surface. The portion of the slide slope below -2.0 feet is not included in the 400 acres of restored wetlands. Including the entire side slope of the placed material, the total project footprint to benefit from the project is approximately 490 acres. (See Figure 3 in Section 4 of this proposal.)

Although this proposal recommends the placement of 5.7 mcy at a cost of \$36.5 million, the quantity of material placed and the resulting acres of wetlands created/restored could be adjusted to reflect funding provided. Alternative funding scenarios ranging from placing between 3.2 mcy to create 220 acres of wetlands at a cost of \$23.5 million (\$106,000 per acre), to placing 9 mcy to create 615 acres at a cost of \$55 million (\$89,000 per acre) were considered.

Routine dredging of Southwest Pass of the Mississippi River and the temporary stockpiling of dredged material in the HDDA comprise key elements of USACE's Mississippi River O&M Program to maintain the Federal navigation channel. The coastal marshes in West Bay are susceptible to degradation through submergence, mainly as a result of subsidence, sea-level rise, and lack of sediment input (although the West Bay Diversion constructed in 2003 is supporting the fight against sediment deprivation and is referenced below). Future marsh development at these submerged sites is dependent upon basin-filling processes, either through placement of dredge material or through the existing diversion that delivers sediment-laden waters to the area, would result in the creation of tidal flats that are intermittently flooded and suitable for marsh development. In addition, being located at the mouth of the Mississippi River, the bird's foot delta experienced extensive damage from Hurricane Katrina and experienced oiling during the Deep Water Horizon Oil Spill, as the project site is located about 70 miles north of the spill site. The HDDA is in close proximity to environmentally cleared placement sites in West Bay. National Environmental Policy Act (NEPA) compliance for the dredging of material from the HDDA and disposal into West Bay is provided by environmental assessment (EA) #517, titled "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana, Designation of Additional Disposal Areas for Head of Passes, Southwest Pass, and South Pass," with associated FONSI signed on November 22, 2013. West Bay is located west of the Mississippi River, in the vicinity of Head of Passes. The bay consists of marsh and shallow open water habitat. A large-scale, uncontrolled sediment diversion into West Bay through the right descending bank of the Mississippi River at mile 4.7 Above Head of Passes (AHP) was constructed under the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) in 2003. The objective of the diversion is to convert approximately 10,000 acres of shallow open water habitat to vegetated wetlands. Since construction of the diversion, 8.3 mcy of dredge material has been hydraulically pumped into the receiving area on five separate occasions to facilitate wetland creation. The proposed project would further build upon those past efforts and benefit the area by immediately creating approximately 400 acres of coastal wetlands.

Framework for a Gulf Coast Sediment Management Program

The perception of dredged material has evolved in recent decades from a material that needed to be disposed of, to a valuable resource in the ecosystem restoration tool box for combating coastal erosion, nourishing beaches, building habitat, and returning subsided wetlands

to an elevation within the tidal range. However, challenges to fully utilize available sediment still exist, including the variation in types of available material, the location of available material in relation to placement sites, the timing of O&M dredging activities compared to the availability of placement sites, and availability of beneficial placement funding.

While the function or value of individual beneficial use projects may be local in scope. Cumulatively, multiple beneficial use projects across a wide geographic area could: 1) significantly offset coastal wetland loss; 2) provide nursery areas or other habitats for important commercial species or species of concern; and 3) minimize salt water intrusion by reestablishing estuarine boundaries through construction of spits, barrier islands and wetlands.

The Gulf ecosystems and the resources they support are vulnerable to man-made and natural events such as development, tropical storm and hurricane events, ongoing subsidence and erosion exacerbated by sea-level rise, disintegration of wetlands and barrier island chains, and high rates of wetland loss. Improving the resiliency of these ecosystems is a critical component of restoring the Gulf of Mexico as a whole, and illustrates a need for a programmatic beneficial use program in the northern coast of the Gulf of Mexico to augment existing beneficial use efforts that are currently based only on individual projects, and elevate them to a programmatic effort. (See Section 9.A of this proposal for a detailed discussion on the USACE's Gulf-wide sediment placement program.)

A recent assessment identified the most pressing challenges facing the Gulf of Mexico ecosystem as: the loss of wetland habitats; erosion of barrier islands; loss and degradation of coastal estuarine habitat; imperiled fisheries; hypoxia (low oxygen) in the Gulf of Mexico; and climate change (Mabus 2010). Sediment, delivered by the Gulf river systems, built much of the Gulf Coast and continues to be essential to the health of the Gulf ecosystem. The utilization of river sediment can offset some of the challenges listed above. Accordingly, the Gulf Coast Ecosystem Restoration Task Force proposed a sediment management approach to address land loss through sustainable resource management, and land building and restoration. The approach recommended two actions related to dredged material: maximize beneficial use, and increase dedicated dredging of river sediments (GCERTF 2011). Beneficial use is defined as the productive use of material produced during the authorized maintenance dredging of navigation channels. Dedicated dredging, while having the same purpose, does not have the same required link with authorized O&M navigation dredging.

USACE has an established record of beneficial use of dredge material; combined, the four Gulf Coast USACE Districts (Galveston, New Orleans, Mobile, and Jacksonville) annually dredge approximately 123 mcy from coastal Federal navigation projects, of which 22 mcy is beneficially used. Beneficial use of dredged material uses science and engineering to produce operational efficiencies supporting sustainable infrastructure; uses natural processes to the maximum benefit; broadens and extends the base of benefits provided by projects to include substantiated economic, social, and environmental benefits; and uses science-based collaborative processes to organize and focus interests (Gerhardt-Smith, et al. 2014).

Navigation in the Gulf Coast region will continue to require dredging, and the implementation of projects that use dredge material to restore coastal habitats should form the cornerstone, or certainly be a well utilized tool, for Gulf coastal ecosystem restoration. Sediment delivered by the many rivers draining into the Gulf is essential to the health of the Gulf Coast ecosystem. One component of a strategic approach to sediment management is maximizing the use of dredge material for effective and sustainable habitat restoration. Currently available sediment is not being fully utilized for effective ecosystem restoration. As such, the Gulf Coast

is an ideal location to augment existing beneficial use and for that matter, dedicated dredging, and elevate them to a programmatic effort. The project described in this proposal, along with potentially others submitted separately for inclusion in the RESTORE Funded Priority List, is intended as a foundational element toward restoring the value of the Gulf of Mexico to the Nation and the World, through the establishment of a Gulf Coast Sediment Placement Program.

A component of the USACE Gulf Coast Sediment Placement Program would be the Lower Mississippi River (LMR) Sediment Placement Program. The LMR Sediment Placement Program would advance planning, technical assistance, and implementation of LMR sediment placement studies, projects, and pilot projects using sediment from the Lower Mississippi River, to restore/create coastal habitats, including barrier islands, wetlands, and maritime forested ridges on both the east (Breton Sound) and west (Barataria Basin) banks of the LMR. Studies to be conducted under this program could include evaluating alternate delivery methods and outcomes from sediment delivery via barge, hopper dredge, pipeline, methods for stockpiling dredge material for future restoration use, and evaluating innovative sediment placement techniques, to name a few. Projects that could potentially be recommended for funding include, but are not limited to, placement of materials within and outside the bird's foot delta, on barrier islands, and along Mississippi River's east and west banks to create emergent wetlands, ridges and other coastal features. Pilot projects could evaluate: the cost-effectiveness of moving sediment to placement sites currently considered as long distance and cost prohibitive; the use of sediment traps on the Mississippi River; and the use of thin layer placement of dredged material to restore coastal marshes, just to name a few.

Since 1976, MVN has used dredged material to create over 48 square miles (31,693 acres) of coastal habitat, including nearly 15,600 acres using material from the LMR. (See Section 9.B of this proposal for graphics depicting MVN's beneficial use efforts.) These projects not only benefit the ecosystem by restoring habitat diversity to its historical marsh-open water configuration, which benefits commercial and recreational finfish, wildlife and water fowl species, but also abates saltwater intrusion into historically freshwater/brackish wetlands. This proposal would provide similar benefits while promoting community resilience by supporting the multiple lines of defense strategy. As a result, the project would support the battle against coastal retreat, dampening storm surges, and reducing storm damages to lower Plaquemines Parish oil and gas, marine transportation and fishing industries, and communities, thereby providing economic and social benefits to the region.

MVN is responsible for the largest Federal channel maintenance dredging program in the nation. On average, MVN annually dredges approximately 78 mcy of material during routine maintenance of federally authorized navigation channels, of which approximately 37 mcy are dredged from remote locations that are too distant from placement sites to be economically used, or the material is physically unsuitable for use. Of the remaining 41 mcy of material, approximately 16 mcy, or nearly 40 percent, is used by existing MVN programs to create/restore wetlands. RESTORE Council funding could be used in concert with MVN Mississippi River O&M efforts to implement a comprehensive sediment use program to restore/create additional coastal wetlands using currently underutilized sediment. Two projects that restore emergent wetland habitat in currently degraded shallow open water that could be components of a LMR Sediment Placement Program for near term implementation are: 1) wetland creation in West Bay, Louisiana, using dredge material from the HDDA; and 2) wetland creation in the Pass a Loutre WMA using dredge material from South Pass of the Mississippi River. The project described in this proposal addresses placement of dredge material from HDDA to West Bay.

2) Focus Areas and Emphasis Areas

The RESTORE Council identified Focus Areas and Emphasis Areas to help ensure Council-selected projects represent a focused, integrated, and efficient use of available funds.

a. Focus Areas

The RESTORE Council identified two focus areas: Habitat and Water Quality. The primary Focus Area of this project is Habitat restoration. The rate of wetland loss in coastal Louisiana is well documented, with the bird's foot delta experiencing the greatest subsidence rates. Through the placement of readily available sediment material into West Bay, the project will rapidly and efficiently restore approximately 400 acres of emergent wetlands, in areas of rapidly eroding wetlands that has degraded to shallow open water habitat, thereby helping mitigate land loss in the Mississippi River bird's foot delta, in general, and in West Bay, specifically.

Focus Area:
Habitat

The project also supports the second focus area of improving water quality by: 1) retarding saltwater intrusion into the historically fresh/brackish water estuary, thereby reducing the conversion of freshwater/brackish wetlands to open water; and 2) restoring wetlands that filter chemicals and sediment from water, restricting such constituents from entering the Gulf.

b. Emphasis Areas

The RESTORE Council identified four emphasis areas that address the significance, sustainability, potential for success, and benefits to the human community of proposed projects. The following describes how the proposed project addresses the Council's Emphasis Areas.

i. Project is an Initial Core Step in Addressing a Significant Ecosystem

- Emphasis Areas:**
- *Addresses Significant Ecosystem Issue*
 - *Sustainable Over Time*
 - *Likely to Succeed*
 - *Benefits the Human Community*

Issue: By restoring coastal wetlands, the proposed project addresses a significant ecosystem issue, the loss of coastal wetlands in the Mississippi River bird's foot delta. Louisiana wetlands, which account for 40% of the continental US coastal wetlands, are unique and vital ecological assets worth saving. The Louisiana coastal area has lost

1,900 square miles of land since 1932 due to multiple causes, including oil and gas development, navigation canals, land subsidence, river management, and sea level rise. (See Section 9.C of this proposal for Louisiana Coastal Land Loss Map.) The bird's foot delta is ground zero for coastal wetland loss (experiencing the greatest subsidence rates in the state) and oiling from the Deep Water Horizon Oil Spill. The wetlands support the multiple lines of defense strategy by serving as storm buffers against hurricanes and as flood risk management features by storing excess floodwaters during high rainfall. They replenish aquifers, purify waters, and provide a habitat for various wildlife and fish species. Louisiana's wetlands benefit humans by way of fisheries industries, fur harvesting, oyster production, recreation resources/ecotourism – providing billions of dollars in revenues for our nation.

A primary method for combating coastal land loss in Louisiana is to reintroduce sediment into the basin via placement of dredge material, which results in the creation of tidal flats that are intermittently flooded and suitable for marsh development. The proposed project will make positive contributions to coastal land building through the use of

sediment material that is currently being underutilized and is readily available for use. The proposed project will build upon existing, separate, but related MVN beneficial use programs including the MVN's Mississippi River Operation and Maintenance (O&M) Program, the CWPPRA Program, and the Louisiana Coastal Area (LCA) BUDMAT Program, all of which are authorized to beneficially use dredge material to restore Louisiana coastal habitat.

Material dredged under MVN's O&M program is disposed of in the least costly alternative that is consistent with sound engineering practices and meets all applicable Federal environmental standards. This least cost disposal alternative is called the Federal standard. Beneficial use projects provide funds for disposal activities associated with separate, cost-shared, individual ecosystem restoration beneficial use projects that are above and beyond the disposal activities that are covered under the Federal standard. Beneficial use projects typically cover the costs for pumping and placing the dredge material beyond the Federal standard, and must be timed/sequenced to coincide with O&M dredging activities. The proposed project excavates readily available sediment materials from the Mississippi River that have been deposited as a result of prior MVN O&M dredging activities and by natural river dynamics including shoaling, in order to create wetlands to achieve the goals of the RESTORE Council to Restore Habitat, at very effective costs.

ii. The Project Will be Sustainable Over Time: Sustainability of the wetlands to be restored by the project will be enhanced through the existing West Bay Sediment Diversion and other beneficial use projects (the Mississippi River O&M Program, CWPPRA, and the LCA BUDMAT Program) in the bird's foot delta. The West Bay Sediment Diversion promotes sediment accretion and marsh creation by delivering sediment and fresh water into the bay. The diversion allows sediment-laden water to flow into the bay to create splays, which are land formations resulting from sediment accretion near the mouth of the diversion. Splays consist of mud flats, channels, and sediment that are capable of building land in open water areas over time (Boyer et al.). The West Bay Diversion and the proposed project are synergistic. Final design of the proposed project will maximize the ability of the placement sites to capture sediment delivered by the West Bay Diversion. The wetlands to be created by the proposed project will provide a substrate for the establishment of a variety of wetland plant species. The wetland plants will promote retention of sediments delivered by the diversion, thus increasing the acreage of wetlands that can be developed by the diversion per unit of time. This in turn helps to sustain the wetlands created by the proposed project. The project life is estimated at not less than 30 years.

iii. The Project is Likely to Succeed: The project has a high probability of success based on MVN's record of creating/restoring coastal wetland habitat with dredge material in West Bay thru practices as proposed under this project. The source of the dredge material, the HDDA, is conveniently located (approximately 1 mile away) to the placement site and is replenished annually through O&M dredging activities and naturally occurring shoaling. In addition, the material is readily available and use of the material is not contingent upon current and/or future O&M activities.

iv. The Project Benefits the Human Community: The project both directly and indirectly benefits the Gulf Coast human community. USACE dredging contracts awarded for over \$1.5 million include a requirement to establish and meet small business subcontracting

goals. For prior dredging contracts, contractors have met their small business contracting requirements by relying on local small businesses for vessel and crew support activities. These subcontracts benefit the local community through the direct and/or indirect purchase of goods and services associated with these activities.

