



United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506



October 9, 2008

Colonel Alvin B. Lee
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Lee:

Please reference the Individual Environmental Report (IER) 11, Tier 2 Borgne, for the Improved Protection on the Inner Harbor Navigation Canal (IHNC), Orleans and St. Bernard Parishes, Louisiana. That IER is being prepared under the approval of the Council on Environmental Quality (CEQ) that will partially fulfill the U.S. Army Corps of Engineers (Corps) compliance with the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321- 4347). IERs are a CEQ approved alternative arrangement for compliance with NEPA that would allow expedited implementation of improved hurricane protection measures. Work proposed in IERs would be conducted under the authority of Public Law 109-234, Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Supplemental 4) and Public Law 110-28, U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (5th Supplemental). Those laws authorized the Corps to upgrade two existing hurricane protection projects [i.e., Westbank and Vicinity of New Orleans (WBV) and Lake Pontchartrain and Vicinity (LPV)] in the Greater New Orleans area in southeast Louisiana. This draft report contains a description of resources in the project area and provides planning objectives and recommendations to minimize project impacts on those resources.

The proposed project was authorized by Supplemental 4 which instructed the Corps to proceed with engineering, design, and modification (and construction where necessary) of the LPV and the WBV Hurricane Protection Projects so those projects would provide 100-year hurricane protection. Procedurally, project construction has been authorized in the absence of the report of the Secretary of the Interior that is required by Section 2(b) of the Fish and Wildlife Coordination Act (FWCA) (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). In this case, the authorization process has precluded the normal procedures for fully complying with the FWCA. The FWCA requires that our Section 2(b) report be made an integral part of any report supporting further project

authorization or administrative approval. Therefore, to fulfill the coordination and reporting requirements of the FWCA, the U.S. Fish and Wildlife Service (Service) will be providing post-authorization 2(b) reports for each IER.

This report incorporates and supplements our FWCA Reports that addressed impacts and mitigation features for the WBV of New Orleans (dated November 10, 1986, August 22, 1994, November 15, 1996, and June 20, 2005) and the LPV (dated July 25, 1984 and January 17, 1992) Hurricane Protection projects, and the November 26, 2007, Draft Programmatic FWCA Report that addresses the hurricane protection improvements authorized in Supplemental 4.

This report contains a description of the existing fish and wildlife resources of the project area, discusses future with- and without-project habitat conditions, identifies fish and wildlife-related impacts of the proposed project, and provides recommendations for the proposed project. This document constitutes the report of the Secretary of the Interior as required by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.). This report has been provided to the Louisiana Department of Wildlife and Fisheries and the National Oceanic and Atmospheric Administration's (NOAA), National Marine Fisheries Service (NOAA's NMFS), and their comments are incorporated (Appendix C).

DESCRIPTION OF THE STUDY AREA

The IER 11 study area includes the Orleans East Bank, New Orleans East, and Chalmette Loop sub-basins along the east bank of the Mississippi River in Orleans and St. Bernard Parishes, Louisiana. Lake Pontchartrain borders the study area to the north. Reaches 148 and 147, and portions of Reach 146 of the LPV Hurricane Protection Levee that parallel the Mississippi River Gulf Outlet (MRGO) make up the study area's southern boundary. The eastern boundary extends along the eastern edge of Lake Borgne.

Two areas have been selected as the preferred locations for the storm surge protection barriers to protect the IHNC from storm surges coming from Lakes Pontchartrain and Borgne. The Borgne 1 location alternative, which would reduce storm surge from Lake Borgne and surrounding areas, extends from west of the Parish Road Bridge on the Gulf Intracoastal Waterway (GIWW) to east of the Michoud Canal on the GIWW and south of Bayou Bienvenue on the MRGO, and includes a portion of the emergent marsh area referred to as the "golden triangle" (Figure 1). The other preferred location alternative is the Pontchartrain 2 location alternative which extends from the Seabrook Bridge to 2,500 feet south of that bridge on the IHNC. The Pontchartrain 2 location alternative would protect the IHNC against storm surge coming from Lake Pontchartrain. The Tier 2, Borgne IER evaluates alternative designs and alignments within the Borgne 1 location alternative; this report focuses on that alternative location alignment.

Figure 1. Individual Environmental Report, Lake Pontchartrain and Vicinity (LPV), IHNC, Tier 2 Borgne study area and selected alternative alignment, Orleans and St. Bernard Parishes, Louisiana (IER 11).



FISH AND WILDLIFE RESOURCES

Habitat types in the project area include wet and non-wet bottomland hardwood habitat, early successional stage bottomland hardwood habitat (i.e., scrub-shrub), marsh, open water, and developed areas. Open water areas associated with the GIWW, MRGO, Bayou Bienvenue, and interspersed open water areas within emergent marsh habitat make up a large portion of the study area. Due to urban development and a forced-drainage system, the hydrology of most of the forested habitat within the levee system has been altered. The forced-drainage system has been in operation for many years, and subsidence is evident throughout the areas enclosed by levees.

Wetlands (forested, marsh, and scrub-shrub) within the study area provide plant detritus to adjacent coastal waters and thereby contribute to the production of commercially and recreationally important fishes and shellfishes. They also provide valuable water quality functions such as reduction of excessive dissolved nutrient levels, filtering of waterborne contaminants, and removal of suspended sediment. In addition, coastal wetlands buffer storm surges reducing their damaging effect to man-made infrastructure within the coastal area.

Factors that will strongly influence future fish and wildlife resource conditions outside of the protection levees include freshwater and sediment input and loss of coastal wetlands. Regardless of which of the above factors ultimately has the greatest influence, emergent wetlands within, and adjacent to, the project area will probably experience losses due to subsidence, erosion, and relative sea-level rise.

The Service has provided FWCA Reports for the authorized hurricane protection projects. Those reports contain a thorough discussion of the significant fish and wildlife resources (including those habitats) that occur within the study area. For brevity, that discussion is incorporated by reference herein but the following information is provided to update the previously mentioned reports and provide IER specific information and recommendations.

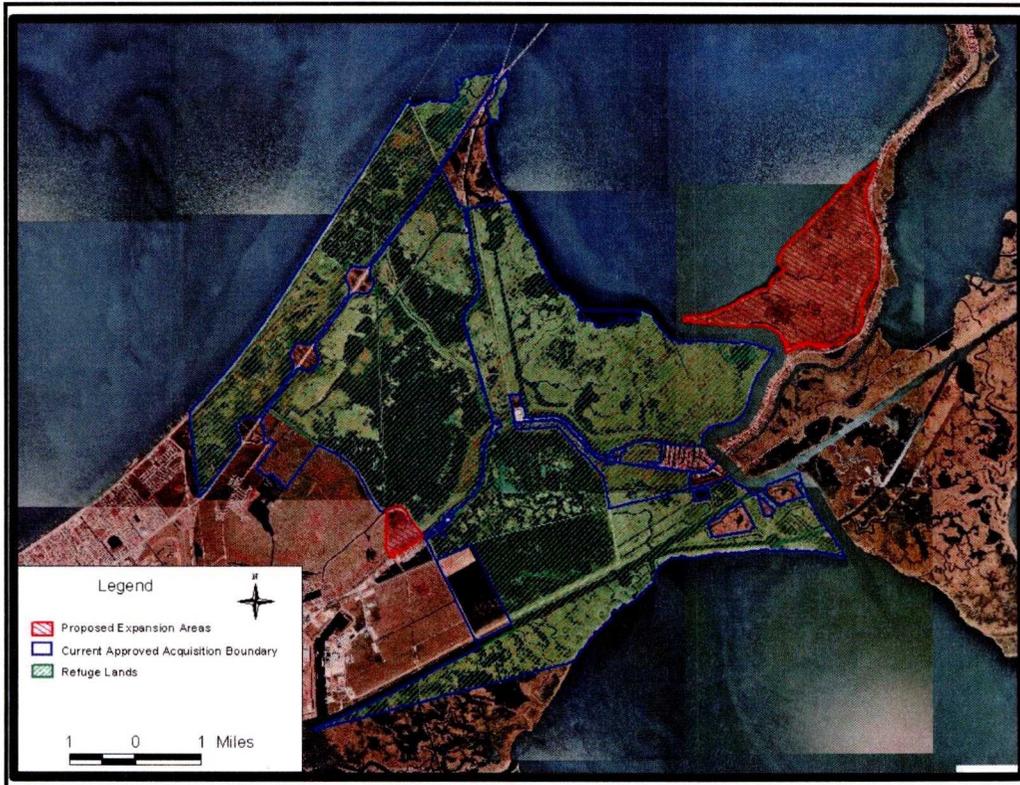
The northern portion of the proposed structural barrier and portions of the open water disposal areas (i.e., marsh enhancement areas) are located on the Service's Bayou Sauvage National Wildlife Refuge (NWR) (Figure 2). The National Wildlife Refuge System Improvement Act of 1997 authorized that no new or expanded use of a refuge may be allowed unless it is first determined to be compatible. A compatibility determination is a written determination signed and dated by the Refuge Manager and Regional Refuge Chief, signifying that a proposed or existing use of a NWR is a compatible use or is not a compatible use. A compatible use is defined as a proposed or existing wildlife-dependent recreational use or any other use of a NWR that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the NWR. A compatibility determination is only required when the Service has jurisdiction over the use. For example, proposed uses that deal exclusively with air space, navigable waters or overly refuges where another Federal agency has primary jurisdiction over the area, would not be subject to compatibility.