Ongoing shoreline retreat threatens communities by making community infrastructure, including roads, utilities, and commercial and industrial establishments more susceptible to wave damage. The proposed project provides a key feature (wetlands) in the multiple lines and defense strategy and enhances community resilience by reducing the vulnerability of lower Plaquemines Parish communities, as well as oil and gas, marine transportation and fishing industries, to shoreline retreat and storm surge. By restoring the freshwater/brackish wetlands of the bird's foot delta (and other beneficial use sites), coastal erosion will be abated, and storm surges will be reduced.

Finally, the project will generate significant benefits to natural resources and natural resource dependent activities and industries, specifically those critical to the fishing and tourism industries. The project restores freshwater and brackish wetlands that are among the most highly productive ecosystems and have historically been important to fisheries, migratory birds, and terrestrial animals.

3) Comprehensive Plan Goals

The RESTORE Council identified five goals that proposed projects should support. The goals address the restoration of habitat and water quality, protecting living coastal resources, enhancing community resilience, and revitalizing the Gulf economy.

a. Restore and Conserve Habitat

The primary goal of this project is to Restore Habitat by rapidly restoring an estimated 400 acres of coastal wetlands through the placement of readily available sediment material into West Bay. This project is a significant step toward restoring the ecosystem diversity to a region containing salt marsh, open water estuaries, and fresh and salt riverine environments. The project will enhance utilization of Mississippi River sediment and contribute to maximizing use of dredge material for effective and sustainable coastal restoration.

Primary Goal:
Restore Habitat

In addition to the primary goal of restoring habitat, the project will support most of the remaining Comprehensive Plan goals, as identified below.

Secondary Goals:

- *Restore Water Quality*
- *Replenish and Protect Living Coastal and Marine Resources*
- *Enhance Community Resilience*
- *Restore and Revitalize the Gulf Economy*

b. Restore Water Quality

The project will improve water quality in the project area by retarding saltwater intrusion into the historically fresh/brackish water estuary, thereby reducing the rate of conversion of freshwater and brackish wetlands to open water. In addition, the wetlands restored by the project will improve water quality by acting as “living filters” that serve as the “final filter” to trap chemicals and sediment (Carter 1997) prior to waters entering the Gulf of Mexico.

c. Replenish and Protect Living Coastal and Marine Resources

Through the placement of sediment material, existing open shallow water will be converted to emergent wetlands. The project will replace less productive fish habitat with higher quality essential fish habitat by replenishing and protecting healthy, diverse, and sustainable living coastal resources in marsh fringe, interspersed shallow ponds, and emergent and submerged vegetation that juvenile fish species depend upon for nursery habitat. Fresh and intertidal intermediate water supporting plant species provide nursery and foraging grounds for a variety of economically important marine species including red drum, black drum, sand trout, spotted seatrout, southern flounder, Atlantic croaker, striped mullet, menhaden, white shrimp, brown shrimp, and blue crab. The project is also expected to benefit terrestrial, semi-aquatic, and avian wildlife species in the proposed project area.

d. Enhance Community Resilience

As outlined in the discussion on the Council’s Emphasis Areas, the proposed project will promote community resilience by reducing the vulnerability of lower Plaquemines Parish infrastructure.

e. Restore and Revitalize the Gulf Economy

The proposed project will serve to restore and revitalize the Gulf economy by: (1) supporting actions to reduce risk to the fishing and oil service areas in lower Plaquemines Parish; (2) complimenting the Federal navigation actions to maintain the viability of the Mississippi River; and (3) providing the habitat necessary for growing and sustaining fish species critical to recreational and commercial fishing industries. Recreational and commercial fishing is a multi-billion dollar industry critical to the economies of the Gulf States. Revenues from fishing, hunting and wildlife viewing in the Gulf region reached nearly \$22 billion in 2010 (U.S. DOI FWS 2011). Over 90 percent of the total U.S. brown and white shrimp landings between 2008 and 2012 were from the Gulf of Mexico (NMFS 2014a). Both shrimp species depend heavily on estuaries and coastal wetlands. Wetlands within the estuary offer both a concentrated food source and a refuge from predators (U.S. DOI FWS 1983). In 2013, 44 percent of all marine fish caught by recreational anglers in the U.S. were from the Gulf of Mexico (NMFS 2014b). Restoring coastal wetland habitat for those fish and wildlife species dependent upon such habitat for nursery, shelter, food, nesting, cover, and other life requirements will benefit the Gulf economy.

4) Comprehensive Plan Objectives

The RESTORE Council identified seven objectives that proposed projects should support. The following describes how the proposed project supports the Council’s objectives.

Primary Objective:
Restore Habitat

a. Restore, Enhance, and Protect Habitats

The proposed project will primarily address the Council’s Comprehensive Plan Objective to “Restore, Enhance, and Protect Habitats” by restoring approximately 400 acres of coastal wetland habitat through the placement of dredge material at a cost of \$93,000 per acre restored. In addition to the primary objective of restoring habitats, the project will support most of the remaining Comprehensive Plan Objectives.

b. Restore, Improve, and Protect Water Resources

The project supports a secondary objective of restoring water resources by preventing further conversion of freshwater and brackish wetlands to open shallow saltwater habitat, and retarding saltwater intrusion into the historically freshwater and brackish wetlands.

Secondary Objectives:

- *Restore, Improve and Protect Water Resources*
- *Protect and Restore Living Coastal and Marine Resources*
- *Restore and Enhance Natural Processes and Shorelines*
- *Promote Community Resilience*
- *Improve Science-Based Decision-Making Processes*

c. Protect and Restore Living Coastal and Marine Resources

As outlined in the discussion on Comprehensive Plan Goals, restoration of emergent wetland habitat will replenish and protect healthy, diverse, and sustainable living coastal habitat essential for juvenile fish, terrestrial, semi-aquatic, and avian wildlife species.

d. Restore and Enhance Natural Processes and Shorelines

In addition to helping maintain the existing shorelines of the Mississippi River and its distributaries by facilitating navigation maintenance dredging, the project would support the return of the historical marsh-open water configuration of the bird's foot delta. In doing so, the project will restore and enhance ecosystem resilience, sustainability, and natural defenses through the restoration of natural processes and shorelines. In addition, coastal wetland vegetation stabilizes the shoreline by holding sediments in place with roots, absorbing wave energy, and breaking up the flow of stream or river currents.

e. Promote Community Resilience

Restoring coastal wetlands and stemming the conversion of freshwater and brackish wetlands to shallow open water will promote community resilience by supporting the multiple lines of defense strategy and reducing the vulnerability of lower Plaquemines Parish infrastructure as outlined in the discussion on the Council's Emphasis Areas.

f. Improve Science-Based Decision Making Processes

The science associated with dredge material placement is well established, as illustrated by MVN's past efforts that have restored over 31,000 acres of coastal habitat since 1976. The success of MVN's beneficial use efforts is due in part to the use of lessons learned to refine beneficial use design and implementation efforts. It would be expected that the proposed project could result in additional contributions and refinements to the science and practice of land building through lessons learned and adaptive management, and its effectiveness of creating wetlands in concert with the existing West Bay Diversion.

5) Comprehensive Plan Priority Criteria

The proposed project directly supports three of the four RESTORE Council-identified priorities and supports the intent of the fourth priority criteria. The project: (1) will make significant contributions to the Gulf Coast ecosystem; (2) is part of a large-scale Gulf Coast ecosystem restoration program; and (3) restores long-term resiliency of the natural resources

most impacted by the Deepwater Horizon oil spill. Beneficial use projects are included in the Louisiana Coastal Master Plan and this project is anticipated to gain the support of the State of Louisiana, Coastal Protection and Restoration Authority, and the Plaquemines Parish Government (see letters of support presented in Section 9.D), illustrating support for the fourth priority.

Priority Criteria:

- *Projects Projected to Make the Greatest Contribution*
- *Part of Large-scale Program for Gulf Coast Ecosystem Restoration*
- *Restores Natural Resources Impacted by Deepwater Horizon Oil Spill*
- *Consistent with State Master Plan*

a. Projects that are Projected to Make the Greatest Contribution

The proposed project not only offers the potential for the greatest contribution to the restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, and coastal wetlands of the Gulf Coast ecosystem, but also offers the capability to accomplish these goals rapidly and extremely cost effectively. This project has the capacity to rapidly restore existing open shallow water habitat to habitat that is more consistent with the historical diverse ecosystem in the region.

b. Large Scale Projects and Programs to Restore the Gulf Coast Ecosystem

As outlined at the beginning of this proposal, this project is a component of a larger USACE beneficial use effort to restore the Gulf Coast coastal ecosystem. This project has the capacity to create approximately 400 acres of emergent wetlands habitat, at an estimated cost of \$36.5 million, or an average of say, \$93,000 per acre.

c. Project Contained in Existing Gulf Coast State Comprehensive Plan

The proposed project is believed to be consistent with the State of Louisiana's Coastal Master Plan and is consistent with the Plaquemines Parish Comprehensive Coastal Restoration Plan, and is anticipated to be supported by the Louisiana Coastal Protection and Restoration Authority and the Plaquemines Parish Government (as illustrated in Section 9.D, PENDING letters of support). In addition, the project may increase alignment between MVN's Mississippi River maintenance dredging and the State's Coastal Zone Management Plan.

d. Projects that Restore Long-Term Resiliency of the Natural Resources Most Impacted by the Deepwater Horizon Oil Spill

The area to be restored by the proposed project is located at the mouth of the Mississippi River (near river mile 0) in the immediate vicinity of the Deep Water Horizon Oil Spill, and as such was impacted by the oil spill.

6) Comprehensive Plan Commitments

The RESTORE Council identified five commitments that proposed projects should achieve. The commitments address the use of science-based decision making, regional approach to restoration engagement, leveraging resources, and delivering results. The following describes how the proposed project supports the Council's commitments.

Comprehensive Plan Commitments:

- *Science-based Decision-Making*
- *Regional Ecosystem-based Approach to Restoration*
- *Leveraging Resources and Partnerships*
- *Delivering Results and Measuring Impacts*

a. Commitment to Science-Based Decision Making

This project is being proposed in part because, as presented in the discussion on Comprehensive Plan Objectives, the science and practice of coastal restoration through the use of dredge material is proven and well established. This ecosystem restoration tool can provide immediate results, build upon past and recent wetland creation projects, in the most cost-effective manner available in the current coastal restoration toolbox.

b. Commitment to a Regional Ecosystem-Based Approach to Restoration

As outlined in the discussion on Comprehensive Plan Objectives, this project is a component of a larger USACE beneficial use of dredge material effort to restore the Gulf Coast coastal ecosystem. The use of sediment is a key tool for regional ecosystem restoration. The Gulf of Mexico Regional Ecosystem Restoration Strategy describes the need “to maximize to the extent practicable and ecologically acceptable the quantity and effective use of sediments” (Gulf Coast Ecosystem Restoration Task Force 2011, 24). USACE has been committed to the restoration of the Nation’s largest expanse of coastal wetlands for more than 30 years, and the proposed project will continue this commitment.

c. Commitment to Leveraging Resources and Partnerships

A major benefit of the proposed project is that it leverages several existing separate, but related programs including the USACE’s Mississippi River O&M Program, the CWPPRA Program, and the LCA BUDMAT Program. These programs have made and/or have proposed to make significant investment in ecosystem restoration in the bird’s foot delta, and more specifically West Bay. Based upon timing of future efforts under these programs, the project proposed in this submission could potentially be coordinated with the implementation of other restoration efforts in West Bay to reduce overall project costs (namely thru synchronization of other dredging activities, thereby at a minimum reducing mobilization and demobilization costs).

As stated throughout this proposal, the MVN O&M Program has an extensive history of creating/restoring coastal habitat in the LMR. In 2014, MVN will continue its efforts to restore coastal Louisiana by placing 5 mcy from the HDDA into the Delta NWR and/or West Bay to restore additional habitat. However, beneficial use under MVN’s Mississippi River O&M Program has historically been restricted by available funding.

The Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) was passed in 1990 to address Louisiana’s need for a restoration program. CWPPRA is authorized to plan, design, construct, maintain, and monitor coastal wetland restoration projects that provide for the long-term conservation of wetlands and their dependent fish and wildlife populations in coastal Louisiana. The five Federal agencies partner with the state to cost share in the design and construction of coastal restoration projects. The CWPPRA Program receives approximately \$80 million in Federal funds annually. CWPPRA has constructed several ecosystem restoration

projects that will be built upon by the proposed project, namely the West Bay Sediment Diversion, and the pumping of 8.3 mcy of dredge material into the diversion channel since 2003, including material placed since 2009 that directly restored 300 acres of coastal habitat.