Federal agencies proposing a project that includes features on a NWR are encouraged to contact the Refuge Manager early in the planning process. The Refuge Manager will work with the project proponent to determine if the proposed project constitutes a "refuge use" subject to a compatibility determination. If the proposed project requires a compatibility determination, a concise description of the project (refuge use) including who, what, where, when, how and why will be needed to prepare the compatibility determination. In order to determine the anticipated impacts of use, the project proponent may be required to provide sufficient data and information sources to document any short-term, long-term, direct, indirect or cumulative impacts on refuge resources. Compatibility determinations will include a public review and comment before issuing a final determination.

All construction or maintenance activities (e.g., surveys, land clearing, etc.) on a NWR will require the Corps to obtain a Special Use Permit from the Refuge Manager; furthermore, all activities on that NWR must be coordinated with the Refuge Manager. Therefore, we recommend that the Corps request issuance of a Special Use Permit well in advance of conducting any work on the refuge. Please contact Kenneth Litzenberger, Project Leader for the Service's Southeast National Wildlife Refuges and Jack Bohannon (985) 822-2000, Refuge Manager for the Bayou

Sauvage National Wildlife Refuge for further information on compatibility of flood control features, and for assistance in obtaining a Special Use Permit. Close coordination by both the Corps and its contractor must be maintained with the Refuge Manager to ensure that construction and maintenance activities are carried out in accordance with provisions of any Special Use Permit issued by the NWR.

Figure 2. Bayou Sauvage NWR Boundaries.



If mitigation lands are purchased for inclusion within a NWR, those lands must meet certain requirements; a summary of some of those requirements is provided in Appendix A. Other land-managing natural resource agencies may have similar requirements that must be met prior to accepting mitigation lands; therefore if they are proposed as a manager of a mitigation site they should be contacted early in the planning phase regarding such requirements.

The following is provided in accordance with the ESA of 1973, as amended. Please reference the Service's December 6, 2007, letter concurring with your previous determination that the proposed project is not likely to adversely affect the West Indian manatee (*Trichechus manatus*), federally listed as an endangered species. That concurrence was based on information provided to the Service in a November 7, 2007, letter stating that the Corps will incorporate the standard manatee protective measures into their construction contracts.

Your June 12, 2008, letter requested the Service's updated concurrence with the Corps' determination that proposed project features described in IER 11, IHNC Tier 2 Borgne are not likely to adversely affect the West Indian manatee. An updated concurrence was requested by the Corps because of the availability of more detailed project designs and features and was prepared in conjunction with IER 11, IHNC, Tier 2 Borgne. According to that letter, the standard manatee protection measures will continue to be included in the Corps' construction contracts. In our June 27, 2008, draft FWCA report the Service concurred that the proposed project is not likely to adversely affect the West Indian manatee. No further endangered species consultation will be required for IER 11, IHNC, Tier 2 Borgne, unless there are changes in the scope or location, or project construction has not been initiated within one year of the date of this report. If construction has not been initiated within one year, follow-up consultation should be accomplished with this office prior to making expenditures for construction.

The threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*), is known to occur in the study area. As you are aware, NOAA's NMFS, in St. Petersburg, Florida is responsible for consultations regarding impacts to the Gulf sturgeon and its critical habitat with the Corps in estuarine habitats, and as we understand the Corps has coordinating with that office. By letter dated August 12, 2008, NOAA's NMFS, St. Petersburg Office determined that the proposed project is not likely to adversely affect the Kemp's ridley, green, and loggerhead sea turtles, and the Gulf sturgeon, and its designated critical habitat.

Estuarine emergent wetlands, estuarine water column, and estuarine water bottoms within the project area have been identified as Essential Fish Habitat (EFH) for both postlarval, juvenile and sub-adult stages of brown shrimp, white shrimp, and red drum, as well as the adult stages of those species in the nearshore and offshore reaches. Commercially important estuarine and marine species such as red drum, spotted seatrout, Gulf menhaden, brown shrimp, and white shrimp are found in the project area. EFH requirements vary depending upon species and life stage.

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act; P.L. 104-297) set forth a new mandate for NOAA's NMFS, regional fishery management councils (FMC), and other federal agencies to identify and protect important marine and anadromous fish habitat. The EFH provisions of the Magnuson-Stevens Act support one of the nation's overall marine resource management goals of maintaining sustainable fisheries. Essential to achieving this goal is the maintenance of suitable marine fishery habitat quality and quantity. Detailed information on Federally-managed fisheries and their EFH is provided in the 1999 generic amendment of the Fishery Management Plans (FMP) for the Gulf of Mexico prepared by the Gulf of Mexico FMC (GMFMC). The generic FMP subsequently was updated and revised in 2005 and became effective in January 2006 (70 FR 76216). NOAA's NMFS administers EFH regulations. Categories of EFH in the project area include the estuarine waters and substrates of the MRGO channel. Estuarine categories include estuarine emergent wetlands and estuarine water column, mud, sand, and shell water bottoms, and rock substrates.

Coastal wetlands also provide nursery and foraging habitat that supports economically important

marine fishery species such as spotted seatrout, sand seatrout, southern flounder, Atlantic croaker, spot, gulf menhaden, striped mullet, white mullet, silversides, killifish, kingfish, pompano, scaled sardines, anchovies, and blue crab. Some of these species serve as prey for other fish species managed under the Magnuson-Stevens Act by the GMFMC (e.g., mackerels, snappers, and groupers) and highly migratory species managed by NOAA's NMFS (e.g., billfishes and sharks). Under future without project conditions there would be no change to EFH.

Portions of Bayou Bienvenue are designated as a Louisiana Natural and Scenic River. Please contact the Louisiana Department of Wildlife and Fisheries, Scenic Rivers Program (318/343-4045) for further information regarding any additional permits or conditions that may be required to perform work on the above referenced river.

ALTERNATIVES UNDER CONSIDERATION

During the initial IER, Tier 1 analysis, the no-action alternative and the alternative to raise the existing Hurricane Protection System to a 100-year level of protection were considered. The location alternatives (i.e., Borgne 1 and Pontchartrain 2) selected for the construction of storm surge protection structures were considered by the Corps to be most responsive to the project's purpose and need, and would be an effective engineering solution that minimizes uncertainty and risk to acceptable levels on a reasonable period of time.

The Borgne 1 location alternative includes a storm surge protection barrier which would be built to protect the IHNC and surrounding areas from storm surges coming from Lake Borgne. The study area extends from west of the Parish Road Bridge on the GIWW to east of the Michoud Canal on the GIWW and south of Bayou Bienvenue on the MRGO. IER 11, Tier 2 Borgne is evaluating the five following alternative alignments within the selected Borgne 1 location range to improve protect within the IHNC/Lake Borgne area:

1. Deep draft gate on the GIWW east of the Parish Road bridge and west of the Michoud slip (i.e., west of the MRGO and GIWW intersection);
2. A deep draft gate on the GIWW immediately east of the Michoud slip (i.e., west of the MRGO and GIWW intersection);
3. A shallow draft gate on the GIWW approximately 500 feet east of the Michoud Canal, a closure structure on the MRGO immediately northwest of the existing Bayou Bienvenue flood control gate, and a barrier (e.g. floodwall of levee) across the marsh connecting the two gates (this alignment would require the rebuilding of Bayou Bienvenue flood control gate); and,
4. A shallow draft gate on the GIWW approximately 1,150 feet east of the Michoud Canal, a closure structure on the MRGO approximately 2,700 feet southeast of the existing Bayou Bienvenue flood control gate, and a barrier (e.g. floodwall of levee) across the marsh connecting the two waterway structures with a gate at the crossing of Bayou Bienvenue.

DESCRIPTION OF SELECTED PLAN

The proposed alternative alignment and design (i.e., Alternative 4a) consists of two miles of new flood protection extending from the Michoud floodwall north of the GIWW to the levee on the west (New Orleans) side of the MRGO. The flood protection would cross the GIWW, Bayou Bienvenue, the MRGO, and the interspersed “golden triangle” marsh including some lands within the Bayou Sauvage NWR. The proposed overall excavated width for installation of this structural wall would be 350 feet.

In order to provide some level of flood protection prior to the 2009 hurricane season, this project is being proposed in two phases. The first phase, called “advanced measures”, would be in place by June 2009 in preparation for the 2009 hurricane season. The second phase, “final configuration”, should be completed by 2011. The paragraphs below describe the advanced measures and final configuration phases of construction for each component.

Advanced Measures

As part of the advanced measures phase of the project, a bypass swing gate structure would be constructed on the GIWW with a sill elevation of -16 feet National American Vertical Datum 1988 (NAVD 88) to provide a 150-foot-wide navigation channel opening. A cofferdam would be installed in the area adjacent to the GIWW bypass swing gate structure to provide preliminary protection, during the construction phases, prior to the installation of the GIWW sector gate. The cofferdam would temporarily restrict flow at this point in the GIWW to the 150-foot-wide GIWW bypass swing gate structure. Once the adjacent primary GIWW sector gate is complete, the bypass gate could be used as a secondary navigation gate, or could be left in the closed position to minimize maintenance and operation costs, which is the sole responsibility of the non-federal sponsor after construction is complete. Therefore, the post-construction operational plan for this bypass gate is unknown at this time. The scenario most likely to have the highest level of adverse impacts (i.e., the gate remaining in a closed position after construction of the primary GIWW sector gate) will be evaluated during this IER process.

At Bayou Bienvenue, a sector gate structure would be constructed to provide a 56-foot-wide permanent navigational passage with a sill elevation of -12 feet (NAVD 88). During the two-year construction phase, a temporary cofferdam would be installed in the area of the Bayou Bienvenue sector gate structure. This cofferdam would have approximately four, 4-foot-diameter culverts to allow some flow in this portion of Bayou Bienvenue. The width of Bayou Bienvenue in this area is approximately 400 feet.

The MRGO crossing would be a braced concrete floodwall, which would provide protection to an elevation of +20.75 feet (NAVD 88) when advanced measures are complete. The MRGO crossing area would be filled with rock/sand to an elevation of -15 feet (NAVD 88) prior to installation of the floodwall structure; after installation is complete, additional rock/sand backfill and riprap would be placed to an elevation of +5 feet (NAVD 88) for additional structural

stability. The overall MRGO crossing length would be approximately 2,400 feet, and the bottom width of the structure is estimated to be 550 feet at its widest point.

The advanced measures would include a concrete floodwall that would provide protection to an elevation of +20.75 feet (NAVD 88) across the wetlands area between the GIWW and MRGO. The barrier wall would have a 15-foot-deep plunge pool with scour mats on the protected side to absorb impact from overtopping and would be plugged at both ends to prevent navigational access.

During construction, a 17-foot-deep channel, approximately 350 feet wide, would be dredged by a cutterhead dredge from the MRGO to the GIWW for construction access. Approximately 1,400,000 cubic yards of material dredged to create this channel would be used beneficially to enhance marsh on the flood side of the barrier within a designated 705-acre area (i.e., Bayou Bienvenue – Proposed Disposal Area) in the “golden triangle” marsh. Material would be pumped in 205 acres of open water within this designated area in an effort to create marsh. The placement of dredged material for wetland enhancement would occur concurrently with construction of the proposed action. Earthen and sheet pile dikes would be constructed to an elevation of +4 feet (NAVD 88) to semi-contain the dredge material within the open water ponds and prevent dredge material slurry from entering existing pipeline canals or the GIWW. The initial fill elevation is expected to be no more than approximately +4 feet (NAVD 88) and settlement is estimated to be approximately +2-3 feet (NAVD 88). Portions of the 705-acre designated area and open water disposal area, and proposed containment dikes are located on Bayou Sauvage NWR.

Following construction, the construction/maintenance access channel would be closed to navigation and water flow by an engineered plug. Use of the channel would be limited to floodwall operation and maintenance activities, such as floodwall integrity inspection. Restricting navigation to only operation and maintenance on this channel also reduces potential shoreline erosion of the eroding “golden triangle” marsh by limiting large wake-producing traffic in the channel. In addition, shoreline protection (e.g., riprap, concrete slope paving, or geotextile tubes) would be provided along the entire length of the flood side maintenance channel. The protection would extend approximately 30 feet into the channel.

Final Configuration

The final configuration would include the addition of a sector gate across the GIWW, installation of a sector gate at Bayou Bienvenue, modifications to the concrete floodwall, and other additional features to increase the protection and structural resilience of the components constructed during advanced measures to the 100-year level of protection.

The GIWW sector gate would be installed in the area of the cofferdam adjacent to the GIWW bypass swing gate to provide a 150-foot-wide navigation pass with protection to an elevation of +26 feet. The bypass gate could be operated under a number of scenarios after completion of the

final configuration sector gate, which would involve varying degrees of economic and labor burden on the non-federal sponsor. In order to analyze and disclose the impacts of this range of operational scenarios, the impacts analysis will consider both a scenario in which both gates normally remain open and a scenario in which only one gate normally remains open.

For the proposed final configuration of the concrete floodwall and the MRGO crossing, 5.25-foot-high cast-in place panels would be placed on top of the concrete cap installed during the advanced measures, bringing the protection to an elevation of +26 feet. A permanent access concrete roadway for maintenance traffic will be included in the concrete cap design on the protected side of the structural barrier. Based on anticipated sea level rise and subsidence in the local area, the design of the structure incorporates 2 feet of structural superiority to account for these changes. The overall excavated width would be approximately 350 feet, which includes a 200-foot inspection channel flood side of the concrete floodwall.

The Bayou Bienvenue sector gate would be installed in the area of the cofferdam to provide a 56-foot-wide area for navigational passage with protection to an elevation of +26 feet. The Bayou Bienvenue sector gate would, in general, remain open once the final configuration is complete.