The LCA BUDMAT program is intended to fund beneficial use of dredged material from Federally-maintained waterways in coastal Louisiana. Program funds are to be used for disposal activities associated with separate, cost-shared ecosystem restoration beneficial use projects that are above and beyond the disposal activities that are covered under MVN's O&M dredging Federal Standard. The program is authorized at \$100 million. Funds have been appropriated for planning and design efforts for two projects on the western edge of West Bay which are being advanced in partnership with the Plaquemines Parish Government (PPG); which could potentially use material from the HDDA to create/restore additional wetlands in West Bay. PPG fully supports the LCA BUDMAT projects and the project proposed in this document, which are complementary to each other. Funds for construction of the two BUDMAT projects have not yet been appropriated.

d. Commitment to Delivering Results and Measuring Impacts

The use of dredge material is a well-established ecosystem restoration tool. Over 31,000 acres of marsh have been restored by MVN through placement of dredge material since 1976, which illustrates that the results and impacts of sediment use are easily documented.

B. Implementation Methodology and Timeline

Sediment will be dredged from the HDDA using a cutterhead dredge. The material will be hydraulically pumped via temporary pipeline to the designated placement sites in West Bay. The placement of the material will be unconfined, to an elevation of 3.0 to 3.5 feet NAVD88 to create emergent wetlands. Project design would be finalized upon receipt of funding. Project planning, design, right-of-entry acquisition, and construction contract award is anticipated to take approximately 6 to 9 months upon receipt of funding. The construction scheduled is estimated at 12 months from contract award. It should be noted that this schedule could be impacted by high water conditions on the Mississippi River and the timing of other projects that have proposed using material from the HDDA. The temporary pipeline from the HDDA to the placement site cannot be installed during high water conditions, which typically occurs from January to July, potentially delaying the initiation of dredge activities. In addition, in order to avoid impacting navigation on the Mississippi River, only one cutterhead dredge is allowed to operate within the HDDA at any time. Other projects, namely the Mississippi River O&M project and LCA BUDMAT, have proposed using material from the HDDA. The schedules of these potential projects must be synchronized as each project gains greater fidelity. It is possible, that additional leveraging will exist as additional projects come to fruition. Coordination has begun on all aforementioned projects and will continue in accordance with funding and proposal acceptance.

C. Best Available Science

As outlined in the discussion on Plan Objectives, the science and practice of using dredge materials for coastal restoration is a proven and well established process.

1) Risks and Uncertainty

MVN has developed a proven record of using dredge material on the LMR in general, and specifically from the HDDA to West Bay. Risk and uncertainty associated with this project

will be minimal, and will primarily be associated with uncertainty associated with costs (specifically fuel costs), scheduling of needed equipment (dredges), scheduling with O&M and LCA and/or other proposed projects using material from the HDDA, unforeseen events and circumstances, and previously unencountered obstacles in obtaining right-of-entry. Right of entry at the placement site has been obtained numerous times in the past in support of MVN activities; however, unforeseen events could impact MVN's ability to obtain right-of-entry from the State of Louisiana, which could impact the proposed project schedule.

2) Monitoring and Adaptive Management

Upon completion of construction activities, placement sites will be surveyed to determine the quantity of wetlands restored. The cost for this effort is included in the overall construction cost of the project. In addition, the placement sites will be monitored annually under USACE's Beneficial Use Monitoring Program (BUMP) aerial photography effort. The BUMP Program consists of using color infrared digital aerial photography that are produced as Orthophotos for use in USACE's GIS programs, which are used to identify changes in land area at USACE beneficial use placement sites. The BUMP Program is funded by MVN's O&M activities. Adaptive management efforts should not be warranted and are not planned under this proposal.

D. Environmental Compliance

As illustrated in the Environmental Compliance Checklist presented at Section 6 of this proposal, all necessary environmental compliance for the dredging of material from HDDA and placement of dredge material in West Bay have been obtained. Specifically, National Environmental Policy Act compliance for the dredging of material from HDDA and for disposal of material in West Bay is provided by environmental assessment (EA) #517, titled "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana, Designation of Additional Disposal Areas for Head of Passes, Southwest Pass, and South Pass," with associated FONSI signed on November 22, 2013. (See Section 9.E of this proposal for the cited FONSI.)

E. Leveraging of Resources and Partnerships

As presented in the discussion on Comprehensive Plan Commitments, the proposed project will build upon several existing beneficial use efforts within MVN, namely USACE Mississippi River O&M Program, the CWPPRA Program, and the LCA BUDMAT Program. In addition, the project will leverage the use of readily available and replenishable Mississippi River sediment to build emergent wetlands. This project is consistent with, and supports the implementation of, the state and PPG restoration plans.

F. Project Success

The placement of dredge material is a known process with a significant record of proven success; it is the "low hanging fruit" in the ecosystem restoration toolbox, and maximum use of dredge material should be utilized for ecosystem restoration efforts prior to considering more problematic, expensive and unproven approaches.

1) Metrics for Success

The metrics for project success is the number of acres of emergent wetland habitat restored (approximately 400 acres), the cost of delivering the sediment to the deposition sites (estimated at \$36.5 million), the average cost per acre (\$93,000), and the length of time required to build the wetlands sites (estimated 21 months from receipt of funding).

2) Reasons to Expect Success

Project success is expected because of: (1) the proven success of building emergent wetland habitat with dredge material in West Bay; (2) the readily available high quality source of material conveniently located at the HDDA, which will be periodically replenished under the Mississippi River O&M Program and by naturally occurring shoaling of sediment; (3) readily available environmental compliance; and (4) readily obtainable real estate right-of-entry which, while not in hand, has been previously obtained numerous times in support of MVN activities.

3) Sustainability

As presented in the discussion on the Council's Emphasis Areas, sustainability of the habitat to be restored by the project will be enhanced by the West Bay diversion that delivers sediment-laden Mississippi River waters to West Bay, and the leveraging of other beneficial use efforts (the Mississippi River O&M Program, CWPPRA, and the LCA BUDMAT Program) that could fund additional beneficial use projects in West Bay.

4) Comprehensive Plan Commitment Progress

As illustrated in this proposal, USACE is committed to achieving the Comprehensive Plan Commitments of: (1) Science-Based Decision Making; (2) a Regional Ecosystem Based Approach to Restoration; (3) the Engagement, Inclusion, and Transparency of the project; (4) Leveraging Resources and Partnership; and (5) Delivering Results and Measuring Impacts.

The proposed project relies upon the proven science of using river sediment to restore wetland habitat in degraded open shallow coastal waters. With the availability of millions of cubic yards of sediment from dredging navigation channels from Texas to Florida, the project, coupled with other beneficial use projects, offers the opportunity for significant regional impacts by restoring essential habitat for diverse fish and wildlife species throughout the Gulf Coast. USACE's Mississippi River O&M Program, CWPPRA, and the LCA BUDMAT Program will be leveraged by the proposed project to produce even greater results. As with the existing ongoing efforts, the proposed project will produce measureable coastal restoration results that will be monitored and documented.

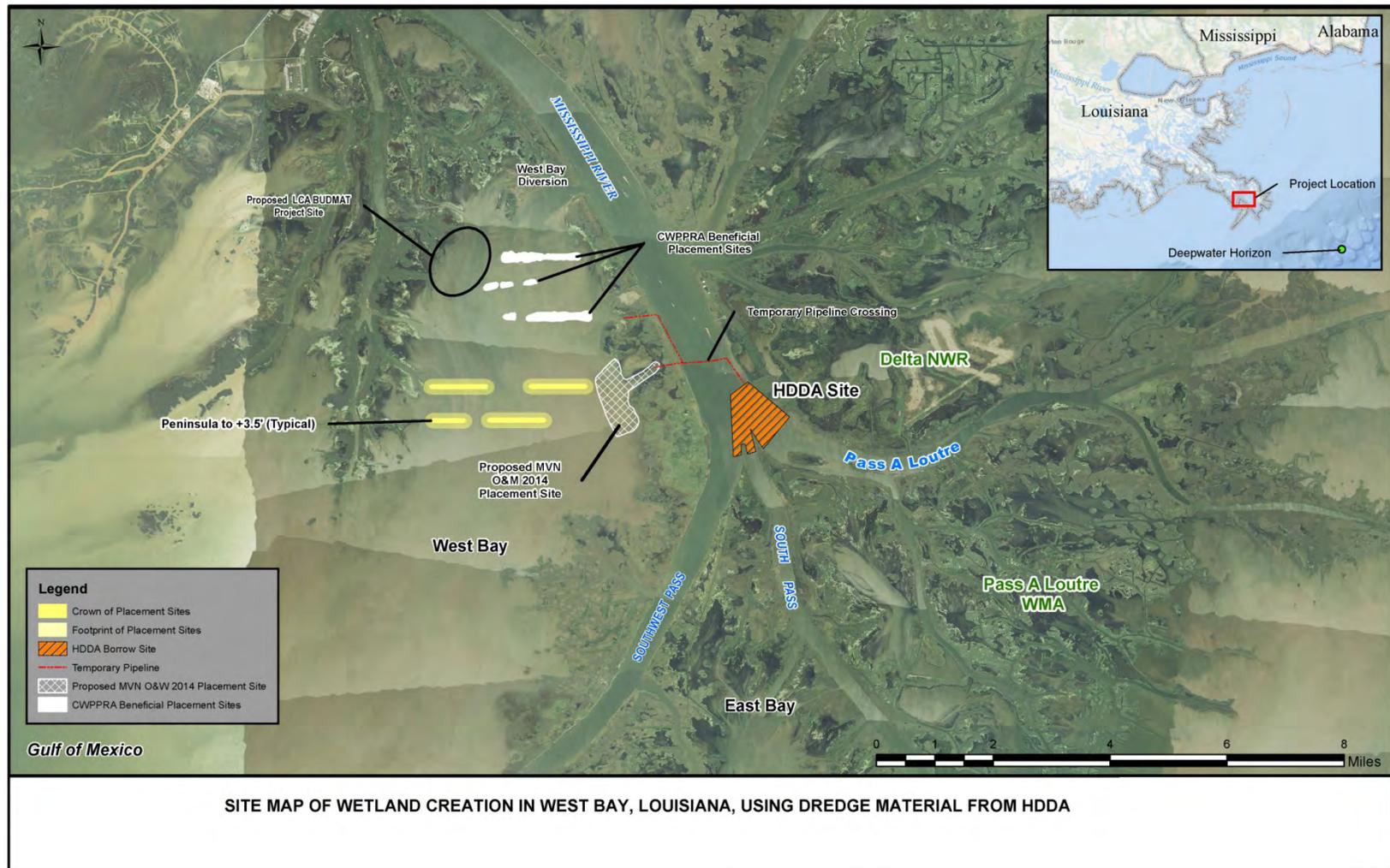
5) Benefits to the Human Community

The bird's foot delta is one of, if not the most productive fish and wildlife habitats in Louisiana, if not the nation, and has been of historical importance because of its diversity and abundance of wildlife, waterfowl, and freshwater/saltwater fish species. In recent years, the area has experienced degradation of its fresh and brackish wetlands to open shallow water as a result of sediment starvation. Restoring land mass within the area would benefit not only local sportsmen, but sportsmen from across Louisiana and beyond that are drawn to this extremely fertile habitat. The human community will also benefit from the project's contribution to multiple lines of defense and combating coastal retreat and its attendant threat to community infrastructure, as well as the benefit of the restored lands in reducing storm surges.

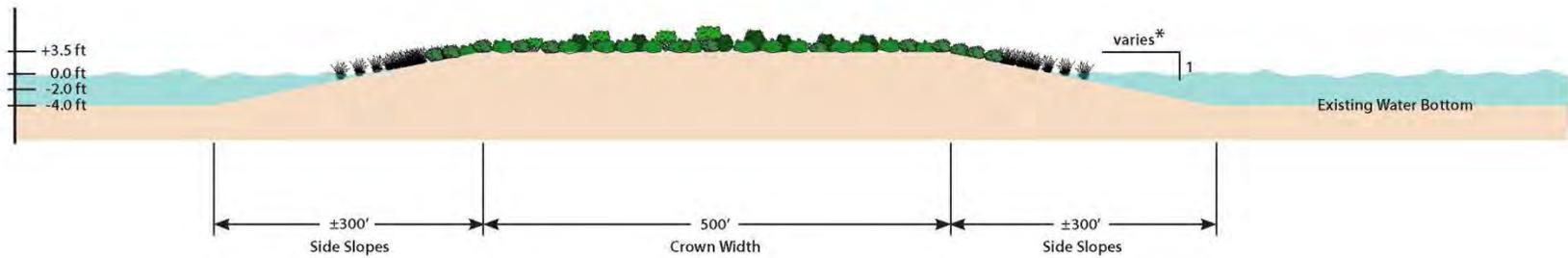
4. LOCATION INFORMATION

The HDDA is located at 29.154°N and 89.249°W, at the Head of Passes of the Mississippi River, approximately 70 miles south of New Orleans, Louisiana. West Bay is located west of the Mississippi River, across the river from the Delta NWR, in the immediate vicinity of the HDDA. Dredge material is proposed to be placed in West Bay in the vicinity of 29.167°N and 89.275°W. The West Bay Sediment Diversion, constructed under the CWPPRA Program, is located on the west bank (right descending bank) of the Mississippi River at mile 4.7 Above Head of Passes (AHP). The HDDA and the West Bay proposed placement sites are shown on Figure 2, a theoretical placement peninsula cross-section is shown in Figure 3, and an engineering drawing of the proposed project is shown in Figure 4. It should be noted that the location, size and configuration of the placement sites depicted in figures 2 and 4 are based on preliminary design. Figure 2 depicts four typical peninsulas that would be created under the recommended plan, while Figure 4 includes the all six peninsulas that could be created under the various alternatives as described in Section 5 below. Final design of the proposed project will be completed upon receipt of funding, and will incorporate consultations with the State of Louisiana and other State and Federal agencies, and will maximize the ability of the placements to capture Mississippi River sediment delivered into the bay by the West Bay Sediment Diversion. As such, final design could result in revised locations, sizes, and configurations of placement sites, which could impact the quantity of wetlands created by the project.

Figure 2. Site Map of Wetland Creation in West Bay, Louisiana, Using Dredge Material From HDDA



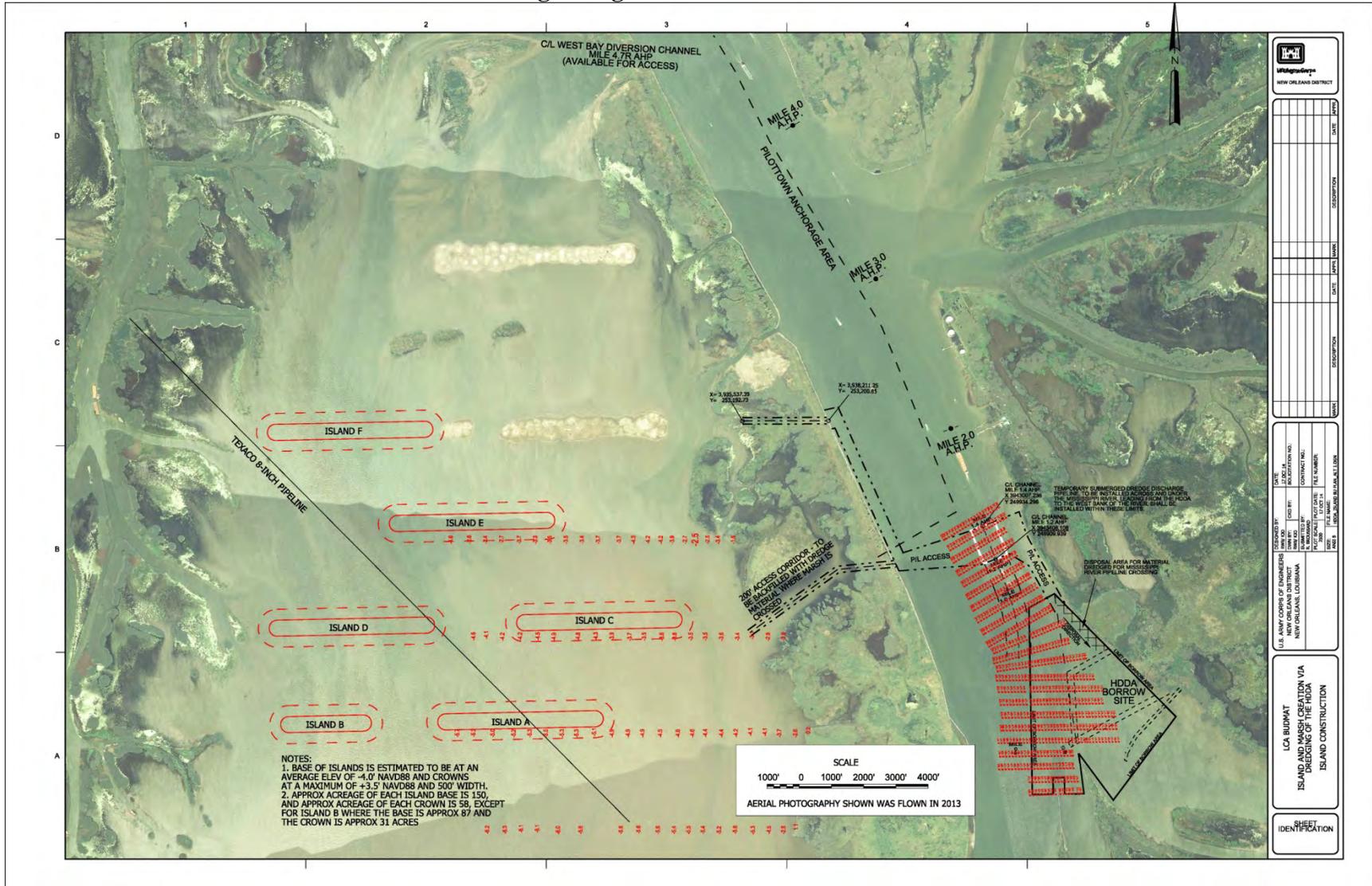
**Figure 3. Theoretical Island Cross-section of Wetland Creation in West Bay, Louisiana,
Using Dredge Material From HDDA**



**Theoretical Peninsula Cross-section
*Not To Scale***

*1V : 30H to 1V : 50H typical side slope, depending on material encountered
NAVD88 Elevation

Figure 4. Engineering Drawings of Wetland Creation in West Bay, Louisiana, Using Dredge Material From HDDA



5. HIGH LEVEL BUDGET NARRATIVE

The estimated cost of the project is \$36.5 million, including finalizing planning and design, mobilization and demobilization (mob and demob), dredging the material at the HDDA, hydraulically pumping and placing the material in the placement sites, contractor profit, contingencies, and supervision and administration. Contractor profit was included in the cost estimate as 10 percent of the total estimated cost of activities to be advertized for competitive bid. Contingency costs are estimated at 25 percent of construction costs, to account for potential variation in fuel costs, final design, differences between the government cost estimate and actual contractor bid prices, and other unforeseen variation. This cost estimate assumes the placement of approximately 5.7 mcy, resulting in the restoration/creation of approximately 400 acres of wetlands, at an average cost of \$93,000 per acre (see Table 1). It should be noted that the quantity of material placed and the resulting acres of wetlands created/restored could be altered to reflect available funding. For instance, the overall costs could be reduced to as low as \$23.5 million if the quantity of material placed was reduced to 3.2 mcy; however, under this scenario only 220 acres of wetlands would be created, at an average cost of nearly \$106,000 per acre. Table 2 presents the quantity of wetlands restored, total cost, cost per acre restored, quantity of material placed, and average cost per cubic yard to place the material for five alternative placement scenarios, ranging from placing 3.2 mcy to 9 mcy.

The costs of the various alternatives, as presented in Table 2, are the estimated funds required to construct the entire project, assuming the implementation of the project would not be able to be synchronized with other proposed projects in West Bay or with MVN O&M dredging activities on the Mississippi River. The total cost of the proposed project could be reduced and/or the quantity of wetlands created could be increased if the timing of the implementation of the proposed project would allow leveraging with other projects in dredge material placement in West Bay or with MVN O&M navigation dredging activities.

Past MVN experiences of creating wetlands in the bird's foot delta and West Bay, under the same implementation techniques, has resulted in the areas naturally vegetating within one year of placement activities through colonization of species from adjacent vegetated areas. Natural vegetation is expected to occur at the proposed placement sites. The species expected to naturally vegetate at the sites include common reed, rattlebox, black willow, eastern baccharis, and wax myrtle on somewhat higher elevations. The most common species to colonize the lower elevations are cattail, bulltongue, maidencane, common threesquare bulrush, alligatorweed, elephant ear, giant cutgrass, California bulrush, marsh hay cordgrass, delta duck potato, and various sedges. Submerged aquatic vegetation naturally colonizes the shallow water areas around the disposal areas. Common species include coontail, parrotfeather, and water milfoil. As a result, no vegetative planting efforts and/or costs are included in this cost estimate.

Table 1. Preliminary Cost Estimate for Wetland Creation in West Bay, Louisiana, Using Dredge Material From HDDA (Placement of Approximately 5.7 mcy of Material)

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Cost
0001	Planning, Engineering and Design	1	Job	\$2,000,000	\$2,000,000
0002	Mobilization and Demobilization	1	Job	\$2,725,000	\$2,725,000
0003	Laying and Removing Pipeline Across River	1	Job	\$1,425,000	\$1,425,000
0004	Dredging HDDA and Placement at West Bay Site	5,700,000	CYS	\$3.85	\$21,945,000
0005	Bird Nesting Avoidance	90	Days	\$1,600	\$144,000
0006	Supervision and Administration	1	Job	\$1,000,000	\$1,000,000
0007	Contingencies (25 Percent)	1	LS	\$7,310,000	\$7,310,000
	TOTAL PROJECT COST				\$36,549,000

Table 2. Summary of Costs and Benefits Placing Alternative Quantities of Material for Wetland Creation in West Bay, Louisiana, Using Dredge Material From HDDA

Alternative No.	Emergent Wetlands Created (Acres)	Total Cost (\$ Million)	Average Cost Per Acre (\$)	Dredge Material Placed (Cubic Yards)	Cost Per Cubic Yard of Material Placed (\$)
1	222	\$23,518,000	\$105,929	3,200,000	\$7.35
2	282	\$27,805,000	\$98,599	4,000,000	\$6.95
3	393	\$36,549,000	\$93,000	5,700,000	\$6.41
4	504	\$44,658,000	\$88,607	7,300,000	\$6.12
5	615	\$54,686,000	\$88,920	9,000,000	\$6.08

6. GULF COAST ECOSYSTEM RESTORATION COUNCIL ENVIRONMENTAL COMPLIANCE CHECKLIST

<u>Environmental Compliance Type</u>	Yes	No	Applied For	N/A
Federal				
National Marine Sanctuaries Act (NMSA)				X
Coastal Zone Management Act (CZMA)	X			
Fish and Wildlife Coordination Act	X			
Farmland Protection Policy Act (FPPA)	X			
NEPA – Categorical Exclusion				X
NEPA – Environmental Assessment	X			
NEPA – Environmental Impact Statement	X			
Clean Water Act – 404 – Individual Permit (USACOE)				X
Clean Water Act – 404 – General Permit(USACOE)				X
Clean Water Act – 404 – Letters of Permission(USACOE)				X
Clean Water Act – 401 – WQ certification	X			
Clean Water Act – 402 – NPDES				X
Rivers and Harbors Act – Section 10 (USACOE)	X			
Endangered Species Act – Section 7 – Informal and Formal Consultation (NMFS, USFWS)	X			
Endangered Species Act – Section 7 - Biological Assessment (BOEM,USACOE)	X			
Endangered Species Act – Section 7 – Biological Opinion (NMFS, USFWS)	X			
Endangered Species Act – Section 7 – Permit for Take (NMFS, USFWS)	X			
Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) – Consultation (NMFS)	X			
Marine Mammal Protection Act – Incidental Take Permit (106) (NMFS, USFWS)				X
Migratory Bird Treaty Act (USFWS)	X			
Bald and Golden Eagle Protection Act – Consultation and Planning (USFWS)	X			
Marine Protection, Research and Sanctuaries Act – Section 103 permit (NMFS)				X
BOEM Outer Continental Shelf Lands Act – Section 8 OCS Lands Sand Permit				X
NHPA Section 106 – Consultation and Planning ACHP, SHPO(s), and/or THPO(s)	X			
NHPA Section 106 – Memorandum of Agreement/Programmatic Agreement				X
Tribal Consultation (Government to Government)	X			
Coastal Barriers Resource Act – CBRS (Consultation)				X
State				
As Applicable per State	X			

7. DATA/INFORMATION SHARING PLAN

Upon completion of construction activities, placement sites will be surveyed, and as-built engineering drawings will be developed, to determine the quantity of emergent wetlands restored by the project. In addition, the placement sites will be monitored annually as part of the USACE's Beneficial Use Monitoring Program (BUMP) aerial photography effort. The BUMP Program consists of using color infrared digital aerial photography that are produced as Orthophotos for use in the USACE's GIS programs, which are used to identify any change in land area at USACE beneficial use placement sites. All as-built drawings and BUMP aerial photography will be made available to the public.

8. REFERENCE LIST OF LITERATURE CITED IN THE PROPOSAL

- Boyer, Mark E., James O. Harris, and R. Eugene Turner. 1997. "Constructed Crevasses and Land Gain in the Mississippi River Delta." *Restoration Ecology* 5(1): 85-92.
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- U.S. Fish and Wildlife Service. 2011. *2011 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. With U.S. Department of Commerce, Bureau of the Census. FHW/11-NAT (RV) Revised February 2014.

9. OTHER

A. Gulfwide Beneficial Use of Dredge Material - Overview

B. New Orleans District Beneficial Use Program Slides

C. USGS Louisiana Coastal Land Loss Map

D. Letters of Support

E. Environmental Compliance (Applicable FONSI)

A. GULFWIDE BENEFICIAL USE OF DREDGED MATERIAL

Overview

During the last three decades of the 20th century, the standard perception was that dredged material was "spoil" or waste material that had no value or needed to be handled as a pollutant. However, as we move into the beginning of the 21st century, issues such as sea level rise, subsidence, loss of habitat, development, and pervasive storm damage in coastal areas has changed that perception. Most coastal managers now recognize that dredged material is frequently uncontaminated, and should be used as a resource to compensate for coastal erosion, to nourish beaches, to build habitat, and to return areas that have subsided below sea level back to an elevation within the tidal range. Even with this change in the way dredged material is valued, challenges remain. For example:

- Dredged material comes in various types from rock to fine grained silts and clays to 'fluff' or 'fluid mud'. Beneficial use of each requires different engineering approaches resulting in wide differences in cost;
- The location of the dredging or dredged material stockpile may not be in a location where there is a need for beneficial use;
- The timing of the dredging requirement is out of sync with the availability of a beneficial use site; or
- Project specific funding and/or overall funding may limit the range and/or extent of beneficial use.

While the function or value of individual beneficial use projects may be only local in scope, for instance, a new wetland area may help protect a particular stretch of levee around a small community, restore a section of critically eroded beach, or provide habitat for a specific population of estuarine organisms, cumulatively, multiple beneficial use projects across a wide geographic area could significantly offset coastal wetland loss, provide nursery areas or other habitats for important commercial species or species of concern such as sea turtles and neotropical migrants and minimize salt water intrusion by reestablishing estuarine boundaries through construction of spits and barrier islands.