FISH AND WILDLIFE CONCERNS IN THE STUDY AREA

Since 1930, Louisiana has lost over 1,500 square miles of marsh, and is still losing 25-30 square miles each year (LCWCR Task Force and WCR Authority 1998). Erosion, subsidence, and relative sea level rise continue to contribute to Louisiana's coastal land loss. The MRGO navigation channel was dredged through the Breton Sound Basin in 1963. Saltwater intrusion facilitated by the MRGO killed thousands of acres of freshwater wetland forests and transformed intermediate and brackish marshes into more saline habitats. Wave-induced shoreline erosion associated with vessel traffic along the MRGO has also contributed to marsh loss in the area. In accordance with the Water Resources Development Act of 2007, approval by the Secretary of the Army and submittal of the June 5, 2008, Chief's Report to Congress by the Assistant Secretary of the Army effectually deauthorized the MRGO channel from mile 60 to the Gulf of Mexico resulting in no further maintenance to that portion of the navigation project.

Given the adverse impacts of continued coastal wetland loss, the Service strongly supports strategies and projects designed to address those losses. To comply with Section 303 (d) of Coastal Wetlands Planning, Protection and Restoration Act (CWPPRA), the Corps must implement and operate project features consistent with the Louisiana Coastal Wetlands Restoration Plan. That plan, developed by the Corps, the Service, and other Federal and State agencies, identified strategies to protect and restore Louisiana's coastal wetlands. Several Region 1 (i.e., Lake Pontchartrain Basin) strategies include diverting Mississippi River water through Violet Canal to sustain the Central Wetlands and Biloxi Marshes, dedicated delivery of sediment for marsh building, as well as closure of the MRGO.

EVALUATION METHOD

Alternative Plan Selection Process

Selection criteria were developed by the Corps for use in selecting a proposed action based on criteria traditionally used during engineering alternatives evaluation as well as NEPA evaluations. The selection criteria include constructability, operations and maintenance, risk and reliability, impacts to significant resources (i.e., navigation, wetlands and other fish and wildlife habitats, hydrology, and socioeconomic and human environment), real estate requirements, and cost. The significant resources outlined above serve as overarching significant resources for the purposes of preliminarily selecting a proposed action, in part because of their relationship and associated direct and indirect impacts on other resources such as species protected under ESA, fisheries, EFH, air quality, noise, aesthetics, cultural resources, and water quality.

Habitat Assessment Methodology

Direct impacts to bottomland hardwood and emergent marsh habitats were quantified by acreage and habitat quality (i.e., average annual habitat unit or AAHUs) and are presented in Table 1. The Service and the NMFS used the Louisiana Department of Natural Resources Habitat Assessment Methodology (HAM) to quantify the impacts of proposed project features on bottomland hardwood habitat and used the Wetland Value Assessment (WVA) methodology for brackish marsh to quantify the impacts on emergent wetlands. The habitat assessment models for bottomland hardwoods within the Louisiana Coastal Zone utilized in this evaluation were modified from those developed in the Service's Habitat Evaluation Procedures (HEP). For each habitat type, those models define an assemblage of variables considered important to the suitability of an area to support a diversity of fish and wildlife species. The HAM, however, is a community-level evaluation instead of the species-based approach used with HEP. The WVA is used evaluate proposed CWPPRA projects, and is similar to the Service's HEP, in that habitat quality and quantity (acreage) are measured for baseline conditions, and predicted for future without-project and future with-project conditions. As with HEP, the WVA provides a quantitative estimate of project-related impacts to fish and wildlife resources; however, the WVA is based on separate models for fresh/intermediate marsh, brackish marsh, and saline marsh. Further explanation of how impacts/benefits are assessed with the HAM and WVA and an explanation of the assumptions affecting habitat suitability (i.e., quality) index (HSI) values for each target year for impacts to bottomland hardwood habitat are available for review at the Service's Lafayette, Louisiana, field office. An explanation of the assumptions affecting HSI values for each target year for impacts to emergent marsh are available for review at the NOAA, NMFS office in Baton Rouge, Louisiana.

As indicated in Table 1, impact analyses conducted indicate that project implementation would result in the direct loss of 122 acres (i.e., 77 acres of emergent marsh and 45 acres of associated open water) and 24.33 AAHUs of emergent marsh, and 15 acres and 2.59 AAHUs of bottomland hardwood habitat.

Table 1: Impacts from Improved Protection on the IHNC (IER 11), Tier 2 Borgne

Habitat Type	Parish	Impacted (acres)	AAHUs
Brackish Marsh	Orleans	77	-24.33
Brackish Water	St. Bernard	45	
Bottomland Hardwood Habitat ¹	Orleans	15	-2.59
Total	--	137	-26.92

¹Young successional bottomland hardwood (i.e., scrub/shrub habitat)

POTENTIAL SIGNIFICANT IMPACTS

Direct impacts to 122 acres of emergent wetlands, of which 20 acres are on Bayou Savage NWR lands, would occur as a result of alternative alignment 4a, i.e., the installation of a concrete floodwall (i.e., barrier) across approximately 2 miles of the “golden triangle” wetlands. The installation right-of-way (ROW) would include a 200-foot inspection and maintenance channel on the flood side of the barrier. Approximately 1,400,000 cubic yards of material dredged from the proposed channel and ROW would be pumped in 205 acres of open water within a 700-acre designated area in an effort to create marsh. The placement of dredged material for wetland enhancement would occur concurrently with construction of the proposed alternative. Initial fill elevation is expected to be no more than approximately +4 feet (NAVD 88) and settlement is estimated to be +2 to +3 feet (NAVD 88). These elevations were selected by the engineers in order to discharge at full production capacity and to maintain the expected construction schedule. Elevations greater than existing marsh elevations could potentially create supratidal marsh and replace existing intertidal habitats. Of the 705-acre designated marsh enhancement area, 113 acres are designated on Bayou Savage NWR, and approximately 15 acres of that area is open water in which the Corps intends to direct dredge material.

For the most part, construction staging areas would be sited in cleared areas and on existing levees; however, a marginal amount of early-successional stage forest (i.e., scrub-shrub stage) that provides medium to low habitat value for diverse fish and wildlife resources would also be directly impacted as a result of the construction of staging areas. These areas would be allowed to revert back to an early succession hardwood forest after construction is complete, and will likely be dominated by the exotic Chinese tallow tree for part of the project life.

Development is ongoing within the hurricane protection levees; therefore, the Service has assumed that, for this specific IER, project-induced development within enclosed wetlands will be insignificant. However, project impacts to non-wet bottomland hardwoods as a result of flood protection improvements should be mitigated.

Indirect impacts would be associated with bisecting the “golden triangle” wetland complex with

a structure. The construction of a barrier across the “golden triangle” marsh and associated waterways and bayous would fragment the emergent marsh complex, thereby disrupting natural hydrologic sheet flow, sedimentation processes, and organism access within this estuarine habitat. Altered hydrologic flow could exacerbate localized erosion rates especially along the shoreline of the proposed maintenance channel and along the protected side of the barrier (i.e., plunge pool) should shoreline protection and plugs not be imposed.

During construction of advanced measures, hydrologic flow and estuarine organism access between the flood side and protected side marsh would be reduced to 4, 48-inch culverts in the 400-foot-wide Bayou Bienvenue and to a 150-foot-wide barge swing gate opening on the GIWW. After the final configuration is complete, estuarine access between the fragmented marsh complexes would be limited to both the GIWW (i.e., 150-foot-wide navigation channel as a worst-case-scenario) and Bayou Bienvenue (i.e., 56-foot-wide sector gate structure) structures.

In an effort to more thoroughly analyze and disclose potential impacts associated with constructing a barrier across the “golden triangle” marsh, the Corps conducted several modeling investigations on project effects on hydroperiod, salinity, velocity, dissolved oxygen, and fish passage. Hydroperiod modeling indicated that the marshes on the protected side of the floodwall levee could experience less tidal inundation, while portions of the marshes on the floodside of the levee could experience greater tidal inundation. Complete closure at Bayou Bienvenue exasperated these conditions. Modeling results also indicated that a tidal phase shift would occur for most of the modeled scenarios throughout the study area by one-half hour. Moreover, modeling results also indicate that closure of the MRGO at Bayou La Loutre produced noticeable reductions in monthly average bottom salinity (i.e., 3-4 parts-per-thousand(ppt)) within the study area waterways and the Lake Borgne area. Decreased inundation periods coupled with the potential decrease in salinity, could convert the interior marsh vegetation community to one that is less tolerant of inundation and higher salinities. An analysis of proposed project impacts on fish passage is ongoing in coordination with the natural resource agencies and will be addressed in IER 11, Tier 2 Pontchartrain.

As indicated, the access channel shoreline would be protected with shoreline protection (e.g., riprap, concrete slope paving, or geotextile tubes) extending out 30 feet from the shoreline. Without this protection, the shoreline and interior marshes would be exposed to wave-induced erosion associated with the proposed maintenance channel. Because of high subsidence rates, shoreline protection projects in the area have required several lifts to maintain the designed elevations, and therefore, have experienced greater operation and maintenance costs.

FISH AND WILDLIFE CONSERVATION MEASURES

The President's Council on Environmental Quality defined the term "mitigation" in the National Environmental Policy Act regulations to include:

(a) avoiding the impact altogether by not taking a certain action or parts of an action; (b)

minimizing impacts by limiting the degree or magnitude of the action and its implementation; (c) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (d) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (e) compensating for the impact by replacing or providing substitute resources or environments.

The Service supports and adopts this definition of mitigation and considers its specific elements to represent the desirable sequence of steps in the mitigation planning process. Based on current and expected future without-project conditions, the planning goal of the Service is to develop a balanced project, i.e., one that is responsive to demonstrated hurricane protection needs while addressing the co-equal need for fish and wildlife resource conservation.

The Service's Mitigation Policy (Federal Register, Volume 46, No. 15, January 23, 1981) identifies four resource categories that are used to ensure that the level of mitigation recommended by Service biologists will be consistent with the fish and wildlife resource values involved. Considering the high value of emergent marsh for fish and wildlife and the relative scarcity of that habitat type, those wetlands are usually designated as Resource Category 2 habitat, the mitigation goal for which is no net loss of in-kind habitat value. Project impacts to wetlands will be minimized to some extent by implementing a structural barrier as opposed to constructing a traditional earthen levee which would require a wider ROW. Also, the preferred alignment location, one of five evaluated alignments, was selected in part because wetlands enclosed by the proposed structure as well as wetlands directly impacted by the ROW footprint have been minimized to the greatest extent practicable. Therefore, remaining direct project impacts should be mitigated via in-kind compensatory replacement of the habitat values lost. The scrub-shrub habitat that may be impacted, however, is placed in Resource Category 3 due to their reduced value to wildlife, fisheries and degraded wetland functions. The mitigation goal for Resource Category 3 habitats is no net loss of habitat value.

Mitigation for unavoidable losses of wetland habitat and non-wet bottomland hardwoods caused by project features will be evaluated through a complementary comprehensive mitigation IER. Several large scale studies and programs [e.g., Louisiana Coastal Protection and Restoration Plan (LaCPR), Louisiana Coastal Area (LCA) Ecosystem Restoration Study, CWPPRA, and Louisiana's Comprehensive Master Plan for a Sustainable Coast] have identified and prioritized proposed restoration plans important for coastal protection and restoration. The East Orleans Landbridge and Biloxi Marshes, two areas prioritized in the LaCPR plan, are essential components of the Louisiana coastal landscape and are important geomorphic barriers for providing protection against storm events and maintaining a sustainable ecosystem. The Service recommends that these and other large scale restoration plans, and their system-wide strategic goals, should be evaluated and considered when developing the comprehensive mitigation IER.

The Corps does not intend to use the proposed marsh creation and nourishment areas as compensatory mitigation for wetland impacts for activities described in this IER. As previously mentioned, compensatory mitigation will be evaluated through a complementary comprehensive mitigation IER. The Corps will, in coordination with the natural resource agencies, assess the

marsh creation areas one year after placement of fill to determine potential adverse impacts of the fill and prior to any consideration of potential mitigation credit. All construction and monitoring performance criteria listed in Appendix B will be necessary to assess potential adverse impacts of the fill and prior to any consideration of potential mitigation credit. Post-construction crediting of mitigation benefits to the enhancement areas is unlikely unless monitoring efforts report demonstrable benefits in the enhancement areas. If the natural resource agencies determine that all construction and monitoring performance criteria have been met and there is a potential to use some portion of the enhancement area as compensatory mitigation, a complete compensatory mitigation plan will be developed and implemented for those areas which will be used as compensatory mitigation. This plan will be described in a separate IER. Given the difficulty in accurately quantifying the potential beneficial effects of marsh nourishment in this case, only the marsh creation areas would be considered as potential compensatory mitigation.

Appendix B provides guidance for avoiding and minimizing impacts to existing marsh and to adequately offset conversion of water bottoms with successful marsh creation. As indicated, to ensure that marsh elevations are achieved, pre- and post-construction surveys should be conducted. Should elevations exceed averaged intertidal marsh elevations and the resource agency post-construction evaluation determine that adverse impacts have occurred, remediation and/or mitigation may be required.

As previously stated, the northern portion of the proposed structural barrier and portions of the open water disposal areas (i.e., marsh enhancement areas) may be located on the Service's Bayou Sauvage NWR. The National Wildlife Refuge System Improvement Act of 1997 authorized that no new or expanded use of a refuge may be allowed unless it is first determined to be compatible. A compatibility determination is a written determination signed and dated by the Refuge manager and Regional Refuge Chief, signifying that a proposed or existing use of a NWR is or is not a compatible use. A compatible use is defined as a proposed or existing wildlife-dependent recreational use or any other use of a NWR that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the NWR System mission or the purposes of the NWR.

The proposed project will likely not meet Compatibility Determination requirements; therefore, the Corps is working with the Service's Regional Office (Division of Realty) to initiate a "land exchange" with the Service, through the Corps' Local Sponsor. In this "land exchange" the Corps will purchase other lands in the Bayou Sauvage NWR acquisition boundary for inclusion into the NWR System and exchange them for the area that will be impacted by the project. In accordance with Service policy, the Corps should finalize all acquisition agreements prior to conducting any construction activities within NWR boundaries. To acquire project impacted lands from the NWR and to provide suitable exchange property for the loss of those NWR lands, the Service's Regional Office (Division of Realty) will coordinate the identification of suitable exchange property, review exchange documents for adequacy, and resolve any legal questions. The Corps is responsible for the preparation of an appraisal for both properties to be exchanged in order to establish a "fair market value." Those appraisals, conducted by a qualified contract appraiser, will be reviewed and approved by the Department of Interior, National Business

Center, Appraisal Services Directorate. This will be a value for value exchange in order to assure that the NWR System continues to fulfill its mission. However, lands acquired to compensate for lands lost to the proposed project right-of-way would not satisfy mitigation requirements offsetting losses to fish and wildlife habitats as determined by the Service's Mitigation Policy (Federal Register, Volume 46, No. 15, January 23, 1981).

Mitigation for unavoidable losses of emergent marsh on Bayou Sauvage NWR would need to be mitigated on that Refuge. Portions of the proposed marsh enhancement area are located on the Refuge. Provided that marsh elevations and design criteria recommended by the natural resource agencies, including the Refuge, are achieved, habitat values gained through the marsh enhancement project could be evaluated as compensatory mitigation for impacts to estuarine habitats on the Refuge. The Corps has an opportunity to use dredge material beneficially, in a cost-effective manner, to restore marsh on Bayou Sauvage NWR and provide compensatory mitigation for project-induced impacts. The Corps should consider designing marsh enhancement areas located on the Refuge in a manner that concurrently mitigates for impacts associated with the construction of the proposed hurricane protection barrier on that Refuge. Coordination regarding this should continue with the Lafayette Field Office and Kenneth Litzenberger, Project Leader for the Service's Southeast National Wildlife Refuges and Jack Bohannon (985) 822-2000, Refuge Manager for the Bayou Sauvage NWR.