The northern coast of the Gulf of Mexico is an ideal location to augment existing beneficial use efforts that are based only on individual projects and elevate them to a programmatic effort. The need and feasibility of a programmatic beneficial use program in the northern Gulf is due to the natural and man-made stresses on the coastal environment experienced in the recent decade, resulting in considerable habitat and wetland loss with subsequent impact on marine and coastal resources, and increase in water quality issues, which may be offset by the proximity of many authorized Federal navigation channels that are dredged on a regular basis as well as local or privately maintained channels, thus providing substantial quantities of materials for use.

Current Conditions in the Gulf of Mexico

The coastal region of the northern Gulf of Mexico owes its current landscape structure to an array of tectonic, erosional and depositional, climatic, geochemical, hydrological, ecological, and human processes that have resulted in some of the world's most complex, dynamic, productive, and threatened ecosystems (Brock et al. 2013). These ecosystems and the resources they support are vulnerable to man-made and natural events such as development, catastrophic hurricane landfalls, ongoing subsidence and erosion exacerbated by sea-level rise, disintegration of barrier island chains, and high rates of wetland loss. Improving the resiliency of these ecosystems is a critical component of restoring the Gulf of Mexico as a whole.

Following the Deepwater Horizon oil spill, an assessment of the most pressing challenges facing the Gulf of Mexico ecosystem described the following (Mabus 2010):

- *Loss of wetland habitats, including coastal marshes, forested wetlands, barrier islands, and coastal shorelines that form the Mississippi River Delta and Chenier Plains.* While an issue in every Gulf state, the loss of coastal habitat has been most dramatically illustrated in Louisiana and highlights the need to maintain freshwater and sediment flows to the Gulf of Mexico. Since the 1930s, the coast of Louisiana has lost nearly 2,000 square miles (approximately 25 square miles per year) of wetlands. Causes of this loss include a combination of erosion, storm damage, land subsidence, alterations to natural freshwater and sediment flow from the Mississippi River, dredging of canals for oil and gas exploration and pipeline installation activity. Climate change (including the impacts of inundation and sea-level rise) threatens to accelerate the loss of these habitats.
- *Erosion of barrier islands and shorelines throughout the Gulf Coast.* From Florida to Texas, continued erosion of the coastal barrier island system undermines storm protection for coastal communities, threatens the beaches that support the local tourism economy, and affects numerous species that rely on these barrier islands for habitat (e.g., Kemp's Ridley and loggerhead sea turtles, numerous shorebirds and the Alabama beach mouse).
- *Loss and degradation of coastal estuarine habitat.* The estuaries and coastal systems of the Gulf Coast—such as Mobile Bay, Apalachicola Bay, Galveston Bay, Tampa Bay, Florida Bay, the Mississippi Sound, Barataria Bay and others—provide the nursery habitat for most of the fishery resources in the Gulf and support a nationally important oyster industry. These estuaries are impacted by a variety of stressors, including pollution, coastal development, energy development, erosion, hydrological alteration, changes in freshwater inflow, structural marsh management and overfishing.
- *Imperiled fisheries.* Several of the major commercially and recreationally important finfish species are currently experiencing pressures from overfishing or have been overfished. In some cases, these conditions have persisted for many years. Additionally, contaminants such as methylmercury in fishes, and red tide organisms and human pathogens in shellfish, reduce fishery values and endanger human health.

- *Hypoxia (low oxygen) in the Gulf of Mexico.* Hypoxia occurs where the concentration of dissolved oxygen in the water column decreases to a level that reduces the quality of habitat, resulting in death or migration away from the hypoxic zone. The northern Gulf of Mexico adjacent to the Mississippi River is the site of the largest hypoxic zone in the United States and the second largest hypoxic zone worldwide. This Gulf of Mexico “Dead Zone” is caused by input of excess nutrient pollution to the Gulf most of which comes from upstream through Mississippi River drainage.
- *Climate change.* Our changing climate is already altering, perhaps irreversibly, the physical, chemical and biological characteristics of our oceans, coasts and adjacent watersheds. Increasing air and water temperatures, changing precipitation patterns, rising sea level, and ocean acidification will increasingly confound efforts to restore or sustain system states.

Sediment, delivered by the Gulf river systems, built much of the Gulf Coast and continues to be essential to the health of the Gulf ecosystem. The utilization of dredged materials can offset some of the challenges listed in the Mabus report above, specifically those associated with erosion of barrier islands, loss of habitat and relative sea level rise mitigation. Accordingly, the Gulf Coast Ecosystem Restoration Task Force proposed a sediment management approach to address land loss through sustainable resource management and land building and restoration. The 2011 Gulf of Mexico Regional Ecosystem Restoration Strategy (GCERTF 2011) recommended 3 actions, two of which are related to dredged material:

- Maximize beneficial use of navigational dredged material, where practicable and ecologically acceptable, for effective and sustainable habitat restoration.
- Increase dedicated dredging of river and other sediment sources, such as permitted offshore sediment shoals, for use in habitat restoration projects.

Beneficial Use

Beneficial use is defined as the productive use of material produced during the authorized maintenance dredging of navigation channels. Dedicated dredging on the other hand while having the same purpose does not have the same required link with authorized navigation dredging. Selection of a beneficial use methodology is governed by the Federal Standard which is defined as the disposal alternative(s) identified by the USACE and its partners which represents the least costly alternative consistent with and meeting the environmental standards established by the 404(b)(1) evaluation process or ocean dumping criteria. Many states believe that the Federal Standard impede the beneficial use of dredged material, however, opportunity exists for a non-federal sponsor to pay the incremental cost between the Federal Standard established for the project and the actual cost of the beneficial use project.

Estimating cubic yards required to create BU acreage depends, among other things, on the placement site conditions (i.e., substrate, water depth, etc.), dredged material characteristics, and the use/non-use of containment. Applying one site's results to another site for predictive purposes is difficult and not entirely reliable. However, a reasonable estimate in a location such as coastal Louisiana is that 1 million cubic yards of material can create approximately 100 acres of wetland when using unconfined placement and between 150 and 200 acres for confined placement.

USACE activities in the Gulf of Mexico

Combined, the four USACE Districts covering the Gulf of Mexico (Galveston, New Orleans, Mobile, and Jacksonville) dredge approximately 123 million cubic yards from coastal Federal navigation projects on an annual basis¹. Approximately 22 million cubic yards of this material is used beneficially as the least cost placement option or when a local sponsor is able to contribute funds to cover the incremental of the more costly beneficial use option. Details of the USACE dredging program are provided in the table below.

District	State	Annual Quantity	% Sand	% Fines	Current BU
Galveston	Texas	20 – 30 mcy	2.8%	97.2%	15 – 20% (3-4.5) mcy
New Orleans	Louisiana	41 mcy*			39% (16 mcy)
Mobile	Mississippi	8.5 mcy	2.9%	97.1%	3.2% ² (270 kcy)
Mobile	Alabama	6.5 mcy	3.8%	96.2%	19% ² (1.25 mcy)
Mobile	Florida panhandle	700,000 cy	70%	30%	50% (350 kcy)
Jacksonville	Florida	875,000 cy	28.1%	62.9%	37% ² (325 kcy)

¹Louisiana dredging totals approximately 78 mcy annually, however 37mcy is determined unsuitable for coastal restoration because it is fluff or the dredging location is remote from the coast.

²All sandy material is beneficially used

In addition, several Federal inland river navigation systems dredge sediments that could be suitable material for coastal restoration and place this material on ‘upland’ disposal areas. For example, approximately 18 million cubic yards (mcy) is present in existing disposal areas along the Black Warrior – Tombigbee Waterway below the first dam. This material is predominately coarse grained sand and some of the areas have a high percentage of gravel which would make excellent containment features or be suitable to establish substrate suitable for oyster reef establishment.

The USACE has an established track record in the area of beneficial use. For instance, MVN is responsible for the largest Federal channel maintenance dredging program in the nation. On average, MVN annually dredges approximately 78 mcy of material during routine maintenance of federally authorized navigation channels, of which approximately 41 mcy is currently suitable for beneficial use. The remainder of material is either dredged from remote locations that are too distant from beneficial placement sites to be economically used, or the material is physically unsuitable for beneficial use.

Of the 41 mcy of material available for beneficial placement, approximately 16 mcy, or nearly 40 percent, is used beneficially by existing MVN programs. Since 1976, MVN has beneficially used dredged material to create over 48 square miles (31,693 acres) of coastal habitat, including nearly 15,600 acres using material from the LMR. These beneficial use projects not only benefit the ecosystem by restoring habitat diversity to its historical marsh-ridge-open water configuration, which benefits commercial and recreational significant finfish, wildlife and water fowl species, but also abates saltwater intrusion into historically freshwater and brackish wetlands. Beneficial use projects may also promote community resilience by preventing further coastal retreat, dampen storm surges, and reduce storm damages providing economic and social benefits to the region.

Within the boundaries of the Mobile District, use of dredged material as a resource began in 1979 with the creation of Gaillard Island in Mobile Bay. Today this 1300 acre island serves as an active disposal area while at the same time serving as a nesting haven for shore and seabirds. In 1983 four brown pelicans were noted nesting on the island which was the first sighting in Alabama since their decline due to hunting and use of DDR. Recent surveys have estimated over 80,000 nesting pairs of birds utilizing the island. More recently dredge material was used beneficially in the restoration of Deer Island off the coast of Biloxi, MS and will be used over the next 20 years to establish a 400 acre wetland adjacent to Singing River Island in Pascagoula, MS.

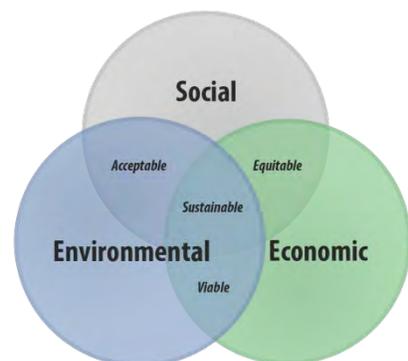
Beneficial use of dredged material builds on the foundation of Working with Nature and Engineering with Nature principles as discussed in the Deer Island Aquatic Ecosystem Restoration Project report (Gerhardt-Smith, et al. 2014).

- Use science and engineering to produce operational efficiencies supporting sustainable infrastructure.
- Use natural processes to maximum benefit, thereby reducing demands on limited resources and enhancing the quality of project benefits.
- Broaden and extend the base of benefits provided by projects to include substantiated economic, social, and environmental benefits (“triple-win” benefits).
- Use science-based collaborative processes to organize and focus interests, stakeholders, and partners to reduce social friction, resistance, and project delays while producing more broadly acceptable projects.

Navigation in the Gulf Coast region will continue to require dredging, and the implementation of projects that use dredge material to restore coastal habitats will provide a cornerstone for coastal ecosystem restoration in the Gulf region. Sediment delivered by the many rivers draining into the Gulf is essential to the health of the Gulf Coast ecosystem. One component of a strategic approach to sediment management is maximizing the beneficial use of dredge material, where ecologically acceptable, for effective and sustainable habitat restoration.

While not all dredge material may be the right consistency or composition to be used beneficially for ecosystem restoration, some sediment that is available is currently being underutilized for effective beneficial use in ecosystem restoration. By beneficially utilizing dredge material to create coastal wetlands, the project will restore habitat.

As mentioned earlier in this Introductory Summary, The northern coast of the Gulf of Mexico is an ideal location to augment existing beneficial use efforts that are based only on individual projects and elevate them to a programmatic effort. The project in this proposal, along with others submitted separately for inclusion in the RESTORE Funded Priority List is intended as a first step and a foundational element toward restoring the value of the Gulf of Mexico to the Nation and the World.



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Gerhardt-Smith, J., J. MacDonald, S. Rees, and N. Lovelace. 2014. Deer Island Aquatic Ecosystem Restoration Project. ERDC-TN-EWN-TBD. Engineering Research Development Center, Vicksburg, MS

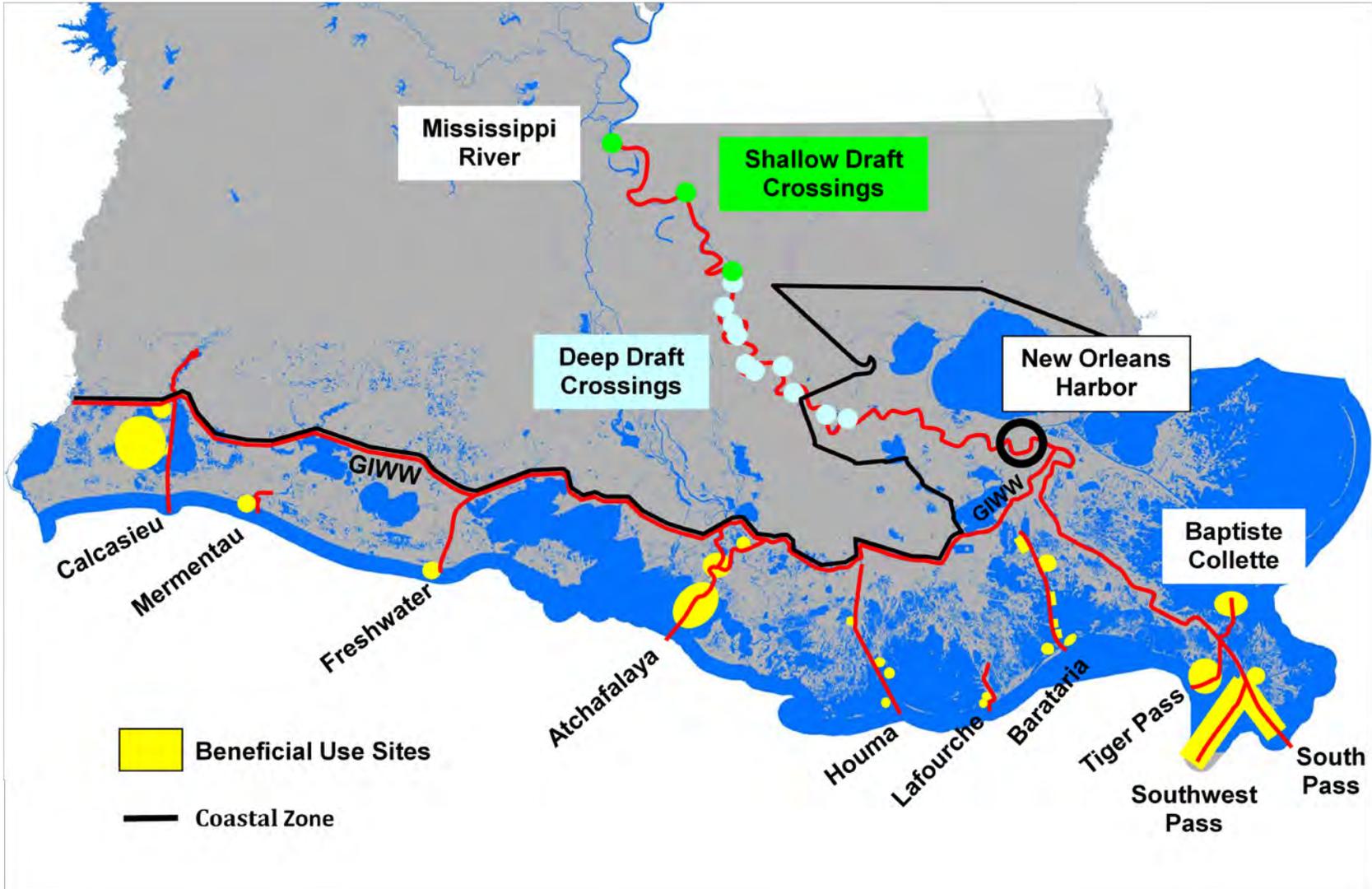
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B. NEW ORLEANS DISTRICT BENEFICIAL USE PROGRAM SLIDES



Louisiana Coast Beneficial Use Placement

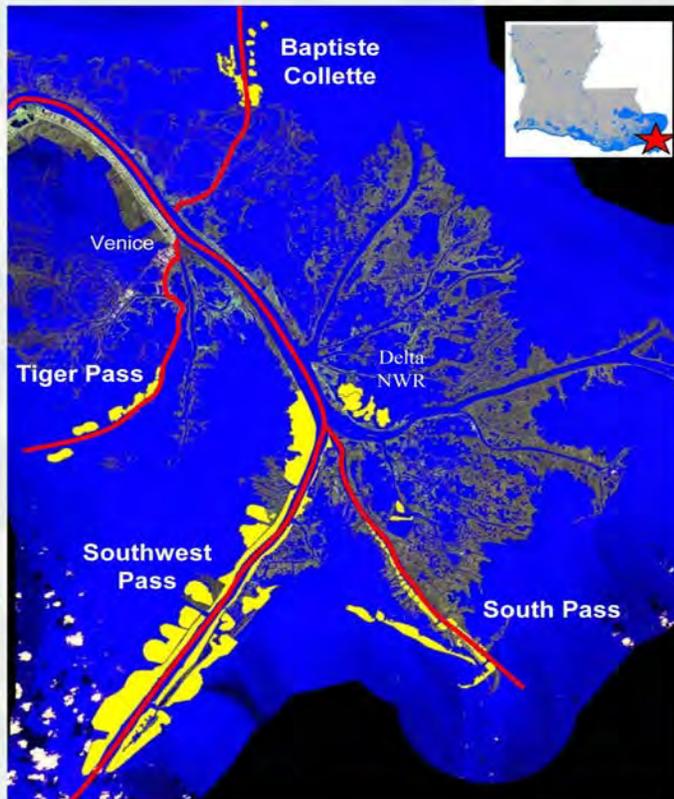


Total Cumulative Acres Created (1976-2013)
31,693 Acres
 (~ 48 Square Miles of land)

- Beneficial Use Placement
- Federal Authorized Navigation Channels

Jacob 5-2-14

Beneficial Use of Dredged Material



Lower Mississippi River

Coastal Habitat Acres Created

Southwest Pass – 13,370 Acres

South Pass – 990 Acres

Tiger Pass – 588 Acres

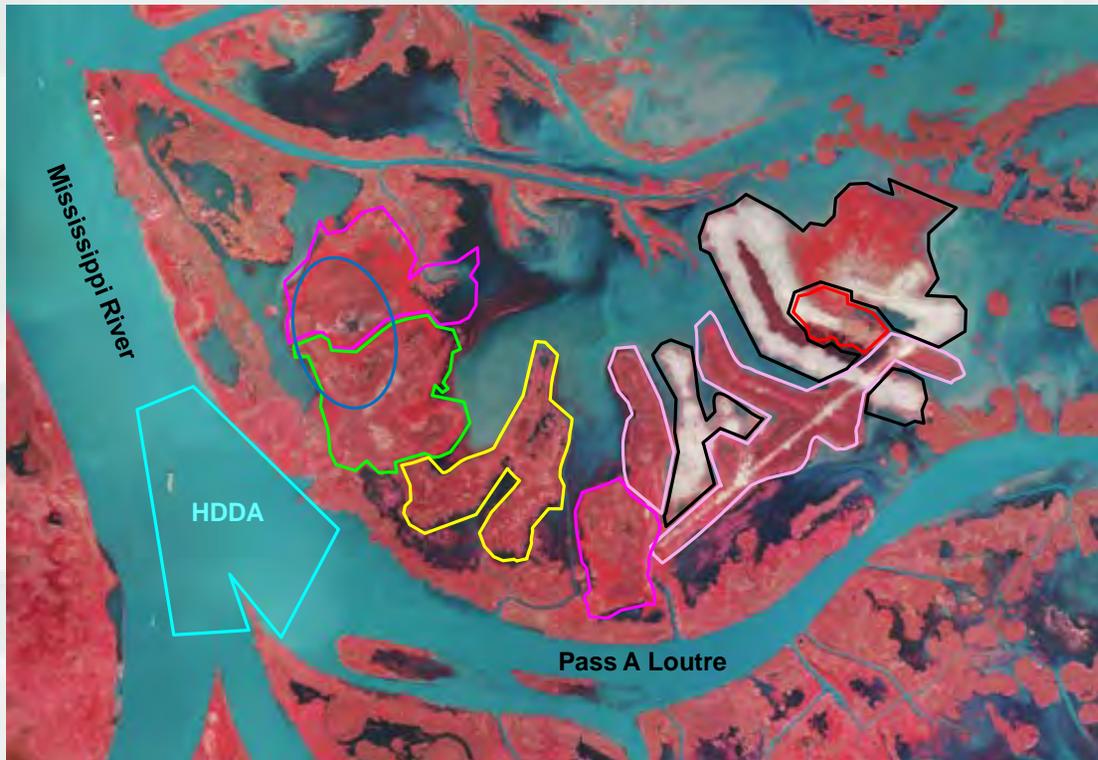
Baptiste Collette – 1318 Acres

— Navigation Channels

■ Beneficial Use Sites



Beneficial Use of Dredged Material HDDA Dredging - Delta National Wildlife Refuge Placement

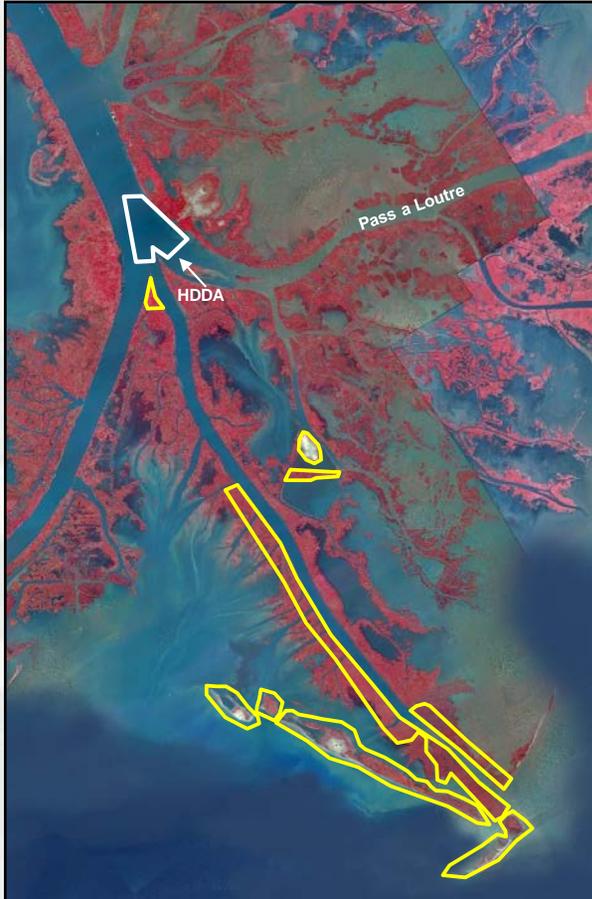


FY 98 – 197 Acres
FY 04 – 274 Acres
FY 07 – 340 Acres
FY 08 – 388 Acres
FY 10 – 466 Acres
FY 11 – 70 Acres
FY 13 – 865 Acres

**Total Acres
Created 2,600**



BUILDING STRONG®



Beneficial Use of Dredged Material

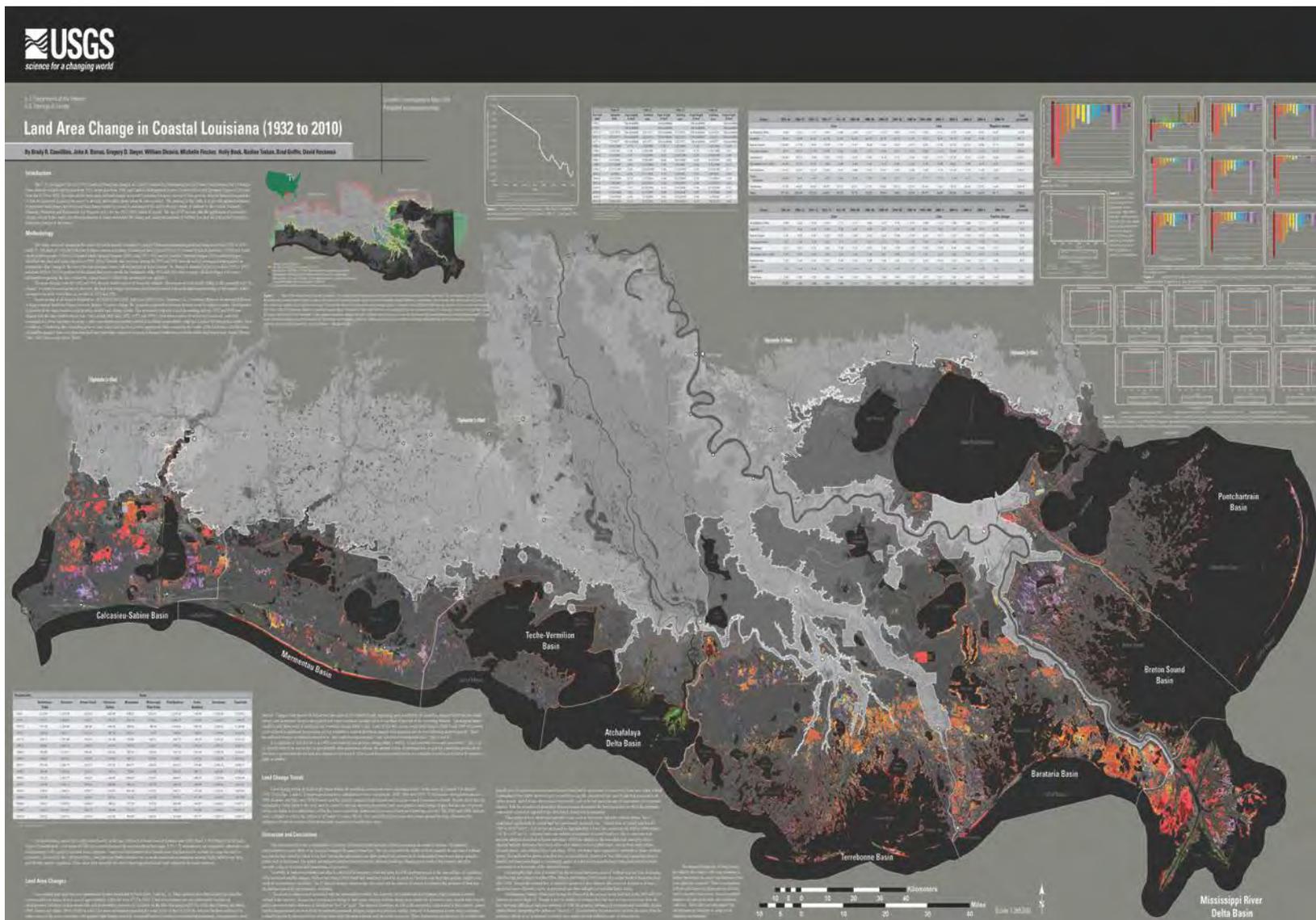
Mississippi River South Pass

990 Acres



BUILDING STRONG®

C. USGS LOUISIANA COASTAL LAND LOSS MAP



D. LETTERS OF SUPPORT



State of Louisiana

BOBBY JINDAL
GOVERNOR

October 31, 2014

Mark Wingate, P.E.
Chief, Projects and Restoration Branch
United States Army Corps of Engineers
New Orleans District
7400 Leake Avenue
New Orleans, LA 70118

RE: RESTORE HDDA to West Bay Proposal Letter of Support

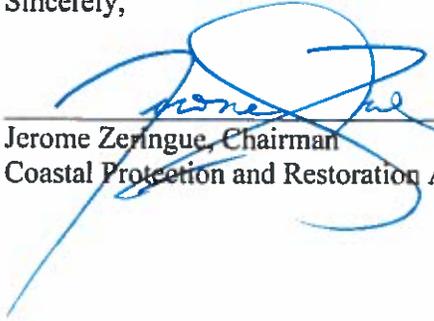
Dear Mark:

Louisiana was already in the midst of a land loss crisis when the Deepwater Horizon Spill occurred further increasing the critical need for projects to restore our damaged and disappearing coastline. Louisiana was impacted most by the Deepwater Horizon Spill experiencing more miles of oiled shoreline and more significant ecological impact than anywhere else in the Gulf.