Furthermore, deposition of dredge material on Bayou Sauvage NWR should adhere to the following additional guidelines to avoid adverse impacts on that NWR:

1. Containment dikes should be located in open water areas with minimal marsh disturbance;
2. Material for containment dikes should be dredged from within the containment area;
3. Containment dikes should be degraded to marsh elevation following completion of disposal;
4. Dewatering/overflow pipes and breaches should be discharged and directed into degraded marsh for marsh nourishment purposes;
5. A maximum pump elevation of +4 NGVD with final settling height of +2.5 NGVD should not be exceeded (these elevations may be adjusted based on engineering surveys and calculated settling rates); and,
6. All marsh creation material should be tested for contaminants prior to placement, and a contaminant report provided to the Refuge.

Reduction in the cross-sectional width of the project area channels combined with the fragmentation of the marsh complex will impact the functioning capacity (e.g., tidal exchange and estuarine organism access) of that marsh complex. As proposed, the 400-foot-wide Bayou Bienvenue channel would be reduced to 4, 48-inch culverts for two years, with a final

configuration consisting of a 56-foot-wide passage. While installing culverts on Bayou Bienvenue is intended to maintain hydrologic connectivity, there will be impacts associated with reducing the tidal exchange and minimizing the channel width and geomorphology for both the advanced measure and final configuration designs. To minimize impacts, as many culverts as feasible should be placed strategically within the water column to facilitate estuarine access during advanced measures, and to the greatest extent practicable, a maximum cross-sectional width should be designed for the final configuration.

Impacts associated with reducing tidal exchange and minimizing the channel width and geomorphology would also occur as a result of constructing a flood protection structure in the GIWW. As a worse-case-scenario, the GIWW would be reduced from a 600 to 700-foot-wide channel to a 150-foot-wide channel. However, the final configuration proposed would consist of two, 150-foot-wide passages within the channel. Operational plans and design configurations should be developed to maximize the cross-sectional area for the advance measures and final configuration. The Corps should coordinate with the natural resource agencies during ongoing development of the structure designs to ensure that fish and wildlife conservation measures are incorporated. Furthermore, NMFS' guidance document titled "Fisheries Friendly Design and Operation Considerations for Hurricane and Flood Protection Water Control Structures" provided in our November 26, 2007, Draft Programmatic FWCA Report should assist in the design of flood protection features while incorporating estuarine habitat conservation measures.

Shoreline protection features implemented along the eastern shoreline of the maintenance channel and channel plugs will help to maintain the shoreline integrity and minimize erosion impacts to interior marshes associated with boat- and wind-generated waves and tidal movement. Plugs installed where the proposed channel intersects with natural and manmade waterways will also help to reduce wave-induced erosion associated with recreational boating access by restricting access. Restricting access may also help to minimize associated operation and maintenance of the shoreline protection features. Additional measures such as posting signage around the structure restricting access would ensure the safety of recreational boaters and ensure unintentional damage to the structures and adjacent marsh caused by boaters attempting to gain access around the plugs and structures.

These structures would minimize project induced shoreline erosion and interior marsh erosion provided that they are maintained throughout the project life. As indicated previously, high subsidence rates in the area and soft substrates have required several lifts of shoreline protection projects to maintain the designed elevations, and therefore, have experienced greater operation and maintenance costs. The local sponsor should be fully apprised of the maintenance requirements and associated costs. If the local project-sponsor is unable to fulfill the financial requirements for maintenance of the shoreline protection features, the Corps should provide the necessary funding to ensure maintenance obligations are met on behalf of the public interest.

SERVICE POSITION AND RECOMMENDATIONS

The Service does not object to providing improved hurricane protection to the Greater New Orleans area provided the following fish and wildlife conservation recommendations are incorporated into future project planning and implementation:

1. Situate the flood protection barrier and associated structures so that destruction and enclosure of emergent wetlands are avoided or minimized, to the greatest extent possible.
2. The width of the construction and maintenance access channel and the plunge pool should be minimized, to the greatest extent practicable, to reduce direct impacts to estuarine wetlands.
3. The Corps shall fully compensate for any unavoidable losses of estuarine wetland habitat, forested wetland habitat and non-wet bottomland hardwoods caused by project features.
4. The project's first Project Cooperation Agreement (or similar document) should include language that specifies the responsibility of the local-cost sharer to provide operational, monitoring, and maintenance funds for mitigation features, as well as shoreline protection features.
5. Acquisition, habitat development, maintenance and management of mitigation lands should be allocated as first-cost expenses of the project, and the local project-sponsor should be responsible for operational costs. If the local project-sponsor is unable to fulfill the financial mitigation requirements for operation, then the Corps should provide the necessary funding to ensure mitigation obligations are met on behalf of the public interest.
6. Further detailed planning and design of project features (e.g., Design Documentation Report, Engineering Documentation Report, Plans and Specifications, operational plans, or other similar documents) should be coordinated with the Service, including refuge personnel, NMFS, LDWF, Environmental Protection Agency (EPA) and Louisiana Department of Natural Resources (LDNR). The Service shall be provided an opportunity to review and submit recommendations on the all work addressed in those reports.
7. The Corps should avoid impacts to Bayou Sauvage NWR, when feasible. If not feasible, the Corps should continue to coordination with Refuge personnel during planning and compatibility determination processes. A Special-Use Permit should be obtained prior to any entrance onto the refuge. Coordination should continue until construction of the flood protection barrier and marsh enhancement project are complete and prior to any subsequent maintenance. Points of contacts for that refuge are Kenneth Litzenberger, Project Leader for the Service's Southeast National Wildlife Refuges and Jack Bohannon (985) 822-2000, Refuge Manager for the Bayou Sauvage NWR. The Corps should not sign the Decision Record until a Compatibility Determination is complete.

8. To facilitate a land exchange with the NWR, the Corps is responsible for the preparation of an appraisal for both properties to be exchanged in order to establish a “fair market value.” Those appraisals, conducted by a qualified contract appraiser, will be reviewed and approved by the Department of Interior, National Business Center, Appraisal Services Directorate. This will be a value for value exchange in order to assure that the NWR System continues to fulfill its mission. In accordance with Service policy, the Corps should finalize all acquisition agreements prior to conducting any construction activities within NWR boundaries.
9. If a proposed project feature is changed significantly or is not implemented within one year of the date of our Endangered Species Act consultation letter, we recommend that the Corps reinstate coordination with each office (i.e., NMFS in St. Petersburg, Florida, and the Service’s Lafayette, Louisiana, Field Office) to ensure that the proposed project would not adversely affect any Federally listed threatened or endangered species or their habitat.
10. Continued coordination should be conducted with the Louisiana Department of Wildlife and Fisheries, Scenic Rivers Program (318/343-4045) regarding any additional permits or conditions that may be required to perform work in Bayou Bienvenue.
11. Guidance for avoiding and minimizing impacts to existing marsh within the enhancement area and to adequately offset conversion of water bottoms with successful marsh creation (Appendix B) should be incorporated into construction design.
12. Should pre- and post-construction surveys indicate that the enhancement area resulted in negative impacts, remediation and/or mitigation may be required.
13. Deposition of dredge material on Bayou Sauvage NWR should adhere to the following additional guidelines to avoid adverse impacts on that NWR:
 - a. Containment dikes should be located in open water areas with minimal marsh disturbance;
 - b. Material for containment dikes should be dredged from within the containment area;
 - c. Containment dikes should be degraded to marsh elevation following completion of disposal;
 - d. Dewatering/overflow pipes and breaches should be discharged and directed into degraded marsh for marsh nourishment purposes;
 - e. A maximum pump elevation of +4 NGVD with final settling height of +2.5 NGVD should not be exceeded (these elevations may be adjusted based on engineering surveys and calculated settling rates); and,
 - f. All marsh creation material should be tested for contaminants prior to placement, and a contaminant report provided to the Refuge.