As such, the urgent call for significant projects to restore Louisiana's ecosystem and coast confronts us today in order to protect the invaluable natural resources, ecology, storm surge protection and unique culture of Louisiana. Louisiana supports projects that achieve our restoration goals and are complementary to or consistent with our Master Plan.

Therefore, Louisiana supports the United States Army Corps of Engineers HDDA to West Bay project proposal for consideration under the Comprehensive Plan Component of the RESTORE Act. We appreciate your efforts in drafting this proposal and thank you for consulting with us on your objectives along the way.

Sincerely,



Jerome Zeringue, Chairman
Coastal Protection and Restoration Authority of Louisiana

Plaquemines Parish Government

BILLY NUNGESSER
Parish President

8056 Hwy. 23, Suite 200
Belle Chasse, LA 70037

(504) 392-6690
(504) 274-2462
1-888-784-5387
Fax: (504) 274-2463

September 24, 2014

Colonel Richard L. Hansen
District Commander
P. O. Box 60267
New Orleans, la 70160

Colonel Hansen:

Plaquemines Parish has loss about 25 percent of its land area due to unrelenting subsidence and erosion caused by numerous natural processes and man-made interventions. The Parish has developed a Comprehensive Coastal Restoration Plan to reduce land loss and reduce storm surge and waves. Our plan complements the state of Louisiana 2012 Coastal Master Plan.

I understand that the New Orleans District is preparing proposals for consideration by the Assistant Secretary of the Army (Civil Works) to be submitted to the RESTORE Council for funding as Council-selected restoration component projects. I further understand that the proposals address the need for comprehensive beneficial use of dredge material on the Lower Mississippi River. Plaquemines Parish fully supports these proposals and any future Corps of Engineers efforts secure RESTORE Council funding for the beneficial use of dredge material on the Lower Mississippi River. Using dredged material from the Mississippi River to build wetlands and vegetative ridges is an integral part of our Plan and the state of Louisiana Master Plan. The proposals if funded would make a significant contribution to combating land loss in Plaquemines Parish and South Louisiana and advancing the implementation of the Plaquemines Parish Coastal Restoration Plan. I strongly encourage the Corps of Engineers to advance these proposals for RESTORE Council consideration.

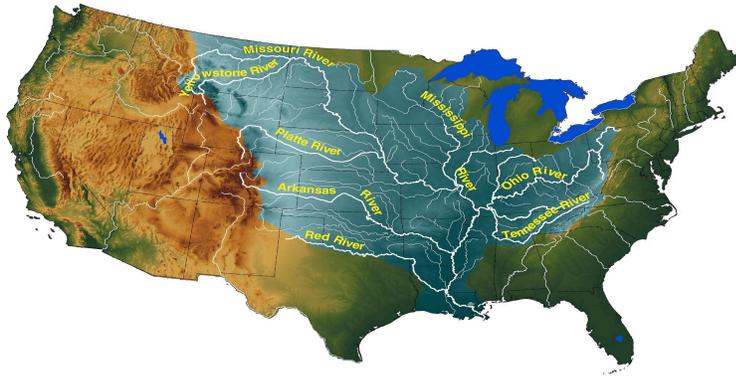
If you need any assistance with facilitating the proposals acceptance, please let me know.

Respectfully,



William "Billy" Nungesser
Plaquemines Parish President

BIG RIVER COALITION



Sean M. Duffy, Sr.
Executive Director
4741 Utica Street, Suite 200
Metairie, LA 70006

Office (504) 833-4190 x 805
Cellular (504) 338-3165
sean.duffy@bigrivercoalition.org

November 6, 2014

Colonel Richard L. Hansen
District Commander
United States Army Corps of Engineers
New Orleans, District
P.O. Box 60267
New Orleans, LA 70160

RE: RESTORE Council Hopper Dredge Disposal Area to West Bay Project

Dear Colonel Hansen,

The purpose of this letter is to indicate our support for wetland creation in West Bay, Louisiana, using dredge material from the Mississippi River Hopper Dredge Disposal Area, as proposed for consideration for funding by the RESTORE Council. The Big River Coalition (BRC) was created in Fiscal Year 2011 in response to the announcement by the Commander of the United States Army Corps of Engineers' (USACE) Mississippi Valley Division (MVD) confirming the discontinuation of reprogramming funds to maintain the Lower Mississippi River (LMR) navigation channel. This position change immediately meant the Mississippi River's navigation channel would no longer receive preferential treatment. Shortly after the 1989 grounding of the M/V MARSHAL KONYEV (Pilottown) that, in essence, closed the navigation channel to all ship traffic, the USACE's Headquarters announced in a position statement that it would maintain the nation's most critical navigation channel. The BRC's original focus was to obtain additional funding to supplement the shortfall in the Corps' Mississippi River Operations and Maintenance budget, to strive to establish a legislative firewall around the Harbor Maintenance Trust Fund (HMTF), and to represent members of the Mississippi River navigation industry in matters related to coastal restoration. As the Coalition grew and continued to make effective progress on these initiatives, members requested that the Coalition lead the charge to deepen the LMR navigation channel to 50 feet.

BIG RIVER COALITION

The BRC enthusiastically offers our support for the proposed RESTORE Council project titled:

“Wetland Creation in West Bay, Louisiana, Using Dredge Material From the Mississippi River Hopper Dredge Disposal Area”

The BRC partnered with the MVN to begin creating wetlands by utilizing the beneficial use of dredged material in the area of Southwest Pass (SWP) in 2009. The Coalition has coined the term “sediment recycling” to describe these beneficial use type projects and programs. This effort required a fundamental change that reintroduced cutterhead dredges as a viable option for the channel maintenance of Southwest Pass. The substitution of a cutterhead dredge(s) for a hopper dredge required increased coordination between the navigation and dredging industries with the MVN. In the inaugural year the sediment recycling along the immediate area of SWP represented the creation of the equivalent of 280 acres of land. In 2014 two cutterhead dredge contracts were used to maintain the SWP navigation channel while also increasing the amount of acreage created. History indicates that it has been over 30 years since two cutterhead dredges were used to maintain the channel in Southwest Pass. The projections for the acreage created in 2014, when including a third cutterhead contract to mine the Hopper Dredge Disposal Area at Pass a Loutre, is estimated to be 1,500 acres.

The advantages of the additional acreage in this environmentally sensitive area of South Louisiana offers multiple system improvements, these include many direct benefits to wildlife and nesting birds, exemplary advantages for increased recreational pursuits through critical habitat improvement – including conversion from open-water to wetlands. The project also demonstrates that land can be built through proper sediment recycling of dredged material. Although, perhaps the predominant advantage to the navigation industry is the buffer the additional landmass provides to protect the Mississippi River deep-draft channel from the impacts of storm surges and coastal land loss.

The Coalition appreciates that the proposed beneficial use of dredged material from the Hopper Dredge Disposal Area with sediment redistribution into the West Bay receiving area will restore approximately 400 acres of emergent wetlands in the environmentally sensitive bird’s foot delta of the LMR. The project intends to remove nearly 6 million cubic yards of sediment material from the Hopper Dredge Disposal Area at Pass a Loutre. The project proposes the designed placement of the recycled sediment load in locations engineered to streamline and increase the facilitation of new deposition from the flow of the operational West Bay Sediment Diversion channel. This proposed project is designed specifically to create 400 acres of marsh that would also offer the secondary benefit of capturing increased sediment from the West Bay Diversion project. The placement areas would be constructed in differing terraced elevations that would promote increased reduction of future storm surges.

BIG RIVER COALITION

The BRC believes strongly that the proposed project will serve to protect and enhance the most important and financially significant navigation channel in the United States. The proposed dredging project would serve to promote the 500 million tons of cargoes that move through the Gulf of Mexico and the 31 states connected by the Mississippi River and Tributaries.

The Big River Coalition is committed to protecting maritime commerce across the Mississippi River and Tributaries (MRT). The Coalition focuses on maximizing transportation efficiencies on the deep-draft ship channel from Baton Rouge to the Gulf of Mexico. As concerns grow about the future management of the Mississippi River system, and efforts are increased to help reduce or prevent adverse impacts related to flood protection, protecting water supplies, recreational boating, fishing, invasive species, coastal restoration, and minimizing the negative impacts of runoff and pollutants, it is critical to the nation's economy that navigation be properly protected. The best economic estimates available indicate that the MRT has over a \$200 billion annual impact on the economy of the United States. Therefore, as visions of the future of the MRT are shaped, it is imperative that navigation representatives strive to ensure that systematic approaches protect maritime trade by maintaining fully authorized channel dimensions while also updating and maintaining our navigation infrastructure.

Sincerely,

Sean M. Duffy, Sr.

Sean M. Duffy, Sr.
Executive Director
Big River Coalition

CC: Mr. Jerome Zeringue
Mr. Mark Wingate

E. ENVIRONMENTAL COMPLIANCE (Applicable FONSI)



REPLY TO
ATTENTION OF:

Regional Planning and
Environment Division South
Environmental Compliance Branch

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P. O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

MISSISSIPPI RIVER, BATON ROUGE TO THE GULF OF MEXICO, LOUISIANA,
DESIGNATION OF ADDITIONAL DISPOSAL AREAS FOR
HEAD OF PASSES, SOUTHWEST PASS, AND SOUTH PASS

PLAQUEMINES PARISH, LOUISIANA

Environmental Assessment (EA) #517

Description of Proposed Action. The U.S. Army Corps of Engineers (USACE), New Orleans District (MVN), proposes to designate additional disposal areas for the placement and beneficial use of dredged material removed during maintenance dredging of the mainstem Mississippi River, Southwest Pass, South Pass, and the hopper dredge disposal area (HDDA) located at the heads of Pass a Loutre and South Pass in the Federally-maintained Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana project. The proposed disposal areas are located in Plaquemines Parish in southeastern Louisiana in the active delta of the Mississippi River. Dredged material would be placed in West Bay; adjacent to the upper Southwest Pass and South Pass navigation channels within the Pass a Loutre Wildlife Management Area (Pass a Loutre WMA); and within the Delta National Wildlife Refuge (Delta NWR) located north of Pass a Loutre. It is anticipated that the disposal areas will naturally vegetate through colonization of species from adjacent vegetated areas, consistent with experience at other beneficial use-disposal areas in the Mississippi River Delta.

West Bay Disposal Area

An additional disposal area, the West Bay Disposal Area (WBDA), would be designated for the beneficial use-placement of dredged material removed during maintenance dredging of the Mississippi River from approximately Mile 10.0 Above Head of Passes (AHP) to Head of Passes; Southwest Pass; and the HDDA. The proposed disposal area encompasses a total of approximately 17,781 acres of mainly shallow open water with some eroded marsh located in West Bay. Shoal material removed during maintenance dredging would be placed in shallow open water areas within the new disposal site for marsh creation. Portions of the proposed West Bay Disposal Area may be considered in the future as designated sediment "stockpile" areas to be used for other coastal restoration efforts in Plaquemines Parish. However, any stockpiling of

dredged material and subsequent use for coastal restoration would require additional environmental compliance efforts beyond the scope of this EA prior to commencement of any restoration activities.

Maintenance-dredged material would be placed in shallow open water areas within the proposed WBDA, with the maximum initial dredged material slurry height of about +4.5 feet Mean Low Gulf (MLG) to achieve an expected final elevation of about +2.5 to +3.0 feet MLG which would be conducive to wetlands (marsh) development. Placement of dredged material on existing submerged aquatic vegetation and/or remnant marsh would be avoided to the maximum extent practicable. For each placement effort, the initial dredged material placement heights, location and timing of placement event, and the disposal site configurations will be closely coordinated with state and Federal natural resource agencies prior to each dredging event. This may result in a variety of dredged material placement heights and configurations throughout this new disposal area. Placement efforts would also be closely coordinated with ongoing beneficial use-disposal activities associated with the Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA) project "West Bay Sediment Diversion, Plaquemines Parish, Louisiana (MR-03)," which was covered in a 2002 Environmental Impact Statement.

Closures and/or retention dikes would be constructed as necessary to prevent dredged material from re-entering adjacent waterways following placement. Earth, shell, sheetpile, rock, aggregate, or some combination of these materials would be utilized to construct closures and dikes. Borrow material for closure/dike construction would be excavated from adjacent water bottom from within the disposal area. Earthen closures/dikes would be allowed to degrade naturally or, if such degradation does not occur, these structures would be mechanically degraded after the dredged material has compacted and dewatered sufficiently to prevent it from entering adjacent waterways—generally no more than approximately 3 years after project construction. MVN would coordinate inspections of these features with the appropriate natural resource agencies prior to taking action, and if deemed necessary, would mechanically degrade earthen closures or dikes to restore natural hydrological conditions and promote tidal exchange.

Flotation access dredging may be required in the WBDA to allow construction equipment and the dredge discharge pipeline to reach discharge sites within the disposal area. Flotation access channel material would be placed on adjacent shallow open water bottom to a maximum initial height of about +4.5 feet MLG and be used to backfill the flotation access channels when disposal operations have been completed. Flotation access channels would be limited to a maximum bottom width of about 80 feet and a maximum depth of about -8.0 feet MLG.

Access corridors across existing marsh and upland areas extending from the Mississippi River and/or Southwest Pass west bankline also may be required to allow construction equipment and dredge pipeline to reach discharge sites within the disposal area. Adverse impacts to areas of existing marsh would be avoided to the maximum extent practicable. Such access corridors would be limited to a maximum width of about 150 feet. These access corridors would be backfilled with dredged material to a maximum elevation of about 3 feet above existing, adjacent marsh upon completion of dredging and disposal activities to restore these degraded corridors to pre-project marsh elevations and ultimately functioning marsh habitat. MVN would attempt to utilize existing access corridors in the area when possible.