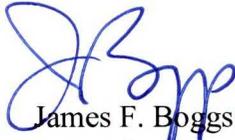
14. Culverts installed within Bayou Bienvenue during advance measures should be placed to allow as much opening as practicable, in number, size, and diversity. To facilitate estuarine access, culverts should be placed near both sides of the channel as well as within in the center of the channel that extends to the bottom.
15. Flood protection water control structures in any watercourse should maintain pre-project cross section in width and depth to the maximum extent practicable, especially structures located in tidal passes.
16. Flood protection water control structures should remain completely open except during storm events. The GIWW by-pass swing gate structure should be positioned in the floating position during non-storm operating conditions, to allow for maximum flows through the structure.
17. The number and siting of openings in flood protection levees should be optimized to minimize the migratory distance from the opening to enclosed wetland habitats.
18. Structures should include shoreline baffles and/or ramps (e.g., rock rubble, articulated concrete mat) that slope up to the structure invert to enhance organism passage. Various ramp designs should be considered, and coordination with the natural resource agencies should continue to ensure fish passage features are incorporated to the fullest extent practicable.
19. To the maximum extent practicable, structures should be designed and/or culverts selected such that average flow velocities during peak flood or ebb tides do not exceed 2.6 feet/second. This may not necessarily be applicable to tidal passes or other similar major exchange points.
20. To the maximum extent practicable, culverts (round or box) should be designed, selected, and installed such that the invert elevation is equal to the existing water depth. The size of the culverts should be selected that would maintain sufficient flow to prevent siltation.
21. Water control structures should be designed to allow rapid opening in the absence of an offsite power source after a storm passes and water levels return to normal.
22. Operational plans should be developed in coordination with the natural resource agencies to maximize the cross-sectional area open for as long as possible. Operations to maximize freshwater retention or redirect freshwater flows could be considered if hydraulic modeling demonstrates that is possible and such actions are recommended by the natural resource agencies.
23. Shoreline protection features should be constructed along the eastern shoreline of the maintenance channel and along the western shoreline of the protected side plunge pool to

maintain the shoreline integrity and minimize shoreline and interior erosion. The project's first Project Cooperation Agreement (or similar document) should include language that specifies the responsibility of the local-cost sharer to provide operational and maintenance funds for shoreline protection features. If the local project-sponsor is unable to fulfill the financial requirements for maintenance of the shoreline protection features, the Corps should provide the necessary funding to ensure maintenance obligations are met on behalf of the public interest.

24. Plugs should be installed where the proposed channel intersects with natural and manmade waterways to minimize recreational boating access and reduce wave-induced erosion. The project's first Project Cooperation Agreement (or similar document) should include language that specifies the responsibility of the local-cost sharer to provide operational and maintenance funds for channel plugs. If the local project-sponsor is unable to fulfill the financial requirements for maintenance of those plugs, the Corps should provide the necessary funding to ensure maintenance obligations are met on behalf of the public interest.
25. To further minimize recreational boater access and associated marsh impacts, signs indicating restricted-access should be posted around the maintenance channel, channel plugs, and adjacent marsh.
26. Forest clearing associated with project features should be conducted during the fall or winter to minimize impacts to nesting migratory birds, when practicable.

Should you or your staff have any questions regarding this report, please contact Angela Trahan (337/291-3137) of this office.

Sincerely,



James F. Boggs
Supervisor
Louisiana Field Office

Attachments

cc: Southeast LA Refuge Complex, Lacombe, LA
EPA, Dallas, TX
NMFS, Baton Rouge, LA
LDWF, Baton Rouge, LA (Attn.: Heather Finley)
LDWF, NHP, Baton Rouge, LA
LDWF, Scenic Rivers Program, Baton Rouge, LA
LDNR, CMD/CRD, Baton Rouge, LA

LITERATURE CITED

Louisiana Coastal Wetland Conservation and Restoration Task Force and the Wetlands Conservation and Restoration Authority. 1998. Coastal 2050: Toward a Sustainable Coastal Louisiana. Louisiana Department of Natural Resources. Baton Rouge, LA. 70898.

APPENDIX A

Summary of Basic Mitigation Land Requirements before Land is Transferred to the U.S. Fish and Wildlife Service

SUBJECT: Revised Basic Mitigation Land Requirements before Land is Transferred to Basic Mitigation Land Requirements before Land is Transferred to the Service.

The following represents a summary of basic mitigation land requirements before land is transferred over to the Service. This does not necessarily represent a comprehensive list, but does represent our best effort to identify all land requirements within reason.

1. For inclusion into the National Wildlife Refuge (NWR) system the lands must be located within a refuge's acquisition boundary.
2. The Service must be provided copies of any easements/agreements for right-of-way on the property especially as it pertains to maintenance of such right-of-way, frequency of maintenance and costs associated with that maintenance if the maintenance is to be preformed by the landowner.
3. The area must be surveyed prior to acquisition by the United States or transfer to the Fish and Wildlife Service. The survey will be conducted by the Corps of Engineers (Corps) or an approved contractor. Boundaries must be marked and permanent monuments set at all corners. Copies of the surveyor notes, plats, etc. resulting from such survey must be provided to Service.
4. Language must be placed in the deed dedicating the mitigation land to fish and wildlife conservation in perpetuity.
5. When possible any restrictive covenants or liens shall be removed, especially if they could interfere with mitigation implementation, operation and/or maintenance.
6. Completion of a Level 1 survey for hazardous, toxic, and/or radioactive wastes with a copy being provided to the Service. If the Level 1 survey indicates the need for further investigations/surveys, those investigations/surveys must be completed and a copy provided to the Service. Lands having unremediated hazardous, toxic, and/or radioactive wastes present may not be accepted into a NWR. Remediated sites will be assessed for inclusion on a case-by-case basis. Documentation of the level of remediation is to be provided to the Service.
7. Funding mechanism for operation and maintenance of the mitigation lands and mitigation features (e.g., water control structures, timber stand improvements, etc.).
8. Documentation must be provided to the Service describing the mitigation goals and objectives in addition to a description of necessary operation and maintenance activities needed to accomplish the stated goals and objectives.

9. Mineral rights should be purchased. If it is not possible to purchase, then protection of surface rights via the following language:

"The vendors reserve for themselves, their successors and assigns, the right to explore, for, operate, produce, remove and transport, oil and gas from the lands herein described. The vendors reserve unto themselves, their successors and assigns, the right of ingress and egress over the said lands in pursuance of the reservations set forth above.

The land is now subject to oil and gas lease in favor of _____, as per lease of record in the records of _____, _____, pages _____ of Book _____, and the conveyance is subject to the rights of the lessee in said lease.

The oil and gas reservations made by the vendors herein in favor of themselves, their successors and assigns, shall be subject to the following stipulations, and any lease made by the vendors, their successors or assigns, subsequent to the date of this deed, shall contain the following stipulations for the protection of the vendee.

The vendors, their successors and assigns, agree that prior to entry upon the land for purposes of exploration, development or production of, oil and/or gas, they shall obtain a Special Use Permit from the U.S. Fish and Wildlife Service, which permit is for the purpose of providing for access and protecting the natural resources of the area for which the land was acquired, and whose terms and conditions will not unreasonably restrain the activities of the vendors, and their successors and assigns.

It is mutually understood between the parties that the intention of the Government in acquiring this area is to create a refuge for, and the protection of, wildlife in the area herein acquired, and the vendors will conform to, and be governed by, and the vendors herein bind themselves, their successors and assigns, agents and employees, to conform to, and be governed by, the rules and regulations pertaining to the protection of wildlife and refuge administration prescribed from time to time by the Secretary of the Interior or his/her authorized agent, the Director of Fish and Wildlife Service, except that such regulations shall not unreasonably restrain the exercise and use by the vendors, their successors and assigns, of the reservation set out in this agreement."

10. The Service would need a title commitment and policy in favor of United States of America that is in the American Land Title Association (ALTA) U.S. Policy 9/28/91 format as provided in Title Standards 2001.

If the title remains with the local-sharer or the Corps a General Plan as provided for under Section 3 of the Fish and Wildlife Coordination Act (48 Stat. 401; 16 U.S.C. 661 et seq.) must be written. However, the Service may chose to not manage lands for which it does not have title.

APPENDIX B

Date: 6/11/08

Subject: IER 11 Guidance for Avoiding and Minimizing Impacts to Existing Marsh and Adequately Offsetting Conversion of Water Bottoms with Successful Marsh Creation:

1. The initial target fill elevation should take into consideration settlement, compaction, and oxidation to maximize the creation of elevations conducive to the establishment of intertidal marsh that would last as long as possible. The final target fill elevation should be obtained by averaging measurements from healthy stands of nearby marsh and approval by natural resource agencies.
2. No more than six inches of sediment should be placed on areas with existing vegetation. Depending on the initial target fill elevation for open water and the elevation of the existing marsh, there is a potential that up to one foot of fill on existing marsh may be allowed, if approved by the natural resource agencies, without requiring mitigation for those fill impacts.
3. Incorporation of an acceptable amount of tidal creeks into the design to be accomplished by either pre or post dredging may be necessary.
4. An onsite inspector should be present at all times during construction.
5. Containment dikes, if used, should be degraded to restore tidal exchange to the disposal area as deemed necessary by the natural resource agencies. Strategic degrading or gapping may be necessary prior to demobilization or one complete growing season after construction.
6. To ensure target elevations are achieved, survey stakes marked with the target elevation and a maximum vertical tolerance (i.e., max slurry elevation) should be installed on no more than 200-foot centers. Installation should be accomplished by means to avoid or minimize tracking on vegetation.
7. Pre-construction, as-built, and one year post-construction surveys should be required and supplied to the natural resource agencies. No later than one year after fill placement, data from each survey should be provided to the resource agencies plotted both in plan view overlaid on aerial imagery and cross sections. These plots should identify the aerial extent (in acres) and elevation data (in NAVD 88) of the disposal area and all access corridors, as well as how much marsh existing pre-project falls within the disposal area after construction and the elevation of those areas.
8. An interagency site inspection should be scheduled prior to demobilization of the dredging contractor.
9. No more than 15% of the final fill area shall exceed the agreed upon final fill elevation.

10. Remediation measures, including sediment removal and replanting (of the necessary plant species), should be required if more than 15% of the site is filled higher than the final target elevation or vegetation damage occurs from pipeline discharge routes or construction equipment access.

The Corps does not necessarily intend to use the subject marsh creation and nourishment areas as compensatory mitigation for wetland impacts for activities described in this IER. Compensatory mitigation for wetland impacts from this project will be described in a separate IER. The Corps will, in coordination with the resource agencies, assess the marsh creation areas one year after placement of fill to determine whether there is the potential to use some portion of these areas as compensatory mitigation. If so, a complete compensatory mitigation plan will be developed and implemented for those areas which will be used as compensatory mitigation. This plan will be described in a separate IER. Given the difficulty in accurately quantifying the potential beneficial effects of marsh nourishment in this case, only the marsh creation areas would be considered as potential compensatory mitigation.

Potential for Mitigation Credit

After construction, mitigation credit for demonstrated marsh creation in open water may be possible. If the Corps, New Orleans District proposes to receive mitigation credit for this disposal, the following performance and success criteria should be met:

A. Initial Success Criteria (one year post construction)

After at least one year post construction, portions of the disposal area that are within a “functional marsh” elevation range (determined through elevation surveys) that previously were open water may be considered for mitigation credit if other criteria also are met.

B. Year Three Success Criteria

1. Three years post construction, at least 80% of the marsh elevations created in open water should be vegetated.
2. At least 80% of the vegetative cover are predominately facultative species or wetter, as verified by monitoring report and, if necessary, verified by an interagency team.
3. Containment dikes should be degraded or breached and tidal creeks constructed and functioning as required by the natural resource agencies.

C. Year Five Success Criteria

Five years after construction, at least 75% of the marsh created in open water remains within the “functional marsh” target elevation range determined by the natural resource agencies. (Note: this would require a 5-year post-construction survey.)

Additionally, monitoring and reporting provisions and land-rights would be a necessary requisite if approved as mitigation, and maintenance lifts may be necessary.

APPENDIX C



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue, South
St. Petersburg, Florida 33701

July 10, 2008

F/SER46/RH:jk
225/389-0508

Mr. James F. Boggs, Field Supervisor
Louisiana Field Office
U.S. Fish and Wildlife Service
646 Cajundome Blvd., Suite 400
Lafayette, Louisiana 70506



Dear Mr. Boggs:

NOAA's National Marine Fisheries Service (NMFS) has received the draft Fish and Wildlife Coordination Act Report (Report) on the Individual Environmental Report (IER) 11 dated June 27, 2008. The Report discusses the U.S. Fish and Wildlife Service's findings and recommendations associated with plans to elevate hurricane protection features on the Inner Harbor Navigation Canal in St. Bernard and Orleans Parishes, Louisiana. As described in the Report, project implementation would directly impact 64 acres of saline marsh and 15 acres of bottomland hardwood habitat, the mitigation for which would be described in a separate IER.

NMFS has reviewed the document and finds that most issues and impacts to resources of concern have been adequately discussed. As is clearly stated in the Report, the Corps of Engineers (COE) does not intend to claim mitigation credit from the beneficial placement of 1.4 million cubic yards of sediment dredged from the construction of the flood wall channel. That dredged material is intended for placement in adjacent wetlands and open waters sites designated as "enhancement areas". However, at the COE's request, the Report leaves open the possibility that sediment placed in the enhancement areas could offer the potential to generate mitigation credit in the future. Lacking precise pre- and post-construction monitoring of the enhancement area, NMFS believes it would be difficult to quantify the wetland benefits of the sediment placement effort. For clarity, NMFS recommends page 14, paragraph 2 of the Report be revised to indicate that all construction and monitoring performance criteria listed in Appendix B would be necessary to assess potential adverse impacts of the fill and prior to any consideration of potential mitigation credit. NMFS further recommends the Report indicate that post-construction crediting of mitigation benefits to the enhancement areas is unlikely unless the monitoring effort reports demonstrable benefits in the enhancement areas.

NMFS has worked closely with the natural resource agencies and the COE to ensure that the construction access channel dredged across the wetlands designated as the "Golden Triangle" included plans for a plug to be installed at both ends of the channel to block normal navigation access. NMFS also requested the construction of a rock shoreline protection feature along the flood side of the channel. The purpose of these supplemental features is to ensure navigation of boats, moving water associated with tidal currents, and wind-generated waves do not cause



accelerated erosion of wetlands in the Golden Triangle area as a result of project implementation. While the Report describes these project components, there is no discussion of the need to ensure these features are maintained for the life of the project. NMFS recommends the Report be revised to clearly discuss the need for maintenance of these project features and to recommend the local sponsor be fully apprised of the maintenance requirements and likely costs associated with them.

Finally, the final sentence in the section titled "Habitat Assessment Methodology" should be revised to provide an accurate summary of the acres or each habitat impacted. While the sentence indicates that project implementation would impact 186 acres of emergent marsh, the table provided in this section of the document more accurately reports the amount as 64 acres.

We appreciate the opportunity to review and comment on this Report.

Sincerely,



for Miles M. Croom
Assistant Regional Director
Habitat Conservation Division

c:
NOD, Owen, Behrens
F/SER46 - Swafford
Files