Delta National Wildlife Refuge Disposal Area

An additional disposal area, the Delta NWR Disposal Area (DNWR-1), would be designated for the beneficial use-placement of dredged material removed during maintenance dredging of the Mississippi River from approximately Mile 10.0 AHP to Head of Passes; Southwest Pass; and the HDDA. The proposed disposal area encompasses a total of approximately 3,350 acres of mostly shallow open water and eroding marsh located in the Delta NWR. Shoal material removed during maintenance dredging would be placed in shallow open water areas within the new disposal site, DNWR-1, for the creation/restoration of marsh and other coastal habitat, including scrub-shrub wetland and willow-dominated wetland.

Maintenance-dredged material would be placed in shallow open water areas within the proposed DNWR-1 disposal area, with a maximum initial dredged material slurry height of about +7.0 feet MLG to achieve a maximum expected final elevation of about +4.0 to +5.0 feet MLG. Placement of dredged material on existing submerged aquatic vegetation and/or remnant marsh would be avoided to the maximum extent practicable. Areas of higher elevation would be supportive of scrub-shrub habitat providing both nesting habitat for mottled ducks and stopover habitat for neotropical migratory songbirds, while lower-elevation areas would be supportive of intertidal herbaceous wetland vegetation (i.e., marsh). For each placement effort, the initial dredged material placement heights, location and timing of placement event, and the disposal site configurations will be closely coordinated with state and Federal natural resource agencies, including U.S. Fish and Wildlife Service (USFWS) personnel responsible for management of the Delta NWR, prior to each dredging event. This may result in a variety of dredged material placement heights and configurations throughout this new disposal area. Placement sites are expected to become vegetated by colonization from adjacent vegetated areas, consistent with experience at other beneficial use-disposal areas in the Mississippi River Delta.

Closures and/or retention dikes would be constructed as necessary to prevent dredged material from re-entering adjacent waterways following placement. Earth, shell, sheetpile, rock, aggregate, hay bales, or some combination of these materials would be utilized to construct closures and dikes. Borrow material for closure/dike construction would be excavated from adjacent water bottom from within the disposal area. Earthen closures/dikes would be allowed to degrade naturally or, if such degradation does not occur, these structures would be mechanically degraded after the dredged material has compacted and dewatered sufficiently to prevent it from entering adjacent waterways—generally no more than approximately 3 years after project construction. MVN would coordinate inspections of these features with the appropriate natural resource agencies prior to taking action, and if deemed necessary, would mechanically degrade earthen closures or dikes to restore natural hydrological conditions and promote tidal exchange.

Flotation access dredging may be required in the DNWR-1 site to allow construction equipment and dredge pipeline to reach discharge sites within the disposal area. Flotation access channel material would be placed on adjacent shallow open water bottom to a maximum initial height of about +4.5 feet MLG and be used to backfill the flotation access channels when disposal operations have been completed. Flotation access channels would be limited to a maximum bottom width of about 80 feet and a maximum depth of about -8.0 feet MLG.

Access corridors across existing marsh and upland areas extending from the east and/or north banklines of the Mississippi River and Pass a Loutre, respectively, may be required to allow construction equipment and dredge pipeline to reach discharge sites within the disposal area. Adverse impacts to areas of existing marsh would be avoided to the maximum extent practicable. Such access corridors would be limited to a maximum width of about 150 feet. These access corridors would be backfilled with dredged material to a maximum elevation of about 3 feet above existing, adjacent marsh upon completion of dredging and disposal activities to restore these degraded corridors to pre-project marsh elevations and ultimately functioning marsh habitat. MVN would attempt to utilize existing access corridors in the area when possible.

Portage Bay Disposal Area

An existing dredged material disposal site, located adjacent to the entrance of Southwest Pass and South Pass, would be re-designated to provide additional disposal capacity in approximately 400 acres of open water area within the site. In addition to the open water areas located mainly in its southern portion, the proposed Portage Bay Disposal Area (PBDA) contains 228 acres of marsh and 92 acres of scrub-shrub dominated upland habitat near Head of Passes, totaling approximately 720 acres. The PBDA site is located within the Pass a Loutre WMA, a 115,000-acre publicly-accessible wildlife area managed by the Louisiana Department of Wildlife and Fisheries (LDWF). LDWF is supportive of the proposed disposal site re-designation. Open water-placement of dredged material to varying elevations, with a maximum disposal elevation of +8.0 MLG, is expected to support a variety of coastal habitats such as marsh and higher-elevation scrub-shrub and willow-dominated wetlands, in addition to scrub-shrub and forested coastal/maritime ridge—habitat that is currently scarce throughout much of the Pass a Loutre WMA, with significant loss due to Hurricane Katrina—which could be utilized by deer and other mammals, mottled ducks, and neotropical migratory songbirds. It is also expected that some fringe marsh and submerged aquatic vegetation would develop, or persist, in remaining shallow open water areas adjacent to newly-placed material within the proposed disposal sites. Nourishment of existing marsh and creation of elevated wetland habitat is expected to benefit native species in the area for nesting, foraging, and refuge during high water events. Placement of dredged material on existing submerged aquatic vegetation and/or marsh would be avoided to the maximum extent practicable.

For each placement effort in the re-designated disposal site, the initial dredged material placement heights, location and timing of placement event, and the disposal site configurations will be reviewed by, and closely coordinated with, Federal and state natural resource agencies including the Louisiana Department of Natural Resources (LDNR) Office of Coastal Management and the LDWF Coastal Operations Program, to minimize impacts to recreational and commercial use of the property and to avoid impacts to nesting and sensitive wildlife. This coordination would occur prior to each dredging event.

Confinement of dredged material placed at these sites could require the construction of perimeter retention dikes to prevent dredged material from escaping into adjacent waterways and lands not environmentally cleared to receive dredged material. If retention dikes are necessary, borrow material to construct these dikes would be obtained from adjacent water bottom within the proposed disposal area. Construction of retention dikes and offsetting of placement areas

from existing marsh within the proposed disposal sites would help to minimize impacts to adjacent marsh and possibly even nourish adjacent marsh. Earthen retention dikes would be allowed to degrade naturally or, if such degradation does not occur, these structures would be mechanically degraded after the dredged material has compacted and dewatered sufficiently to prevent it from entering adjacent waterways—generally no more than approximately 3 years after project construction. MVN would coordinate inspections of these features with the appropriate natural resource agencies prior to taking action, and if deemed necessary, would mechanically degrade earthen closures or dikes to restore natural hydrological conditions and promote tidal exchange.

Construction of flotation access channels may be necessary in shallow water areas adjacent to the proposed disposal area to allow barges carrying construction equipment and dredge pipeline to access the site. Material excavated during the construction of flotation access channels would be placed on adjacent shallow open water bottom to a maximum initial height of about +4.5 feet MLG or be used to backfill the flotation access channels when disposal operations have been completed. Flotation access channels would be limited to a maximum bottom width of about 80 feet and a maximum depth of about -8.0 feet MLG.

Factors Considered in Determination. This office has assessed the impacts of no action and the proposed action on important resources, including navigation, wetlands, scrub-shrub uplands, wildlife, aquatic resources/fisheries, essential fish habitat (EFH), threatened and endangered species, water quality, air quality, cultural resources, recreational resources, and visual resources (aesthetics). For the proposed action, no significant adverse impacts were identified for any of the important resources. Up to 21,531 acres of marsh, elevated wetlands and scrub-shrub habitat, and shallow open water habitat would be created through the beneficial use of dredged material, which will provide valuable fisheries and wildlife habitat and more productive categories of EFH, and improve storm surge attenuation capacity in the Mississippi River Delta. The risk of encountering hazardous, toxic, and radioactive waste is low. No impacts have been identified that would require compensatory mitigation and all practicable means of avoiding adverse environmental effects have been adopted. Existing wetlands would only be minimally and temporarily impacted by construction activities (i.e., access channel excavation), and these areas would be backfilled to pre-project marsh elevations and eventually revegetated and restored upon completion of the project. By letter dated March 22, 2013, the USFWS confirmed that the proposed action is not likely to adversely affect any endangered or threatened species. In a letter dated February 15, 2013, the LDNR concurred with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program. State Water Quality Certificates were received from the Louisiana Department of Environmental Quality on November 1, 2012; June 21, 2012; and June 5, 2013. Reviews of the Section 404(b)(1) Public Notices were completed on May 18, 2012; July 12, 2012; and October 12, 2012. Section 404(b)(1) evaluations were signed on December 8, 2012 and June 25, 2013. In a letter dated September 5, 2013, the Louisiana State Historic Preservation Officer (SHPO) concurred with a recommendation of no effect on historic properties. This office has concurred with, or resolved, all Fish and Wildlife Coordination Act recommendations contained in a letter from the USFWS, dated October 28, 2013. This office has concurred with, or resolved, all comments addressing essential fish habitat contained in a letter from the National Marine

Fisheries Service dated October 30, 2013. This office has considered all comments received from the U.S. Environmental Protection Agency in a letter dated October 31, 2013.

Environmental Design Commitments. The following commitments are an integral part of the proposed action:

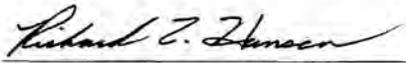
- 1) If the proposed action is changed significantly or is not implemented within one year, MVN will reinitiate coordination with the USFWS to ensure that the proposed action would not adversely affect any Federally-listed threatened or endangered species, or their habitat. [USFWS memo dated March 22, 2013]
- 2) The proposed project would be located in an area where waterbird nesting colonies are known to occur. MVN shall follow USFWS guidelines for minimizing disturbance to nesting migratory birds. These measures include insuring that construction activities are located more than 650 feet and 1,000 feet away from black skimmers and colonial nesting birds, respectively and 2,000 feet or more from nesting brown pelicans. [USFWS memo dated March 22, 2013]
- 3) If earthen retention features or closures do not sufficiently degrade naturally following appropriate settlement of dredged material placed within the disposal area, they should be mechanically breached and/or degraded as necessary, generally no more than approximately 3 years after construction. [USFWS memo dated October 28, 2013]
- 4) For each dredged material placement effort, the initial placement heights, location and timing of placement event, and the disposal site configurations shall be closely coordinated with state and Federal natural resource agencies prior to each dredging event.
- 5) Placement of dredged material on existing marsh or submerged aquatic vegetation shall be avoided to the maximum extent practicable.
- 6) If any unrecorded cultural resources are determined to exist within the proposed project boundaries, then no work will proceed in the area containing these cultural resources until a MVN-PDN-NCR archeologist has been notified and final coordination with the SHPO and the Tribal Historic Preservation Officer (THPO) has been completed. [MVN-PDN-NCR/SHPO Standard Operating Procedure]

Public Involvement. The proposed action has been coordinated with appropriate Federal, state, and local agencies and businesses, organizations, and individuals through distribution of EA #517 for their review and comment. EA #517 is attached hereto and made a part of this FONSI.

Conclusion. This office has assessed the potential environmental impacts of the proposed action and has determined that it would have beneficial environmental effects through the creation of wetland habitats as discussed in EA #517. Based on this assessment, which is attached hereto and made a part hereof, a review of the comments made on EA #517, and with the implementation of the environmental design commitments listed above, a determination has

been made that the proposed action would have no significant impact on the human environment. Therefore, a Supplemental Environmental Impact Statement will not be prepared.

22 Nov 2013
Date


Richard L. Hansen
Colonel, U.S. Army
District Commander



ELIGIBILITY REVIEW

Bucket 2 – Council Selected Restoration Component

PROPOSAL TITLE

Wetland Creation in West Bay, Louisiana, Using Dredge Material From the Mississippi River Hopper Dredge Disposal Area

PROPOSAL NUMBER

ACOE-1

LOCATION

Bird's foot delta of Lower Mississippi River at river mile 1 Above Head of Passes

SPONSOR(S)

Department of the Army

TYPE OF FUNDING REQUESTED (Planning, Technical Assistance, Implementation)

Technical Assistance/Implementation

REVIEWED BY:

Bethany Carl Kraft/ Ben Scaggs

DATE:

11-18-14

1. Does the project aim to restore and/or protect natural resources, ecosystems, fisheries, marine and wildlife habitat, beaches, coastal wetlands and economy of the Gulf Coast Region?

YES NO

Notes:

Proposal seeks to create/restore approximately 400 acres of emergent wetlands.

2. Is the proposal a project?

YES NO

If yes, is the proposed activity a discrete project or group of projects where the full scope of the restoration or protection activity has been defined?

YES NO

Notes:

3. Is the proposal a program?

YES NO

If yes, does the proposed activity establish a program where the program manager will solicit, evaluate, select, and carry out discrete projects that best meet the program's restoration objectives and evaluation criteria?

YES NO

Notes:

4. Is the project within the Gulf Coast Region of the respective Gulf States?

YES NO

If no, do project benefits accrue in the Gulf Coast Region?

YES NO

Notes:



Eligibility Determination

ELIGIBLE

Additional Information

[Empty box for additional information]

Proposal Submission Requirements

1. Is the project submission overall layout complete? *Check if included and formatted correctly.*

- | | | | |
|--------------------------------|-------------------------------------|---------------------------------------|-------------------------------------|
| A. Summary sheet | <input checked="" type="checkbox"/> | F. Environmental compliance checklist | <input checked="" type="checkbox"/> |
| B. Executive summary | <input checked="" type="checkbox"/> | G. Data/Information sharing plan | <input checked="" type="checkbox"/> |
| C. Proposal narrative | <input checked="" type="checkbox"/> | H. Reference list | <input checked="" type="checkbox"/> |
| D. Location information | <input checked="" type="checkbox"/> | I. Other | <input checked="" type="checkbox"/> |
| E. High level budget narrative | <input checked="" type="checkbox"/> | | |

If any items are NOT included - please list and provide details

[Empty box for listing missing items]

2. Are all proposal components presented within the specified page limits (if applicable)?

YES NO

Notes: