



REPLY TO
ATTENTION OF

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

Regional Planning and
Environmental Division, South
New Orleans Environmental Branch

Decision Record

Individual Environmental Report Supplemental #11.b
IMPROVED PROTECTION ON THE
INNER HARBOR NAVIGATION CANAL
ORLEANS AND ST. BERNARD PARISHES, LOUISIANA

IERS #11.b – Tier 2 Borgne – IHNC

Description of the Proposed Action. The proposed action consists of restoring and reinforcing portions of levees and floodwalls that do not meet the necessary factors of safety for stability and seepage, as dictated by current Hurricane and Storm Damage Risk Reduction (HSDRRS) design guidelines. The levees and floodwalls within the project area provide a level of risk reduction that is currently below the 100-year level of risk reduction. After construction of the Borgne Barrier (as described in IER #11 Tier 2 Borgne) and the Seabrook Gate (as described in IER #11 Tier 2 Pontchartrain) and once the structures are operational, the Inner Harbor Navigation Canal (IHNC) and Gulf Intracoastal Waterway reaches would become secondary risk reduction features required to withstand water levels caused by pump station outflow, overtopping of the primary risk reduction system, and internal rainfall. The design guidelines used to determine the current safety factors assume that water levels within the IHNC are at 8 feet (ft; North American Vertical Datum of 1988 [NAVD88]) corresponding to a 100-year level hurricane event and 12 ft corresponding to a 500-year level hurricane event.

Factors Considered in Determination. The New Orleans District Corps of Engineers (CEMVN) has assessed the impacts of the proposed action on significant resources in the project area including water and coastal resources, upland resources, wildlife, threatened and endangered species, cultural resources, recreational resources, aesthetics, noise, air quality, transportation, socioeconomics, environmental justice, and the risk of encountering Hazardous, Toxic, or Radioactive Wastes.

The impacts for the proposed action are as follows:

- **Water and Coastal Resources** - There would be no direct impacts to water and coastal resources in the area (including the IHNC, GIWW, and the portion of Bayou Bienvenue designated a Natural and Scenic River). Indirect impacts could include increased turbidity and sedimentation within these waterways. These impacts would be minor and

minimized through use of Best Management Practices and adherence to state and federal regulations governing stormwater runoff at construction sites. No wetlands would be impacted therefore, no compensatory mitigation is required.

- **Upland Resources** - Direct impacts to upland resources in the project area would be minor and temporary and would include soil disturbance during construction and the loss approximately 1.2 acres of marginal habitat. Staging areas which previously consisted of marginal habitat would eventually return to their preconstruction conditions.
- **Wildlife** - There would be minor and temporary direct impacts to small amounts of non-natural occurring wildlife habitat during construction resulting primarily from soil disturbance and noise.
- **Threatened and Endangered Species** – Only aquatic threatened and endangered species could potentially occur in the project area. Because no in-water construction work is included in the proposed action, no threatened or endangered species would be affected during construction or after the project has been completed. On 24 July 2010, the US Fish and Wildlife Service concurred with CEMVN’s conclusion that the proposed action would not be likely to adversely affect any threatened or endangered species or their critical habitat.
- **Cultural Resources** - The proposed action would not impact any historic properties. The existing right-of-way and proposed staging areas have been previously impacted extensively by the construction of major navigation channels (GIWW and IHNC), port facilities, HSDRRS, railroads, vehicular bridges, and by regular maintenance dredging activities, making the likelihood for discovering intact and undisturbed archaeological deposits in the existing right-of-way minimal.
- **Recreational Resources** - Indirect impacts associated with elevated noise, access difficulty and potential disturbance from night lighting, especially to recreational resources located around the northern IHNC would be possible. As most of the recreational resources in this area are currently either closed or under renovation, indirect impacts would be anticipated to be minor and would be temporary, occurring only during the construction period. Minor and temporary cumulative impacts to recreational resources would be possible due to the combination of the IHNC restoration/reinforcement methods and other projects in the area (particularly if construction of the Seabrook Gate structure overlaps with the proposed action).
- **Aesthetics** – Direct, minor temporary impacts resulting from the presence of construction equipment/vehicles and from lighting used for any nighttime construction to aesthetics in the project vicinity would be minor.
- **Noise** – Direct, minor and temporary impacts would result from the increased noise levels from construction activities (within 200 ft) and from construction vehicle traffic along minor roadways. Potential minor and temporary indirect impacts associated with elevated noise include those related to recreation, wildlife, and emotional and mental

stress that could result from the noise levels in the area during construction. Cumulative noise impacts could result from multiple ongoing and planned construction projects in the area; this would be most significant along the northern reaches of the IHNC. These cumulative noise impacts would be minor and temporary.

- **Air Quality** - Temporary impacts to air quality from construction vehicle emissions and fugitive dust released by construction activities. Vehicle emissions would be minor and fugitive dust would be managed through BMPs such as sprinkler trucks. Potential minor and temporary indirect impacts to air quality could include temporary visual and health impairments created by airborne dust and equipment emissions. These impacts would also be minimized through the use of BMPs.
- **Transportation** - Direct temporary impacts associated with a potential increase in congestion from construction traffic could occur. Minor indirect impacts to wear and tear of secondary roads could occur; however, haul routes would be maintained and project access would occur primarily through the use of roadways rated for heavy trucks.
- **Socioeconomics** – Temporary, beneficial direct impacts to socioeconomics associated with the purchase of materials, equipment, and services and a temporary increase in employment and income during project construction would occur. Beneficial indirect and cumulative impacts would include enhanced protection of socioeconomic resources as a result of enhancement of the HSDRRS and potential long-term employment opportunities and subsequent increases in income levels in Orleans and St. Bernard Parishes.
- **Environmental Justice** - All populations groups within the HSDRRS would benefit directly from completion of the proposed action and the resultant enhanced flood-protection. There would be minor and temporary indirect impacts resulting from construction activities, such as elevated noise, diminished air quality, and increased traffic congestion associated with construction activities. These impacts would equally impact non-minority and non-low-income communities as well as minority and low-income communities; therefore, disproportionately adverse effects on minority and low-income populations would not be expected to occur.

Environmental Design Commitments. If the proposed project has not been constructed within 1 year of 28 October 2010, or if changes are made to the proposed project, the Corps should re-initiate Endangered Species Act consultation with USFWS to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

If any unrecorded cultural resources are determined to exist within the proposed project area, then no work will proceed at the site(s) containing these cultural resources until a CEMVN staff archaeologist has been notified and final coordination with the Louisiana State Historic Preservation Officer (SHPO) and Tribal Historic Preservation Officer (THPO) has been completed.

Agency & Public Involvement. Various governmental agencies, non-governmental organizations, and citizens were engaged throughout the preparation of IER #11.b Tier 2 Borgne Supplemental. Agency staff from U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency Region VI, U.S. Department of Commerce, National Marine Fisheries Service, U.S. Natural Resources Conservation Service, Advisory Council on Historic Preservation, Governor's Executive Assistant for Coastal Activities, Louisiana Department of Wildlife and Fisheries, Louisiana Department of Natural Resources, Louisiana Department of Environmental Quality, and Louisiana SHPO were part of an interagency team that has and will continue to have input throughout the HSDRRS planning process.

There have been over 100 public meetings since March 2007 about proposed HSDRRS work in the New Orleans area. Issues relating to draft IER #11.b Tier 2 Borgne Supplemental were discussed during three of these meetings: 13 October, 26 October and 8 November, 2010. CEMVN sends out public notices in local and national newspapers, news releases (routinely picked up by television and newspapers in stories and scrolls), emails, and mail notifications to stakeholders for each public meeting. In addition, www.nolaenvironmental.gov was established to provide information to the public regarding proposed HSDRRS work. Below is a list of comments received.

1. Public Comments (found in Appendix D)
 - a. John Koefler, Citizens against Widening the Industrial Canal: letter received 13 November 2010
2. Agency Comments (found in Appendix E)
 - a. National Marine Fisheries Service, Southeast Regional Office: letter dated 20 October 2010
 - b. National Resources Conservation Service: letter dated 21 October 2010
 - c. U.S. Fish and Wildlife Service: letter dated 28 October 2010
 - d. Louisiana Department of Wildlife and Fisheries letter dated 10 November 2010

Decision. In accordance with the Alternative Arrangements for NEPA Compliance, as published in the Federal Register on 13 March 2007, CEMVN has assessed the potential environmental impacts of the proposed action described in this IER, and performed a review of the above comments received for draft IER #11.b Tier 2 Borgne Supplemental, as well as public meetings held on 13 October, 26 October, and 8 November 2010.

Furthermore, all practicable means to avoid or minimize adverse environmental impacts have been incorporated into the recommended plan. The public interest will be best served by implementing the proposed action to reduce hurricane and storm damage risk, in a timely manner, to residences, businesses and infrastructure in the areas surrounding the IHNC as described in IER #11.b Tier 2 Borgne Supplemental, and in accordance with the design commitments discussed above.

CEMVN will prepare a Comprehensive Environmental Document (CED) that may contain additional information related to IERS #11.b that becomes available after the execution of the Final IERS. The CED will provide a mitigation plan, comprehensive cumulative impacts analysis, and any additional information that addresses outstanding data gaps in any of the IERS

in accordance with the Federal Register notice dated 13 March 2007.

I have reviewed IER #11.b Tier 2 Borgne Supplemental and have considered agency comments and recommendations and comments received from the public during the scoping phase and comment periods. I find the recommended plan fully addresses the objectives as set forth by the Administration and Congress in the 3rd, 4th, 5th, 6th Supplemental Appropriations.

The plan is justified, in accordance with environmental statutes, and it is in the public interest to construct the actions as described in this document and IER Tier 2 Borgne, which is attached hereto and made a part hereof.

29 Nov 2010
Date


Edward R. Fleming
Colonel, US Army
District Commander

**FINAL
INDIVIDUAL ENVIRONMENTAL REPORT SUPPLEMENTAL**

**IMPROVED PROTECTION ON THE
INNER HARBOR NAVIGATION CANAL**

ORLEANS AND ST. BERNARD PARISHES, LOUISIANA

IERS #11.b – TIER 2 BORGNE - IHNC



**US Army Corps
of Engineers®**

November 2010

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1.0 INTRODUCTION

The United States (U.S.) Army Corps of Engineers (USACE)-Mississippi Valley Division, New Orleans District (CEMVN) has prepared this *Individual Environmental Report Supplemental (IERS) #11.b – Tier 2 Borgne – Improved Protection on the Inner Harbor Navigation Canal (IHNC), Orleans and St. Bernard Parishes, Louisiana*, referred to as IERS #11.b – Tier 2 Borgne – IHNC in the remainder of this report. This IERS has been prepared to evaluate the potential impacts associated with restoring and reinforcing approximately 4.6 miles (mi) of non-contiguous IHNC and Gulf Intracoastal Waterway (GIWW) levees and floodwalls in Orleans Parish, Louisiana. This document is the second supplement to *Individual Environmental Report #11 (IER #11) – Tier 2 Borgne - Improved Protection on the Inner Harbor Navigation Canal, Orleans and St. Bernard Parishes, Louisiana* (USACE 2008a), and evaluates strengthening secondary flood risk reduction structures against water that could potentially enter the GIWW and IHNC from overtopping of the primary risk reduction system, and internal rainfall. Evaluation of deficient segments of the IHNC Hurricane Storm Damage Risk Reduction System (HSDRRS) were divided into three reaches (Reach 1, 2, and 3; figure 1) based on the sub-basins that are protected by the existing flood risk reduction system.

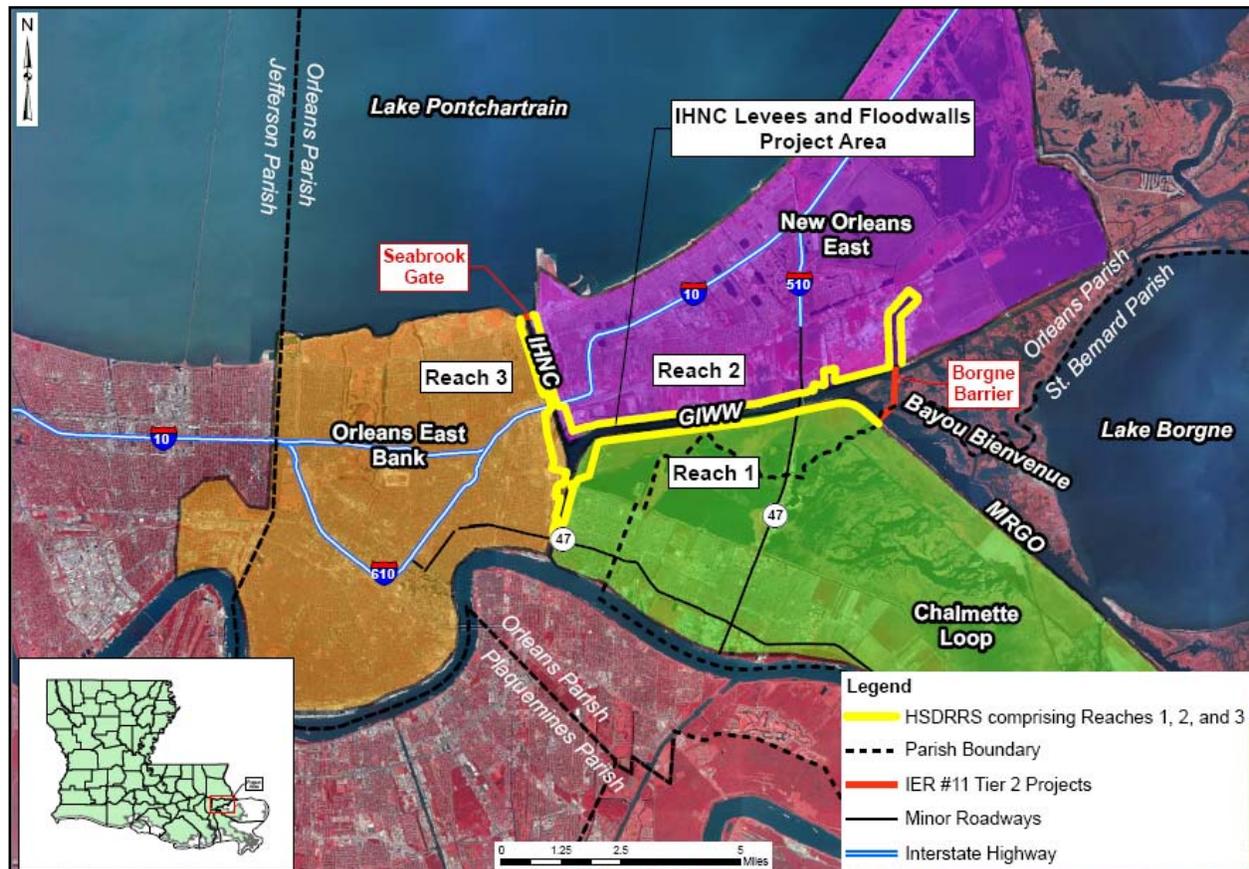


Figure 1. Project Area Map Showing the Location of Sub-basins and Reaches 1, 2, and 3

IERS #11.b – Tier 2 Borgne - IHNC was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality (CEQ)'s

Regulations (40 Code of Federal Regulations [CFR] 1500-1508), as reflected in the USACE Engineering Regulation (ER) 200-2-2, Environmental Quality, Procedures for Implementing NEPA (33 CFR 230). The proposed action is located in southeastern Louisiana and is part of the Federal effort to rebuild and complete construction of the HSDRRS in the New Orleans Metropolitan Area as a result of Hurricanes Katrina and Rita.

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of this project is to provide 100-year level risk reduction to the New Orleans Metropolitan Area by restoring and reinforcing existing HSDRRS features along the IHNC and GIWW to meet current HSDRRS design guidelines for safety and stability (USACE 2008b). The term “100-year level of risk reduction,” as it is used throughout this document, refers to a level of risk reduction which reduces the risk of hurricane surge and wave-driven flooding that the New Orleans Metropolitan area has a 1 percent chance of experiencing each year. Approximately 33 mi of levees and floodwalls (I-walls, T-walls, L-walls), and closure gate structures within this corridor were examined against HSDRRS seepage and stability criteria. Of the 33 mi, 21 sections of secondary protection totaling approximately 4.6 mi were identified as not meeting the HSDRRS seepage and stability criteria and have been proposed for restoration to improve flood risk reduction. With the construction of the Borgne Barrier and Seabrook Gate (figure 1) underway, these reaches will no longer be the primary line of defense for these areas. However, these floodwalls and levees are part of the HSDRRS and are required to meet HSDRRS Engineering Standards in order for the system to be certified under the National Flood Insurance Program.

1.2 AUTHORITY FOR THE PROPOSED ACTION

The proposed action was authorized by the Department of Defense (DoD), Emergency Supplemental Appropriations to Address Hurricanes in the Gulf of Mexico, and Pandemic Influenza Act of 2006 (3rd Supplemental – Public Law [PL] 109-148, Chapter 3, Construction, and Flood Control and Coastal Emergencies) and the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (PL 109-234; 4th Supplemental). Additional funding was provided in the Fiscal Year 2008 Emergency Supplemental Funding, PL 110-252 (6th Supplemental).

1.3 PRIOR REPORTS

Several reports related to HSDRRS in the vicinity of the proposed action have been prepared by the USACE, other Federal, state, and local agencies, research institutes, and individuals. Pertinent studies, reports, and projects are summarized below:

- On 20 November 2010, the CEMVN Commander signed a Decision Record on IERS #12 Addendum entitled, “GIWW, Harvey, and Algiers Levees and Floodwalls, Jefferson, Orleans, and Plaquemines Parishes, Louisiana.” The document was prepared to evaluate the potential impacts associated with proposed project revisions related to the location of a disposal site for levee material, construction of floodwalls, relocation of the Barriere Golf Course, and possible temporary closures of the Belle Chasse Tunnel.
- On 29 October 2010, the CEMVN Commander signed a Decision Record on IER #31 entitled, “Contractor Furnished Borrow Material #7, East Baton Rouge, Jefferson, Lafourche, Plaquemines, St. Bernard, and St. Tammany Parishes, Louisiana, and Hancock County, Mississippi.” The document evaluates the potential impacts associated with the possible excavation of ten proposed contractor furnished borrow areas.

- On 7 October 2010, the CEMVN Commander signed a Decision Record on IER #27 entitled, “Outfall Canal Remediation on the 17th Street, Orleans Avenue and London Avenue Canals, Jefferson and Orleans Parishes, Louisiana.” The document was prepared to evaluate the potential impacts associated with strengthening of floodwalls along these three outfall canals.
- On 1 April 2010, the CEMVN Commander signed a Decision Record on IER #11 Tier 2 Pontchartrain entitled “Improved Protection on the Inner Harbor Navigation Canal, Tier 2 Pontchartrain, Orleans Parish, Louisiana.” The document was prepared to evaluate the potential impacts associated with the proposed construction of a storm surge risk reduction structure on the IHNC where it meets Lake Pontchartrain at Seabrook.
- On 22 January 2010, the CEMVN Commander signed a Decision Record on IER #32 entitled, “Contractor Furnished Borrow Material #6, Ascension, Plaquemines, and St. Charles Parishes, Louisiana.” The document was prepared to evaluate the potential impacts associated with the possible excavation of seven proposed contractor furnished borrow areas.
- On 10 December 2009, the CEMVN Commander signed a Decision Record on IER Supplemental #11 Tier 2 Borgne entitled “Improved Protection on the Inner Harbor Navigation Canal, Orleans, and St. Bernard Parishes, Louisiana.” The document evaluates the potential effects associated with proposed project revisions to the original IER #11 Tier 2 Borgne gate design at Bayou Bienvenue.
- On 28 September 2009, the CEMVN Commander signed a Decision Record on IER #30 entitled, “Contractor Furnished Borrow Material #5, St. Bernard and St. James Parishes, Louisiana, and Hancock County, Mississippi.” The document evaluates the potential impacts associated with the possible excavation of three proposed contractor furnished borrow areas.
- On 8 September 2009, the CEMVN Commander signed a Decision Record on IER #29 entitled, “Contractor Furnished Borrow Material #4, Orleans, St. John the Baptist, and St. Tammany Parishes, Louisiana.” The document evaluates the potential effects associated with the possible excavation of three proposed contractor furnished borrow areas.
- On 31 July 2009, the CEMVN Commander signed a Decision Record on IER #28 entitled, “Government Furnished Borrow Material #4, Plaquemines, St. Bernard, and Jefferson Parishes, Louisiana.” The document evaluates the potential impacts associated with the possible excavation of two government furnished borrow areas, and an access road to a previously approved government furnished borrow area.
- On 3 February 2009, the CEMVN Commander signed a Decision Record on IER #25 entitled “Government Furnished Borrow Material #3, Orleans, Jefferson, and Plaquemines Parishes, Louisiana.” The document was prepared to evaluate the potential impacts associated with the possible excavation of four government furnished borrow areas.
- On 21 October 2008, the CEMVN Commander signed a Decision Record on IER #11 Tier 2 Borgne entitled "Improved Protection on the Inner Harbor Navigation Canal, Tier 2 Borgne Orleans and St. Bernard Parishes, Louisiana." The document was prepared to evaluate the potential impacts associated with constructing a surge barrier near Lake Borgne.
- On 20 October 2008, the CEMVN Commander signed a Decision Record on IER #26 entitled "Pre-Approved Contractor Furnished Borrow Material #3, Jefferson, Plaquemines, and St. John the Baptist Parishes, Louisiana, and Hancock County, Mississippi." The document was prepared to evaluate the potential impacts associated with the actions taken by

commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.

- On 30 May 2008, the CEMVN Commander signed a Decision Record on IER #22 entitled “Government Furnished Borrow Material #2, Jefferson and Plaquemines Parishes, Louisiana and Hancock County, Mississippi.” The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE while excavating borrow areas for use in construction of the HSDRRS.
- On 5 May 2008, the CEMVN Commander signed a Decision Record on IER #23 entitled “Pre-Approved Contractor Furnished Borrow Material #2, St. Bernard, St. Charles, Plaquemines Parishes, Louisiana, and Hancock County, Mississippi.” The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- On 21 February 2008, the CEMVN Commander signed a Decision Record on IER #18 entitled “Government Furnished Borrow Material, Jefferson, Orleans, Plaquemines, St. Charles, and St. Bernard Parishes, Louisiana.” The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of excavating borrow areas for use in construction of the HSDRRS.
- On 14 February 2008, the CEMVN Commander signed a Decision Record on IER #19 entitled “Pre-Approved Contractor Furnished Borrow Material, Jefferson, Orleans, St. Bernard, Iberville, and Plaquemines Parishes, Louisiana, and Hancock County, Mississippi.” The document was prepared to evaluate the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- On 24 July 2006, the CEMVN Commander signed a Finding of No Significant Impact (FONSI) on Environmental Assessment (EA) #433 entitled “U.S. Army Corps of Engineers Response to Hurricanes Katrina & Rita in Louisiana.” The document was prepared to evaluate the potential impacts associated with the actions taken by the USACE as a result of Hurricanes Katrina and Rita in southern Louisiana.
- The final Environmental Impact Statement (EIS) for the Lake Pontchartrain and Vicinity (LPV) Hurricane Protection Project was published in August 1974. A Statement of Findings was signed by the CEMVN Commander on 2 December 1974. Final Supplement I to the EIS, dated July 1984, was followed by a Record of Decision (ROD), signed by the CEMVN Commander on 7 February 1985. Final Supplement II to the EIS, dated August 1994, was followed by a ROD signed by the CEMVN Commander on 3 November 1994.

1.4 PUBLIC CONCERNS

Throughout southern Louisiana, one of the greatest areas of public concern is reducing the risk of hurricane, storm, and flood damage for businesses and residences and providing for public safety during major storm events. Hurricane Katrina forced residents from their homes, temporarily or permanently closed businesses and, due to extensive flooding, made returning to communities in a timely manner unsafe.

In public meetings held for IERs #11 Tier 2 Borgne and Tier 2 Pontchartrain (USACE 2008a and 2010a), citizens in both Orleans and St. Bernard Parishes expressed concern over inadequate HSDRRS in the area. Public concerns were raised regarding potential social impacts that may be experienced during construction, including increased noise, damage to transportation

infrastructure from construction vehicles, and disruption of historical and cultural resources, as well as concerns for potential land use restrictions.

Citizens requested that the CEMVN consider any impacts the project might have on the water table, and warned that groundwater could be contaminated if pipelines carrying chemicals were damaged during construction. Comments were also voiced about the possible hazards of construction in and near residential streets where children play.

Concerns about flood risk reduction during construction were raised, particularly with regard to timelines of projects in the area, the closure structures on the GIWW (IER #11 Tier 2 Borgne), and projects along the IHNC, specifically the east and west wall modifications. Business representatives were concerned about flooding and stress to existing floodwalls from rising water as a result of closing the GIWW, and they expressed interest in the construction of a pump in the IHNC to alleviate potential flooding during a storm event from the existing pumps that drain into the IHNC.

Three public meetings were held for IERS #11.b - Tier 2 Borgne both before and during the 30-day public comment period. These meetings were held on 13 October 2010, 26 October 2010, and 8 November 2010 within Orleans East Bank, New Orleans East, and Chalmette Loop (Lower 9th Ward), respectively. Summaries of comments made at these public meetings can be found in appendix F.

2.0 PROPOSED ACTION AND ALTERNATIVES

NEPA requires Federal agencies to rigorously explore and objectively evaluate all reasonable alternatives including the potential for taking “no action” in their alternatives analysis.

2.1 DESCRIPTION OF THE PROPOSED ACTION

The proposed action consists of restoring and reinforcing portions of levees and floodwalls that do not meet the necessary factors of safety for stability and seepage, as dictated by current HSDRRS design guidelines (USACE 2008b). These guidelines can be found at <http://www.mvn.usace.army.mil/ENG/PageA.asp>. The levees and floodwalls within the project area provide a level of risk reduction that is currently below the 100-year level of risk reduction. After construction of the Borgne Barrier (as described in IER #11 Tier 2 Borgne) and the Seabrook Gate (as described in IER #11 Tier 2 Pontchartrain) and once the structures are operational, the IHNC and GIWW reaches would become a secondary risk reduction feature required to withstand water levels caused by pump station outflow, overtopping of the primary risk reduction system, and internal rainfall. The design guidelines used to determine the current safety factors assume that water levels within the IHNC are at 8 feet (ft; North American Vertical Datum of 1988 [NAVD88]) corresponding to a 100-year level hurricane event and 12 ft corresponding to a 500-year level hurricane event.

The project area lies completely within Orleans Parish; however, it defines the dividing line for three sub-basins of the larger Pontchartrain Basin: Orleans East Bank, New Orleans East, and Chalmette Loop (St. Bernard Parish) (figure 1). The HSDRRS within this corridor is composed of various features that provide risk reduction to the three sub-basins, including earthen levees, I-walls, L-walls, T-walls, and closure gates that extend along the IHNC from the IHNC Lock to the Seabrook Bridge at Lake Pontchartrain and along the GIWW from the IHNC to the Michoud Canal near the Borgne Barrier in eastern New Orleans. The project area is divided into three primary reaches, each of which contains deficient segments of levees and floodwalls (figure 2).

The existing levee system is designated with "station" numbers which represent a standard basis of measurement in engineering. The term "stations" refers to a form of measurement that marks distance in 100-ft increments along the longitudinal axis of the levee. The deficient segments of HSDRRS proposed for restoration or reinforcement under the proposed action will be identified by their designated station numbers. Detailed figures of each deficient segment included in the proposed action, and their right-of-ways (ROWs), are provided in appendix B.

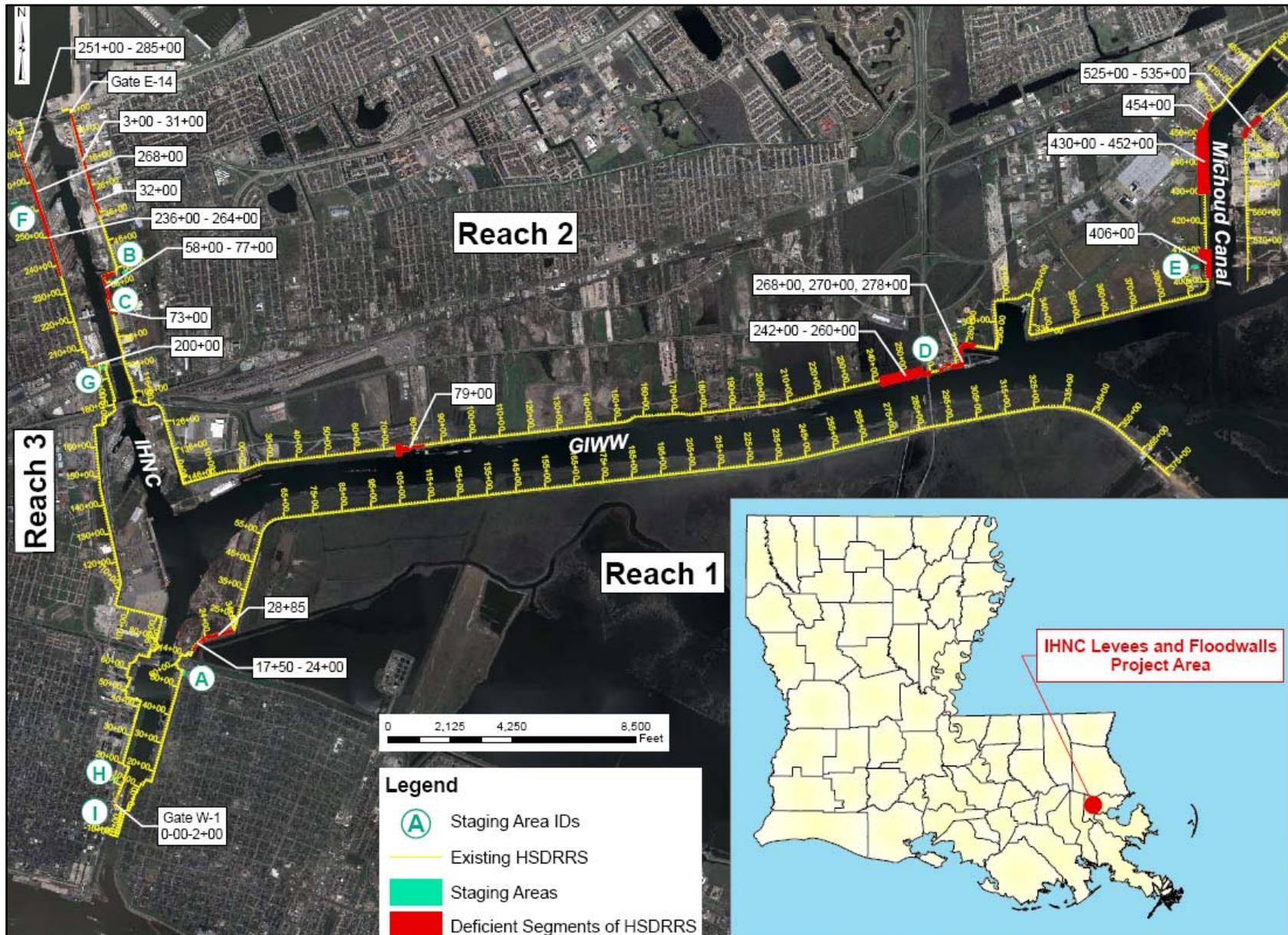


Figure 2. Map of Project Area Showing Deficient Segments of Levees and Floodwalls

2.1.1 Description of Restoration/Reinforcement Methods

Several methods of restoration/reinforcement, all of which would be built entirely within existing ROWs, would be used to address deficiencies within the subject reaches. These construction methods include the following:

Deep Soil Mixing

Deep soil mixing (DSM), a stabilization method that uses cement, lime, slag, other pozzolonic materials, and combinations of these stabilizers to increase the strength and stiffness of soft or loose ground, is a proposed and alternate reinforcement method at six deficient segments of the HSDRRS in the project area. DSM introduces panels of engineered grout or reagent into the underlying soils to modify their physical and chemical characteristics without excavation (see figure 3). The stabilizers are blended into the ground using a variety of mixing tools.

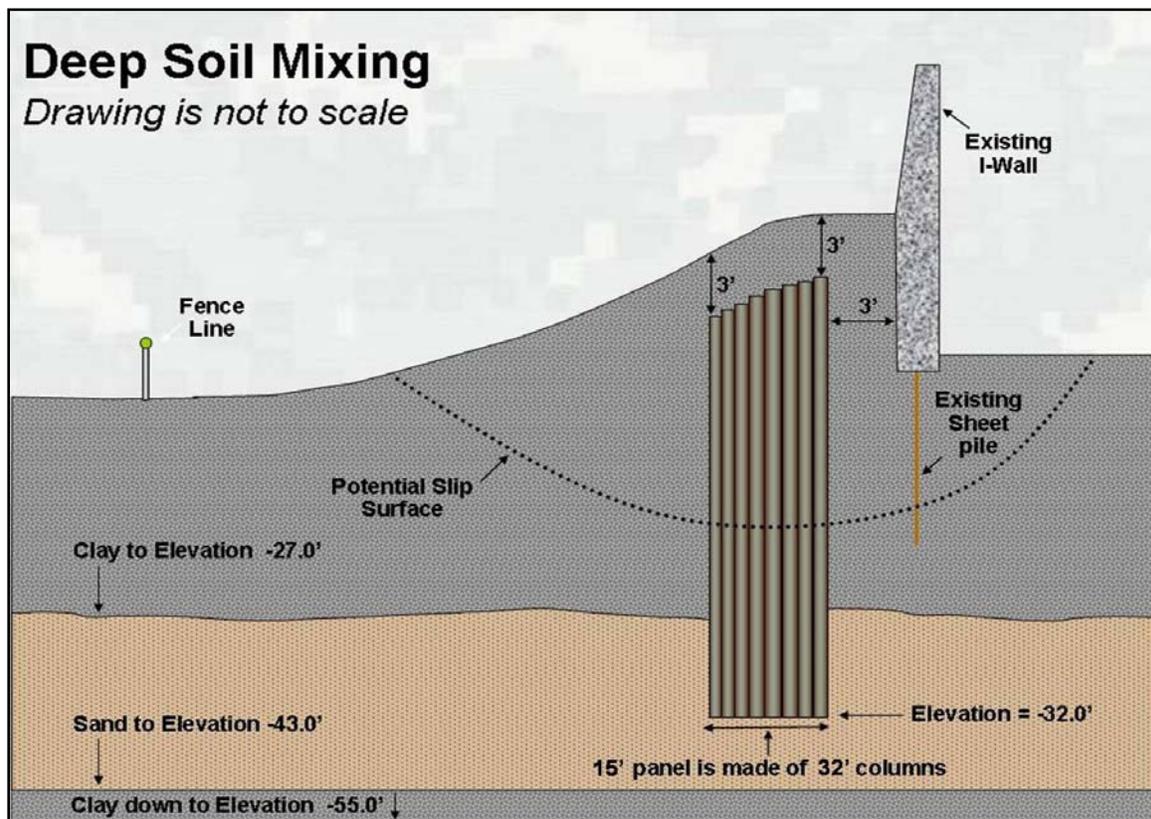


Figure 3. Conceptual Figure of Deep Soil Mixing

DSM would be used to improve the existing earthen embankment on the protected side of the levee or I-wall by installing soilcrete columns. Although, the exact dimensions of reinforcement methods cannot be determined until the final design is complete, DSM typically consists of soil mix columns arranged in rows or panels oriented perpendicular to the levee or I-wall. A typical DSM remediation could consist of eight 32-ft long soil-mixing columns in a row that overlap each other by approximately 6 inches, giving the panels a width of 15 ft. Each set of panels (columns) typically has 8 ft of space between them (figure 4).

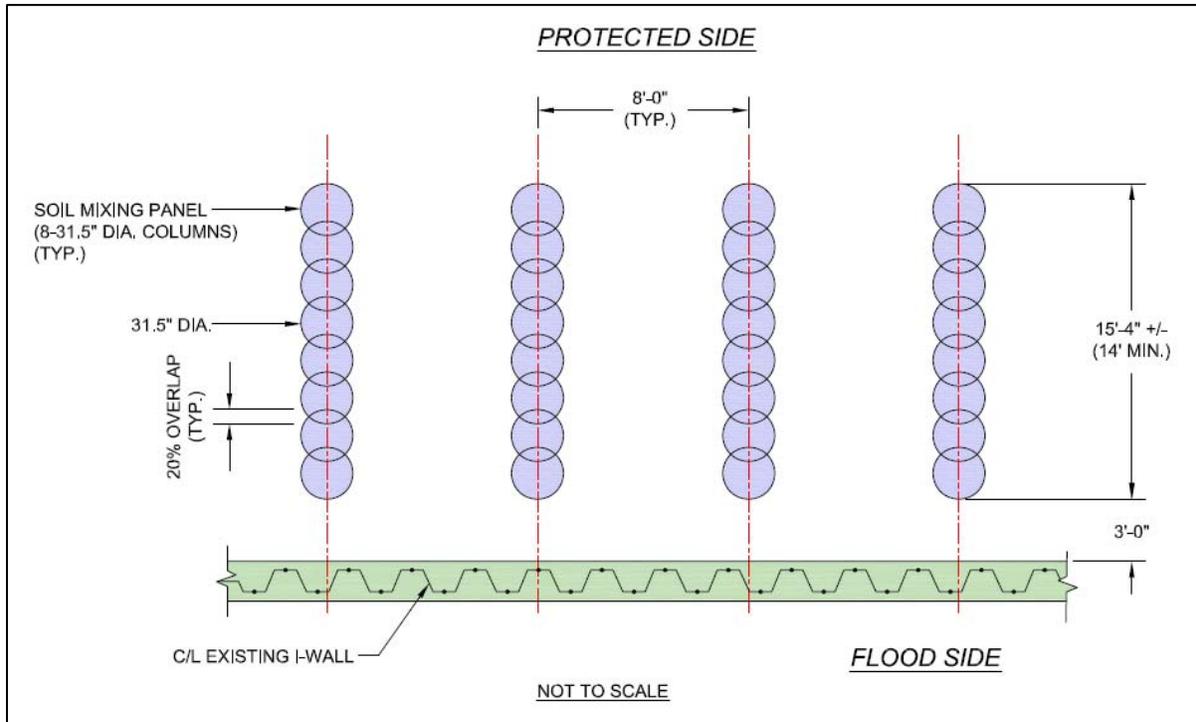


Figure 4. Soil Mixing Diagram Illustrating the Layout of Soil Mixing Panels along the Protected Side of an I-wall

Berm

Berms constructed for this project would consist of soil added to the protected side toe of a levee or floodwall to decrease the risk of failure as a result of stability and/or seepage issues (photo 1). Berms can be used to add extra weight to an area where a stability issue has been encountered and/or to place low-permeability material over a levee to mitigate a seepage problem. Approximately 16,000 cubic yards (cy) of government-approved borrow would be placed on the protected side of five deficient sections of the HSDRRS to increase stability and control seepage. Seepage berms are infrequently used in conjunction with floodwalls since floodwalls are often constructed in areas where ROW availability or cost is insufficient for levee construction (USACE 1989). However, the existing ROW for the floodwalls at stations 73+00, 79+00, 242+00 to 260+00, and 525+00 to 535+00 (Reach 2) offers enough space for stability berms to be built without requiring

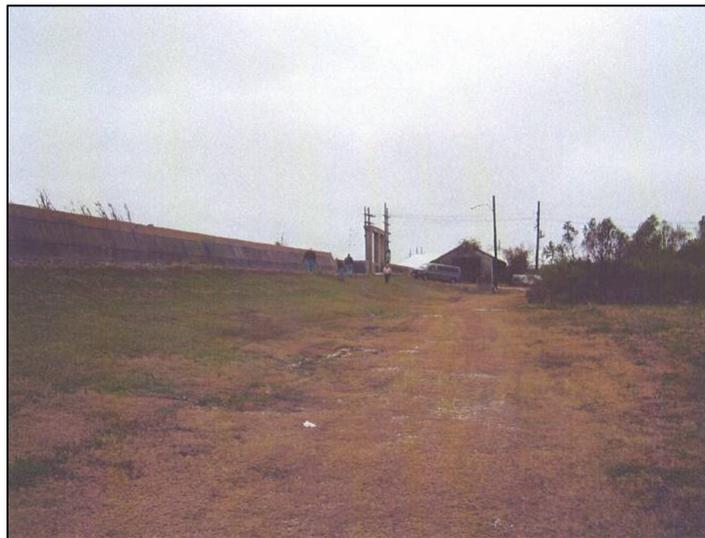


Photo 1. Example of a Berm (area of brown grass)

additional ROW. All proposed berms would have an approximate width of 25 ft, a height of 3 ft, and would be placed at the toe on the protected side of the levee or floodwall. Berms would be constructed to the estimated lengths provided for each station in tables 1 through 3. The embankment would be reseeded with turf grass upon completion.

Buttress Wall

A concrete buttress wall is an addition to an existing I-wall, which is constructed by driving piles, setting forms against (behind) the existing floodwall structure, and placing a concrete slab on the protected side of the floodwall. The new buttress pilings (vertical and batter piles) are installed at intervals directly against the existing walls to assist in resisting the floodwall or levee load (figure 5). Buttress walls are the proposed or alternate reinforcement method for approximately 13 sections of flood risk reduction within the project area.

Concrete Slab

A concrete slab is a remediation measure used on I-walls to decrease the protected side height of floodwalls, commonly referred to as “stick-up.” A concrete slab differs from a buttress slab in that it is a remediation measure not designed to address stability issues, but to control deflection of the existing I-wall during a storm event. Concrete slabs are sufficiently able to resist the existing floodwall or levee load without the need for buttress piles. Current design criteria require that there be less than 4 ft of stick-up; therefore, if the distance between the protected-side ground surface and either the top of the existing floodwall or the maximum canal water level is greater than 4 ft, a concrete slab would be poured adjacent to the floodwall on the protected side to raise the protected side ground surface. This reinforcement method is the proposed technique at stations 17+50 to 24+00 (Reach 1), Gate E-14, 58+00 to 77+00, 454+00 (Reach 2), and 200+00, 251+00 to 285+00, and Gate W-1 (Reach 3). The thickness of the concrete slabs would vary between 12 inches and 24 inches and extend out approximately 8 ft from the existing I-walls or gates to reinforce areas with stick-up concerns.

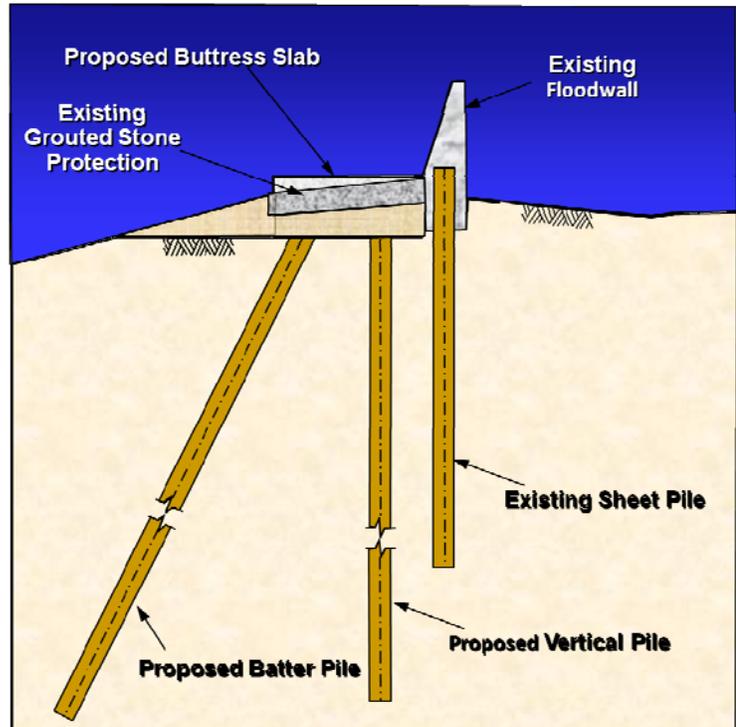


Figure 5. Conceptual Figure of a Buttress Wall

Relief Wells

Relief wells are vertically installed wells that intercept underseepage and provide a controlled outlet for the water, thus draining excess water from the subsurface sand layer (figure 6). They consist of a pipe advanced into a subsurface sand layer that is equipped with a well screen surrounded by filter material that is designed to prevent the inwash or migration of foundation materials into the well.

Three segments within Reach 2 (406+00 and 430+00 to 452+00) and Reach 3 (236+00 to 264+00), totaling approximately 5,600 ft in length, are proposed to be reinforced by relief wells.

Preliminary designs indicate that the relief wells would be installed at the toe on the protected side of deficient floodwall segments. Each relief well would be 8 inches in diameter and installed to a depth of approximately 40 ft to 45 ft. In addition, a collector pipe and discharge line would also be constructed along each segment where relief wells are installed. The collector pipe collects the excess seepage from each well and a discharge line for each I-wall segment discharges it to the nearest canal.

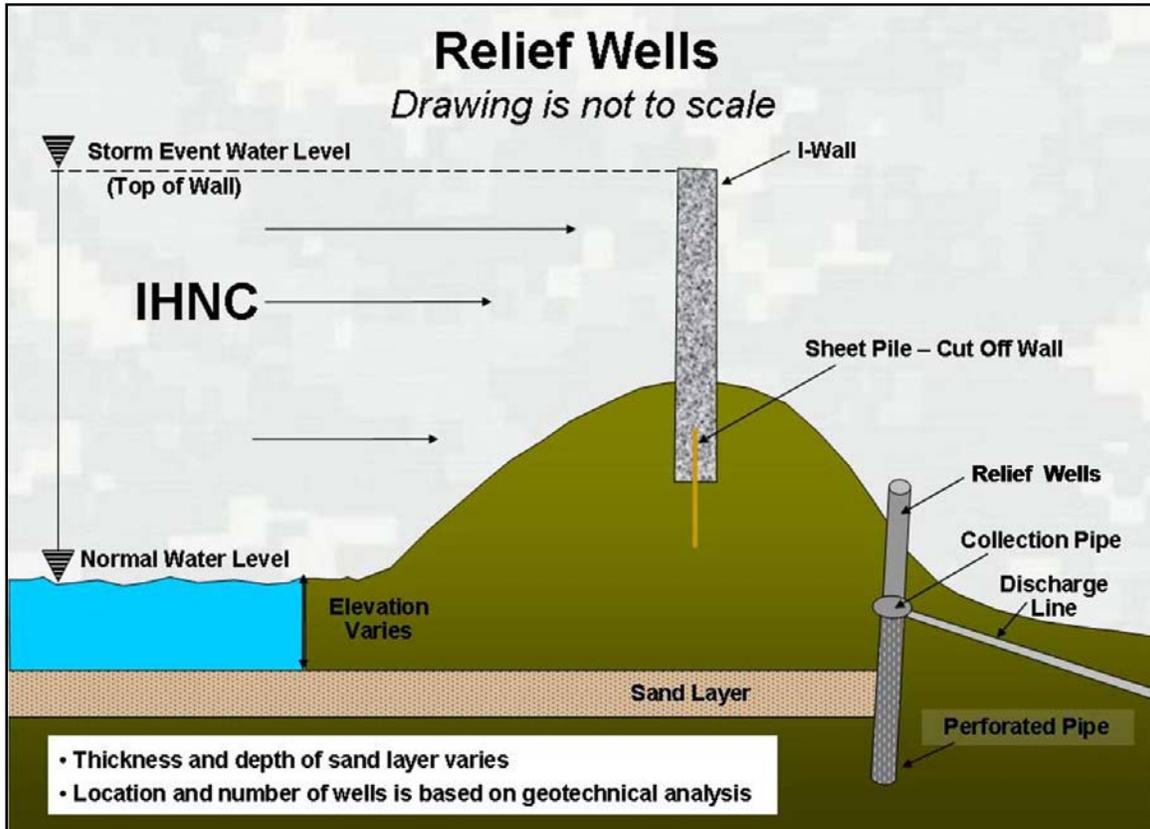


Figure 6. Conceptual Figure of Relief Wells

2.1.2 Proposed Restoration/Reinforcement Methods by Reach

A recommended plan for the proposed action of restoring and reinforcing multiple deficient segments of levees and floodwalls to meet the HSDRRS safety factors along the IHNC was developed based on preliminary engineering and cost analyses. Deficient segments (identified by station number) and the proposed restoration/reinforcement method for each are listed in tables 1 through 3. The proposed action is based on these proposed restoration/reinforcement methods; however, alternate restoration/reinforcement methods that could instead be employed at each of the subject stations are also provided in tables 1 through 3. Future detailed engineering and cost analyses conducted prior to finalizing the design could indicate that an alternate restoration or reinforcement method among those listed in the tables may be more appropriate for a given station; however, because all restoration/reinforcement methods would be conducted within approximately the same footprint and would provide the same level of risk reduction, the alternate restoration/reinforcement methods are not considered separate alternatives and are all evaluated as part of the proposed action for each segment. For several deficient segments of the HSDRRS, no alternate restoration/reinforcement method was available;

therefore, at these segments (stations), only the no action alternative and the proposed action were evaluated. All segments, regardless of restoration/reinforcement method used, would meet the required factor for safety.

Reach 1

Reach 1 extends from stations 0+00 to 380+00 along the east side of the IHNC from the IHNC Lock to the GIWW including the south side of the GIWW from the IHNC to Bayou Bienvenue. Reach 1 includes approximately 1,200 ft of deficient areas, which correspond with two stations, 28+85 and 17+50 to 24+00. Reach 1 station IDs, type of flood risk reduction structure, length, and proposed and alternate restoration/reinforcement methods are presented in table 1.

Table 1.
Reach 1 Restoration/Reinforcement Methods

Station	Type	Estimated Length (ft)	Proposed Restoration or Reinforcement Method	Alternate Restoration or Reinforcement Method
28+85	Earthen Levee	500	Deep Soil Mixing	Berm
17+50 to 24+00	I-wall	700	Concrete Slab	Buttress Wall

Reach 2

Reach 2 comprises the east side of the IHNC from Lake Pontchartrain to the GIWW and extends along the north side of the GIWW from the IHNC to the Borgne Barrier. Reach 2 has a total of approximately 3.2 mi (16,700 ft) of deficient areas, which are presented in table 2.

Table 2.
Reach 2 Restoration/Reinforcement Methods

Station	Type	Estimated Length (ft)	Proposed Restoration or Reinforcement Method	Alternate Restoration or Reinforcement Method
E-14	Gate	1,000	Concrete Slab	Buttress Wall
3+00 to 31+00	I-wall	2,800	Buttress Wall	NA
32+00	Gate	500	Buttress Wall	NA
58+00 to 77+00	I-wall	1,900	Concrete Slab	Buttress Wall
73+00	I-wall	200	Berm	Deep Soil Mixing
79+00	L-wall	3,000	Berm	Deep Soil Mixing
242+00 to 260+00	Earthen Levee	1,800	Berm	Deep Soil Mixing
268+00	T-wall	500	Buttress Wall	NA
270+00	I-wall	400	Buttress Wall	NA
278+00	I-wall	400	Buttress Wall	NA
406+00	I-wall	600	Relief Wells	NA
430+00 to 452+00	I-wall	2,200	Relief Wells	NA
454+00	I-wall	400	Concrete Slab	Buttress Wall
525+00 to 535+00	I-wall	1,000	Berm	Deep Soil Mixing

NA = no alternate restoration/reinforcement method available.

Reach 3

Reach 3 lies along the west side of the IHNC and extends from the IHNC Lock at the Mississippi River to the Seabrook Bridge at Lake Pontchartrain. As shown in table 3, Reach 3 has approximately 1.19 mi (6,300) ft of deficient areas.

Table 3.
Reach 3 Restoration/Reinforcement Methods

Station	Type	Estimated Length (ft)	Proposed Restoration or Reinforcement Method	Alternate Restoration or Reinforcement Method
268+00	I-wall	600	Deep Soil Mixing	Buttress Wall
236+00 to 264+00	I-wall	2,800*	Relief Wells	NA
251+00 to 285+00	I-wall	3,400*	Concrete slab	Buttress Wall
200+00	I-wall	600	Concrete Slab	Buttress Wall
W-1 0+00 to 2+00	Gate	200	Concrete Slab	Buttress Wall

NA = no alternate restoration/reinforcement method available.

* = Approximately 1300 ft of these two deficient areas overlap. In this 1300 ft, two restoration and reinforcement methods would likely be applied. For calculation of the total length of deficiency, the overlapping area is only counted once. Therefore, the length of deficiency from station 236+00 to 285+00 is 4,900 feet.

In addition to the 1.19 mi of deficient segments in Reach 3 that would be restored/reinforced two structures, one maintenance building and one small shed would either be relocated or demolished as part of the proposed action. The structures are located adjacent to Gate W-1 and stations 0+00 through 2+00 at the IHNC Lock (photo 2). The buildings are approximately 1 ft from the floodwall; therefore, construction of a concrete slab to provide additional stability would require the demolition or relocation of the buildings. The structures, which are owned by the USACE and used for equipment and material storage associated with operation of the IHNC Lock, are sited on USACE property outside of the existing ROW for the proposed action. The shed has a footprint of approximately 560 square feet (sq ft) and contains maintenance equipment such as ladders, lawnmowers, containers, etc.). The maintenance building houses chemicals for cleaning and mechanical operations (degreasers, etc.) and occupies approximately 260 sq ft. The decision as to whether these structures would be relocated or demolished would be made during the final design process for the proposed work at Gate W-1. If relocation is selected, the structures would be moved to another location on the current USACE property.

2.1.3 Construction-Related Information for the Proposed Action

Restoration/reinforcement construction would occur entirely within the existing levee/floodwall ROW. The construction duration would be approximately 300 days (10 months). Construction schedules for work on the various deficient segments could overlap and may include work up to 24 hours per day and 7 days per week. Each restoration/reinforcement process would require its own combination of construction equipment (table 4) and would have its own estimated duration.



Photo 2. Location of Two Structures Proposed for Relocation or Demolition in Reach 3

**Table 4.
Restoration/Reinforcement Method Construction Equipment Requirements**

Construction Equipment	Project Restoration/Reinforcement Alternatives				
	Deep Soil Mixing	Berm	Buttress Wall	Concrete Slab	Relief Wells
Backhoe	X				
Crane	X		X		X
Dump Truck		X			
Excavator		X	X		
Front end loader		X			
Concrete mixer truck			X	X	
Auger drill rig	X				X
Dozer	X	X	X		X
Generators	X				X
Flatbed Trucks	X	X	X	X	X
Rollers		X			
Graders	X	X			
Portable Air Compressors	X				X
Welding Machines					X
Drill Rig	X				X

DSM is estimated to take approximately 12 weeks at a single location. Dust emissions would not be an issue due to the high water content of soil at the locations where DSM is the proposed reinforcement method; therefore, best management practices (BMPs) for dust control would not be required. However, if conditions change, BMPs for dust control would be incorporated.

The process to restore an I-wall or levee with a berm could take approximately 50 working days, allowing for rain and other weather delays. Embankment material would be transported to the site via dump truck. Given that approximately 18 cy of material can be carried in a single truckload and a rate of approximately one truckload every 30 minutes would be utilized, this process would require approximately 16 truckloads per day. Dust emissions from this method would be controlled using a water sprinkler truck.

Project design engineers estimate that construction of a buttress wall would require the excavation of approximately 600 cy of earthen material at each station to be reinforced with this method. Because the amount of excavated material would be relatively minor, it would not require disposal, but instead be used for backfill. Water trucks would be used for dust control should the water content of the soil not be sufficient to eliminate dust during the placement of embankment material.

Excavation activities would not be necessary for the addition of concrete slabs proposed at seven deficient segments because they would be placed over the existing ground. Each slab would then be attached to the ground using ground hooks. Concrete transport trucks may kick up some dirt in and around the project sites, but the use of water trucks would be implemented to control dust during construction as needed.

Preliminary project design indicates that relief wells would be approximately 30 ft to 35 ft deep, which would result in approximately 1 cy of soil tailings per well; therefore, soil quantities would not be significant enough to require disposal. Installation of relief wells would not generate any dust and no BMPs should be necessary.

Restoration and reinforcement activities within each subject reach would occur entirely within existing ROW. USACE-provided Geographic Information System (GIS) layers of ROW boundaries were used to determine the proposed footprint at each station. The total area of all existing ROW for the deficient segments of HSDRRS is approximately 82.6 acres (see breakdown by reach and station ID in table 7). This acreage is the total footprint that would be impacted (either temporarily or permanently) by the proposed action if the restoration/reinforcement methods required that the entire ROW at each deficient segment be disturbed during construction (worst-case scenario). If construction of the proposed action occurs without the disturbance or degradation of all ROW areas at the deficient segments, fewer acres would be impacted. The classification of impacts associated with the project footprint as permanent or temporary depends solely on the specific method of restoration/reinforcement being performed and the resource being evaluated.

For the duration of construction, materials and equipment necessary to complete the proposed restoration and reinforcement methods would be staged at nine locations throughout the project area. No construction would occur at these temporary staging areas, which are primarily located outside of existing ROW and are each approximately 0.5-acre in size or smaller (see table 7 in Section 3.2.2 for descriptions and approximate acreages and appendix C for detailed figures). The majority of the staging areas are located either in industrial areas or on undeveloped parcels. Staging Area F is located immediately adjacent to the Pontchartrain Park residential area. One staging area would be located along the east bank of the IHNC (Reach 1), south of its convergence with the GIWW; four staging areas would be required for Reach 2 restoration/reinforcement work along the east bank of the IHNC and north bank of the GIWW;

and four staging areas would be established along the west bank of the IHNC within Reach 3. Staging Area G, depicted as being located over Highway 90 (Chef Menteur Highway) in appendix C, was illustrated as such to show its location on the aerial map; this staging area would actually be located underneath the overpass.

Project access would occur along existing roads and properties, including but not limited to those illustrated in figure 7. Temporary construction easements adjacent to the existing ROW may be needed to provide access and adequate room for equipment operation. Small, ancillary streets are not highlighted on figure 7, but would be used to access existing HSDRRS. Reach 1 primary access would be from Florida Avenue, St. Claude Avenue, Jourdan Avenue, N. Claiborne Avenue, Paris Road, and to traverse the levee as needed. Primary access to Reach 2 would require use of the following roadways: Jourdan Road, Almonaster Boulevard, N. Claiborne Avenue, Japonica Street, Highway 90, and Paris Road, with secondary access through Terminal Road, Elaine Street and Boh Brothers Almonaster Yard, Industrial Parkway, and to traverse the levee as needed. Primary access to Reach 3 would occur from Hayne Boulevard, France Road, Japonica Street, Highway 90, N. Claiborne Avenue, Poland Avenue, and St. Claude Avenue, and to traverse the levee as needed. Construction of the proposed action would adhere to the New Orleans Codes of Ordinances regarding street weight limits for trucks and oversized vehicles (CNO 2010a) and would not result in any temporary road closures. Traffic Control Plans could be implemented for work in the project area, particularly along the IHNC on France Road and Jourdan Road.

Table 5 provides information on the approximate volumes of materials that would be required for construction of the proposed action.

Table 5.
Estimated Construction Material Quantities Required to Complete the Proposed Action

Material	Total Length of Material Placement (ft)	Units of Measure	Quantity
<i>Reach 1</i>			
Structural Concrete	700	cy	2,800
Silt Fencing	1200	linear feet (LF)	1,440
Concrete for DSM	500	cy	2,000
Rebar	700	LF	4,200
<i>Reach 2</i>			
Embankment Fill	6,000	cy	30,000
Top Soil	6,000	cy	30,000
Concrete Form	7,900	sq ft	31,600
Structural Concrete	3,300	cy	13,200
Silt Fencing	16,700	LF	20,040
Corrugated Metal Piping (CMP)	2,800	LF	7,000
Rebar	7,900	LF	47,400
<i>Reach 3</i>			
Concrete for DSM	600	cy	2,400
Concrete Form	4,200	sq ft	16,800
Structural Concrete	4,200	cy	16,800
Rebar	4,200	LF	25,200
Silt Fencing	7,600	LF	9,120
CMP	2,800	LF	7,000

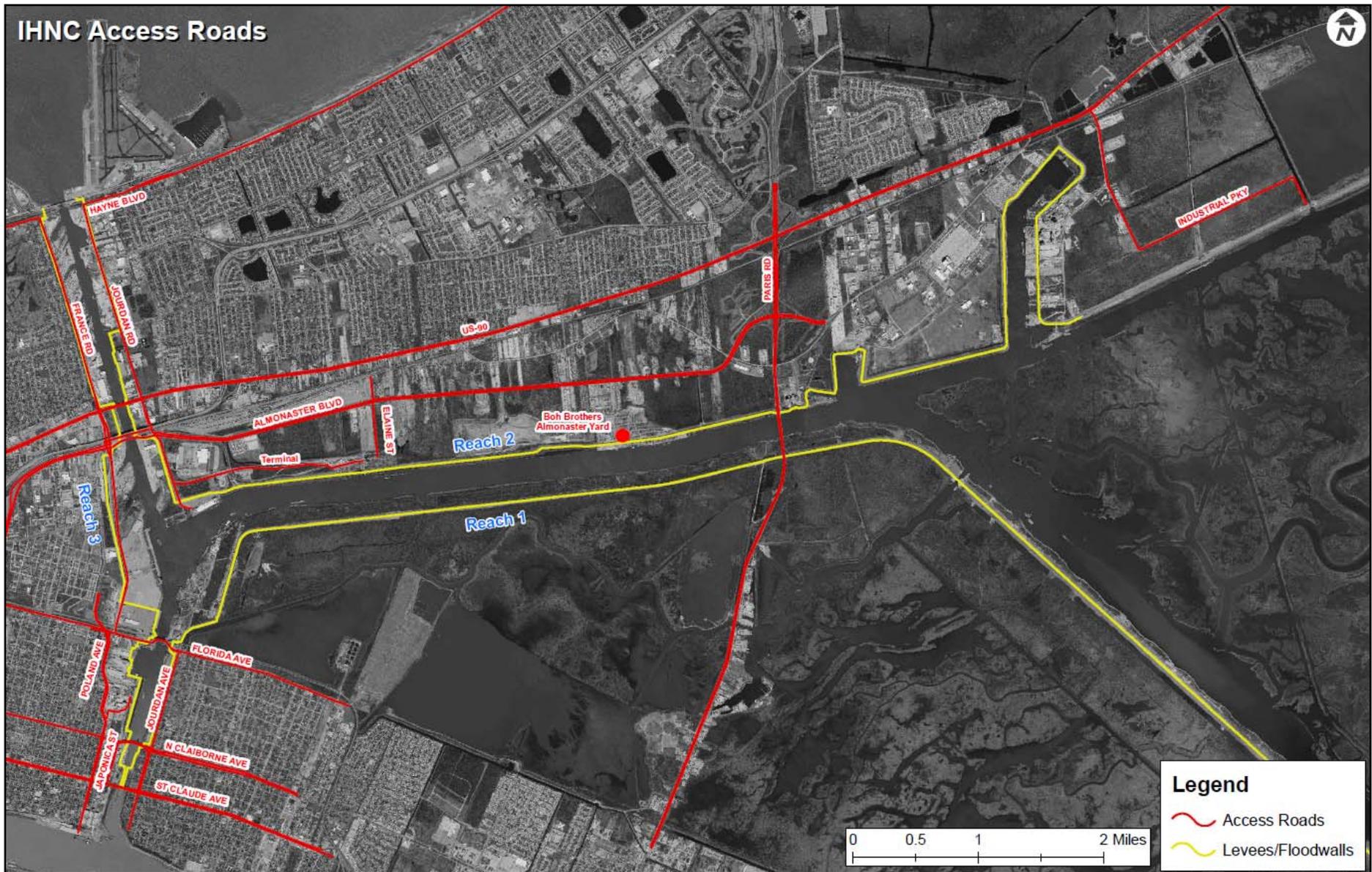


Figure 7. Map of Anticipated Project Access Roads and Properties

2.2 ALTERNATIVES TO THE PROPOSED ACTION

2.2.1 No Action Alternative

The CEQ regulations and USACE's ER for implementing NEPA require that a no action alternative be evaluated. Under the no action alternative, the proposed action would not be constructed by the CEMVN. The 4.6 mi of levees, floodwalls, and closure gate structures that were identified as being deficient would not be restored or reinforced; therefore, the secondary line of defense provided by these flood risk reduction structures in Reaches 1, 2, and 3 would remain in its current condition with potential seepage and stability issues. The Borgne Barrier and Seabrook Gate would be in place and would continue to serve as the primary line of defense for the project area. The Borgne Barrier consists of approximately 2 miles of new floodwalls and gates extending from the Michoud floodwall north of the GIWW to the levee on the west side of the MRGO. The Seabrook Gate is comprised of a sector gate and two vertical lift gates in the IHNC just south of the Senator Ted Hickey Bridge with T-wall floodwall tie-ins to LPV 104 to the west and LPV 105 to the east.

2.3 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The following alternatives were eliminated from further consideration due to increased engineering costs and because they did not adequately meet the purpose and need. These alternatives are considered complementary to alternatives that reduce flood risks.

2.3.1 Non-Structural Alternatives

Section 73 of the Water Resources Development Act (WRDA) requires consideration of non-structural alternatives in flood damage reduction studies. ER 1105-2-100 provides planning guidance on applicable non-structural measures, which states that non-structural measures can be considered independently or in combination with structural measures (USACE 2000). Non-structural measures reduce flood damages without significantly altering the nature or extent of flooding. Damage reduction from non-structural measures is accomplished by changing the use of the floodplains, or by accommodating existing uses to the flood hazard. Examples are flood proofing, relocation of structures, flood warning and preparedness systems (including associated emergency measures), and regulation of floodplain uses. Although the project area is located entirely within Orleans Parish, St. Bernard Parish is also considered in the cost estimate for non-structural alternatives because the proposed action would reduce the flood risk in both parishes. Both Orleans and St. Bernard Parish already have flood warning systems and evacuation plans in place and regulation of floodplain use is addressed by the National Flood Insurance Program; therefore, only flood proofing and relocation were considered as non-structural measures. The flood proofing non-structural measures evaluated in this analysis are to raise in place existing structures and the acquisition and relocation of the structures, which is defined as a buyout or permanent physical relocation.

Raise in Place

Flood proofing would require elevating all residential and commercial properties' structures subject to flooding in the study area above the expected levels of flooding. This alternative would also have to consider elevating roadways, public buildings, and some forms of public infrastructure that would need to continue operations during and after a storm event. Some facilities, such as roadways and railroads, might remain at grade when repair from storm damage would be less costly than the construction, operation, and maintenance of them on elevated structures. The average cost of elevating residential structures in the study area has been estimated at approximately \$95 per sq ft (USACE 2007a and 2007b). This includes the cost of

administration, design, inspection, costing, project management, and all other associated costs of elevating the structures, as well as the costs of the occupants of the residential structures being relocated to temporary housing during the time that the structures are being elevated. Approximately 107,000 homes in Orleans Parish and 20,000 homes in St. Bernard Parish were damaged by flooding from Hurricane Katrina (U.S. Department of Housing and Urban Development [HUD] 2006). Although Hurricane Katrina was greater than a 100-year storm and not all of this flooding was a product of breaching or overtopping of the IHNC HSDRRS, this figure is reasonably representative of the magnitude of homes in these parishes that are vulnerable to storm surge induced flooding. The \$95 per sq ft average cost results in a cost of approximately \$152,000 to raise a 1,600-sq ft residence above the expected level of flooding. Using these assumptions, the cost of raising flood-prone homes would be estimated at approximately \$16.3 billion in Orleans Parish and \$3 billion in St. Bernard Parish for a total cost of \$19.3 billion.

Other costs associated with flood proofing would include elevating non-residential buildings, roads and railroads, and other infrastructure. No information is available on the cost of elevating commercial, industrial, and public buildings because these buildings are so different from one another that information would have to be developed for each individual building. However, it can reasonably be expected that it would equal the cost associated with elevating the residential structures, and bring the total estimated cost to more than \$40 billion.

Elevating the roadways would be equivalent to converting all roadways and railroads to bridges. The costs for repairing all roads and railroads would be much more reasonable, and these costs were estimated based on highway design assumptions and current unit prices. A non-structural alternative that left roads and railroads at existing elevations would mean they would have to be repaired after each storm event. Costs for repairing two-lane asphalt roads with shoulders were estimated at \$400,000 per mile. There are approximately 1,432 mi of two-lane roads in Orleans Parish. About 80 percent of the roads in Orleans Parish were flooded during Hurricane Katrina. Therefore, repair costs would be \$458.2 million for each storm event that exceeded the level of flood risk reduction. Repair costs were estimated at \$800,000 per mile for four-lane divided roadways with shoulders. There are approximately 398 mi of four-lane roadways in Orleans Parish. The cost of repairs to the four-lane roadways would be \$254.7 million for each storm event that compromised hurricane risk reduction. Repair costs to railroads were calculated for the 114 mi of railroad in Orleans Parish. Railroad repair costs were estimated at \$100 per LF. This resulted in railroad repair costs of approximately \$60.2 million for the parish.

No information is available on the costs for elevating other infrastructure such as airport facilities, electrical distribution and transmission grids, gas distribution lines, drainage, sewage and water distribution facilities, communication networks, public transit, and waterborne navigation facilities. However, the estimated costs of elevating all flood-prone infrastructure in the study area would likely exceed \$20 billion, which would be much more than the costs of other structural alternatives. Therefore, this alternative was eliminated from further consideration.

Real Estate Acquisition and Relocation Assistance

Public acquisition of properties in areas subject to flooding can also reduce damages from storms and hurricanes. Acquisition of these properties as part of a Federal project and for projects where there is Federal financial assistance in any part of project costs would be subject to the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, 42 United States Code (USC) Section 4601, et seq., as amended (the Relocation Assistance Act). Accordingly, the displacement of individuals, families, businesses, farms, and non-profit

organizations would have to be organized and a system established to minimize the adverse impacts on displaced persons.

There are several options that could be offered for the acquisition and relocation alternative: sale of the site and home or commercial structure to the local sponsor for demolition, sale of the site to the local sponsor and relocation of the structure to a comparable site outside the area of flooding, or relocation of the displaced persons to a comparable home or business outside the area of flooding. In addition to compensation for real property, displaced persons would be eligible for expenses for moving themselves and their personal or business-related property, costs of property lost as a result of moving or discontinuing a business, expenses in searching for a replacement business or farm, and necessary expenses for reestablishment of a displaced farm, nonprofit organization, or small business at its new location. However, the estimated costs for real estate acquisition and relocation assistance for all flood-prone infrastructures in the study area would exceed the costs of structural alternatives. Therefore, this alternative was eliminated from further consideration.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 ENVIRONMENTAL SETTING

General

The project area is located within the Central Gulf Coastal Plain, or more specifically, on the eastern flank of the Mississippi River Deltaic Plain along the banks of the IHNC and the GIWW (figure 8). The study area lies completely within Orleans Parish; however, it defines the dividing line for three sub-basins of the larger Pontchartrain Basin: Orleans East Bank, New Orleans East, and Chalmette Loop (figure 1).

The Orleans East Bank sub-basin extends westward from the IHNC to the 17th Street Canal and is bordered to the north by Lake Pontchartrain and to the south by the Mississippi River. The New Orleans East sub-basin extends eastward from the IHNC toward the Rigolets Pass and is bordered by Lake Pontchartrain and the GIWW to the north and south, respectively. The Chalmette Loop Sub-basin extends east and south, bordered on the north by the GIWW, on the east by the Mississippi River-Gulf Outlet (MRGO), and on the south by the Mississippi River and the portion of the Chalmette Loop Levee that runs from the Mississippi River to Highway 46 between the communities of Caernarvon and Verret (USACE 1984).

Relief in the area is very slight with a minimum of 4 ft between the remnant alluvial ridge marking the location of an ancient distributary of the Mississippi River and the adjacent lowlands. Maximum elevations of 2 ft are found toward the southern end of the project area along the remnant alluvial ridge located between Highway 90 and Interstate 10. Minimum elevations of -4 ft are found in drained marsh areas near the north end of the project.

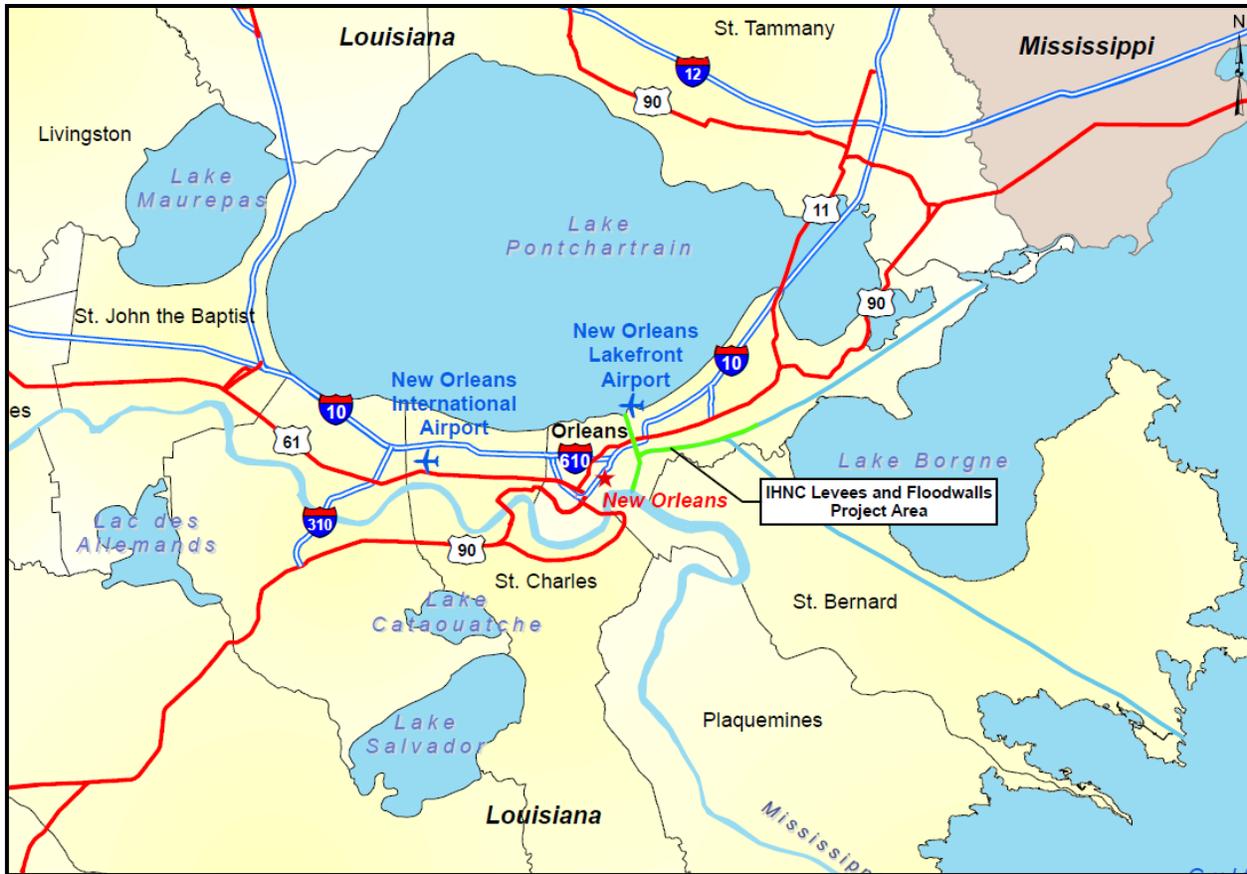


Figure 8. Regional Map of the IHNC Levees and Floodwalls Project Area

Climate

Orleans and St. Bernard Parishes are located at subtropical latitude. The climate is influenced by the many water surfaces of the nearby wetlands, rivers, lakes, streams, and the Gulf of Mexico. Throughout the year, these water bodies modify relative humidity and temperature conditions, decreasing the range between the extremes. Summers are long and hot, with an average daily temperature of 81 degrees Fahrenheit (°F) and high average humidity. Winters are characterized by cold, dry, polar air masses moving southward from Canada, with an average daily temperature of 53°F. Average annual precipitation is approximately 61 inches with monthly averages varying from 2.8 inches in October to 6.5 inches in July (USACE 1974; National Oceanic and Atmospheric Administration [NOAA] 1987).

Precipitation in Louisiana is largely due to convectional activity in the summer and tropical storms during the winter. Due to its proximity to the Gulf of Mexico, the study area is susceptible to tropical waves, tropical depressions, tropical storms, and hurricanes. These weather events can produce significant amounts of precipitation over a very short period and are often accompanied by strong winds, tornadoes, and storm surge along the coastal areas. Analysis of historic data from the National Hurricane Center dataset on tropical cyclones (including tropical depressions, tropical storms, and hurricanes) of the Louisiana coast from 1900 to 1999 shows a total of 63 storms, of which 49 were Category 3 or less. Not all of these storms had direct contact with the New Orleans metro area (U.S. Geological Survey [USGS] 2002). Since 1999, a total of 10 storms, of which 7 were Category 3 or less, have impacted Louisiana (USACE 2006).

Geology and Soils

Dominant physiographic features in the vicinity include Lake Pontchartrain and the lakefront levee to the north, the IHNC to the west, the GIWW in the center, Bayou Bienvenue and Golden Triangle marsh to the east, and the Mississippi River to the south. The foundation soils consist of artificial fill materials underlain by Holocene and Pleistocene age deposits. These material types are comprised predominantly of sands with some fat and lean clays, silts, and organics. At the northern end of Reaches 2 and 3, the surface and shallow subsurface is composed of up to 18 ft of hydraulic fill from Lake Pontchartrain. Fill deposits contain sand, silt, and clay, overlying lacustrine and beach deposits. Lacustrine deposits are characterized by soft to medium clays with some silt and sand layers and shells and are approximately 10 ft thick. Beach deposits are approximately 30 ft thick and are related to the Pine Island Beach Ridge that trends east-west across the area. The beach deposit is generally composed of silty sand and sand with shells. Beach deposits overlie 5 ft to 10 ft of bay-sound deposits, which are characterized by soft to medium clays, silts, and some sand containing shell fragments. Pleistocene deposits are located beneath bay-sound deposits at approximate elevation of -50 ft NAVD88. These deposits are mainly stiff to very stiff, oxidized clays, silts, and sands. This area along the IHNC also contains Aquent soils, which are poorly drained soils that are stratified and clayey to mucky throughout, resulting from hydraulically dredged material (U.S. Department of Agriculture, Soil Conservation Service 1989). Groundwater has been artificially lowered by forced drainage. The sands and silts in the fill and beach deposits may be hydraulically connected to Lake Pontchartrain or the IHNC (USACE 2008c).

Soils along the GIWW vary from west to east. Soils along the western portion of the canal include Aquent soils from dredged material in addition to Harahan and Schreiver clay, Lafitte muck, and urban lands. Both Harahan and Schreiver clays are poorly drained soils that typically form from backswamp alluvium. Lafitte muck is very poorly drained very slightly saline to saline muck and clay that forms in marshes. Along the Michoud canal on the western side of the GIWW and extending into Bayou Bienvenue on the east, soils include urban land, dredged Aquents, Harahan and Schreiver clays, and Lafitte muck as described above in addition to Allemands muck (drained), Kenner muck (drained), and Clovelly muck. Allemands muck is a poorly drained non-saline to very slightly saline soil that forms from decomposed organic material overlaying clayey backswamp deposits. Kenner muck is a very poorly drained non-saline to very slightly saline soil that forms in marshes. Both the Allemands and Kenner mucks along this portion of the GIWW have been drained. Clovelly muck is a very poorly drained and very slightly saline to saline soil that forms in marshes, primarily in Bayou Bienvenue on the eastern end of the GIWW. Both the Kenner and Clovelly mucks form from herbaceous organic material over fluid clayey alluvium.

Soil borings collected from the project vicinity can provide information on the nature and extent of soils and shallow sediments, along with their physical and engineering properties. Figure 9 illustrates past soil borings and cone penetrometer tests (CPTs) collected every 50 ft along the subject reaches.

Hurricanes Katrina and Rita

On 29 August 2005, Hurricane Katrina made landfall near Buras on the Louisiana Coast south of New Orleans. At landfall, Hurricane Katrina was at the upper end of Category 3 intensity range with maximum sustained winds estimated at 123 miles per hour (mph). Because of the storm surge, large areas of New Orleans East and St. Bernard Parish were flooded due to the overtopping and breaching of levees and floodwalls on the INHC, the GIWW, and the MRGO. Additionally, the Orleans East Bank was flooded due to breaching of levees and floodwalls

associated with Lake Pontchartrain, located within the Orleans East Bank sub-basin and areas west.

On 24 September 2005, Hurricane Rita hit the western part of Louisiana and the storm surge inflicted additional damage in the project vicinity, re-flooding areas in the ninth ward and Gentilly prior to making landfall near the Texas-Louisiana border. The damages to Orleans Parish's residences were widespread, and at least 10 of the 29 historic districts in the parish suffered extensive damage from flooding.



Figure 9. Soil Boring Locations in the Project Area

3.2 SIGNIFICANT RESOURCES

This section contains a list of the important resources located in the vicinity of the proposed action, and describes in detail those resources that would be impacted, directly or indirectly, by the alternatives. Direct impacts are those that would be caused by the action taken and occur at the same time and place (40 CFR 1508.8(a)). Indirect impacts are those that would be caused by the action and would be later in time or farther removed in distance, but are still reasonably foreseeable (40 CFR 1508.8(b)). Cumulative impacts are discussed in section 6.0.

The resources described in this section are those recognized as important by laws, executive orders, regulations, and other standards of National, state, or regional agencies, and organizations; technical or scientific agencies, groups, or individuals; and the general public. Important resources described in this section include hydrology, aquatic resources, upland resources, wildlife, threatened and endangered species, cultural resources recreational resources, aesthetics, noise, air quality, socioeconomics, and transportation. Further detail on these resources can be found by contacting the CEMVN, or on www.nolaenvironmental.gov, which offers information on the ecological and human value of these resources, as well as the laws and regulations governing each resource. Search for “Significant Resources” in the website’s digital library for additional information.

Table 6 shows those significant resources found within the project area, and notes whether they would be impacted by the alternatives analyzed in this IERS.

**Table 6.
Significant Resources in the Project Study Area**

Significant Resource	Impacted	Not Impacted
Water and Coastal Resources		X
Upland Resources	X	
Wildlife	X	
Threatened and Endangered Species		X
Cultural Resources		X
Recreational Resources	X	
Aesthetics	X	
Noise	X	
Air Quality	X	
Socioeconomics	X	
Environmental Justice		X
Transportation	X	

3.2.1 Water and Coastal Resources

Existing Conditions

The proposed project area occurs within the Lake Pontchartrain Basin, a watershed of 4,700 square miles (mi²) in southeast Louisiana and southwest Mississippi. The basin is within the coastal zone delineation and, therefore, is regulated under the Louisiana State and Local Coastal

Resources Management Act of 1978. The natural hydrology of the project area has been significantly altered by the IHNC, GIWW, levees of the HSDRRS, and several man-made canals created for oil exploration, flood control, and wetland restoration. The proposed project would be located along the banks of the IHNC from Lake Pontchartrain to the Mississippi River and the banks of the GIWW from the IHNC to the Michoud Canal on the north bank and Bayou Bienvenue on the south bank.

Major surface water features in the region around the project area include the IHNC, GIWW, Lake Pontchartrain, MRGO, Bayou Bienvenue, and the Mississippi River (figure 10).



Figure 10. Major Hydrologic Features of the Project Area

All of these surface water features are Waters of the United States (WoUS; as defined by 33 CFR 328) and Navigable Waters of the United States (NWUS; as defined by 33 CFR 329). This project is subject to the USACE regulatory authority under Section 404 of the Clean Water Act (CWA; 33 USC 1344) and Section 10 of the Rivers and Harbors Act (33 USC 401). Other environmental laws and regulations also apply and are discussed in section 9.0.

The majority of the deficient segments are adjacent to developed areas within New Orleans. A few sections within Reach 2 (7,300 ft total) and Reach 1 (1,200 ft total) are located in the vicinity of Bayou Bienvenue; however these segments are several miles from the portion of Bayou Bienvenue that is designated as a Natural and Scenic River (figure 11).

Aquatic resources within the study area change yearly (due to El Niño Southern Oscillation and La Niña events), seasonally (water quality, hydrology, and weather), and daily (tides and freshwater inflow). Aquatic resources that occur within the project area include habitat (open water, benthic, and submerged aquatic vegetation [SAV]) and organisms (bivalves, crustaceans, phytoplankton, and fishes) that work together synergistically to cycle nutrients and food energy through the coastal ecosystem in Louisiana.

The IHNC is hydrologically connected to the GIWW, the MRGO, the Mississippi River, and Lake Pontchartrain. The IHNC is approximately 30 ft deep, with a minimum 150 ft bottom width and 300 ft top width. The GIWW west of the Michoud Canal within the project area is authorized as 36 ft deep, 500 ft bottom width waterway. East of the Michoud Canal within the project area, the GIWW is authorized as a 150 ft width waterway. The IHNC from the GIWW/MRGO confluence to the IHNC Lock is an authorized deep draft navigation channel, 36 ft deep and 500 ft wide. The IHNC Lock is located at the southern terminus of the IHNC and allows waterborne traffic to transit to and from the Mississippi River, the GIWW, and Lake Pontchartrain. The MRGO was deauthorized as a Federal waterway on 5 June 2008, with a rock closure structure constructed at Bayou La Loutre.

The major influences on water levels within the basin are wind and tide with some localized effects by vessel traffic. Tidal ranges average approximately 1 ft and 2 ft at Lake Pontchartrain and Lake Borgne, respectively.

The historic gage record (1923 to 2006) at the IHNC Lock shows that the median range of low to high water levels is -0.79 ft to 3.71 ft National Geodetic Vertical Datum of 1929 (NGVD29). Water level reached 10.61 ft NGVD29 during Hurricane Betsy. Although there are no water level records at the IHNC Lock for Hurricane Georges, records are available for nearby locations. During Hurricane Georges, the highest recorded water level in the IHNC at the Florida Avenue Bridge was 8.35 ft NGVD (1983 adjustment) on 27 September 1998. The highest recorded water level (high water mark) at the IHNC Lock, due to Hurricane Katrina, was recorded at 14.3 ft NAVD88 2004.65. With completion of the HSDRRS in 2011 the risk of storm surge within the IHNC Basin would be reduced.

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Water and Coastal Resources

Under the no action alternative, flood risk reduction features in the subject reaches located along the IHNC and GIWW would not be restored or reinforced and there would be no in-water construction. There would be an increased risk associated with the interior floodwalls and levees (secondary protection) along the IHNC and GIWW if failure were to occur during a storm event. The segments of HSDRRS for which seepage and stability-related deficiencies were identified could potentially fail and result in flooding within the three sub-basins adjacent to the subject reaches. Minor temporary impacts to water and coastal resources could occur if debris and contaminated floodwaters were to enter the IHNC or GIWW.

Future Conditions with Proposed Action

Direct Impacts to Water and Coastal Resources

Under the proposed action, a variety of restoration/reinforcement types would be used to remediate deficient sections of flood risk reduction along the IHNC and GIWW (tables 1 through 3). Regardless of the restoration/reinforcement method, all construction would occur entirely within existing land-based ROW (appendix B) with no direct impacts to the IHNC or GIWW. No disruption of natural hydrologic and sediment transport patterns, sheet flow, or water quality would occur from the proposed project. Additionally, the proposed work would have no impact on the portion of Bayou Bienvenue that is designated a Natural and Scenic River (located over a mile from the nearest deficient section). Nine temporary staging areas, scattered around the project area and totaling approximately 3.4 acres, would be located in upland areas primarily outside of existing ROW; these staging areas would have no effect on water or coastal resources in the project area.

Indirect Impacts to Water and Coastal Resources

The existing ROW at many deficient segment locations is directly adjacent to banks of the IHNC, GIWW, Bayou Bienvenue, and the Michoud Canal (see detailed figures in appendix B). Construction activities within the ROW could potentially cause indirect impacts of increased turbidity and sedimentation within these waterways; however, construction-related runoff would be managed through the implementation of BMPs, such as structural erosion controls, and adherence to regulations governing storm water runoff at construction sites, which would minimize the potential effects from the proposed action on water and coastal resources.

Cumulative Impacts to Water and Coastal Resources

Potential cumulative impacts on water and coastal resources would involve the combined impacts from the multiple LPV HSDRRS projects occurring in the vicinity of the project (including IERS #11 – Tier 2 Borgne and Tier 2 Pontchartrain, #4, #6, and #8). However, impacts from restoration/reinforcement activities would be limited to temporary, construction-related impacts. The proposed action would not be expected to contribute to cumulative impacts on water and coastal resources since no in-water work would occur and all construction would take place on the protected side of existing levees and floodwalls.

3.2.2 Upland Resources

Existing Conditions

For the purposes of this analysis, terrestrial or upland resources are defined as any non-marsh or non-wetland areas within the project corridor. All of the deficient flood risk reduction features in the project area are located along canal banks. Along the IHNC, the majority of terrestrial area is comprised of industrial parcels or unoccupied, formerly-industrial sites. The Port of New Orleans owns the majority of land along the IHNC. The portions of the project corridor located along the GIWW, Michoud Slip, and Michoud Canal within Reaches 2 and 3 consist of industrial areas and relatively undeveloped open space. All construction would take place within the existing ROW adjacent to the deficient floodwall/levee sections on the protected side. Existing HSDRRS ROWs are regularly mowed to limit the growth of vegetation, and most of the unpaved, upland habitat in the project corridor contains only early successional vegetation, including turf grass such as Bermudagrass (*Cynodon dactylon*) and Bahiagrass (*Paspalum notatum*); weeds such as crabgrass (*Digitaria* spp.), plantain (*Plantago major*), and common

ragweed (*Ambrosia artemisiifolia*); and small shrubs such as wax myrtle (*Myrica cerifera*), yaupon (*Ilex vomitoria*), and rattlebush (*Sesbania drummondii*). Please refer to Section 3.2.7 (Aesthetics) for representative photographs of the potentially impacted areas.

Potential temporary staging areas are located throughout the project area along the IHNC and GIWW near deficient segments (see detailed figures in appendix C). These areas vary from paved parking areas and mowed or landscaped plots to areas overgrown with weeds and shrubs such as those listed above.

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Uplands

Under the no action alternative, no construction within the previously disturbed and/or developed ROW would occur because the deficient levee/floodwall segments along the IHNC and GIWW would not be restored or reinforced. There would be an increased risk of flooding in the three sub-basins if the interior floodwalls and levees (secondary protection) along the IHNC and GIWW were to breach during a storm event. Should flooding occur, some upland areas may be inundated and experience temporary direct impacts. There could be permanent and potentially cumulative impacts to some vegetated areas if faunal populations perish as a result of extended submersion or potential contamination from floodwaters.

Future Conditions with Proposed Action

All five restoration/reinforcement methods would affect limited upland resources entirely within the existing ROW that occurs in industrial areas that have been previously disturbed. Table 7 summarizes the potential terrestrial impacts for each segment and restoration/reinforcement type. Most of the impacts designated as ‘permanent’ would only impact a small portion of the ROW permanently. For example, buttress walls constructed to reinforce existing I-walls or gates may increase the area that is permanently covered by concrete by less than one sq ft per LF of floodwall. The remainder of the ROW would return to its current state when construction is complete (temporary impact). The approximate acreages of impacted area are included as a total of temporary and permanent impacts. Impacts associated with specific restoration/reinforcement types are discussed in detail below.

Direct Impacts to Uplands

DSM – DSM, the proposed reinforcement method for six segments of the HSDRRS, involves mixing columns of cement or a combination of other stabilizers vertically into the existing soil. Minor, temporary impacts to upland resources would result from construction due to ground clearing to make way for the machinery and possibly a limited amount of excavation/grading related to leveling the ground for equipment transport or placement. These impacts would take place within the existing ROW, which currently consists of regularly mowed and maintained grassy areas. This area is not considered naturally occurring habitat. Additionally, DSM would occur below the ground surface; therefore, the ROW would be returned to current conditions after construction, resulting in no permanent impacts to upland resources.

Table 7.
Permanent and Temporary Upland Impacts

Reach	Station ID	Existing Structure	Proposed/Alternate Restoration or Reinforcement Type	Approximate Area of Impact (acres)	Permanent* or Temporary Impact
Deficient Segments					
1	28+85	Earthen Levee	DSM/Berm	5.4	T/T
1	17+50 to 24+00	I-wall	Concrete Slab/Buttress wall		P/P
2	Gate E-14	Gate	Concrete Slab/Buttress wall	7.0	P/P
2	3+00 to 31+00	I-walls	Buttress walls/NA		P
2	32+00	Gate	Buttress wall/NA		P
2	58+00 to 77+00	I-wall	Concrete Slab/Buttress wall	3.6	P/P
2	73+00	I-wall	Berm/DSM		
2	79+00	L-wall	Berm/DSM	4.4	T/T
2	242+00 to 260+00	Earthen Levee	Berm/DSM	12.8	T/T
2	268+00, 270+00, 278+00	T-wall and I-walls	Buttress walls/NA	6.4	P
2	406+00	I-wall	Relief wells/NA	6.5	T/P
2	430+00 to 452+00	I-walls	Relief wells/NA	22.7	T/P
2	454+00	I-wall	Concrete slab/Buttress wall		P/P
2	525+00 to 535+00	I-wall	Berm/DSM	3.4	T/T
3	268+00	I-wall	DSM/Buttress wall	9.9	T/P
3	236+00 to 264+00	I-walls	Relief wells/NA		T/P
3	251+00 to 285+00	I-walls	Concrete slab/Buttress wall		P/P
3	200+00	I-wall	Concrete slab/Buttress wall	0.3	P/P
3	Gate W-1, 0+00 to 2+00	Gate	Concrete slab/Buttress wall	0.2	P/P
TOTAL:				82.6	
Reach	Staging Area ID	Description of Land Use		Approximate Area of Impact (acres)	Permanent* or Temporary Impact
Staging Areas					
1	Staging Area A	Grass/gravel median between two paved roads		0.4	T
2	Staging Area B	Mowed lot		0.5	T
2	Staging Area C	Partially mowed lot; some overgrowth		0.5	T
2	Staging Area D	Mowed and gravel lot		0.3	T
2	Staging Area E	Gravel lot, equipment lay down area		0.5	T
3	Staging Area F	Mowed lot		0.2	T
3	Staging Area G	Gravel lot		0.5	T
3	Staging Area H	Gravel and paved lot		0.4	T
3	Staging Area I	Paved lot		0.1	T
TOTAL:				3.4	T
TOTAL UPLAND IMPACTS:				86	T/P

*Permanent = Some minor, permanent impacts to upland resources may occur, but not over the entire ROW.

Berm – The berm restoration method, proposed for five segments of the HSDRRS, consists of adding embankment material to the protected side of a levee/floodwall within existing grass-covered ROW for reinforcement. This restoration type would result in minor, temporary impacts to upland resources in the area. The uplands impacted, however, are regularly maintained ROW areas, and are not considered natural habitat. Once the berm is in place, the ROW would be reseeded with turf grass to control erosion, returning it to its current state. Therefore, construction of a berm at any of the stations where it is a proposed or alternate restoration method would not result in permanent impacts to upland resources.

Buttress Wall – Buttress walls are the proposed reinforcement method for several existing floodwall and gate segments. These existing structures already consist of a considerable amount of concrete. During construction, minor, temporary impacts to uplands within the existing ROW would occur. Heavy equipment and concrete mixers would need to drive on the ROW, potentially tearing up the grass. Additionally, some excavation would be necessary near the existing concrete in order to tie in the buttresses. This alternative could result in very minor permanent impacts, as the buttresses may extend past the existing extent of the concrete in the ROW. This upland habitat, however, is not considered naturally occurring; therefore, the permanent impacts would be very small. Once the construction is complete, the area would be reseeded to control erosion, thereby returning most of the ROW to its current state.

Concrete Slab – Concrete slabs are the proposed method for seven deficient floodwall and gate segments of HSDRRS. During construction, minor, temporary impacts would occur in the ROW due to the operation of machinery heavy equipment and minor excavation work. This reinforcement technique could also result in very minimal permanent impacts, depending on the current extent of the concrete at the deficient segments. Most of the floodwalls already have either concrete or riprap placed on the protected side, which is not considered part of upland resources. Once the construction is complete, the area would be reseeded to control erosion, returning most of the ROW to its current state. Overall, this reinforcement method would result in minor, permanent impacts to upland resources.

Relief Wells – Relief wells are the proposed reinforcement type for three deficient segments. The existing HSDRRS at most of these segments are floodwalls with adjacent grass covered berms. During construction, minor, temporary impacts to the existing ROW would occur due to heavy equipment and minimal excavation. Additionally, permanent impacts would occur to a very small portion of the ROW due to the installation of the wells (photo 3). The wells are approximately 8 inches in diameter and would be placed between 25 ft and 30 ft from the floodwall in the ROW. The ROW upland habitat impacted is not naturally occurring, and impacts would be minimal.



Photo 3. Example of a relief well in existing ROW

Staging Areas – All of the restoration/reinforcement methods would require the use of several small staging areas (primarily located outside of existing ROW), totaling approximately 3.4 acres. Many of the proposed staging areas would be located in industrial areas (under bridges, in parking lots, etc.), which are not considered uplands and would therefore not result in any

impacts to upland resources. Four of the potential staging areas would be placed in regularly mowed grasslands. Although these areas are not naturally occurring upland habitat, temporary impacts such as loss of vegetation could occur if large quantities of materials are stockpiled on site or heavy equipment is staged for long periods of time. Use of Staging Area F, which is located within the Pontchartrain Park residential neighborhood, would result in minor, temporary impacts since it is very small (approximately 0.2 acres) and there are approximately 2 acres of adjacent habitat available. Similarly, Staging Areas B and C would have minor, temporary impacts on this low-quality terrestrial habitat given that they represent approximately 1 acre of a total of approximately 17 acres of similar habitat located within 1,000 ft. Staging Area D, located near the Entergy facility on the north bank of the GIWW, would be situated on a site that was previously vegetated but is currently occupied primarily by dirt/gravel, likely due to its use as an access route to the existing HSDRRS. These impacts would be minimal because of the relatively small areas that could potentially be affected, the amount of similar habitat available nearby, and because even if a loss of vegetation did occur, the plots would eventually be re-colonized by weedy and grassy species occurring in similar, nearby areas.

Another five potential staging areas would be setup in currently paved spaces or areas that have already experienced a loss of vegetation and are occupied by dirt and/or gravel. Some of these plots have become overgrown with shrub/scrub habitat and provide some natural habitat in the area; however, they are all within a larger industrial setting, and are not likely extensively used by wildlife. The non-ROW portion of Staging Area A (appendix C), is situated entirely on dirt/gravel; therefore, staging activities would not result in any impacts to this area. Staging Areas E, G, H, and I would all be situated adjacent to existing ROW on plots currently paved or occupied by dirt/gravel. Due to their placement, and the availability of similar habitat nearby, temporary impacts to upland resources that would result from the staging areas would be minor. Since these temporary staging areas would return to their current state following construction, there would not be any permanent impacts to uplands. This process could take several months, but the types of weedy plants that currently exist on these sites, such as crabgrass and ragweed, are fast-growing and would reduce the time it would take for the sites to return to preconstruction conditions.

Indirect and Cumulative Impacts to Uplands

No indirect or cumulative impacts on upland resources would be expected to result from the proposed action.

3.2.3 Wildlife

Existing Conditions

Wildlife diversity and abundance within the project area are dependent on the quality and extent of suitable habitat available. Potential habitat areas that would be impacted by the proposed action include the man-made IHNC and GIWW, small patches of scrub-shrub community, open grassy uplands maintained along the existing HSDRRS, and marsh areas on the western side of Reach 1. The majority of terrestrial habitat within the project area occurs immediately adjacent to the existing HSDRRS. As all of the construction would take place within the ROW, the majority of potentially affected habitat is grassy uplands.

Terrestrial wildlife habitat in the project area consists principally of disturbed or early successional herbaceous communities with limited areas of shrubs and small trees. Land use in and around the project area is predominantly comprised of active and abandoned industrial properties owned by the Port of New Orleans. A small area adjacent to the ROW along the west bank of the IHNC is residential, and a few subject segments located in the eastern portion of the

project area along the GIWW are partially undeveloped. Vegetative communities associated with the existing HSDRRS and the ROW are composed of mainly turf grasses with herbs, weeds, and scattered shrubs. Grassy areas along the existing levees and floodwalls undergo routine maintenance (mowing) and landscaping, which prevents the grasses from growing tall enough to provide cover, limits vegetative diversity, and reduces habitat value. The less developed portions of the project area, along the GIWW to the east, have scrub-shrub habitat adjacent to the mowed ROW, providing some cover and plant diversity for wildlife.

The upland habitat within the project area is of relatively low quality. However, there are adjacent areas of open water and shoreline, which provide habitat for aquatic and semi-aquatic wildlife, particularly wading birds, waterbirds, and waterfowl. The IHNC and the GIWW are man-made navigational channels consisting of a main channel with several small slips branching out from both banks. The aquatic habitats of the IHNC and GIWW have been previously disturbed by dredging and construction activities related to navigation of large vessels. Due to the industrial noise, traffic, and repeated disturbance of the area, it is unlikely that many aquatic wildlife species permanently inhabit areas of the IHNC near Seabrook or the Lock, or the GIWW between the IHNC and the Michoud Canal; however, it is expected that they occasionally use these channels as a route to pass between Lake Borgne and Lake Pontchartrain.

Wildlife that typically inhabit terrestrial or brackish aquatic habitats such as those in the project area include a limited assemblage of amphibians, reptiles, birds, and mammals. Species from each of these classes that could occur in the project area can be identified based on the geographical range and habitat preference of each species. The Gulf Coast toad (*Bufo valliceps*) is an amphibian that could occur in the project area. Reptiles that may utilize habitats in the vicinity of the project include the common snapping turtle (*Chelydra serpentina*) and green anole (*Anolis carolinensis*) (Conant and Collins 1998; Felley 1992; Wigley and Lancia 1998). Potentially occurring mammals include the muskrat (*Ondatra zibethicus*), nutria (*Myocastor coypus*), wild boar (*Sus scrofa*), cotton mouse (*Peromyscus gossypinus*), and raccoon (*Procyon lotor*) (Whitaker 1998; Wigley and Lancia 1998). Marine mammals that could potentially use the IHNC or GIWW for passage include the bottlenose dolphin (*Tursiops truncatus*), the only cetacean likely to occur in the project area (NOAA 2008), and the West Indian manatee (*Trichechus manatus*) (Abadie et al. 2000).

The bottlenose dolphin has not been observed to utilize the IHNC as an important habitat or migration route, and it is not known to regularly inhabit Lake Pontchartrain (Barry et al. 2008). A large number of dolphins typically occur in the Mississippi Sound and Lake Borgne to the east of Lake Pontchartrain. These dolphins can enter Lake Pontchartrain through the two natural tidal passes at the east end of the lake, The Rigolets and Chef Menteur Pass, and groups of dolphins were observed in these passes and the eastern end of Lake Pontchartrain in 2008 (Barry et al. 2008). Dolphins could also enter Lake Pontchartrain through the IHNC via the GIWW. A NOAA study (Barry et al. 2008) of a group of dolphins that remained in the eastern end of the lake in 2008 did not record observations of dolphins in the area of the IHNC in larger-scale surveys. NOAA reported that personnel of the Louisiana Department of Wildlife and Fisheries (LaDWF) considered occurrences of bottlenose dolphins far from the eastern boundary of the lake to be uncommon (Barry et al. 2008). Thus, the bottlenose dolphin could occur in the project area, but such occurrences would be expected to be rare.

Birds that may utilize the habitats of the project area include both non-migratory residents of the region and migratory species that are present only part of the year. Non-migratory species that may forage along the shoreline and in the open water of the area include the anhinga (*Anhinga anhinga*), Caspian tern (*Hydroprogne caspia*), royal tern (*Thalasseus maxima*), Forster's tern (*Sterna forsteri*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), black-crowned night heron (*Nycticorax nycticorax*), black skimmer (*Rynchops niger*), American coot (*Fulica*

americana), fish crow (*Corvus ossifragus*), and brown pelican (*Pelecanus occidentalis*). The brown pelican, which falls under the jurisdiction of U.S. Fish and Wildlife Service (USFWS), could potentially occur in the northern IHNC- Lake Pontchartrain area. This species was delisted under the Endangered Species Act on 17 December 2009 due to its recovery. Migrant birds that may occur in the area during summer include the roseate spoonbill (*Platalea ajaja*; see photo 4) and yellow-crowned night heron (*Nyctanassa violacea*), and migrants occurring in winter include the double-crested cormorant (*Phalacrocorax auritus*), common loon (*Gavia immer*), mallard (*Anas platyrhynchos*), lesser scaup (*Aythya affinis*), laughing gull (*Larus atricilla*), ring-billed gull (*Larus delawarensis*), and herring gull (*Larus argentatus*) (Dunn and Alderfer 2006, Wigley and Lancia 1998, America's Wetland 2009).



Photo 4. Roseate Spoonbills at Station 454+00

There also is a potential for the non-migratory bald eagle (*Haliaeetus leucocephalus*) to forage for fish in the project vicinity, though the level of human activity in the area makes this unlikely. Although the bald eagle was recently delisted as a federally threatened species (August 2007), it continues to be protected under the Bald and Golden Eagle Protection Act, as well as the Migratory Bird Treaty Act. Habitats suitable for use by the bald eagle are present in St. Bernard and Orleans Parishes, and occurrences of the bald eagle have been recorded in both parishes. However, habitats in the immediate IHNC/GIWW project area do not have characteristics that would be particularly attractive to bald eagles for nesting, such as large bald cypress or other tall trees. Consequently, the bald eagle would not be expected to nest or regularly forage in the project area.

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Wildlife

Under the no action alternative, wildlife resources would not be affected by construction activities because the deficient levee/floodwall segments along the IHNC and GIWW would not be restored or reinforced. If the interior floodwalls and levees along the IHNC and GIWW were to fail during a storm event, there would be an increased risk of flooding in the three sub-basins. Should flooding occur, some upland areas may be inundated. Flooding would result in direct impacts to wildlife that utilize flooded areas if wildlife were forced to evacuate and were unable to find other suitable habitat nearby. Indirect impacts related to habitat loss would occur as a result of flooding if wildlife that fled or avoided flooded areas were later unable to return. Both direct and indirect impacts would have cumulative aspects should flooding occur in multiple areas within the three sub-basins.

Future Conditions with Proposed Action

Direct Impacts to Wildlife

The proposed action would be compatible with the conditions for wildlife that exist today, as the features that would result from the proposed action would be similar to current features in the project area. All construction would take place within existing ROW, which is regularly mowed and maintained. This habitat is of relatively low quality for wildlife, and very few species would be expected to permanently inhabit the area. Similarly, most of the staging areas would be located in upland areas of low quality habitat. Although not all segments of the HSDRRS have the same proposed restoration/reinforcement methods, the impacts of each proposed method would be similar and are discussed together for all sites. Specific impacts are discussed below for each of the restoration/reinforcement methods and the staging areas. For all methods, wildlife inhabiting nearby terrestrial and brackish aquatic habitats could be indirectly impacted as a result of construction activities and temporarily vacate or avoid the area. Following completion of restoration/reinforcement work, it is likely any wildlife that formerly utilized or occupied these areas would return.

DSM – DSM is the proposed reinforcement method for Reach 1, station 28+85 and Reach 3 station 268+00 and an alternate reinforcement for Reach 2 stations 73+00, 79+00, 242+00 to 260+00, and 525+00 to 535+00. Most of these stations are immediately adjacent to industrial facilities. Stations 79+00 and 242+00 to 260+00 are in relatively isolated, natural areas. Construction work would take place on the existing ROW, which consists of regularly mowed grass. During construction, a small quantity of grassy, upland habitat would be disturbed. These areas provide limited, poor-quality habitat, and the potential impacts to wildlife would be very small and temporary. After construction, the area would return to its current state; there would be no permanent loss of terrestrial wildlife habitat with the DSM reinforcement method.

Berm – Berm is the proposed restoration method for Reach 2, stations 73+00, 79+00, 242+00 to 260+00, and 525+00 to 535+00. It is an alternate restoration method for station 28+85. Additional soil material would be placed on the protected side of the existing levees/floodwalls to increase stability. Potential impacts to wildlife would be similar to those described for DSM. There would be temporary impacts to a small, previously disturbed, grassy habitat during construction, and then the area would be returned to its current state.

Buttress Wall – Buttress walls are the proposed reinforcement method for Reach 2, stations 3+00 to 31+00, 32+00, 268+00, 270+00, and 278+00, and an alternate reinforcement method for Reach 1, station 17+50 to 24+00; Reach 2, stations E-14, 58+00 to 77+00, and 454+00; and Reach 3, stations 268+00, 256+00 to 285+00, 200+00, and W-10+00 to 2+00. Construction of buttress walls at these deficient floodwall segments would result in a temporary disturbance of ROW during construction and the permanent loss of some of the grassy areas at these stations. The potentially affected areas of mowed grass provide minimal habitat for wildlife; therefore, the loss of some of the grassy, upland habitat adjacent to the floodwalls and gates would not likely impact wildlife resources.

Concrete Slab – Concrete slabs are the proposed reinforcement method for Reach 1, station 17+50 to 24+00; Reach 2, stations E-14, 58+00 to 77+00, and 454+00; and Reach 3, stations 251+00 to 285+00, 200+00 and W-1 0+00 to 2+00. Many of the stations for which concrete slabs are the proposed reinforcement method already have at least partial concrete slabs in place, which reduced the quality of terrestrial habitat in the ROW. A small part of the remaining grassy portions of the ROW would be disturbed during construction, but would be returned to their current state following construction.

Relief Wells – Relief wells are the proposed reinforcement method for Reach 2, station 406+00 and 430+00 to 452+00, and Reach 3, stations 236+00 to 264+00. This reinforcement method would have potential temporary impacts to wildlife similar to the DSM method but potentially slightly smaller because wells would be faster to install.

Staging Areas - All proposed restoration/reinforcement methods would require the same associated staging areas (appendix C). These areas would be sited in a variety of locations, from a residential area to under bridges and overpasses. Staging areas would be used for equipment and materials storage during construction. Most of the staging areas consist of poor quality habitat and are paved, gravel lots, or mowed grass (photo 5; in a rail yard, on a parking lot, between two roads, under an overpass, etc.). A few of the staging areas are currently overgrown with weeds, providing limited habitat, but these are located within industrial areas, making them less suitable for wildlife. A small



Photo 5. Staging Area H
(Example of Habitat within an Industrial Area)

amount of existing scrub/shrub habitat would be disturbed or cleared for use as staging areas during construction. Temporary loss of this vegetation would reduce the area available to migratory birds that potentially depend on areas like these as resting spots or for cover from predators during stop-overs. Following construction, these areas would be allowed to re-vegetate, and, after a few years, they likely would return to their current overgrown condition.

Indirect and Cumulative Impacts to Wildlife

It is unlikely that the proposed action would contribute to permanent indirect or cumulative wildlife impacts in the project area. Any potential impacts would occur during construction and be temporary, adding an incremental temporary impact to the disturbances caused to wildlife by construction throughout the project area.

3.2.4 Threatened and Endangered Species

Existing Conditions

The deficient HSDRRS segments in Reaches 1, 2, and 3 are located adjacent to the IHNC and GIWW. The recognized threatened and endangered species that have the potential to occur within the project area are presented in table 8. These protected species include the West Indian manatee (*Trichechus manatus*), threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*), and Kemp's ridley sea turtle (*Lepidochelys kempii*), the loggerhead sea turtle (*Caretta caretta*), and the green sea turtle (*Chelonia mydas*). All have the potential to occur adjacent to the deficient segments, specifically within the GIWW, the northern portion of the IHNC near the confluence with Lake Pontchartrain, or the Mississippi River near the IHNC Lock.

Table 8.
Federally Listed Threatened and Endangered Species Potentially Occurring in
Orleans Parish, Louisiana

Common Name	Scientific Name	Status	Agency with Jurisdiction
Mammal			
West Indian Manatee	<i>Trichechus manatus</i>	Endangered	USFWS
Fish			
Gulf Sturgeon	<i>Acipenser oxyrinchus desotoi</i>	Threatened	NOAA Fisheries
Reptiles			
Kemp's Ridley Turtle	<i>Lepidochelys kempii</i>	Endangered	NOAA Fisheries
Loggerhead Turtle	<i>Caretta caretta</i>	Threatened	NOAA Fisheries
Green Sea Turtle	<i>Chelonia mydas</i>	Threatened	NOAA Fisheries

Source: USFWS 2010; NOAA Fisheries Service 2010a and 2010b.

In accordance with the provisions of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 USC 1531 et seq.), the CEMVN requested information on protected, proposed, and candidate species and critical habitat that may occur in the vicinity of the deficient segments from the USFWS office in Lafayette, Louisiana (letter dated 15 July 2010 in appendix E). In response and in accordance with the provisions of the Endangered Species Act and the Migratory Bird Treaty Act of 1918 (40 Stat. 755, as amended; 16 USC 703 et seq.), the USFWS responded via facsimile dated 24 July 2010. The USFWS determined that the proposed action is not likely to adversely affect the federally listed species that occur in the region and for which the USFWS has responsibility.

In addition, four of the federally listed species that are the responsibility of NOAA Fisheries Service have a potential to occur in the project area: the threatened Gulf sturgeon (*Acipenser oxyrinchus desotoi*), the endangered Kemp's ridley sea turtle (*Lepidochelys kempii*), the threatened loggerhead sea turtle (*Caretta caretta*), and the threatened green sea turtle (*Chelonia mydas*). The CEMVN concluded that the proposed work would have no effect on threatened or endangered species under the jurisdiction of NOAA in the project area; therefore no consultation with NOAA is required. Brief descriptions of federally listed species that could potentially occur in waterways adjacent to the project area are provided below.

West Indian Manatee

The West Indian manatee is federally and state-listed as endangered and is protected under the Marine Mammal Protection Act of 1972, under which it is considered depleted (USFWS 2001). The manatee is a subtropical species with little tolerance for cold, and it returns to and remains in the vicinity of warm-water sites in peninsular Florida during the winter (USFWS 2007a; USFWS 2007b). Thus, the manatee is not a year-round resident in Louisiana, but it may migrate there during warmer months. There were 110 reported sightings of manatees in Louisiana between 1975 and 2005 (LaDWF 2005a). Occurrences and distribution appear to be increasing and are regularly reported in the tributaries along the north shore of Lake Pontchartrain and in canals within adjacent coastal marshes. Although manatees can occur in the IHNC and GIWW, preferred food sources (submerged or floating aquatic vegetation) are absent from the project area. Given the extensive areas of relatively undisturbed wetlands in the region and the frequent

passage of boats and large vessels through the IHNC and GIWW, it is unlikely that manatees would utilize this area as habitat or frequently occur in the project area.

Gulf Sturgeon

The Gulf sturgeon is federally listed as threatened throughout its range and is state-listed as threatened in Louisiana. The present range of the species extends from Lake Pontchartrain and the Pearl River system in Louisiana and Mississippi east to the Suwannee River in Florida (USFWS and NOAA 2003). Although Gulf sturgeon would not be expected to utilize the IHNC or GIWW as an important migratory route, they potentially could forage in the shallow, inshore lake habitat near the mouth of the IHNC at Seabrook in winter. Gulf sturgeon would not be expected to utilize the project areas near the IHNC or GIWW as a significant habitat component because the sediments in this area do not have the characteristics that Gulf sturgeon prefer for foraging. The IHNC and GIWW are artificial waterways with heavy boat traffic, a highly developed shoreline, and very limited habitat value for the Gulf sturgeon. The area of Lake Pontchartrain near the mouth of the IHNC similarly is a heavily trafficked and developed area. Thus, any presence of Gulf sturgeon in this segment of the project area likely would be transitory and occasional.

Kemp's Ridley, Loggerhead, and Green Sea Turtles

Sea turtles are air-breathing reptiles with large flippers and streamlined bodies. They inhabit tropical and subtropical marine and estuarine waters around the world. Of the seven species in the world, six occur in WoUS, and all are listed as threatened and endangered. The three species identified by NOAA Fisheries as potentially occurring in the vicinity of the project area are similar in appearance, though they differ in maximum size and coloration. The Kemp's ridley and loggerhead turtles potentially could find suitable foraging habitat for invertebrates and fish in the open waters of Lake Pontchartrain or the Golden Triangle. The green turtle is less likely to occur there due to the scarcity of the seagrasses on which they feed. All three species nest on sandy beaches, which are not present in the project area, and the Kemp's ridley does not nest in Louisiana. The life stages that may occur in the Lake Pontchartrain or Golden Triangle areas are likely to be older juveniles to adults (NOAA Fisheries Service 2010b). Both the IHNC and GIWW are artificial waterways with heavy boat traffic, developed shorelines, and negligible habitat value to these sea turtle species. Thus, any presence of sea turtles in the project area would be transitory and occasional.

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Threatened and Endangered Species

Under the no action alternative, flood risk reduction features in the subject reaches located along the IHNC and GIWW would not be restored or reinforced. In-water construction activities and delivery of construction materials via the IHNC or GIWW would not occur; therefore, no aquatic threatened and endangered species would be directly impacted. There would be an increased risk of flooding in the three sub-basins associated with the secondary floodwalls and levees if the deficient segments were to fail during a storm event. Indirect impacts could occur if debris and potentially contaminated floodwaters were to reach the IHNC and GIWW or upland areas and degrade potential threatened and endangered species habitat.

Future Conditions with Proposed Action

Direct, Indirect, and Cumulative Impacts to Threatened and Endangered Species

Under the proposed action, regardless of the restoration/reinforcement method, no in-water construction work would occur; therefore, no threatened or endangered species would be affected during construction or after the project has been completed. Although the project segments are located adjacent to the IHNC and GIWW, no construction would take place directly within the habitats of concern and there would be no direct, indirect, and cumulative impacts to threatened or endangered species with the potential to occur adjacent to the project areas.

3.2.5 Cultural Resources¹

Existing Conditions

For the proposed project, the Area of Potential Effect (APE) includes 21 individual levee alignment segments totaling approximately 4.6 mi in length (shown as red segments on figure 2) and nine proposed staging areas (labeled as areas A through I in appendix C). With the exception of Staging Areas A and I, of which a small portion of each falls within the ROW, all proposed staging areas would be located nearby or adjacent to existing ROW.

The CEMVN contracted R. Christopher Goodwin and Associates, Inc. (RCGA) to conduct cultural resources evaluations of IER #11 – Tier 1 (USACE 2008c) and Tier 2 Borgne and Pontchartrain project activities (USACE 2008a and 2010a). The results of those findings are summarized below as appropriate and applicable for the current project area.

Tier 2 Pontchartrain - IHNC

RCGA utilized background research, previous cultural resource investigations review, soil and topographic analyses, and field reconnaissance information to identify high potential areas for archaeological resources and to assess any historic structures and potential historic districts that might be located in the project area (Heller and Hannah 2009).

Background research into records on file at the Louisiana Division of Archaeology and the New Orleans District indicate no previously recorded archaeological sites are located in the Tier 2 Pontchartrain project area. However, site forms and archaeological investigation reports describe known archaeological sites within the project vicinity. Prehistoric shell midden sites have been recorded nearby on the Lake Pontchartrain shoreline along beach ridges and where bayou channels drain into the lake. Due to recent geologic development of the Mississippi delta, the earliest known archaeological sites in the project vicinity date to the Poverty Point period (1700–500 BC).

Within the greater New Orleans Metropolitan area, historic period archaeological sites and structures, such as forts, plantations, residential neighborhoods, bridges, and industrial facilities initially developed along the high ground adjacent to natural waterways and lake shorelines, and were later established along man-made canals and within drained back swamp areas. Historic period watercraft are recorded in bayous, river channels, and lakes in the region.

¹ Apart from the rest of this report, which was prepared by AECOM, the Cultural Resources analysis and discussion was prepared by USACE-CEMVN. For a full list of preparers, see Table 16 in Section 10.

Background research indicates two previous cultural resources surveys were conducted within or near the IER #11 - Tier 2 Pontchartrain project area. One survey consisted of an examination of the Lake Pontchartrain and Vicinity Hurricane Protection Levee system (New World Research 1983). No cultural resources were identified in the survey area. In the second study, researchers included an evaluation of the Seabrook Railroad Bridge and determined it was eligible for listing on the National Register of Historic Places (NRHP) (Wilson et al. 2006).

Waterway development heavily influenced construction throughout project area, particularly along the IHNC. Construction of the IHNC began in 1918 and was completed in 1923. The canal provided an improved route between Lake Pontchartrain and the Mississippi River through the use of one of the largest locks in the nation at the time of its construction. In addition, a complex railroad network crosses New Orleans East along Chef Menteur Highway and Hayne Boulevard. New Orleans East subsequently developed into a significant industrial center for the City of New Orleans.

Six cultural resources have been previously documented within the immediate project vicinity, but none are located directly in the project area. These properties include 1) Camp Leroy Johnson site (16OR219), 2) U.S. Army Air Base Building, 3) Downman Road Site (16OR8), 4) Pontchartrain Park Residential Area, 5) Pine Village Residential Area, 6) Lakefront Airport, and 7) Fountain of the Four Winds.

Following the completion of archival research, soil and topographic analysis, and reconnaissance level field investigations, researchers determined that no areas in the Tier 2 Pontchartrain project area possessed the potential to contain buried archaeological deposits and no Phase 1 level investigation was conducted. Only one historic structure was identified in the project area. As mentioned previously, the Seabrook Railroad Bridge is a NRHP-eligible steel bascule structure constructed in 1920 on the Norfolk Southern railroad where it crosses over the IHNC.

Tier 2 Borgne – GIWW and MRGO

For the eastern portion of the GIWW, records on file at the Louisiana Division of Archaeology and the New Orleans District indicate numerous previously recorded archaeological and historic properties are located within, and immediately adjacent to, the eastern sections of the GIWW study area.

For the IER #11 – Tier 2 Borgne project, the cultural resources study boundaries extended 500 ft to the protected side of the existing levees that border the north bank of the GIWW and the southwest bank of the MRGO. The western boundary was located approximately 1,500 ft west of the Paris Road Bridge. The eastern boundary at the time extended beyond the current project area across the Golden Triangle Marsh in a straight line due south from the Maxent Canal. Therefore, this study area overlaps the current project study boundaries and the findings are applicable.

Background research identified three known archaeological sites in the eastern section of the GIWW study area. Site 16OR40 (Linsley Site) was recorded in 1960 as a re-deposited shell midden extending 500 ft along the spoil bank of the GIWW. Shell, large quantities of vertebrate faunal material, Poverty Point objects, and other cultural materials were recovered. Four radiocarbon dates ranging from 2490-1590 BC were obtained from organic samples. Investigators at that time concluded that the site was buried under marsh and cultural deposits from the site were dredged and placed on the spoil bank during the construction of the GIWW. Additional testing in 1982 suggests widening of the GIWW may have destroyed additional portions of the site.

Site 16OR41 (Paris Road) was originally recorded in 1964 as a buried midden deposit exposed during drag line operations for the construction of the Paris Road Bridge. Cultural material recovered from the site dated exclusively to the Tchefuncte Period (circa 500 BC – AD 100). In 1984, a portion of the recorded site location was auger tested to a depth of 17 ft with negative results. Researchers concluded that the tested portion of the site had been destroyed.

Site 16OR55 (Atlatl Weight Site) was recorded in 1975 as a scatter of prehistoric midden material located on a spoil bank adjacent to the GIWW. Although no temporally diagnostic artifacts have been reported from the site, additional investigations have been recommended by researchers. There is a discrepancy in the site records showing two separate locations for the site, one north and one south of the GIWW.

One known historic property is recorded in the eastern side of the GIWW project area. This property is the National Aeronautics and Space Administration (NASA) Michoud Assembly Facility located immediately north of and adjacent to the GIWW between the Michoud Slip and Michoud Canal. The area was first owned by French settler Gilbert Antione de St. Maxent in 1763 and later was purchased by Antoine Michoud. The brick smokestacks from Michoud's sugar mill still exist at the entrance to the NASA facility. Beginning in 1941, Higgins Industries built Liberty ships and later wooden cargo planes at the facility. In 1961, NASA chose the Michoud facility for the production of the first stages of the Saturn rocket and continues to use the facility to the present day. A recent architectural survey of the facility determined that three buildings associated with the space program and ten buildings associated with World War II activities are eligible for listing on the NRHP.

Researchers conducted a boat survey within the eastern portion of the GIWW project area. This survey included marshes along the shorelines of the GIWW, portions of the MRGO, and a northern section of Bayou Bienvenue. During the survey, shorelines were examined for cultural material and for evidence of intact cultural deposits. Wherever possible, pedestrian survey, shovel test excavations, and/or probing were also conducted in high probability areas located on dry, high ground. Probing found no buried shell deposits and no other cultural material was identified. Due to low research potential, low artifact density, and lack of integrity, researchers determined that the locus was not significant and recommended no further work.

Researchers also evaluated the potential for submerged cultural resources in the eastern section of the GIWW area. Background research identified seven previously reported shipwreck locations in the surrounding area. Confirmed sites are modern vessels located in the channels of the MRGO and the GIWW. The likelihood for significant historic period shipwrecks and other nautical cultural resources is considered extremely low in these man-made and maintained channels.

The following discussion of impacts is based on the information provided in the cultural resources investigation management summaries prepared by RCGA (Heller et al. 2008 and Heller and Hannah 2009).

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Cultural Resources

Under the no action alternative the deficient levee/floodwall segments along the IHNC and GIWW would not be repaired or restored. There would be an increased risk of flooding should

the deficient segments fail during a high water event. Direct impacts to cultural resources associated with flooding could be submersion damage to cultural resources such as historic buildings, structures, and cemeteries. Indirect impacts could result if subsequent repairs to historic resources were conducted in such a way that the historic features of the resource were irretrievably removed or demolished. Indirect impacts to existing or undetected archaeological resources could occur should levee or floodwall failure result in scouring of an area containing such resources, thereby resulting in those resources being washed out of the subsurface and potentially being lost or damaged. Impacts to both historic and archaeological cultural resources could be cumulative should the flooding occur throughout the New Orleans Metropolitan area.

Future Conditions with Proposed Action

Direct, Indirect, and Cumulative Impacts to Cultural Resources

All proposed activities associated with restoring and reinforcing deficient portions of the existing levees and floodwalls up to the 100-year level of risk reduction would be conducted within the existing ROW and would have no direct, indirect, or cumulative impacts on significant cultural resources. The existing project ROW has been subjected to severe ground disturbing activities associated with the construction of the existing HSDRRS; excavation and construction of major canals and waterways including the IHNC, Michoud Canal, and GIWW; and the development of adjacent control structures and industrial facilities. The likelihood for intact and undisturbed cultural resources in the existing ROW is extremely minimal.

Known archaeological and cultural resources identified in the study area include: Site 16OR219 (Camp Leroy Johnson), the U.S. Army Air Base Building, Site 16OR8 (Downman Road Site), Pontchartrain Park Residential Area, Pines Village Residential Area, New Orleans Lakefront Airport, Fountain of the Four Winds, Site 16OR41 (Paris Road), Site 16OR40 (Linsley Site), Site 16OR55 (Atlatl Weight Site), and the NASA Michoud Assembly Facility. No construction or materials staging would occur on the archaeological or cultural sites identified above; therefore, these properties would not be impacted by the proposed action.

During the previous project surveys, researchers evaluated the potential for undiscovered cultural resources within sections of the eastern project area, including a 500 ft corridor on the protected side of the levee center line along the GIWW. High probability areas for cultural resources within the ROW of the proposed action were identified along bayou shorelines and these areas were surveyed by boat. No new archaeological sites were identified (Heller et al. 2008). The likelihood of undiscovered cultural resources in the existing ROW is low given the amount of disturbance these areas have experienced in association with initial construction of the levees. Therefore, potential adverse impacts to cultural resources are not anticipated.

Erosion of ground deposits during flood events can result in severe damage and destruction of archaeological sites. Implementation of the proposed action would provide an added level of flood protection to significant historic properties located in the immediate project vicinity; therefore, potential beneficial impacts may occur as a result of the project activities.

In a 13 September 2010 letter, the Louisiana State Historic Preservation Officer (SHPO) reviewed the proposed project and concurred that should have no affect on historic properties. The project is currently under review by interested Indian Tribes. The Decision Record for this IERS will not be signed until Section 106 consultation for the proposed action has been concluded.

Implementation of the proposed action would have beneficial cumulative impacts on cultural resources in the New Orleans Metropolitan area. This alternative is part of the ongoing Federal

effort to reduce the threat to property posed by flooding. The combined effects from construction of the multiple projects underway and planned for the HSDRRS would reduce flood risk and storm damage to significant archaeological sites, individual historic properties, engineering structures and nineteen historic districts.

3.2.6 Recreational Resources

Existing Conditions

This section focuses on the public recreational activities available in the project vicinity. Fishing and boating are the dominant recreational resources within the project area, though there are also a number of parks and public playgrounds. Within the project vicinity, primary public recreational activities include:

- Boating and fishing in Lake Pontchartrain, the IHNC and the GIWW;
- Fishing from Frank Davis Pier and bank fishing along the IHNC;
- Boating and fishing from Lakeshore Park;
- Passive recreation in Lakeshore Park, Pontchartrain Park, and small local playgrounds;
- Pontchartrain Landing RV Park; and
- Golfing at the Joe M. Bartholomew Sr. Golf Course.

Most of the recreational resources noted above are near the northern IHNC, near the Seabrook Bridge and on the western side of the IHNC. These are described individually in detail below. The other stations requiring restoration/reinforcement are in more industrial and isolated areas. The Bayou Sauvage National Wildlife Refuge (NWR) is nearby, south of Reach 2, stations 406+00, 430+00 to 452+00, 454+00, and 525+00 to 530+00 (figure 11).



Figure 11. Map of Bayou Bienvenue and Bayou Sauvage NWR

The Bayou Sauvage NWR is a natural area consisting of 23,000 acres of fresh and brackish marsh, providing habitat for wading birds, fish, and other wildlife (USFWS 2009). Recreational activities within the refuge include boating, fishing, hiking, and bird watching (USFWS 2008). Peak waterfowl populations of 75,000 are found in the wetland areas during the fall, winter, and early spring months (USFWS 2007c). Although there is a large migratory bird population, the Bayou Sauvage NWR is not listed as an Important Birding Area (IBA) by the National Audubon Society (Audubon 2010). The nearest readily-accessible public access point within the NWR with respect to the project location is the Joe Madere Marsh Unit, which is accessible from Highway 90 to the east of the project site.

Another potential recreational area in the eastern end of the project vicinity is Bayou Bienvenue, a portion of which is a natural and scenic water body designated by the State of Louisiana (figure 11). The official designation is from the confluence with Villeré Bayou to Lake Borgne, which is over 2 mi from the nearest deficient segment of HSDRRS. This bayou meanders from Lake Borgne, through the Golden Triangle marsh, across the MRGO, and then runs parallel to and south of the GIWW. Near stations 17+50 to 24+00 and 28+85 in Reach 1, Bayou Bienvenue merges with an outfall canal. The bayou provides boating and fishing



Photo 6. Eddie's Boat Launch
(located on the south side of the Paris Road Bridge)

opportunities in a natural setting and is recognized as a local recreational resource that supports local opportunities associated with wetland ecosystems including fishing, canoeing, and wildlife observation. Bayou Bienvenue is noted as an Impaired Waterbody by the U.S. Environmental Protection Agency (USEPA). It is designated as “fully supporting” fish and wildlife propagation, primary contact recreation, and secondary contact recreation; but “not supporting” oyster propagation due to probable fecal coliform impairment most likely from wildlife other than waterfowl (USEPA 2010). Although the eastern portions are used extensively, it is unlikely that the portion of Bayou Bienvenue nearest to the deficient segments in Reach 1 would be used for recreation, as this is essentially the outfall canal of a sewage treatment plant.

Five boat launches are located in the project area. The only public ramp is located within 1,500 ft of station 268+00 in Reach 3, the Seabrook Boat Launch in Lakeshore Park (a collective term for the series of parks located along the south shore of Lake Pontchartrain). Currently, the public launch at Seabrook Bridge is inaccessible due to construction work in the area. Four private ramps also occur in the vicinity of the project: Eddie Pinto's Boat Launch, located across the Paris Road Bridge from the project area (photo 6); and Seabrook Marine, Pontchartrain Landing recreational vehicle (RV) Park, and Trinity Yachts, which are located along the west bank of the IHNC adjacent to some of the deficient HSDRRS segments but outside of the ROW and the project footprint. These features and other recreational resources in the area are illustrated in figure 12.

According to the Louisiana Department of Transportation and Development (LaDOTD), the project area contains three designated bicycle paths: the Mississippi River Trail, which is located less than 1,000 ft from the southern-most station on the IHNC, Gate W-1; and two suggested cross-state bicycle routes, one along the portion of the Chef Menteur Highway that travels west of Paris Road and across the IHNC, and another path that continues south from the Paris Road Bridge at station 260+00 (LaDOTD 2008 and Mississippi River Trail [MRT] 2008).

Fishing and pleasure craft (including charters) launch from various facilities on the IHNC such as Seabrook Marine and Pontchartrain Landing RV Park (figure 12). As many as 65 boats per day launch from Seabrook Marine on busy summer weekends, and may return several times per day (HDR 2009a). The RV Park at Pontchartrain Landing offers the use of boat ramps for a fee and has had as many as 100 launches per day on a busy weekend (HDR 2009b).

Fishing is an important recreational resource for the State of Louisiana. In 2003, it supported 16,999 jobs and generated a total economic impact of \$1.6 billion (LaDWF 2005b). The Seabrook Bridge area is well-known throughout the state for its record trout catches and is a popular fishing spot among local residents. The Frank Davis Fishing Pier extends from the shore underneath the Seabrook Bridge and is managed by the Orleans Levee Board. This pier is regionally known for catches of white trout, speckled trout, flounder, redfish, sheepshead, black drum, and croaker, primarily due to its proximity to the existing scour holes (Davis 2007). The pier is also currently inaccessible due to construction activities and materials staging under the Seabrook Bridge and along Lakeshore Drive.

Preparation and equipment/material staging for construction of a new floodgate structure on the IHNC at Seabrook (USACE 2010a) and for improvements to the Lakefront Levee and floodwalls (USACE 2009a) have impacted access to the Frank Davis pier and Seabrook Launch. During construction of the Seabrook Gate, the most significantly impacted recreational features would be expected to be boating and fishing, as a result of the placement of a cofferdam structure across the entire IHNC channel for approximately 6 months to 12 months. During this time all boat access and water flow between Lake Pontchartrain and the IHNC through the Seabrook Gate would be suspended and local fishing opportunities would be limited. Access between the IHNC and Lake Pontchartrain could be achieved using the GIWW and the Rigolets pass between Lake Pontchartrain and the Gulf of Mexico.

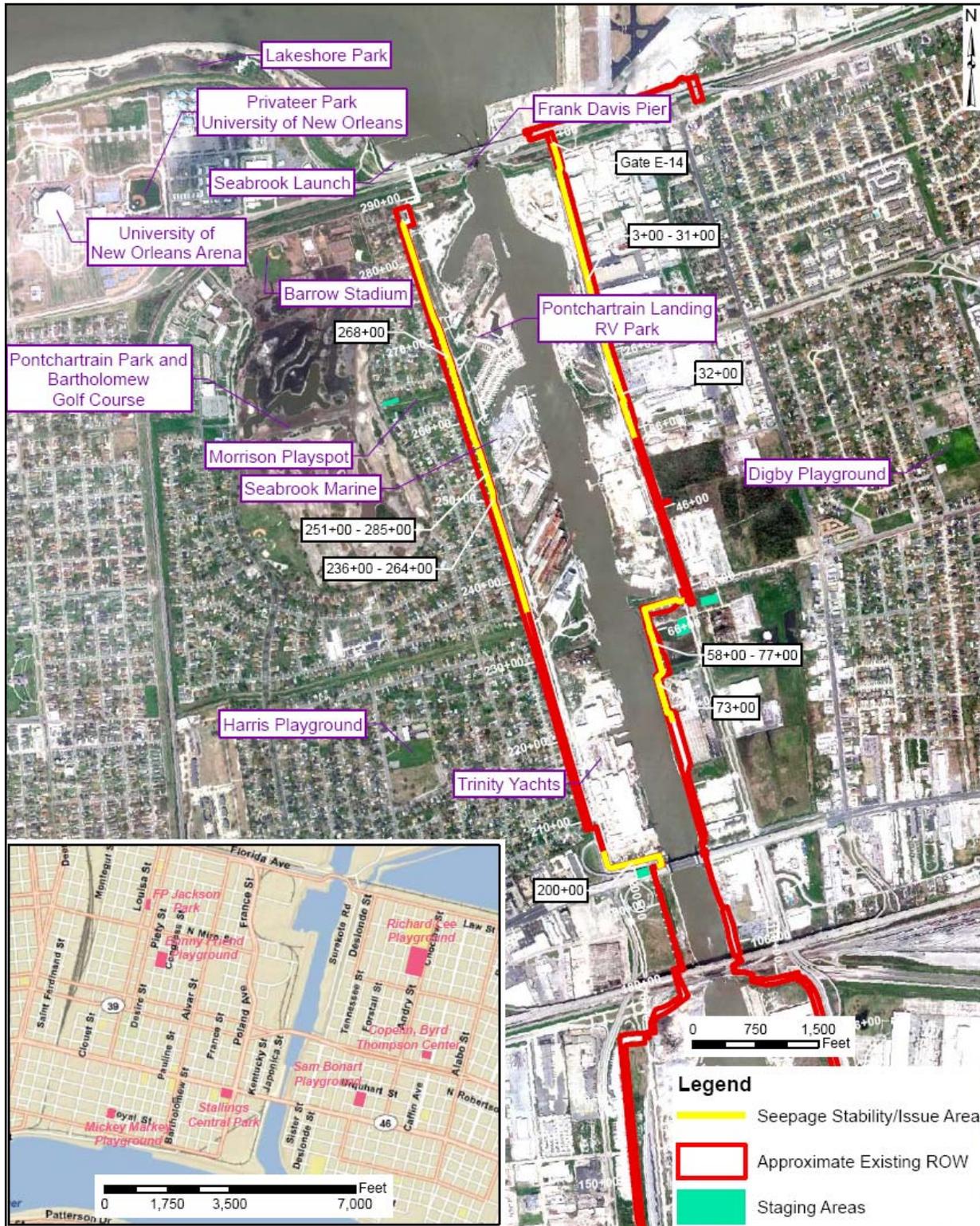


Figure 12. Recreational Areas near the Western Portion of the Project Vicinity

On 20 April 2010, an explosion occurred on the active, exploratory offshore drilling rig Deepwater Horizon in the Gulf of Mexico and on 24 April 2010, it was discovered that oil was leaking from the wellhead into the Gulf. For approximately 100 days afterwards, massive amounts of oil were released, forcing recreational and commercial fishing closures in both state and federal waters (LDWF 2010). Although recreational fishing along the Gulf Coast was severely impacted by this oil spill, the immediate New Orleans area was largely spared. The waters of Lake Pontchartrain remained open except for a small portion near the Rigolets Pass, which was closed when tar balls were observed. Recreational fishermen in Lake Pontchartrain were most likely not affected by these closures. Fishermen in the GIWW may have experienced minor, temporary effects. As of 19 August 2010, many areas closer to shore have been reopened to both commercial and recreational fishing; however, oyster and crab fisheries were two of the most heavily impacted inland resources and many inshore areas still remained closed.

Bird-watching is also a popular recreational activity in and around Seabrook. The New Orleans Lakefront at Seabrook is listed as an official location (site 7-5) on the Louisiana Birding Trail (America's Wetland 2009). Public benches are provided in Lakeshore Park for bird-watching or passive recreational opportunities.

Numerous recreational areas for adults and children are located near the northern IHNC project area. As illustrated on figure 12, there are several recreational areas along the IHNC. These parks and playspots are local community facilities accessible to the public.

Relative to the project location, the closest facilities are Morrison playspot (photo 7) and Pontchartrain Park (photo 8), both on the west side of the IHNC. The 1.7-acre Morrison playspot is adjacent to stations 236+00 to 264+00, 251+00 to 285+00 and 268+00. Currently, this area is undeveloped; however, the Downtown



Photo 7. The Morrison Playspot
(the floodwall in the background)



Photo 8. Pontchartrain Park and the Joe W. Bartholomew, Sr. Golf Course (under construction)

Neighborhood Market Consortium desires to develop the area into a community garden area, including a cypress forest, children's play area, natural wetland, amphitheater, and roadside produce stand (Goldenberg 2008). On the east side of the IHNC in Pines Village, the closest park is Digby Playground, located approximately one mile away from station 73+00. This 7-acre playground is a well-developed facility recently rehabilitated for public use (City of New Orleans [CNO] 2008a).

Prior to Hurricanes Katrina and Rita, Pontchartrain Park was a well-developed, approximately 185-acre public facility just west of the northern IHNC portion of the project area (photo 8; figure 12). At its closest point, the boundary of Pontchartrain Park is approximately 450 ft from the floodwall along France Road. The park was an important recreational resource to the community and to help ensure its continued use, the New Orleans Neighborhood Rebuilding Plan (NOLANRP) has identified numerous redevelopment projects for the park and area (NOLANRP 2006). These redevelopments and renovations are currently under construction (photo 8).

Included within Pontchartrain Park are Wesley Barrow Stadium, the Bartholomew Golf Course, and a playground area on the southern end of the park (figure 12). Prior to Hurricane Katrina, the Wesley Barrow Stadium served as the primary site for the city's Little League teams as well as for local high schools (CNO 2007).

The Joe M. Bartholomew, Sr. Municipal Golf Course, an 18-hole golf course in the Pontchartrain Park neighborhood, was damaged during Hurricane Katrina and has not re-opened. Originally named the Lake Pontchartrain Golf Course, this course was the only golf course available to African-Americans during the segregation era in New Orleans. By 1979, it had undergone renovations and was renamed the Joe M. Bartholomew Sr. Municipal Golf Course, after Joseph M. Bartholomew, one of the wealthiest African American men in New Orleans at the time. Although the golf course is not currently listed on the NRHP, neighborhood and civic organizations are pursuing its designation (Greater New Orleans Community Data Center [GNOCDC] 2008; Pontchartrain Park Neighborhood Association [PPNA] 2008).

Barrow Stadium, on the northern end of the golf course, is also slated for renovation. Plans involve the replacement of the existing stadium and the construction of a new stadium. The new stadium has been designed and bids for general contractors have been received (CNO 2010b). No work is currently being done on the stadium (photo 9). The playground area on the southern end of the park is operational and includes swings, jungle gyms, baseball fields, soccer fields, and basketball courts.

On the southern end of the IHNC, near the lock, are several small neighborhood playgrounds, Bunny Friend, Mickey Markey,



Photo 9. The Wesley Barrow Stadium
(currently closed and fenced off)

Stallings Center, Richard Lee playground, Sam Bonart playground, and the Copelin, Byrd Thompson Center (figure 12). These recreational spaces are in various states of repair. The Bunny Friend playground has basketball courts and a small jungle-gym play area, which is currently functional. This playground has been in operation since the early 20th century when Ida Friend donated money and land to build it in memory of her son (Pontchartrain 2010). Mickey Markey playground does not have any amenities, but is a popular dog park where dogs are allowed both on and off leash (poopypark.com 2010). The Stallings Center playground once had an indoor gym and pool available to the community prior to Hurricane Katrina. The buildings were demolished in March 2010, and construction of a new Community Center is slated to begin in the near future (Times Picayune 2010). The Richard Lee playground and the Copelin Center are currently closed and the buildings are either in serious disrepair or have been demolished. The pool at the Bonart playground has not reopened since the hurricane, but there is an open grassy space for recreation (Davis 2010).

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Recreation

No construction within the previously disturbed and/or developed ROW would occur under this alternative because the deficient levee/floodwall segments along the IHNC and GIWW would not be restored or reinforced. There would be an increased risk of flooding in the New Orleans East, Orleans East Bank, and Chalmette Loop sub-basins if storm surge were to cause breaches in the interior floodwalls and levees along the IHNC and GIWW. If the secondary line of defense were to fail, some recreation areas may experience temporary, direct impacts from flooding. There could be permanent and potentially cumulative impacts to some recreation areas should submersion result in damage requiring demolition of structures, and/or if repairs to these areas are delayed over a long-term, as happened following Hurricane Katrina.

Future Conditions with Proposed Action

Direct and Indirect Impacts to Recreation

The proposed action would be compatible with recreation areas within the project vicinity since the proposed restoration/reinforcement methods would not result in alterations to existing HSDRRS structures that would require any additional space outside of the ROW once completed. Under the proposed action, recreational assets of the project corridor would be temporarily impacted by construction activities, which would last approximately 10 months. The impacts associated with each restoration/reinforcement method would be similar for all sites and are discussed together for all sites. Specific sites where the proposed restoration/reinforcement method may have different impacts from the more general impacts are discussed under each method.

None of the proposed methods would directly, physically impact the Bayou Sauvage NWR, Bayou Bienvenue, or any of the other recreational facilities in the project vicinity. Impacts to aesthetics and noise associated with construction activities and the presence of heavy equipment in nearby recreational areas would be temporary and minor. Direct, temporary impacts related to night-time construction activities would result from noise from earthmoving and project lighting. The noise from construction operations would affect the generally placid environmental conditions that may be enjoyed by fisherman, recreational boaters or bird watchers. Additional temporary impacts to passive recreational activities such as bird watching may be experienced

during construction. Minor, indirect impacts associated with construction at specific stations are described below.

DSM – DSM is the proposed reinforcement method for Reach 1, station 28+85 and Reach 3 station 268+00, and is an alternate reinforcement method for Reach 2, stations 73+00, 79+00, 242+00 to 260+00 and 525+00 to 535+00. Most of these stations are immediately adjacent to industrial facilities. Stations 79+00 and 242+00 to 260+00 are in relatively natural open areas adjacent to the GIWW. There are no recreational facilities adjacent or near station 28+85; however, station 268+00 is near several recreational facilities, including the Seabrook Boat Launch, the Frank Davis Pier, Morrison Playspot, Lakeshore Park, Pontchartrain Park, Wesley Barrow Stadium, and the Joe Bartholomew Sr. Golf Course. These recreational areas are currently non-operational or inaccessible, except for a small area on the southern end of Pontchartrain Park. Potential indirect impacts to this small park could include difficulties in reaching the areas, due to increased traffic on the roads, increased noise due to heavy machinery, and minor visual impacts. If these recreational areas were to re-open prior to completion of the proposed action, then temporary impacts associated with access and overall quality of the recreational opportunity due to noise and disturbance would occur. Following construction, no impacts to recreational resources in the area would be expected since no additional space would be required.

Berm – Berm is the proposed restoration method for Reach 2, stations 73+00, 79+00, 242+00 to 260+00 and 525+00 to 535+00. It is the alternate restoration method for Reach 1 station 28+85. These areas already consist of earthen levee or earthen levee/floodwall combination. There are no official recreational areas in the vicinity of these stations; therefore, there would be no direct impacts to recreation associated with these restoration features. Potentially, persons actively boating or fishing in the GIWW or Bayou Bienvenue could experience slight impacts due to increased noise from the heavy machinery. These indirect impacts would be temporary. Bayou Bienvenue is located to the south of several stations in Reach 2, but the designated Natural and Scenic River portion is separated from stations 525+00 to 535+00 and stations 242+00 to 260+00 by more than 3 mi and 4 mi, respectively (figure 11). Equipment may be visible during construction, but the distance would lessen any noise or other potential impacts to recreation in the bayou.

Buttress Wall – Buttress walls are the proposed reinforcement method for Reach 2, stations 3+00 to 31+00, 32+00, 268+00, 270+00 and 278+00, and the alternate reinforcement method for Reach 1, stations 17+50 to 24+00, Reach 2, stations E-14, 58+00 to 77+00 and 454+00, and Reach 3, stations 268+00, 256+00 to 285+00, 200+00 and W-1 0+00 to 2+00. There are no recreational areas near Reach 1 and recreational areas near the Reach 3 stations include those mentioned previously for the DSM alternative. No direct impacts to recreation would be associated with this reinforcement type. Potential indirect impacts would be similar to the DSM alternative, such as a temporary increase in noise and difficulty reaching the functional playground at the southern end of the park.

Concrete Slab – Concrete slabs are the proposed reinforcement method for Reach 1, station 17+50 to 24+00; Reach 2, stations E-14, 58+00 to 77+00, and 454+00; and Reach 3, stations 251+00 to 285+00, 200+00, and W-1 0+00 to 2+00. Gates E-14 and W-1 are the only stations for which this reinforcement method is proposed that are located near recreational facilities; the Seabrook Boat Launch, the Frank Davis fishing pier, and the small neighborhood parks surrounding the IHNC Lock. Since all construction activities and the footprint of the concrete slab would occur within the existing ROW, no direct impacts would be anticipated. Temporary indirect impacts such as avoidance of nearby recreational areas due to construction noise or road closures (inaccessibility) could potentially occur. Currently, the Seabrook Launch and Frank Davis Pier are inaccessible due to construction on Lakeshore Drive and equipment staging at the

boat launch. If these recreational areas were to re-open prior to completion of the proposed action, then temporary impacts associated with access and overall quality of the recreational opportunity due to noise and disturbance would occur. The parks on the southern end of the IHNC (inset on figure 12) are not immediately adjacent and are not fully functional. There are plans to rehabilitate several of these recreation areas; however, it is unlikely that this work would be completed before this project begins.

Relief Wells – Relief wells are the proposed reinforcement method for stations 406+00 and 430+00 to 452+00 (Reach 2) and stations 236+00 to 264+00 (Reach 3). Stations 430+00 to 452+00 are located on the NASA property in a highly industrial area. Stations 258+00, 256+00, and 248+00 are located along the northern IHNC, near several recreational areas; however, all work would occur in the existing ROW and no impacts to recreational activities in the vicinity would be anticipated. Potential indirect impacts to recreation in this area would be similar to those described for the concrete slab method since similar equipment would be used and the stations are adjacent. These impacts would be minor due to the distance between the proposed work and the recreational facilities and the fact that most of the facilities are not currently operational. Given that most of the recreational facilities in the area are either closed or under construction, impacts would only occur if these facilities reopened prior to completion of the proposed action.

Staging Areas – All proposed restoration/reinforcement methods would have associated staging areas (appendix C). The existing land use of these potential staging areas varies greatly, ranging from adjacent residential areas to bridge underpasses. Staging areas would be used for equipment and materials storage during construction. Temporary direct impacts to recreation could occur in the areas that are near to the staging areas. These impacts would be similar to those mentioned previously for construction activities. A portion of the western end of the Morrison Playspot is a proposed staging area (photo 7; appendix C). This recreational area is currently undeveloped land, although it is mowed and maintained regularly. There are plans to develop this plot into a community garden and a recreational area for the neighborhood. A direct impact to recreation in the area could occur if the City of New Orleans or other organization were to attempt to develop the playspot prior to completion of the proposed action. This area would experience a direct impact while in use as a staging area; however, if the restoration/reinforcement methods are completed prior to any attempts to develop this recreational area, potential impacts would be temporary. Indirect impacts to recreation from the staging area would be similar to those described for construction activities, primarily associated with a temporary decrease in recreational opportunities due to increased noise and inaccessibility.

Cumulative Impacts to Recreation

Minor cumulative impacts to recreational resources along the northern IHNC are possible due to the combined effects of the restoration/reinforcement methods along the IHNC and other projects in the area (see section 4). These impacts would be greater for people using the RV park and the private boat launching facilities in the area, particularly if construction schedules of the proposed action work overlap with the construction schedule of the Seabrook Gate. Similar cumulative impacts to recreation from the construction schedules of the deficient levee/floodwall segments near the Borgne Barrier could also be possible. These impacts would be temporary, occurring only during construction.

3.2.7 Aesthetics

Aesthetics is a measure of sentiment or taste that an environment can induce in an observer. This measure involves the visual appearance of a setting and its structures, and how they blend or contrast with their surroundings. Aesthetics with respect to this IERS includes details such as the shape and color of the levees and floodwalls, the interaction of the HSDRRS with neighboring structures or other scenery, the placement of the HSDRRS structures with respect to roads, green space and other structures nearby, and potential visual interruptions that would block or alter a person's visual perspective in the area.

There are potential aesthetic impacts from all the alternatives for the restoration/reinforcement of the deficient HSDRRS segments. These impacts vary with the segments because the existing aesthetic conditions vary by site location. For the purpose of this evaluation, aesthetically similar or adjacent sites have been grouped together because potential impacts would be the same at these sites. Additionally, aesthetic impacts during construction may vary by site and restoration/reinforcement method; however, the impacts vary so slightly that construction impacts are assumed to be similar for all methods other than the no action alternative.

Existing Conditions

Reach 1 of the HSDRRS (stations 28+85 and 17+50 to 24+00) consists of both earthen levee and floodwall, with associated joints between them. The area is relatively flat in relief with the levee and floodwalls constituting the highest ground. The general appearance is a mixture of rural and industrial. A large reclamation company, Southern Recycling, is immediately adjacent to the levee on the western side. The Southern Recycling property is intensely industrial with significant large machinery activity and massive piles of shredded metals and other materials. The levee is only partially visible from inside the plant close to the floodgates due to the presence of trees between the levee and the facility and throughout the operations yard. The levee in this area is also visible from the Florida Avenue Bridge. To the east of the levee, there is a small open area and a canal, with trees and other vegetation. Further east are railroad tracks and a drainage pump station, which do not have a direct line of sight to the levee. The aesthetics in this area therefore vary between highly industrial areas and natural settings, with the levee in the middle (photos 10 and 11).

A portion of the HSDRRS within Reach 2 (station 79+00) is aesthetically similar to the segments of HSDRRS that are adjacent to Southern Recycling. This segment consists of levee and floodwall with the associated joints. The protected side has several industrial facilities with varying operations and large equipment operating over a large area. The flood side has two abandoned barge loading docks and associated cranes and machinery (photos 12 and 13). The industrial areas are surrounded by green space, which lessens the industrial feel slightly, though at the same time making it more jarring. A disjointed feeling is produced in this area due to the mixture of the natural and industrial settings. The flood side of the levee is in disrepair, and littered with debris, trash, and dilapidated structures. On either side of this segment are much more naturally vegetated areas. The immediate lush vegetation and the open space between the levee and the taller trees calms the intensity of the human-made structures and activities, especially as one is looking down on them.

Another segment of Reach 2 (stations 242+00 to 260+00) is less industrial in quality. This segment is the most tranquil of all the stations. There is industry to the east and west of the station, along the GIWW, but none immediately adjacent (photo 14). The calming view of the grassy levee and the adjacent waters of the GIWW is interrupted by a series of pipes running over and through the area. The aesthetic impacts of these pipes are relatively minor; however, as

they are much smaller in comparison to the other more natural features. From the top of the levee, a large expanse of varied and natural vegetation is highly visible to the north, further enhancing the peaceful setting. The industrial areas in the distance are far enough away that they do not have an extensive view of the levee. An observer on or near the levee in this area cannot hear the sounds made in the industrial areas either, adding to the serenity of the area.

Stations 268+00, 270+00, 278+00 adjacent to stations 242+00 to 260+00 along Reach 2 are more industrial in setting. These stations also consist of both levee and floodwalls with associated joints and floodgates providing access to the GIWW (photo 15). The aesthetics of these segments are more industrial than the other segments in Reach 2. The Entergy Michoud Plant is very large and imposing with many pipelines, buildings, and other structures throughout the facility including vents and storage tanks; portions of the plant machinery and structures cross over the levee. These segments of the levee are visible from the Paris Road Bridge. The noise from the bridge contributes to the overall industrial nature of this area. Along stations 268+00, 270+00, 278+00 the waters of the GIWW are less influential on the overall aesthetics and natural areas are not prominent.

The segments of the HSDRRS on and adjacent to the NASA facility (stations 406+00, 430+00 to 452+00 and 454+00) are also highly industrial in nature (photo 16). The industrial appearance of the area immediately adjacent to the levee, however, is lessened by a wide expanse of grass and a drainage canal between the floodwall and the NASA facility. This segment is entirely floodwall atop an earthen levee. The wall is so high that an observer cannot see over it from inside the facility, therefore the Michoud Canal area is not visible. Access to these levee segments is restricted and there is not a large amount of activity in this back-side area of the plant. Therefore, it is relatively peaceful in nature. An observer is shielded from the intense industrial activities on the other side of the Michoud Canal by the floodwall itself, allowing a more tranquil setting. The trees throughout the NASA facility also aid in reducing the industrial nature of the area. Due to the flat topography and the grassy area, a sense of openness is experienced, with a large view of sky broken only in the distance by the adjacent facility.

The rest of the stations in Reach 2 (stations 79+00, 3+00 to 31+00, 32+00, gate E-14, and 525+00 to 535+00) and those in Reach 3 (268+00, 236+00 to 264+00, 251+00 to 285+00, 200+00, and Gate W-1) are far more densely industrial in nature than those discussed previously (photos 17 through 21). The former USCG station (station Gate W-1) is the most aesthetically unpleasant (photo 17). The floodwall is adjacent to four abandoned industrial buildings in severe disrepair. Debris, machinery, and trash litter the area both inside and around the buildings. To the northern end of the station is a more open area, still highly industrial in appearance, with concrete slabs, wooden piers, and bridges occupying most of the view. The only natural vegetation is bushy weeds, adding to the unkempt nature of the site. On the other side of the floodwall is an equally unpleasant and apparently mostly abandoned area, consisting of large warehouse-type buildings and dilapidated residential structures. Some of the houses appear to be abandoned. The roads are potholed and un-curbed and the green spaces are covered in weeds.

The stations along the flood side of the northern IHNC are aesthetically similar to Gate W-1. The area is also highly industrial in nature with abandoned industrial sites interspersed with active ones (photos 18 and 19). There are large expanses of desolate areas that create an isolated appearance though also lessen the mechanical nature of the area. Some abandoned portions appear almost natural as they have been allowed to grow over with weeds, some of which are now the size of small trees. The Pontchartrain Landing RV Park, in the center of the eastern shore of the IHNC, is a well-kept, landscaped RV camping area. This property is juxtaposed to the rest of the properties in the vicinity. Along the IHNC in this area, the normally tranquil aspects of a large body of water are only partially experienced because many portions of the water body are littered with the remains of abandoned piers and other facilities jutting out into

the water (photo 18). Overall, the flood side of the HSDRRS in the northern end of the IHNC is an aesthetically unpleasant area, with small islands of naturally vegetated and landscaped areas between the industrial or abandoned buildings.

The protected side of the HSDRRS along the northern IHNC is different in appearance as compared to the flood side. On the western shore, there is an occupied residential area, with single family homes with small yards (photo 20). The neighborhood appears generally well kept and almost sub-urban in nature as seen from the floodwall. Due to the height of the floodwall, the industrial area is partially hidden, distancing the larger buildings that are still visible. Further west from the residential neighborhood is a park and a golf course. From this vantage point, the observer experiences a peaceful suburban neighborhood, with agreeable walking and driving areas.

The eastern shore of the protected side of the northern IHNC is considerably industrial in nature (photo 21). There are many large warehouse buildings and parking areas, including a huge gypsum plant. Most of these properties are functioning with varying amounts of activity. The view of the levee from this side of the wall is restricted as there is a very small open area between the wall and the adjacent facilities. Although the area is cleaner and in working order, the lack of open space creates a constricted feeling as one can only see for short distances. The grass on the berm along this portion of the levee is often stressed, contributing to the industrial aspect. There are railroad tracks on the northern end of this stretch and a highway on the southern end, which are noisy and could exacerbate the aesthetic discontent experienced in this area.



Photo 10. Reach 1, illustrating the levee and the adjacent industrial and natural areas at these stations



Photo 11. Gate leading to levee access road (Southern Recycling to the left and a natural environment in the background)



Photo 12. Station 79+00 and surrounding industrial area, showing the asphalt company



Photo 13. Floodwall and one of the abandoned barge loading facilities on the flood side of the HSDRRS



Photo 14. Station 247+00 (natural setting near the levee with industrial areas in the distance)



Photo 15. HSDRRS adjacent to the Paris Road Bridge and the Entergy Michoud Plant, showing industrial nature of the area



Photo 16. HSDRRS adjacent to the NASA facility (wide grassy area and a canal between the facility and the floodwall)



Photo 17. Former USCG facility adjacent to the IHNC Lock (abandoned buildings, concrete/industrial features)



Photo 18. Station 73+00 floodwall (industrial nature of the area, abandoned piers/buildings in the IHNC itself)



Photo 19. Northern section of IHNC east bank (Halliburton facility and France Road)



Photo 20. Northern section of IHNC west bank (industrial area on the left and the residential area on the right)



Photo 21. View of the protected side of the eastern IHNC floodwall, illustrating the industrial nature of the area

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Aesthetics

Since no restoration/reinforcement work would occur, the deficient segments in Reaches 1, 2, and 3 could potentially fail during future high water events resulting in localized or regional flooding. The scale and degree of flooding would determine the significance of potential direct, indirect, and cumulative impacts to the aesthetics of the area. Widespread flooding could result in the accumulation of debris or significant damage to structures and resources. Such impacts would be temporary since the floodwaters would be expected to retreat and areas would return to pre-storm conditions following completion of potential reconstruction and cleanup. Should flooding occur on a regional level there would likely be cumulative impacts to aesthetics.

Future Conditions with Proposed Action

Direct and Indirect Impacts to Aesthetics

The proposed action is compatible with the natural and cultural setting that exists today, as the project features of the proposed action are of similar nature to current project features. Under the proposed action, the aesthetic value of the project corridor would be temporarily impacted by construction activities. The impacts of each proposed restoration/reinforcement method would be similar for all sites and are discussed together for all sites. Any potential site-specific impacts related to a particular restoration/reinforcement method are discussed for that method below.

DSM – DSM is the proposed reinforcement method for stations 28+85 (Reach 1) and 268+00 (Reach 3), and is an alternative reinforcement type for stations 73+00, 79+00, 242+00 to 260+00 and 525+00 to 535+00. Most of these stations are immediately adjacent to industrial facilities. During the installation of the stabilizing columns, temporary impacts to the aesthetics in the area could occur. Large machinery would be necessary to install the subterranean columns, which would intensify the industrial nature of the surroundings. This disturbance would be temporary in nature and the completed reinforcement would appear essentially the same as the current HSDRRS does.

All construction would occur on the protected side of the floodwall, which in the case of station 268+00 is adjacent to a residential area. As this area is relatively sheltered from the industrial aspects of the flood side of the HSDRRS, impacts during construction would be more noticeable here. Depending on the size of the equipment, temporary impacts to the aesthetics environment of the residential area could occur. Construction would be expected to take less than 3 months. The machinery required for this work would be large and very conspicuous, and could also be noisy. Other vehicles carrying workers and materials would be parked behind the homes during the day, adding to the visual disturbance. Station 28+85 is not in a residential area and is adjacent to a very large reclamation facility. There would be direct impacts to aesthetics during construction in this area. Stations 79+00 and 242+00 to 260+00 are located in a more natural environment with open areas. No indirect impacts would be anticipated with this reinforcement method.

Berm – Berm is the proposed restoration method for stations, 73+00, 79+00, 242+00 to 260+00, and 525+00 to 535+00. Berm is an alternate restoration method for station 28+85. Additional soil material would be placed on the protected side of the existing levees to increase stability and control seepage. Stations 79+00 and 242+00 to 260+00 are either in industrial areas or in

relatively open space. Temporary impacts to aesthetics would occur during construction due to the heavy machinery required to import and compact soils. These impacts would be minor; however, as these areas are both isolated from general public view and already experience this type of activity. Once construction is complete, no permanent impacts to aesthetics would occur because the additional soils would resemble the existing conditions and the USACE would reseed the levee to restore the grasses to maintain soil stability.

Station 73+00 is in a somewhat more industrial area than stations 79+00 and 242+00 to 260+00. Impacts to aesthetics during construction would be slightly greater in this area. Temporary impacts during construction would be short. Only one facility would be impacted during construction, Dupuy Storage. The short-term construction would occur behind the buildings on the protected side, hiding most of the equipment from view of both employees and passers-by. Earthmoving activities would also take place behind the facility at this station. After construction is complete, there would be no aesthetic impacts, as the area would appear very similar to the existing conditions.

Buttress Wall – Buttress walls are the proposed reinforcement method for Reach 2, stations 3+00 to 31+00, 32+00, 268+00, 270+00, and 278+00. They are the alternate reinforcement method for Reach 1, station 17+50 to 24+00, Reach 2 stations E-14, 58+00 to 77+00, and 454+00, and Reach 3, stations 268+00, 256+00 to 285+00, 200+00, and W-1 0+00 to 2+00. There would be minor aesthetic impacts during construction due to the large machinery required to construct the buttresses. Reinforcement would be conducted in existing industrial areas, thereby lessening the visual impacts. Once construction is complete, there would be a minimal aesthetic impact to these stations as the buttress walls would be slightly larger than the existing floodwalls. The structures, however, would retain their existing color and general footprint and would not result in overall changes to the viewshed in the area. Reinforcement features would either be located behind existing industrial facilities or adjacent to very large facilities.

Concrete Slab – Concrete slabs are the proposed reinforcement method for Reach 1, station 17+50 to 24+00+00, Reach 2, stations E-14, 58+00 to 77+00, and 454+00 and Reach 3, stations 251+00 to 285+00, 200+00, and W-1 0+00 to 2+00. Aesthetic impacts during construction would be similar to those associated with the buttress walls, as similar equipment would be used. These stations are all in industrial or relatively isolated areas. Only three facilities would experience impacts at Gate E-14: Halliburton, an industrial facility that already has large earthmoving equipment and piles of material on site; Catholic Charities Archdiocese of New Orleans, occupying a warehouse with minimal activity on the protected site; and another warehouse facility to the south on the protected side, currently for lease. After construction is complete, there would be no permanent visual impacts, as the structures would appear similar to the existing conditions.

Relief Wells – Relief wells are the proposed reinforcement method for Reach 2, stations 406+00 and 430+00 to 452+00 and Reach 3, stations 236+00 to 264+00. This method would consist of installing wells on the protected side of the HSDRRS to reduce seepage. The stations in Reach 3 are adjacent to a residential area on the protected side. There would be moderate, direct aesthetic impacts in this area during construction due to the heavy machinery used to drill the relief wells. Stations 406+00 and 430+00 to 452+00 are in a relatively isolated area with restricted access behind the NASA facility. Minor aesthetic impacts during construction in this area would be expected due to the industrial location and the lack of public access. After construction is complete, there would be no permanent aesthetic impacts, as the area would appear similar to existing conditions. Several relief wells have already been installed in these areas (photo 20). These wells are small structures that have little visual impact.

Staging Areas – All proposed restoration/reinforcement methods would have associated staging areas (appendix C). These areas are all in variable locations, from adjacent to residential areas to under bridges and overpasses. Staging areas would be used for equipment and materials storage during construction. Minor and temporary aesthetic impacts would occur in these areas. Visual aspects of these impacts would include heavy machinery and variable quantities of materials such as soils, metal concrete supports and timber. These impacts would be temporary, for the duration of the construction. In some areas, such as those adjacent to residential areas (Morrison playspot), impacts would be slightly greater. No indirect impacts to aesthetics would be expected to result from the proposed action's use of the staging areas.

Cumulative Impacts to Aesthetics

Cumulative aesthetic impacts related to the IHNC/GIWW restoration/reinforcement methods and other projects in the area (see section 4 for detailed descriptions of other projects in the area) would be minor and temporary. These projects include the Seabrook and Lake Borgne HSDRRS projects (IER #11 Tier 2 Borgne and Pontchartrain), renovations/improvements to the LPV lakefront HSDRRS and outfall canal closures (IERs #4, #5, and #6), the rebuilding of the Bartholomew golf course, the construction of a pump station on Dwyer Road, and various other small scale infrastructure improvements being done by the City of New Orleans. During construction of the proposed action and other projects in the vicinity, the presence of large machinery and equipment and the related noise and vibrations would contribute to aesthetic impacts. These effects would be most strongly felt in the Pontchartrain Park residential area, where several other projects are located in close proximity and could occur simultaneously.

3.2.8 Noise

Noise is generally described as unwanted sound, which can be based either on objective effects (hearing loss, damage to structures, etc.) or subjective judgments (such as community annoyance). Sound is usually represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

Noise levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the day-night average sound level (DNL). DNL is the community noise metric recommended by USEPA and has been adopted by most Federal agencies (USEPA 1974). A DNL of 65 weighted decibels (dBA) is the level most commonly used for noise planning purposes and represents a compromise between community impact and the need for activities like construction. The A-weighted sound level, used extensively in this country for the measurement of community and transportation noise, represents the approximate frequency response characteristic of an average young human ear. Areas exposed to a DNL above 65 dBA are generally not considered suitable for residential use. A DNL of 55 dBA was identified by USEPA as a level below which there is no adverse impact (USEPA 1974).

Due to decreased levels of activity at night, background noise is generally about 10 dBA lower compared to daytime noise levels. Because of this quieter environmental setting, night-time noise levels are perceived as being louder than the same noise during the day and thus, generally produce a greater level of annoyance (University of South Carolina 1998). It is generally agreed that people perceive intrusive noise at night as being 10 dBA louder than the same level of noise during the day. This perception is largely because background environmental sound levels at night in most areas are about 10 dBA lower than those during the day.

Existing Conditions

The project is located in an industrial portion of the New Orleans Metropolitan Area. Existing noise in the area results from not only vehicle and boat traffic (horns), train activity, and nearby airport traffic, but also from the heavy industrial uses of the shoreline property. Noise levels surrounding the project corridor vary depending on climatic conditions and the time of day (typically, traffic is heavier at specific times and industries operate during normal business hours). Areas to the northwest of the project corridor primarily consist of open water (Lake Pontchartrain) and parkland with minimal noise generated by recreational users. Areas lining Reach 2 (figure 2) are primarily industrial immediately adjacent to the levees; therefore, noise levels can be slightly elevated, but can vary depending on what activities, equipment, and vehicles are running at any specific time of day. A few hundred feet from the levees along the IHNC, the area becomes residential with lower average noise levels. The majority of the southern boundary of the project corridor (Reach 1) is undeveloped marsh with some industrialization along the southern portions of the IHNC. Bayou Bienvenue and Lake Borgne line the western side of the project area. These two areas are relatively quiet and dominated more by natural noises and occasional ship traffic.

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Noise

Under the no action alternative, no construction would occur; therefore, no direct noise-related impacts would occur. However, since no restoration/reinforcement work would occur, the deficient levee/floodwall sections could potentially fail during future storm events, potentially resulting in localized or regional flooding. Temporary indirect and possibly cumulative impacts to the noise environment may occur during the subsequent clean-up and rebuilding process.

Future Conditions with Proposed Action

Direct Impacts to Noise

Noise levels related to construction activities vary with the type of equipment being used. Table 9 describes noise emission levels for construction equipment that would be expected to be used during project construction activities, regardless of the restoration/reinforcement method.

**Table 9.
Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation
at Various Distances¹**

Noise Source	50 ft	100 ft	200 ft	500 ft	1,000 ft
Backhoe	78	72	66	58	52
Crane	81	75	69	61	55
Dump Truck	76	70	64	56	50
Excavator	81	75	69	61	55
Front end loader	79	73	67	59	53
Concrete mixer truck	79	73	67	59	53
Auger drill rig	84	78	72	64	58

Table 9.
**Weighted (dBA) Sound Levels of Construction Equipment and Modeled Attenuation
at Various Distances¹**

Noise Source	50 ft	100 ft	200 ft	500 ft	1,000 ft
Dozer	82	76	70	62	56
Generators	81	75	69	61	55
Flatbed Trucks	74	68	62	54	48
Rollers	80	74	68	60	54
Graders	85	79	73	65	59
Portable Air Compressors	78	72	66	58	52
Welding Machines	74	68	62	54	48
Soil Mix Drill Rig	80	74	68	60	54

Source: Highway Construction Noise Handbook (FHWA 2006).

Notes: The dBA at 50 ft is a measured noise emission. The 100- to 1,000-ft results are modeled estimates.

The anticipated noise levels at 50 ft range from 76 dBA to 85 dBA based on data from the Federal Highway Administration (FHWA) (FHWA 2006). As not every type of equipment is used at a given time, noise levels would vary over the duration of a construction project.

Although the operation of several pieces of construction equipment at a particular time are likely to contribute to the actual noise levels at a specific receptor location, the resulting noise levels would be dominated by the noisier source (e.g., 85 dB + 76 dB = 101 dB).

Noise associated with the project would be regulated in accordance with the City of New Orleans Ordinance 23263, Chapter 66, Article IV regarding noise. For the purposes of this analysis, it is assumed that construction could occur on a round-the-clock basis.

Table 10 presents the equipment that would be used during construction of each restoration/reinforcement method. Potential impacts to the noise environment associated with construction of each restoration/reinforcement methods are discussed below. Table 10 presents a summary of the equipment that would be used for each alternative and the maximum and minimum estimated dBA at the 200 ft and 500 ft distances. These distances were selected because in general the ROW is generally 200 ft or less and for all restoration/reinforcement methods, the noise levels would be at or below 65 dBA at 500 ft.

All equipment would not be operating simultaneously at all times. Most construction activities would generate noise levels above 65 dBA within 200 ft of the project area (62 to 73 dBA). Within 500 ft all noise should be at or below 65 dBA (54 to 65 dBA). There are some residences and businesses located within 200 ft of the levee that may, therefore, experience minor elevated noise levels during construction periods. These impacts would be anticipated to be a temporary, minor annoyance. For the more remote areas, while elevated noise levels may be more noticeable during construction, potential impacts would be minor. Any nearby wildlife could move away from noise disturbances, and there are few recreation resources in the vicinity to impact human activities. Construction vehicle traffic would not be anticipated to impact the noise environment in association with most alternatives as the majority of the noise would occur during initial delivery and then removal of the equipment.

Table 10.
Restoration/Reinforcement Method Construction Equipment Requirements

Restoration or Reinforcement Method	Equipment	200 ft		500 ft	
		Min dBA	Max dBA	Min dBA	Max dBA
DSM	auger drill rig, dozer, generators, flatbed trucks, graders, portable air compressors, and the soil mix drill rig	62	73	54	65
Berm	dump trucks, excavators, dozers, flatbed trucks, and graders	62	67	54	59
Buttress Wall	concrete mixer trucks, excavators, dozers, and flatbed trucks	62	70	54	62
Concrete Slab	concrete mixer trucks and flatbed trucks	62	73	54	65
Relief Wells	auger drill rig, dozer, generators, flatbed trucks, portable air compressors, welding machines and a drill rig	62	72	54	64

For construction of the berm, potential adverse impacts to the noise environment may result from the regular flow of dump trucks delivering the borrow material. All three stations are located adjacent to industrial areas. It is estimated that the proposed action for these levee/floodwall segments would require approximately one truck load of borrow material every 30 minutes for a total of 16 truck loads per day. Allowing extra time to accommodate rain days on which construction activities would not occur, this work would be completed within approximately 50 days total.

All proposed restoration/reinforcement methods would have associated staging areas (appendix C). These areas would be placed in a variety of locations near the deficient segments. Some staging areas are located adjacent to residential areas while others are in open areas or under bridges and overpasses. Staging areas would be used for equipment and materials storage during construction. Minor and temporary impacts to the noise environment could occur during transportation of equipment to and from the staging areas during construction, particularly when the staging areas are located in or adjacent to residential areas. Overall, the noise impacts associated with the staging areas should be minor and temporary.

The overall direct impacts to the noise environment associated with construction of the various alternatives would be minor and temporary. After completion of construction, there would be no impacts to the noise environment at any stations or in the surrounding area associated with the resumption of normal levee operations.

Indirect Impacts to Noise

Potential indirect noise impacts include those related to recreation, wildlife, and emotional and mental stress that could result from increased noise levels in the area during construction. There are few recreational resources located within 500 ft of the construction areas; therefore, significant impacts to human activities in these areas would not be anticipated. Pontchartrain Landing RV Park is located just east of station 255+00 on the west bank of the IHNC across France Road. The RV Park would be expected to experience noise impacts during construction along this portion of HSDRRS, but these impacts would be minimal because all work would be

conducted on the protected side of the existing I-wall and approximately 60% of the RV Park rental sites are greater than 500 ft from the project area. Wildlife potentially occurring in the area could avoid or move away from the noise, but would be expected to return following construction. Emotional and mental stress created by elevated noise levels would be minor and temporary and compensated by the relief associated with the hurricane risk reduction provided by the project. Therefore, significant indirect impacts associated with noise produced during construction of the proposed action would not be anticipated.

Cumulative Impacts to Noise

Cumulative noise resulting from ongoing and planned construction projects and rebuilding/restoration activities following Hurricanes Katrina and Rita would not likely generate noise levels in the project area which would surpass the maximum levels of noise described above. Although, concurrent projects would likely extend the length of time people would be exposed to increased noise levels. This would be most significant along the northern reaches of the IHNC where there are multiple deficient segments and adjacent residential neighborhoods and businesses, all within range of the proposed new gate structure at Seabrook. Construction of the Seabrook Gate is anticipated to occur at the same time as the proposed action; therefore, it would be likely that noise associated with Seabrook Gate construction (including pile driving) would be louder than the noise generated by these restoration/reinforcement methods. Therefore, cumulative noise impacts associated with the proposed action would be temporary.

3.2.9 Air Quality

The USEPA, under the requirements of the Clean Air Act of 1963 (CAA), has established National Ambient Air Quality Standards (NAAQS) for six contaminants, referred to as criteria pollutants (40 CFR 50). These are carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (less than 10 microns in diameter [PM₁₀] and particulate matter less than 2.5 microns in diameter [PM_{2.5}]), lead (Pb), and sulfur dioxide (SO₂). The NAAQS include primary and secondary standards. The primary standards were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air. The primary and secondary standards are presented in table 11.

Existing Conditions

Areas that meet the NAAQS for a criteria pollutant are designated as being “in attainment;” areas where a criteria pollutant level exceeds the NAAQS are designated as being “in non-attainment.” The proposed action evaluated in this IERS would occur in Orleans and St. Bernard Parishes, Louisiana, and are areas currently designated as “in attainment” for all criteria pollutants. Further analysis required by the CAA general conformity rule (Section 176(c)) would not be required.

Table 11.
National Ambient Air Quality Standards

Pollutant and Averaging Time	Primary Standard		Secondary Standard	
	micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)	parts per million (ppm)	$\mu\text{g}/\text{m}^3$	ppm
Carbon Monoxide 8-hour concentration 1-hour concentration	10,000 ¹ 40,000 ¹	9 ¹ 35 ¹	- -	
Nitrogen Dioxide Annual Arithmetic Mean	100	0.053	Same as primary	
Ozone 8-hour concentration	147	0.075 ²	Same as primary	
Particulate Matter <u>PM_{2.5}</u> : Annual Arithmetic Mean 24-hour Maximum <u>PM₁₀</u> : Annual Arithmetic Mean 24-hour concentration	15 ³ 35 ⁴ 50 150 ¹	- - - -	Same as primary	
Lead Quarterly Arithmetic Mean	1.5	-	Same as primary	
Sulfur Dioxide Annual Arithmetic Mean 24-hour concentration 3-hour concentration	80 365 ¹ -	0.03 ¹ 0.14 ¹ -	- - 1300 ¹	- - 0.50 ¹

Source: 40 CFR 50.

Notes:

¹ Not to be exceeded more than once per year.

² 3-year average of the 4th highest daily maximum 8-hour concentration may not exceed 0.075 ppm, effective as of 27 March 2008.

³ Based on 3-year average of annual averages.

⁴ Based on 3-year average of annual 98th percentile values.

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Air Quality

Under the no action alternative, no construction would occur; therefore, no direct air quality-related impacts would occur. However, since no restoration/reinforcement activities would be performed, the deficient levee/floodwall sections could potentially fail during future high water events, thereby resulting in localized or regional flooding. Temporary indirect, and possibly cumulative, air quality impacts may occur during the subsequent clean-up and rebuilding process.

Future Conditions with Proposed Action

Direct and Indirect Impacts to Air Quality

Under the proposed action, a variety of restoration/reinforcement methods would be used to remediate deficient segments of flood risk reduction along the IHNC and GIWW (tables 1 through 3). During construction of all restoration/reinforcement methods, increases in air emissions near the project area would be expected during the construction period of approximately 300 days (10 months). These emissions could include: (1) exhaust emissions from operations of various types of non-road, on-site construction equipment such as loaders, excavators, cranes, etc.; (2) exhaust emissions from operations of on-road trucks and private vehicles used to access the work area; and (3) fugitive dust due to earth disturbance. The exhaust emissions from construction equipment would be from mobile sources for which emissions performance standards would be applicable to source manufacturers, and they are not regulated under the CAA air permit regulations. Given the small scale of the individual restoration/reinforcement projects, exhaust emissions associated with construction employees private vehicles to access the work site would be minor in comparison to the existing emissions associated with vehicle traffic in the area, therefore impacts to air quality would not be anticipated.

Construction related air emissions for the proposed action may result in an increase in criteria pollutant emissions at and near the proposed project sites. These effects would be temporary; related principally to fugitive dust mobilization by construction activities. Dust emissions would be controlled by natural conditions (most of the project would occur in wet areas, which would help control dust) and by standard BMPs. Additional impacts to air quality may be associated with the transport of construction supplies and equipment for certain restoration/reinforcement alternatives.

The highest potential for air quality impacts associated with construction of the proposed action or other alternatives would be for those stations immediately adjacent to neighborhoods and recreational areas (Gates E-14 and W-1 0+00 to 2+00, and stations 3+00 to 31+00, 32+00, 268+00, 236+00 to 264+00, 251+00 to 285+00, 73+00, 58+00 to 77+00, and 200+00). However, site-specific construction effects would be temporary and dust emissions would be controlled using BMPs when necessary. Construction activities within Reaches 1, 2, and 3 would occur concurrently throughout the 10-month construction duration and would be similar to those activities that have been ongoing throughout New Orleans since Hurricane Katrina. Therefore, overall potential impacts to air quality in association with construction of the proposed action or other alternatives would be temporary and minor.

Specific air quality impacts associated with the five restoration/reinforcement methods are discussed below.

DSM – DSM is the proposed reinforcement alternative for Reach 1, station 28+85 and Reach 3 station 268+00 and the alternate reinforcement method for stations 73+00, 79+00, 242+00 to 260+00, and 525+00 to 535+00. These stations are immediately adjacent to industrial facilities and stations 268+00 and 73+00 are located near residential neighborhoods. Dust mobilization would not be anticipated in association with DSM construction. The soil being mixed has a high water content, which would bind particles together and resist airborne mobilization. Most of the activity would take place beneath the surface presenting a barrier to airborne dust mobilization. Construction vehicle emissions would not be anticipated to impact air quality in association with this reinforcement alternative as the majority of the emissions would occur during initial delivery and then removal of the equipment. Minor dust emissions could occur as a result of movement

of construction vehicles on the site. After completion of the reinforcement features, there would be no direct impacts to air quality at any stations or in the surrounding area associated with the resumption of normal levee operations. No indirect impacts to air quality would be expected as a result of this method.

Berm – Berm is the proposed restoration method for stations 73+00, 79+00 and 242+00 to 260+00 and 525+00 to 535+00. Current HSDRRS features at these stations are an I-wall, T-wall, and earthen levee, respectively. The berm would build up these existing embankments. Fugitive dust mobilization would be expected under this restoration method. Borrow material would be transported to the project site using dump trucks. A single dump truck would transport about 18 cubic yards of embankment material. Deficient segments proposed to be restored with a berm would require approximately one truckload of borrow material every 30 minutes for a total of 16 truckloads per day. Allowing extra time to accommodate rain days on which construction activities would not occur, this work would be completed within approximately 50 days total. To control dust emissions during transportation of the borrow material the dump truck bed would be wet down and/or covered. During on-site construction, a sprinkler truck would wet the borrow material as it was installed on the existing embankments to control dust emissions. All three stations are located adjacent to industrial areas. A residential neighborhood is located a few blocks from station 73+00. Stations 242+00 to 260+00 are adjacent to undeveloped areas near Bayou Bienvenue. With the use of BMPs potential direct air quality impacts associated with the berm construction would be minor and temporary.

Potential for indirect impacts to air quality could include temporary visual and health impairments created by airborne dust and vehicle and construction equipment emissions. Visual impairments could occur in the immediate project area or along transportation routes as a result of the mobilization of fugitive dust during construction or transportation of berm material. Health impairments to allergy and/or asthma sufferers could occur for residents or workers in the immediate project vicinity as a result of mobilization of fugitive dust. These potential impacts would only occur during the construction period and would be expected to be controlled with the use of BMPs during construction. Therefore, indirect impacts associated with the berm method would be minor and temporary.

Buttress Wall – Buttress walls are the proposed reinforcement method for Reach 2, stations 3+00 to 31+00, 32+00, 268+00, 270+00 and 278+00. Buttress walls are an alternative reinforcement method for Gates E-14 Gate W-1 0+00 to 2+00, Reach 1 stations 17+50 to 24+00, Reach 2 stations 58+00 to 77+00 and 454+00, and Reach 3 stations 268+00, 256+00 to 285+00, and 200+00. At each location where buttress walls are installed, approximately 600 cy of material would be excavated to allow for installation. This excavated material would be used for backfill and the remainder of the material would be spread on the existing levee. Mobilization of fugitive dust would not be anticipated due to the existing moist condition of the excavated material though sprinkler trucks would be available should dust mobilization become an issue. Air quality impacts from dust emissions associated with this reinforcement method would therefore be minor and temporary. Construction vehicle emissions would not be anticipated to impact air quality in association with this reinforcement alternative as the majority of the emissions could occur during initial delivery and then removal of the equipment. Minor dust emissions could occur as a result of movement of construction vehicles on the site. Direct air quality impacts from dust emissions associated with this reinforcement method would be minor and temporary. There would be no anticipated indirect impacts to air quality as a result of this method.

Concrete Slab – Concrete slabs are the proposed reinforcement method for Gates E-14 and W-1 0+00 to 2+00; Reach 1 stations 17+50 to 24+00; Reach 2 stations 58+00 to 77+00 and 454+00; and Reach 3 stations 251+00 to 285+00 and 200+00. The concrete slabs would be installed on the existing ground and no excavation would be required. Construction vehicle traffic would not

be anticipated to impact air quality in association with this reinforcement method as the majority of the emissions would occur during initial delivery and then removal of the equipment. Minor dust emissions could occur as a result of movement of construction vehicles on the site. Sprinkler trucks would be utilized to control mobilized dust during construction of the concrete slabs if needed. Therefore, direct air quality impacts associated with this reinforcement method would be anticipated to be minor and temporary. No indirect impact would occur as a result of this method.

Relief Wells – Relief wells are the proposed reinforcement method for Reach 2 stations 406+00 and 430+00 to 452+00, and Reach 3 stations 236+00 to 264+00. Stations 406+00 and 430+00 to 452+00 are located on or adjacent to the NASA property in a highly industrial area. Stations 236+00 to 264+00 are located adjacent to an industrial area and close to a residential neighborhood. Approximately 2 cy of excavated material would be associated with each drilled well. This excavated soil would be spread on the existing levee and supporting embankments. The excavated soil is naturally wet; therefore, dust mobilization associated with this reinforcement method should be minor. Construction vehicle traffic would not be anticipated to impact air quality in association with this alternative, as the majority of the emissions would occur during initial delivery and then removal of the equipment. Minor dust emissions could occur as a result of movement of construction vehicles on the site. Therefore, potential direct impacts associated with this reinforcement method would be expected to be minor and temporary. There would be no anticipated indirect impacts to air quality as a result of this method.

Staging Areas – All proposed restoration/reinforcement types would have associated staging areas (appendix C). These areas would be placed in a variety of locations near the deficient segments. Some staging areas are located adjacent to residential areas while others are in open areas or under bridges and overpasses. Staging areas would be used for equipment and materials storage during construction. Minor and temporary impacts to air quality could occur during transportation of equipment to and from the staging areas during construction, particularly when the staging areas are located in an area with exposed soil or are accessed along dirt, gravel, or shell roads. Given the naturally damp nature of the soil in this area, the fugitive dust impacts associated with transportation of equipment to and from the staging areas would be anticipated to be minor and temporary. BMPs would be used if necessary to control fugitive dust. Direct air quality impacts from dust emissions associated with the staging areas would be minor and temporary. Proposed action activities performed at the staging areas would not result in any indirect impacts to air quality.

Cumulative Impacts to Air Quality

Potential cumulative impacts to air quality could occur from concurrent and ongoing construction projects in the New Orleans Metropolitan Area and immediate project vicinity. Other construction activities occurring during the same timeframe and within the vicinity of the proposed action would likely occur incrementally throughout the construction period.

Standard BMPs would likely be used for other activities or projects occurring within the vicinity the project area that could potentially create dust emissions. For instance, application of water to control dust and periodic street sweeping and/or wetting down of paved surfaces would aid in preventing fugitive dust from becoming airborne. Therefore, cumulative impacts to air quality in the project area from the proposed action would be minor and would last only during construction.

3.2.10 Transportation

Orleans Parish and St. Bernard Parish are densely developed with residential, commercial, and light to medium industrial land uses. Throughout the project area are facilities, docks, and slips for the Port of New Orleans. The Port of New Orleans is one of the world's busiest ports with many intersecting transportation modes: river and sea vessels, rail, and highway (Port of New Orleans 2009). Navigational resources in the project area are associated with the IHNC, GIWW, and the associated slips in the project vicinity.

Existing Conditions

The existing conditions of Orleans and St. Bernard Parishes related to transportation are discussed in the following sections.

3.2.10.1 Navigational Resources

Inner Harbor Navigation Canal (IHNC)

The IHNC was completed in 1923 to provide navigation between the Mississippi River and Lake Pontchartrain, a distance of approximately 5 mi. The channel where the IHNC connects to Lake Pontchartrain is maintained at an elevation of -16 ft. The IHNC consists of approximately 30 acres of open water (including the slips and Turning Basin). Depths in the IHNC within and around the project vicinity range from 30 ft to 41 ft. The channel is approximately 95 ft wide at its most narrow point and serves as an active navigation route for the Port of New Orleans and other vessels.

Gulf Intracoastal Waterway (GIWW)

The GIWW is a 1,300 mile long constructed canal that runs from Brownsville, Texas to St. Marks Florida and links all the major ports along the Gulf Coast to the U.S. inland waterway systems. The GIWW was conceived with the Rivers and Harbors Act of 1873, which set aside funds for a survey for a canal connecting inland waterways from Donaldson, Louisiana to the Rio Grande River in Texas. As the canal was built, a series of congressional acts resulted in expansion of the canal both in length and depth. Construction of the final expanse of the canal was completed in 1949 (Texas Department of Transportation [TxDOT] 2004).

3.2.10.2 Airports

On the east side of the IHNC, the New Orleans Lakefront Airport extends into Lake Pontchartrain. The airport is designated as a general aviation airport, but also serves military and commercial aircraft.

3.2.10.3 Railroads

There are several rail lines in the New Orleans Metropolitan Area. There is a major rail line that runs parallel to Interstate 10 (I-10), and a Norfolk Southern-owned rail line crosses the IHNC at Seabrook. The New Orleans Public Belt Railroad operates two rails running north/south along the east and west banks of the IHNC, but their lines do not join with the Norfolk Southern line.

3.2.10.4 Surface Roads

I-10 and Highway 90 are the major east-west highways that cross this area (figure 13). I-10 is a six-lane divided freeway that connects the New Orleans Metropolitan Area with Baton Rouge to the west and Mississippi to the east. Baton Rouge, the state capital and second largest city in Louisiana, is a major traffic generator to the west of the project area. In addition, I-10 is a major east-west route along the northern Gulf Coast. Highway 90 is a six-lane divided highway with no access control. It runs parallel to I-10 in this area, and primarily serves local travel, while I-10 serves regional travel.



Figure 13. Major Roads and Highways near the Project Area

Operational conditions on a surface road can be described with “level-of-service” (LOS). LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. The “Highway Capacity Manual” (Transportation Research Board 2000) defines six LOS levels, designating each level with the letters A to F. LOS “A” represents the best operating condition, and LOS “F” represents the worst operating condition. LOS “C” or “D” is generally considered acceptable.

The most recent traffic volumes available from the LaDOTD are from 2008 (LaDOTD 2009a). Due to a population shift and additional construction activity that occurred in the aftermath of Hurricane Katrina, these traffic volumes may not be suitable for finitely determining the existing

LOS of area highways; however, they provide an order-of-magnitude baseline for comparison when trucks associated with construction of the floodgates and floodwalls are added. The latest traffic counts for I-10 in its closest proximity to the project area are 58,800 to 74,400 vehicles a day. The two traffic counts for Highway 90 (Chef Menteur Highway) in the project area are 19,900 and 25,200 vehicles a day.

Hayne Boulevard, which provides access to the project area from the north, is classified as an “urban collector” (LaDOTD 2009b). Roads classified as principal arterials that connect I-10 and Highway 90 to the project area include France Road, Paris Road, Jourdan Road, Florida Ave, and N. Claiborne Ave; Old Gentilly Road also serves as a connection to the east side of the project area near Michoud Canal (LaDOTD 2009b). I-10 and Highway 90 are likely routes into the project area (figure 13), although transportation routes for delivering construction materials have not yet been determined.

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Transportation

No construction within the previously disturbed and/or developed ROW would occur because the deficient levee/floodwall segments along the IHNC and GIWW would not be restored or reinforced. There would be an increased risk of flooding in the three sub-basins if the interior floodwalls and levees (secondary protection) along the IHNC and GIWW were to fail during a storm event. Direct impacts could occur to the roadways in the area as a result of flood-related damage. Indirect impacts to local traffic would be expected should re-routing or lack of access result from flood damage to local roadways. Direct and indirect impacts could be cumulative if flooding were to occur on a regional level.

Future Conditions with Proposed Action

Direct Impacts to Transportation

Regardless of the restoration/reinforcement method, construction activities could result in increased traffic and potential increased congestion. Following project completion, there would be no additional impacts to transportation resources.

Construction traffic, including, but not limited to, generators, cranes, trucks, bulldozers, excavators, graders, and front-end loaders (table 4), would use a number of surface roads to reach the various project segments. Figure 7 shows the major surface roads that would be used by construction equipment, delivery vehicles, and construction personnel to access the project locations. Delivery of equipment or supplies to the project sites by rail or barge would not be anticipated, although use of these forms of transportation could be required once designs have been finalized.

Equipment and materials would most likely come from outside the project area. The only major roads that connect the project area to the larger metropolitan and regional area are I-10, Highway 90, and SR-47 north of the GIWW. Construction traffic would likely not use SR-47 to the south of the project area, because the I-10 and Highway 90 are more economically attractive transportation facilities for hauling equipment and materials than any facilities south of the area.

Heavy trucks adversely affect the LOS of a highway. “Heavy trucks” are vehicles that have more than four tires touching the pavement. Heavy vehicles adversely affect traffic in two ways:

(1) they are larger than passenger cars and occupy more roadway space; and (2) they have poorer operating capabilities than passenger cars, particularly in respect to acceleration, deceleration, and the ability to maintain speed on grades. The second impact is more critical. The inability of heavy vehicles to keep pace with passenger cars in many situations creates large gaps in the traffic stream, which are difficult to fill by passing maneuvers. The resulting inefficiencies in the use of roadway space cannot be completely overcome.

DSM – This method employs multiple pieces of heavy equipment along with support vehicles (table 4). The equipment would need to be mobilized to the project site, staged, and mobilized between stations during the project. Additionally cement, lime, slag, and other materials would need to be transported and staged for use at the various stations. Implementing DSM as part of the proposed action would be expected to take approximately 12 weeks per location; therefore, if proposed DSM work was not conducted concurrently at the various stations, DSM construction-related impacts on transportation could last approximately 6 months. Therefore, implementation of DSM as a reinforcement method could result in minor to moderate transportation impacts throughout the construction period.

Berm – Under the proposed action, approximately 16,000 cy of borrow material would be used in berm construction. This quantity would require approximately 16 to 18 dump truckloads per day for approximately 50 working days. Additionally, heavy equipment such as front-end loaders and bulldozers would be used to build the berms from the delivered borrow material. Mobilization of the equipment between stations would be required during the project, which would result in minor to moderate transportation impacts along the roads used to access the staging areas and project site during construction of the berms.

Buttress Wall – Mobilization of concrete trucks is the primary transportation impact associated with this method. Under the proposed action, increased construction traffic would be localized to Reach 2 and impacts to transportation along these roads should be minor to moderate.

Concrete Slab – As with buttress walls, mobilization of concrete mixing trucks would be expected to be the primary transportation-related impact. Between 8 sq ft and 16 sq ft of concrete would be poured for every LF of floodwall to be reinforced using concrete slabs (approximately 8,200 ft total). Approximately 2,430 cy to 4,860 cy of concrete would be required. Therefore, approximately 270 to 540 truckloads using 9-cy capacity concrete mixer trucks would be required over the construction period. Impacts associated with the increased construction traffic would be minor to moderate on the access roads used to reach the project area throughout the course of the project.

Relief Wells – As with DSM, this reinforcement method requires mobilization of heavy equipment, specifically drilling rigs, and associated support vehicles (table 4). Mobilization of equipment between stations would be required during the project. Therefore, implementation of relief wells as a reinforcement method could result in minor to moderate transportation impacts throughout the construction period.

Staging Areas - Staging areas for the project would be located in close proximity to the levee segments, but outside the existing ROW. Staging areas are located in immediate proximity to access roads. Periodic isolated traffic associated with mobilization of equipment and delivery of materials would be the primary transportation impact associated with the staging areas. Once initial mobilization and materials delivery is completed for each reach, traffic impacts would be primarily contained to intra-project material transport between stations. With work in various reaches occurring concurrently and work duration varying with restoration/reinforcement type, transportation impacts would vary by time and location depending on the stage of the project. The greatest impacts would be anticipated during project start-up with impacts decreasing as

work is completed at individual stations and reaches. Impacts associated with staging areas would therefore be anticipated to be minor to moderate throughout the course of construction.

Indirect Impacts to Transportation

Increased use of heavy trucks on roadways in the project area would contribute to roadway degradation. The additional truck traffic resulting from the proposed action would contribute to additional wear-and-tear on roads within the project vicinity. Impacts to dirt, gravel, or shell roads could potentially be significant depending on the level of construction traffic and amount of rainfall during the construction period. Dirt, gravel, and shell roads would be more susceptible to vehicle-induced erosion during high precipitation periods. The berm restoration method would require up to 16 trucks carrying borrow material per day. Once these trucks leave the major thoroughfares, some of the minor roads used to reach the project sites could experience wear and tear from increased traffic; however, USACE construction vehicles and equipment are not the only vehicles using these roadways, which are rated to handle construction traffic. The condition of these roadways would be inspected prior to construction of the proposed action and haul routes would be maintained for construction access during the period of construction; therefore, indirect impacts associated with roadway damage would not be expected to occur.

The Gulf Coast storm season begins in June, but typically storm activity peaks in August and September. Depending on whether or not construction efforts would be considered during hurricane evacuation planning, the increased level of truck traffic within the project vicinity could contribute to delays during potential hurricane evacuations since the roads within the project area could potentially be used as hurricane evacuation routes. Because construction of the proposed action would not likely begin before October 2010, thereby avoiding peak hurricane season for southeastern Louisiana, no impacts to hurricane evacuation routes would be anticipated. Similarly, there would be no indirect impacts to transportation if construction-related traffic was halted during an evacuation.

Overall, indirect impacts to transportation because of the proposed action could occur depending on the nature of the roadways, amount of precipitation during construction activities, and amount of construction vehicle traffic.

Cumulative Impacts to Transportation

Additional wear-and-tear of pavement on roads within the project's vicinity could occur due to increased truck traffic under the proposed action. On-going construction related to other projects and rebuilding efforts in Orleans and St. Bernard Parishes could also contribute to the increase of truck traffic and could, therefore, increase the wear-and-tear on the pavement of the roads and add to area congestion. Corresponding cumulative impacts to socioeconomics because of the increased roadway degradation would be similar to those discussed previously.

3.3 SOCIOECONOMICS

Existing Conditions

The project area is located along the IHNC and GIWW within Orleans Parish and adjacent to St. Bernard Parish, from the IHNC Lock to the Seabrook Bridge at Lake Pontchartrain and along the GIWW from the IHNC to the IHNC Barrier, which is near the Michoud Canal in eastern New Orleans. Following construction of the IHNC in 1923, the canal physically separated the New Orleans East area and the Lower Ninth Ward from the rest of Orleans Parish. Most of St. Bernard Parish is surrounded by and composed of water and is generally bounded by the MRGO and the Mississippi River. The urbanized portions are located adjacent to New Orleans along the

banks of the Mississippi River within the levee system. Within the project vicinity, St. Bernard Parish consists of marshlands. Land use along the project corridor in Reach 1 is predominantly residential along the IHNC (in the Lower Ninth Ward), with some industrial areas at the western end of the GIWW, and vacant marshland for the remainder of the corridor along the GIWW. Land use within Reach 2 consists of industrial and vacant parcels along the GIWW and industrial and commercial uses along the IHNC, with predominantly residential development farther inland from these waterways. Within Reach 3, along the western bank of the IHNC, industrial and commercial parcels border the canal; residential areas are located farther inland, with a concentration of commercial development near where I-10 crosses the IHNC.

Socioeconomic conditions in the project area have changed dramatically since the 2000 Census. Most of the housing, businesses, and community infrastructure in the three sub-basins (figure 1) were damaged by Hurricane Katrina in 2005. Hurricane Katrina displaced significant portions of the population and the extensive property damage and recovery to pre-hurricane conditions continue. The information is presented here for Orleans Parish and St. Bernard Parish because socioeconomic data for the years since Hurricane Katrina are available only at the parish level.

Table 12 illustrates the population count for Orleans and St. Bernard Parishes in 2000 and the pre- and post-Katrina estimates through July 2009, which is the latest date for which Census Population Estimates Program data are currently available. Both Orleans and St. Bernard Parishes were estimated to have experienced a major change in population between 2005 and 2009 with estimated decreases of 27 and 40 percent, respectively, because of Hurricane Katrina.

Table 12.
Estimated Change in Population 2000-2009

Geographic Area	Population	Estimated Population			
	2000	July 2005 (Pre-Katrina)	July 2009 (Post-Katrina)	Percent (%) Change 2000 – 2005	Percent (%) Change 2005 – 2009
State of Louisiana	4,468,976	4,497,691	4,492,076	0.64%	-0.13%
Orleans Parish (City of New Orleans)	484,674	455,188	354,850	-6.08%	-26.79%
St. Bernard Parish	67,229	64,951	40,655	-3.39%	-39.53%

Source: U.S. Census Bureau (USCB) 2000; USCB 2010

According to the 2000 Census, there were 215,091 housing units in Orleans Parish and 26,790 in St. Bernard Parish. The vacancy rate in Orleans Parish was 12.5 percent and it was 6.2 percent in St. Bernard Parish. Of the occupied units, 46.5 percent in New Orleans were occupied by owners. In St. Bernard Parish, the owner-occupancy rate was much higher at 74.6 percent (USCB 2000).

Data from Federal Emergency Management Agency (FEMA) Individual Assistance Registrants and Small Business Administration Disaster Loan Applications were analyzed by the HUD Office of Policy Development and Research in February 2006 and revised in April 2006. This study estimates that approximately 71.5 percent of the year 2000 occupied housing units in Orleans Parish were damaged; 55.9 percent severely. In St. Bernard Parish, 80.6 percent were estimated to be damaged; 78.4 percent severely (HUD 2006).

The demographic profiles for Orleans and St. Bernard Parishes for the years 2000, 2006, and 2009 are provided in table 13. In 2000, approximately two-thirds of the Orleans Parish population was Black or African-American; 85 percent of St. Bernard Parish residents were White. Table 13 demonstrates the changes to these populations after Hurricane Katrina and during the ongoing recovery. Because of the post-hurricane population losses, the racial and ethnic composition of the two parishes has changed notably. Between 2000 and 2009, the Black or African American population of Orleans Parish experienced the greatest decline, losing an estimated 105,938 individuals. In St. Bernard Parish, the White population lost the greatest number of individuals, declining by an estimated 27,679 persons. During the same time period, persons of Hispanic ethnicity increased by an estimated 13.4 percent in Orleans Parish and 2.1 percent in St. Bernard Parish. The number of Native Hawaiian and Other Pacific Islanders, a small component of the populations of the two parishes, increased by approximately 100 percent between 2000 and 2009.

Table 13.
Population Changes by Race and Ethnicity

Race or Ethnicity	Orleans Parish				St. Bernard Parish			
	2000 Census	2006 Estimate	2009 Estimate	Percent (%) Change 2000-2009	2000 Census	2006 Estimate	2009 Estimate	Percent (%) Change 2000-2009
Total Population	484,674	223,388	354,850	-26.8%	67,229	15,514	40,655	-39.5%
Non-Hispanic								
White	128,871	65,270	105,977	-17.8%	56,723	10,861	29,044	-48.8%
Black or African American	323,392	125,600	217,454	-32.8%	5,095	1,684	6,320	24.0%
American Indian	852	360	845	-0.8%	309	137	306	-1.0%
Asian	10,919	6,173	10,253	-6.1%	872	244	814	-6.7%
Native Hawaiian and Other Pacific Islander	88	115	178	102.3%	6	5	12	100.0%
Some Other Race Alone	961	NA	NA	NA	37	NA	NA	NA
Two or More Races	4,765	1,325	3,331	-30.1%	762	235	662	-13.1%
Hispanic								
Any Race	14,826	9,705	16,812	13.4%	3,425	1,327	3,497	2.1%

Sources: USCB 2000; USCB 2010

According to the 2000 Census, the median household income in Orleans Parish was \$27,133. Of the 188,365 households in Orleans Parish, there were almost 40,000 households with annual incomes of less than \$10,000. This was the largest group of all pre-Hurricane Katrina income categories. After Hurricane Katrina, the Louisiana Health and Population Survey indicates that the population losses were most pronounced in households in the lower income brackets, raising the median household income of the households who responded to this question to somewhere

between \$35,000 and \$49,999. The median income in St. Bernard Parish was \$35,939 in 2000 and the largest groups fell in the mid-range of household incomes. After Hurricane Katrina, the survey reported that median income for respondent households in 2006 was slightly lower than in 2000, ranging between \$25,000 and \$34,999 (USCB 2000; Louisiana Public Health Institute 2006).

Poverty status was determined by the USCB in 2000 for Orleans and St. Bernard Parishes for most of the residents. Persons below the poverty level at that time represented 27.9 percent and 13.1 percent of Orleans and St. Bernard Parish populations, respectively, compared to 19.6 percent of the Louisiana population (USCB 2000).

In Orleans Parish, the number of people in the labor force declined by 26.9 percent between 2000 and 2006. The number of employed persons dropped by about the same percentage, but the number of unemployed persons dropped slightly more, bringing the overall unemployment rate in 2006 down to 4.7 percent compared to 5.1 percent in 2000. In St. Bernard Parish, the labor force was reduced by about 25.4 percent between 2000 and 2006. Notably, the number of unemployed persons in 2006 was 54.6 percent less than in 2000. This explains the decline in unemployment by 2 percentage points (from 5.1 percent to 3.1 percent). The need for workers resulting from the hurricanes of 2005 also had an impact on state unemployment, which declined between 2000 and 2006 from 5.0 percent to 4.0 percent (USACE 2008c). Between 2006 and 2008, the labor force grew in both parishes while the unemployment rate increased, to 6.1 percent in Orleans Parish and 5.2 percent in St. Bernard Parish (Louisiana Department of Labor 2009).

A review of the Monthly Employment by Industry Sector data provided by the Louisiana Department of Labor revealed that Orleans Parish had sustained a loss of 11.1 percent of its employers in the third quarter of 2006 compared to the first quarter of 2001. This loss translated into a 41.7 percent decrease in jobs in the same period. Although the number of establishments in the two sectors of Educational Services and Accommodation Services increased, the actual number of employed persons decreased significantly. St. Bernard Parish lost almost half its jobs in the 2001 to 2006 period and 15.8 percent of its employers. Mining and Construction were the only sectors to show a positive percent change in the number of jobs, although the increase of 691 did little to compensate for the overall losses. The Retail Trade Sector, which had been the parish's largest employer in terms of the number of establishments as well as the number of jobs, experienced the greatest losses (USACE 2008c). Between the third quarters of 2006 and 2009, the number of jobs in Orleans Parish increased by 9.2 percent, although the number of employers declined by 8.6 percent. The Accommodation and Food Service sector and the Health Care and Social Assistance sector experienced the largest growth in number of jobs. In St. Bernard Parish during the same period, the number of jobs grew by 2.1 percent while there was a 21.6 percent loss in employers. The Health Care and Social Assistance sector lost the greatest number of employers (Louisiana Department of Labor 2010).

Three neighborhoods and a variety of businesses are located within the project area (figure 14). Two of the residential areas and many of the businesses located near the northern portion of the IHNC are discussed in detail in IER #11 – Tier 2 Pontchartrain, the Final Individual Environmental Report for Improved Protection on the Inner Harbor Navigational Canal, Orleans Parish, Louisiana (USACE 2010a). A summary of these neighborhoods and businesses, with details on additional neighborhoods and businesses in other portions of the project area is provided below.

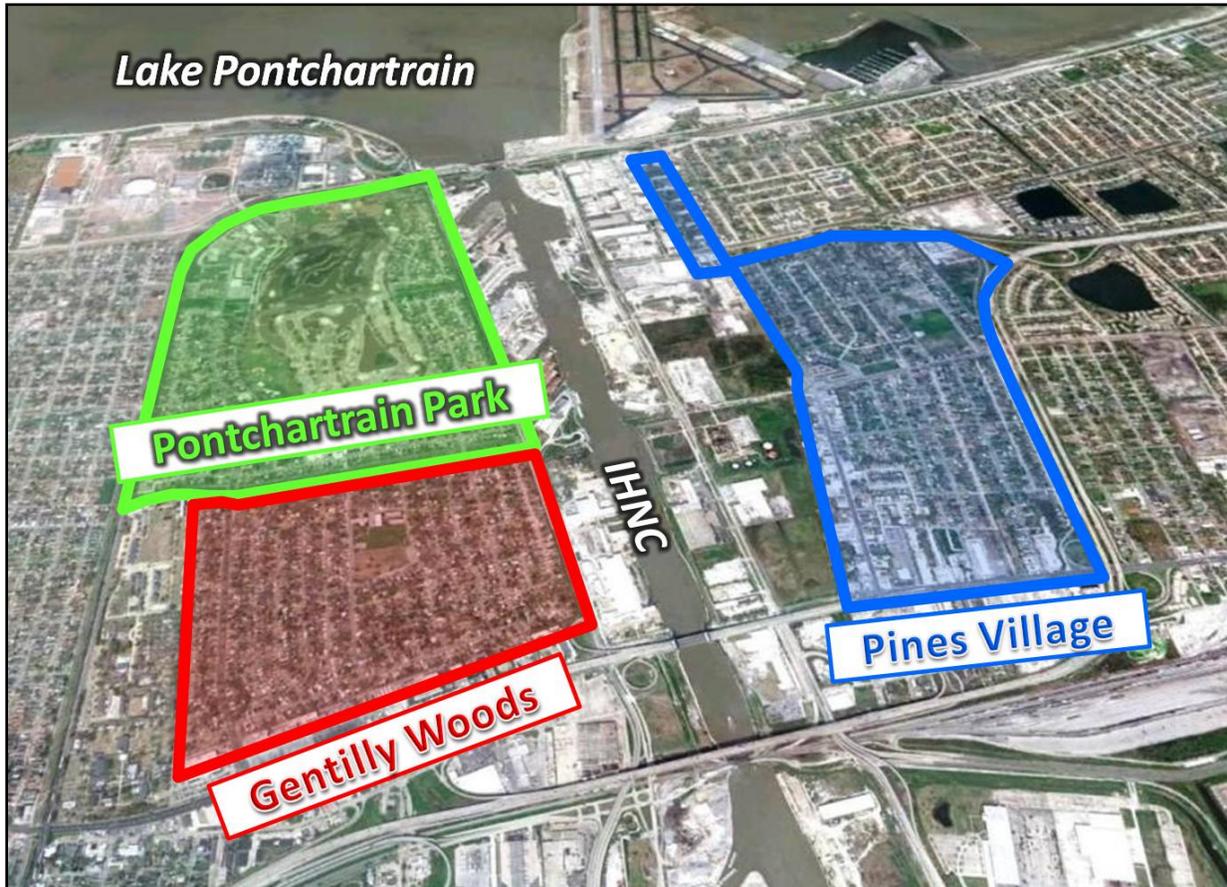


Figure 14. Neighborhoods Located in the Northern Portions of Reaches 2 and 3

Pontchartrain Park Neighborhood

Approximately 70 homes in the Pontchartrain Park neighborhood back up to the existing HSDRRS on the west bank of the IHNC, with distances ranging from approximately 50 ft to 80 ft from the levee to the rear of individual houses. The height of the levee wall is generally well-above the existing rooftops of the houses which are primarily one-story. A narrow industrial buffer bordered by Hayne Boulevard to the north and Highway 90 to the south (approximately 145 acres) stands between the HSDRRS and the IHNC in this area.

Pontchartrain Park is a suburban neighborhood developed in the 1950s. It is one of the first areas in New Orleans designed to provide home ownership to middle and upper income African Americans and one of the last Gentilly neighborhoods to be developed. FEMA, in consultation with the Louisiana SHPO, has identified the Pontchartrain Park National Register Historic District, which incorporates Pontchartrain Park and portions of streets on the east side of the park including Prentiss Avenue, Congress Drive, Madrid Street, DeBore Drive, Morrison Road, and Frankfort Street, as eligible for listing in the NRHP (FEMA 2006).

The neighborhood is rebuilding following the damages caused by Hurricane Katrina (CNO 2006a). The neighborhood has a number of active civic organizations such as the Pontilly Neighborhood Association and Pontchartrain Park Home Improvement Association. Redevelopment efforts are being supported by the New Orleans Redevelopment Authority

(NORA), The Road Home, and Pontchartrain Park Community Development, LLC (WDSU 2008). Additional support is provided by the state-administered Economic Development/Economic Zone program (CNO 2006a). Five projects are identified within the Pontchartrain Park neighborhood for redevelopment (CNO 2006a):

- Renovate and re-open the Pontchartrain Park Senior Community Center,
- Restore Pontchartrain Park, Bartholomew Golf Course, and Barrow Stadium,
- Create a pedestrian/bike path around Pontchartrain Park,
- Renovate and reopen the Coghill Elementary School,
- Enclose Dreux Canal and create a walking path.

The following long-term key projects and initiatives were presented in the New Orleans Master Plan (CNO 2008b):

- Create a long-term framework for transformation of the Industrial Canal into a waterfront incorporating mixed-use development, boating, parkland, and neighborhood access.
- Restore Pontchartrain Park as the District's signature public space.

Pines Village Neighborhood

Pines Village is generally bordered by the IHNC on the west, I-10 to the east and south, and Morrison Road to the north. The Pines Village neighborhood was one of the first to be developed in New Orleans East. In the 1950s, the neighborhood's namesake, Sigmund Pines, purchased a large piece of marsh land adjacent to the IHNC and proceeded to develop it with residences. In the 1950s and early 1960s, substantial numbers of dwellings, both doubles and single-family detached, were built in the Pines Village Subdivision. Pines Village contains one neighborhood park, several churches, two schools and commercial/industrial development. There are no local, state, or Federal historic districts designated in the neighborhood. Over 300 acres of industrial/commercial use property are located between the IHNC and the residential areas of Pines Village. The residential areas in Pines Village are located approximately a quarter of a mile east of the HSDRRS.

The Pines Village neighborhood is not within the NORA jurisdiction. The industrial portions of the neighborhood are, however, within an Economic Development/Enterprise Zone. Redevelopment goals of the neighborhood include improving residential conditions by setting maximum density limits for residential units (CNO 2006b).

Redevelopment projects as identified by the City of New Orleans for the Pines Village neighborhood include (CNO 2006b):

- Street repairs (Downman Road),
- Replace street trees,
- Repair signage and signals,
- Dwyer Road drainage improvements,
- Digby Park improvements,
- Develop new school and community center at Ray Abrams Elementary,
- Bus shelters on Dwyer and Downman Roads.

The following long-term key projects and initiatives were presented for the Pines Village Neighborhood with respect to the Master Plan and Comprehensive Planning Ordinance Process:

- Maintain the Industrial Canal Employment/Industrial Development Zone,

- Enhance buffer area between industrial and residential areas along Downman Road,
- Extend Dwyer Road into the Industrial zone with a buffer area,
- Expand low-density residential infill areas north of Morrison Road with ground-level parking.

Gentilly Woods Neighborhood

Gentilly Woods is a 385-acre neighborhood comprised of primarily bricked, single-family residences. The City Planning Commission defines the boundaries of this residential area as Dreux Avenue to the north, the IHNC to the east, Highway 90 to the south, and People’s Avenue to the west. Approximately 30 homes back up to the existing HSDRRS on the west bank of the IHNC, with distances ranging from approximately 50 ft to 80 ft from the levee to the rear of individual houses. Gentilly Woods became a residential development in the 1950s and was designed and marketed as post-war housing (GNOCDC 2002).

Public Facilities

Within the project area, there are currently two District Police Stations, seven Fire Engine Stations, and 14 public schools, (CNO 2010c and GNOCDC 2010). None of these facilities are adjacent to the floodwalls, levees, floodgates or staging areas, and are at least 1000 feet from any activities related to the proposed action (figure 15). Potential impacts to these facilities are discussed in section 3.3.3 below.

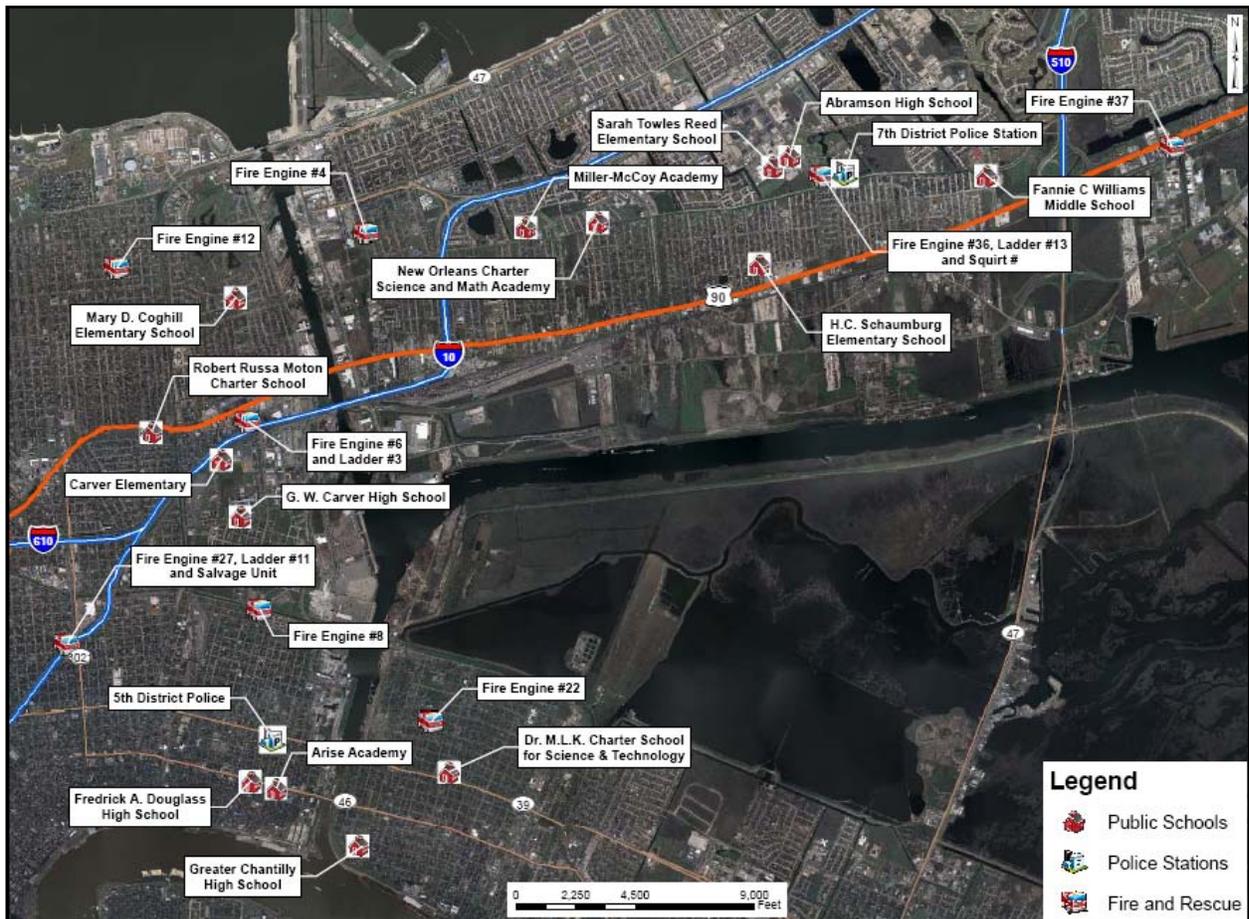


Figure 15. Public Facilities in the Project Area

Industrial and Commercial Resources

The banks of the IHNC and GIWW provide land for industrial uses. Some industrial resources decided not to return after Hurricane Katrina and the closure of the MRGO at Bayou La Loutre (DeGregorio 2008). However, several industrial and commercial resources remain within the project area or vicinity (figure 16).

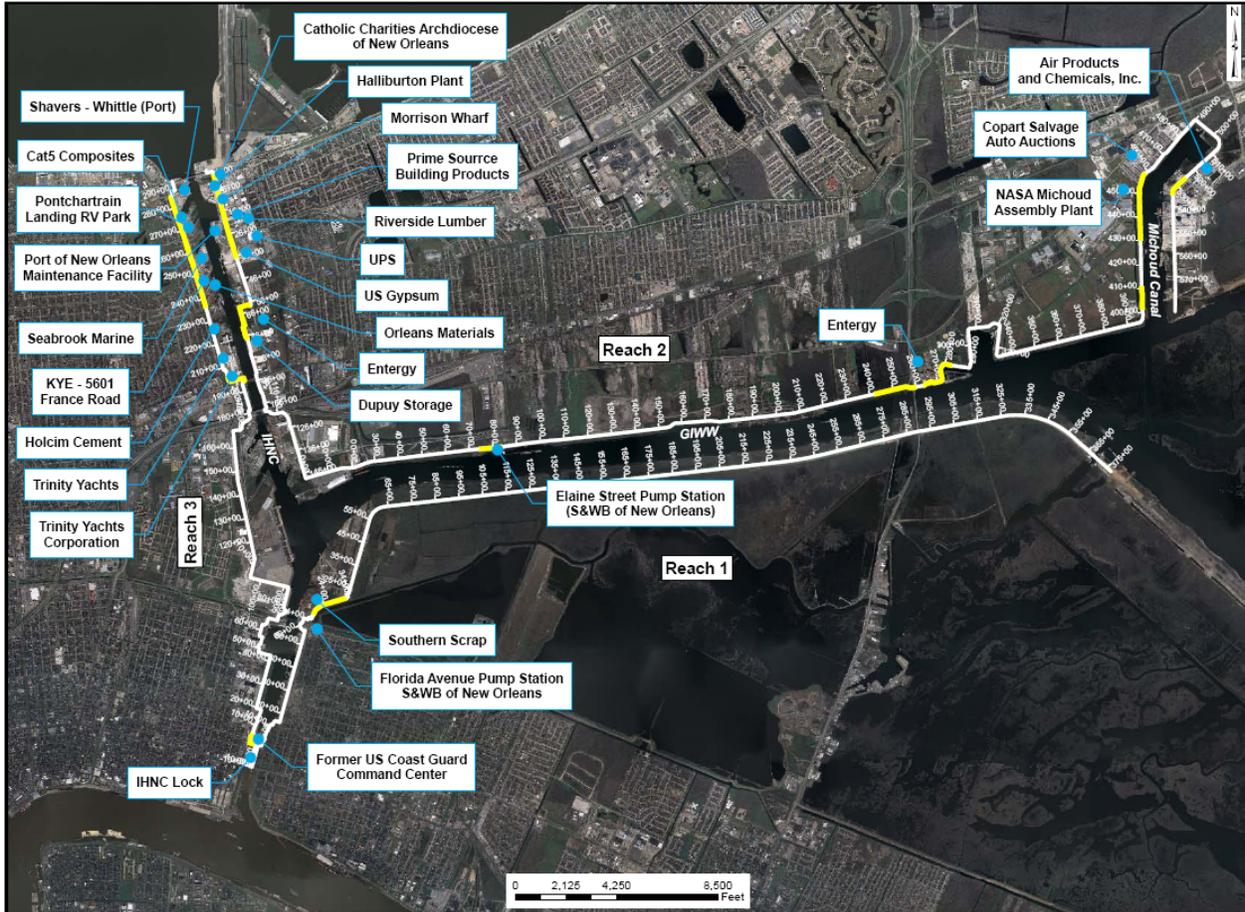


Figure 16. Industrial and Commercial Resources in the Project Area

The western bank of the IHNC is characterized by approximately 125 acres of industrial property between the IHNC and France Road with residential homes backing up to the existing levee west of France Road. Most of the industrial lands on the western side of the IHNC are vacant or cleared. Among the industrial users on the west bank is an RV park. The eastern bank of the IHNC is characterized by approximately 150 acres of industrial property between the IHNC and Jourdan Road with approximately 240 acres of additional industrial use located between the existing levee and the residential homes of Pines Village.

The following is a discussion of industrial users along the IHNC and GIWW beginning with the northernmost business on the west bank of the IHNC. For IER #11 – Tier 2 Pontchartrain, interviews were conducted with representatives of several businesses to collect specific operational information (USACE 2010a).

New Orleans Public Belt Railroad - New Orleans Public Belt Railroad operates both rails running north/south along the east and west banks of the IHNC. Current operations are generally at night or early morning, about three times a week, with approximately 10 to 12 rail cars, based on needs. The existing rail lines on the west side of the IHNC terminate approximately 3,500 ft from the northern-most endpoint of the line.

Shavers-Whittle Construction Material Yard (former) – The property at 6401 France Road is approximately 144,000 square ft and is owned by the Port of New Orleans. It extends into the IHNC along Slip Number 6. The current lease has expired. At the time IER #11-Tier 2 Pontchartrain was completed, the Port had plans to use the property as a laydown yard for a period of about 4 months to 6 months starting in the spring of 2010 to construct a new dredge assembly; however, currently this property is being used as a staging area for the construction of the Seabrook Closure (USACE 2010a).

Cat 5 Composites – Cat5, located on 3.2 acres at 6201 France Road, holds various government contracts for ship repairs. The current lease with the Port of New Orleans has expired. The business would likely remain, but would enter into a new sub-lease to Pontchartrain Landing when that organization expands their holdings to the north. Cat5 Composites has plans to add docks and ramps to facilitate their sea trials. Currently, Cat5 uses both Lake Pontchartrain and the GIWW for sea trials. Speed runs are conducted in the GIWW. When conducting sea trials in the lake, they rely on access to the lake through Seabrook.

Pontchartrain Landing Waterfront RV Park – The property at 6001 and 6101 France Road is an approximately 20-acre RV park owned by the Port of New Orleans and leased to Pontchartrain Properties. Pontchartrain Landing identifies itself as the newest and largest waterfront RV park in New Orleans. The site fronts the IHNC approximately 2,500 ft south of Lake Pontchartrain and borders Slip Number 5 with the Seabrook Marina. The park's capacity is 152 RV parking slips (105 were currently available in January 2009) in various price ranges. Tenants often bring their boats and can pay to use the onsite public launch for quick access to the lake. The RV park site plan illustrates that the facility either currently provides, or plans to provide: boat launches, boat trailer parking, houseboat parking, houseboat rentals, and RV storage. The RV park provides services supportive of recreational uses, consistent with long-range plans for the west bank of the IHNC. The RV park states it has long-term plans to expand their operations north along the IHNC to include mixed-use facilities.

Port of New Orleans – The open water of the IHNC and adjacent land is owned by the Port of New Orleans. Parcels are leased to tenants who may need water access for their operations.

Seabrook Harbor/Seabrook Marine, LLC – Located at 5801 France Road, this 7.81 acre facility provides services to refurbish and repair boats, including dockage and dry storage. Additional facilities include a store, showers, fuel, bait sales, and fish cleaning facilities. Dry storage is available for up to 200 vessels in a stacked configuration in a warehouse. There are eight in-water slips with 250 ft dockage. Approximately 80 spaces are available for storage for boats up to 80 ft. The property is owned by the Port of New Orleans and leased to Seabrook Harbor LLC which is operated by a local family. The current lease extends through 2018.

Trinity Yachts, Inc. – Located at 4325 France Road, Trinity Yachts is a builder of custom yachts of steel and aluminum construction for vessels up to 160 ft and 300 tons. The France Road yard constructs modules for shipment to the Gulfport yard for larger vessels. The France Road yard receives construction materials on barges. Delivery of completed yachts is made through the GIWW. At any given time, they typically have about five yachts in their production process. Approximately every 90 days, a yacht comes off the production line. They run trials about four times a year.

Holcim Cement – Holcim Cement is a distributor of cement products. Their product is made in Theodore, Alabama and received at this location via barge from the GIWW and rail. Product is distributed from this facility by way of rail and truck.

Catholic Charities Archdiocese of New Orleans – Catholic Charities Archdiocese of New Orleans operates a warehouse on the eastern shore of the IHNC, adjacent to the floodgate across Hayne Boulevard.

Halliburton/Baroid Drilling Fluids Inc./Dresser Industries – For approximately 50 years, Halliburton has performed grinding operations at their plant on the IHNC, immediately south of the Seabrook bridge on the eastern bank off Jourdan Road. The facility grinds barite and bentonite for use in drilling muds for petroleum drilling operations. This processing plant is located at 8000 Jourdan Road on 12.19 acres owned by the Port of New Orleans and leased to Halliburton Energy Services currently through 2011 (USACE 2010a).

Halliburton utilizes rail, truck, and water for materials transport. Materials for grinding/crushing operations are barged in from the Mississippi River on the GIWW. They have a rail spur that enters their facility from the line that runs north/south along the eastern shore of the IHNC.

Morrison Yard Wharf and Turning Basin – Owned by the Port of New Orleans, and located in the 7300 block of Jourdan Road, this site houses pile driving equipment and is used for top-side repair of Port vessels. Fender piles are stored on the east side of the Turning Basin. They are delivered by rail and loaded on vessels for installation along their various wharfs. The wharf structure is leased for lay-berthing third-party vessels and on occasion for cargo unloading. The large warehouse was leased for storage pre-Hurricane Katrina. The approximately 8-acre Turning Basin is used by the Port, Halliburton, and Trinity Yachts. Industrial resources along the IHNC also recognize that the Turning Basin is used as a temporary safe haven for boats to stop overnight or as conditions on the lake warrant need for temporary shelter. The warehouse is currently still in disrepair following Hurricane Katrina, the site appears abandoned, but the turning basin and lay down areas may still be in use.

PrimeSource Building Products – PrimeSource Building Products is a wholesaler and distributor of fasteners and building materials (PrimeSource 2005). The New Orleans facility located near the project area is one of the company's distribution centers.

Riverside Lumber Company, Inc. – Riverside Lumber stocks and supplies domestic and imported lumber and fine woods. Additionally, Riverside manufactures molding, flooring, and custom millwork (such as wooden appliques, corbels, dowels, finials, post caps, and rosettes) to customer specifications. Established in 1920, the company is family owned and operated (Riverside Lumber 2010).

United Parcel Service (UPS) – UPS operates a warehouse and shipping facility on the eastern shore of the IHNC at 5700 Morrison Road. Facilities include a warehouse, a large truck and car parking lot, and a truck washing station.

US Gypsum – US Gypsum previously produced both wallboard and mineral wool ceiling tile such as SHEETROCK® brand gypsum panels and DUROCK® brand cement board. Sheetrock production was suspended in December 2007 but the plant still produces cement board. US Gypsum utilizes the GIWW for shipments to their plant. They also receive trucked shipments of cement from the Holcim plant on the west bank of the IHNC and rely on rail operations of New Orleans Public Belt Railroad to send out their finished product.

Orleans Materials – The France Road yard of Orleans Materials fabricates various materials from steel. Currently, the yard is producing 60-ft deck barges. The yard receives steel by both barge and rail.

Dupuy Storage and Forwarding, LLC – Established in 1936, Dupuy Storage maintains approximately 1 million sq ft of warehouse and yard space with a focus on the transportation and storage of general cargo, coffee, tea, sugar, and other commodities. Dupuy transports materials via the New Orleans Public Belt Railroad and the IHNC (Dupuy 2010).

Entergy – The Entergy power generating station located on the eastern shore of the IHNC, across Jourdan Road from Dupuy Storage has not been operational since Hurricane Katrina; there are no plans to reopen the facility.

Southern Recycling – Established and headquartered in New Orleans in 1900, Southern Recycling’s “core business involves the high volume recycling of metal-based consumer products, construction and infrastructure debris, blue and brown water vessels, and marina structures” (Southern Recycling 2010). Additional activities include “vessel, platform, and bridge deconstruction, industrial clearance, total metallic debris and natural disaster debris management, and consumer product and regulatory compliance services” (Southern Recycling 2010). Through the recycling process, the company produces over 100 grades of recycled products. These materials are distributed along rail, roads, and along the IHNC and GIWW (Southern Recycling 2010).

U.S. Coast Guard (USCG) – The USCG facility on Urquhart Street, adjacent to the IHNC Lock has not been operational since Hurricane Katrina. New facilities were built adjacent to NASA on the Michoud Canal after Hurricane Katrina.

New Orleans Sewerage & Water Board Florida Avenue Pump Station – The pump station adjacent to the Florida Avenue Bridge in the lower ninth ward is not currently operational. The New Orleans Sewerage and Water Board and the USACE are planning on renovating this station (USACE 2009b).

IHNC Lock – The IHNC lock is fully operational. The lock provides access between Lake Pontchartrain, the IHNC, the GIWW, and the Mississippi River. The USACE is replacing the existing IHNC Lock with a new, larger lock to be located within the IHNC and north of Claiborne Avenue. The new lock will be tied in to the floodwalls and levees on each side of the IHNC. No construction work is expected on this project in the foreseeable future due to a lack of funding.

New Orleans Sewerage & Water Board Elaine Street Pump Station – The pump station operated by the New Orleans Sewerage and Water Board on the end of Elaine Street has been renovated. It has been operational since 16 August 2010 (USACE 2010c).

NASA Michoud Assembly Facility – Established in 1961 to construct components of the Saturn moon rockets, the NASA Michoud Assembly Facility supported the construction of external fuel tanks for NASA’s space shuttle fleet (NASA 2008). This facility no longer constructs external fuel tanks as production has been officially shut down after nearly four decades. Michoud continues to provide support for other NASA programs including oversight of shuttle launches and landings, as well as NASA’s smaller Constellation Program. Stages of the Ares rockets and Orion crew exploration vehicle are scheduled to be constructed at Michoud in the future (NASA 2010). NASA utilizes the Michoud canal to transport the rocket parts and external tanks to the GIWW and then to the Gulf of Mexico. On 17 August 2010, NASA and New Orleans Mayor Mitch Landrieu announced that Blade Dynamics would be establishing their headquarters at

Michoud where they will “manufacture the world's most advanced wind turbine blades” (NASA 2010). This is expected to bring over 600 new jobs to New Orleans.

Copart Salvage Auto Auctions – Copart buys and sells a variety of vehicles (automobiles, SUVs, trucks, motorcycles, industrial vehicles, RVs, classic cars, boats, jet skis, and snowmobiles) through internet-based auctions. The New Orleans facility is one of the company’s nationwide storage and shipping facilities (Copart 2010).

Air Products and Chemicals, Inc. - Air Products maintains and operates an industrial gas complex, producing primarily liquid hydrogen, along the IHNC in New Orleans. This facility utilizes the railroad and IHNC for shipping needs in addition to pipeline transport (Air Products 2005 and 2008).

Discussion of Impacts

In the sections below, potential direct, indirect, and cumulative impacts to socioeconomics associated with the no action and proposed action alternatives are discussed with respect to a) displacement of population and housing, b) employment, business, and industry, c) availability of public facilities and services, d) transportation, e) disruption of community and regional growth, f) tax revenues and property values, and g) changes in community cohesion.

3.3.1 Displacement of Population and Housing

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Population and Housing

Under the no action alternative, the deficient levee/floodwall segments along the IHNC and GIWW would not be restored or reinforced. The indirect impacts associated with displacement of population and housing would contribute to adverse cumulative impacts to the New Orleans Metropolitan area. Without improvements to the deficient levee/floodwall segments along the IHNC and GIWW, this portion of the HSDRRS would provide a lower level of risk reduction that would leave parts of Orleans and St. Bernard Parishes more vulnerable to storm-related flooding and potential displacement of population and housing. The secondary line of defense provided by these flood risk reduction structures in Reaches 1, 2, and 3 would continue to have potential seepage and stability issues. This would present an increased risk of storm-related flooding in the low-lying portions of these reaches and associated damage to housing and displacement of residents. Costs would be incurred for such items as evacuation, clean up, debris removal, building and infrastructure repair, damaged vehicles, and reoccupation of homes. Indirect impacts could be cumulative should flooding occur across the region.

Future Conditions with Proposed Action

Direct Impacts to Population and Housing

Restoring/reinforcing portions of the levees and floodwalls would have beneficial impacts on population and housing within the three sub-basins, and specifically for several residential neighborhoods in Orleans Parish. All five methods of restoration/reinforcement types would be built entirely within existing ROWs; therefore, adjacent housing in the Pontchartrain Park/Gentilly Woods/Pines Village neighborhoods would not be directly impacted by construction activities. No population or housing in these neighborhoods would be displaced during construction. Following completion of construction, residents of all three neighborhoods would receive improved protection and a reduced flood risk from the restored/reinforced

HSDRRS. The increased protection has the potential to increase homeowner confidence and, therefore, could promote an increase in population in the area.

Indirect Impacts to Population and Housing

Indirect impacts to residents in the Pontchartrain Park and Gentilly Woods neighborhoods would occur as a result of elevated noise levels experienced during the construction process for restoring and/or reinforcing the deficient segments. These elevated noise levels would constitute a temporary and minor annoyance. Elevated noise is not anticipated to cause impacts to the Pines Village neighborhood. Increased traffic congestion during the construction period may also constitute a minor and temporary adverse indirect impact to the local population. There would be no permanent adverse impacts to population and housing in any of the adjacent neighborhoods as a result of the proposed action.

Cumulative Impacts to Population and Housing

Implementation of the proposed action would have beneficial cumulative impacts within the three sub-basins protected by Reaches 1, 2, and 3. In the long-term, the proposed levee/floodwall restoration/reinforcement methods, in conjunction with other proposed or ongoing infrastructure and HSDRRS projects in the vicinity, would improve the HSDRRS and reduce the risk of storm-related flooding and thus of displacement of population and housing within the area. Cumulatively, the increased protection would likely instill confidence in residents desiring to return to the area, thus resulting in local and regional population increases.

3.3.2 Impacts to Employment, Business, and Industry

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Employment, Business, and Industry

With no action, the current reduced level of flood risk reduction provided by the subject reaches of HSDRRS would present an increased risk of storm-related flooding in the low-lying portions of the three sub-basins and associated damage to businesses and industries located on the protected side, disruption of economic activity, and, correspondingly, employment. Indirect impacts include the costs that would be incurred for such activities and items as evacuation, clean up, debris removal, building and infrastructure repair, damaged vehicles, and reoccupation of businesses. The increased risk would constitute an adverse and potentially cumulative impact to employment, business, and industry. Businesses and industries located between the HSDRRS and the IHNC or GIWW would not experience indirect beneficial or adverse impacts from the no action alternative. The no action alternative would have additional adverse, indirect and cumulative impacts on employment, business, and industry in the area in that it could reduce the community confidence level in the HSDRRS.

Future Conditions with Proposed Action

Direct Impacts to Employment, Business, and Industry

Restoring/reinforcing portions of levees and floodwalls along the IHNC and GIWW that do not meet the HSDRRS seepage and stability criteria would have beneficial impacts on employment, business, and industry within the three sub-basins that are protected by the existing flood risk reduction system. All five methods of restoration/reinforcement would be built entirely within existing ROWs; therefore, land use on adjacent industrial and commercial property would not be directly impacted by construction activities. There would be temporary, beneficial

socioeconomic impacts from construction activities associated with the proposed action, including purchase of materials, equipment, and services and a temporary increase in employment and income. This impact would be local or regional, depending on where the goods, services, and workers would be obtained.

Indirect Impacts to Employment, Business, and Industry

Businesses and industries immediately adjacent to the HSDRRS would experience indirect impacts associated with elevated noise levels during construction of the proposed action. These impacts would be minor and temporary and would not be anticipated to impact operations.

During construction, there would be temporary indirect adverse impacts as a result of increased traffic on local roads which could potentially increase congestion and adversely affect access to businesses. However, road closures are not anticipated as a result of the proposed action; therefore, these potential impacts would be minor and temporary. If local roadways are damaged during construction and diversion of traffic becomes necessary, this would temporarily impact nearby businesses by increasing or decreasing the number of drop-in customers. However, these effects would be localized and temporary.

Cumulative Impacts to Employment, Business, and Industry

In the long-term, the proposed levee/floodwall restoration/reinforcement methods in conjunction with other proposed or ongoing infrastructure and HSDRRS projects in the vicinity would improve the HSDRRS and reduce the risk of storm-related flooding within the study area. This would enhance business and industry owner confidence, which could lead to expansion and growth within the area.

3.3.3 Availability of Public Facilities and Services

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Public Facilities and Services

Under the no action alternative, the deficient levee/floodwall segments along the IHNC and GIWW would not be restored or reinforced. The secondary line of defense provided by the structures in Reaches 1, 2, and 3 would continue to have potential seepage and stability issues. This would present an increased risk of storm-related flooding in the low-lying portions of these reaches and associated damage to buildings and infrastructure, disruption of economic activity, and displacement of residents. Public services including police stations, fire and rescue stations, and schools potentially could be damaged if this line of defense were to fail during a major storm event. Costs would be incurred for such activities and items as evacuation, clean up, debris removal, building and infrastructure repair, and damaged vehicles.

The no action alternative would have an adverse indirect impact on socioeconomic resources in the area in that it could reduce the confidence level in the HSDRRS to the extent that a second line of defense is not performing to its highest potential. Lack of confidence in the defense system could encourage people to move out of the area, which, in turn, would reduce the tax base used to pay for maintenance and upkeep of the public services and facilities in the area. The no action alternative would contribute to adverse cumulative impacts on socioeconomic resources in the New Orleans Metropolitan area. Without improvements to the deficient levee/floodwall segments along the IHNC and GIWW, this portion of the HSDRRS would provide a lower level of risk reduction that would leave parts of Orleans and St. Bernard Parishes more vulnerable to storm-related flooding and potential damage to public facilities in the project area.

Future Conditions with Proposed Action

Direct Impacts to Public Facilities and Services

Under the proposed action, beneficial impacts to public services and facilities within the three sub-basins that are protected by the existing flood risk reduction system would be expected. All five methods of restoration/reinforcement would be built entirely within existing ROWs; therefore, nearby public facilities would not be directly impacted by construction activities. Public facilities in the area would be less likely to be damaged by flooding with the upgraded HSDRRS in place, resulting in a positive, direct impact.

Indirect Impacts to Public Facilities and Services

As discussed in section 3.2.10.4, Surface Roads, indirect impacts to transportation resulting from wear and tear to minor roads would occur. Corresponding indirect socioeconomic impacts to public facilities in the area would occur while the repairs to the roads were underway. Police and fire vehicles could have difficulty accessing certain portions of the project area, and repairs to roads near schools could slow traffic in the vicinity. These impacts would be localized and temporary. In the long-term, the proposed action would improve the HSDRRS and reduce the risk of storm-related flooding within the study area, including public services and facilities. This would reduce the likelihood of associated damage to buildings and infrastructure and the reduction in availability of public facilities and services.

Cumulative Impacts to Public Facilities and Services

Implementation of the proposed action would have beneficial cumulative impacts on socioeconomic resources within the three sub-basins that are protected by the subject HSDRRS. In the long-term, the proposed levee/floodwall restoration/reinforcement methods in conjunction with other proposed or ongoing infrastructure and HSDRRS projects in the vicinity would improve the HSDRRS and reduce the risk of storm-related flooding within the study area.

3.3.4 Effects on Transportation

In this section, those transportation impacts that have direct, indirect, and cumulative effects on socioeconomic resources are discussed. A complete analysis of impacts associated with transportation resources is included in section 3.2.10.

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Transportation

Without restoration or reinforcement to the levee/floodwall segments, continued seepage and stability deficiencies would increase the risk of storm-related flooding in low-lying areas, which could result in damage to local roadways. Indirect socioeconomic-related transportation impacts could occur from the expenditure of funds to repair such damaged roadways. Socioeconomic related transportation impacts could be cumulative should flooding occur throughout the regional area.

Future Conditions with Proposed Action

Direct Impacts to Transportation

Restoring/reinforcing portions of levees and floodwalls would likely reduce the number of road repairs required as a result of seepage and flooding damage. This would have a beneficial impact on local transportation and on the local economy.

Indirect Impacts to Transportation

As discussed in section 3.2.10.4, Surface Roads, indirect impacts to transportation resulting from wear and tear to minor roads would occur. Corresponding indirect socioeconomic impacts would occur as the community absorbs the cost of maintaining/repairing these roads. Additional indirect transportation-related socioeconomic impacts would result from non-project traffic avoiding these damaged roadways and thus creating new wear and increasing traffic and congestion on other local roads. During construction, increased traffic could potentially increase congestion and adversely affect access to businesses and residences. Diversion of traffic could temporarily impact businesses along the damaged roadways through loss or increase of drop-in customers. However, these effects would be localized and temporary.

Cumulative Impacts to Transportation

In the long-term, the proposed levee/floodwall restoration/reinforcement methods, in conjunction with other proposed or ongoing infrastructure and HSDRRS projects in the vicinity, would improve the HSDRRS and reduce the risk of storm-related flooding. This would, in turn, reduce transportation-related socioeconomic impacts in the New Orleans Metropolitan area.

3.3.5 Disruption of Community and Regional Growth

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Community and Regional Growth

Under the no action alternative, direct impacts consist of a lack of construction related to restoration or reinforcement. No sections of existing HSDRRS would be restored or reinforced to the 100-year level of risk reduction; therefore, no time or funds would be allocated to this project. The deficient sections of HSDRRS would continue to experience potential seepage and stability issues, and therefore, increase the risk of storm-related flooding in the low-lying portions of Reaches 1, 2, and 3. Indirect impacts include a continued risk of flood-related damage to buildings and infrastructure, disruption of economic activity, and displacement of residents. In the event of such damages, costs would be incurred for such activities and items as evacuation, clean up, debris removal, building and infrastructure repair, damaged vehicles, and reoccupation of homes and businesses. Such flooding events would significantly impact community and regional growth in a similar manner to the disruption that followed the flooding associated with Hurricane Katrina. These indirect impacts could also be cumulative if such flooding occurred on a regional level.

The no action alternative could have an adverse indirect impact on socioeconomic resources in the area in that it would be expected to reduce the community confidence level in the HSDRRS. Lack of confidence would likely result in continued delays in population and business resettlement in the areas protected by these reaches, which may influence existing residents or businesses to move out of the area. Such delays in resettlement and relocations would constitute an adverse impact to community and regional growth, especially if residents or businesses

choose to relocate out of the New Orleans Metropolitan area. These indirect impacts could also be cumulative should other planned HSDRRS projects be delayed or canceled.

Future Conditions with Proposed Action

Direct Impacts to Community and Regional Growth

Restoring/reinforcing the HSDRRS would have beneficial impacts on socioeconomic resources within the three sub-basins that are protected by the existing flood risk reduction system. All five methods of restoration/reinforcement would be built entirely within existing ROWs; therefore, adjacent land use would not be directly impacted by construction activities. Following completion of the proposed action, land use patterns in the three sub-basins would not be expected to change since restoring and reinforcing the existing levees and floodwalls would not encourage one type of land use over another. In the long-term, the proposed action would improve the HSDRRS and reduce the risk of storm-related flooding to the study area. Increased risk reduction would reduce the likelihood of disruption of community and regional growth during future storm events. The additional security would likely encourage community and regional growth in the areas protected by Reaches 1, 2, and 3.

Indirect Impacts to Community and Regional Growth

As discussed in section 3.2.10.4, Surface Roads, indirect impacts to transportation resulting from wear and tear to minor roads would occur. Corresponding indirect socioeconomic impacts would occur as the community absorbs the cost of maintaining/repairing these roads. However, these effects would be localized and temporary and would not be expected to have a permanent adverse impact on community or regional growth.

Cumulative Impacts to Community and Regional Growth

In the long-term, the proposed levee/floodwall restoration/reinforcement methods in conjunction with other proposed or ongoing infrastructure and HSDRRS projects in the vicinity would improve the HSDRRS and reduce the risk of storm-related flooding within the study area. This cumulative effect would encourage community and regional growth in Orleans and St. Bernard Parishes.

3.3.6 Impacts to Tax Revenues and Property Values

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Tax Revenues and Property Values

Under the no action alternative, the increased risk of storm-related flooding in the low-lying portions of Reaches 1, 2, and 3 and the associated damage to buildings and infrastructure would result in adverse impacts to tax revenues and property values. Indirect impacts would result from costs incurred for certain activities, such as evacuation, clean up, debris removal, building and infrastructure repair, and reoccupation of homes and businesses. Lack of confidence in the system could cause residents and businesses to move out of the area, thus reducing potential tax revenues and creating indirect impacts. Additionally, should lots stand abandoned or in disrepair, property values could potentially experience stagnation or even decrease within the local affected area. These direct and indirect impacts would also be cumulative given the number of levee and floodwall segments in need of restoration and reinforcement.

Future Conditions with Proposed Action

Direct Impacts to Tax Revenues and Property Values

All five methods of restoration/reinforcement would be built entirely within existing ROWs; therefore, adjacent land use would not be directly impacted by construction activities. There would be temporary, beneficial socioeconomic impacts from construction activities, including purchase of materials, equipment, and services and a temporary increase in employment and income and associated tax revenues. This impact would be local or regional, depending on where the goods, services, and workers would be obtained. Once construction is complete, there could be an increase in tax revenues if residents and businesses from out of the region move into the area due to an increase in confidence regarding flood risk reduction. Any potential positive impact on property values cannot be quantified due to the influence of numerous other factors of supply and demand.

Indirect Impacts to Tax Revenues and Property Values

As discussed in section 3.2.10.4, Surface Roads, indirect impacts to transportation resulting from wear and tear to minor roads would occur. Corresponding indirect socioeconomic impacts would occur as the community absorbs the cost of maintaining/repairing these roads. Depending on the level of repairs required, this could impact tax revenues and, if repairs are delayed, nearby property values. Additional indirect transportation-related impacts on socioeconomics could result from non-project traffic avoiding these damaged roadways and thus creating new wear and increasing congestion on other roads. During construction, increased traffic on local roads would potentially increase congestion and adversely affect access to businesses and residences. Diversion of traffic could potentially temporarily impact any businesses along the damaged roadways through loss or increase of drop-in customers, potentially impacting tax revenues. However, these effects would be localized and temporary.

Cumulative Impacts to Tax Revenues and Property Values

Implementation of the proposed action would have beneficial cumulative impacts on socioeconomic resources within the three sub-basins that are protected by the existing flood risk reduction system in the project area. In the long-term, the proposed levee/floodwall restoration/reinforcement methods in conjunction with other proposed or ongoing infrastructure and HSDRRS projects in the vicinity would improve the HSDRRS and reduce the risk of storm-related flooding within the study area. This increased risk reduction would lead to additional community and regional growth and thus to increased in tax revenues and property values.

3.3.7 Changes in Community Cohesion

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Community Cohesion

Under the no action alternative, the deficient levee/floodwall segments along the IHNC and GIWW would continue to have potential seepage and stability issues that reduce their level of risk reduction. The potential risk could result in community anxiety and lack of confidence. Residents may relocate from or decide not to return to the community, thus further disrupting community cohesion beyond that caused by Hurricane Katrina. Indirect impacts to community cohesion could result from the no action alternative if residential relocations result in new populations settling into these neighborhoods, particularly should potential racial or ethnic

conflicts arise. These impacts would be cumulative as a result of the number of deficient segments along Reaches 1, 2, and 3.

Future Conditions with Proposed Action

Direct Impacts to Community Cohesion

Restoring/reinforcing portions of levees and floodwalls along the IHNC and GIWW that do not meet the HSDRRS seepage and stability criteria would have beneficial impacts on socioeconomic resources within the three sub-basins that are protected by the existing flood risk reduction system. All five methods of restoration/reinforcement would be built entirely within existing ROWs; therefore, adjacent land use would not be directly impacted by construction activities. No populations would be displaced and changes in community cohesion would not be expected to occur.

Indirect and Cumulative Impacts to Community Cohesion

The increased sense of security and confidence in the risk reduction provided by the HDRRS would encourage continued community growth and recovery. The continued growth would likely increase community cohesion as the neighborhoods recover and prosper. This increased community cohesion would be a cumulative impact as well throughout the three sub-basins and the New Orleans Metropolitan area as the region continues to recover.

3.4 ENVIRONMENTAL JUSTICE

Executive Order 12898 of 1994 (59 FR 7629) directs Federal agencies to identify and address, as appropriate, potential disproportionately high and adverse human health or environmental effects of Federal actions on minority and low-income populations. In 1995, the DoD issued a *Strategy on Environmental Justice* that lays out its approach to meet the intent of the Executive Order and provides an implementation plan to execute that strategy (DoD 1995). The USEPA defines environmental justice (EJ) as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies” (USEPA 1998).

The methodology to accomplish this analysis includes identifying low-income and minority populations within the study area using up to date economic statistics, aerial photographs, 2000 Census data (USCB 2000), and Environmental Systems Research Institute, Inc. (ESRI) estimates (ESRI 2007), as well as conducting community outreach activities such as small neighborhood focus meetings. The smallest political unit(s) containing an EJ project area is/are considered the reference community of comparison, whose population is therefore considered the reference population for comparison purposes. A potential disproportionate impact may occur when the percent minority and/or percent low-income population in an EJ study area are greater than those in the reference community. References cited in this EJ section explain this rationale in more detail.

The sources for the data used in the analysis include aerial imagery and the 2000 U.S. Census and 2007 estimates from ESRI. Although it has been nine years since the 2000 U.S. Census was conducted, it serves as a logical baseline of information for the following reasons:

- The 2000 Census is the most accurate source of data available due to the sample size of the Census decennial surveys; with one of every six households surveyed, the margin of error is negligible;

- The Census reports data at a much smaller geographic level than other survey sources, providing a more defined and versatile option for data reporting; and
- Census information sheds light upon the demographic and economic framework of the area, pre-Hurricane Katrina. By accounting for the absent population, the analysis does not exclude potentially low-income and minority families that wish to return home.

Due to the considerable impact of Hurricane Katrina upon the New Orleans Metropolitan Area and the likely shift in demographics and income, the 2000 Census data are supplemented with more current data, including 2007 estimates provided by ESRI (2007).

Existing Conditions

According to the 2000 Census and 2007 ESRI estimates, the area within a one-mile radius of the project's footprint, in the three reaches of the project work, includes low-income or minority populations, particularly in the areas of the IHNC and vicinity in Orleans Parish. The minority population in the area is greater than 50 percent, and is not substantially different than the percentage of minorities within Orleans Parish, the reference community for the project area. Similarly, the percentage of the population living below the poverty level in the area was comparable to the Orleans Parish percentage and significantly lower than the State of Louisiana percentage for 2000. Areas in St. Bernard Parish within a one mile radius of the project footprint are uninhabited. Based on the available descriptions of the project and work site locations, residential areas within a one-mile radius of the project footprint, for the three reaches of the work in Orleans Parish, are located along the IHNC in the Lower Ninth Ward portion of Reach 1 and farther inland, behind waterfront industrial and commercial uses, along the IHNC and GIWW in Reach 2 and Reach 3.

Discussion of Impacts

Future Conditions with No Action

Direct, Indirect, and Cumulative Impacts to Environmental Justice

Under the no action alternative, the deficient levee/floodwall segments along the IHNC and GIWW would not be restored or reinforced. The secondary line of defense provided by these flood risk reduction structures in Reaches 1, 2, and 3 would continue to have potential seepage and stability issues. This could present an increased risk of storm-related flooding in the low-lying portions of these reaches and associated damage to buildings and infrastructure, disruption of economic activity, and displacement of residents. These impacts could be borne by significant minority and low-income populations residing within a one-mile radius of the project, as well as within the remainder of the three reaches. However, although the no action alternative would have adverse direct, indirect, and cumulative impacts on minority and low-income residents in the project area, the impacts would not be considered to be disproportionately borne by such populations. Therefore, no EJ issues would be anticipated for this alternative.

Future Conditions with Proposed Action

Direct, Indirect, and Cumulative Impacts to Environmental Justice

Restoring and/or reinforcing portions of levees and floodwalls along the IHNC and GIWW that do not meet the HSDRRS seepage and stability criteria would have beneficial impacts on the populations within the three sub-basins that are protected by the existing flood risk reduction

system. All populations groups within the HSDRRS would benefit from completion of the proposed action. All five methods of restoration/reinforcement types would be built entirely within existing ROWs; therefore, the proposed action would not require any takings of residential properties and no populations would be displaced. There would be temporary indirect impacts resulting from construction activities, such as noise, air quality, and traffic associated with construction equipment, material deliveries, and other related activities. However, these impacts would be temporary in nature and would equally impact non-minority and non-low-income communities as well as minority and low-income communities. Thus, disproportionately high and adverse effects on minority and low-income populations would not be expected to occur.

Implementation of the proposed action would not result in significant adverse effects on environmental resources that individuals involved in subsistence fishing or hunting utilize. Also, restoration/reinforcement activities on levees and floodwalls would not be anticipated to involve the release of hazardous, toxic, or radioactive materials to which minority or low-income populations could be exposed. Accordingly, the proposed action would not create disproportionately high and adverse environmental or human health effects on minority and low-income populations.

Implementation of the proposed action would have beneficial cumulative impacts on all populations within the three sub-basins that are protected by the existing flood risk reduction system in the project area. That is, the cumulative reduced risk of storm-related flooding would benefit all residents of the project area, regardless of income or race. Thus, disproportionately adverse effects on minority and low-income populations would not be expected to occur.

3.5 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE

The USACE is obligated under ER 1165-2-132 to assume responsibility for the reasonable identification and evaluation of all hazardous, toxic, and radioactive waste (HTRW) contamination within the vicinity of the proposed action. ER 1165-2-132 identifies CEMVN HTRW policy to avoid the use of project funds for HTRW removal and remediation activities. Costs for necessary special handling or remediation of wastes (e.g., Resource Conservation and Recovery Act [RCRA] regulated), pollutants, and other contaminants, which are not regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), would be treated as project costs if the requirement is the result of a validly promulgated Federal, state, or local regulation.

An American Society for Testing and Materials (ASTM) International E 1527-05 Phase I Environmental Site Assessment (ESA) was completed for the project area(s). The *Final Phase I ESA, Inner Harbor Navigation Canal (IHNC) Levees and Floodwalls, IHNC and Gulf Intracoastal Waterway (GIWW)*, dated 27 July 2010 and prepared by AECOM Technical Services, Inc. included 23 deficient HSDRRS levee/floodwall segments and nine staging areas, and documented the Recognized Environmental Conditions (RECs) for the proposed action areas in Reaches 1, 2, and 3. If a REC cannot be avoided, due to construction requirements, the CEMVN may further investigate the REC to confirm the presence or absence of contaminants, and actions to avoid possible contaminants. Federal, state, or local coordination may be required. The Phase I ESA referenced below will be maintained on file at the office of the CEMVN and is incorporated herein by reference. A copy of the report is available upon request from the CEMVN, or by accessing www.nolaenvironmental.gov.

The Phase I ESA found two Recognized Environmental Conditions, several adjacent properties with histories of spills or other environmental conditions and other general environmental concerns (Table 14). The two RECs were associated with activities at adjacent facilities.

Table 14.
Recognized Environmental Conditions in the Project Area

Site	Location	REC Site Description
W-1 0+00 to 2+00 Former USCG operations	Former USCG Facility at 4640 Urquhart Street, New Orleans, Louisiana 70117 Lat: 29° 58' 1.65"N, Long: 90° 1' 38.77"W	Soils potentially impacted by hazardous substances or petroleum products by adjacent facility.
28+85 and 17+50 to 24+00 Southern Recycling	Southern Scrap/Southern Recycling at 4801 Florida Avenue, New Orleans, LA 70117; Lat: 29° 57' 23.47957" N, Long: 90° 07' 40.63540" W	Soils potentially impacted by hazardous substances or petroleum products by adjacent facility.
Segments along the IHNC	Port of New Orleans, 6201 France Road; UPS, 5700 Morrison Road; Southern Recycling, 4801 Florida Avenue; Baroid Drilling Fluids (currently Halliburton), 8000 Jourdan Road; NASA, 03800 Old Gentilly Road; and Seabrook Marine, 5801 France Road.	Adjacent properties which have had historical leaks or spills which could have impacted the soils under the HSDRRS. Soils potentially impacted by hazardous substances or petroleum products by adjacent facilities.
79+00	End of Elaine Street	Soils potentially impacted by hazardous substances or petroleum products by historical and adjacent facilities.
242+00 to 260+00	Adjacent to the Paris Road Bridge	Soils potentially impacted by hazardous substances or petroleum products by a liquid gas pipeline or the maintenance thereof.

At the former USCG operations facility, there was evidence of possible underground storage tanks (USTs) or other underground equipment and there was previously a hazardous materials storage area adjacent to the floodwall. This facility was abandoned following the hurricane, and the area is currently in a state of disrepair. There are multiple drums, containers and pipelines on site whose contents are not identified. Some of these containers were actively leaking at the time of the site visit. The potential for impacts to the soil in the ROW exists.

At Southern Recycling, large quantities of materials are recycled, including cars, refrigerators and other metal appliances. The condition of these materials while being recycled or stored on site is unknown. The cars are reported to be drained of fluids prior to being stored on site. However, there are records of leaks from the fuel tanks of ships which were being cut up for recycling. Therefore, not all fluids from all appliances and vehicles are removed. Additionally, this facility operates a 'fluff' landfill on the protected side of the levee where all the soft materials are placed. The potential for hazardous materials and/or petroleum products in this landfill exists. Additionally, both Southern Recycling and the former USCG facility were heavily flooded during Hurricane Katrina and any materials stored on site would have spilled

during this flooding. The other environmental concerns found were regarding the previous or ongoing use of many of the adjacent properties.

The HSDRRS segments are mostly in heavy industrial areas, which have been used in this manner for many decades. Many adjacent facilities have records of historical spills or other environmental conditions which could have impacted the soils under the HSDRRS. Many of the adjacent facilities were observed to store hazardous materials and/or petroleum products on site, in various conditions. Due to the nature of the project, site visits were not performed for all adjacent properties. Containers and their conditions had to be observed generally from the HSDRRS ROW. Additionally, housekeeping and regular maintenance issues were not addressed at these facilities. The potential for spills and leaks to have impacted the soils in the HSDRRS is present, but unlikely, due to the nature of the soils, the small sizes of the containers and distance from the ROW.

Generally, although the potential exists for impacted soils in the ROW of the HSDRRS in the project area, it is unlikely that these impacts would necessitate any remediation. Additionally, the types of restoration/reinforcement methods proposed would not remove these soils from their current placement. Therefore, during the restoration/reinforcement processes these soils would not be expected to impact areas outside of the ROW. Soils and other materials imported to complete the restoration/reinforcement methods would be tested prior to placement in the project area.

The CEMVN intends to conduct Phase II investigations adjacent to Southern Recycling. These investigations would involve soil and/or groundwater sampling (within the ROW) in the vicinity of the facility in areas which may have been impacted by the adjacent use. The results of this sampling effort would dictate future actions with respect to disposal of any excavated soils at the nearest deficient segments (stations 17+50 to 24+00 and 28+85). The CEMVN does not intend to conduct Phase II investigations at the USCG facility, as they would not be disturbing any soils in this area.

There is a low probability of encountering HTRW associated with the cleaning chemicals (degreasers, etc.) that are currently being stored in the maintenance building near Gate W-1 on the west bank of the IHNC. Before this building would be re-located or demolished, all chemical contents would be carefully removed or properly disposed of. It is possible that small chemical spills or leaks have occurred within the shed (from maintenance equipment) and maintenance building historically, but given the small size of the buildings and the small amounts of equipment and cleaning compounds that are housed within them, it is unlikely that spills or leaks large enough to impact the underlying soils would have occurred.

4.0 CUMULATIVE IMPACTS

4.1 METHODOLOGY

NEPA requires a Federal agency to consider not only the direct and indirect impacts of a proposed action, but also the cumulative impacts of the action. A cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

To successfully assess cumulative impacts, a broad range of activities and patterns of environmental changes that are occurring in the vicinity of the project were considered. The following items were guidelines for the cumulative impact analyses in this document:

- The proximity of the projects to each other, both geographically and temporally.
- The probability of actions affecting the same environmental resource, especially systems that are susceptible to development pressures.
- The likelihood that the project would lead to a wide range of effects or lead to a number of associated projects.
- Whether the effects of other projects are similar to those of the project under review and the likelihood that the project would occur.

4.2 DESCRIPTION OF PROJECTS CONSIDERED

There are several Federal projects and/or federally funded projects currently underway in the project vicinity. The largest of these is the upgrading of the HSDRRS. Construction is currently ongoing and in various stages throughout the project area. Types of projects include earthen levee raising, floodwall rebuilding/raising, construction of gates and access roads, and the two closure structures on the IHNC and GIWW (the Seabrook closure and the Borgne closure). These construction projects can result in road closures, increased traffic and noise, and general aesthetic impacts nearby. For example, Lakeshore Drive is currently inaccessible near the IHNC due to construction of various portions of the HSDRRS. This work is scheduled to be completed in 2011 and, therefore, would likely be underway at the same time as the proposed action. Preparation and equipment/material staging for construction of a new floodgate structure on the IHNC at Seabrook (USACE 2010a) and for improvements to the Lakefront Levee and floodwalls (USACE 2009a) have impacted access to the Frank Davis pier and Seabrook Launch. During construction of the Seabrook Gate, the most significantly impacted recreational features would be expected to be boating and fishing, because of the placement of a cofferdam structure across the entire IHNC channel for approximately 6 months to 12 months. During this time all boat access and water flow between Lake Pontchartrain and the IHNC would be suspended and local fishing opportunities would be limited.

The USACE is currently engaged in drainage pump station storm proofing projects. These projects will storm proof 22 pump stations, the Carrollton water treatment plant, the old and new river intakes and the power plant, all operated by the Sewerage and Water Board of New Orleans. Some of these pump stations are immediately adjacent to some of the deficient levee segments. The Elaine Street pump station is adjacent to segment 79+00, the Grant Avenue station is near segment 242+00 to 260+00, pump station #5 is adjacent to segments 17+50 to 24+00 and 28+85, and pump station #19 is on the west bank of the IHNC immediately to the north of the Florida Avenue Bridge. The Elaine Street pump station is currently being replaced by an automated system. Upgrade and construction activities at these locations associated with the proposed action could minimally contribute to cumulative impacts through temporary increases in traffic and noise levels and aesthetic impacts in these areas.

Another Federal/state project in the region involves the USACE and the Southeast Louisiana (SELA) Flood Control Program. This project has many individual construction areas across New Orleans. The remaining three drainage projects still to be completed are the Florida Avenue Canal, the Broad Street pump station, and the Prichard Place pump station. The Broad Street and Prichard Place pump stations are not located in the IHNC/GIWW project area. The

Florida Avenue Canal improvements are currently under construction, immediately adjacent to the Florida Avenue Bridge, on the west bank of the IHNC. Traffic is currently limited to one lane in each direction leading to and from the bridge. Another ongoing SELA project is the construction of a pump station at the end of Dwyer Road. This pump station is immediately adjacent to the potential staging area in the center of the east bank of the IHNC. IHNC/GIWW restoration/reinforcement work in these areas could minimally contribute to cumulative impacts through temporary increases in traffic and noise levels and aesthetic impacts.

The USACE is replacing the existing IHNC Lock with a new, larger lock to be located within the IHNC and north of Claiborne Avenue. The new lock will be tied in to the floodwalls and levees on each side of the IHNC. No construction work is expected on this project in the foreseeable future due to a lack of funds necessary to continue construction. Therefore, there would be no cumulative impacts associated with this project.

Due to the damage from Hurricane Katrina, general rebuilding of both private and public facilities, commercial properties, and residences is ongoing throughout the area. These activities may contribute to noise, traffic, and aesthetic impacts in the project vicinity. Several of these rebuilding projects are adjacent to the Pontchartrain Park residential area on the west bank of the IHNC. The city's recovery program includes improvements to the Joe Bartholomew, Sr. golf course and the other facilities in Pontchartrain Park. These improvements are currently under construction. If they are not completed before the start of the proposed action, the levee/floodwall work could add to traffic, noise, air quality, and aesthetic impacts in the area.

In an effort to repair roads damaged because of Hurricanes Katrina and Rita, the Regional Planning Commission, CNO, LaDOTD, and FHWA formed a partnership to create the South Louisiana Submerged Roads Program. This comprehensive program funded entirely by the FHWA and administered by LaDOTD, identifies and repairs/resurfaces hurricane-damaged streets throughout south Louisiana. It began in July 2007 and includes more than 50 street projects in Orleans, Jefferson, and St. Bernard Parishes. Roadwork related to the Submerged Roads Program including road closures and/or detours could potentially occur in the project vicinity during the duration of the proposed action. Alternate access routes for the proposed action work in Reaches 1, 2, and 3 may be required if unanticipated roadwork occurs as part of the Submerged Road Program.

The Claiborne Avenue Bridge is currently undergoing repairs and has frequent closures, requiring traffic to reroute to either the Florida Avenue Bridge or the St. Claude Avenue Bridge. This project should be complete prior to the commencement of the proposed action, resulting in no cumulative impacts to traffic and noise.

The Port of New Orleans has plans to repair the dolphins and fenders at the Seabrook, Almonaster, and Florida Avenue bridges. This work would be mainly in the waterways, resulting in no cumulative impacts to traffic and very minor cumulative impacts to aesthetics, air quality, and noise.

Overall, the proposed restoration/reinforcement work along the IHNC and GIWW would contribute minimally to cumulative impacts to transportation, noise, air quality, and aesthetics in the immediate project vicinity. These impacts would be temporary and only extend for the duration of the construction, which is approximately 10 months. These impacts would be more noticeable in adjacent residential areas, such as Pontchartrain Park, as opposed to the more industrialized portions of the three reaches.

Concurrent projects would likely extend the amount of time people are exposed to the increased noise levels resulting from construction activities. This would be most significant along the

northern reaches of the IHNC where there are multiple project segments in close proximity to each other and to the adjacent neighborhoods, and within range of the proposed new gate structure at the IHNC outlet to Lake Pontchartrain. Should construction of the Seabrook Gate occur at the same time as the activities associated with the proposed action, it is likely the noise associated with gate construction would be higher than the noise generated by the levee/floodwall work. Therefore, it is anticipated that cumulative noise impacts associated with the proposed levee/floodwall restoration/reinforcement activities along the northern portion of the IHNC would be minor.

It is expected that standard air quality BMPs would be used for other activities or projects occurring within the project vicinity that could potentially create dust emissions. For instance, application of water to control dust and periodic street sweeping and/or wetting down of paved surfaces would aid in preventing fugitive dust from becoming airborne. Other construction activities occurring during the same timeframe and within the vicinity of the proposed action would likely occur incrementally throughout the construction period. Therefore, cumulative impacts to air quality in the project area from the proposed action and other concurrent construction activities in the area would be temporary and minor. Once construction of the proposed action is complete, there would be no continuing impacts to air quality; therefore, no contribution to cumulative air quality impacts in the area would be expected.

The multiple projects potentially ongoing simultaneously in the area may contribute to transportation impacts. These impacts would be minor and temporary, for the duration of the construction only. Restoration/reinforcement of levee/floodwall segments are relatively small projects with nearby staging areas, reducing the need for large and frequent deliveries. It is anticipated that cumulative transportation impacts would be minimal.

Cumulative aesthetic impacts due to the proposed action would be minor and temporary. These impacts would only last for the duration of the construction and resultant structures would closely resemble the existing ones. During construction, the presence of large machinery and equipment and the related noise and vibrations could add to the aesthetic impacts associated with other projects in the vicinity. These effects would be most strongly felt in the Pontchartrain Park residential area, where several other projects are located in close proximity and could occur simultaneously.

Minor cumulative impacts to recreational resources and socioeconomics along the northern IHNC are possible, particularly for people using the RV park and the private boat launching facilities, if the construction activities associated with the proposed action take place concurrent with the building of the Seabrook closure structure. Cumulative impacts to recreation from restoration/reinforcement of levees/floodwalls near the Borgne closure structure would also be possible. These impacts would be temporary in nature, occurring only during active construction of the proposed action.

Implementation of the proposed action would have beneficial cumulative impacts on socioeconomic resources within the three sub-basins that are protected by the existing flood risk reduction system in the project area. In the long-term, the proposed action in conjunction with other proposed or ongoing infrastructure and HSDRRS projects in the vicinity would improve the HSDRRS and reduce the risk of storm-related flooding within the study area. Associated damage to buildings and infrastructure, disruption of economic activity, and displacement of residents would be less likely. There would also be cumulative beneficial impacts on population, long-term employment, and income levels in Orleans Parish.

The cumulative impacts identified above would equally affect non-minority and non-low-income communities as well as minority and low-income communities. Thus, disproportionately adverse

effects on minority and low-income populations would not be expected to occur. The cumulative reduced risk of storm-related flooding would benefit all residents of the project area, regardless of income or race.

4.3 CEMVN HSDRRS IERs

Federal hurricane damage risk reduction for the greater New Orleans area is referred to as the HSDRRS and is divided into three USACE authorized projects: (1) LPV; (2) West Bank and Vicinity (WBV); and (3) New Orleans to Venice (NOV). The NOV and WBV projects have no or limited discussion in this IER because their alignments are not located within the project region and, with the exception of some positive cumulative impacts to socioeconomics, these projects would not greatly increase cumulative impacts. The various projects that make up the LPV projects include the construction of 125 mi of levees, concrete floodwalls, and other structures. Many of these projects are broken out by area and referred to by their IER document number. Figure 17 shows LPV and WBV IER projects. A summary of the projects that fall within the New Orleans Metropolitan Area is provided below:

- **IER #1, LPV, La Branche Wetlands Levee, St. Charles Parish, Louisiana** – evaluates the potential impacts associated with raising approximately 9 mi of earthen levees; replacing over 3,000 ft of floodwalls; rebuilding, modifying or closing five drainage structures; and modifying one railroad gate along the existing levee system on the north side of U.S. 61 (Airline Highway) between the Bonnet Carré Spillway and the northwest end of the Louis Armstrong New Orleans International Airport near the St. Charles/Jefferson Parish line.
- **IER #2, LPV, West Return Floodwall Jefferson and St. Charles Parishes, Louisiana** – evaluates the potential impacts associated with the proposed replacement of 17,900 ft (3.4 mi) of floodwalls along the line between Jefferson Parish and St. Charles Parish in the northeastern portion of the Mississippi River deltaic plain. The project area is adjacent to the Parish Line Canal from the north side of the Louis Armstrong New Orleans International Airport to the south shore of Lake Pontchartrain.
- **IER #3, LPV, Lakefront Levee, Jefferson Parish, Louisiana** – evaluates the potential impacts associated with the proposed rebuilding of 9.5 mi of earthen levees, upgrading of the foreshore protection, the replacement of two floodgates, the construction of fronting protection, and construction or modification of breakwaters at four pumping stations just east of the St. Charles Parish and Jefferson Parish line to the western side of the 17th Street Canal.
- **IER #4, LPV, New Orleans Lakefront Levee, Orleans Parish, Louisiana** – investigates improvement of the levee, floodwall, and Bayou St. John Sector Gate extending from the 17th Street Canal to the IHNC.
- **IER #5, LPV, Permanent Protection System for the Outfall Canals Project on 17th Street, Orleans Avenue, and London Avenue Canals, Jefferson and Orleans Parishes, Louisiana** – evaluates the impacts of a new permanent pump station and closure (i.e., gates) at or near the mouth of each of the outfall canals operating in series with the existing Sewerage and Water Board of New Orleans pump stations.

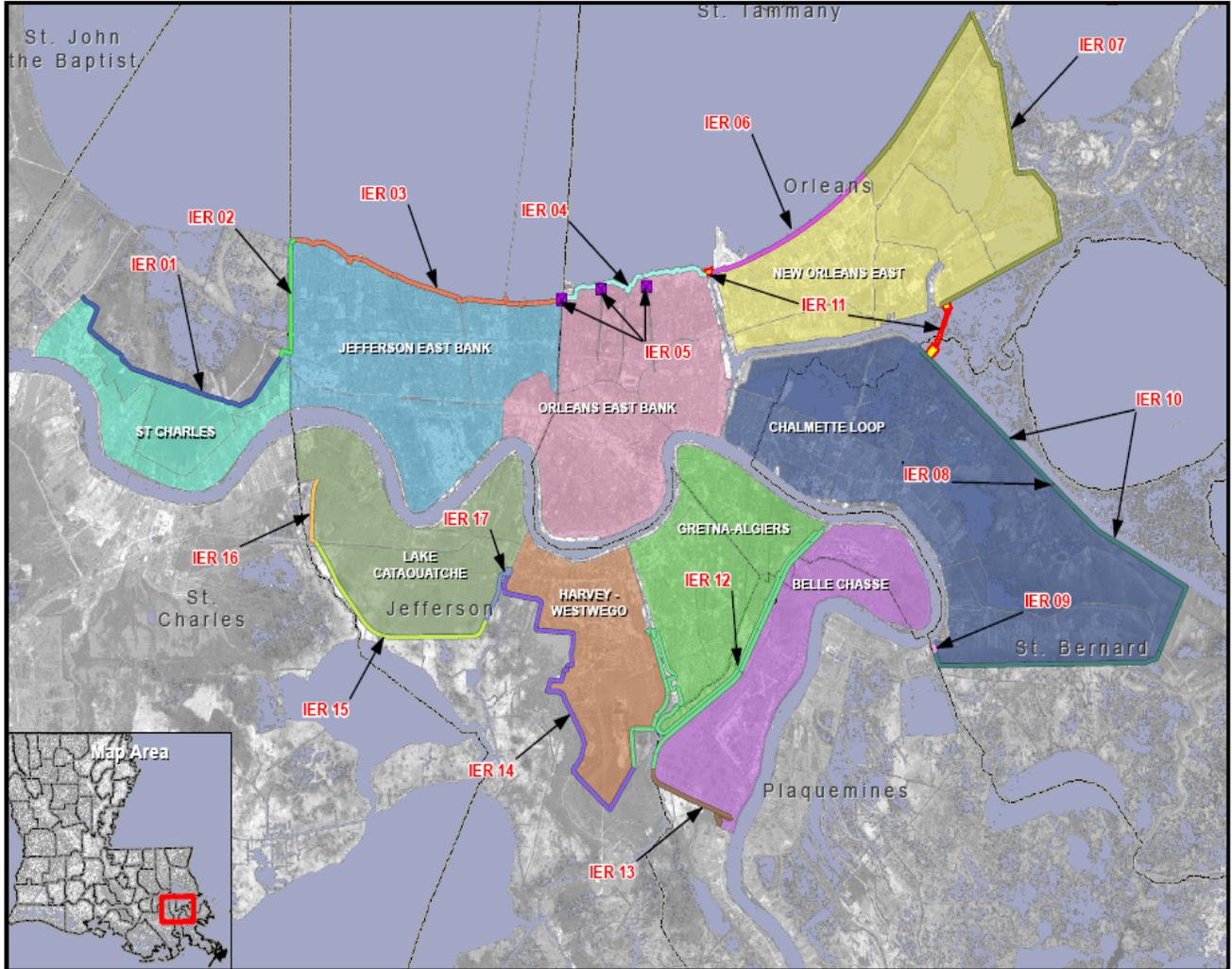


Figure 17. HSDRRS LPV and WBV IER Projects

- **IER #6, LPV, New Orleans East, Citrus Lakefront Levee, Orleans Parish, Louisiana** – investigates improvement of approximately 6 mi of levees, floodwalls, and floodgates that extend from the IHNC and the New Orleans Lakefront Airport east to Paris Road – locally known as the Citrus Lakefront. Foreshore protection enhancements along this reach could include the dredging of access channels in Lake Pontchartrain.
- **IER #7, LPV, New Orleans East, New Orleans East Lakefront to Michoud Canal, Orleans Parish, Louisiana** – investigates improvement of approximately 19.3 mi of levee and three floodgates stretching from the New Orleans East Lakefront Levee to New Orleans East Back Levee – CSX Railroad to Michoud Canal. This portion of the LPV HSDRRS encompasses a large portion of the Bayou Sauvage National Wildlife Refuge (NWR). The northern portion of this reach could include foreshore protection enhancements requiring dredged access channels in Lake Pontchartrain.
- **IER #8, LPV, Bayou Dupre Control Structure, St. Bernard Parish, Louisiana** – evaluates the impacts of the construction of a new flood control structure on Bayou Dupre

with steel sector gates and floodwall tie-ins, constructed on the floodside of and adjacent to the existing structure.

- **IER #9, LPV, Caernarvon Floodwall, St. Bernard Parish, Louisiana** – evaluates the impacts of replacing two floodgates and constructing approximately 1,500 ft of floodwall, and a levee tie-in at the southwest terminus of the Chalmette Loop levee.
- **IER #10, LPV, Chalmette Loop Levee, St. Bernard Parish, Louisiana** – evaluates the impacts of constructing a T-wall on top of the existing Chalmette Loop levee.
- **IER #11 - Tier 2 Borgne, Improved Protection on the IHNC, Orleans and St. Bernard Parishes, Louisiana** – evaluates the potential impacts associated with constructing surge barriers on Lake Borgne. This is the Tier 2 review for alternatives to protect against storm surge from the IHNC originating from Lake Borgne. This project was initially evaluated in IER #11 Tier 1 (USACE 2008c). Currently, this project is under construction; dredging and piles tests are complete and approximately 1.2 million cy of dredged material has been beneficially used for marsh nourishment within 205 acres of open water ponds near the project area.
- **IER #11 - Tier 2 Borgne Supplemental, Improved Protection on the IHNC, Orleans and St. Bernard Parishes, Louisiana** – evaluates the potential impacts associated with constructing a vertical lift gate on Bayou Bienvenue in lieu of a sector gate, which was evaluated in the original Tier 2 Borgne document.
- **IER #11 - Tier 2 Pontchartrain, Improved Protection on the IHNC, Orleans Parish, Louisiana** – evaluates the potential impacts associated with the proposed construction of a storm surge risk reduction structure on the IHNC where it meets Lake Pontchartrain (Seabrook area). This IER was prepared as a second tier evaluation to IER #11 for the portion of the flood risk reduction project that occurs near Lake Pontchartrain and is referred to as “Tier 2 Pontchartrain.”
- **IER #12, GIWW WCC, Harvey, and Algiers Levees and Floodwalls, Jefferson, Orleans, and Plaquemines Parishes, Louisiana** – includes a sector gate across the GIWW and levee tie-ins to the adjacent Hero Canal levee to the east and the V-line levee to the west. Approximately 3 mi of levee and floodwall would be constructed, along with a closure complex across the GIWW, a pump station, fronting protection, and a bypass channel. Levees would generally be raised to 14 ft, requiring 3.1 million cy of earthen material and 310,000 tons of stone.
- **IER #13, WBV, Hero Canal Levee and Eastern Terminus, Plaquemines Parish, Louisiana** – evaluates 22,000 LF of levee improvements and the construction of 1,500 LF of floodwalls.
- **IER #14, WBV, Westwego to Harvey Levee, Jefferson Parish, Louisiana** – evaluates 12 mi of levee, construction of 7,013 LF of floodwalls, and modifications to three pump stations.
- **IER #15, WBV, Lake Cataouatche Levee, Jefferson Parish, Louisiana** – evaluates 8 mi of levee and fronting protection modifications for one pump station.
- **IER #16, WBV, Western Tie-In, Jefferson and St. Charles Parishes, Louisiana** – evaluates construction of a new levee section to complete the western terminus of the West Bank and Vicinity Hurricane Protection Project.

- **IER #17, WBV Company Canal Floodwall, Jefferson Parish, Louisiana** – evaluates 442 LF of floodwalls and fronting protection modifications to two pump stations.
- **IER #18 - Government Furnished Borrow Material, Jefferson, Orleans, Plaquemines, St. Charles, and St. Bernard Parishes, Louisiana and IER #19 – Pre-Approved Contractor Furnished Borrow Material, Jefferson, Orleans, St. Bernard, Iberville, and Plaquemines Parishes, Louisiana, and Hancock County, Mississippi** – The purpose of these two IERs is to identify borrow areas that contain suitable material that can be excavated to supply clay material to Federal HSDRRS levee and floodwall projects.
- **IER #20, LPV Hurricane Protection Project – Mitigation: Manchac Wildlife Management Area Shoreline Protection Modification, St. John the Baptist Parish, Louisiana** – This mitigation IER will be completed to document the mitigation plan for unavoidable impacts from the resulting actions of the aforementioned IERs #1 to #11.
- **IER #22, Government Furnished Borrow Material #2, Jefferson and Plaquemines Parishes, Louisiana and Hancock County, Mississippi** – evaluates the potential impacts associated with the actions taken by the USACE while excavating borrow areas for use in construction of the HSDRRS.
- **IER #23, Pre-Approved Contractor Furnished Borrow Material #2, St. Bernard, St. Charles, Plaquemines Parishes, Louisiana, and Hancock County, Mississippi** – evaluates the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- **IER #24, Stockpile Sites for Borrow Material, Orleans and St. Bernard Parishes, Louisiana** – evaluates the potential impacts associated with the actions taken by commercial contractors as a result of stockpiling borrow material for use in construction of the HSDRRS.
- **IER #25, Government Furnished Borrow Material #3, Orleans, Jefferson, and Plaquemines Parishes, Louisiana** – evaluates the potential impacts associated with the actions taken by the USACE while excavating borrow areas for use in construction of the HSDRRS.
- **IER #26, Pre-Approved Contractor Furnished Borrow Material #3, Jefferson, Plaquemines, and St. John the Baptist Parishes, Louisiana, and Hancock County, Mississippi** – evaluates the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- **IER #27, Outfall Canal Remediation on the 17th Street, Orleans Avenue, and London Avenue Canals Jefferson and Orleans Parish, Louisiana** – evaluates the potential impacts associated with the proposed remediation of approximately 7 miles of floodwalls that have been examined for stability, seepage, settlement, and deflection along the 17th Street, Orleans Avenue, and London Avenue Outfall Canals.
- **IER #28, Government Furnished Borrow Material #4, Plaquemines, St. Bernard, and Jefferson Parishes** – evaluates the potential impacts associated with the possible excavation of two government furnished borrow areas, and an access road to a previously-approved government furnished borrow area.

- **IER #29, Pre-Approved Contractor Furnished Borrow Material #4, Orleans, St. John the Baptist, and St. Tammany Parishes** - evaluates the potential impacts associated with the actions taken by commercial contractors as a result of excavating borrow areas for use in construction of the HSDRRS.
- **IER #30, Contractor-Furnished Borrow Material #5, St. Bernard and St. James Parishes, Louisiana, and Hancock County, Mississippi** - evaluates the potential impacts associated with the actions taken by commercial contractors as a result of excavating three proposed borrow areas for use in construction of the HSDRRS.
- **IER #31, Contractor-Furnished Borrow Material #7, East Baton Rouge, Jefferson, Lafourche, Plaquemines, St. Bernard, and St. Tammany Parishes, Louisiana, and Hancock County, Mississippi** – evaluates the potential impacts associated with the actions taken by commercial contractors as a result of excavating ten proposed borrow areas for use in construction of the HSDRRS.
- **IER #32, Contractor-Furnished Borrow Material #6, Ascension, Plaquemines, and St. Charles Parishes, Louisiana** – evaluates the potential impacts associated with the actions taken by commercial contractors as a result of excavating seven proposed borrow areas for use in construction of the HSDRRS.

Table 15 provides a summary of the cumulative impacts to be mitigated for the HSDRRS based on the IERs completed (draft or final) to date. In addition to the impacts shown in table 15, approximately 170.5 acres of impacts to forested habitats requiring mitigation would occur as part of projects for the raising of the Mississippi River Levee.

Table 15.
HSDRRS Impacts and Compensatory Mitigation to be Completed

IER	Parish		Non-wet BLH	Non-wet BLH	BLH	BLH	Swamp	Swamp	Marsh	Marsh	Water Bottoms
			<i>acres</i>	<i>AAHUs</i>	<i>acres</i>	<i>AAHUs</i>	<i>acres</i>	<i>AAHUs</i>	<i>acres</i>	<i>AAHUs</i>	<i>acres</i>
1 LPV, La Branch Wetlands Levee	St. Charles	Protected Side	-	-	-	-	137.50	73.97	-	-	-
		Flood Side	-	-	11.33	8.09	143.57	110.97	-	-	
1 Supplemental LPV, La Branch Wetlands Levee	St. Charles	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
2 LPV, West Return Floodwall	St. Charles, Jefferson	Protected Side	-	-	-	-	-	-	-	-	75.00
		Flood Side	-	-	-	-	-	-	17.00	9.00	
2.a Supplemental LPV, Jefferson East Bank	Jefferson, St. Charles	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	2.00	1.55	16.50	11.45	
3 LPV, Jefferson Lakefront Levee	Jefferson	Protected Side	-	-	-	-	-	-	-	-	26.40
		Flood Side	-	-	-	-	-	-	-	-	
3.a Supplemental LPV, Jefferson East Bank	Jefferson	Protected Side	-	-	-	-	-	-	-	-	277
		Flood Side	-	-	-	-	-	-	-	-	
4 LPV, Orleans Lakefront Levee	Orleans	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
5 LPV, Lakefront Pump Stations	Jefferson, Orleans	Protected Side	-	-	-	-	-	-	-	-	3.29
		Flood Side	-	-	-	-	-	-	-	-	
6 LPV, Citrus Lands Levee	Orleans	Protected Side	-	-	-	-	-	-	-	-	6.90
		Flood Side	-	-	-	-	-	-	4.00	-	
7 LPV, Lakefront Levee	Orleans	Protected Side	-	-	151.70	79.30	-	-	100.40	36.80	106.00
		Flood Side	-	-	30.00	11.90	-	-	70.00	37.20	
7 Supplemental LPV, Lakefront Levee	Orleans	Protected Side	-	-	17.00	9.90	-	-	18.60	6.10	12.49
		Flood Side	-	-	2.80	0.30	-	-	56.00	29.80	
8 LPV, Bayou Dupre Control Structure	St. Bernard	Protected Side	-	-	-	-	-	-	-	-	0.30
		Flood Side	-	-	-	-	-	-	-	-	
9 LPV, Caernarvon Floodwall	Orleans, St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	10.00	4.65	1.16	0.66	-	-	1.90	1.20	

Table 15.
HSDRRS Impacts and Compensatory Mitigation to be Completed

IER	Parish		Non-wet BLH	Non-wet BLH	BLH	BLH	Swamp	Swamp	Marsh	Marsh	Water Bottoms
			<i>acres</i>	<i>AAHUs</i>	<i>acres</i>	<i>AAHUs</i>	<i>acres</i>	<i>AAHUs</i>	<i>acres</i>	<i>AAHUs</i>	<i>acres</i>
10 LPV, Chalmette Loop	St. Bernard	Protected Side	-	-	38.32	16.44	-	-	106.55	57.31	95.00
		Flood Side	-	-	35.31	15.22	-	-	323.04	209.94	
11 Tier 2 Borgne IHNC	Orleans, St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	15.00	2.59	-	-	122.00	24.33	
11 Tier 2 Borgne Supplemental IHNC	Orleans, St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	
11 Tier 2 Pontchartrain IHNC	Orleans	Protected Side	-	-	-	-	-	-	-	-	7.00
		Flood Side	-	-	-	-	-	-	-	-	
12 GIWW, Harvey, Algiers	Jefferson, Orleans, Plaquemines	Protected Side	-	-	251.70	177.3	-	-	-	-	-
		Flood Side	-	-	2.30	1.90	74.90	38.50	-	-	
13 Hero Canal and Eastern Tie-In	Plaquemines	Protected Side	-	-	13.00	7.80	-	-	-	-	-
		Flood Side	-	-	19.00	10.59	39.00	28.27	-	-	
14 WBV, Westwego to Harvey Levee	Jefferson	Protected Side	-	-	45.00	30.00	-	-	-	-	-
		Flood Side	-	-	45.50	37.17	29.75	17.02	-	-	
14 Supplemental WBV, Westwego to Harvey Levee	Jefferson	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	42.00	24.00	-	-	
15 WBV, Lake Cataouatche Levee	Jefferson	Protected Side	-	-	23.50	6.00	-	-	-	-	-
		Flood Side	-	-	3.60	1.35	-	-	-	-	
16 WBV, Western Tie- in	Jefferson	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	78.60	36.20	-	-	137.80	66.30	
16 Supplemental WBV, Western Tie- in	Jefferson	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	79.10	34.18	-	-	-	-	
17 Company Canal Floodwall	Jefferson	Protected Side	-	-	5.50	2.69	-	-	-	-	-
		Flood Side	-	-	-	-	19.00	17.09	-	-	
18 GFBM	Jefferson, Orleans, Plaquemines, St. Bernard, St. Charles	Protected Side	276.90	89.29	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	

Table 15.
HSDRRS Impacts and Compensatory Mitigation to be Completed

IER	Parish		Non-wet BLH	Non-wet BLH	BLH	BLH	Swamp	Swamp	Marsh	Marsh	Water Bottoms
			<i>acres</i>	<i>AAHUs</i>	<i>acres</i>	<i>AAHUs</i>	<i>acres</i>	<i>AAHUs</i>	<i>acres</i>	<i>AAHUs</i>	<i>acres</i>
19 CFBM	Hancock County, MS; Iberville, Jefferson, Orleans, Plaquemines, St. Bernard	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
22 GFBM	Jefferson, Plaquemines	Protected Side	86.93	28.90	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
23 CFBM	Hancock County, MS; Plaquemines, St. Bernard, St. Charles	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
25 GFBM	Jefferson, Orleans, Plaquemines	Protected Side	854.70	243.10	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
26 CFBM	Jefferson, Plaquemines, St. John the Baptist; Hancock County, MS	Protected Side	-	-	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
28 GFBM	Jefferson, Plaquemines, St. Bernard	Protected Side	19.10	11.60	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
29 CFBM	Orleans, St. Tammany, St. John the Baptist	Protected Side	107.30	48.60	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
30 CFBM	St. Bernard and St. James; Hancock, MS	Protected Side	225.00	189.40	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
32 CFBM	Ascension, Orleans, Plaquemines, St. Charles	Protected Side	195.00	96.20	-	-	-	-	-	-	-
		Flood Side	-	-	-	-	-	-	-	-	-
Totals		Protected Side	1764.93	707.09	545.72	329.43	137.5	73.97	225.55	100.21	609.38
		Flood Side	10	4.65	323.7	160.15	350.22	237.4	748.24	389.22	
		Both	1774.93	711.74	869.42	489.58	487.72	311.37	973.79	489.43	609.38

- = Not applicable to the IER or number impacted is 0
GFBM: Government Furnished Borrow Material // CFBM: Contractor Furnished Borrow Material

5.0 SELECTION RATIONALE

Under the proposed action, remedial work would be conducted on some of the walls and levees of the IHNC and GIWW in order to ensure compliance with current HSDRRS design criteria (USACE 2008b) to provide 100-year risk reduction. The proposed action, a combination of DSM, berms, buttress walls, concrete slabs, and relief wells, is the alternative most responsive to the project's purpose and need. It is an effective engineering solution that would minimize uncertainty and risk to acceptable levels in a reasonable period of time. The proposed action is compatible and would work in concert with other projects that have been completed, are in progress, or will be implemented, to improve the damage reduction provided by the HSDRRS.

The no action alternative would result in the least impacts to water and coastal resources, uplands, wildlife, and recreational resources, causing less noise and dust impacts. However, the impacts that would occur under the proposed action would all be temporary in nature, during construction of the proposed action, with the exception of the limited upland resources impacted by the proposed action. The no action alternative does not meet the project's purpose and need of providing full HSDRRS 100-year level of risk reduction to the project area, thereby having a greater potential socioeconomic and human impact. Benefits from the reduced risk of storm damage to socioeconomics experienced under the proposed action would not result from the no action alternative. The risk associated with the no action alternative outweighs the limited and temporary resource impacts that would occur under the proposed action. Therefore, it did not compare favorably with the proposed action, which is necessary to ensure that walls and levees of the IHNC and GIWW comply with current HSDRRS design guidelines.

6.0 COORDINATION AND CONSULTATION

Preparation of this IERS has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. The following agencies, as well as other interested parties, received copies of the draft IERS:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality
Louisiana State Historic Preservation Officer

The Louisiana Department of Natural Resources (LaDNR) reviewed the proposed action for consistency with the Louisiana Coastal Resources Program (LaCRP). The proposed action was found to be consistent with the LaCRP, as per a letter dated 23 July 2010 (appendix E).

The proposed action was coordinated with and reviewed by the USFWS via a letter dated 15 July 2010. As a result of this review, the CEMVN and USFWS jointly concluded that the proposed action would not be likely to adversely affect any threatened or endangered species or their critical habitat (USFWS facsimile dated 24 July 2010).

Section 106 of the National Historic Preservation Act, as amended, requires consultation with the Louisiana SHPO and Native American tribes. Eleven federally-recognized tribes that have an interest in the region were given the opportunity to review the proposed action. In a Section 106 letter to the SHPO dated 30 July 2010, the CEMVN provided project documentation, evaluated cultural resources potential in the project area, and found that the proposed action would have no impact on cultural resources. The SHPO concurred with the CEMVN's "no historic properties affected" finding in a letter dated 13 September 2010. The Decision Record for this IERS will not be signed until Section 106 consultation is concluded.

A Water Quality Certificate (WQC) was not required. A Section 404(b)(1) Public Notice and a Section 404(b)(1) Evaluation were not required because no work would impact wetlands or WoUS.

A draft modified Fish and Wildlife Coordination Act (FWCA) Report was provided by the USFWS on 5 August 2010. The CEMVN received a final modified FWCA Report from the USFWS on 17 November 2010. The 17 November 2010 FWCA Report along with the 9 October 2008 and 29 March 2010 Final FWCA Reports for IERs #11-Tier 2 Borgne and Tier 2 Pontchartrain, respectively, addresses the study area and the project construction to be conducted along the IHNC and GIWW. The Final and Modified FWCA Reports concluded that the proposed project does not require mitigation and will not impact high quality fish or wildlife habitat; therefore, the USFWS still does not object to the construction of the proposed action provided that fish and wildlife conservation recommendations are implemented concurrently with project implementation.

7.0 MITIGATION

To minimize potential impacts to air quality, contractors would be instructed to conduct proper and routine maintenance of all vehicles and other equipment. These actions ensure that emissions would be within the design standards of all construction equipment. Contractors would be instructed to conduct proper and routine maintenance of all vehicles and other equipment. These actions ensure that emissions would be within the design standards of all construction equipment. Dust suppression methods would be implemented to minimize fugitive dust emissions. Additionally, all construction equipment and vehicles would be required to be kept in good operating condition to minimize exhaust emissions. No jurisdictional wetlands or bottomland hardwoods would be impacted by the proposed action; therefore, compensatory mitigation would not be required.

8.0 COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Construction of the proposed action would not commence until the proposed action achieves environmental compliance with all applicable laws and regulations, as described below.

Environmental compliance for the proposed action will be achieved upon coordination of this IERS with appropriate agencies, organizations, and individuals for their review and comments. This includes USFWS confirmation that the proposed action would not be likely to adversely affect any endangered or threatened species, or completion of ESA Section 7 consultation (appendix E); LaDNR concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the LaCRP (appendix E); receipt of a WQC from the State of Louisiana (appendix E); public review of the Section 404(b)(1) Public Notice and

signature of the Section 404(b)(1) Evaluation; coordination with the Louisiana SHPO (appendix E); receipt and acceptance or resolution of all USFWS Coordination Act recommendations (appendix E); and receipt and acceptance or resolution of all Louisiana Department of Environmental Quality (LaDEQ) comments on the air quality impact analysis documented in the IERS.

9.0 CONCLUSION

The proposed action consists of restoring and reinforcing a total of approximately 4.6 mi of non-contiguous IHNC and GIWW levees and floodwalls in Orleans Parish, Louisiana. The CEMVN has assessed the environmental impacts of the proposed action and has determined that the proposed action would have the following impacts:

- **Water and Coastal Resources** - There would be no direct impacts to water and coastal resources in the area (including the IHNC, GIWW, and the portion of Bayou Bienvenue designated a Natural and Scenic River). Indirect impacts could include increased turbidity and sedimentation within these waterways. These impacts would be minor and minimized through use of BMPs and adherence to state and federal regulations governing stormwater runoff at construction sites.
- **Upland Resources** - Direct impacts to upland resources in the project area would be minor and temporary and would include soil disturbance during construction and the loss of less than 1.2 acres of marginal habitat.
- **Wildlife** - There would be minor and temporary direct impacts to small amounts of non-natural occurring wildlife habitat during construction resulting primarily from soil disturbance and noise.
- **Threatened and Endangered Species** – Only aquatic threatened and endangered species could potentially occur in the project area. Because no in-water construction work is included in the proposed action, no threatened or endangered species would be affected during construction or after the project has been completed.
- **Cultural Resources** - The proposed action would not impact any historic properties. The existing ROW and proposed staging areas have been previously impacted extensively by the construction of major navigation channels (GIWW and IHNC), port facilities, HSDRRS, railroads, vehicular bridges, and by regular maintenance dredging activities, making the likelihood for discovering intact and undisturbed archaeological deposits in the APE minimal.
- **Recreational Resources** - Indirect impacts associated with elevated noise, access difficulty and potential disturbance from night lighting, especially to recreational resources located around the northern IHNC would be possible. As most of the recreational resources in this area are currently either closed or under renovation, indirect impacts would be anticipated to be minor and would be temporary, occurring only during the construction period. Minor and temporary cumulative impacts to recreational resources would be possible due to the combination of the IHNC restoration/reinforcement methods and other projects in the area (particularly if construction of the Seabrook Gate structure overlaps with the proposed action).

- **Aesthetics** – Direct, temporary impacts resulting from the presence of construction equipment/vehicles and from lighting used for any nighttime construction to aesthetics in the project vicinity would be minor.
- **Noise** – Direct, minor impacts would result from the increased noise levels from construction activities (within 200 ft) and from construction vehicle traffic along minor roadways. Potential minor and temporary indirect impacts associated with elevated noise include those related to recreation, wildlife, and emotional and mental stress that could result from the noise levels in the area during construction. Cumulative noise impacts could result from multiple ongoing and planned construction projects in the area; this would be most significant along the northern reaches of the IHNC. These cumulative noise impacts would be minor and temporary.
- **Air Quality** - Temporary impacts to air quality from construction vehicle emissions and fugitive dust released by construction activities. Vehicle emissions would be minor and fugitive dust would be managed through BMPs such as sprinkler trucks. Potential minor and temporary indirect impacts to air quality could include temporary visual and health impairments created by airborne dust and equipment emissions. These impacts would also be minimized through the use of BMPs.
- **Transportation** - Direct impacts associated with a potential increase in congestion from construction traffic could occur. Minor indirect impacts to wear and tear of secondary roads could occur; however, haul routes would be maintained and project access would occur primarily through the use of roadways rated for heavy trucks.
- **Socioeconomics** – Temporary, beneficial direct impacts to socioeconomics associated with the purchase of materials, equipment, and services and a temporary increase in employment and income during project construction would occur. Beneficial indirect and cumulative impacts would include enhanced protection of socioeconomic resources as a result of enhancement of the HSDRRS and potential long-term employment opportunities and subsequent increases in income levels in Orleans and St. Bernard Parishes.
- **Environmental Justice** - All populations groups within the HSDRRS would benefit directly from completion of the proposed action and the resultant enhanced flood-protection. There would be minor and temporary indirect impacts resulting from construction activities, such as elevated noise, diminished air quality, and increased traffic congestion associated with construction activities. These impacts would equally impact non-minority and non-low-income communities as well as minority and low-income communities; therefore, disproportionately adverse effects on minority and low-income populations would not be expected to occur.

10.0 PREPARED BY

The point of contact for this IERS is Joan M. Exnicios, USACE, New Orleans District. Table 16 lists the preparers of relevant sections of this report. Ms. Exnicios can be reached at the U.S. Army Corps of Engineers, New Orleans District; P.O. Box 60267; New Orleans, Louisiana 70160-0267.

Table 16.
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11.0 LITERATURE CITED

- Abadie, S.W., C.G. Brantley, S. Mickal, and S. Shively. 2000. Distribution of the Manatee (*Trichechus manatus*) In the Lake Pontchartrain Estuarine System. Basics of the Basin Research Symposium.
- Air Products. 2005. Air Products Announces Expected Financial Impact of Recent Hurricanes, and October 26th Fourth Quarter Earnings and Teleconference Information. Accessed 27 August 2010 at:
<http://www.airproducts.com/pressroom/companynews/archived/2005/27sept05d.htm>.
- Air Products. 2008. EH&S Awards. Accessed 27 August 2010 at:
<http://www.airproducts.com/responsibility/ehs/ourcommitment/ehsawardssummary.htm>.

- America's Wetland. 2009. Bayou Birds, America's Wetland Birding Trail on Louisiana's Great Gulf Coast: Orleans Loop. Department of Culture, Recreation, and Tourism. Accessed 8 September 2009 at: <http://www.fermatainc.com/la/documents/AWLoop7.pdf>.
- Audubon. 2010. Louisiana Important Bird Areas. Accessed 9 July 2010 at: <http://iba.audubon.org/iba/stateIndex.do?state=US-LA>.
- Barry, K. P., A. M. Gorgone, and B. Mase. 2008. "Lake Pontchartrain, Louisiana, Bottlenose Dolphin Survey Summary, 28 April 2008 – 10 May 2008." Southeast Fisheries Science Center, National Marine Fisheries Service, NOAA, Protected Resources and Biodiversity Division. PRBD-08/09-01. October.
- City of New Orleans (CNO). 2006a. Pontilly Neighborhood Planning District 6 Rebuilding Plan. Updated 31 October 2006. Accessed 29 December 2008 at: <http://www.nolanrp.com/final.php>.
- CNO. 2006b. Pines Village Neighborhood Planning District 9 Rebuilding Plan. Updated 31 October 2006. Accessed 29 December 2008 at: <http://www.nolanrp.com/final.php>.
- CNO. 2007. City of New Orleans, Mayor's Office of Communications. Press Release. Company Restores NORD's Wesley Barrow Stadium. 10 January 2007. Accessed 5 January 2009 at: <http://www.cityofno.com/pg-1-66-press-releases.aspx?pressid=3742>.
- CNO. 2008a. City of New Orleans, Mayor's Office of Communications. Press Release. 13 June 2008. Accessed 24 December 2008 at: <http://www.cityofno.com/pg-1-66-press-releases.aspx?pressid=4869>.
- CNO. 2008b. New Orleans City Planning Commission Master Plan/Comprehensive Zoning Ordinance initiative. Planning District Six: Meeting 1. 11 November 2008. Accessed 31 December 2008 at: www.nolamasterplan.org.
- CNO. 2010a. New Orleans Municipal Codes of Ordinance – Section 154-1523, Traffic and Vehicles, Truck and Oversized Vehicles, Weight Limits. Accessed at http://library.municode.com/HTML/10040/level4/PTIICO_CH154TRVE_ARTXIVTROVVE_DIV1GE.html#PTIICO_CH154TRVE_ARTXIVTROVVE_DIV1GE_S154-1523WELI. 6 May.
- CNO. 2010b. New Orleans – Our Recover In Progress. Accessed 2 July 2010 at: <http://neworleans.iprojweb.com/default.aspx>.
- CNO. 2010c. City of New Orleans GIS Property Viewer. Accessed on 27 August at: <http://www.cityofno.com/pg-137-7-gis-property-viewer.aspx>.
- Conant, R. and J. T. Collins. 1998. A Field Guide to Reptiles and Amphibians of Eastern and Central North America, third edition, expanded. New York: Houghton Mifflin Company.
- Copart. 2010. About Copart. Accessed 27 August 2010 at: http://www.copart.com/c2/about_copart_car_salvage_auction.html.
- Davis, F. 2007. Frank Davis Fishing Pier Officially Open. Web log of Frank Davis. 23 March 2007. Accessed 24 December 2008 at: http://www.beloblog.com/WWLTV_Blogs/frankdavis/.
- Davis, M. 2010. Special Report: New Orleans Recreation Department. Accessed on 20 July 2010 at: <http://bestofneworleans.com/gyrobase/Content?oid=oid%3A77669>.

- DeGregorio, J. 2008. Changing with the times. Jen DeGregorio, Business writer, NOLA.com. Saturday, 12 January 2008. Accessed 5 January 2009 at:
http://www.nola.com/news/index.ssf/2008/01/changing_with_the_times.html.
- Department of Defense (DoD). 1995. Department of Defense Strategy on Environmental Justice. 24 March 24 1995. Accessed 31 January 2007 at:
<https://www.denix.osd.mil/denix/Public/Library/Planning/Justice/note7.html>.
- Dunn, J.L. and J. Alderfer. 2006. National Geographic Field Guide to the Birds of North America, fifth edition. Washington, D.C. National Geographic.
- Dupuy. 2010. Dupuy Storage & Forwarding , LLC. Accessed 27 August 2010 at:
<http://www.dupuystorage.com/>.
- Environmental Systems Research Institute, Inc. (ESRI). 2007. Business Analyst Online: 2007 Demographic and Income Profile.
- Federal Emergency Management Agency (FEMA). 2006. Section 106 Notices for Louisiana; Notice of Proposed Expansion of New Orleans Historic Districts. Accessed 8 September at: <http://www.crt.state.la.us/culturalassets/FEMA106/readnotice.asp?NoticeID=8>.
- Federal Highway Administration (FHWA). 2006. “Highway Construction Noise Handbook.” Final Report. FHWA, U.S. Department of Transportation. August 2006. Accessed 20 September 2007 at: <http://www.fhwa.dot.gov/environment/noise/handbook/index.htm>.
- Felley, J.D. 1992. Medium – Low-Gradient Streams of the Gulf Coastal Plain. Chapter 6 in Biodiversity of the Southeastern United States: Aquatic Communities, eds. C. T. Hackney, S. M. Adams, and W. H. Martin. New York: John Wiley & Sons.
- Goldenberg. 2008. Proposed Community Garden Work Sites New Orleans 2008. Accessed 2 July 2010 at: http://www.dnmc.org/wp-content/uploads/files/work_site_descriptions.pdf.
- Greater New Orleans Community Data Center (GNOCDC). 2002. Gentilly Woods Neighborhood Snapshot. Accessed 5 October at:
<http://gnocdc.org/orleans/6/29/snapshot.html>.
- GNOCDC. 2008. Pontchartrain Park Neighborhood Snapshot. Accessed 24 December 2008 at:
<http://www.gnocdc.org/orleans/6/31/snapshot.html>.
- GNOCDC. 2010. Public School Environmental Scanner, Orleans Parish, October 2009. Based on data records from the Louisiana Department of Education and the Cowen Institute for Public Education Initiatives (charter authority). Accessed 27 August at:
<http://www.gnocdc.org/schools/>.
- Guardian. 2010. BP Oil Spill Timeline. Accessed 19 August 2010 at:
<http://www.guardian.co.uk/environment/2010/jun/29/bp-oil-spill-timeline-deepwater-horizon>.
- HDR Engineering (HDR). 2009a. Notes from Interview between Cory Wilkinson/Drue Deshotels (HDR) and Jeffrey Montz (Seabrook Marine). 3 February 2009.
- HDR. 2009b. Notes from Interview between Cory Wilkinson/Drue Deshotels (HDR) and Nate Gaarder/Leigh Brock (Pontchartrain Landing RV Park). 15 January 2009.

- Heller, N., Nowak, T.J., and L. Hannah. 2008. Management Summary: Phase I Cultural Resources Survey and Inventory, and Nautical Remote Sensing Investigation, Performed for Lake Pontchartrain and Vicinity Project, Borgne 1 Portion of Individual Environmental Report Area 11 (IER # 11): Orleans and St. Bernard Parishes, Louisiana. Prepared by R. Christopher Goodwin & Associates, Inc., New Orleans.
- Heller, N. and L. Hannah. 2009. Phase 1 Cultural Resources Survey and Inventory Performed for Lake Pontchartrain and Vicinity Project, Pontchartrain 2 Portion of Individual Environmental Report Area 11 (IER #11): Orleans Parish, Louisiana. Report prepared by R. Christopher Goodwin and Associates, Inc., New Orleans.
- Louisiana Department of Labor. 2009. Louisiana Workforce Information Review 2009, New Orleans (Southeast) Report, Regional Labor Market Area 1. November. Accessed 6 July 2010 at: http://www.laworks.net/Downloads/LMI/WkfInfoRev_RLMA_1_2009.pdf.
- Louisiana Department of Labor. 2010. Employment & Wages Reports Quarterly Data. Accessed 6 July 2010 at: <http://www.laworks.net/LaborMarketInfo>.
- Louisiana Department of Transportation and Development (LaDOTD). 2008. Office of Planning and Programming. "Greater New Orleans Area Bike Map." Accessed 25 April 2008 at: <http://www.dotd.state.la.us/maps/>.
- LaDOTD. 2009a. "LaDOTD Estimated Annual Average Daily Traffic Sites." Accessed 31 August 2009 at: <http://www.dotd.la.gov/highways/tatv/>.
- LaDOTD. 2009b. "New Orleans Highway Functional Classification Urbanized Area Map." A map published by the LaDOTD, Office of Planning and Programming. Accessed 22 September 2009 at: http://www.dotd.louisiana.gov/planning/maps_classification/urbanized/New_Orleans.pdf.
- Louisiana Department of Wildlife and Fisheries (LaDWF). 2005a. "Manatee." Accessed August 2007 at: <http://www.wlf.louisiana.gov/experience/threatened/manatee.cfm>.
- LaDWF. 2005b. The Economic Benefits of Fisheries, Wildlife and Boating Resources in the State of Louisiana. Prepared by Southwick Associates, Inc., 2 June 2005. Accessed 8 September at: <http://www.wlf.louisiana.gov/pdfs/education/Economic%20Benefits%20of%20FishWLB%20BoatingResources2003.pdf>.
- LaDWF. 2010. Oil Spill Response. Accessed on 19 August 2010 at: <http://www.wlf.louisiana.gov/oilspill/>.
- Louisiana Public Health Institute. 2006. Louisiana Health and Population Survey, Orleans and St. Bernard Parish Survey Results. Accessed 1 July 2010 at: <http://www.popestla2006>.
- Mississippi River Trail, Inc. (MRT). 2008. 858 N. Jackson, Fayetteville, AR 72701. Accessed June 2008 at: <http://www.mississippirivertrail.org>.
- National Aeronautics and Space Administration (NASA). 2008. NASA's Michoud Assembly Facility. Accessed 27 August 2010 at: http://www.nasa.gov/centers/marshall/michoud/maf_history.html.

- NASA. 2010. Latest News at Michoud Assembly Facility. Accessed 27 August 2010 at: <http://www.nasa.gov/centers/marshall/michoud/index.html>.
- National Oceanic and Atmospheric Administration (NOAA). 1987. Technical Report NWS 38. Hurricane Climatology for the Atlantic and Gulf Coasts of the United States. U.S. Government Printing Office, Washington, DC.
- NOAA. 2008. U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments – 2007. G. Waring, E. Josephson, C. P. Fairfield-Walsh, and K. Maze-Foley, eds. NOAA Technical Memorandum NMFS-NE-205. January. Accessed at: <http://nefsc.noaa.gov/nefsc/publications.tm/tm205/tm205.pdf>.
- NOAA Fisheries Service. 2010a. “Gulf Sturgeon (*Acipenser oxyrinchus desotoi*).” Accessed 7 June 2010 at: <http://www.nmfs.noaa.gov/pr/species/fish/gulfsturgeon.htm>
- NOAA Fisheries Service. 2010b. “Marine Turtles.” Accessed 7 June 2010 at: <http://www.nmfs.noaa.gov/pr/species/turtles/>.
- New Orleans Neighborhood Rebuilding Plan (NOLANRP). 2006. Pontchartrain Park, District 6. Neighborhood Presentation June 2006. Accessed 24 December 2008 at: http://www.nolanrp.com/neighborhood_info.php?district=6&forum=8.0&neighborhood=Pontchartrain%20Park.
- New World Research, Inc. 1983. Cultural Resources Survey of Terrestrial and Off-Shore Locations, Lake Pontchartrain and Vicinity Hurricane Protection Project, Louisiana. Report on File, Louisiana Division of Archaeology, Baton Rouge.
- Pontchartrain, B. 2010. Where did the park in the 9th ward "Bunny Friend" get its name? accessed on 20 July 2010 at: <http://bestofneworleans.com/gyrobase/Content?oid=oid%3A66871>.
- Pontchartrain Park Neighborhood Association (PPNA). 2008. Website. Accessed 24 December 2008 at: <http://www.pontchartrainpark.org/>.
- Poopypark.com. 2010. Mickey Markey playground. Accessed 20 July 2010 at: <http://poopypark.com/>. Port of New Orleans. 2009. Port of New Orleans Overview.
- PrimeSource. 2005. PrimeSource Building Products, Inc. Accessed 27 August 2010 at: <http://www.primesourcebp.com/index.asp>.
- Riverside Lumber. 2010. Riverside Lumber Fine Woods. Accessed 27 August 2010 at: <http://www.riversidelumber.com/frameset.htm>.
- Southern Recycling. 2010. Company Profile. Accessed 27 August 2010 at: <http://www.sorec-emr.com/profile.php>.
- Texas Department of Transportation (TxDOT). 2004. Gulf Intracoastal Waterway. Accessed at: http://www.texasgulfcoastonline.com/portals/0/pdfs/tx_gulfcoastwaterway.pdf.
- Times Picayune. 2010. Demolition begins on NORD's Stallings Center. Accessed 20 July 2010 at: http://www.nola.com/politics/index.ssf/2010/03/demolition_begins_on_nords_sta.html.

- Transportation Research Board (TRB). 2000. Highway Capacity Manual 2000, third edition. National Research Council, Washington, D.C.
- U.S. Army Corps of Engineers (USACE). 1974. Final Environmental Impact Statement, Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project, Statement of Findings.
- USACE. 1984. Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project Reevaluation Study. New Orleans District. July.
- USACE. 1989. Engineering and Design: Retaining and Flood Walls. Engineer Manual No. 1110-2-2502. 29 September. Accessed at: <http://140.194.76.129/publications/engine-manuals/em1110-2-2502/basdoc.pdf>.
- USACE. 2000. *Planning Guidance Notebook*. ER 1105-2-100. April 22.
- USACE. 2006. “Louisiana Coastal Protection and Restoration, Preliminary Technical Report to Congress, Enclosure C: Louisiana Economy and 2005 Hurricane Damage.” June 2006. Accessed at: <http://lacpr.usace.army.mil>.
- USACE. 2007a. Hurricane and Storm Damage Reduction System Design Guidelines. New Orleans District Engineering Division. Interim. Updated 12 June 2008. Accessed 13 July 2010 at: <http://www.mvn.usace.army.mil/ENG/PageA/entiredocument.pdf>.
- USACE. 2007b. Summary Report. Gulf Coast Flood Proofing. Un-copyrighted Report prepared by Donald Whitmore, P.E. July 18.
- USACE. 2008a. Final Individual Environmental Report #11 – Tier 2 Borgne – Improved Protection on the Inner Harbor Navigation Canal, Orleans and St. Bernard Parishes, Louisiana. October. Accessed at: http://www.nolaenvironmental.gov/nola_public_data/projects/usace_levee/docs/original/FinalIER11_21Oct08.pdf.
- USACE. 2008b. Hurricane and Storm Damage Reduction System Design Guidelines. Prepared by New Orleans District Engineering Division. June. Accessed 18 May 2010 at: <http://www.mvn.usace.army.mil/ENG/PageA.asp>.
- USACE. 2008c. Final Individual Environmental Report #11 – Tier 1 - Improved Protection on the Inner Harbor Navigation Canal, Orleans and St. Bernard Parishes, Louisiana. March. Accessed at: http://www.nolaenvironmental.gov/nola_public_data/projects/usace_levee/docs/original/Final%20IER%2011%202.pdf.
- USACE. 2009a. Final Individual Environmental Report #4 – LPV, New Orleans Lakefront Levee, West of Inner Harbor Navigation Canal, Orleans Parish, Louisiana. March. Accessed at: http://www.nolaenvironmental.gov/nola_public_data/projects/usace_levee/docs/original/FinalIER4DR.pdf.
- USACE. 2009b. U.S. Army Corps Of Engineers Orleans Parish Pump Station Stormproofing Activities Environmental Assessment. EA# 474 (Amended May 15, 2009). Accessed at: http://www.nolaenvironmental.gov/nola_public_data/projects/usace_levee/docs/original/OrleansEAErrata.pdf

- USACE. 2010a. Final Individual Environmental Report #11 – Tier 2 Pontchartrain – Improved Protection on the Inner Harbor Navigation Canal, Orleans Parish, Louisiana. April. Accessed at: http://www.nolaenvironmental.gov/nola_public_data/projects/usace_levee/docs/original/IER11T2DRApr2010.pdf.
- USACE. 2010b. IHNC Lock Replacement Project Overview. Accessed at: <http://www.mvn.usace.army.mil/pd/projectsList/home.asp?projectID=107&projectP2=108785&directoryFilePath=ProjectData> on 31 August 2010.
- USACE. 2010c. Task Force Hope Status Report Newsletter. Accessed 31 August 2010 at: http://www.mvn.usace.army.mil/hps2/pdf/August_16_2010.pdf
- U.S. Census Bureau (USCB). 2000. Census 2000 Summary File 1 (SF1) and Summary File 3 (SF3). Accessed 23 June 2010 at: <http://factfinder.census.gov>.
- USCB. 2010. Population Estimates, 2009 Estimates of Incorporated Places and Minor Civil Divisions. Accessed 23 June 2010 at: <http://www.census.gov/popest/estimates.html>.
- U.S. Department of Agriculture, Soil Conservation Service. 1989. Soil Survey of Orleans Parish, Louisiana. June.
- U.S. Department of Housing and Urban Development (HUD). 2006. “Current Housing Unit Damage Estimates, Hurricanes Katrina, Rita, and Wilma, February 12, 2006.” Revised 7 April 2006. Accessed at: <http://www.huduser.org/publications/destech/GulfCoastHsngDmgEst.html>.
- U.S. Environmental Protection Agency (USEPA). 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Report 550/9-47-004.
- USEPA. 1998. Final Guidance For Incorporating Environmental Justice Concerns in EPA’s NEPA Compliance Analyses. April 1998.
- USEPA. 2010. 2006 Waterbody Report for Bayou Bienvenue. Accessed 19 July 2010 at: http://oaspub.epa.gov/tmdl/attains_waterbody.control?p_list_id=&p_au_id=LA042004_00&p_cycle=2006&p_state=LA.
- U.S. Fish and Wildlife Service (USFWS). 2001. Florida Manatee Recovery Plan (*Trichechus manatus latirostris*), third revision. FWS Southeast Region. October 30.
- USFWS. 2007a. West Indian Manatee (*Trichechus manatus*) 5-Year Review: Summary and Evaluation. FWS Southeast Region. April.
- USFWS. 2007b. Species Information, Threatened and Endangered Species System (TESS), Species Profiles. Accessed August 2007 at: http://ecos.fws.gov/tess_public/StartTESS.do.
- USFWS. 2007c. “Southeast Louisiana National Wildlife Refuges Habitat Management.” Accessed at: http://www.fws.gov/southeastlouisiana/habitat_mgt.htm.
- USFWS. 2008. Bayou Sauvage National Wildlife Refuge Fishing and Public Use Regulations Accessed at: <http://www.fws.gov/bayousauvage/>.

- USFWS. 2009. Bayou Sauvage National Wildlife Refuge. Accessed 2 July 2010 at: <http://www.fws.gov/bayousauvage/>
- USFWS. 2010. Threatened and Endangered Species of Louisiana. Accessed 8 July 2010 at: http://www.fws.gov/lafayette/section7/LA_TE_Species_List_January_2010.pdf.
- USFWS and NOAA. 2003. “Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Gulf Sturgeon.” Federal Register. Vol. 68, No. 53, pp. 13370-13418. Washington, D.C. March 19, 2003.
- U.S. Geological Survey (USGS). 2002. “Tropical Cyclones of the Louisiana Coast.” Accessed 13 December 2007 at: <http://pubs.usgs.gov/of/2002/of02-206/phy-environment/cyclones1980-99.html>.
- University of South Carolina. 1998. Environmental Noise: The Invisible Pollutant. Institute of Public Affairs, Environmental Excellence in South Carolina (E2SC). Volume 1, No. 1, Fall. Accessed at: <http://www.cavtozzi.com/portfolio/publications/EnvironmentalNoise.pdf>.
- WDSU. 2008. Group Trying To Redevelop Pontchartrain Park. 20 October 2008. Accessed 29 December 2008 at: <http://www.wdsu.com/news/17765521/detail.html>.
- Whitaker, J.O. 1998. The Audubon Society Field Guide to North American Mammals, revised edition. New York: Alfred A. Knopf.
- Wigley, T.B. and R.A. Lancia. 1998. Wildlife Communities. Chapter 9 in Southern Forested Wetlands: Ecology and Management, eds. M.G. Messina and W.H. Conner. Boca Raton, Florida: Lewis Publishers.
- Wilson, A., Maygarden B., and M. Damour. 2006. Cultural Resource Investigation for Floodgate Protection and Levee Construction, Inner Harbor Navigation Canal and Mississippi River Gulf Outlet, Orleans and St. Bernard Parishes. Earth Search, Inc. Submitted to U.S. Army Corps of Engineers, New Orleans District (Draft Report).

APPENDIX A

List of Acronyms and Abbreviations

LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
AAHU	average annual habitat unit
AD	Anno Domini
APE	Area of Potential Effect
ASTM	American Society for Testing and Materials
BC	Before Christ
BLH	bottomland hardwood
BMP	best management practices
CAA	Clean Air Act
CEMVN	Corps of Engineers, Mississippi Valley Division, New Orleans District
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFBM	Contractor Furnished Borrow Material
CFR	Code of Federal Regulations
CMP	Corrugated Metal Piping
CNO	City of New Orleans
CO	carbon monoxide
CPT	cone penetrometer test
CWA	Clean Water Act
cy	cubic yard
dB	Decibel
dba	A-weighted decibel
DNL	day-night average sound level
DoD	Department of Defense
DSM	Deep Soil Mixing
EA	Environmental Assessment
EAR	Engineering Alternatives Report
EIS	Environmental Impact Statement
ER	Engineering Regulation
EJ	Environmental Justice
ESA	Environmental Site Assessment
ESRI	Environmental Systems Research Institute, Inc.
°F	degree Fahrenheit
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
ft	feet
FWCA	Fish and Wildlife Coordination Act
GFBM	Government Furnished Borrow Material
GIS	Geographic Information System
GIWW	Gulf Intracoastal Waterway
GNOCDC	Greater New Orleans Community Data Center
HSDRRS	Hurricane and Storm Damage Risk Reduction System

LIST OF ACRONYMS AND ABBREVIATIONS

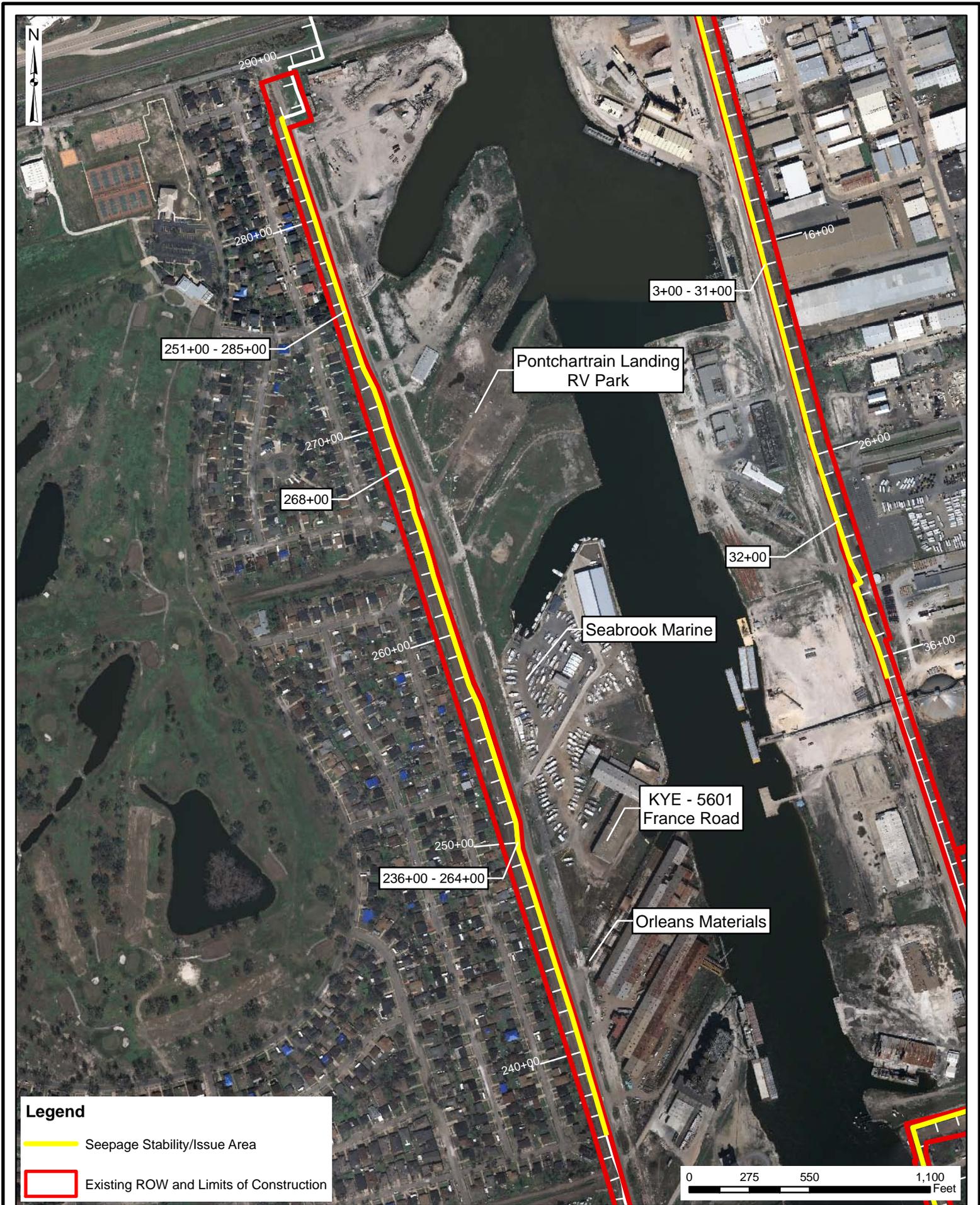
HTRW	hazardous, toxic, and radioactive waste
HUD	U.S. Department of Housing and Urban Development
I-10	Interstate 10
IBA	Important Birding Area
IHNC	Inner Harbor Navigation Canal
IER	Individual Environmental Report
IERS	Individual Environmental Report Supplemental
LaDOTD	Louisiana Department of Transportation and Development
LaCRP	Louisiana Coastal Resource Program
LaDEQ	Louisiana Department of Environmental Quality
LaDNR	Louisiana Department of Natural Resources
LaDWF	Louisiana Department of Wildlife and Fisheries
LF	linear feet
LOS	level-of-service
LPV	Lake Pontchartrain and Vicinity
mi	mile(s)
mi ²	square miles
mph	miles per hour
MRGO	Mississippi River-Gulf Outlet
MRT	Mississippi River Trail
MS	Mississippi
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NAVD88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NGVD29	National Geodetic Vertical Datum of 1929
NMFS	National Marine Fisheries Service
No.	number
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOLANRP	New Orleans Neighborhood Rebuilding Plan
NORA	New Orleans Redevelopment Authority
NRHD	New Orleans Register Historic District
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
NWUS	Navigable Waters of the United States
O ₃	ozone
Pb	lead
PDT	Project Delivery Team
PL	Public Law
PM	particulate matter
PPL	Priority Project List
ppm	parts per million

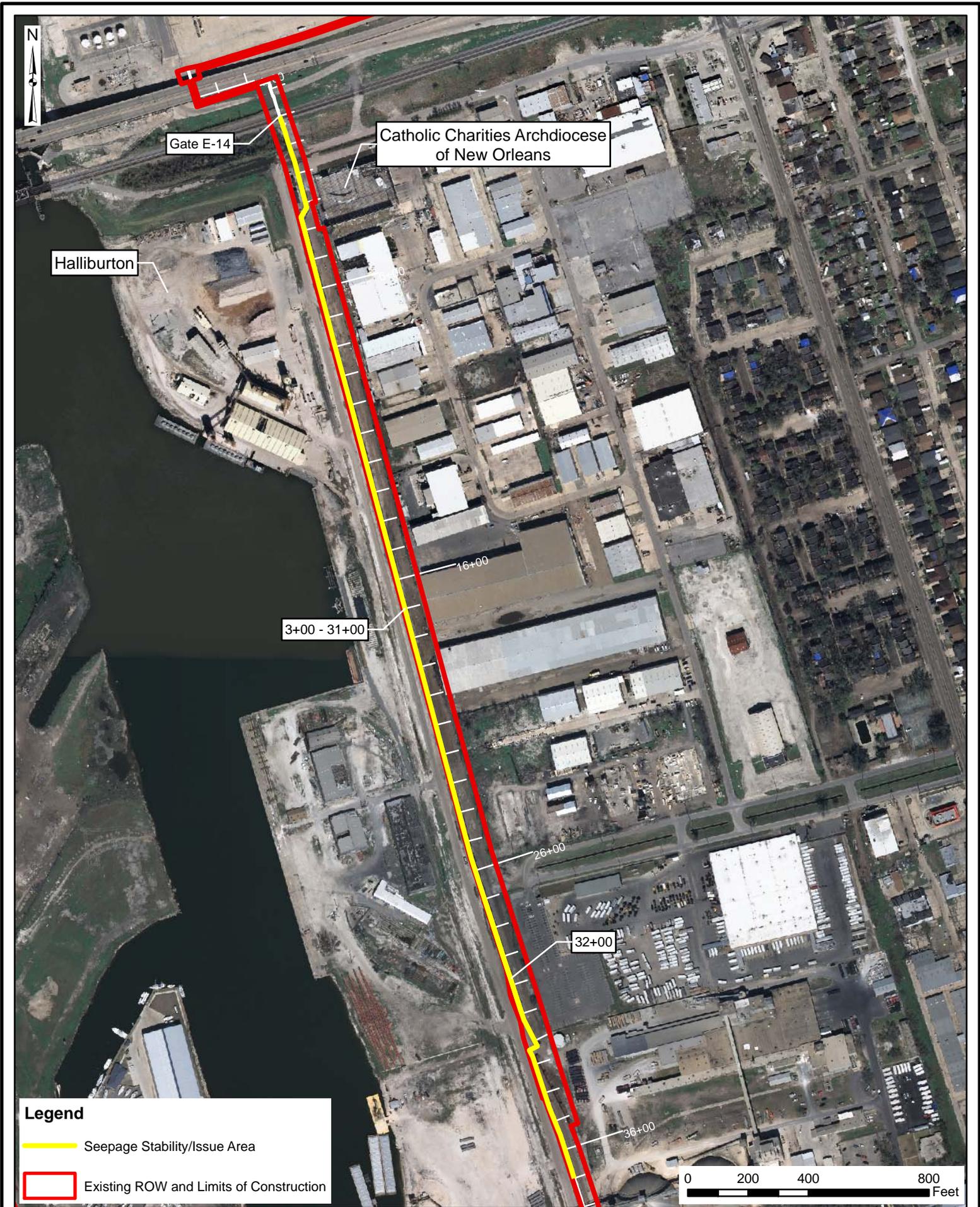
LIST OF ACRONYMS AND ABBREVIATIONS

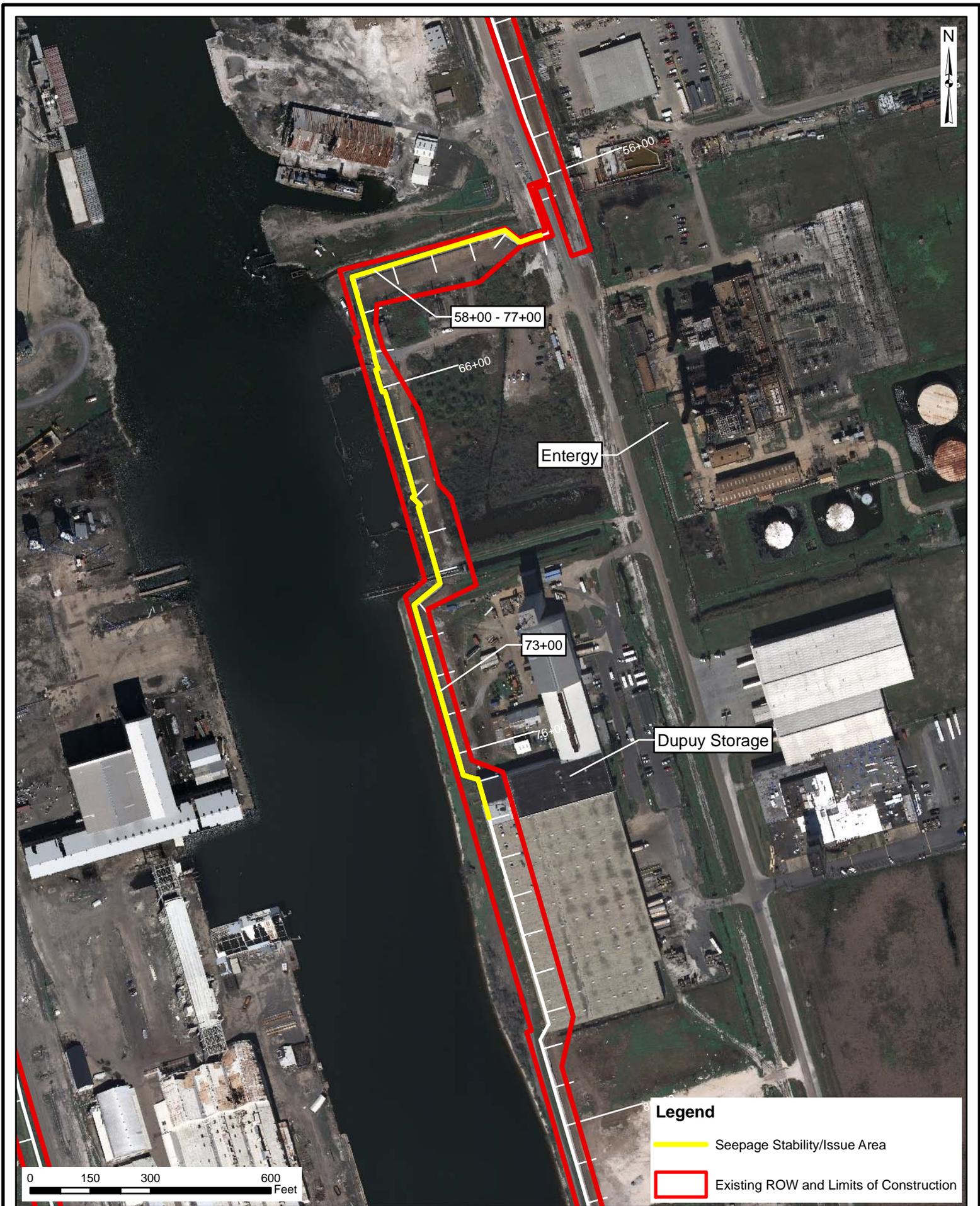
PPNA	Pontchartrain Park Neighborhood Association
RCGA	R. Christopher Goodwin and Associates, Inc.
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
ROD	Record of Decision
ROW	right-of-way
RV	recreational vehicle
S&WB	Sewerage and Water Board of New Orleans
SAV	submerged aquatic vegetation
SELA	Southeast Louisiana
SHPO	State Historic Preservation Office
SO ₂	sulfur dioxide
sq ft	square feet
TRB	Transportation Research Board
TxDOT	Texas Department of Transportation
µg/m ³	micrograms per cubic meter
UPS	United Parcel Service
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USCB	United States Census Bureau
USCG	U.S. Coast Guard
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground storage tank
WBV	West Bank and Vicinity
WoUS	Waters of the United States
WQC	water quality certificate
WRDA	Water Resources Development Act

APPENDIX B

Detailed Figures of Subject Reach 1, 2, and 3 Segments





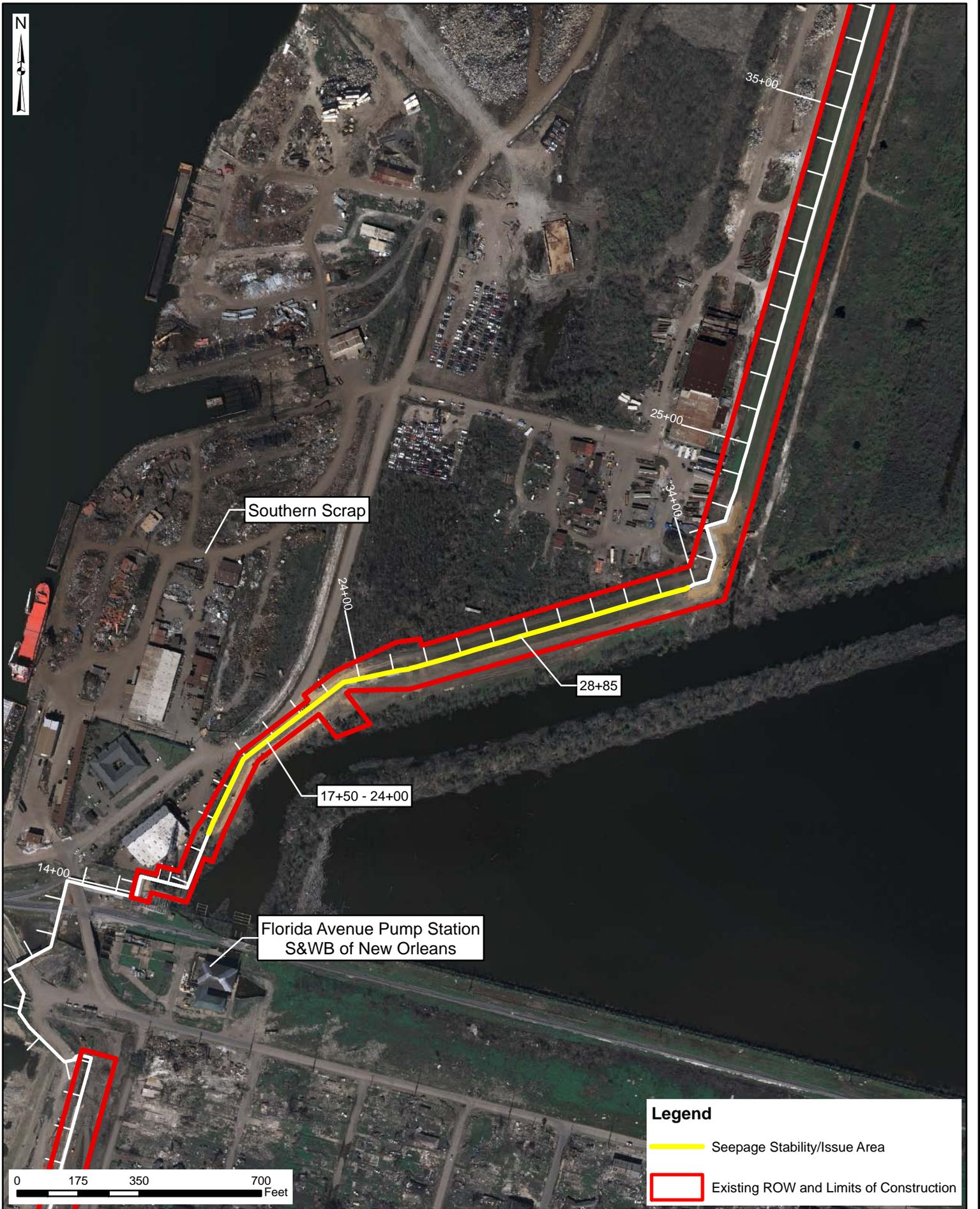




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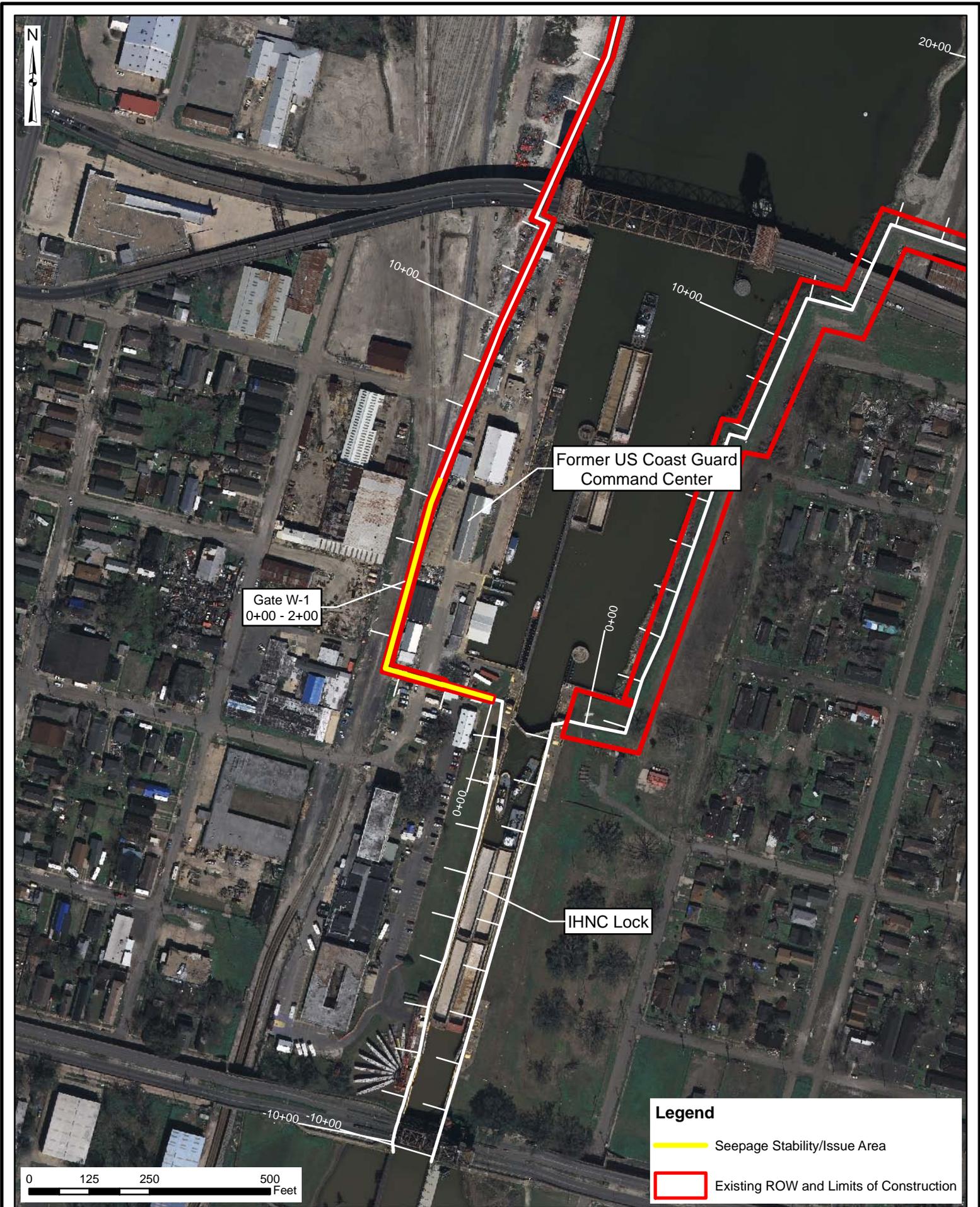
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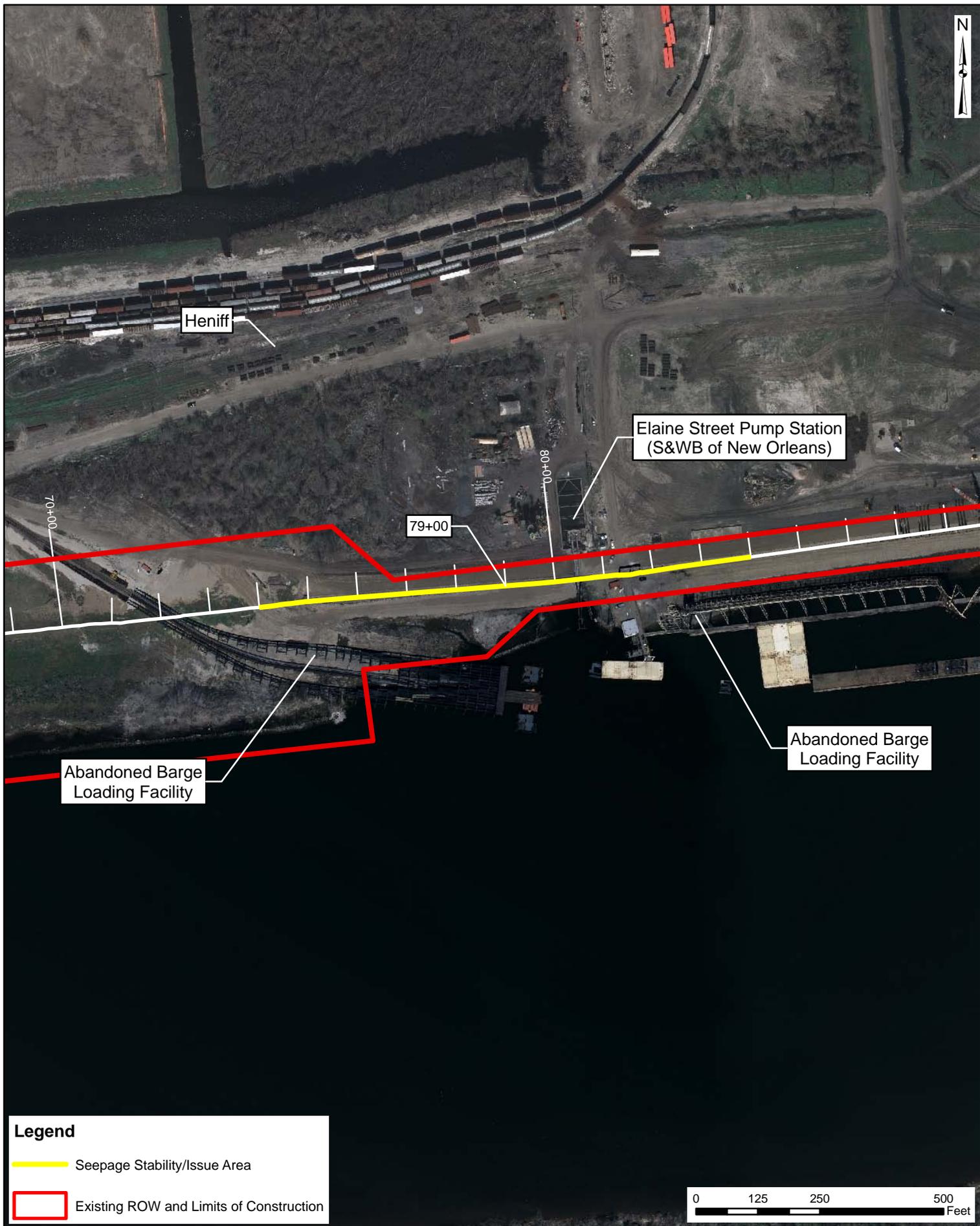
Existing ROW and Limits of Construction



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-  Seepage Stability/Issue Area
-  Existing ROW and Limits of Construction





Heniff

Elaine Street Pump Station
(S&WB of New Orleans)

79+00

80+00

70+00

Abandoned Barge
Loading Facility

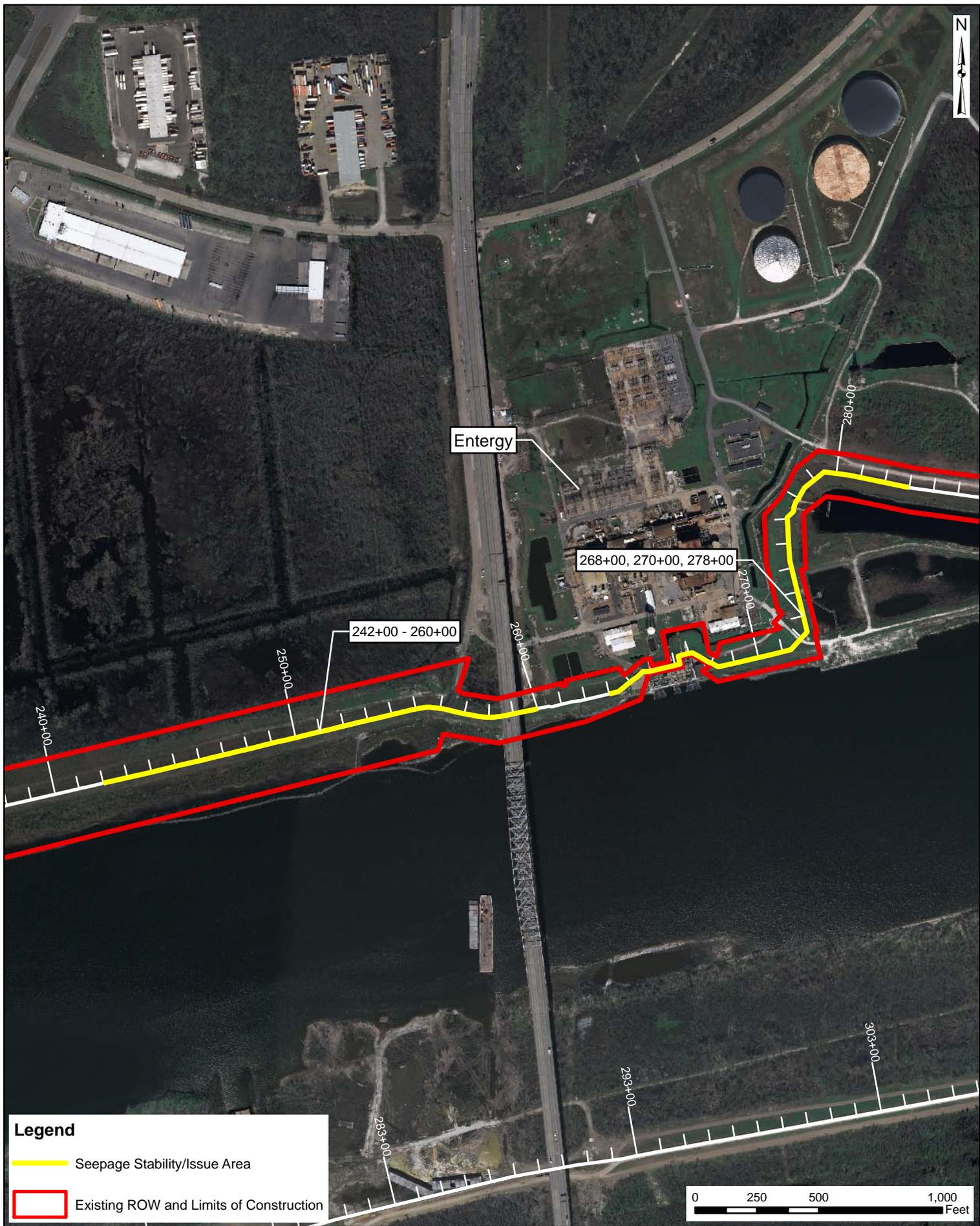
Abandoned Barge
Loading Facility

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 Seepage Stability/Issue Area

 Existing ROW and Limits of Construction

0 125 250 500
Feet



Entergy

268+00, 270+00, 278+00

242+00 - 260+00

250+00

240+00

260+00

270+00

280+00

283+00

293+00

303+00

Legend

-  Seepage Stability/Issue Area
-  Existing ROW and Limits of Construction





406+00

410+00

400+00

391+00

Legend

 Seepage Stability/Issue Area

 Existing ROW and Limits of Construction





NASA Michoud
Assembly Facility

454+00

450+00

430+00 - 452+00

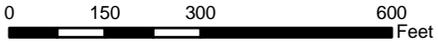
440+00

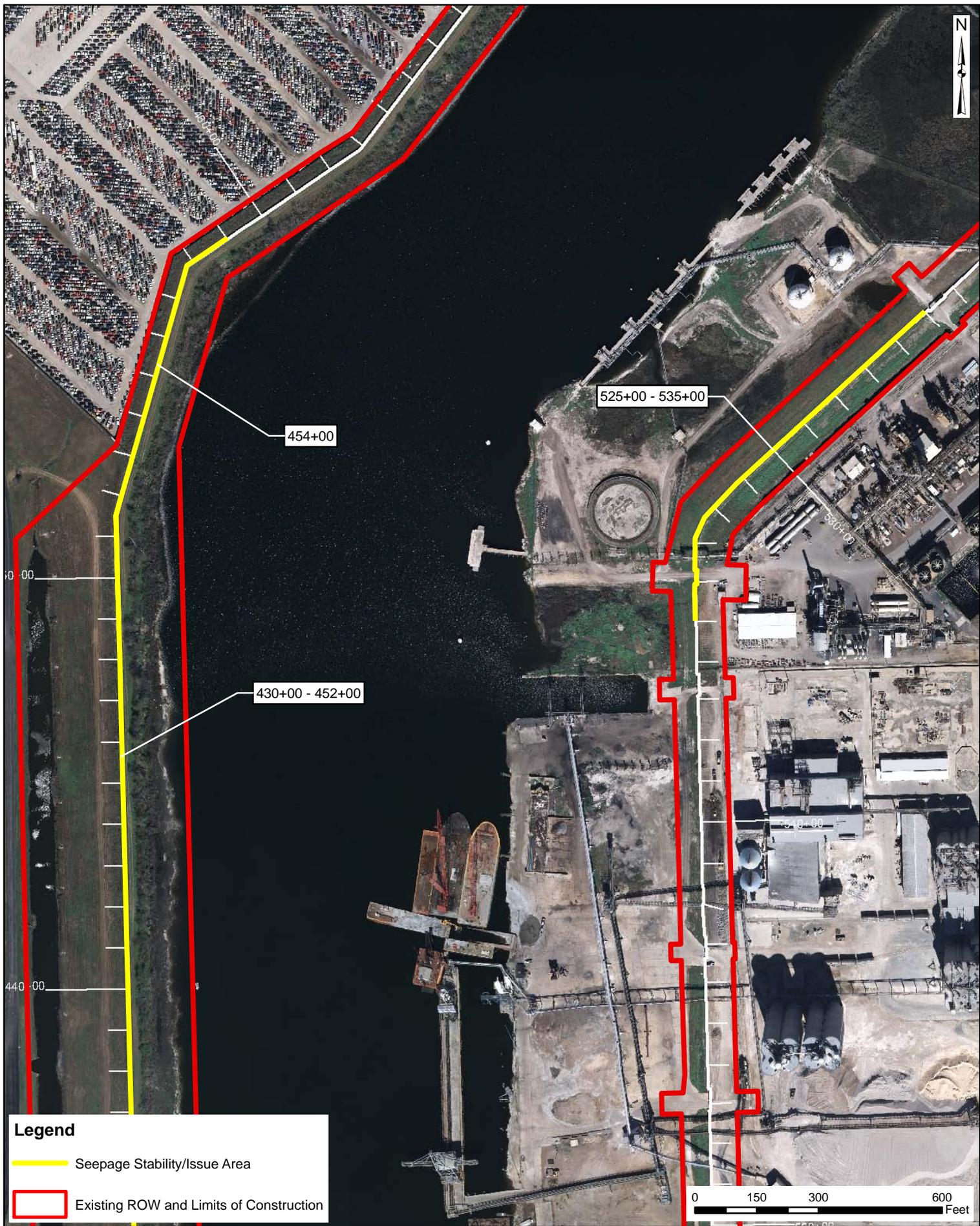
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 Seepage Stability/Issue Area

 Existing ROW and Limits of Construction





APPENDIX C

Detailed Figures of Temporary Staging Areas



Legend

-  Seepage/Stability Issue Area
-  Existing ROW and limits of construction
-  Staging Areas



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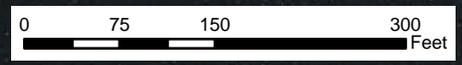
- Seepage/Stability Issue Area
- Existing ROW and limits of construction
- Staging Areas





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-  Seepage/Stability Issue Area
-  Existing ROW and limits of construction
-  Staging Areas





Legend

-  Seepage/Stability Issue Area
-  Existing ROW and limits of construction
-  Staging Areas



IHNC



200+00

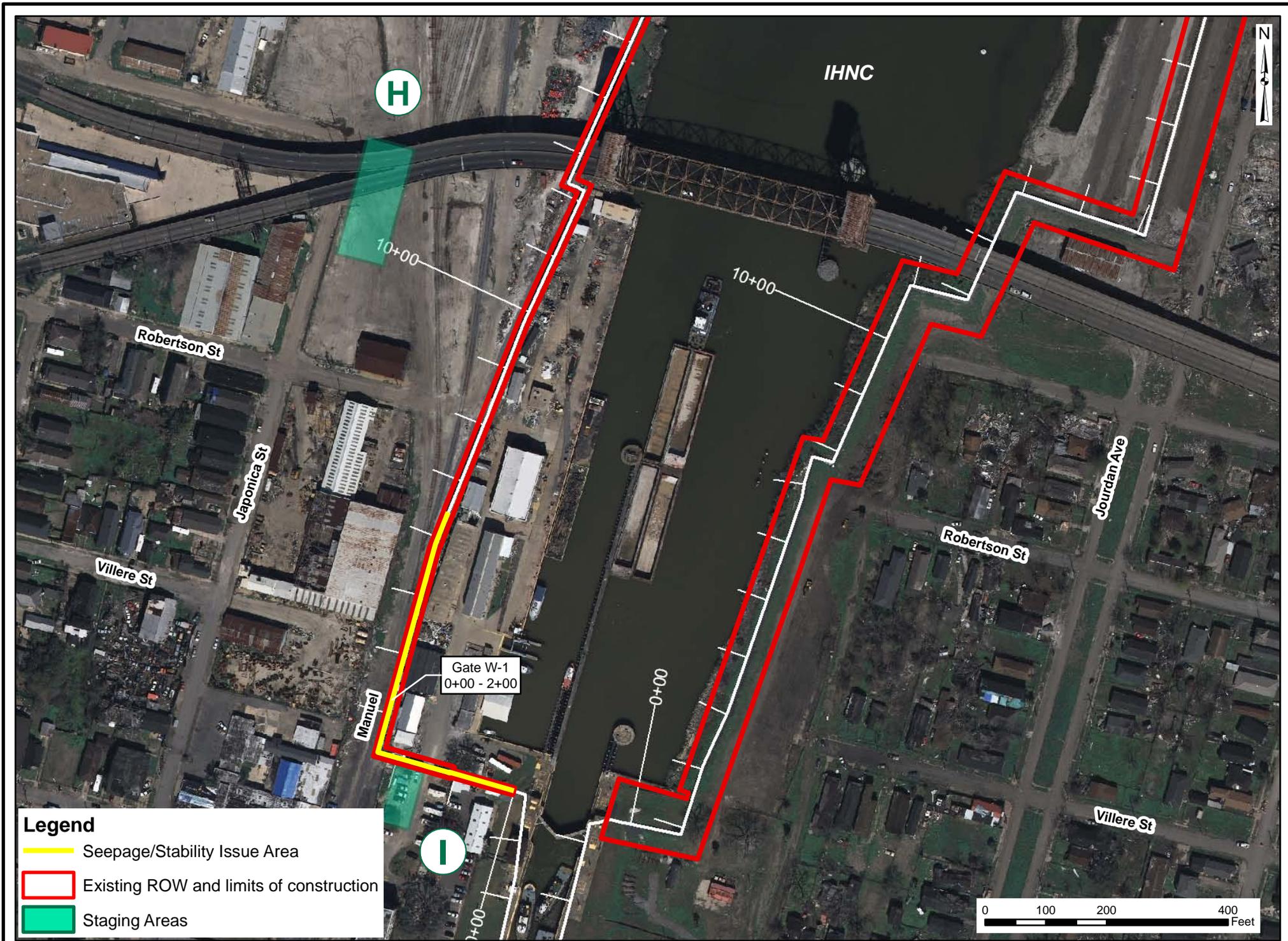
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200+00

Legend

-  Seepage/Stability Issue Area
-  Existing ROW and limits of construction
-  Staging Areas





Legend

- Seepage/Stability Issue Area
- Existing ROW and limits of construction
- Staging Areas

APPENDIX D

30-day Public Comments

CAWIC

November 13, 2010

Col Edward Fleming
C/o Ms. Laura Lee Wilkinson
U.S. Army Corps of Engineers
P O Box 60267
New Orleans, LA 70160-0267
Laura.L.Wilkinson@usace.army.mil

Re: IER 11 Tier 2 Borgne Comments

Dear Ms. Wilkinson,

Here is our comment, as follows---

1. Despite the diligence of the EJ effort by the Corps we do not believe the Corps has met the standard of EJ Executive Order 12898 by involving our community, and particularly the Lower Ninth Ward, in the *development* of this levee plan. The plan has come to us very late in the planning process and through a narrow window of comment opportunity. We ourselves have been hard-pressed to comment under these circumstances. The lack of comment from this neighborhood should not be read as acceptance of this Corps project but is more likely lack of suitable opportunity.
2. The plan substitutes modeling of storm surges for the improved levee we see necessary for our protection across the top of: "Reach One". We do not think the model is inclusive enough of future extreme weather conditions and should be objectively analyzed in context of the whole by the National Science Foundation at the Corps request. This is a matter of prudence and request from a community flooded several times already under confident Corps protection. How about it?
3. We think cumulative decisions made by the Corps in this immediate area. are in violation of NEPA. These decisions too denied early involvement of community, and allowed adverse environmental impacts arbitrarily to benefit the shipping industry. The Corps approved the Lock Replacement Project over substantive community objections including NEPA. Now IER 11 accommodates these improper and unjust decisions, now to refuse improved levee protection along the MrGO five mile levee above Lower Ninth because this is reserved for the lock project activity. This cumulative effect exacerbates injustice. We ask that the Corps recognize this and make changes to correct this situation.
Thank you.

Sincerely,

John Koefel
President

**CITIZENS AGAINST WIDENING THE INDUSTRIAL CANAL
4442 ARTS ST NOLA 70122 594 615 7266**



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

November 29, 2010

REPLY TO
ATTENTION OF

Regional Planning and
Environmental Division, South
New Orleans Environmental Branch

John Koefel
President
Citizens Against Widening the Industrial Canal
4442 Arts Street
New Orleans, LA 70122

Re: Draft Individual Environmental Report Supplemental (IERS) #11.b Tier 2 Borgne
Comment Letter

Dear Mr. Koefel:

Thank you for your correspondence of November 13, 2010 providing comments on behalf of Citizens Against Widening the Industrial Canal to our draft IERS #11.b-Tier 2 Borgne. The U.S. Army Corps of Engineers, New Orleans District (CEMVN), would like to thank you for your participation in the public review process.

The Commander considered the information provided in the IER document as well as those comments received from the public and from interested agencies. Colonel Fleming made his decision based upon what is in the best interest of the people of southeastern Louisiana. The human environmental impacts were considered along with engineering criteria. Public safety is the primary consideration for the Hurricane Storm Damage Risk Reduction System.

CEMVN appreciates your taking the time to submit comments and would like to address the concerns you brought up in your November 13th letter:

1. Environmental Justice: It is first important to understand that the "levee plan" which you refer to is not the primary risk reduction system for the Lower Ninth Ward. The *primary* risk reduction system is the perimeter protection which includes the Borgne Barrier and Seabrook Gate, the development of which extensively involved your community as well as other low-income and minority communities, meeting the standard of EJ Executive Order 12898. This primary protection system provides equal risk reduction across the entire New Orleans Metropolitan area it encompasses. In planning public meetings for the work proposed on the secondary risk reduction features, which you refer to as the "levee plan", the CEMVN chose meeting locations closest to the majority of the deficient segments of levee and floodwall to be remediated under the proposed action, namely Gentilly and New Orleans East. Notice of these meetings was provided to the public

through newspaper advertisements in the Times-Picayune and USA Today, as well as through postcards sent to previous attendees of public meetings, including meetings previously held in the Lower Ninth Ward. At the request of a Lower Ninth Ward resident, a third meeting was held in your neighborhood to explain the primary and secondary risk reduction systems, as well as solicit comments from your neighborhood. The CEMVN does not believe that the proposed action poses disproportionately high and adverse human health or environmental effects on the Lower Ninth Ward, as the proposed action will ensure that this and all other neighborhoods have equal hurricane and storm damage risk reduction.

2. Modeling: The modeling conducted to derive the elevations and designs necessary to meet the 100-year surge elevation also considered the resiliency of the system under conditions greater than the 100-year storm. The model considers the entire system as a whole, using a systems approach, and has been independently technically reviewed. An extensive USACE/FEMA internal review and American Society of Civil Engineers external review of the hydraulic design approach was conducted to determine system design elevations sufficient to provide protection from a hurricane event that would produce a 1% exceedence surge elevation and associated waves. Additionally, Battelle conducted an additional independent external peer review of the hydraulic modeling design report and the new 1% design guidelines developed using the lessons learned from Hurricane Katrina.
3. The proposed action as identified in IERS 11.b Tier 2 Borgne covers required remediation of levees and flood walls that presently do not meet new Corps design guidelines. The proposed action neither benefits nor involves the shipping industry. The proposed project is a hurricane and storm damage risk reduction system project, not a navigation project. The cumulative impacts of this project in conjunction with the IHNC Lock project were analyzed and described in IERS #11.b. However, the Lock project does not impact whether or not the proposed action in IERS #11.b is constructed, and vice-versa. The levee above the Lower Ninth Ward is not being refused improved protection due to the lock project. No work is proposed on this reach because 1) this levee meets the new and improved post-Katrina design guidelines for safety and stability and 2) this levee serves as secondary risk reduction behind the Borgne Barrier. Once the entire system is in place the Lower Ninth will have the same level of protection as the rest of the metropolitan area enclosed by the system. The plan for providing the 100 year level of Risk Reduction for the Lower Ninth is composed of the Lake Borgne Barrier and the Seabrook Complex along with the St. Bernard system currently under construction. The Lake Borgne Barrier is nearly complete and the Seabrook Complex and St. Bernard will provide the 100 year level of risk reduction by June 2011.

Again, we would like to thank you for your comments and for taking the time to participate in the IERS #11.b Tier 2 Borgne public review process. Should you have additional questions please contact Ms. Laura Lee Wilkinson at (504) 862-1212 or at laura.l.wilkinson@usace.army.mil.

Sincerely,

A handwritten signature in cursive script that reads "Joan M. Exnicios".

Joan M. Exnicios

Chief, New Orleans Environmental Branch

APPENDIX E

Interagency Correspondence



REPLY TO
ATTENTION OF

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

MAY 03 2010

Regional Planning and
Environmental Division, South
New Orleans Environmental Branch

Mr. Gregory Ducote
Interagency Affairs - LADNR
CMD
P.O. Box 44487, Capital Station
Baton Rouge, LA 70804-4487

Dear Mr. Ducote:
Attn: Brian Marcks

Enclosed is the U.S. Army Corps of Engineers, New Orleans District's Consistency Determination for the proposed project to restore and remediate levees and floodwalls along the Inner Harbor Navigation Canal and Gulf Intracoastal Waterway.

The New Orleans District has determined that the proposed project is consistent, to the maximum extent practicable, with the guidelines of the State of Louisiana's approved Coastal Resources Program.

If you have any questions, please contact Lee Walker, Environmental Management Contractor, at 504-862-1444.

Sincerely,

A handwritten signature in black ink that reads "Joan M. Exnicios".

Joan Exnicios
Chief, New Orleans
Environmental Branch

Enclosure

LOUISIANA COASTAL USE GUIDELINES CONSISTENCY DETERMINATION

REPAIR AND RESTORATION OF LEVEES AND FLOODWALLS IN INNER HARBOR NAVIGATION CANAL/ GULF INTRACOASTAL WATERWAY CORRIDOR ORLEANS PARISH, LOUISIANA

INTRODUCTION

Section 307 of the Coastal Zone Management Act of 1972, 16 U.S.C. 1451 et. seq. requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." In accordance with Section 307, a Consistency Determination has been prepared for the proposed action covered under a forthcoming NEPA document. Coastal Use Guidelines were written in order to implement the policies and goals of the Louisiana Coastal Resources Program, and serve as a set of performance standards for evaluating projects. Compliance with the Louisiana Coastal Resources Program, and therefore, Section 307, requires compliance, to the maximum extent practicable, with applicable Coastal Use Guidelines.

PURPOSE AND NEED FOR THE PROPOSED ACTION

This project includes repair and restoration of the levees and floodwalls along the Inner Harbor Navigation Canal and Gulf-Intracoastal Waterway (GIWW). Portions of the existing levees/floodwalls within this corridor have been identified as not meeting the Hurricane and Storm Damage Risk Reduction System (HSDRRS) seepage and stability criteria. Approximately 33 miles of levees and floodwalls have been examined for stability, seepage, and non-residual problematic areas. Of the 33 miles, approximately 5 miles have been recommended for repair to enhance flood protection. Because these reaches will no longer be the primary line of defense given the construction of the Borgne Barrier and Seabrook Gate, these reaches are not being raised to the 100-year level of risk reduction.

DESCRIPTION OF THE PROPOSED ACTION

This project includes restoration and remediation of portions of levees and floodwalls that do not meet the necessary factors of safety for stability, as dictated by current design guidelines. These design guidelines for these factors of safety assume conditions are such that the water levels within the Inner Harbor Navigation Canal is at least 12 feet [NAVD88 (2004.65)] or water levels are at the top of the levee or floodwall. The HSDRRS within this corridor is composed of various features, including earthen levees, I-Walls, L-Walls, T-Walls and closure gate structures, which all provide protection to the three sub-basins from the IHNC Lock to the Seabrook Bridge at Lake Pontchartrain and along the Gulf-Intracoastal Waterway (GIWW) from the IHNC to the IHNC Barrier which is near the Michoud Canal in eastern New Orleans. The project area is divided into three primary reaches, described below and shown in figure 1.

Reach I extends from Stations 0+00 to 380+00 and extends along the east side of the IHNC from the IHNC Lock to the GIWW and also includes the south side of the GIWW from the IHNC to Bayou Bienvenue. Reach 1 has approximately 1600 feet of deficient areas.

Reach II comprises the east side of the IHNC from Lake Pontchartrain to the GIWW and extends along the north side of the GIWW from the IHNC to the Borgne Barrier. Reach 2 has approximately 1.5 miles of deficient areas.

Reach III lies along the west side of the IHNC and extends from the IHNC Lock at the Mississippi River to the Seabrook Bridge at Lake Pontchartrain. Reach 3 has approximately 3600 feet of deficient areas.

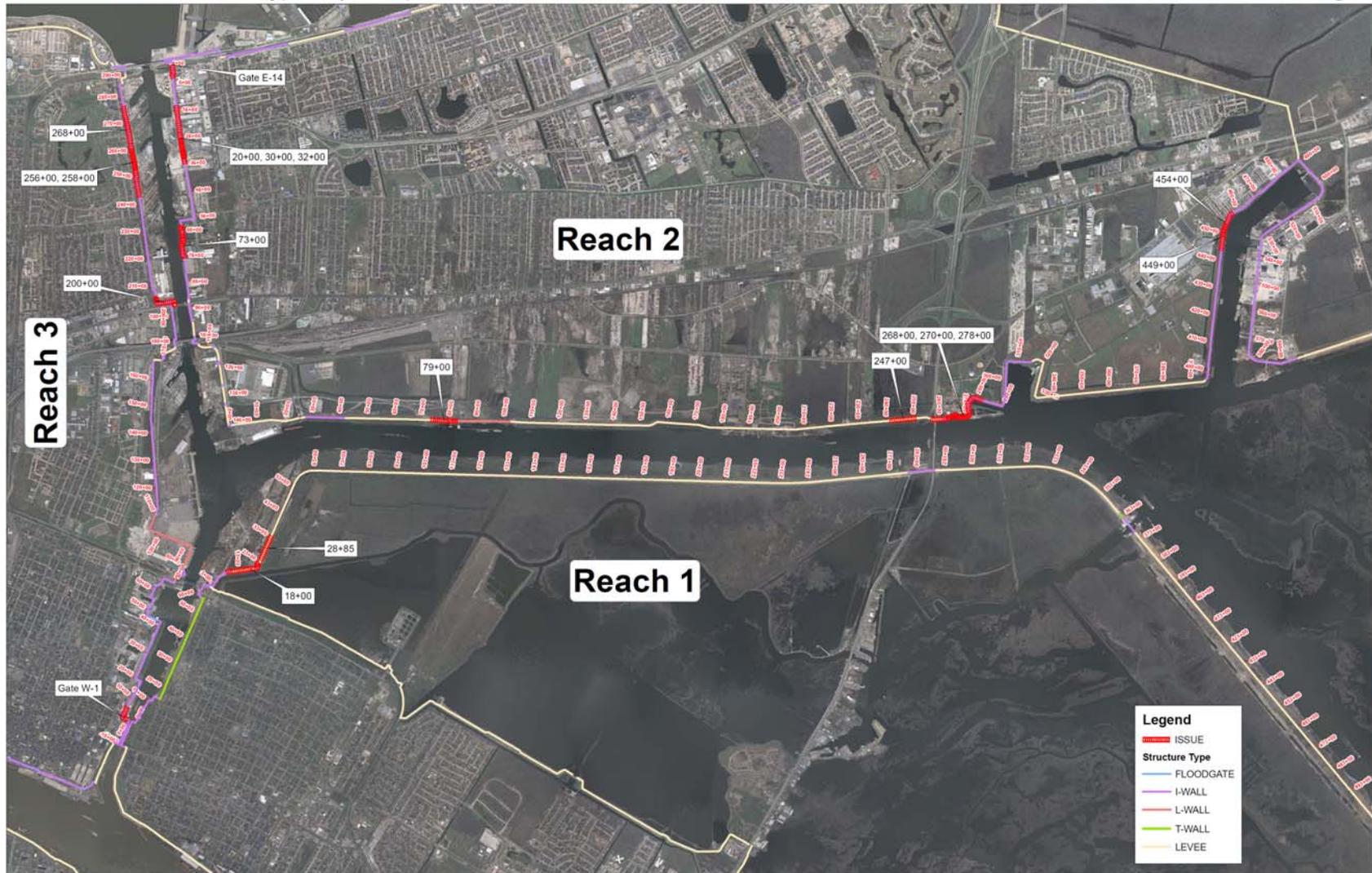


Figure 1: Approximately 5 miles of levee and floodwall in need of restoration and repair. Approximate work areas are highlighted in red.

Several alternative methods, all of which would be built within existing rights-of-way, could be used to address deficiencies within the subject reaches. These methods include the following:

Deep Soil Mixing (DSM): The deep mixing method is a stabilization method that uses cement, lime, slag, other pozzolonic materials, and combinations of these stabilizers to increase the strength and stiffness of soft or loose ground. DSM introduces panels of engineered grout or reagent into the underlying soils to modify their physical and chemical characteristics without excavation (see figure 2).

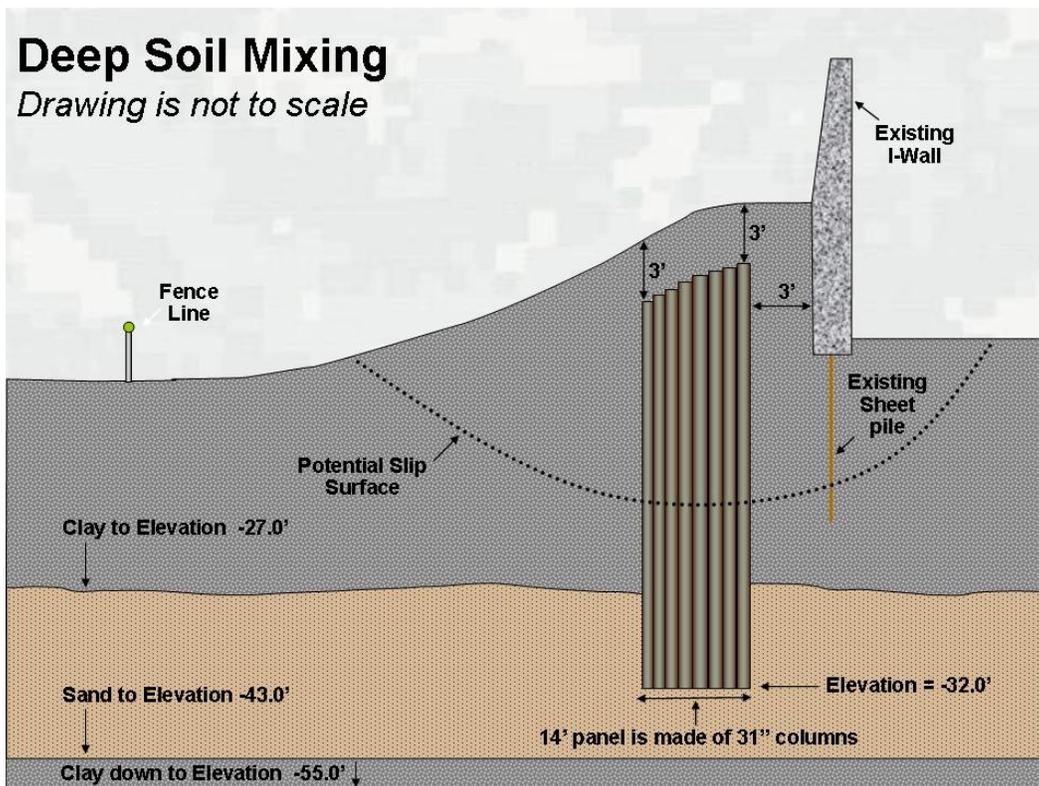


Figure 2: Conceptual figure of deep soil mixing

Berm: Approximately 16,000 cubic yards of government approved borrow would be placed on the protected side of the existing protection system to increase stability.

Buttress Wall: A buttress is an addition to an existing I-wall, installed in panels and connected by a concrete slab, projecting from the wall which serves to support or reinforce the wall. To reduce stresses in the stem, it contains buttresses at intervals along the wall to tie the stem and base slab together (see figure 3).

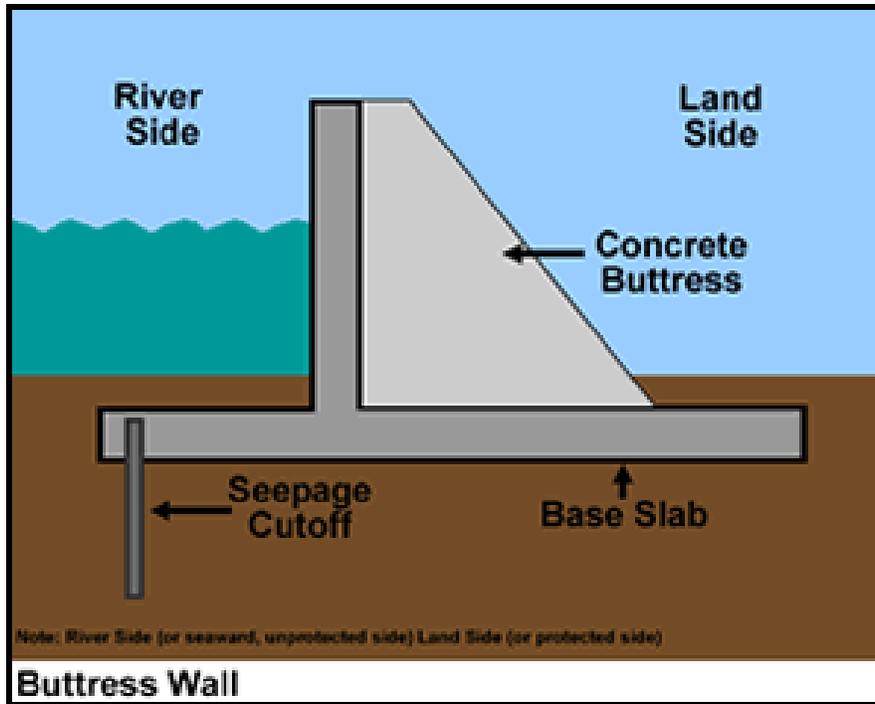


Figure 3: Conceptual figure of buttress wall

Concrete Slab: A structural concrete slab would be poured perpendicular to the adjacent floodwall on the protected side to act against lateral forces.

Relief Wells: Relief wells are vertically installed wells consisting of a well screen surrounded by a filter material designed to prevent inwash of foundation materials into the well. Relief wells intercept underseepage and provide a controlled outlet for the water, draining excess water from the subsurface sand layer (see figure 4).

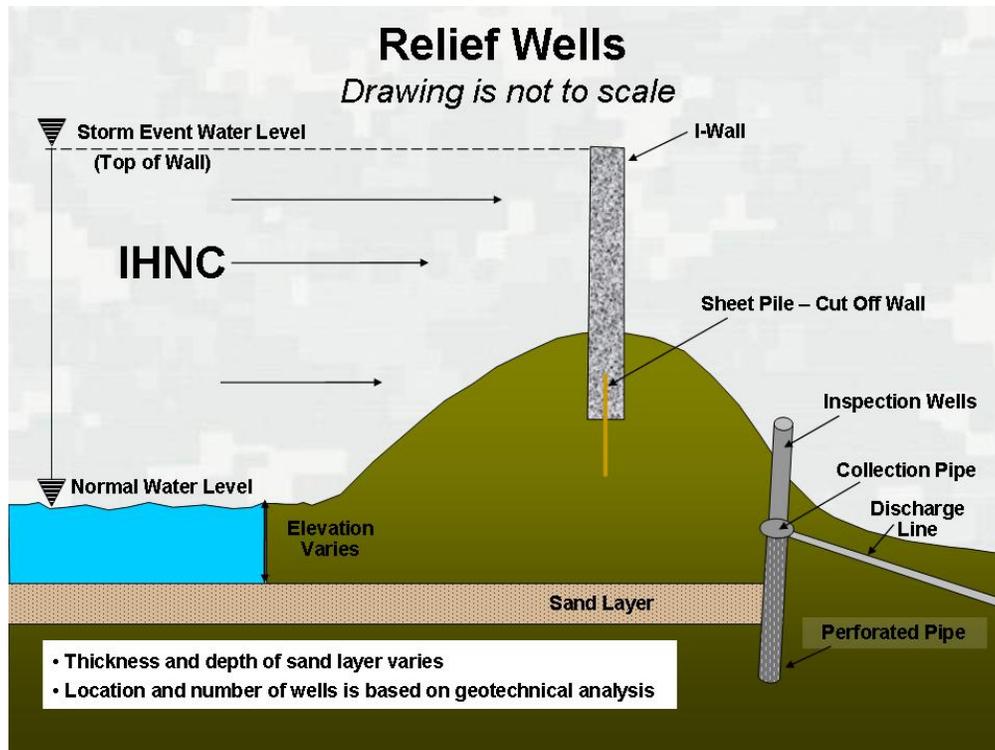


Figure 4: Conceptual figure of relief well

Preliminary analysis has developed a recommended plan for addressing deficiencies. Further analysis may indicate that a different alternative among those listed above may be more appropriate for a given reach. The following tables provide these recommendations.

Reach I Recommended Repairs

Station	Type	Estimated Length(ft)	Recommended Repair
28+85	Levee	500	Deep Soil Mixing
18+00	I-Wall	300	Concrete Slab

Reach II Recommended Repairs

Station	Type	Estimated Length (ft)	Recommended Repair
E-14	Gate		Concrete Slab/Berm
20+00	I-Wall		
30+00	I-Wall		
32+00	Gate	2000	Buttress Wall
73+00	I-Wall	200	Berm
79+00	L-Wall	3000	Berm
268+00	T-Wall		
270+00	I-Wall		
278+00	I-Wall	1300	Buttress Wall
449+00	I-Wall	400	Relief Wells
454+00	I-Wall	400	Concrete Slab

Reach III Recommended Repairs

Station	Type	Estimated Length(ft)	Recommended Repair
268+00	I-Wall	600	Deep Soil Mixing
258+00	I-Wall		
256+00	I-Wall	1000	Relief Wells
200+00	I-Wall	600	Concrete Slab
W-1 1+44	Gate	100	Concrete Slab

Equipment that would be required to conduct the work includes generators, cranes, dump trucks, flatbed trucks, bull dozers, excavators, rollers, graders, tractors, front end loaders, portable air compressors, welding machines, cement pumping trucks, drills, augers, portable lighting, and water trucks.

All construction that is to take place will occur within the existing levee/floodwall right of way. Construction is anticipated to begin between the months of July and October 2010, with duration of approximately 300 days. All access will be along existing roads, to include (figure 5):

Reach 1: Primary access will be from Florida Ave, St.Claude Ave, and Jordan Ave, N. Claiborne Ave, Paris Rd. and to traverse the levee as needed.

Reach 2: Primary access will be from Jordan Road, Almonaster Blvd, N. Claiborne Ave, Japonica St, Hwy 90, and Paris Rd, with secondary access through Terminal Road, Elaine St. and Boh Bros Almonaster yard, Industrial Pkwy, and to traverse the levee as needed.

Reach 3: Primary access will be from Haynes Blvd, Frances Rd, Japonica St, Hwy 90, N. Claiborne Ave., Poland Ave, and St. Claude Ave, and to traverse the levee as needed.

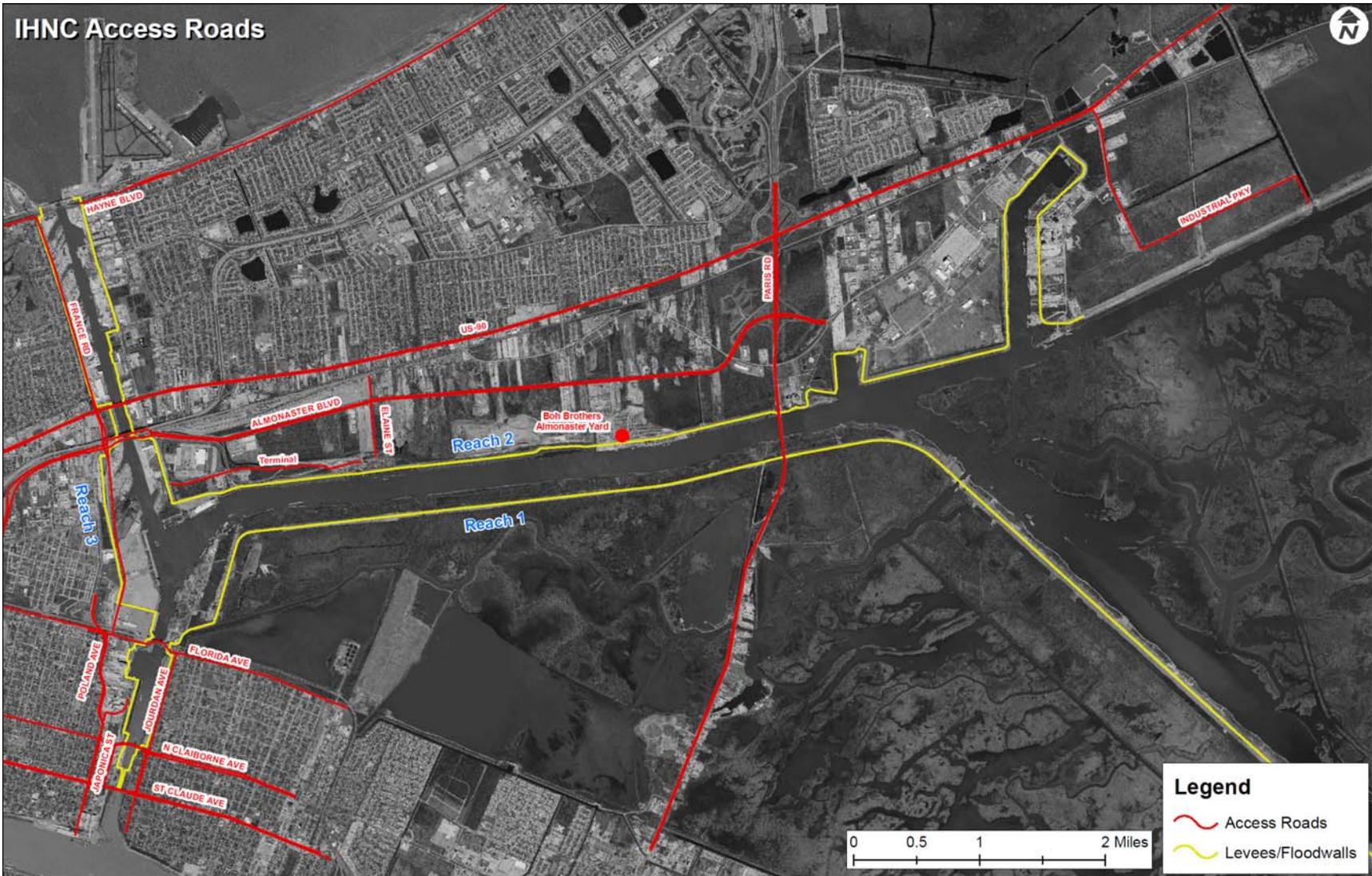


Figure 5: Project access would largely involve roads and properties highlighted in red

GUIDELINES APPLICABLE TO ALL USES

Response 1.1 - 1.5: These guidelines are acknowledged and have been addressed through the preparation of responses to the guidelines contained within the specific use categories.

Guideline 1.6: Information regarding the following general factors shall be utilized by the permitting authority in evaluating whether the proposed use is in compliance with the guidelines.

- a) type, nature, and location of use.

Response 1.6 (a): See Project Description.

- b) Elevation, soil, and water conditions and flood and storm hazard characteristics of site.

Response 1.6 (b): The project area is located within the Central Gulf Coastal Plain, or more specifically, on the eastern flank of the Mississippi River Deltaic Plain. Relief in the area is very slight with a minimum of four feet between the remnant alluvial ridge marking the location of an ancient distributary of the Mississippi River and the adjacent lowlands. Maximum elevations of 2 feet are found toward the southern end of the project area along the remnant alluvial ridge located between U.S. Highway 90 and Interstate 10. Minimum elevations of -4 feet are found in drained marsh areas near the north or Lake Pontchartrain end of the project. The foundation soils consist of artificial fill materials underlain by Holocene and Pleistocene age deposits. The material types consist predominantly of silty sands with some sands, fat and lean clays, silts and organics.

Due to its proximity to the Gulf of Mexico, the study area is susceptible to tropical waves, tropical depressions, tropical storms, and hurricanes. These weather events can produce significant amounts of precipitation over a very short period of time and are often accompanied by strong winds, tornadoes, and storm surge along the coastal areas. The levees and floodwalls within the project area provide a level of risk reduction that is currently below the 100 year level of risk reduction. Once the construction of the Borgne Barrier (as described in Individual Environmental Report #11 Tier 2 Borgne) and the Seabrook Gate (as described in Individual Environmental Report #11 Tier 2 Pontchartrain) are constructed and operational, the subject reaches will become a redundant risk reduction feature that will be required to withstand water levels caused by overtopping of the primary risk reduction system.

- c) Techniques and materials used in construction, operation, and maintenance of use.

Response 1.6 (c): See Project Description.

- d) Existing drainage patterns and water regimes of surrounding area including flow, circulation, quality, quantity, and salinity; and impacts on them.

Response 1.6 (d): No permanent disruption of natural hydrologic and sediment transport patterns, sheet flow, or water quality would occur from the proposed project. The IHNC is hydrologically connected to the GIWW, the MRGO, Mississippi River, and Lake Pontchartrain. The IHNC is approximately 30 ft deep, with a minimum 150 ft bottom width and 300 ft top width. The GIWW west of the Michoud Canal within the project area is authorized as 36 ft deep, 500 ft bottom width waterway. East of the Michoud Canal within the project area, the GIWW is authorized as a 150 ft width waterway. The IHNC from the GIWW/MRGO confluence to the IHNC Lock is an authorized deep draft navigation channel, 36 ft deep and 500 ft wide. The IHNC lock is located at the southern terminus of the IHNC and allows waterborne traffic to transit to and from the Mississippi River, the GIWW and Lake Pontchartrain. The MRGO was deauthorized as a Federal waterway on June 5, 2008, with a rock closure structure constructed at Bayou La Loutre.

The major influences on water levels within the basin are wind and tide with some localized effects by vessel traffic. Tidal ranges average approximately 1 ft and 2 ft at Lake Pontchartrain and Lake Borgne, respectively. Average flow velocity in the IHNC is about 0.6 feet per second (ft/s); however, surface ebb and bottom velocities may exceed 2 ft/s. More recent velocity modeling has indicated that closure of the MRGO at Bayou La Loutre may decrease existing velocities in the IHNC by half however.

The historic gage record (1923-2006) at the IHNC Lock shows that the median range of low to high water levels is -0.79 to 3.71 ft National Geodetic Vertical Datum of 1929 (NGVD29). Water level reached 10.61 ft NGVD29 during Hurricane Betsy. Although there are no water level records at the IHNC Lock for Hurricane Georges, records are available for nearby locations. During Hurricane Georges, the highest recorded water level in the IHNC at the Florida Avenue Bridge was 8.35 ft NGVD (1983 ADJ.) on 27 September 1998. The highest recorded water level (high water mark) at the IHNC Lock, due to Hurricane Katrina, was recorded at 14.3 ft NAVD88 2004.65. With completion of the HSDRRS in 2011 the risk of storm surge within the IHNC Basin is reduced.

The MRGO acts as a limited tidal conduit for the exchange of saline water from the Gulf of Mexico into the IHNC and Lake Pontchartrain. Measurements of non-storm event flows in the IHNC have demonstrated the presence of an upper layer of water flowing out from Lake Pontchartrain and a lower layer flowing toward the lake. However, the construction of the MRGO closure structure at Bayou La Loutre is expected to alter this direct saline influence, decreasing the conveyance of saline water to the IHNC and Lake Pontchartrain.

- e) Availability of feasible alternative sites or methods for implementing the use.

Response 1.6 (e): The range of feasible alternatives for addressing deficiencies are provided in the project description.

- f) Designation of the area for certain uses as part of a local program.

Response 1.6 (f): None identified

- g) Economic need for use and extent of impacts of use on economy of locality.

Response 1.6 (g): The proposed action would enhance the HSDRRS for communities in the New Orleans Metropolitan area. Construction activities would provide a temporary direct socioeconomic benefit through local spending and employment. In the long-term, the proposed action would reduce the risk of storm-related flooding within the study area, and associated damage to buildings and infrastructure, disruption of economic activity, and displacement of residents would be more likely.

- h) Extent of resulting public and private benefits.

Response 1.6 (h): The proposed action would provide an increased level of risk reduction for all communities in the project area, including Orleans and St. Bernard Parish.

- i) Extent of coastal water dependency of the use.

Response 1.6 (i): The proposed construction could be considered coastal water dependent, as its purpose and need is to reduce the risk of storm-related flooding originating from coastal waters.

- j) Existence of necessary infrastructure to support the use and public costs resulting from the use.

Response 1.6 (j): The existing transportation infrastructure would be utilized to construct the proposed action. Existing flood protection structures would be improved as part of the proposed action.

- k) Extent of impacts on existing and traditional uses of the area and on future uses for which the area is suited.

Response 1.6 (k): Limited construction related impacts, such as increased noise and dust, could be expected to users of adjacent areas.

- l) Proximity to and extent of impacts on important natural features such as beaches, barrier islands, tidal passes, wildlife and aquatic habitats, and forest lands.

Response 1.6 (l): The majority of the deficient reaches are adjacent to developed areas within New Orleans. A small portion (1300 feet) of Reach 1 is located in the vicinity of Bayou Bienvenue; however the reach is several miles from the portion of this bayou designated as a Natural and Scenic River. The proposed work would have no impact on this Scenic River.

- m) The extent to which regional, state, and national interests are served including the national interest in resources and the siting of facilities in the coastal zones as identified in the coastal resources program.

Response 1.6 (m): Hurricane and storm damage risk reduction for the City of New Orleans greater metropolitan area, its residences, businesses, industrial use and infrastructure is of National, state and local interest. Because the location of the City of New Orleans is within the Louisiana Coastal Zone, the siting of these levees and floodwalls within the coastal zone is necessary.

- n) Proximity to and extent of impacts on, special areas, particular areas, or other areas of particular concern of the state program or local programs.

Response 1.6 (n): None identified.

- o) Likelihood of, and extent of impacts of, resulting secondary impacts and cumulative impacts.

Response 1.6 (o): Because the proposed action would take place within existing right-of-way and within an existing HSDRRS facility, any impacts to the project area would be temporary in nature and cease at the end of construction.

- p) Proximity to and extent of impacts on public lands or works, or historic, recreational or cultural resources.

Response 1.6 (p): Any impacts such as noise, dust or limited access to recreational resources, such as bank fishing, boating or use of public parks in the project vicinity, would be temporary in nature during the construction period. No public lands would be impacted by the proposed action. No cultural or historic resources are anticipated to be impacted by the proposed action. There is one known archeological site in the vicinity of Paris Road which is within the project footprint; however, no subsurface work is proposed in the vicinity of this site. The proposed action will be coordinated with the State Historic Preservation Officer under Section 106 of the National Historic Preservation Act.

- q) Extent of impacts on navigation, fishing, public access, and recreational opportunities.

Response 1.6 (q): Any impacts such as noise, dust or limited access to recreational resources, such as bank fishing, boating or use of public parks in the project vicinity, would be temporary in nature during the construction period. No impacts to navigation are anticipated.

- r) Extent of compatibility with natural and cultural setting.

Response 1.6 (r): The proposed action is compatible with the natural and cultural setting that exists today, as the project features of the proposed action are of similar nature to current project features. Under the proposed action, the aesthetic value of the project corridor would be temporarily impacted by construction activities. No cultural or historic

resources are anticipated to be impacted by the proposed action. There is one known archeological site in the vicinity of Paris Road which is within the project footprint; however, no subsurface work is proposed in the vicinity of this site. The proposed action will be coordinated with the State Historic Preservation Officer under Section 106 of the National Historic Preservation Act.

s) Extent of long-term benefits or adverse impacts.

Response 1.6 (s): Long-term benefits include increase flood risk reduction for the adjacent areas. There are no long term adverse impacts anticipated.

Guideline 1.7: It is the policy of the coastal resources program to avoid the following adverse impacts. To this end, all uses and activities shall be planned, sited, designed, constructed, operated and maintained to avoid to the maximum extent practicable significant:

Guideline 1.7 (a): reductions in the natural supply of sediment and nutrients to the coastal system by alterations of freshwater flow;

Response 1.7 (a): The proposed action would not alter freshwater flows.

Guideline 1.7 (b): adverse economic impacts on the locality of the use and affected governmental bodies;

Response 1.7 (b): All work would take place within existing right-of-way.

Guideline 1.7 (c): detrimental discharges of inorganic nutrient compounds into coastal waters;

Response 1.7 (c): No detrimental discharges of such compounds are expected.

Guideline 1.7 (d): alterations in the natural concentration of oxygen in coastal waters;

Response 1.7 (d): No alteration of oxygen concentration will result from the proposed actions. Best Management Practices and a Stormwater Pollution Prevention Plan will be implemented.

Guideline 1.7 (e): destruction or adverse alterations of streams, wetland, tidal passes, inshore waters and waterbottoms, beaches, dunes, barrier islands, and other natural biologically valuable areas or protective coastal features;

Response 1.7 (e): No adverse effects to these resources are expected. Best Management Practices and a Stormwater Pollution Prevention Plan will be implemented.

Guideline 1.7 (f): adverse disruption of existing social patterns;

Response 1.7 (f): Adverse social impacts would occur primarily from the rerouting or addition of vehicular traffic, increased noise levels, and other construction-related items. These impacts would be short-term and cease upon the completion of construction.

Guideline 1.7 (g): alterations of the natural temperature regime of coastal waters;

Response 1.7 (g): Project construction and operation would not cause a change in the natural temperature regime of coastal waters.

Guideline 1.7 (h): detrimental changes in existing salinity regimes;

Response 1.7 (h): No measurable change in existing salinity regimes would occur.

Guideline 1.7 (i): detrimental changes in littoral and sediment transport processes;

Response 1.7 (i): The proposed action would not affect littoral or sediment transport processes.

Guideline 1.7 (j): adverse effects of cumulative impacts;

Response 1.7 (j): The proposed action would not result in any long term adverse effects of cumulative impacts. Temporary impacts from construction would compound impacts from other construction within the project area, but would cease upon the completion of construction.

Guideline 1.7 (k): detrimental discharges of suspended solids into coastal waters, including turbidity resulting from dredging; Best Management Practices and a Stormwater Pollution Prevention Plan will be implemented.

Response 1.7 (k): No dredging will occur. No detrimental discharges of suspended solids are expected.

Guideline 1.7 (l): reductions or blockage of water flow or natural circulation patterns within or into an estuarine system or a wetland forest;

Response 1.7 (l): No impacts to water flow or circulation patterns will result from the proposed action.

Guideline 1.7 (m): discharges of pathogens or toxic substances into coastal waters;

Response 1.7 (m): No discharges of pathogens or toxic substances into coastal waters are expected to result from the proposed action.

Guideline 1.7 (n): adverse alteration or destruction of archaeological, historical, or other cultural resources;

Response 1.7 (n): No cultural or historic resources are anticipated to be impacted by the proposed action. There is one known archeological site in the vicinity of Paris Road which is The proposed action will be coordinated with the State Historic Preservation Officer under Section 106 of the National Historic Preservation Act.

Guideline 1.7 (o): fostering of detrimental secondary impacts in undisturbed or biologically highly productive wetland areas;

Response 1.7 (o): No secondary impacts to wetlands are expected.

Guideline 1.7 (p): adverse alteration or destruction of unique or valuable habitats, critical habitat for endangered species, important wildlife or fishery breeding or nursery areas, designated wildlife management or sanctuary areas, or forestlands;

Response 1.7 (p): No adverse alteration or destruction of unique or valuable habitats is expected. CEMVN will coordinate with US Fish and Wildlife Service to confirm that this proposed action is not likely to adversely impact endangered or threatened species.

Guideline 1.7 (q): adverse alteration or destruction of public parks, shoreline access points, public works, designated recreation areas, scenic rivers, or other areas of public use and concern;

Response 1.7 (q): No adverse alteration or destruction of these resources is expected.

Guideline 1.7 (r): adverse disruptions of coastal wildlife and fishery migratory patterns;

Response 1.7 (r): No disruption to migratory patterns is expected.

Guideline 1.7 (s): land loss, erosion and subsidence;

Response 1.7 (s): No land loss, erosion or subsidence is anticipated under the proposed action.

Guideline 1.7 (t): increases in the potential for flood, hurricane or other storm damage, or increases in the likelihood that damage will occur from such hazards;

Response 1.7 (t): The proposed action would reduce the potential for damages throughout the project area.

Guideline 1.7 (u): and reductions in the long-term biological productivity of the coastal ecosystem.

Response 1.7 (u): No reduction in long-term biological productivity is expected.

Guideline 1.8: In those guidelines in which the modifier "maximum extent practicable" is used, the proposed use is in compliance with the guideline if the standard modified by the term is complied with. If the modified standard is not complied with, the use will be in compliance with

the guideline if the permitting authority finds, after a systematic consideration of all pertinent information regarding the use, the site and the impacts of the use as set forth in guideline 1.6, and a balancing of their relative significance, that the benefits resulting from the proposed use would clearly outweigh the adverse impacts resulting from non-compliance with the modified standard and there are no feasible and practical alternative locations, methods and practices for the use that are in compliance with the modified standard and:

- a) significant public benefits will result from the use, or;
- b) the use would serve important regional, state or national interests, including the national interest in resources and the siting of facilities in the coastal zone identified in the coastal resources program, or;
- c) the use is coastal water dependent.

The systematic consideration process shall also result in a determination of those conditions necessary for the use to be in compliance with the guideline. Those conditions shall assure that the use is carried out utilizing those locations, methods and practices which maximize conformance to the modified standard; are technically, economically, environmentally, socially and legally feasible and practical and minimize or offset those adverse impacts listed in guideline 1.7 and in the guideline at issue.

Response 1.8: Acknowledged.

Guideline 1.9: Uses shall to the maximum extent practicable be designed and carried out to permit multiple concurrent uses which are appropriate for the location and to avoid unnecessary conflicts with other uses of the vicinity.

Response 1.9: The purpose and use of the proposed project would be for flood risk reduction. All work will take place within the existing right-of-way of the existing flood risk reduction system. Therefore the proposed action use is consistent with the current use.

Guideline 1.10: These guidelines are not intended to be, nor shall they be, interpreted to allow expansion of governmental authority beyond that established by La. R.S. 49:213.1 through 213.21, as amended; nor shall these guidelines be interpreted so as to require permits for specific uses legally commenced or established prior to the effective date of the coastal use permit program nor to normal maintenance or repair of such uses.

Response 1.10: Acknowledged.

GUIDELINES FOR LEVEES

Guideline 2.1: The leveeing of unmodified or biologically productive wetlands shall be avoided to the maximum extent practicable.

Response 2.1: The proposed action would modify existing levees and floodwalls within existing right-of-way and without changing the alignment.

Guideline 2.2: Levees shall be planned and sited to avoid segmentation of wetland areas and systems to the maximum extent practicable.

Response 2.2: The proposed action would modify existing levees and floodwalls within existing right-of-way and without changing the alignment.

Guideline 2.3: Levees constructed for the purpose of developing or otherwise changing the use of a wetland area shall be avoided to the maximum extent practicable.

Response 2.3: The proposed action would modify existing levees and floodwalls within existing right-of-way and without changing the alignment. The area behind the existing levees and floodwalls is already developed.

Guidelines 2.4: Hurricane and flood protection levees shall be located at the wetland/non-wetland interface or landward to the maximum extent practicable.

Response 2.4: The proposed action would modify existing levees and floodwalls within existing right-of-way and without changing the alignment.

Guideline 2.5: Impoundment levees shall only be constructed in wetland areas as part of approved water or marsh management projects or to prevent release of pollutants.

Response 2.5: No impoundment levees would be constructed as part of the proposed project.

Guideline 2.6: Hurricane or flood protection levee systems shall be designed, built, and thereafter operated and maintained utilizing best practical techniques to minimize disruptions of existing hydrologic patterns, and the interchange of water, beneficial nutrients and aquatic organisms between enclosed wetlands and those outside the levee system.

Response 2.6: Existing hydrologic patterns would not be altered. The proposed action would modify existing levees and floodwalls within existing right-of-way and without changing the alignment.

GUIDELINES FOR LINEAR FACILITIES

Guideline 3.1: Linear use alignments shall be planned to avoid adverse impacts on areas of high biological productivity or irreplaceable resource areas.

Response 3.1: Existing hydrologic patterns would not be altered. The proposed action would modify existing levees and floodwalls within existing right-of-way and without changing the alignment.

Guideline 3.2: Linear facilities involving the use of dredging or filling shall be avoided in wetland and estuarine areas to the maximum extent practicable.

Response 3.2: No dredging or filling of wetlands would occur under the proposed action.

Guideline 3.3: Linear facilities involving dredging shall be of the minimum size and length.

Response 3.3: No dredging would occur under the proposed action.

Guideline 3.4: To the maximum extent practicable, pipelines shall be installed through the "push ditch" method and the ditch backfilled.

Response 3.4: Any pipelines or utility crossings that are not in accordance with current design criteria shall be relocated, removed, modified, or abandoned in place as part of this project.

Guideline 3.5: Existing corridors, right-of-way, canals, and streams shall be utilized to the maximum extent practicable for linear facilities.

Response 3.5: The proposed action would modify existing levees and floodwalls within existing right-of-way and without changing the alignment.

Guideline 3.6: Linear facilities and alignments shall be, to the maximum extent practicable, designed and constructed to permit multiple uses consistent with the nature of the facility.

Response 3.6: Multiple uses (such as recreation and open space) of the levees and floodwalls would be permitted.

Guideline 3.7: Linear facilities involving dredging shall not traverse or adversely affect any barrier island.

Response 3.7: No barrier islands would be affected.

Guideline 3.8: Linear facilities involving dredging shall not traverse beaches, tidal passes, protective reefs or other natural gulf shoreline unless no other alternative exists. If a beach, tidal pass, reef or other natural gulf shoreline must be traversed for a non-navigation canal, they shall be restored at least to their natural condition immediately upon completion of construction. Tidal passes shall not be permanently widened or deepened except when necessary to conduct the use. The best available restoration techniques which improve the traversed area's ability to serve as a shoreline shall be used.

Response 3.8: No dredging would occur under the proposed action.

Guideline 3.9: Linear facilities shall be planned, designed, located, and built using the best practical techniques to minimize disruption of natural hydrologic and sediment transport patterns, sheet flow, and water quality, and to minimize adverse impacts on wetlands.

Response 3.9: No disruption of natural hydrologic and sediment transport patterns, sheet flow, or water quality would occur from the proposed project.

Guideline 3.10: Linear facilities shall be planned, designed, and built using the best practical techniques to prevent bank slumping and erosion, saltwater intrusion, and to minimize the potential for inland movement of storm-generated surges. Consideration shall be given to the use of locks in navigation canals and channels which connect more saline areas with fresher areas.

Response 3.10: Acknowledged.

GUIDELINES FOR DREDGED MATERIAL DEPOSITION

Not applicable

GUIDELINES FOR SHORELINE MODIFICATION

Not applicable

GUIDELINES FOR SURFACE ALTERATIONS

Guideline 6.1: Industrial, commercial, urban, residential, and recreational uses are necessary to provide adequate economic growth and development. To this end, such uses will be encouraged in those areas of the coastal zone that are suitable for development. Those uses shall be consistent with the other guidelines and shall, to the maximum extent practicable, take place only:

- a) on lands five feet or more above sea level or within fast lands; or
- b) on lands which have foundation conditions sufficiently stable to support the use, and where flood and storm hazards are minimal or where protection from these hazards can be reasonably well achieved, and where the public safety would not be unreasonably endangered; and
 - 1) the land is already in high intensity of development use, or
 - 2) there is adequate supporting infrastructure, or
 - 3) the vicinity has a tradition of use for similar habitation or development

Response 6.1: The proposed project has the potential to reduce damages to Orleans and St. Bernard Parish. This would benefit all uses within the Parish.

Guideline 6.2: Public and private works projects such as levees, drainage improvements, roads, airports, ports, and public utilities are necessary to protect and support needed development and shall be encouraged. Such projects shall, to the maximum extent practicable, take place only when:

- a) they protect or serve those areas suitable for development pursuant to Guideline 6.1; and
- b) they are consistent with the other guidelines; and
- c) they are consistent with all relevant adopted state, local and regional plans.

Response 6.2: The proposed project will comply with all guidelines, laws, and plans and has the potential to reduce flood risk to Orleans and St. Bernard Parish.

Guideline 6.3: BLANK (Deleted)

Guideline 6.4: To the maximum extent practicable wetland areas shall not be drained -or filled. Any approved drain or fill project shall be designed and constructed using best practical techniques to minimize present and future property damage and adverse environmental impacts.

Response 6.4: No wetlands would be impacted by the proposed action.

Guideline 6.5: Coastal water dependent uses shall be given special consideration in permitting because of their reduced choice of alternatives.

Response 6.5: The proposed project is coastal water dependent.

Guideline 6.6: Areas modified by surface alteration activities shall, to the maximum extent practicable, be re-vegetated, refilled, cleaned and restored to their predevelopment condition upon termination of the use

Response 6.6: Following construction completion, temporarily disturbed areas will be returned to pre-construction conditions.

Guideline 6.7: Site clearing shall to the maximum extent practicable be limited to those areas immediately required for physical development.

Response 6.7: Acknowledged.

Guideline 6.8: Surface alterations shall, to the maximum extent practicable, be located away from critical wildlife areas and vegetation areas. Alterations in wildlife preserves and management areas shall be conducted in strict accord with the requirements of the wildlife management body.

Response 6.8: The proposed action would modify existing levees and floodwalls within existing

right-of-way and without changing the alignment.

Guideline 6.9: Surface alterations which have high adverse impacts on natural functions shall not occur, to the maximum extent practicable, on barrier islands and beaches, isolated cheniers, isolated natural ridges or levees, or in wildlife and aquatic species breeding or spawning areas, or in important migratory routes.

Response 6.9: The proposed project does not involve any surface alterations which have adverse impacts to these resources.

Guideline 6.10: The creation of low dissolved oxygen conditions in the water or traps for heavy metals shall be avoided to the maximum extent practicable.

Response 6.10: No low dissolved oxygen conditions or traps for heavy metals will result from the proposed action.

Guideline 6.11: Surface mining and shell dredging shall be carried out utilizing the best practical techniques to minimize adverse environmental impacts.

Response 6.11: Not applicable.

Guideline 6.12: The creation of underwater obstructions which adversely affect fishing or navigation shall be avoided to the maximum extent practicable.

Response 6.12: Not applicable.

Guideline 6.13: Surface alteration sites and facilities shall be designed, constructed, and operated using the best practical techniques to prevent the release of pollutants or toxic substances into the environment and minimize other adverse impacts.

Response 6.13: All practical techniques will be used to prevent the release of pollutants or toxic substances. A Phase I Hazardous, Toxic, Radioactive Waste (HTRW) Environmental Site Assessment (ESA) will be completed for the project area.

Guideline 6.14: To the maximum extent practicable only material that is free of contaminants and compatible with the environmental setting shall be used as fill.

Response 6.14: Acknowledged.

GUIDELINES FOR HYDROLOGIC AND SEDIMENT TRANSPORT MODIFICATIONS

Not applicable

GUIDELINES FOR DISPOSAL OF WASTES

Guideline 8.1: The location and operation of waste storage, treatment, and disposal facilities shall be avoided in wetlands to the maximum extent practicable, and best practical techniques shall be used to minimize adverse impacts which may result from such use.

Response 8.1: The proposed project does not involve any such facilities.

Guideline 8.2: The generation, transportation, treatment, storage and disposal of hazardous wastes shall be pursuant to the substantive requirements of the Department of Natural Resources adopted pursuant to Act 334 of 1978 and approved pursuant to the Resource Conservation and Recovery Act of 1976 P.O. 94-580, and of the Office of Conservation for injection below surface.

Response 8.2: Acknowledged.

Guideline 8.3: Waste facilities located in wetlands shall be designed and built to withstand all expectable adverse conditions without releasing pollutants.

Response 8.3: The proposed project does not involve any such facilities.

Guideline 8.4: Waste facilities shall be designed and constructed using best practical techniques to prevent leaching, control leachate production, and prevent the movement of leachate away from the facility.

Response 8.4: The proposed project does not involve any such facilities.

Guideline 8.5: The use of overland flow systems for non-toxic, biodegradable wastes, and the use of sump lagoons and reservoirs utilizing aquatic vegetation to remove pollutants and nutrients shall be encouraged.

Response 8.5: The proposed project does not involve any such activities.

Guideline 8.6: All waste disposal sites shall be marked and, to the maximum extent practicable, all components of waste shall be identified.

Response 8.6: The proposed project does not involve any such sites.

Guideline 8.7: Waste facilities in wetlands with identifiable pollution problems that are not feasible and practical to correct shall be closed and either removed or sealed, and shall be properly re-vegetated using the best practical techniques.

Response 8.7: The proposed project does not involve any such facilities.

Guideline 8.8: Waste shall be disposed of only at approved disposal sites.

Response 8.8: Acknowledged.

Guideline 8.9: Radioactive wastes shall not be temporarily or permanently disposed of in the coastal zone.

Response 8.9: The proposed project does not involve any such wastes.

GUIDELINES FOR USES THAT RESULT IN THE ALTERATION OF WATERS DRAINING INTO COASTAL WATERS

Not applicable

GUIDELINES FOR OIL, GAS, AND OTHER MINERAL ACTIVITIES

Not applicable

CONSISTENCY DETERMINATION

Based on this evaluation, the New Orleans District, U.S. Army Corps of Engineers, has determined that the proposed action would be consistent, to the maximum extent practicable, with the State of Louisiana's approved Coastal Resources Program.



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

REPLY TO
ATTENTION OF

15 July 2010

Hurricane Protection Office
P.O. Box 60267
New Orleans, Louisiana 70160-0267
FAX: 504-862-2897

James Boggs
Field Supervisor
U.S. Fish and Wildlife Service
646 Cajundome Blvd - Suite 400
Lafayette, LA 70506

Dear Mr. Boggs:
Attn: David Walther

Provided for your review are the project description, project location map, and determination by the U.S. Army Corps of Engineers (USACE), Mississippi Valley Division, New Orleans District (CEMVN) of the effect that the proposed action would have on threatened and endangered (T&E) species under USFWS jurisdiction. An Environmental Assessment #498 (EA #498) is currently being conducted to evaluate potential impacts from the proposed action, referred to as Inner Harbor Navigation Canal (IHNC) Levees and Floodwalls Restoration and Repair Project. The levees, floodwalls, and closure gate structures that were identified as needing repair are part of the Hurricane and Storm Damage Risk Reduction System (HSDRRS) for Orleans Parish, Louisiana. This draft EA #498 will be completed in the next few months and will be forwarded to you upon completion.

PROJECT DESCRIPTION

The proposed project consists of repairing and restoring portions of levees and floodwalls that did not meet the necessary factors of safety for stability, as dictated by current HSDRRS design guidelines (USACE 2008a). The levees and floodwalls within the project area provide a level of risk reduction that is currently below the 100-year level of risk reduction. Once construction of the Borgne Barrier (as described in IER #11 Tier 2 Borgne) and the Seabrook Gate (as described in IER #11 Tier 2 Pontchartrain) has been completed and these structures are operational, the subject reaches would become a redundant risk reduction feature that would be required to withstand water levels caused by overtopping of the primary risk reduction system. The design guidelines for the safety factors assume conditions are such that water levels within the IHNC are at least 12 feet (ft; North American Vertical Datum of 1988 [NAVD88]) or water levels are at the top of the levee or floodwall.

The HSDRRS within this corridor is composed of various features, including earthen levees, I-Walls, L-Walls, T-Walls, and closure gate structures, which all provide risk reduction to the three sub-basins (figure 1) from the IHNC Lock to the Seabrook Bridge at Lake Pontchartrain and along the GIWW from the IHNC to the IHNC Barrier, which is near the Michoud Canal in New Orleans East. The project area is divided into three primary reaches and each reach is comprised of numerous deficient segments of levees/floodwalls (figure 2).

Several methods of repair/restoration are proposed; all of which would be built entirely within existing right of way (ROW), and could be used to address deficiencies within the subject reaches. These construction methods include the following:

Deep Soil Mixing

The deep soil mixing (DSM) method is a stabilization method that uses cement, lime, slag, other pozzolonic materials, and combinations of these stabilizers to increase the strength and stiffness of soft or loose ground. DSM introduces panels of engineered grout or reagent into the underlying soils to modify their physical and chemical characteristics without excavation (see figure 3).

DSM consists of improving the existing earthen embankment on the protected side of the levee or I-wall by installing soilcrete columns. Geotechnical analyses indicate that adding columns with an average unconfined compressive strength provides sufficient strength to the overall soil mass and increases the global stability of the section to acceptable levels. Although, the exact dimensions of repair methods cannot be determined until the final design is complete, DSM typically consists of soil mix columns arranged in rows or panels oriented perpendicular to the levee or I-wall. There are typically eight 32-ft long soil-mixing columns in a row, which overlap each other by approximately 6 inches, giving the panels a width of 15 ft. Each set of panels (columns) typically have 8 ft of space between them.

Berm

Approximately 16,000 cubic yards (CY) of government-approved borrow would be placed on the protected side of the existing risk reduction system to increase stability and control seepage. Seepage berms are infrequently used in conjunction with floodwalls since floodwalls are often constructed in areas where ROW availability or cost is insufficient for levee construction (USACE 1989); however, the existing ROW for the floodwalls and levees at stations 73+00, 79+00, 247+00, and 525-535+00 in Reach 2 offers enough space for stability berms to be built without requiring additional area. All proposed berms would have an approximate width of 25 ft, a height of 3 ft, and would be placed at the toe on the protected side of the levee or floodwall. Berms would be constructed to the estimated lengths provided for each station in tables 1 through 3. The embankment would be reseeded upon completion.

Buttress Wall

A concrete buttress wall is an addition to an existing I-wall which is constructed by driving piles,

setting forms against (behind) the existing flood protection structure, and pouring concrete inside the forms such that the completed addition meets the design engineer's specifications. These buttress pilings are installed at intervals along the wall to tie the stem and base slab together and to assist in resisting the floodwall or levee load (see figure 4).

Concrete Slab

A structural concrete base slab would be poured perpendicular to the adjacent floodwall on the protected side to act against lateral forces. The thickness of the concrete slabs would vary between 12 inches and 24 inches and extend out approximately 8 ft from the existing I-walls or gates.

Relief Wells

Relief wells are vertically installed wells consisting of a well screen surrounded by a filter material designed to prevent the inwash or migration of foundation materials into the well. Relief wells intercept underseepage and provide a controlled outlet for the water, draining excess water from the subsurface sand layer (see figure 2-5).

Five segments within Reaches 2 and 3, totaling approximately 3,800 ft in length, are proposed to be repaired by relief wells. Preliminary designs indicate that the relief wells would be placed approximately 30 ft to 45 ft from the floodwalls, installing approximately 60 wells total. Each relief well would be 8 inches in diameter and installed to a depth of approximately 30 ft to 35 ft. In addition, a collector pipe and discharge line would also be constructed along each segment where relief wells are installed. The collector pipe collects the excess seepage from each well and a discharge line for each I-wall segment discharges it to the nearest canal.

Preliminary analysis has developed a recommended plan for addressing deficiencies and the recommended construction techniques for the proposed action of repairing and restoring levees and floodwalls to meet HSDRRS safety factors along the IHNC. Corresponding stations are listed in tables 1 through 3. The proposed action is based on these recommended repair methods; however, any alternative repair methods that could potentially be employed at each of the subject stations are also provided in tables 1 through 3. Future detailed analysis could indicate that an alternative method among those listed in the tables may be more appropriate for a given station once designs are finalized, however because all repair methods are approximately within the same footprint (existing ROW) and would provide the same level of risk reduction, they are not considered separate alternatives and are evaluated as part of the proposed action. For several deficient segments of HSDRRS, no alternate repair method was available; therefore, at these stations, only the no action alternative and the proposed action were evaluated.

Reach 1

Reach 1 extends from Stations 0+00 to 380+00 and extends along the east side of the IHNC from the IHNC Lock to the GIWW and also includes the south side of the GIWW from the IHNC to Bayou Bienvenue. Reach 1 has approximately 800 ft of deficient areas which correspond with two stations, 28+85 and 18+00. Station IDs, type of flood risk reduction structure, length, and recommended repairs for Reach 1 are presented in Table 1.

**Table 1.
Reach 1 Proposed Action**

Station	Type	Estimated Length (ft)	Recommended Repair Method	Alternate Repair Method
28+85	Earthen Levee	500	Deep Soil Mixing	Berm
18+00	I-wall	300	Concrete Slab	Buttress Wall

Reach 2

Reach 2 comprises the east side of the IHNC from Lake Pontchartrain to the GIWW and extends along the north side of the GIWW from the IHNC to the Borgne Barrier. Reach 2 has approximately 2.4 miles (mi) of deficient areas which are presented in Table 2.

**Table 2.
Reach 2 Proposed Action**

Station	Type	Estimated Length (ft)	Recommended Repair Method	Alternate Repair Method
E-14	Gate	1,000	Concrete Slab/Berm	Buttress Wall
20+00	I-Wall	1,000	Buttress Wall	NA
30+00	I-Wall	1,000	Buttress Wall	NA
32+00	Gate	500	Buttress Wall	NA
65+00 to 70+00	I-Wall	500	Concrete Slab	Buttress Wall
73+00	I-Wall	200	Berm	Deep Soil Mixing
79+00	L-Wall	3,000	Berm	Deep Soil Mixing
247+00	Earthen Levee	1,600	Berm	Deep Soil Mixing
268+00	T-Wall	500	Buttress Wall	NA
270+00	I-Wall	400	Buttress Wall	NA
278+00	I-Wall	400	Buttress Wall	NA
406+00	I-Wall	600	Relief Wells	NA
449+00	I-Wall	400	Relief Wells	NA
454+00	I-Wall	400	Concrete Slab	Buttress Wall
525+00 to 535+00	I-Wall	1,000	Berm	Deep Soil Mixing

NA = no alternate repair method available

Reach 3

Reach 3 lies along the west side of the IHNC and extends from the IHNC Lock at the Mississippi River to the Seabrook Bridge at Lake Pontchartrain. As shown in Table 2-3, Reach 3 has approximately 4,100 ft of deficient areas.

Table 3.
Reach 3 Proposed Action

Station	Type	Estimated Length (ft)	Recommended Repair Method	Alternate Repair Method
268+00	I-Wall	600	Deep Soil Mixing	Buttress Wall
258+00	I-Wall	1,000	Relief Wells	NA
256+00	I-Wall	1,000	Relief Wells	NA
248+00	I-Wall	800	Relief Wells	NA
200+00	I-Wall	600	Concrete Slab	Buttress Wall
W-1 1+44	Gate	100	Concrete Slab	Buttress Wall

NA = no alternate repair method available

Construction Related Information for Proposed Action

The permanent ROW that could potentially be impacted by construction of the proposed action would be approximately 62.5 acres, all within existing ROW. Staging areas, primarily located in upland areas not within existing ROW, would be required for the proposed action and would temporarily impact approximately 5.4 acres (figure 2, detailed views shown on figures 6 and 7). Fourteen staging areas, each 0.5-acre in size or smaller, would be necessary to repair/restore deficiencies in Reaches 1, 2, and 3 (figures 6 and 7). Two staging areas would be located along the east bank of the IHNC, south of its convergence with the GIWW; seven staging areas would be required for Reach 2 repair work along the east bank of the IHNC and north bank of the GIWW; and five staging areas would be established along the west bank of the IHNC within Reach 3.

Repair and restorative construction would occur entirely within the existing levee/floodwall ROW. The construction duration would be approximately 300 days (10 months) and would likely begin between August and October 2010. The construction schedule may include work up to 24 hours per day and 7 days per week.

Project access would occur along existing roads and properties, to include those illustrated in figure 2-8. Small, ancillary streets are not highlighted on figure 2-8 but would still be used to access existing HSDRRS. Reach 1 primary access would be from Florida Avenue, St. Claude Avenue, Jourdan Avenue, N. Claiborne Avenue, Paris Road, and to traverse the levee as needed. Primary access to Reach 2 would require use of the following roadways: Jourdan Road, Almonaster Boulevard, N. Claiborne Avenue, Japonica Street, Highway 90, and Paris Road, with secondary access through Terminal Road, Elaine Street and Boh Bros. Almonaster Yard, Industrial Parkway, and to traverse the levee as needed. Reach 3 primary access would

occur from Hayne Boulevard, France Road, Japonica Street, Highway 90, N. Claiborne Avenue, Poland Avenue, and St. Claude Avenue, and to traverse the levee as needed. Construction of the proposed action would not be expected to result in any temporary road closures.

A significant amount of construction equipment would be required to conduct the work, including generators, cranes, dump trucks, flatbed trucks, bulldozers, excavators, rollers, graders, tractors, front end loaders, portable air compressors, welding machines, cement pumping trucks, drills, augers, portable lighting, and water trucks. Table 4 provides information on the approximate volumes of materials that would be required for construction of the proposed action.

**Table 4.
Estimated Construction Material Quantities Required to Complete the Proposed Action**

Material	Total Length of Material Placement (ft)	Units of Measure	Quantity
<i>Reach 1</i>			
Structural Concrete	300	CY	1,200
Silt Fencing	800	linear feet (LFT)	960
Concrete for DSM	500	CY	2,000
Rebar	300	LFT	1,800
<i>Reach 2</i>			
Embankment Fill	4,800	CY	24,000
Top Soil	4,800	CY	24,000
Concrete Form	5,700	square feet (sq ft)	22,800
Structural Concrete	1,900	CY	7,600
Silt Fencing	12,500	LFT	15,000
Corrugated Metal Piping (CMP)	1000	LFT	2,500
Rebar	5700	LFT	34,200
<i>Reach 3</i>			
Concrete for DSM	600	CY	2,400
Concrete Form	700	sq ft	2,800
Structural Concrete	700	CY	2,800
Rebar	700	LFT	4,200
Silt Fencing	4100	LFT	4,920
CMP	2800	LFT	7,000

CEMVN DETERMINATION OF IMPACTS TO T&E SPECIES

CEMVN has assessed the environmental impacts of the proposed action on T&E species in the project vicinity. In a previous consultation letter to CEMVN dated February 2, 2009 related to IER #11 Tier 2 Pontchartrain, USFWS discussed two Federally listed species under its

jurisdiction that potentially could occur in the northern IHNC- Lake Pontchartrain area: the endangered West Indian manatee (*Trichechus manatus*) and the endangered brown pelican (*Pelecanus occidentalis*). The brown pelican subsequently was delisted in November 2009 due to its recovery, so it is not included in this determination.

Manatees potentially can occur in Lake Pontchartrain at the mouth of the IHNC and, although it is unlikely, they could enter the canal. The proposed action would involve construction and operation of new levee protection measures along the canal. No in-water construction would occur. Given the total absence of in-water work associated with the proposed action, this project would have no direct effects on this species. The potential for indirect effects on manatees due to adverse effects on the water quality of inshore areas of Lake Pontchartrain or the IHNC during the construction period would be prevented through the use of best management practices and adherence to regulations governing stormwater runoff at construction sites. Thus, the proposed action would have no direct or indirect effect on the manatee.

CONTACT INFORMATION

Please review the enclosed information and provide comments within 30 days of the date of this letter. This EA will not be finalized until all environmental review and compliance requirements have been completed. A copy of the final EA will be provided upon request.

Comments should be mailed to the attention of Ms. Laura Lee Wilkinson; U.S. Army Corps of Engineers; CEMVN-HPO; P.O. Box 60267; New Orleans, Louisiana 70160-0267. Comments may also be provided by E-Mail to Laura.L.Wilkinson@usace.army.mil. Ms. Wilkinson may be contacted at (504) 862-1212, if questions arise.

Sincerely,



Laura Lee Wilkinson
Environmental Coordinator
Hurricane Protection Office

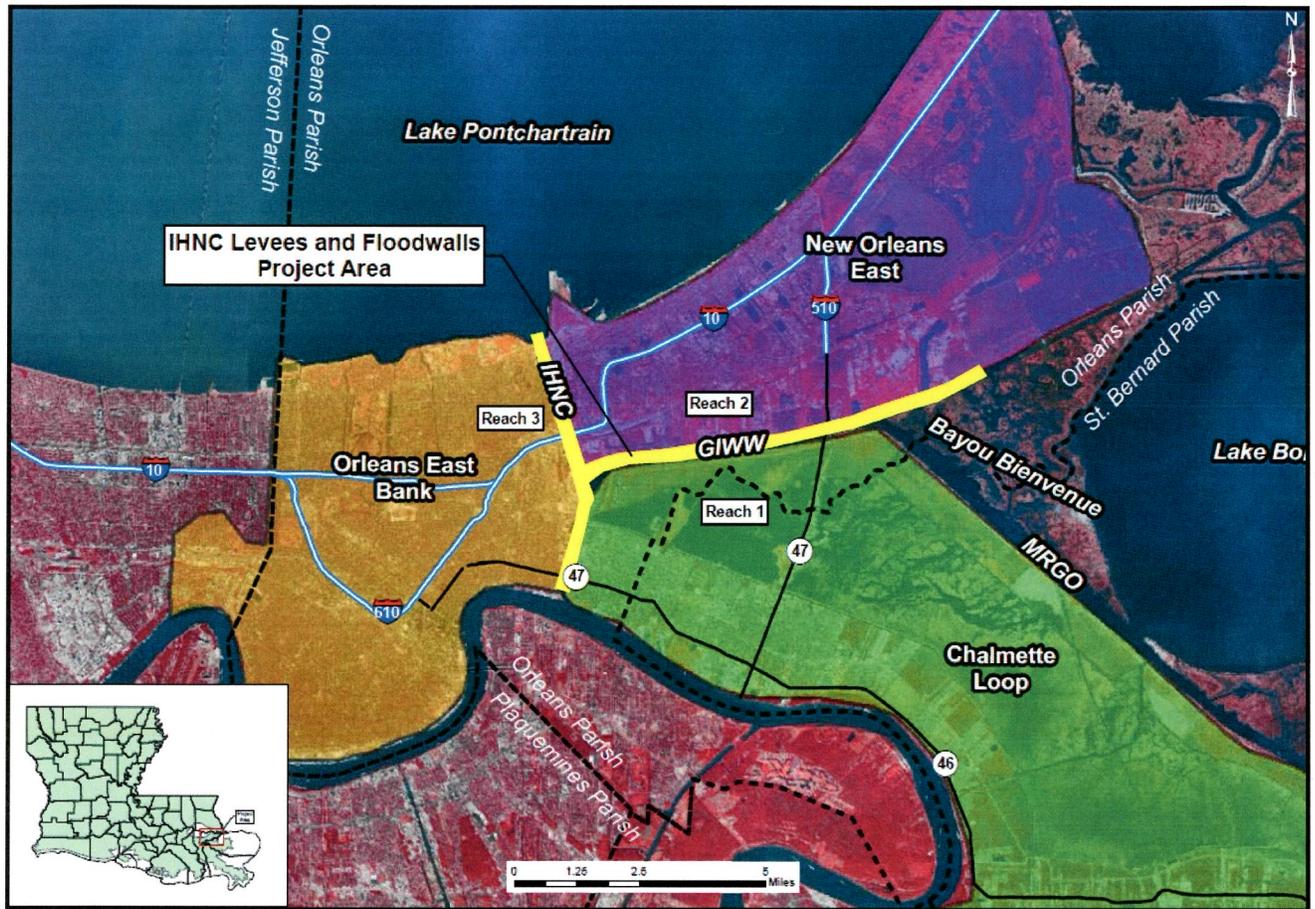


Figure 1. Project Area Map Showing the Location of Sub-basins and Reaches 1, 2, and 3



Figure 2. Map of Project Area Showing Deficient Segments of Levees and Floodwalls and Existing ROW

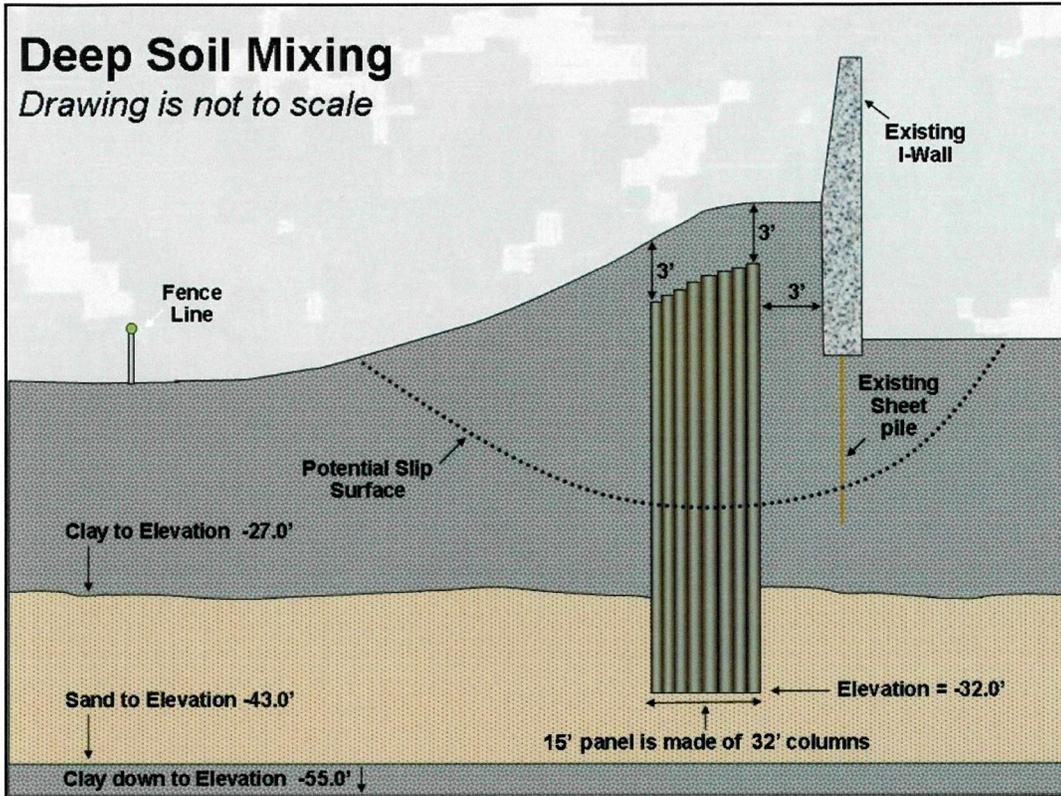


Figure 3. Conceptual Figure of Deep Soil Mixing

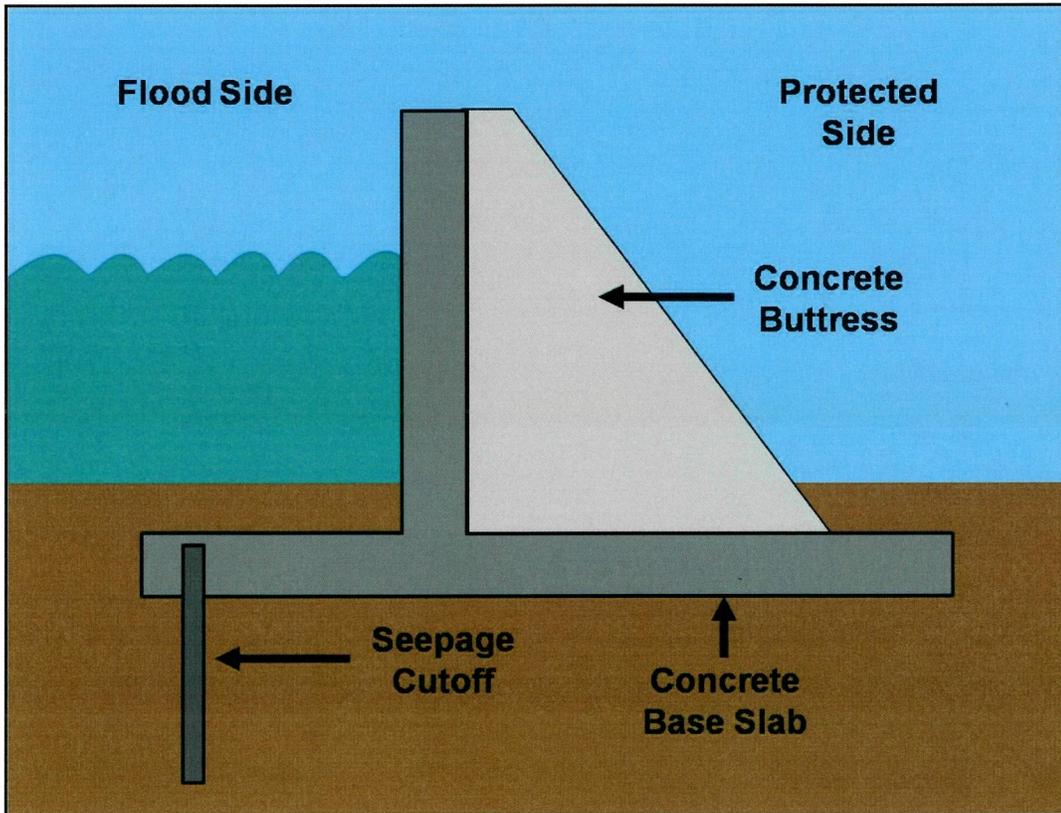


Figure 4. Conceptual Figure of a Buttress Wall

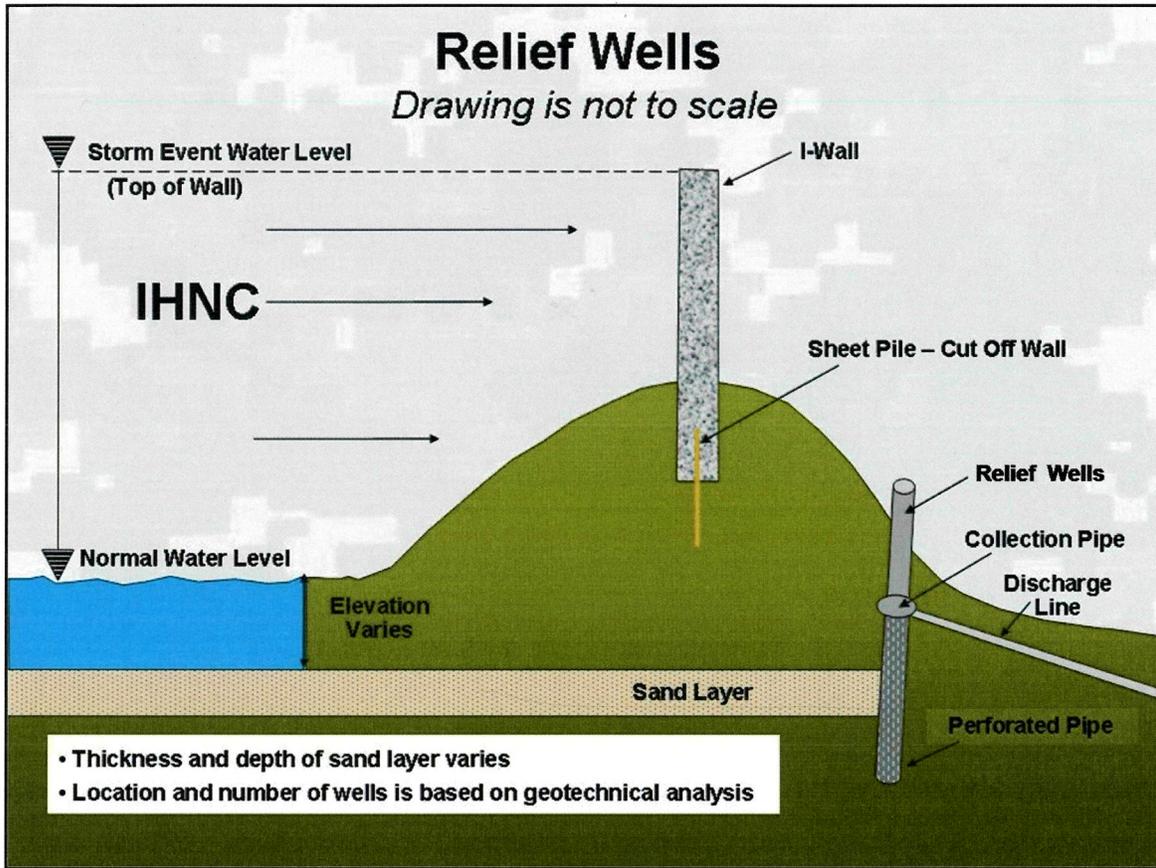


Figure 5. Conceptual Figure of Relief Wells



Figure 6. Temporary Staging Area Locations (1 of 2)

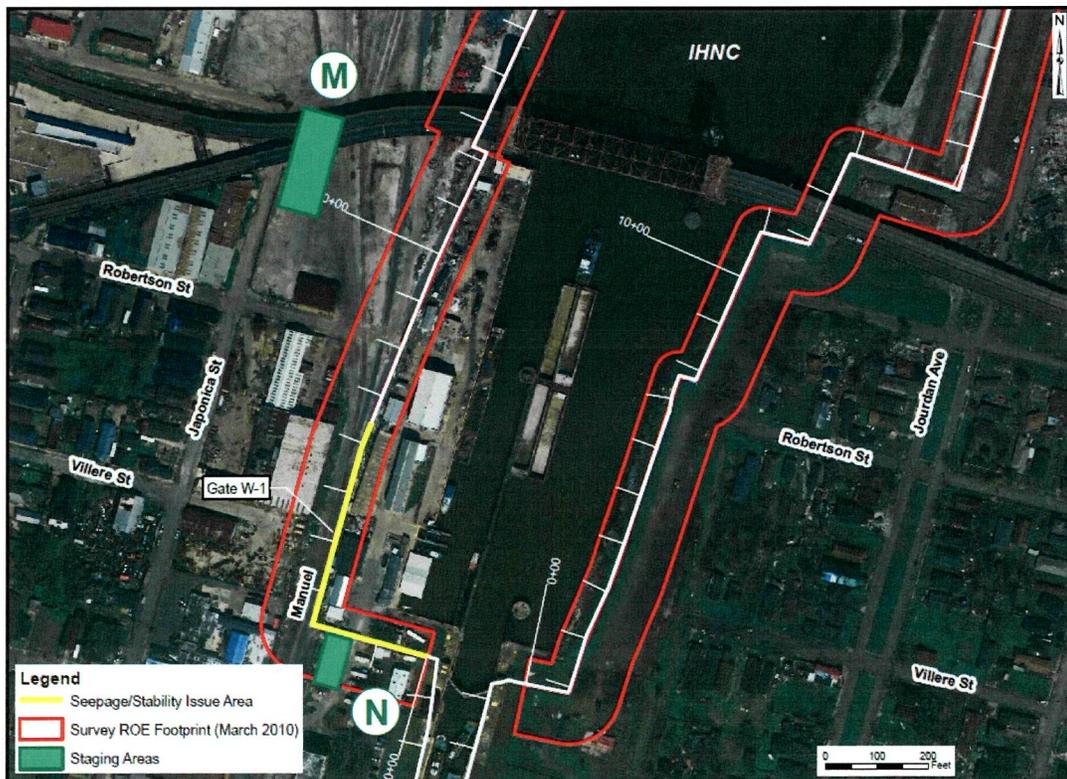
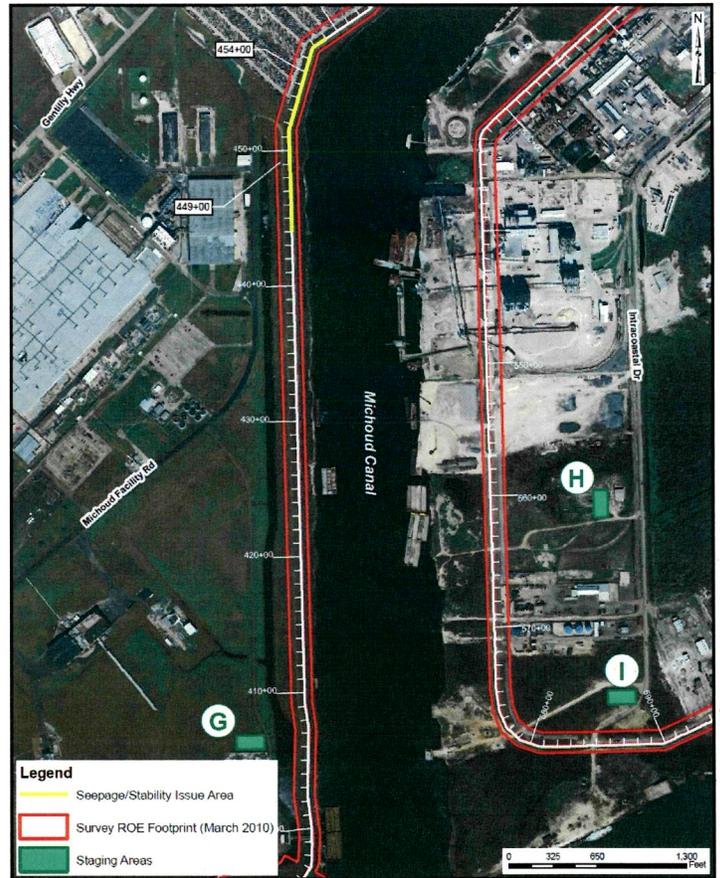
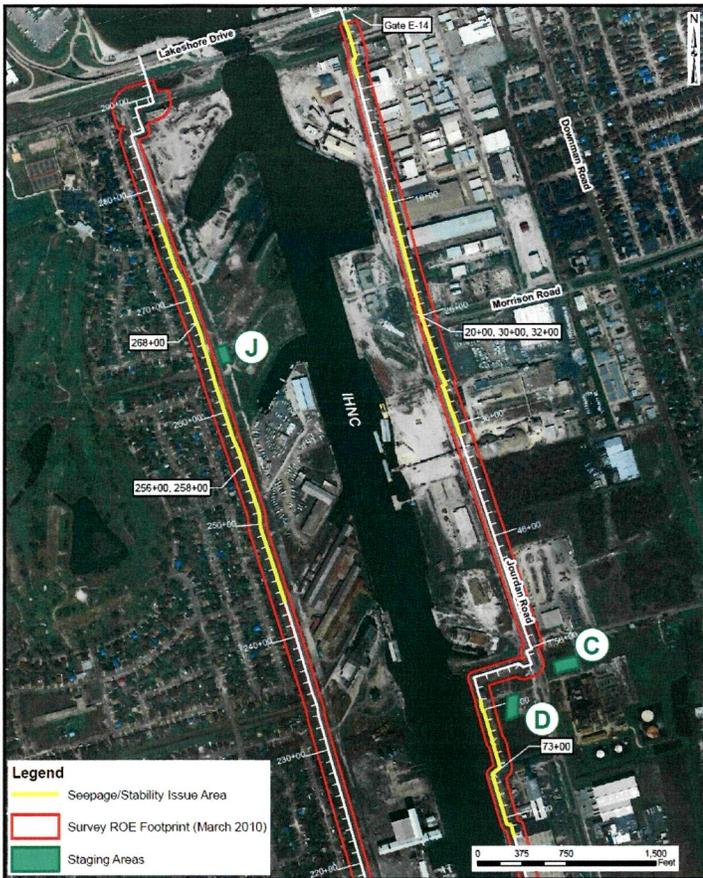


Figure 7. Temporary Staging Area Locations (2 of 2)



Figure 8. Map of Anticipated Project Access Roads and Properties

BOBBY JINDAL
GOVERNOR



ROBERT D. HARPER
SECRETARY

State of Louisiana
DEPARTMENT OF NATURAL RESOURCES
OFFICE OF COASTAL MANAGEMENT

July 23, 2010

Joan M. Exnicios
Chief, Environmental Planning & Compliance Branch
Dept. of the Army
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160-0267

RE: **C20100126**, Coastal Zone Consistency
U. S. Army Corps of Engineers, New Orleans District
Direct Federal Action
Repair and restoration of levees and floodwalls in the INHC and GIWW corridor,
Orleans Parish, Louisiana

Dear Ms. Exnicios:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP. If you have any questions concerning this determination please contact Brian Marcks of the Consistency Section at (225)342-7939.

Sincerely yours,

Gregory J. DuCote
Administrator
Interagency Affairs/Field Services Division

GJD/JDH/bgm

CC: Lee Walker COE-NOD
Dave Butler, LDWF
Tim Killeen, IA/FSD
Wynecta Fisher, Orleans Parish

Net Embankment Increase/Concrete Slab: The net embankment increase requires adding fill on the protected side of the I-Wall so that SWE is not more than 4 feet above the protected side embankment. A concrete slab tying the cut-off wall to the I-wall may be used to increase the embankment if the 4 foot stick-up requirement cannot be met by adding fill alone. It also may require adding fill to the flood side of the wall to remediate the pile penetration concerns or both sides of the wall to remediate the D/H concerns. Construction of this alternative would require access on the protected side for equipment and material delivery. The increased embankment height is not expected to exceed 2 feet above the existing embankment.

CEMVN DETERMINATION OF IMPACTS TO T&E SPECIES

In conjunction with IER #5 (Permanent Protection System for the Outfall Canals Project on 17th Street, London Avenue and Orleans Avenue Canals) and IER #4 (Orleans East Bank, New Orleans Lakefront Levee, West of Inner Harbor Navigation Canal to Eastbank of 17th St. Canal), we believe that these projects, as planned, would not adversely affect any threatened or endangered species, and any impacts to the designated Gulf Sturgeon critical habitat would be temporary and will have been minimized to the maximum extent practicable. Please review this information and inform us whether or not you agree with our determination.

CONTACT INFORMATION

Please review the enclosed information and provide comments within 30 days of the date of this letter. The IER will not be signed until all environmental review and compliance requirements have been completed. A copy of the signed IER will be provided upon request.

Comments should be mailed to the attention of Ms. Laura Lee Wilkinson; U.S. Army Corps of Engineers; CEMVN-HPO; P.O. Box 60267; New Orleans, Louisiana 70160-0267. Comments may also be provided by E-Mail to Laura.L.Wilkinson@usace.army.mil. Ms. Wilkinson may be contacted at (504) 862-1212, if questions arise.

Sincerely,



Laura Lee Wilkinson
Environmental Coordinator
Hurricane Protection Office
U.S. Army Corps of Engineers,
New Orleans District

This project has been reviewed for effects to Federal trust resources under our jurisdiction and currently protected by the Endangered Species Act of 1973 (Act). The project, as proposed,
() will have no effect on those resources
(X) is not likely to adversely affect those resources.
This finding fulfills the requirements under Section 7(a)(2) of the Act.

 24 Jul 2010

Acting Supervisor
Louisiana Field Office
U.S. Fish and Wildlife Service



United States Department of the Interior



FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506
August 5, 2010

Colonel Edward R. Fleming
District Engineer
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Fleming:

Please reference the U.S. Army Corps of Engineers (Corps) August 2, 2010, electronic correspondence providing supplemental information regarding the "Draft Individual Environmental Report Supplemental (IERS) Improved Protection on the Inner Harbor Navigation Canal (IHNC), Orleans and St. Bernard parishes, Louisiana, IERS # 11b Tier 2 Borgne." That IER is being prepared under the approval of the Council on Environmental Quality (CEQ) to obtain compliance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321- 4347) and is authorized 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 of Engineers (Corps) to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana to provide 100-year hurricane protection. This draft report provides planning objectives and recommendations to minimize project impacts to fish and wildlife resources.

The U.S. Fish and Wildlife Service (Service) provided a November 26, 2007, Draft Programmatic Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) report that addresses the hurricane protection improvements authorized in Supplemental 4, an October 9, 2008, FWCA Report that provided recommendations specific to IER 11 Tier 2 Borgne, and an October 23, 2009, FWCA Report that provided recommendations specific to IER 11 Tier 2 Pontchartrain. This letter supplements our previous reports and addresses the proposed repair and restoration of portions of levees and floodwalls that do not meet the necessary factors of safety for stability as dictated by the current Corps design guidelines. This report does not constitute the report of the Secretary of the Interior as required by Section 2(b) of the FWCA. This report has been provided to the Louisiana Department of Wildlife and Fisheries and the National Marine Fisheries Service; their comments will be incorporated into our final report.

The study area is located within Orleans and St. Bernard Parishes within the Mississippi River



Deltaic Plain of the Lower Mississippi River Ecosystem. Higher elevations occur on the natural levees of the Mississippi River and its distributaries. Developed lands are primarily associated with natural levees, but extensive wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development. Federal, State, and local levees have been installed for flood protection purposes, often with negative effects on adjacent wetlands. The Mississippi River, the Gulf Intracoastal Waterway (GIWW), and Inner Harbor Navigation Canal (IHNC) are prominent landscape features, as are extensive oil and gas industry access channels and pipeline canals. Extensive wetlands and associated shallow open waters dominate the landscape outside the flood control levees, and Lakes Pontchartrain and Borgne are two major estuarine water bodies located within the study area.

Habitat types in the study area include forested wetlands (i.e., bottomland hardwoods in varying successional stages and/or swamps), non-wet bottomland hardwoods, marsh, open water, and developed areas. Due to 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.

As previously mentioned, the Service has provided FWCA Reports for the authorized hurricane protection project. Those reports contain a thorough discussion of the significant fish and wildlife resources (including habitats) that occur within the study area. For brevity, that discussion is incorporated by reference herein but the following information is provided to supplement the previously mentioned reports and provide specific recommendations regarding the proposed change in plans.

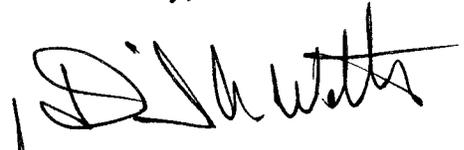
To ensure a 100-year level of protection the subject reaches of the existing levees and floodwalls along the IHNC will be repaired and restored to become a redundant risk reduction feature associated with overtopping of the primary risk reduction system (i.e., the Borgne Barrier and Seabrook Gate). Several methods of repair and restoration are proposed along the three primary reaches which include numerous deficient segments of levee and floodwalls. Construction methods include deep soil mixing, constructing berm on the protected-side of the existing system to increase stability, constructing a concrete buttress wall in addition to the existing I-wall, constructing a structural concrete base slab perpendicular to the adjacent floodwall on the protected side, and constructing relief wells. Approximately 62.5 acres of existing right-of-way (ROW) could potentially be impacted by construction of the proposed action. Fourteen staging areas, primarily located in upland areas not within the existing ROW, would be required for the proposed action and would temporarily impact approximately 5.4 acres. Existing levee ROWs currently vegetated with grass and provide minimal habitat for fish and wildlife resources.

SERVICE POSITION AND RECOMMENDATIONS

Because the proposed project do not require mitigation and will not impact high quality fish and wildlife habitat, the Service still does not object to the construction of the proposed project but believes that the recommendations provided in our previous FWCA Reports continue to remain valid and should be incorporated into future project planning and implementation.

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

Sincerely,



James F. Boggs
Supervisor
Louisiana Field Office

cc: NMFS, Baton Rouge, LA
EPA, Dallas, TX
LDWF, Baton Rouge, LA
LDNR, CMD, Baton Rouge, LA
OCPR, Baton Rouge, LA



SCOTT ANGELLE
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF HISTORIC PRESERVATION

PAM BREAU
SECRETARY

September 13, 2010

Ms. Joan M. Exnicios
Chief, New Orleans Environmental Branch
New Orleans District, U.S. Army Corps of Engineers
P.O. Box 6267
New Orleans, LA 70160-0267

Re: Determination of Effect
Proposed Repair and Restoration of Levees and Floodwalls in
Inner Harbor Navigation Canal/Gulf Intracoastal Waterway Corridor
New Orleans, Orleans Parish, LA

Dear Ms. Exnicios:

We have completed our review of the referenced levee-floodwall repair and restoration project and it is our opinion that it would have no adverse effect on any historic property.

If you have any questions, please contact Mike Varnado in the Division of Historic Preservation at (225) 219-4596.

Sincerely,

A handwritten signature in blue ink that reads "Phil Boggan".

Phil Boggan
Deputy State Historic Preservation Officer

PB:MV:s



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

October 20, 2010 F/SER46/RH:jk
225/389-0508

Ms. Joan M. Exnicios
Environmental Planning and Compliance Branch
Planning, Programs, and Management Division
New Orleans District, U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Ms. Exnicios:

NOAA's National Marine Fisheries Service (NMFS) has received the draft **Individual Environmental Report (IERS) #11.b Tier 2 Borgne-IHNC** titled "Improved Protection on the Inner Harbor Navigation Canal, Orleans and St. Bernard Parishes, Louisiana" transmitted by your letter dated October 15, 2010. The draft IERS evaluates the impacts of various construction methods to restore and reinforce 4.6 miles of existing hurricane protection features associated with the Inner Harbor Navigation Canal and Gulf Intracoastal Waterway. Evaluated construction methods included deep soil mixing, berms, concrete slabs, buttress walls, and relief wells.

As discussed in the draft IERS, none of the reinforcement measures discussed have the potential to impact wetlands or other areas categorized as essential fish habitat. As such, NMFS has no comments to provide on the document or recommendations as to reinforcement of hurricane protection features.

We appreciate the opportunity to provide comments on the draft IERS.

Sincerely,


for Miles M. Croom

Assistant Regional Administrator
Habitat Conservation Division

c:
FWS, Lafayette, Walther
EPA, Dallas, Ettinger
LA DNR, Consistency, Ducote
F/SER46, Swafford
Files



United States Department of Agriculture



Natural Resources Conservation Service
3737 Government Street
Alexandria, LA 71302

(318) 473-7751
Fax: (318) 473-7626

October 21, 2010

Joan Exnicios
Chief, New Orleans Environmental Branch
Department of Army
P.O. Box 60267
New Orleans, Louisiana 70160-0267

RE: Tier 2 Borgne-IHNC Inner Harbor Navigation Canal

Joan Exnicios:

I have reviewed your proposal titled Improved Protection on the Inner Harbor Navigation Canal. At this time, NRCS does not have any project that would be impacted by your proposed project.

Please direct all future correspondence to me at the address shown above.

Respectfully,

A handwritten signature in black ink, appearing to read "W. Norton", is written over the typed name.

Kevin D. Norton
State Conservationist

Helping People Help the Land

An Equal Opportunity Provider and Employer



United States Department of the Interior



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

October 28, 2010

Colonel Robert Sinkler
Commander
Hurricane Protection Office
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Sinkler:

Please reference the U.S. Army Corps of Engineers' (Corps) draft Individual Environmental Report Supplemental (IERS) titled "Improved Protection on the Inner Harbor Navigation Canal (IHNC), Orleans and St. Bernard Parishes, Louisiana" (IERS # 11.b Tier 2 Borgne – IHNC). The draft IERS was transmitted via an October 15, 2010, letter from Ms. Joan M. Exnicios, Chief of your New Orleans Environmental Branch. That draft IERS evaluates the potential impacts associated with the proposed hurricane protection improvements along the Inner Harbor Navigation Canal (IHNC). The U.S. Fish and Wildlife Service (Service) submits the following comments in accordance with provisions of the National Environmental Policy Act (NEPA) of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321 et seq.), and the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.).

The IERS has been prepared to evaluate the potential impacts associated with restoring and reinforcing approximately 4.6 miles of non-continuous IHNC and Gulf Intracoastal Waterway (GIWW) levees and floodwalls in Orleans Parish, Louisiana. Restoration and reinforcement of twenty-one (21) deficient sections of levee and floodwall would be an improvement to the secondary flood risk reduction system of the IHNC Hurricane Storm Damage Risk Reduction System, with the Borgne Barrier and Seabrook Gate being the primary flood risk reduction system. Several methods of restoration are proposed within the existing rights-of-way including deep soil mixing, berm construction, relief well installation, and buttress wall and/or concrete slab construction.

The draft IERS provides a good description of fish and wildlife resources in the study area, the purpose and need for the proposed action, and the potential impacts associated with each alternative and method of restoration. The Service has determined that the proposed project will not have a significant adverse impact on our Federal fish and wildlife trust resources. Furthermore, the Service concurred with the Corps' determination that the proposed action is not likely to adversely affect any Federally listed threatened or endangered species on July 24, 2010.

**TAKE PRIDE[®]
IN AMERICA** 

Should the proposed project changed significantly or is not implemented within one year, we recommend that you reinitiate coordination with our office to ensure the continuing validity of our determinations.

We appreciate the opportunity to review the draft IERS. If you or your staff has any questions regarding the above letter, please have them contact Angela Trahan of this office at (318) 291-3137.

Sincerely,



per James F. Boggs
Supervisor
Louisiana Field Office

cc: NMFS, Baton Rouge, LA
EPA, Dallas, TX
LDWF, Baton Rouge, LA
LDNR, CMD, Baton Rouge, LA
OCPR, Baton Rouge, LA



BOBBY JINDAL
GOVERNOR

State of Louisiana

ROBERT J. BARHAM
SECRETARY

DEPARTMENT OF WILDLIFE AND FISHERIES
OFFICE OF WILDLIFE

JIMMY L. ANTHONY
ASSISTANT SECRETARY

November 10, 2010

Attn: Joan M. Exnicios
Planning, Programs, and Project Management Division
Environmental Planning and Compliance Branch
United States Army Corps of Engineers
P. O. Box 60267
New Orleans, LA 70160-0267

RE: *Application Number: IERS 11.b Supplemental*
Applicant: U.S. Army Corps of Engineers-New Orleans Division
Notice Date: October 15, 2010

Dear Ms. Exnicios:

The professional staff of the Louisiana Department of Wildlife and Fisheries (LDWF) has reviewed the above referenced Public Notice. Based upon this review, the following has been determined:

LDWF has no objection to the proposed project, provided that previous LDWF recommendations are incorporated into the new permit as standard conditions.

The Louisiana Department of Wildlife and Fisheries appreciates the opportunity to review and provide recommendations to you regarding this proposed activity. Please do not hesitate to contact Habitat Section biologist Chris Davis at 225-765-2642 should you need further assistance.

Sincerely,

Kyle F. Balkum
Biologist Program Manager

cd

c: Chris Davis, Biologist



United States Department of the Interior



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

November 17, 2010

Colonel Robert Sinkler
Commander
Hurricane Protection Office
U.S. Army Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160-0267

Dear Colonel Sinkler:

Please reference the August 2, 2010, electronic correspondence providing supplemental information regarding the "Draft Individual Environmental Report Supplemental (IERS) Improved Protection on the Inner Harbor Navigation Canal (IHNC), Orleans and St. Bernard parishes, Louisiana, IERS # 11b Tier 2 Borgne." That IERS is being prepared under the approval of the Council on Environmental Quality (CEQ) to obtain compliance with the National Environmental Policy Act of 1969 (83 Stat. 852, as amended; 42 U.S.C. 4321- 4347) and is authorized 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 of Engineers (Corps) to upgrade two existing hurricane protection projects (i.e., Westbank and Vicinity of New Orleans and Lake Pontchartrain and Vicinity) in the Greater New Orleans area in southeast Louisiana to provide 100-year hurricane protection.

The U.S. Fish and Wildlife Service (Service) provided a November 26, 2007, Draft Programmatic Fish and Wildlife Coordination Act (FWCA; 48 Stat. 401, as amended; 16 U.S.C. 661 et seq.) report that addresses the hurricane protection improvements authorized in Supplemental 4, a October 9, 2008, FWCA Report that provided recommendations specific to IER 11 Tier 2 Borgne, and a October 23, 2009, FWCA Report that provided recommendations specific to IER 11 Tier 2 Pontchartrain. This letter supplements our previous reports and addresses the proposed repair and restoration of portions of levees and floodwalls that do not meet the necessary factors of safety for stability as dictated by the current Corps design guidelines. This report constitutes the report of the Secretary of the Interior as required by Section 2(b) of the FWCA. This report has been provided to the Louisiana Department of Wildlife and Fisheries and the National Marine Fisheries Service, and no additional comments or recommendations have been received from those agencies.



The study area is located within Orleans and St. Bernard Parishes within the Mississippi River Deltaic Plain of the Lower Mississippi River Ecosystem. Higher elevations occur on the natural levees of the Mississippi River and its distributaries. Developed lands are primarily associated with natural levees, but extensive wetlands have been leveed and drained to accommodate residential, commercial, and agricultural development. Federal, State, and local levees have been installed for flood protection purposes, often with negative effects on adjacent wetlands. The Mississippi River, the Gulf Intracoastal Waterway (GIWW), and IHNC are prominent landscape features, as are extensive oil and gas industry access channels and pipeline canals. Extensive wetlands and associated shallow open waters dominate the landscape outside the flood control levees, and Lakes Pontchartrain and Borgne are two major estuarine water bodies located within the study area.

Habitat types in the study area include forested wetlands (i.e., bottomland hardwoods in varying successional stages and/or swamps), non-wet bottomland hardwoods, marsh, open water, and developed areas. Due to 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.

As previously mentioned, the Service has provided FWCA Reports for the authorized hurricane protection project. Those reports contain a thorough discussion of the significant fish and wildlife resources (including habitats) that occur within the study area. For brevity, that discussion is incorporated by reference herein but the following information is provided to supplement the previously mentioned reports and provide specific recommendations regarding the proposed change in plans.

To ensure a 100-year level of protection the subject reaches of the existing levees and floodwalls along the IHNC will be repaired and restored to become a redundant risk reduction feature associated with overtopping of the primary risk reduction system (i.e., the Borgne Barrier and Seabrook Gate). Several methods of repair and restoration are proposed along the three primary reaches which include numerous deficient segments of levee and floodwalls. Construction methods include deep soil mixing, constructing berm on the protected-side of the existing system to increase stability, constructing a concrete buttress wall in addition to the existing I-wall, constructing a structural concrete base slab perpendicular to the adjacent floodwall on the protected side, and constructing relief wells. Approximately 62.5 acres of existing right-of-way (ROW) could potentially be impacted by construction of the proposed action. Fourteen staging areas, primarily located in upland areas not within the existing ROW, would be required for the proposed action and would temporarily impact approximately 5.4 acres. Existing levee ROW currently vegetated with grass provides minimal habitat for fish and wildlife resources.

SERVICE POSITION AND RECOMMENDATIONS

Because the proposed project does not require mitigation and will not impact high quality fish and wildlife habitat, the Service still does not object to the construction of the proposed project.

The recommendations provided in our previous FWCA Reports continue to remain valid and should be incorporated into future project planning and implementation.

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

Sincerely,



James F. Boggs
Supervisor
Louisiana Field Office

cc: NMFS, Baton Rouge, LA
EPA, Dallas, TX
LDWF, Baton Rouge, LA
LDNR, CMD, Baton Rouge, LA
OCPR, Baton Rouge, LA

APPENDIX F

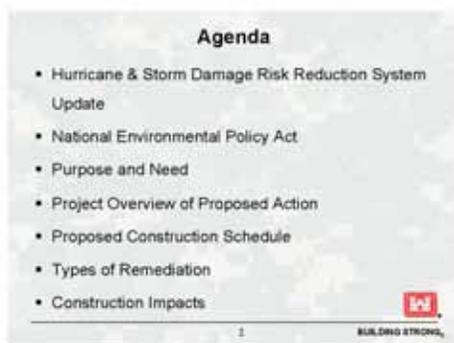
Public Meeting Comment Summaries

Individual Environmental Report Supplemental IER #11b – Tier 2 Borgne Public Meeting October 13, 2010

Location	St. Gabriel the Archangel Catholic Church
Time	Open House 6 p.m.- 6:30 p.m. Presentation 6:30 p.m.
Attendees	Approx. 40
Format	Open House Presentation Discussion
Handouts	<ul style="list-style-type: none"> • Seabrook Complex Fact Sheet • Lake Borgne Surge Barrier Fact Sheet • Corps Approval Process brochure
Facilitator	Nancy Allen, public affairs



Nancy Allen: Welcome. I'm Nancy Allen, the public affairs officer for the Hurricane Protection Office. Our commander Col. Sinkler couldn't be with us this evening, but I want to welcome you and say thank you for taking time out of your schedule to be with us. I would like to introduce some staff members we have here tonight. We have Ron Elmer, our IHNC branch chief and he will be doing the presentation this evening. Bill Maloz, a project manager, Chantrelle Carriere, a project manager, Laura Lee Wilkinson and Lee Walker from environmental. We also have Joe Rochelle with us representing Councilwoman Clarkson's office, Gerry Gillen from the Orleans Levee District and Clay Miller from the Port of New Orleans.

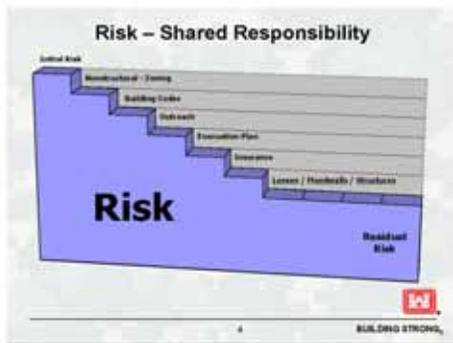


Tonight's meeting is to discuss Individual Environmental Report Supplemental 11b Tier 2, which focuses on improved protection in the Inner Harbor Navigation Canal. This IER Supplemental has not been released yet for public review, but tonight we will brief you on the information contained within it and take your questions and comments. We expect that it should be out by Friday. The 30-day public comment period for this document will start once it's released for the public. We ask that you let us get through all the slides and then we will open up the floor for questions and comments. I'll give you a brief update on the status of the system and then turn it over to Ron for some more information on specifics of the projects.



I do want to give you a brief update of where we are on the construction of the hurricane and storm damage risk reduction system. This is a \$14.4 billion dollar system that was authorized and fully-funded by Congress and we are well on our way of our goal of providing 100-year level of protection by June 2011. The Hurricane Protection Office is overseeing construction on the East Bank of Orleans Parish and St. Bernard Parish, including the IHNC corridor, and the outfall canals. Along the New Orleans metro lakefront from the 17th Street Canal to the IHNC, we are more than 95% complete with that work. We are finishing up some floodwall

construction on the west ends and four ramps along Lakeshore Drive and those streets will be re-opened within a few months. In New Orleans East, this portion of work is 100% complete. We are doing work here on the floodwalls from the Lakefront Airport up to Lincoln Beach. On the east side adjacent to the Bayou Sauvage Wildlife Refuge, we are building some of the most massive levees in the system; these are approximately 300 feet wide with an elevation of 22-24 feet. In this area, which we call LPV – Lake Pontchartrain and Vicinity 111, we are using a process called deep soil mixing where we are injecting cement into the soil to create columns and that helps stabilize the foundation of the levees. The IHNC surge barrier here, the wall is complete and we are just finishing up work on the three navigation gates. Around St. Bernard, we are busy construction 23-miles of T-walls, two sector gates and two highway floodgates.



We do like to remind everyone that reducing risk is a shared responsibility. We can all do our part to reduce risk including implementing zoning and building codes, outreach and education, having an evacuation plan, having insurance and then the structural features of the system like levees, floodwalls and flood structures. However, there is always residual risk living in Southeast Louisiana. We do ask you to be alert and have an evacuation plan and if your local officials order an evacuation, please follow those orders.

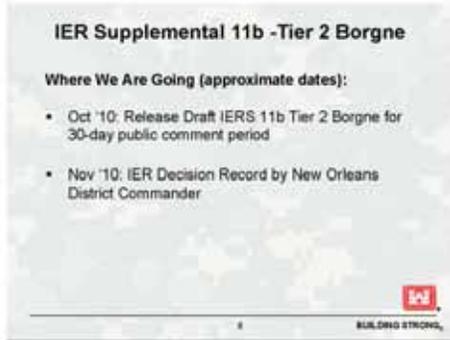
National Environmental Policy Act "NEPA"

- Required for all major Federal actions
- Analyze potential impacts to the human and natural environment and investigate reasonable alternatives
- Analyses documented in Environmental Assessments (EA), Environmental Impact Statements (EIS), or Individual Environmental Reports (IER)
- Public involvement is KEY: *We want to hear from you!*
- **Goal: more informed decision making through public involvement**

BUILDING STRONG

The projects that we are discussing here tonight are subject to the National Environmental Policy Act or NEPA, which requires that we look at the impacts of this project and look at alternatives. These studies can be documented in different types of reports including environmental assessments, environmental impact statements or individual environmental reports and that is what we are talking about here tonight.

The following notes were recorded by USACE contractors. These notes are intended to provide an overview of the presentations and public questions and comments, and are not intended to provide a complete or verbatim account of the meeting. This account is not intended to be a legal document.

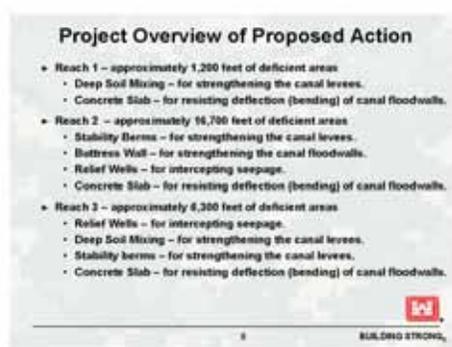


To give you a timeline, our document should be out by Friday and you will have 30 days to submit written comments and then in November 2010, we expect the IER decision record to be signed by the New Orleans district commander. All of our information regarding our environmental reports can be found on www.nolaenvironmental.gov.

Ron Elmer: I am the program manager for the Inner Harbor Navigation Canal program and that includes all the barriers, the levees and floodwalls along the GIWW and IHNC as well as the Seabrook structure. The purpose of this IER is to identify and make public the areas that we have found deficient along the IHNC with respect to the new design guidelines that we are required to follow when we build new levee and floodwall systems. These guidelines have certain safety factors for stability and seepage. We have done an analysis of all the levees and floodwalls, approximately 30 miles, and there is about 4.6 miles of the system that doesn't quite meet those guidelines with respect to stability and seepage.



This slide shows you the ways and methods we plan on using to remediate and correct those deficiencies that we have found. In Reach One, this is the levee and floodwall system that runs along the Lower 9th Ward and the East Bank of the IHNC, the south side of the GIWW and ties into the barrier system by Bayou Bienvenue. Reach Two is the area in New Orleans East around the Michoud Canal along the GIWW and then on the east side going north towards the lake. The third reach is on the west side of the IHNC that runs from the lock at the river all the way to the lakefront. Those are the three reaches we broke up the work into.



In Reach 1, based on the analysis to date, we are finding stability problems that we are correcting by using deep soil mixing and concrete slabs. We have some slides later that will show you graphically what we are doing. One Reach 2 there is approximately 16,700 feet of deficient area, which indicates different types of problems dealing with seepage and instability and these are the methods we plan on using to correct those deficiencies; stability berms, buttress walls, relief wells and concrete slabs. On Reach 3 there is approximately 63-hundred feet of deficiency areas and we plan on using the same type of corrective actions to take care of those

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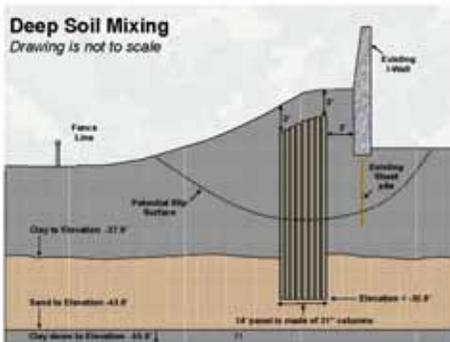
deficiencies.



This map in red shows the areas that are deficient and where they are located along the system. We are not quite finished all the analysis, but to date these are the areas we have found to be deficient and all indications are we can probably reduce the amount of work that is necessary once we finish analysis. The amount of work we are showing in the IER will potentially go down some.



Right now our proposed construction schedule once the IER public review is done and decision record signed, we can then go out with contracts. We plan on advertising contracts in early 2011 and there are several contracts and we should have everything done by next hurricane season, June 1, 2011. All the work that we are doing is within the existing footprint of the existing right-of-ways so we are not going out onto any private or commercial property within the footprint of the existing right-of-way of the levee system.

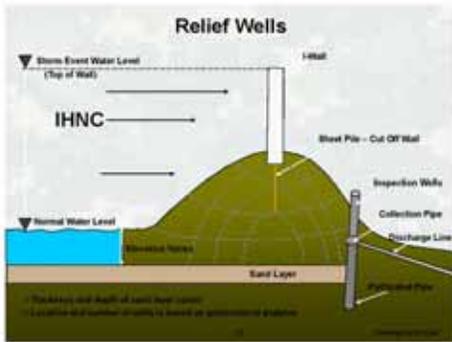


Deep soil mixing is one of the methods we have to remediate the deficiencies we have in certain areas. The problem is when the water gets high enough on the wall, there is a stability problem where the earth wants to rotate this way and fail. Our solution is doing deep soil mixing, which strengthens the area where this possible failure plain exist and it keeps it from sliding.



These are pictures of deep soil mixing that we have previously done along the IHNC along the West Bank. We did about 18-hundred feet of wall right after Gustav and it went well.

Public Meeting Summary



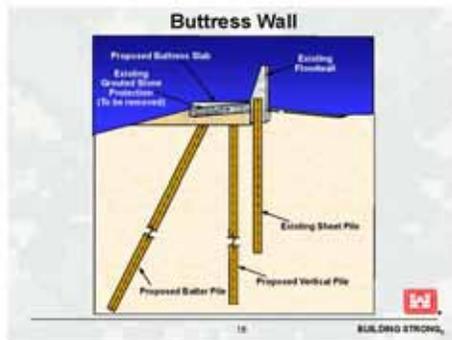
Relief wells are another method for taking care of seepage problems; this is the canal side and this is the protected side. When the water gets up into the canal the water pressure in the sand layers that exist in some areas, builds up and the soil starts to move and the pressure so high that you will get movement of sand layer and the system will slide. The bank becomes unstable because of movement of the sand layers below. To relieve that pressure we put in a relief well where that water is controlled into a pipe and into the drainage system so that it prevents the pressures from building up and moving the material.



These are some pictures of some wells that are along the protected side of the canal. There are quite a few of them in some areas and they do function quite well.



This is another method of repairing for a stability problem. Some areas where the stability problems exist we can solve that problem by adding additional dirt on the backside to compensate for that slow failure. This is quite an easy fix and goes quickly.



This is a buttress wall and another stability problem fix. There are existing grouted mats behind the wall for overtopping and erosion protection and that is where we see some stability problems in the smaller areas. What we are doing is going in removing this existing erosion protection, driving piles and building a slab behind to compensate for the stability problem.

Public Meeting Summary

What To Expect During Construction

- Construction impacts
 - Elevated noise levels from motors, pumps, generators, etc.
 - Road access will be limited at times
 - Extended work hours (6 days per week up to 12 hours per day)
- Efforts to minimize impacts
 - Trucks will utilize only approved haul routes

CONSTRUCTION IMPACTS HOTLINE
877-427-0346



17 BUILDING STRONG

There are some things that can be expected during construction, but most of the construction areas aren't in too many residential areas, but there will be some construction impacts. There may be some elevated noise levels from the pumps, generators and motors of the equipment. We don't see any road closures, but in some isolated areas there may be limited access during construction with the road traffic. We do expect to do some extended work hours where we will be working six days a week, 12 hours a day. To minimize impacts, we will have requirements for controlling dust when the trucks are rolling in the street. We will use approved haul roads so we shouldn't have any impact with the areas we are talking about in the construction efforts we will have going on.

Inner Harbor Navigation Canal
Lake Pontchartrain (Seabrook) Surge Barrier



Conceptual

18 BUILDING STRONG

This is the Seabrook structure; the IER doesn't cover this, it covers the levees and floodwalls, but this is an integral part of the system where the levees and floodwalls along the canal tie into the lakefront. This work has started and we are under construction and we are moving well with the construction. We don't see any problems right and all indications is that we will have the 100-year level of protection next hurricane season and it's moving quite well.

Inner Harbor Navigation Canal
Lake Pontchartrain (Seabrook) Surge Barrier

Construction Under way



19 BUILDING STRONG

The canal is closed at the Railroad Bridge at Seabrook because of us building the sector gates and lift gates. We are underway and the canal is closed and we are anticipating roughly a 12-month closure period.

Currently Available for Public Review

- IER 31 – Contractor Furnished Borrow Material #7
 - Public review Sept. 17 through Oct. 16, 2010
- Comments can be submitted by:
 - Calling 504-862-1544
 - E-mailing www.environmental@usace.army.mil
 - Or at any time at www.nolaenvironmental.gov

20 BUILDING STRONG

Nancy Allen: Some additional items we want to bring to your attention. We do have an IER available for public review and you see the review dates here. It is for the Contractor Furnished Borrow. You can submit your comments by phone, by e-mail or at www.nolaenvironmental.gov.

On Monday Oct. 25th we will have a meeting on the Westbank regarding the Belle Chasse Tunnel construction impacts

The following notes were recorded by USACE contractors. These notes are intended to provide an overview of the presentations and public questions and comments, and are not intended to provide a complete or verbatim account of the meeting. This account is not intended to be a legal document.



Public Meeting Summary

Upcoming Public Meetings
Open House 6 p.m. - Presentation 6:30 p.m.

Monday, October 25, 2010
 Belle Chasse Tunnel Construction Impacts
 IER 12 Supplemental Addendum
 Belle Chasse Auditorium, 8308 Highway 23
 Belle Chasse, LA 70007

Tuesday, October 26, 2010
 New Orleans East Construction Update
 IER 11b Supplemental Tier 2 Boigne
 St. Maria Goretti Church, 7360 Crowder Boulevard
 New Orleans, LA 70127

Tuesday, October 26, 2010
 Southeast Louisiana Urban Flood Control Program - Orleans
 Loyola University New Orleans
 Room 211 Hall, 2nd floor, 6363 St. Charles Avenue
 New Orleans, LA 70118

21 BUILDING STRONG

On Oct. 26th, we will be in New Orleans East at the St. Maria Goretti Church for a New Orleans East construction update as well as to take additional comments and questions on the IER 11b Supplemental. So we will be giving a briefing on this project and provide an update on other New Orleans East projects at that time. Also on Tues. Oct 26th, there is a meeting about SELA and that is at Loyola New Orleans.

Opportunities for Public Input

- Regular Public Hearings throughout the Hurricane and Storm Damage Risk Reduction System (HSRRS) Area
- Make sure to sign in tonight to get on our meeting notification mailing list
- Comments can be submitted at any time at www.nolaenvironmental.gov
- Individual Environmental Reports (IER) 30-day Public Review

Questions and comments regarding Hurricane Risk Reduction Projects should be addressed to:

Patricia Leroux
 PM-82
 P.O. Box 60267
 New Orleans, LA 70160-0267
 Telephone: 504-862-1544

E-mail: environmental@usace.army.mil

22 BUILDING STRONG

There are always opportunities for you to give us feedback. Make sure you sign in and you will be added to our mailing list. Comments can always be submitted on www.nolaenvironmental.gov and you can address your comments specifically to Patricia Leroux for this and other projects. Comments here tonight will also become part of the official record.

Web-based Resources

www.nolaenvironmental.gov <http://www.mvn.usace.army.mil>

CONSTRUCTION IMPACTS HOTLINE
 877-427-0345

BUILDING STRONG

We have two web resources. There is www.nolaenvironmental.gov, all of our environmental documentation is there. We also have the New Orleans District webpage, which is www.mvn.usace.army.mil and this information is also on all our fact sheets in the back of the room. We also have a construction impacts hotline; if you have issues or questions or see something please call this hotline and someone will get back in touch with you and try to minimize those impacts in your neighborhood.

Social Web Networking Communities

social media: bring events to life

twitter
 It's an online messaging and social networking system that allows people to post short messages (140 characters or less) called tweets. Tweets are visible to all users or to a specific group of users. Twitter is a popular way to share information and connect with others. Check out our photos at www.flickr.com/photos/3782759@N00/

flickr
 Flickr is an online community platform for sharing digital photos and videos. Users from around the world can post and view photos and videos. Flickr is a popular way to share information and connect with others. Check out our photos at www.flickr.com/photos/3782759@N00/

facebook
 Facebook is a global social networking site that allows people to connect with friends and family. Users can post photos, videos, and messages. Facebook is a popular way to share information and connect with others. Check out our photos at www.facebook.com/3782759@N00/

We also have several networks at Twitter to give out short, brief messages. If you are curious about any of these projects, please visit Flickr, which is a photo-sharing website and you can find pictures of all of our projects. We are also on Facebook. We also like to have people come out and see our projects so if you have a community group, you can schedule a field trip or have someone speak to your group, please let us know and we will get your information.

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Public Meeting Summary

These are our direct links to all social media.

We are now going to open it up for your comments or questions. We don't have speaker cards so we are just going to line up at the microphone and I'll take you in that order. I do ask that you be respectful of everyone and keep your comments to three to five minutes so we can get to everyone. If you still have questions or concerns afterwards, you can see any of the Corps folks. All comments will be considered part of the public record. We will do our best to answer questions about other projects, but if we don't have the answer, we will get back to you.

Billy Marchel: You say you are repairing or fixing deficient areas, how are you defining deficient?

Ron Elmer: We are following the guidelines set following Katrina for design of floodwalls based on the stability and seepage.

Billy Marchel: So is that going to say maintaining the existing elevation of the IHNC floodwalls with the 500-year survivability?

Ron Elmer: Yes, what we are doing is making sure they satisfy the design criteria for stability and seepage. The existing levees and floodwalls vary in height anywhere from 12-15 feet and that is being analyzed for what they are for water to the top of those walls for the specs they have set for the design criteria.

Billy Marchel: And the strength and survivability for overtopping we can

Ron Elmer: They are presuming for the 500-year, yes...

Billy Marchel: So if you look at the LACPR Report that shows for a 400-year event with the Michoud Gate and Seabrook Gate in place, the water in the industrial canal will be 12 feet.

Ron Elmer: No it won't, it will be 10 feet.

Billy Marchel: So, what you are saying is with that wall in place, that this side of that wall would be survivable and hold up to a 400-year event.

Ron Elmer: Right now, the 100-year storm event, if we had design solved, there would be eight feet of water in that canal, that's the theory. If we have a 500-year storm, it would get up to 10 feet.

Billy Marchel: The walls are now 12 feet with a 500-year survivability, so we would have potentially 500-year protection on this side of that wall for some overtopping.

Ron Elmer: There shouldn't be any overtopping, no.

Billy Marchel: Ok, plus we have 18.5 foot lakefront levee and a 500-year survivability so between New Orleans and the Industrial Canal and the 17th Street Canal, we will basically have 500-year protection in the part of New Orleans.

Ron Elmer: What we are saying is that the system being designed to be resilient to the 500-year storm; I'm not saying we have a 500-year level of protection. We have a 1% of a 100-year

The following notes were recorded by USACE contractors. These notes are intended to provide an overview of the presentations and public questions and comments, and are not intended to provide a complete or verbatim account of the meeting. This account is not intended to be a legal document.



Public Meeting Summary

level of protection is what we are building. It is resilient to withstanding the 500-year storm is what I'm staying. You will have substantially more overtopping on the 500-year event on other features of the system, but within the IHNC it will be 10 feet because it's the secondary line of protection. You have the barrier and the Seabrook structure that is your 500 line of protection.

Billy Marchel: I'm just saying that the lakefront is not going to overtop in a 4 or 500-hundred event

Ron Elmer: You are going to have some splash over for the 500-year event....

Billy Marchel: Not with the LACPR you aren't...

Ron Elmer: Well I'm not familiar with the LACPR report.

Howard Rogers: I'm a resident of Gentilly and the director of the New Orleans Council on Aging. My question is about the Seabrook floodgate. Looking at the floodgate and looking at the description that you have, I noticed that the existing floodwalls don't meet the standards and I understand you are going to build a flood gate to tie into the floodwall. The other question I asked of the engineers a few years ago. When the floodwall was breeched in the Lower 9th Ward, there was an I-wall that replaced a T-wall and we asked the question of why not come along and raise the rest of those I-wall to that same height of the T-wall that is there?

Ron Elmer: When we were first authorized by Congress to proceed with the construction of the barrier and Seabrook, we looked at several alternative ways of proving the 100-year protection. Now, we are protecting for a storm surge that is 18.5 feet high right here. The highest wall you have in here is 15 feet and that's the new one. We are designing for a 10.5 foot lake surge for the same storm and that's the difference. You have 18.5 feet of water trying to get through this way and you have 10.5 feet of water coming from here. So we looked at what was the best way of getting 100-year level of protection. If we have to design these walls and levees for that 18.5 foot surge here, these walls would have to be 18 to 19-foot high; that would make it a 100-year level of protection. The cost of building and replacing all these levees and floodwalls, every one of them, the cost is phenomenal compared to building the barrier here and building the Seabrook structure and controlling the level of water. That is why we did not go into raising all the levees and floodwalls. All we were authorized to do after the storm was repair the ones that were damaged and that is what we did. What we are doing now because the change in the design guidelines, and we are depending on these walls for as secondary line of protection and they meet the guidelines, so the best alternative for giving this area the 100-year level of protection was to block surge here and here and not have to replace all these levees and floodwalls. We would have to tear out even the new ones we built after Katarina because they are not sufficient; we couldn't add onto them.

Howard Rogers: My last question is what is going to stop any kind of storm surge coming up the river?

Ron Elmer: Well, the design storm doesn't give you a surge large enough to overtop the lock that's in place. The lock is high enough to protect you against a 100-year storm surge elevation that is produced in the river at that location.

Leigh Bock: I represent folks who are on the inside of the floodwall, not the side that everyone else is on. This does nothing for us expect guarantee that we are going to get flooded.

Ron Elmer: You do not get flooded any more than you would if we didn't build this barrier and we had to raise all these levees.

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Public Meeting Summary

- Leigh Bock:** Can I ask why there were no pumps designed to this system?
- Ron Elmer:** Because it wasn't considered necessary because we have the storage to handle any overtopping of the structures.
- Leigh Bock:** In the process you are flooding everybody on the inside.
- Ron Elmer:** No, if those structures weren't there and you get the same event, the level of water surface would be higher.
- Leigh Bock:** I understand that, but you are pumping the rest of the city into that area, correct?
- Ron Elmer:** Correct, and we have all the elements that take into account ...
- Nancy Allen:** You are not pumping the entire city into there...
- Ron Elmer:** No
- Leigh Bock:** But you just said is we are going to get an eight foot flood...
- Ron Elmer:** You are going to get an eight foot elevation for that design storm. If that happens, you will get eight feet of water...
- Leigh Bock:** And if that happens, I have six feet of water on my property.
- Ron Elmer:** Correct. If the barrier and Seabrook structure weren't there and we raised the walls to say 18 to 20 feet, you would have more than eight foot; you would have 10 or 12 feet.
- Leigh Bock:** I just want the record to show that nothing is being done to protect the people on the inside. You are creating a situation where the city is pumping into there and deliberately raising the water up to an eight foot level during a 100-year storm, which means I have six feet of water on my property.
- Ron Elmer:** Correct, and if we did not have the barriers in place, your water elevation would be higher than that.
- Leigh Bock:** I agree, but shouldn't there be some kind of pump system to alleviate that you are pumping water in; don't you need to pump it out?
- Ron Elmer:** There is enough storage that amount of water. You are on the flood side of a hurricane protection system. You are going to get flooded.
- Leigh Bock:** Yeah, but the idea of putting the locks at either end was to stop that, right?
- Ron Elmer:** No, it was to protect the populated areas; it wasn't to protect the area that is on the flood side of the hurricane protection. We are not making it worse; we are making it better. You will have less water for those storm conditions. You will have less water elevation in here than you have had in the past.

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Billy Marchel: As a follow-up comment, on the west side of the Harvey Canal, they put a pump system in and they designed it with gate closures that can pump over 20,000 cfs and they are maintaining a water level of five feet as opposed to +8 on that side. Plus five was chosen because that supported the industries inside the floodwall so there is a difference for those who designed the system in the Harvey – Algiers Canal versus the group that’s made the decision over here and that’s worth talking about. We are getting short shifted on this side.

John Koferlo: I’m from Citizens Against Widening the Industrial Canal. I want to make sure I understand what you are saying. At a meeting a year ago, I asked you about a levee that we would like to see built between the surge barrier and the IHNC and you at that time said you weren’t planning on building a levee there because we were all inside the wider hurricane protection area. I remember talking about that because we didn’t feel safe. Now you are saying with that drawing up there, I don’t really understand what those yellow lines mean, but you are saying you are going to now replace all the existing levees with....

Ron Elmer: We are not replacing, we are remediating those areas so that they satisfy the design guidelines that we are required to satisfy. I showed you the examples of how we remediate those areas with deep soil mixing, relief wells, etc.

John Koferlo: So across the top, those yellow lines...

Ron Elmer: This is just the levee alignment. The areas in red are where we are proposing to do work.

John Koferlo: From the bridge to the surge barrier, we have an earthen levee there now that is 12 feet high and on the water side of it, we have an old part of the MRGO that is 41-foot deep so that’s basically the earthen side of MRGO, it’s still there?

Ron Elmer: All of this is earthen levee system for the most part on this side, yes. There is some wall but it’s a small amount of wall and it ties into the barrier right here. You have existing levee, which is about 15-foot high. The only area where it’s 12 is the wall area some old walls.

John Koferlo: When you get done fixing those walls on the West Bank of the Industrial Canal, how high is the levee going to be across the top of the Lower 9th Ward there?

Ron Elmer: We are not raising the levees or walls.

John Koferlo: Well, I’m here to say that you need to; you need to have a good levee there because we have listened to you over the years and we have objected to your solutions even before you were here. We have flooded twice; we flooded in Betsy because of MRGO and you said no problem we will take care of it. We flooded in Katrina and Rita and those were times where you assured us we wouldn’t flood. We are tired of that and we are tired of being the last people consulted when these plans are made. This is really the first time we’ve been invited in to hear this plan and we know you’ve talked to Clay Miller and others and we know that the [Inaudible] has plans for the new lock and other things, which I think is going to be built along this area here and these are things that really bother us because we get in on the tail end of it and we’ve flooded before and we don’t want to flood again. We don’t think it’s fair and just the way the procedures are. We like you a lot, but it has not worked for us and we really need a levee there that’s as strong as the levees in St. Bernard and everywhere else around the IHNC. I noticed also on this IER #11, that the way the document is authorized it’s to protect the IHNC and the other IERs were to protect the populations in that area and ...

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Ron Elmer: We are protecting the populated area that abut to the....

Vanessa Gueringer: I am the chair for Community Voice in the Lower 9th Ward. I am very upset and I'll just say I don't like the Corps and I don't like [Inaudible]. I was late this evening because I had two bridges up at one time in my neighborhood and Tuesday I had three bridges up in my neighborhood and we are trapped like rats down there. [Inaudible]...just the inside the degradation that you all do where you all go into our neighborhoods. It's the city, it's the Corps, it's the port, y'all don't care about us, about population down there. Our levee is at 12 feet and y'all have authorization from Congress to raise it everywhere else except in the Lower 9th. We have flooded in Katrina, Betsy, and in Gustav we had water overlapping the Upper 9th; they didn't show the water on the other side but it was equally as high. You think that these surge barrier and the Seabrook structure is going to suffice; you don't care about us, because you protect the population of the city that you want to protect. We are the Achilles heel, just like your former commander said and they don't have any intention of being fair about this. You want to do the locks and hold us hostage with two antiquated bridges that clearly need to be replaced and the Corps comes into our neighborhood and say it's going to be 10-15 years of construction, traffic jams, bridges up. Now we are going to destroy your neighborhood some more and [Inaudible]. I will fight you the Corps, the port, the city because it is wrong what you are doing on the Lower 9th Ward and New Orleans East [Inaudible]. Get real and do the right thing. Do you go to church and believe in God? You must believe in the devil that's what you believe in. You don't believe in us. You would rather see us rot and die. Why couldn't the levees be higher? Tell me why we have an earthen levee in our community that needs to be addressed. Tell me why the day before the meeting you see it in the paper? Because you [Inaudible]...we did community outreach. Even if ten people show up you want to be able to justify it. It's wrong for you to do that. Sit on stuff for months and then and you come here and we have 30 days to respond. Ya'll got to stop this stuff and guess what, there's more than me fighting so we are going to be here doing this dance for a long time. It is environmental racism; environmental injustice [Inaudible]. I sat in the council chambers this week talking to Reinventing the Crescent folks, which was supposed to come into my neighborhood, but the port then signed an agreement with the city to make sure they get to use the land they wanted to, but it's not coming down to my neighborhood. Someone decided along the way it wasn't going to happen and I'm sick and tired of coming to these meetings and hearing all of this. We are nowhere on your minds. When you show all these drawing of surge barriers, it's not going to protect us.

Darryl Malek-Wiley: I am the environmental justice organizer of the Sierra Club and this just goes back to the whole process of the IERs. We've been saying from day one that this whole process is limiting comment from the public and we don't feel like it meets the full requirements of the National Environmental Policy Act. I've yet to see any document on the cumulative impact of all the IERs; it's sort of yes, trust us and we will fix in it all in the end and I have the problem with the concept of the Corps fixing anything in the end in the beginning here. So this whole process of community involvement needs work; we are here talking about a document that is not going to be released until Friday. I would like to have something I can read before I have a meeting so we can have more informed discussion. I know that you work hard to make sure the document is correct, but we would like to have a chance to read it before we get up here and talk about it. The whole process from day one on these IERs is that the document is coming tomorrow, but tell us what you think tonight and the Sierra Club and other environmental groups don't think that is proper and that this whole process if flawed and that we have to see what comes up at the end.

Nancy Allen: This was not the intention of tonight's meeting to have the meeting before the document was released. We scheduled the meeting and rather than canceling and rescheduling, we just decided to go ahead and have this meeting. We will have another meeting on Oct. 26th so you will

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have plenty of time to review that document and either submit your comments in writing or we will be there on the 26th to answer your questions and take your comments then.

Billy Marchel: I just want to make address the comments on the levee on the north side of the IHNC and the comments from the lady in the Lower 9th. Both of those areas, New Orleans East and the Lower 9th Ward, will have the same level of protection and the same strength of levees, whether it's a levee or floodwall, it will be built to a 100-year elevation and 500-year survivability. That means it will last to a 500-year storm, but it may have some overtopping. So no one is discriminating against New Orleans East or the Lower 9 anymore than they are discriminating against the people that live west of the Industrial Canal. The system is being built with the same specifications throughout and for someone to think they are getting shorted; the only ones who are getting shorted are the Industrial Canal people versus the Harvey Canal people. Everyone in the area is getting 100-year protection, which is a starting point, it's not where we need to go in the long run, but don't say anyone is discriminating against you because you are in the Lower 9th or you are in New Orleans East because that is not the case.

Vanessa Gueringer: I beg to differ. It has been a campaign of degradation and disrespect towards our protection in the Lower 9th Ward. This lock project, and I didn't speak on that, you want to store all this sediment that's in that canal on Bayou Bienvenue right in our community. So, there has been disrespect and discrimination. It is a known fact that this is what the government does in poor neighborhoods. They put things they wouldn't put in other's neighborhoods and it is a form of environmental racism; that's what it is. I beg to differ. We have been flooded and until you live where I live and been flooded all these times, you can't say that. Walk in our shoes and you will see what I'm saying.

Simon Hand: I live in the Lower 9th Ward. I want to reiterate what was said about this levee wall here on the GIWW. We have 20-foot levees in St. Bernard and 18-foot levee there on the canal and just a 12-foot there along the GIWW so I want to second what was said about that levee needing to be higher. I have a question about the walls on the Industrial Canal. On the Claiborne Bridge there is a step down in the wall where the new wall ends that you put in and where the old wall begins and there is a step down about 3 to 4 feet there, can you explain how that works? By the looks it seems to be a problem if you have water in the canal and within a short space....

Ron Elmer: The lowest elevation on the GIWW currently existing is 12 feet and it occurs in a number of different locations. We have some walls that are 12.5 or 13 feet, it varies all the way through. The design conditions, the water will never be higher than 10 feet and that's with the 500-year storm event, a storm that is worse than Katrina. The water will only get to 10 feet in here.

Simon Hand: Is that because of the storm surge [Inaudible]

Nancy Allen: It's because of the IHNC surge barrier ...

Ron Elmer: Once this barrier is completed the water can't get into the system. The only water that is getting into the system is water overtopping the barrier and what we did was calculate how much water would overtop the barrier. The barrier is 26 feet high. The 100-year storm surge is 18.5 feet high so if you got 18 feet of additional wall where the waves are barely splashing over, we know how much water will come over in that 100-year storm. We put that water in the basin and there are a set of pumping stations that contribute water into that system and that's roughly 7,400 cfs that's pumped in and that's if each pump is pumping at a 100% capacity over a 24-hour period during the event. All that water is added into the calculation and I can tell you, if anyone knows anything about pumping stations, they do not pump at 100% capacity so we are being conservative with the amount of water with the amount of water we are calculating into the canal. So, you have the overtopping on the barrier, you have rainfall and

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then you have the actual rainfall into the canal that's not pumped in and then you add wind setup at 8.5 feet and assuming we are closing the canal when it's at +3 elevation, that makes it less than eight feet of water and we are being conservative with the amount of water we are putting in there because you will never get 100% capacity. During Katrina, only one of the seven pump stations kept up and it was the one in Michoud facility; the rest of them were down and not pumping. So we did a conservative estimate on what possible water would come into that closed system and high the water would get and that is what we calculated. Even with the 500-year storm on the barrier with the surge elevation at 20 feet, you still have another six feet of wall and the only thing that is getting over the wall is the splash of waves and when you contribute all that water, it gets up to 10 feet. With a Katrina storm you should not have problem with anything in the canal once we finish all the work. They were tested in Gustav. We had only 12 feet of water in the canal during Gustav and that won't happen once the barrier and Seabrook is in place.

Simon Hand: One other comment about the different treatment of the Lower 9th Ward and other parts of the city. I understand about what you are saying that the whole system being built to the same standards....

Ron Elmer: Same level of protection across the city...

Simon Hand: But, the Lower 9th Ward is the only place where the lock extension project is being built right next to it. In other words, that neighborhood is the only one that has a giant project being built right next to it that is going to last 10 – 15 years and it is going to cause traffic delays and noise, possibly jeopardizing that floodwall there and making that canal deeper and more dangerous so I think that needs to be recognized even though the same level of protection might be being provided throughout the city. This is lock expansion project is a whole different thing; I'm pretty sure there is nothing else in the system like that being built right up next to a....

Ron Elmer: In an urbanized area, you are correct. Probably nowhere else in the system, but I'm not involved in the lock project so I can't answer too many questions.

Male Speaker: If that would have been in play you wouldn't have had the flooding from the industrial canal you had because there would have been a new, stronger T-wall along there.

Nancy Allen: I just want the emphasis we are not here to talk about the lock as we are not the office that is building the lock. The IHNC Lock Replacement has been authorized for more at least 50 years and it's funded on a yearly basis. What we are here to talk about is the construction of the 100-year system with the goal of having that protection in place for the entire system, same level of protection, on one June 2011.

Simon Hand: I think it needs to be mentioned in the context of this area that we are looking at here. You can say it's a separate thing, but I think it needs to be talked about with this because you can't separate the two.

Ron Elmer: True. If and when a new lock is built, it will have to be built for hurricane protection. It will have to satisfy the same criteria and all these other things. When they design that new lock, it will have to satisfy the same conditions for hurricane situations; it has to be built to the same criteria.

Billy Marchel: I can't imagine being in my house when I had this much water. When the surge barrier is closed and the pumps in the rest of the city aren't working because of a storm that is out in the gulf and coming in and we have a stalled storm with a lot of rain, I can imagine very well a scenario where the Lower 9th Ward floods in these conditions because the water can't get and the pumps aren't

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working and it's just raining for days. I would love to see your model one day but I just know that is going to happen unless measures are taken to change that.

Nancy Allen: I do want to reiterate that this document will be released by Friday and it will be open for a full 30-day comment period and you will have a chance to look at the at document and then come back to a public meeting if you choose on Oct. 26th in New Orleans East. We will answer your questions and hear your comments on this document.

Vanessa Gueringer: Why don't you have a public meeting in the Lower 9th Ward?

Nancy Allen: That wasn't where we scheduled the meeting. We move the meetings around. We added a second on the 26th that was the only one that would be after the release of the documents.

Vanessa Gueringer: You should be having a meeting in the Lower 9th.

Nancy Allen: You can make that request as part of the 30-day comment period. We are going to stay and can answer any more questions and we have materials in the back. Again, we are more than happy to schedule group visits out to the surge barrier or to other projects. We have surveys in the back of the room if you can fill them out before you leave. Thank you for coming.



US Army Corps
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New Orleans District

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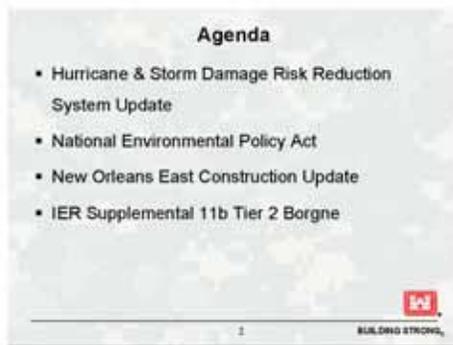
New Orleans East – Construction Update & IER 11b-Tier 2 Borgne

Location	St. Maria Goretti Church
Time	Open House 6:00 p.m. Presentation 6:30 p.m., followed by a discussion
Attendees	Approx. 30
Format	Open House Presentation
Handouts	<ul style="list-style-type: none"> • Approval Process Brochure • 2010 Status map
Facilitator	Nancy Allen



Nancy Allen: We are here for a Corps of Engineers Construction Update and public meeting on IER 11b. If you are here for another meeting, you are welcome to stay with us, but I believe there are other groups meeting as well. I'm Nancy Allen with public affairs of the Hurricane Protection Office. Our commander Col. Sinkler couldn't be here this evening and sends his apologies. I want to thank you for being here and taking the time to be with us. I want to introduce a few members of the Corps staff we have with us. There is Ron Elmer who is our IHNC Branch Chief, Captain Brock Schmidt who is the officer in charge of Orleans Parish, Bill Maloz and

Chantrell Carriere, Laura Lee Wilkinson and Lee Walker from Environmental. We have TK Tieu with us from Councilman Fielkow's office and Gerry Gillen from the Orleans Levee District.



Tonight we have a dual purpose meeting. We are going to give you a brief overview of the Hurricane and Storm Damage Risk Reduction System and also go into more detail of the progress in New Orleans East. We are also here to discuss IER Supplemental 11b Tier 2, which focuses on improved protection in the Inner Harbor Navigational Canal. That IER is currently out for public review so we will be taking your comments tonight and those will be part of the official record. We are going to ask that you let us get all the way through the slides and then we will take your comments and questions.

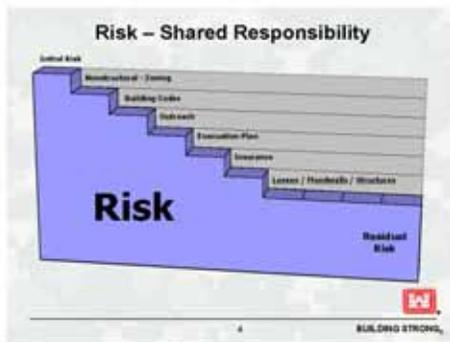
Everyone was given a speaker request card when you came in and if you do have a comment or question you would like to ask, we ask that you fill that out and hold it up in the air, someone will come get it and we will be calling in the order that we received the cards.

Public Meeting Summary



This is the entire Hurricane and Storm Damage Risk Reduction System and I want to provide you on a brief update on the system. This is a \$14.4 billion dollar system that was authorized and fully funded by Congress and we are well on our way of the goal of providing 100-year protection by June 1, 2011. Our office, the Hurricane Protection Office, is overseeing construction on the East Bank of Orleans Parish and St. Bernard Parish, including outfall canals and the IHNC. Along the New Orleans metro lakefront we are more than 95% completed as we finish up some floodwall construction on the east and west ends of that stretch and some ramps along Lake

Shore Drive, which we are in the process of finishing and opening. We will give you more details about New Orleans East this evening. The surge barrier is here and the wall is complete. We are now working on three navigable gates. That is a 26-foot tall surge barrier out in the waterway here. I think some of you have seen it and if not, we would like to give you a tour. In St. Bernard, we are building 23-miles of T-wall, two sector gates and two floodgates and all that construction is underway.



We used to refer to this as the Hurricane Protection System and recently we began calling this the Risk Reduction System. Buying down risk and reducing risk is what is important. All of us share in a responsibility in reducing this risk. In this diagram, we show everyone's initial risks and then there are a variety of things you can do to lower your risk and everyone has a role; whether it's building codes, flood insurance, zoning and then structural things like levees and floodwalls. We do remind you we are still in hurricane season and hopefully we will get through the season without having a storm this year, but we do urge you to have an evacuation plan ready and if local officials call for an evacuation, please follow those orders.

National Environmental Policy Act "NEPA"

- Required for all major Federal actions
- Analyze potential impacts to the human and natural environment and investigate reasonable alternatives
- Analyses documented in Environmental Assessments (EA), Environmental Impact Statements (EIS), or Individual Environmental Reports (IER)
- Public involvement is KEY: *We want to hear from you!*
- Goal: **more informed decision making through public involvement**

IER 11 Supplemental is a NEPA document, that's the National Environmental Policy Act. Before the Corps begins any major project we have to do an environmental process that allows us to look at the human and environmental impacts of any project. These can be documented in several ways including an environmental assessment, an environmental impact statement, or an individual environmental report, an IER and that's what we are going to talk about. All the projects under construction have already been through this NEPA process, but we are here tonight to tell you about the proposed project along the Inner Harbor Navigation Canal listen to you and get your feedback. With that, I'm going to turn it over to Captain Schmidt and he will talk about the New Orleans East Construction.



Public Meeting Summary

New Orleans East Risk Reduction Projects

- Construction value: \$800 M - \$1 B
- Floodwalls: 7 miles
- Levees: 20 miles
- Gates: 5
- Interstate Crossing: 1
- Pump Stations: 6

BUILDING STRONG

Capt. Brock Schmidt: I'm the officer in charge of Orleans Parish and I'm here to give you an update on the project in New Orleans East. New Orleans East is getting about 800 million to one billion dollars in construction. The projects we have going on are 105 adjacent to the lakefront; 106, a gate at Haynes Boulevard; 108, which is a completed project along the Bayou Sauvage; 109, which goes on the east side of Bayou Sauvage; 110, which is the cross at the railroad tracks; and 111, which connects into the surge barrier along the GIWW.

LPV 105: Lakefront Airport

Project Description

- Replace existing floodwall to 15 ft.
- Raise levee to 17.
- Construct 60' wide floodgate across Downman Road.

Construction Status

- LPV 105.01 (West Floodwall) - 9% complete
- LPV 105.02 (East Floodwall) - 2% complete
- Road closure at Downman Road and Hayne Boulevard will remain in effect through November 2010.
- All work will be finished in June 2011.

BUILDING STRONG

The 105 project that goes along the lakefront, has been moved south from its original location. Originally, the project was along the Lakefront Airport; it's been moved to the south side of the railroad tracks. The reason for that is we wanted to move the protection a little closer to that area and have an easier crossing for Downman Road where there will be two gates involved in that project. If you go out there, you will notice the construction is focused on the Downman Road area. There should be two lanes opened there around the November 11th timeframe, and the road itself should be completely opened in January. The overall project will be completed in April of next year and this project continues all the way out to Crowder. The overall project is being raised about two feet.

LPV 106: Citrus Levee

Project Description

- Raise levee to 17
- Install positive cutoff / drainage culverts for Citrus / Jahncke Pump Stations.

Construction Status

- LPV 106 - 2% complete
- 100-year elevation will be attained in April 2011.

BUILDING STRONG

Project 106 is driving sheet pile along the Lake Pontchartrain Levee here. The reason why sheet pile is being put in place, in order to raise the levee 2.5 feet they are going to, they would have to have extended it out and take part of Downman Road. So what we did is drive sheet pile about 35-40 feet down and put a two foot concrete cap on top of that.

LPV 107: Lincoln Beach Levee & Gate

Project Description

- Replace existing floodwall with a levee to 17.
- Construct a new floodgate to 15 ft.

Construction Status

- LPV 107 - 9% complete
- All work will be finished in January 2011.

BUILDING STRONG

Project 107, this is Lincoln Beach and there is a gate there and they are replacing that with a new gate, about two feet higher than the existing gate. All these projects are due to be completed by June 1, 2011. Most will be completed by early to mid-May of next year.



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LPV 108: Basin Road to South Point October 26, 2010



Project Description
-Raising 33,100 feet of levee to between 17' and 18'
-Adding new floodwall at Collins Pipeline

Construction Status
-Levee Raise - 100% complete
-Floodwall at Collins Pipeline - 100% complete



BUILDING STRONG

Project 108 is completed and it's the earthen levee to the north side of Bayou Sauvage. What they did was raise it about 2.5 to three feet; most of it on the protected side of the levee system. It all includes the Collins pipeline, a T-wall section in that area. The project is complete and we are looking to turn that over to the Orleans Levee District in the next couple of months.

LPV 109 (Southpoint to CSX Railroad)



Project Description
-Raise 7.5 miles of existing levee to 100-year elevation (increased avg. elevation by 6 ft and avg. base width by 250 ft)
-Construct a 50-foot-wide gate at Highway 11 and a 38-foot-wide gate at Highway 90

Construction Status
-LPV 109 - 26% complete
-All work will be finished in June 2011



BUILDING STRONG

Project 109 is a pretty unique project. It started out at the southern most point at 18.5 feet high and continues to about 14 feet at its northern point. This project is being raised to 25 feet at its southern point and 18 feet at its northern point. In order to raise that levee to that height, we actually had to triple the foot size of it. In order to do that, we had to put in a sand blanket and wick drains in order to keep water. We actually recaptured what was Bayou Sauvage at the time and it's going to be about 3.4 million cubic yards of clay, which is being added to the existing levee. That equals to over a Superdome's worth of clay at this point.

LPV 109 (Southpoint to CSX Railroad)



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Along 109, there are three highway crossings. This is 110, which is what we call 109 LPV and right here what you can see are the sand blankets and the wick drains. Each one of these drains is punched about 35 to 40 feet into the ground. It's a thin piece of material about that wide and about this thick, and actually pulls the water from underneath and pushes it back into Bayou Sauvage, which is what you are looking at right here. This is the clay that is being placed on it. They will place about 3.4 million cubic yards.

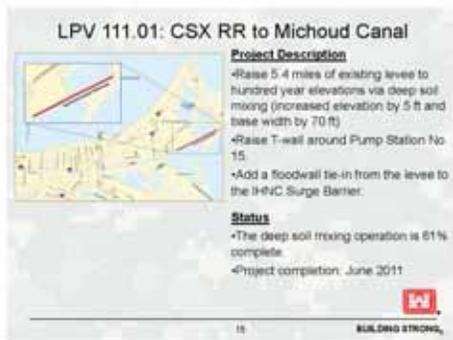


This is an overhead shot. Right here is the existing levee on 109 and where this sand is, that will be the new foot.

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LPV 110, the railroad crossing. LPV 110 is the replacement of a railroad gate for the CSX Railroad in the middle of Bayou Sauvage, so it's not commonly seen, but it's out there. What we have done is the contractor isn't going to start this work until December first so he will spend the next month preparing and mobilizing. All his submittals are in and the gate is being built at this time. When he starts in December, he will start demoing this region here and replace the gate by June 1, 2011.



LPV 111; this is a 5.3 mile stretch of levee that is adjacent to the GIWW. In this particular project, what they have done is instead of expanding the foot of the levee, they have deep soil mixed. They have actually taken and mixed 1.7 million cubic yards of cement and earth below the surface. The reason for that is the current soils in Louisiana allows a ton of subsidence. What we have done is essentially create 18-hundred concrete columns below the levee. The levee at its western most point is +32 feet and at its eastern most point is +25. Once you get past the levee there will be a 32-foot T-wall that will tie into the surge barrier.



As you can see here, this is a deep soil mixing project and the existing levee

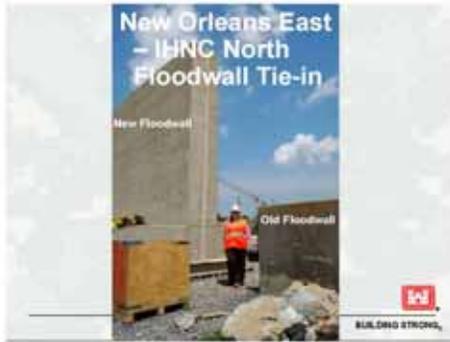


This is deep soil mixing actually occurring. It takes about an hour for each one of these times. What they do is drive down into the middle of the earth and it takes an hour down and an hour back up.



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This is the flood wall and this is Nancy Allen standing next to the floodwall, so if this is about five feet, you can see the height of the floodwall. It is built on a six foot section of the levee.



This is the tie-in right here. The earthen levee is out here to the east and this is the corner tie-in and back through here it ties into the existing surge barrier, which is 26 feet with the navigable waterways.



Ron Elmer:

I'm Ron Elmer and I'm the program

manager for the Inner Harbor Navigation Canal system. Most people know that the IHNC has the Industrial Canal, that's a local term used for the IHNC that run from the Mississippi River where the lock is to the north at Seabrook where the airport is. This is the GIWW going to where the surge barrier is being built and this is the MRGO. On this picture you can see in inset of what the Seabrook structure will look like. It's going to be a 95-foot wide sector with two 50-foot vertical lift gates on either side for additional flow. We just started construction on this. The existing channel is closed for navigation and currently we are filling a big hole and we have started construction of the T-walls that tie-in from the land onto where these structures are going to be built. Nancy earlier mentioned that he barrier wall, and this inset here shows you a depiction of what that looks like, but the barrier wall itself is 100% complete. It's approximately 10,000 feet long from the north side of the GIWW all the way across MRGO where it ties into the MRGO levee system that is being built along St. Bernard there. The only opening that currently exist in this 10,000 feet is 150-foot wide opening where navigation is currently being passed through for the barges; it's being passed through right here. What we are doing with the IER that is out for public review is looking at restoring and remediating existing levees and floodwalls along the GIWW and the IHNC that do not quite meet current design guidelines. There is approximately 33 miles of levees and floodwalls along this system and there is approximately 4.6 miles that we are going to have to address with this remediation work. This inset here is a vertical lift gate that is a part of the barrier and it's currently under construction. This is for small recreational boats to use as it's only 56-foot wide with a 35-foot clearance once the gates are in place. This system will be in place by next hurricane season. This depiction up here shows the two gates that will be built along the GIWW; one is a barge gate and the other is a sector gate. The barge gate abutments are done; the barge gate itself is under construction in Sulphur, LA and it will be shipped over here in March or April and we will then be able to

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hook that up and get it ready for operation next hurricane season. Come next hurricane season we expect to have this entire system in place where we can close it for the 100-year storm surge and you will have a 100-year level of protection. Same with the mediation work we plan on doing along here as that will also be done by next hurricane season and the Seabrook structure will have the 100-year level of protection, but there will still be working ongoing on the gates. However, the cofferdam system that we are building to create an area to construct these gates, that cofferdam system will meet the 100-year level of protection next year. You will have the 100-year level of protection through here as well as along the MRGO and the New Orleans East area.



This is an area photo of the barrier. This is the MRGO and this is the GIWW and this is heading back towards the IHNC; you can see the city in the background. This barrier wall itself is complete with the only opening is right here and it's 150-foot wide where barges are currently traveling through on the GIWW. This is Bayou Bienvenue and this is where the vertical lift gate is being constructed.



This is another picture of the barrier wall on the flood side where the storm surge would come up against the wall.



This is the back side of the barrier wall where you see the piles that support the wall.



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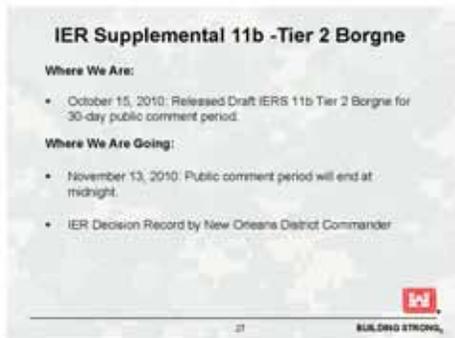
This is a photo of the Seabrook structure. This is going to be the 95-foot wide sector gate and the two vertical lift gates on either side.



This is a current picture by the bridge where we are building the sector gate and two vertical lift gates. The gate is being constructed about 540 feet south the Ted Hickey Bridge. We exercised the construction option back in July of 2010 and we expect the cofferdam system to be in place by spring of 2011. Like I said earlier, that cofferdam system will provide that 100-year level of protection in the beginning of next hurricane system while we finish up the gates.



Like I said earlier, the canal is closed and will be for the next 12 months while we construct the gates and this sign identifies to boaters and others that access to the lake is closed.



The IER Supplemental 11b-Tier 2 Borgne is now out for public review. It went out on October 15th and will be out for a 30-day public comment period. The 30 days will end on November 13th and hopefully, unless there are significant comments, we are hoping that a decision record will be signed shortly after that and we get started on the construction and remediation of the levees and floodwalls along the IHNC and GIWW.

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Purpose and Need



Restore and reinforce portions of 4.6 miles of levees and floodwalls along the Inner Harbor Navigation Canal so that they meet the necessary factors of safety for stability and seepage, as dictated by current Hurricane & Storm Damage Risk Reduction System design guidelines.

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The purpose of the work we are doing is to reinforce portions of 4.6 miles of levees and floodwalls along this system. We do have another slide that shows the area where we need to do the work. The reason we are doing the work is that the design guidelines that we must follow have become more stringent and they have changed since Katrina for higher factors of safety and different type of analysis we have to do for seepage and stability. We have done an analysis of 33 miles of levee and floodwalls and we found approximately 4.6 miles that do not meet the guidelines and those are the areas we will go into and do this restoration work.

Project Overview of Proposed Action

- Reach 1 – approximately 1,200 feet of deficient areas
- Reach 2 – approximately 16,700 feet of deficient areas
- Reach 3 – approximately 6,300 feet of deficient areas

Types of Remediation

- Deep Soil Mixing – for strengthening the canal levees.
- Concrete Slab – for resisting deflection (bending) of canal floodwalls.
- Stability Berms – for strengthening the canal levees.
- Buttress Wall – for strengthening the canal floodwalls.
- Relief Wells – for intercepting seepage.

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This is the proposed action on the three reaches and the approximate length of deficient areas in those three reaches. These are the different types of remediation work we will be doing. We are using deep soil mixing when there is a stability problem. We have concrete slabs that will also help us in resisting and making suspect areas more stable. We are adding stability berms in some areas and we are also using buttress walls and for seepage problems we are using relief wells. In the back we show examples of each one of these methods for solving the problems we have. They have been used before and they work well.



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Here in the red areas along the GIWW and the IHNC, these are the areas we will be doing work. We are almost finished the analysis and there is the potential that we may reduce some of these areas down and may not have to do as much work that we are showing on this particular drawing.

Proposed Construction Schedule

- Contracts would be advertised in early 2011.
- Construction would complete by June 1, 2011.
- All restoration / reinforcement construction would occur entirely within the existing levee / floodwall Right of Way.

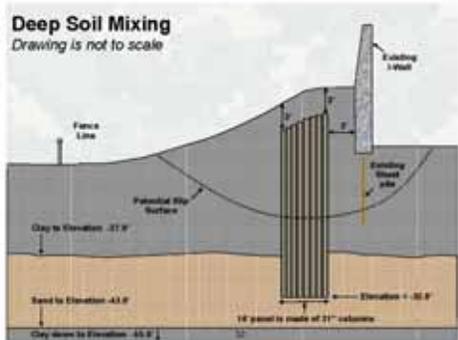
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For the remediation work, if everything goes well with the IER and we get the decision record completed in November, we anticipate advertising the contracts in early January 2011 and the construction that we are doing will be completed by next hurricane season. All the work we are doing will go within the existing footprint of the levee and floodwall. There is no need for us to get additional right-of-ways.

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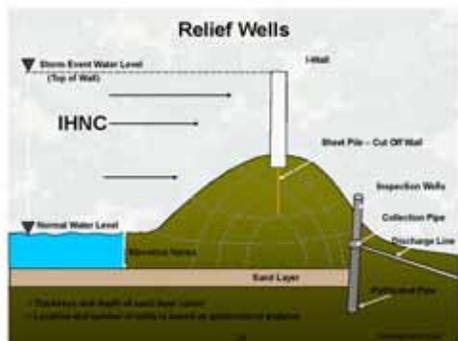
If you look at these areas labeled by letters, these are staging areas that we are proposing to stage equipment and from what I understand, most of these sites are no in residential areas or close to houses. These are approximations of what we think we will need for staging, but I have a feeling the number of areas actually used will be less than this once we get done.



This is a depiction of how deep soil mixing works. What you do here is auger down and mix cement in with the soil and what this does is....if you look at this slope line here, this is a failure plain. Based on analysis when water gets up against the wall, the force on the wall wants to make this soil rotate and fail and what deep soil mixing does is interrupt that failure plain and prevent it from happening.



Here are pictures of some soil mixing jobs we have done in the past. There is a lot of this happening on the on-going hurricane protection system right now.



This is a relief well and this is what we use to solve seepage problems. What happen is in some areas, you have sand layers below the levee system and when the water in the canal goes up along the wall, the pressure of all this water pushes water through the sand layer. This pressure can get high enough that it makes the sand move and that is the last thing you want happening under the levee is having the dirt moving. It will cause the levee to fail. So what we do is put in these relief wells and it interrupts that sand layer and it controls the flow of water; it's not that much water but enough to make the dirt move. The water is collected into the relief well and feed into the city drainage system.

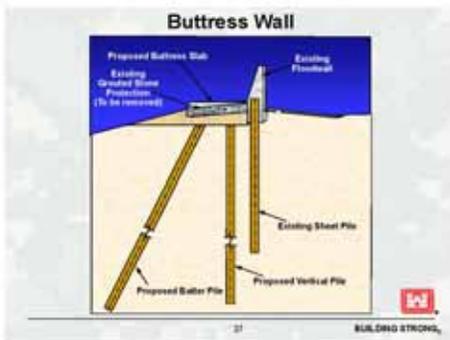
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Here are some pictures of relief wells. These are along the IHNC on the northern end and you will see a lot of the relief wells in place.



This is another method of solving a stability problem that isn't so bad to use the soil mixing, all you have to do is add an additional amount of dirt on the backside to compensate for the additional force that is being created when the water goes up against the wall.



This is what we call a buttress wall. What you currently have is an I-wall with a sheet pile underneath it and you will have these erosion blankets on the back side from when water splashes over to dissipate the energy of the water going over the wall. What we are going to do is remove these things, drive piles and put in a new stability slab to compensate for stability problems we are finding in some locations.



During construction, there will be some elevated noise from equipment being used. Road access may be limited at some times and we will be working extended hours, six days a week up to 12 hours per day. Trucks will be utilizing approved haul routes to minimize the impacts of increased traffics on the road. There is a hotline for questions and complaints and you can contact this number here.

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Currently Available for Public Review

- IER 11.b Supplemental – Improved Protection on the Inner Harbor Navigation Canal
 - Public review until midnight on Nov. 13, 2010
- IER 12 Supplemental Addendum - Belle Chasse Tunnel Construction Impacts and "Westbank N" disposal site
 - Public Review until midnight on Nov. 18, 2010
- Comments can be submitted by:
 - Calling 504-862-1544
 - E-mailing mvnenvrntmental@usace.army.mil
 - Or at any time at www.nolaenvironmental.gov

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Nancy Allen: In addition to IER 11 we are getting public comment on, there is also IER 12 Supplemental that is also available for public comment. You can put your comments in by phone, you can e-mail or you can submit them on www.nolaenvironmental.gov.

Upcoming Public Meetings

<p>Monday, Nov. 8, 2010 IER 11.b Supplemental public meeting Light City Church 8177 Saint Claude Ave New Orleans, LA Open House 8 to 6:30 p.m. Presentation 6:30 p.m.</p>	<p>Wednesday, Nov. 10, 2010 LCA - Myrtle Grove Construction Report Scoping Meeting - Lafourche South Lafourche Levee District 17904 Hwy. 5239 Galliano, LA 70334 Open House 8 to 6:30 p.m. Presentation 6:30 p.m.</p>
<p>Tuesday, Nov. 9, 2010 LCA - Myrtle Grove Construction Report Scoping Meeting - Crown Point Joseph's Hall 8131 Bourgeois Blvd Crown Point (Metairie) LA 70072 Open House 8 to 6:30 p.m. Presentation 6:30 p.m.</p>	<p>Thursday, November 18, 2010 LCA - Myrtle Grove Construction Report Scoping Meeting - Piquemines Woodland Plantation 21897 Highway 23 West Point & La Houche (Port Sulphur), LA 70082 Open House 8:00 to 9:30 p.m. Presentation 9:30 p.m.</p>

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We have several upcoming meetings; I know several of you asked about LCA public meetings and three of those are scheduled in November as well as Monday, Nov. 8th we will be having another meeting about IER Supplemental at Light City Church in New Orleans at St. Claude Ave.

Opportunities for Public Input

- Regular Public Meetings throughout the Hurricane and Storm Damage Risk Reduction System (HSRRS) Area
- Make sure to sign in tonight to get on our meeting notification mailing list
- Comments can be submitted at any time at www.nolaenvironmental.gov
- Individual Environmental Reports (IER) 30-day Public Review

Questions and comments regarding Hurricane Risk Reduction Projects should be addressed to:

Patricia Lemoine
P.M.-03
P.O. Box 60267
New Orleans, LA 70165-0267
Telephone: 504-862-1544

E-mail: mvnenvrntmental@usace.army.mil

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There are numerous ways that we take public important, which is very important to us. If you signed in this evening you will be added to our mailing list and you will get announcements on all of our public meetings. You can always go to nolaenvironmental.gov to get the latest information. All of our records are there as well as reports. Any comments you would like to submit regarding to this IER can be sent to this contact information here.

Resources

www.nolaenvironmental.gov <http://www.mvn.usace.army.mil>



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There are two website you should know about, which is nolaenvironmental.gov and the other is our district homepage, which is mvn.usace.army.mil and again we do have a construction impact hotline and we do record every complaint we get and do our best to rectify the situation.

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We are also on Facebook, Flickr and Twitter. If you are looking for some updated photos of all the projects, you can go to Flickr. We use the other two sites for meeting and event notes.

We are now going to open it up for your comments and questions. We have no speaker requests cards so if anyone has a card with them they can hold their hand up. Otherwise we will just open the floor. We do ask you to keep it to three minutes and we ask that you speak into the microphone because we do record these meetings and all the meeting summaries go on nolaenvironmental.gov as they all become part of the public record as well.

Gregory Hamilton: I just want to be sure I understand this. You were talking about the additional work on the GIWW, the 4.6 miles, and you were calling that remediation and restoration work; that's in addition to a lot of work that has been done.

Ron Elmer: Yes, there has been a substantial amount of work done since Katrina. They added a lot of erosion protection behind all the walls in case of splash over. There were areas we have already done seep soil mixing, but those were areas we considered extremely critical. What we are finding after Katrina, it took two or three years to come up with revised design guidelines that we had to follow. We have just recently finished the analysis of all the levees and floodwalls and there are these areas in red that do not quite meet those guidelines. Instead of meeting a safety of 1.4, it might be 1.38 so we are going in, and we don't consider these areas critical because all these areas were hit by Hurricane Gustav and we did have between 11 and 12 feet of water inside the IHNC, and none of these walls gave us a problem. They are strong, but they fall just short of meeting the guidelines and that is why we are doing this work. This is the secondary line of protection. Once you have the barrier and Seabrook in place, the majority of the storm surge will be stopped, but the barrier is designed to be overtopped and there will be water going into the IHNC. So we have to make sure those walls can hold that water safely and meet the guidelines.

Gregory Hamilton: You did say you were on schedule for June?

Ron Elmer: Yes, all that work will be done before next hurricane season.

Gregory Hamilton: And right now the cofferdams that are under construction at the gates on the barrier, they presently have the capacity of about five feet?

Ron Elmer: Right, but those cofferdams will be out come next hurricane season as the gates will be in place. We will still be doing some mechanical work as such, but the gates will be able to be closed for a storm event and provide the 100-year level of protection.

Melanie Ally: The Orleans East Lakefront Airport floodwall I see is 16.0 to 21.5 from Downman Road to Read Blvd., I see that it's a yellow line that says it doesn't meet the 100-year risk reduction. Is that already completed? When it is completed will it then meet the 100-year?



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Capt. Brock Schmidt: No, it's not complete. Currently that is under construction now and it does not currently meet the 100-year level of protection. When it's completed around May of next year, it will meet the 100-year level of protection.

Melanie Ally: The MRGO outlet, which we were told it's [Inaudible] for flooding in this New Orleans East, will that meet the 100-year level of protection?

Capt. Brock Schmidt: What's been done is that the surge barrier that Ron was talking about will actually block any water that would come up the MRGO. The MRGO was closed off 40-50 miles down from New Orleans and the surge barrier is eight to nine miles from the center of the city so that water will not actually enter into the MRGO, it won't actually come into the IHNC with any force, which is a critical piece here. What happened during Katrina was water came in with force, but now when it hits the surge barrier it won't have any force if it were to enter the IHNC. That entire area is now part of the secondary protection so water with force hits the surge barrier it stops at that point and any water that comes in after that will trickle in like it would into a soup bowl as opposed to coming in with force and hitting the walls with force. Essentially it will raise up to 100-year level of protection and water will not enter through MRGO with any force into this area.

Nancy Allen: The MRGO is here and there is one closure south of here off the map and that is closing with a rock dike. We then constructed the surge barrier here across the GIWW, Lake Borgne and MRGO and that is 26-feet high so that will essentially block 100-year storm surge plus. So all of this becomes a secondary line of protection and we will be remediating all of those and the entire system will be at the 100-year level of protection by June 1, 2011; it is a common level of protection across the system.

Male Speaker: What is the estimated total cost of all the protection?

Ron Elmer: East and West Bank there is approximately 14 billion dollars.

Nancy Allen: It is a 14 billion dollar system and that is fully funded and we have all the funds in the bank and we are spending it.

Vanita Rogers: You mentioned the well that you were building to offset the water that would go into the drainage system, the relief well, have you considered that it will be hurricane season with the rain, but have you also considered the pumping stations in those particular areas for the amount of water?

Ron Elmer: Yes. There are seven pump stations that pump water into the IHNC and the GIWW in that area and the amount of water that these relief wells collect isn't really a lot of water; it doesn't really add that much to the system. What you want to do is keep that water from moving through the sand and making the sand move to make the levee unstable. We have taken into account, all the pumping stations and their capacities and we assume they are running at 100% capacity even though that rarely happens and we've been very conservative in our analysis of how much water will go into the system so we are exaggerating what we think will get there and that is what we are doing to determine how much water will be in there.

Vanita Rogers: You also showed the four areas of remediation. Can you say where the lowest one?

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Ron Elmer: The lowest one right here and that is actually a piece of wall that is right next to the existing lock on the west side. It's not much of a wall and there is some remediation work that has to be done. That is actually on the Corps property for the lock.

Vanita Rogers: Now the red one, right there. Now where is that one located?

Bill Maloz: Right by the Florida of the bridge.

Ron Elmer: Just north of the Florida Bridge.

Vanita Rogers: So it's on the other side of the bridge.

Ron Elmer: Yes, it's on the lake side of the bridge.

Vanita Rogers: And the others one will go right down the rest of the canal right there.

Ron Elmer: Yes, there are different areas scattered throughout the system that we are looking at.

Gregory Hamilton: There was a report about two months ago that some of the funding for the Corps for reinforcing the pumping station in certain works had to be reduced because the overall costs was greater than anticipated for all the projects; they had to shift money around. Have you made any progress in restoring that money?

Nancy Allen: That's the storm proofing projects you are talking about. The Corps was authorized a certain amount for storm proofing project for some Orleans pump stations, Sewerage and Water Board projects, and some Jefferson Parish pump stations. Those parishes were actually the ones who looked at the amount the money we were given by Congress and made the decisions about what projects they wanted to have done. They took all the projects and prioritized them and made decisions about which projects would be funded and what wouldn't be funded. So it is up to Congress now if they choose to grant additional money for the storm proofing projects, but at this point the two local entities have decided how they want that money spent on the different projects. In New Orleans, it's Sewerage and Water Board.

Gregory Hamilton: So no real progress has been made?

Nancy Allen: No, we've had this same amount of money from the beginning but some of the bids came in a little higher so we did some shifting of priorities along with the Sewerage and Water Board. I am going to clarify something. Everyone was given a status map tonight and just knows that this map is dated June 2010 so this was just a snap shot as of June 2010; what were the areas most at risk and what were the areas that met the 100-year criteria. At this point, nearly everything that is red is under construction for the 100-year system. If you were to do a map now it would look different. If you were to do a map three months or six months from now, it would continue to change. The goal is to get to green by June 1, 2011 and we are well on our way of meeting that 100-year level of protection. This map is five months out of date.



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Vanita Rogers: The deep soil mixing, a comment was made with how Louisiana soil is, so how are you judging which ones will be mixed with the cement and where are you going to be putting that.

Ron Elmer: They are doing an analysis of how strong that cement they are putting in there has to be. Every area is different. You have to analysis the existing condition of the soil in that particular area as the soils vary throughout the system. You have to design the concrete mix with the soil that is in place because you are mixing the soil and pumping the concrete to make a column. In every location it's a determination on the type of soil you have and how much strength you have in the concrete and that analysis is done to determine the exact mixture of cement and soil when you are doing these things.

Nancy Allen: I also think she's asking why we do deep soil mixing in some places and not others.

Ron Elmer: If you are asking why we use deep soil mixing and not something else, the deep soil mixing is in areas where you have the greatest stability problems; that gives you more strength. In some areas our stability problems are very minor and it doesn't take that much work and you don't need that type of system to get it to where it meets the guidelines. You can do it by adding an additional berm or something else.

Vanita Rogers: I'm just looking at the area and to me all the soil is like the same.

Ron Elmer: It varies. It's all bad I can tell you that but it does vary from area to area.

Vanita Rogers: I know, but to me it's like it's not that much variation. Also, are you considering that they are not fortifying that pump by Florida Ave. Bridge?

Ron Elmer: I don't know what work they are doing on that pump station right now.

Vanita Rogers: That was one of the ones they cut so I don't think anything will be done for that particular pump and that's where you are putting your remediation work is being done right there on the wall where the pump is not going to be working. Are you putting a well there or what?

Nancy Allen: The storm proofing projects are improvements to existing pump stations that will help them better operate during a storm and make it so that in some cases the operators can stay there. So that pump station will be functioning, they are just not upgrading any of the elements with additional funding from Congress. The pump station will still work and that pumping is added into the capacity in the IHNC.

Vanita Rogers: Somewhere in that there, that particular area is the lowest area; therefore, if you are not going to strengthen the pump that is already being subjected to the water from a hurricane and it needs remediation, are you doing something else there? Are you doing the well there...

Ron Elmer: At that particular site I'm not sure what the remediation method is off hand.

Bill Maloz: The fronting and storm protection we are not doing, that is associated with the pump and they have the same design criteria that we do so that is being taken care of for the 100-year level of protection. We can show you in the back what we are doing so you know what those soils are below that ground and why we use what we use.

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Heather Egger: I have a question about the access channel behind the Lake Borgne Surge Barrier. This canal was constructed so that it could be accessed by heavy equipment?

Ron Elmer: Yes, and barges. We had to work off barges because it was over water. We dug an access channel across that triangle from the GIWW to the MRGO. That access channel will be structurally closed off when we finish the job. There will not be access through that area by boats. Are we filling in the canal? No. We will be putting erosion protection on the banks on both sides, but the canal will be shut off. We do have to keep it open in case we need future heavy equipment needs for any major repairs that come up because that is the only way you can get equipment into that area to do any repair work. The equipment must come in by barge.

Female Speaker: I just want to clarify a point with the deep soil mixing. I know as you go down in the earth you go through layers of dirt, sand and clay and such. So how far down are you doing the deep soil mixing?

Bill Maloz: It varies, but about 30-feet maximum.

Female Speaker: So that's above the sand?

Nancy Allen: No, it's through the sand.

Ron Elmer: What these things have to do is interrupt this failure plain. Our analysis shows that once you get the water on top of the wall, the soil will fail and start moving so what we have to do is interrupt that failure plain and keep that dirt from rotating and that is what that does.

Female Speaker: I was just wondering why you didn't go all the way to clay.

Ron Elmer: Because it's not necessary. We have to interrupt that failure plain and the problem is here; the problem is not down there.

Female Speaker: No, I just wonder would the extra length make it stronger.

Ron Elmer: The depth of how far they go is based on the weight of the material being pushed. It's the matter of the forces you are trying to counteract.

Melanie Ally: I understand that the T-wall levees are the strongest. The levees that you are going to be completing in the New Orleans East area, are they going to be the T-wall levees?

Capt. Brock Schmidt: The T-walls will be put up along the Lakefront Airport. On the existing earthen levee, they are driving sheet pile there and putting a cap on it. The reason why is because the way it's structurally done, the sheet pile drives down deep enough you won't see any failures on either side. The existing I-walls that are there will be replaced with T-walls.

Nancy Allen: T-walls along the levees have pluses and minuses. They are all being built to the same standards so some of the construction in New Orleans East is replacing I-walls with T-walls and some of it is levees. We will stick around and are a happy to go over the maps in the back and the illustrations ... sir, go ahead.



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John Koefler: I just came from a meeting in the Lower 9th Ward and I know there is quite a lot of interest of having you come and present this.

Nancy Allen: November 8th we will be at Light City Church. That request was made at the last meeting and we scheduled that within a couple of days.

John Koefler: I think the area that concerns us most is this old levee and I know you've addressed it, but it's the levee along the six miles along the main part of the Industrial Canal and the surge barrier. We think that it's too low and we know you are going to fix the worse spots, but we still feel it's too low and we are going to get the water first in New Orleans East and the Lower 9th Ward and St. Bernard when the water rises in there, which it is sure to do. Many people feel that you should build your headquarters there and get off that high levee Uptown and come on down. I'm not being vicious here; I'm being real because that's where it is. You all don't seem to see that. I don't know where you go home to every night, but we go home and it doesn't feel good being in a place that we feel that is being taken care of; it's always last. When the money ran out, there's no more money to build that levee there and that's where the water came in. We've just gone ahead and built where there were levees and seawalls along the Industrial Canal, but there was never a real levee along there and there is still not because of how the legislation was worded. You are going to put the toxic sediments there from the Industrial Canal project and you are going to use it as land to build a new lock, but not to build a levee that we feel we need. That's our complaint and you really don't seem to be looking out for us and we are feeling it. We don't think this work is complete until we are protected and that's both in the Lower 9th Ward and St. Bernard and New Orleans East. I know you are working hard at it, but I don't think you see it from our point of view.

Ron Elmer: What I can tell you is that every individual within this risk reduction system when it's complete, everyone will have the same the level of protection. No one is being treated or given preferential treatment. Everyone will have the same level of protection no matter where you live.

John Koefler: You will have a little bit more above the Corps office and Uptown. You will have a little bit more.

Ron Elmer: Sir, every person living in the metropolitan area behind this system when it's done, will have the same level of protection. That is what we are building.

John Koefler: You have to excuse me as I have all this stuff building up in me. There was an article in the Times Picayune this week about someone claiming the flood protection factors that the Corps was using, the model, really needs to be examined by the National Science Foundation or...

Ron Elmer: Which it has been done...

John Koefler: By the National Science Foundation?

Nancy Allen: By the National Science Academies of Science and many other organizations, several times over...

John Koefler: Would you be willing to do that...well, I would like to see that, it's available?

Ron Elmer: We can document that different review processes we went through and all the different organizations, universities, as they have reviewed the model, the design guidelines we are



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using. It's been approved across the board, not only by the Corps, but by a number of individuals and institutions outside the Corps.

John Koefler: But yet there are still some people that have....

Ron Elmer: Yes, there's always going to be some people that don't believe....

John Koefler: But there are scientists and they are people...

Ron Elmer: What I can tell you is that we have a majority of the scientific community and academia agreeing with what we are doing. The majority.

Nancy Allen: Our commitment to the Southeast Louisiana Flood Protection Authority at the meeting was that we would provide them any assistance that they needed if they chose to have another review of the model. The model is 152 storms on a variety of tracks, with a variety of characteristic. I think it is something like 10,000 combinations of tracks. There is a slide that shows all the historical tracks, theoretical storms, etc. It took five super computers, I think, at both the engineering research and design center in Vicksburg and at different universities to run this model and to run and produce the 100-year level of protection and translated it to the heights and elevations throughout the system. So it's not a simple process to review, but we certainly support SLFPA need to do that and we've already committed to giving them all the information they could use.

Are there any other questions or comments? You did receive a survey when you came in and if you could fill that out that would be very helpful. We will be talking about IER 11b Supplemental again on Monday, November 8th in the 9th Ward at Light City Church on St. Claude Ave. and we invite you all to attend. You can always find the information on our public meetings on nolaenvironmental.gov. We will stick around to answer your questions and if you would like to submit written comments, you have until Nov. 13th to do so. Thank you for coming.



Public Meeting Summary

Individual Environmental Report Supplemental IER 11b-Tier 2 Borgne Improved Protection on the Inner Harbor Navigation Canal Nov. 8, 2010

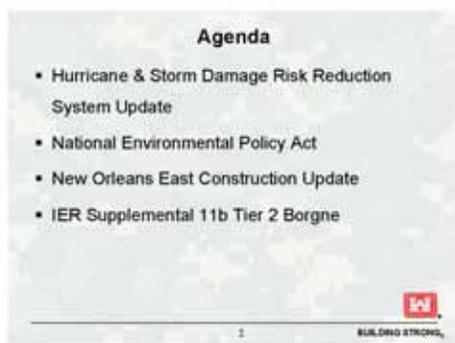
Location	Light City Church
Time	Open House 6:00 p.m. Presentation 6:30 p.m., followed by a discussion
Attendees	Approx. 55
Format	Open House Presentation
Handouts	<ul style="list-style-type: none"> • Corps Approval Process Brochure • 2010 Status map
Facilitator	Nancy Allen



Nancy Allen: Good evening. I'm Nancy Allen and I'm the public affairs officer for the Hurricane Protection Office. I want to thank everyone for being here tonight. I would like to introduce a few members of the Corps staff we have with us. You will be hearing from Ron Elmer who is our IHNC Branch Chief. Dr. John Grieshaber is chief of execution support, Laura Lee Wilkinson is our environmental manager. We also have with us Captain Brock Schmidt and Major David Carter and others to answer questions as needed. We will stay around afterwards if you have questions you would like to talk

one-on-one about. I also have a few other introductions. We have Mike Hunnicut from FEMA, TK Tieu from Councilman Arnie Fielkow's office and Jerry Gillen from the Orleans Levee District. To start us off we are going to opening prayer from Tyrone Larkee from Light City Church.

Tyrone Larkee: Father God we thank you for this time and opportunity to be here and we stand before you. I thank you for the people that are here tonight Father God; I pray your blessings on them. I pray your blessings on this meeting for the people of this neighborhood and this city and this region Father God. I thank you for all you have done and all your blessings in the mighty name of Jesus, amen.



Nancy Allen: We would like to thank the Light City Church for having us this evening. The purpose of tonight's meeting is to discuss IER Supplemental 11b, which focuses on improved protection in the Inner Harbor Navigational Canal. That IER is currently out for a 30-day public review. We will give you a brief status update on construction in the region and we taking your comments tonight when we are done. We are going to ask that you let us get all the way through the slides and then we will take your comments and questions. Everyone was given a speaker request card when you came in and if you would like to ask a question or make a comment, just fill out that card and either turn it in at the desk or when we get to the question and answer period, if you hold it up in the air and we

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will call on people in the order that their cards were received this evening. All comments tonight will be part of the public record on IER 11b, Tier 2.



When we talk about flooding in New Orleans, there are four major flood risks that need to be addressed. They are flooding from the Mississippi River, flooding from rainfall, flooding due to coastal erosion and flooding from hurricane storm surge. All four of those can be affected by global subsidence and sea level. There is a system in place for each one of these flooding risks. Tonight we will be primarily focusing on reducing risks from hurricane storm surge, but as you can see from this illustration, they do overlap and all of them have to be taken into consideration through different systems of risk reduction.

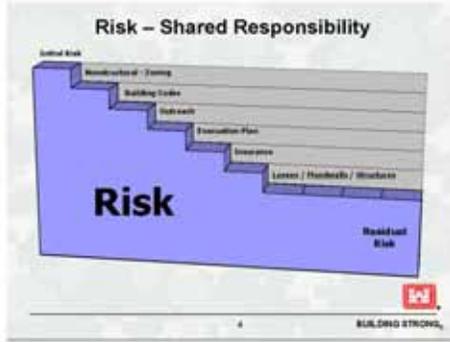


I want to give you a brief update on the status of the Hurricane and Storm Damage Risk Reduction System. This is a 14 billion dollar system that was authorized and fully funded by Congress and our mission is to provide 100-year level of protection by June 1, 2011. We have about 200 days left to achieve that protection. Our office, the Hurricane Protection Office, is overseeing construction on the East Bank of Orleans Parish and St. Bernard Parish, including the entire IHNC corridor. There are really three key strategic improvements that we have made. The first is blocking off the avenues through which storm surge entered the city. We are blocking off from Lake Borgne, from

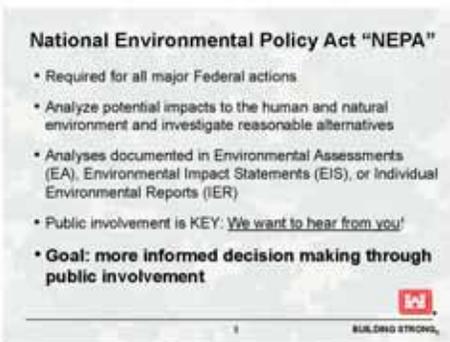
Lake Pontchartrain and the three outfall canals. The second is raising and strengthening levees and floodwalls across the system using the same criteria that provides a consistent 100-year level of protection for the entire region. Everything within this system will be at the 100-year level of protection. That is also what we call the one percent system, meaning that you have a one percent chance every year of a storm exceeding this design, but it is a consistent system across the region. The third improvement is repairing and storm-proofing interior pump stations and we are doing that in Orleans, Jefferson Parishes and we did repairs in St. Bernard and Plaquemines Parishes as well. Along the lakefront in metro New Orleans, we are almost complete with this construction. We have a little bit of work here on either end on the ramps and floodwalls and all of those closures along Lakeshore Drive will be reopened in a few months. Moving into New Orleans East, this portion of the work is 100% completed. This portion is all under construction right now; we are doing some floodwall work near Lakefront Airport and then some levee work in here and we are well on our way with that. Over here in the most eastern portion, we are building the most massive levees in the system; these are about 300-foot wide and some very high elevations and those boarder along the Bayou Sauvage Refuge. This section is what we call LPV 111 and what we are doing there is using a process called deep soil mixing to inject cement into the soil to create columns. This stabilizes the soil under the levees and allows us to build up these levees here. Work is going well along the IHNC Surge Barrier. Again, this is where we are closing it off here. The barrier wall is 26 feet high and that is complete. Everything we are doing now is with the three gates in here. In St. Bernard we are building about 23 miles of T-walls all around ST. Bernard and two sector gates and two flood gates. That work is currently underway. By June 1, 2011 the system will be able a 100-year storm even though work will continue for about the next year or so as we finish everything.

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We used to refer to this as the Hurricane Protection System, but what we've learned is that it is really buying down or reducing risk. Even after we construct the system there will always be some residual risks to all of us who live in this area. What this diagram shows is that you show your initial risks and then show the way everyone who shares responsibility can lower their risks. We have non-structural, zoning, building codes, outreach, having an evacuation plan, having insurance and then down to the structural features of the system. All of these things will work in tandem to reduce your risk, but the key thing to remember is that in Southeast Louisiana there is always residual risk and we suggest that everyone have an evacuation plan and heed the warning of an evacuation.



National Environmental Policy Act "NEPA"

- Required for all major Federal actions
- Analyze potential impacts to the human and natural environment and investigate reasonable alternatives
- Analyses documented in Environmental Assessments (EA), Environmental Impact Statements (EIS), or Individual Environmental Reports (IER)
- Public involvement is KEY: *We want to hear from you!*
- Goal: **more informed decision making through public involvement**

The USACE logo and 'BUILDING STRONG' slogan are at the bottom.

IER 11 Supplemental is a NEPA document. Before the Corps begins any major project we have to complete NEPA documentation, and that's the National Environmental Policy Act. It means that we analyze the impacts of the project and investigate any alternative means. There are several ways these studies can be documented. Whether it's through environmental assessment, an environmental impact statement or what we are using on this system, an Individual Environmental Report, and IER. Public participation is the key. We are here to listen to you and answer your questions. We look at both the human and environmental impacts of all these projects. All of these projects in the system have NEPA documentation and all of that is available on-line at nolaenvironmental.gov. With that I'm going to turn this over to Ron Elmer to give you some information on IER 11.



Ron Elmer: Good evening. I am the program manager for all the work that is ongoing along the IHNC corridor and the GIWW. My office is responsible for overseeing the construction of the barrier, which is shown here in red. This is a drawing of what that barrier wall looks like. Like Nancy said earlier, the entire wall is complete. The only opening that we have is the openings along the GIWW where we are constructing the sector gate, which is on this side right here. This barge gate, the opening is completed. The barge isn't here yet, but it will be for next hurricane season so we

will be able to close off that. Right now there is a cofferdam in place right here, where navigation can't get through. We are constructing the sector gate. The sector gate will be here by next year and we will be able to close this also by next hurricane season. On Bayou Bienvenue, this is the type of construction we under construction; it's a vertical lift gate. This is a smaller gate and will be primarily used by smaller vessels, shrimp and fishing boats. Another structure that is currently under construction is the Seabrook Structure out at the lakefront by the airport. We have just started this construction within the last couple of months and we are scheduled to have the 100-year level of protection in place by hurricane next season at that location also. The IER that is out for public review is addressing the interior the old levee and

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floodwalls that exist along the Industrial Canal, which is a local term for the IHNC, and along the GIWW. Following Katrina the design guidelines were revamped after forensic analysis of what happened during Katrina and the way this barrier is designed, it's designed to be overtopped. It's at a 26-foot elevation and the levees and floodwalls that tie into it along the GIWW here are going to be at 32 feet as well as the T-wall they are building along the MRGO. What we are doing is taking advantage of the storage capacity that we have in the IHNC and the GIWW to hold water that will splash over during the 100-year storm. Our predictions are that the water surface elevation along the interior will get up to eight feet during the 100-year storm and even during the 500-year storm it will get up to a 10-foot elevation and the existing levees and floodwalls vary in elevation from 12-15 feet. Because of the new design guidelines we are investigating all these levees and floodwalls to determine whether they can meet those guidelines with the water conditions we are going to be introducing during the storm. That is what this public meeting is about and the IER is addressing the proposed action that we have in place to do some remediation work along here so that these walls do meet the new design guidelines.



This is a picture of the barrier that we were showing you that this wall is completed. Right now there is a cofferdam here and the vessels are traveling along this side. The vertical lift gate along Bayou Bienvenue right here is also under construction.



This is another picture of the barrier wall. This is on storm side and it's quite an impressive structure.



This is on the protected side of the barrier and shows the batter piles that go up to the deck and then go down into the ground to support the structure. These piles are approximately 245 feet long and they go down to almost a -200 feet into the ground.

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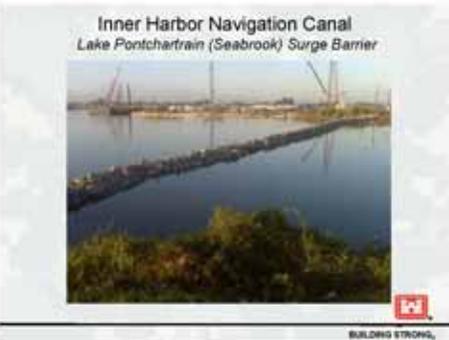
This is a rendering of what the structure will look out at Seabrook that is currently under construction. There are two vertical lift gates that will block flow and then there is a sector gate that navigation will travel to get into the lake and the canal.



These are the dimensions; the sector gate is about 540 feet south of the railroad bridge. We will have the cofferdam in place, which is a circular sheet pile cell that we will construct across the canal on both the north and south side of where the gate will be built. You pump the water out and then you construct the gates in the dry land.



We have placed some large signs showing that the canal is closed. It is closed for navigation into the lake and from the lake into the canal. This will stay closed until we finish construction.



We built a rock dike that is just south of the bridge. There is a large hole in the canal, about 90-feet deep, that we need to fill with sand and when tides come in and out from the lake through this narrow opening at the bridge, we were concerned about losing some of the sand as we dumped it into the hole so this is helping us fill that hole much quicker.



Public Meeting Summary

IER Supplemental 11b -Tier 2 Borgne

Where We Are:

- October 15, 2010: Released Draft IERS 11b Tier 2 Borgne for 30-day public comment period.

Where We Are Going:

- November 13, 2010: Public comment period will end at midnight.
- IER Decision Record by New Orleans District Commander



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IER Supplemental 11b, Tier 2 Lake Borgne, which is the document that is now out. It went out on Oct. 15th and it's open for a 30-day public review. The public review comment period ends on November 13th. Unless there are some significant comments, we are hoping a Decision Record to be signed within a week after that November 13th date and we will move on with the construction.

Purpose and Need



Restore and reinforce portions of 4.6 miles of levees and floodwalls along the Inner Harbor Navigation Canal so that they meet the necessary factors of safety for stability and seepage, as dictated by current Hurricane & Storm Damage Risk Reduction System design guidelines.



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The purpose of the IER is to identify areas we are going to be doing proposed action to get the walls and levee systems that don't quite meet the new guidelines up to those standards. There are approximately 4.6 miles of levees and floodwalls in different spots within the system that we will be looking at and doing work on. We broke this down to Reach 1, which is the levee and floodwall system that goes around the Lower 9th Ward up into the GIWW and then around to the barrier. Reach 2 is the one that goes around the New Orleans East side and Reach 3 is the western side of the canal in metro New Orleans.

Project Overview of Proposed Action

- Reach 1 – approximately 1,200 feet of deficient areas
- Reach 2 – approximately 16,700 feet of deficient areas
- Reach 3 – approximately 6,300 feet of deficient areas

Types of Remediation

- Deep Soil Mixing – for strengthening the canal levees.
- Concrete Slab – for resisting deflection (bending) of canal floodwalls.
- Stability Berms – for strengthening the canal levees.
- Buttress Wall – for strengthening the canal floodwalls.
- Relief Wells – for intercepting seepage.



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In Reach 1 we have approximately 1,200 feet of area we need to do work in. On Reach 2, almost 17,000 feet and on Reach 3 we have 6,300 feet of work area. There are several different methods we will be using to address the different types of deficiencies that we are analyzing. As mentioned earlier, there is deep soil mixing and that is what they are using along the GIWW levee system to strengthen the foundation conditions so that we can raise the levees up along there. We will be using that in some areas to correct stability problems. We will also be using concrete slabs to resist the bending forces that occur on walls when water gets on them. Some areas we will be adding additional dirt to strengthen the levee system; we call

those stability berms. There is another method we call buttress walls where we drive piles and build slabs to buttress against the existing walls. In areas where we have seepage problems we will use relief wells that drain the water that seeps through the sand layers below the levee to prevent the seepage from causing an unstable levee section.




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This shows the areas where we are looking at doing the proposed work; where it is in red. There is a spot along here near Reach 1. There is another area along the Michoud Canal and the GIWW as well as along the IHNC itself towards the lake end of the canal. There is one little spot near the lock, a piece of wall that we are looking at doing some additional strengthening.

Public Meeting Summary

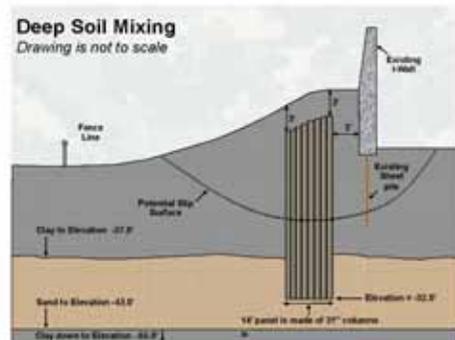
Proposed Construction Schedule

- Contracts would be advertised in early 2011.
- Construction would complete by June 1, 2011.
- All restoration / reinforcement construction would occur entirely within the existing levee / floodwall Right of Way.



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If everything goes well with the IER public review and the Decision Record is signed and with all the plans and designs are completed, we will advertise in early January in 2011. Construction will be completed by next hurricane season as we do have enough time to do all the repairs before then. All the work we are doing will be done within the existing right-of-way along the levee system and floodwalls.



This shows the deep soil mixing method that we will use for stability problems. What they do is drill down with an auger and when they raise the auger; then pump in cement to create these columns. The purpose of the columns is to strengthen where we have detected a failure plain in the system and these columns intercept these failures and prevents this whole system from rotating and causing a levee or wall failure.

Deep Soil Mixing
For Soil Strengthening

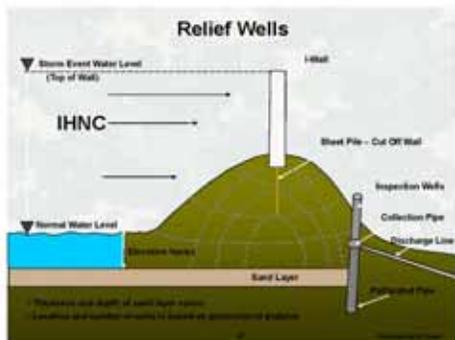


Inner Harbor Navigation Canal - East Wall



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This is a picture of some deep soil mixing we did along IHNC prior to Gustav. This shows the auger going in and coming out and creating the cement columns.



This is a depiction of how the relief well works. Where we have the water in the canal rise up against the wall, that addition pressure pushes water in sand layers that exist below some of the levee sections. If you do not control that push of water, it forces water in the sand layers it could start to move the materials and cause a levee failure. What we do is put in relief wells and what that does is control the flow of the water in the sand layer and it brings it up in the well and discharges it into the existing storm system.



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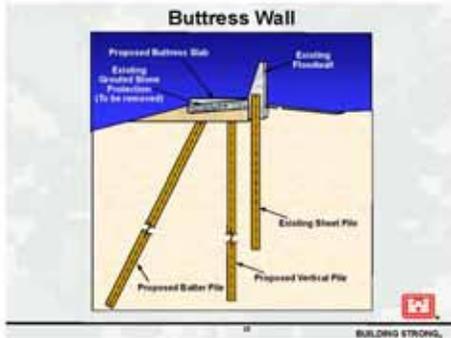
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These are some pictures of relief wells that are in place now. This is what they look like when they are finished.



This is an example of a stability berm being used to offset some stability we might have in some areas. In some areas where we are quite close to meeting the guidelines but they do still show some instability, one counter-method of acting on the instability is to add to dirt on the back side, which is called a stability berm, to offset and potential failure.



This is an example of a buttress wall. Right now what you have is sheet pile going into the ground with an I-wall and a scour pad behind it, this grey piece. What we will be doing is taking these pads out and driving piles and then putting in a slab to buttress this wall against a stability problem.

Female Speaker: Can you say that again?

Ron Elmer: What's out there now is this concrete wall sticking up; it's an I-wall with a sheet pile into the ground. In areas where this is the best way to offset detected stability problems, what we will do is take this pad out, drive pilings and then report a slab behind the wall to make it more stable.



Here are some impacts that can be expected during construction. There will be elevated noise levels from the equipment. In the areas that we are working in there may be some access limitations. We do plan to work extended times, six days per week up to 12 hours per day. We will enforce that contractors use approved haul roads in the areas and not drive through neighborhoods.

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Public Meeting Summary

Currently Available for Public Review

- IER 11.b Supplemental – Improved Protection on the Inner Harbor Navigation Canal
 - Public review until midnight on Nov. 13, 2010
- IER 12 Supplemental Addendum - Belle Chasse Tunnel Construction Impacts and "Westbank N" disposal site
 - Public Review until midnight on Nov. 18, 2010
- Comments can be submitted by:
 - Calling 504-862-1544
 - E-mailing myenvironmental@usace.army.mil
 - Or at any time at www.nolaenvironmental.gov



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Comprehensive Environmental Document (CED)

Purpose of the CED: Discuss Cumulative benefits and impacts of the Hurricane and Storm Damage Risk Reduction System, Mitigation, Data Gaps

Draft CED Release Date April 2011 - Draft CED document will address cumulative impacts and benefits, operations and maintenance and other data gaps that have been finalized at that time.

Future CED documents: Additional documents will be prepared to update cumulative impacts and provide information about additional comments (i.e. long term monitoring and analysis at Bayou aux Carpes and Inner Harbor Navigation Canal) or IER documents in preparation as the monitoring or additional NEPA documents are completed.

A CED Specific Public Scoping Meeting was held on 2 September 2009. Information from that scoping meeting can be found under ProjectCED or under the meeting date on www.usace.army.mil



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Nancy Allen: In addition to IER 11b that is out for public review, there is another IER out regarding the Belle Chasse Tunnel construction. Again, IER 11b public comment closes at midnight on November 13th. All comments made here tonight will become part of the record and you can submit them until November 13th via phone, e-mail or online at nolaenvironmental.gov.

We are in the process of writing a comprehensive environmental document that will look at all the cumulative benefits and impacts of construction of the Hurricane and Storm Damage Risk Reduction System. This is the schedule for that document. We expect a draft to be released in April 2011 and then we've already held one scoping meeting, which was on September 2, 2009, and we will hold more meetings. All this information regarding the Comprehensive Environmental Document can be found on www.nolaenvironmental.gov.

Upcoming Public Meetings

Tuesday, Nov. 9, 2010
LCA - Myrtle Grove Construction Report Scoping Meeting - Crowl Point Joseph's Hall
8151 Saratoga Blvd
Crowl Point (Marrero) LA 70072

Wednesday, Nov. 10, 2010
LCA - Myrtle Grove Construction Report Scoping Meeting - Lafourche South (Lafourche Levee District)
17004 Hwy 5235
Galliano, LA 70334

Thursday, November 18, 2010
LCA - Myrtle Grove Construction Report Scoping Meeting - Plaquemine Woodland Plantation
21987 Highway 23
West Point a La Roche (Port Sulphur), LA 70081

Monday, Dec. 6, 2010
IER 23 - Mississippi River Levees
Bayou Barriere Golf Clubhouse
7427 Hwy 23
Belle Chasse, LA 70037

Tuesday, Dec. 7, 2010
LPIV Mitigation and St. Charles Parish construction jobsite
American Legion Post 386
12188 River Rd
St. Rose, LA 70067

Thursday, Dec. 8, 2010
WVU Mitigation, Canal of Company Canal/Bayou Segrette construction and IER 15 Supplemental
Vidrewege Seven Senior Center
421 4th St.
Wolffsgo LA 70084



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We do have some upcoming meetings, including some pertaining to mitigation. I know that was a question at the last public meeting so there is another meeting to talk about mitigation for the system on December 7th. We also have some coastal meetings coming up as well.

Opportunities for Public Input

- Regular Public Meetings throughout the Hurricane and Storm Damage Risk Reduction System (HSDRRS) Area
- Make sure to sign in tonight to get on our meeting notification mailing list
- Comments can be submitted at any time at www.nolaenvironmental.gov
- Individual Environmental Reports (IER) 30-day Public Review

Questions and comments regarding Hurricane Risk Reduction Projects should be addressed to:

Patricia Leroux
PM-23
P.O. Box 80267
New Orleans, LA 70160-0267
Telephone: 504-862-1544

E-mail: myenvironmental@usace.army.mil



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There are many opportunities for public input. Make sure if you signed in tonight at the back table and if you did, you will be on our mailing list. Again, you can submit any comments at nolaenvironmental.gov. There is an email address listed and then there a contact person and that Patricia Leroux.



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We have two websites. The first is nolaenvironmental.gov. That is where all of our environmental documents are located. We also have our district website is mvn.usace.army.mil. We have also established a construction impact hotline. If you have any questions or concerns about construction in your neighborhood, you can call this number, 1-877-427-0345. There are magnets in the back that have that number. We take reports from everyone who calls and we do all we can to resolve the situation.



We are also using websites like Twitter, Flickr and Facebook to put out additional announcements. You can find us by searching for Team New Orleans on these sites. We are now going to open up for your questions and comments. You were given a speaker request card in the back and I do have a stack here from those who filled them out. If you have one at your seat and you would like to make a comment, hold it up in the air and someone will come pick it up. You will have three minutes at the microphone. We do ask that you be respectful and give everyone their amount of time to speak. We do have a light system to track time. The light will blink yellow when you

have a minute left and you will have a buzz when your time is up. We will be here as long as needed to answer your questions and take your comments. Once we've gone through all who have put in a card, we will open it up to anyone with follow-up questions. There will be transcript made of tonight's meeting so it's important that you speak into the mic and speak one at a time so we can get an accurate transcript, which will be available on line.

Beth Butler: I just wanted to say that we are against the expansion of the Industrial Canal and this is a timely subject because when you look at what we have to do and spend all this money, we need to spend more to make our area safer. I am very concerned that the [Inaudible] Canal is still not being handled by the Corps of Engineers. That has somehow been left off the list and it's a big drainage form Metairie into our city every time that thing overfills and it needs to be added back into the Corps responsibilities and not a line item in the federal budget. That is very important to our area. Also, the whole thing about MRGO and filling it in can't be done quickly enough. We really need to step on this and I would also like to have you have the critics positions brought up as part of a presentation so we can have a better discussion because it's just the Corps presentation and we've had a lot of experts say this is not adequate for flood protection.

Nancy Allen: If you have any questions concerning criticisms of the Corps, we are happy to address those.

Linda Jackson: I've heard several times tonight about community input and the Lower 9th Ward community has not given that input because you've never had meetings here because this is the first. I would appreciate it if you would have more so more people in the community can come out and give their input. I understand there are a lot of things going on around the Lower 9th Ward and no one has

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given their input because there were no meetings. I heard you go to the East and West Banks, but not the Lower 9th Ward and we would like to be a part of that program.

Nancy Allen: Thank you. We do ask that you sign up in the back because all Corps meetings are publicized and we are also available to come to community and home owner associations, church and homeowner groups to speak. Nick Silbert has some cards and if you would like to have one our team members come speak to your group, we are happy to do that.

Linda Novak: I have a number of questions. When you said while pointing the slide on the Bayou Sauvage area, you said that the levee walls would be 32-feet high?

Ron Elmer: Yes, where they tie into the surge barrier, they start out at 32 feet.

Linda Novak: I just wanted to make sure because nowhere on this map does it say 32 feet. The highest is 28, 27?

Capt. Brock Schmidt: That's because they actually built the wall higher...what you see on there is a 100-year level of protection number and we've actually gone above that so it will be 32 feet.

Linda Novak: I would also like to know if the height of the levee walls along the IHNC is equal height no matter where you are up and down the canal.

Ron Elmer: No. The existing levees and floodwalls within the existing IHNC varies from place to place from anywhere from 12 to 15 feet.

Linda Novak: Is there is a reason why we don't want to make them all as high as possible and equally along the length of it?

Ron Elmer: We were charged with providing a 100-year level of protection and that is what we are doing by building the barrier and the Seabrook structure. The levees and floodwalls that will be behind those two structures will become secondary line of protection.

Linda Novak: That leads me to and it's a question that you may not be able to answer. All of this work you are doing won't amount to much if there are large objects in the Industrial Canal such as barges or ships and they once again go crashing through levees so the surge barrier won't make any difference in that situation. So my question is what organization is tasked with insuring that there are no potentially damage objects in the canal?

Ron Elmer: The Coast Guard is responsible for making the rule governing whether or not barges are inside the IHNC. They will ask for our input and we will give them our recommendations.

Linda Novak: I would like to know about the navigation gates. I would like to know the size of that navigation gate, specifically what size of ship will be able to get through that gate?

Ron Elmer: First of all, that is a barge channel so you won't get ships in there. There are two gates and each one is 150-feet wide and -16 feet deep.

Linda Novak: One final question, if you could address the issue of why the areas in red were the ones chosen to be updated last.



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Ron Elmer: Because those are the ones based on our analysis do not quite meet the new design guidelines so we need to do this remediation work so that they do meet the guidelines. We analyzed all the walls and levees and those are the areas where we have deficiencies with respect to meeting the new guidelines.

Nancy Allen: Let me clarify. Are you talking about the areas that are red on that status map that you have?

Linda Novak: I guess my question is why is this area the last to be updated? For instance, the top area around the lakefront in green and yellow means that area is up to the standard you want it to be or close to it.

Ron Elmer: That is the status map of where we are with the 100-year level of protection being built.

Nancy Allen: That's where we were as of June 2010. All of the area on that map, everything that is red and amber, will be green by June 1, 2011.

Linda Novak: I suppose you do not understand what my question is. I want to know why you chose that first versus that last.

Nancy Allen: We didn't. There was less work needed in some areas than others, but all of it was to be completed by June 2011 to handle the 100-year storm.

Vanessa Gueringer: Are there any plans to improve the existing IHNC levee north of the Lower 9th Ward, which is 12 feet high and an unreinforced dirty and grassy ridge and also are there plans to improve the secondary protection, which is a sheet pile wall along Florida Avenue belonging to the Orleans Levee Board.

Ron Elmer: I'm not certain what areas you just identified in particular....

Vanessa Gueringer: I'm talking about Florida Ave., there is a sheet piling levee system along Florida Ave.

Nancy Allen: It's where the new and old....

Ron Elmer: I don't if that's in one of the areas we are going to be doing remediation work on.

Vanessa Gueringer: So you are saying there are no plans to reinforce it?

Ron Elmer: No, not as far as I know.

Vanessa Gueringer: So that sheet piling is going to remain?

Ron Elmer: Yes.

Vanessa Gueringer: Isn't it true that the 12-foot earthen levee that protects us from a five-mile stretch of a 41-foot deep MRGO channel remains authorized right above the Lower 9th Ward? We are talking about the MRGO and we are talking about a 40-foot deep channel that is five miles within the



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MRGO channel that is above Lower 9th. We understood that MRGO was deauthorized in its entirety, the entirety of MRGO...

Ron Elmer: The MRGO was deauthorized where it converges and goes into the GIWW, from this spot all the way down to the gulf, that portion of it.

Vanessa Gueringer: Why wasn't that stretch deauthorized the five mile stretch above Lower 9...

Ron Elmer: Because it was a different authorization and it's still a deep channel that has to serve...

Vanessa Gueringer: Was it not deauthorized because the Port asked you not to deauthorize it?

Ron Elmer: I do not know how that came about as I was not a part of that.

Vanessa Gueringer: In any case we were not notified about the entirety of MRGO was not deauthorized. Isn't it true that the Crop plans a large toxic sediment reservoir, a confined disposal facility for the lock project on the south side of the 12-foot earthen levee in the flood plain that will sit right beside Bayou Bienvenue if you do the lock project?

Ron Elmer: I'm not familiar with the lock project. We have Bobby Duplantier here to answer that.

Bobby Duplantier: There is a proposed two-cell confined facility right in the area that you are speaking of, but that material has been tested and it has shown no significant risk to human health or the environment. In addition, it will be capped and covered to be sure none of it seeps out into the area.

Vanessa Gueringer: You're going to be really sure of that? One last question if I can. You talked about an eight-foot splash over from the surge barrier. Once those surge gates are closed and this splash over happens in the IHNC and there is a hurricane and there is rain, we are talking about eight feet and we already have the lowest levees in the entire system that are basically at 12 feet, can you be sure it will only be eight feet and we are not going to flood?

Ron Elmer: Based on our analysis that is what I believe. We have used very conservative numbers assuming a 100% capacity of all the pumps pumping water in and we took all the rainfall and applied it to the system. We have taken a very conservative approach to it and we are saying eight feet for the 1% storm, the 100-year storm, and 10-feet for the 500-year storm.

Vanessa Gueringer: You can't ever be certain. We are the most flooded neighborhood in the city and once you close those gates, we are going to be trapped like rats in here if that water exceeds eight feet and we are dealing with 12-foot levees. The levees need to be raised just like they have been raised for the entirety of the levee system. We again are being left out.

Ron Elmer: Once again, the system on the inside, the secondary line of protection, you have a primary line of protection that will provide the same level of protection everyone has in the entire system; everyone is getting equal treatment.

Vanessa Gueringer: We are not.



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Theola Garret: Why does the design allow for any overtopping at all in the system and secondly, why are we preparing for a 100-year risk instead of 500-year protection? If the project is authorized then why don't we do the 500-year plan as opposed to 100-year? Also, you mentioned some failure plains and areas where there is some instability and I would like to know where they are located especially if they are in the Lower 9th Ward near Claiborne and Florida Avenue in particular. My next question is the Shaw group, where are they from and who are they? Also, the hotline number that you put up there with the 277 number, where are those people located that we will be talking to about our complaints?

Nancy Allen: Let's work backwards. The construction hotline goes to a member of the public affairs staff here in New Orleans. We then figure out what project and area it's associated with and then we get it to Capt. Schmidt or one of our other folks. It is handled locally and we do our best to get you an answer or provide information or point you in the right direction.

Ron Elmer: I remember the one about Shaw. Shaw is a Louisiana -based company in Baton Rouge. As far as the areas we are looking at, where you see these red spots along the GIWW and the canal, those are the areas we are looking at doing proposed action. The Lower 9th Ward is down here so there is one spot here, the closet one to your area that we will be doing work; this is right where the levee ties into....that's Florida Avenue, north of Florida Ave. Congress authorized us to do the 100-year storm; we can only do what Congress authorizes us to do. We can't go beyond that. As for splash over and why we allow that. As you have seen since Katrina, there is a lot of emphasis on how the Dutch do things. They do these kinds of things. You take advantage of your conditions and storage capacity and you implement that and make that part of your system and how it operates. If we would have built this wall up to the 32 feet up to the other side where we are tying in, we probably couldn't have built this type of wall; it would have to have been different and would have cost more. This was an effective use of the existing conditions and what we were trying to do. This is a standard practice in the Netherlands to use storage area for storm water.

Theola Garret: I do have another question about scouring as I don't know where the flood wall is now along the canal from Claiborne to Florida Avenue if you have the scouring pads or whatever...

Ron Elmer: Following Katrina that was one of the first major things we did. We put scour pads behind all the existing walls.

Theola Garret: Is that wall at its highest elevation or is there any plan in the future to raise it. I know the last person who was in charge said it was raised two feet but they redid it after Katrina.

Ron Elmer: They did after Katrina to the walls that had catastrophic failure, they rebuilt those walls to 15, yes.

Theola Garret: And that wall is a T-wall and not an I-wall?

Ron Elmer: Yes, all our walls will be T-walls, no I-walls.

Nancy Allen: I do want to recognize state senator Cynthia Willard-Lewis just came in; we thank you for being here.

Vanita Rogers: You didn't mention much about the remediation. I was at the last meeting in New Orleans East and I talked about the deep soil mixing and I had concerns about it because you kept mentioning that the soil in Louisiana is so bad. Right after they had in the Times-Picayune and

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the problem they had with BP because of the cement. I'm wondering if you have a quality control or some standard that you will have for all of your deep soil mixing in that some areas have worse soil that will be mixed and you are not going to get the stability that you will need or how are you going to handle that?

Ron Elmer: On all of our construction projects, we have an extensive quality assurance program. The contractors that are building have a quality control plan system in place that they are required to do varying amounts of testing on the concrete they are pouring as well as the soil they are putting in the levee systems. There is an extensive quality control put into place from the contractors and on top of that, we the Corps also do quality assurance tests on what they have already tested. We do a double testing within our control.

Theola Garret: So you already have it established what grade of cement you want? If that particular area doesn't come up to grade do you bring something in to make it up grade?

Ron Elmer: Yes, when we are using concrete they test it and if it doesn't meet the specifications, it's redone. It's taken out and redone, but that rarely happens.

Theola Garret: Since you are saying that you are doing the deep soil and it's going to be right for the soil for that area, so where do you get the soil....

Ron Elmer: In the deep soil mixing, they use the soil that is there. They auger down and as they back the auger out, they inject concrete. Now they have done soil test where they are doing this and in every situation is different. They design the concrete mix based on what the soils conditions are at that spot.

Theola Garret: The lady just asked about the remediation areas were and one was going to be at Florida and another time, I think you said one was going to be by the lock?

Ron Elmer: There are a couple of spots. Theirs is this area on the east side by Florida Avenue as well the spot next to the existing lock.

Theola Garret: On those two areas, what kind of remediation will you be doing by the lock and for the one by the bridge?

Ron Elmer: They are doing deep soil mixing here and they are putting a concrete slab here at the lock.

Theola Garret: Deep soil mixing will be by the Florida Avenue?

Ron Elmer: Yes.

Theola Garret: In what areas are you going to put the well?

Ron Elmer: I know there are some areas along here that we have to put some additional wells and along this area, but it varies from place to place.

Theola Garret: I'm still concerned because our area will have overtopping and our pumps are not being shielded on Florida Avenue so I'm concerned about the height you say you are going to allow for topping.

Ron Elmer: The lowest wall on the system is 12 feet.



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Theola Garret: Right, but if you are saying you are going to allow for topping into the drainage system and the pumps aren't working...

Nancy Allen: We are allowing for overtopping at the surge barrier, we are not allowing for overtopping on the levees and floodwalls. We do have a blowup of this map on display and we can stay back there afterwards and if you specific questions on what type of work we are doing in areas, it's probably easier to see back there and we can answer those questions.

John Koefler: I have already made some comments. You know I'm uneasy about the 12-foot levee along the old MRGO section. I think it's not adequate, but tonight what really strikes me is that there has been modeling that has determined the height of levees and I know that the modeling has been done by the National Academy of Science and that it has been done a little piecemeal for this section and that section and this consideration and that consideration. I heard that in other testimony in other meetings that we've had. I'm concerned that no independent review has been done with an overview to the protection of us all down here for hurricane protection and from the navigation channels that are being built separately by another Corps department. I'm concerned that there isn't the coordination of the publically obvious person who has the overview. The best I could find are the people doing the levees don't really know what the plans are for the changes in the levees that are made necessary by the deep new lock project. Is that correct?

Ron Elmer: If and when they build the new lock, all the levee systems that would be affected by it will be built to the new standards that we have now.

John Koefler: But they are not built to those standards now as far as we know.

Ron Elmer: These are the areas we are saying that are not meeting those standards and that is what the purpose of this meeting is to show you the areas that we are going to go in and do work for the areas that do not meet those guidelines. If and when they build this new lock, if they move it north of Claiborne that was the proposal when I looked at the project, all the levees that will be built as part of that project will have to meet these same guidelines.

John Koefler: And you have no idea or nothing to tell us about what those guidelines would be. It's conceivable that the levees will have to be done over, right?

Ron Elmer: Not the ones we are doing, no.

John Koefler: Along the Industrial Canal, along Jourdan Ave. we already have relief wells because the soil underneath the levee, the seawall there, isn't able to be drained without those relief wells, so there is a certain amount of water liability there. If on the canal side six more feet is taken out and that is just the beginning of navigation for containers, then it seems to me that it will be a lot weaker. Right now it has a safety factor, according to you all, of 1.3. Sandy soil with an I-beam construction and relief wells. What my question is, is how much more depth in the canal can that particular levee stand? It seems to me that it's pretty close to what is capacity is right now.

Dr. Greishaber: Let's take this back to the original part of your question. You're concerned with the levees that are protecting you for hurricane protection. Today, they are designed for the existing conditions today. When a change is made to the system, they add a lock, they deepen the channel there is an actual design that is revisited for the change in the condition. So if they dredge the canal six feet deeper, than part of that project would be the institution of additional relief wells, additional dirt, deeper cutoffs, whatever is required. This is a balanced system today for the existing condition. No

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changes will happen that will put this system in jeopardy because when the change happens, the adjustments will be made to the existing hurricane protection system.

John Koefler: You don't mind if I ask you right now what those changes are going to be. The lock project is an authorized project and I as a citizen and resident down here want to know what to expect from it.

Dr. Grieshaber: The changes would be a function of the depth. If you are telling me it's going to be six-feet deeper, I would either add additional sheet pile or additional wells or a combination of both.

John Koefler: You don't mind me asking to know that now. I want to know what right this is an authorized project...

Nancy Allen: Bobby do you want to give an update on the lock?

Bobby Duplantier: You are correct that the lock is an authorized project but it is still very early in its design phases. We are not even 20 to 30% complete design yet. Once we complete that design then we will be able to turn that over and figure out what changes will have to occur in the system to accommodate this new structure.

John Koefler: I would like to know what we are in for, you know. To have an authorized project that is going to dig the canal deeper and yet you can't tell us what impact that is going to be on the levees that are already pretty marginal as far as I'm concerned. With relief wells that tells me that there is not a whole lot that can be done without going a lot deeper with sheet piling or doing a lot of soil remediation, but do you see what I mean? It seems like there isn't anybody who can give us the overview, the long-term planning of what's going to happen in our area. It's not enough to say when that project gets rolling, when that stuff starts happening that someone will then design and provide the money for something that has a lot of implications for us. We live down here. We don't want to have our lives disrupted and have our children and grandchildren not be able to get back-and-forth the canal, to have our property values down because you can't tell us what these two projects coming together are going to mean in real dollars and cents. I don't think that is a unreasonable request.

Dr. Grieshaber: Let me go back. The system you referred to of relief wells, you use the term marginal; I take exception to that. These levees and floodwalls along the IHNC corridor are designed to the same stringent criteria as the rest of the hurricane protection system. This is the same criteria that is used in St. Bernard, St. Charles, Jefferson Parish, Orleans Parish and New Orleans East. There is no marginal system here. We have criteria that was very stringent and we have applied it to every aspect of the system. Secondly, that criteria is going to be a constant. If there are changes that are brought about by the lock project that criteria will still be applied. Whatever it will take, whether it is more relief wells, deep sheet pile or a combination of both, you will have that

Nancy Allen: [Inaudible]

Dr. Grieshaber: As far as what was done under modeling, let's go back to before there was a hurricane protection system. Hurricane Betsy came. When Congress put together the authorization to build a system, they only knew one storm. They came up with Hurricane Betsy as the critical storm and we designed our system for a Betsy-like storm. We looked at three approaches coming up the river. Now with the advent of super computers, we were able to generate 152 storms and we used six super computers. The Department of Defense gave up three of their super computers to do nothing but analysis on this model. We had three computers from universities. We then took these 152 storms and came up

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with our system. We then went back and we took Camille, Katrina, Flossie, George and we plugged it in to make sure we had a good model. So the modeling has been very rigorous. They have taken every combination that these super computers could come up with and they came up with the model. They then turned around and tested the model with storms that we've already had. So this isn't just a guess; this was a very rigorous solution of every possible combination that was brought together and used to develop the storm surge that set the elevations to protect this area.

John Koefler: Has the model factored in subsidence and sea level rise?

Dr. Grieshaber: Yet it did. If you look at all these numbers there are two numbers. They are what we call the 2057 number and the current number. The 2057 number is taking into account general subsidence and sea level rise and that is why we have projected all of our walls to an elevation to the 2057 number because it's difficult to add to a wall that had already been built.

John Koefler: And a slow moving storm that causes the surge gates to be closed and the city to be pumping water into the canal and if it stays five or six days maybe a storm we haven't had yet that will sit over us and pour down 20 inches a day for four or five days, would be a serious event in the Lower 9th Ward with those 12-foot levees. Inside is what concerns us.

Dr. Grieshaber: We are going to close those gates at elevation three. We will close the gates at three and we say we will have 24 straight hours of a 10-year rain event and we will estimate that every drop of water that falls within the basin ends up in the canal, even those we know the pumps can't officially move that much water. So we reached the conservative estimate for how long we can have this rain and we reached out and took the most conservative estimate by assuming every drop of water that fell within that basin got pumped into the IHNC, which is not really the case, and then we assumed all the rain that fell in and we put all that. That totaled less than eight feet and then we used eight feet as our design. Now this modeling tells us a lot of things. One the big storms don't just sit out there. The kind of storms that would get you overtopping at the surge barrier have to move through or they will die if they sit there and stay as tropical storms. If they are tropical storms there is a good chance we don't close the Lake Pontchartrain gate any way. So what we have is an extremely conservative approach to a very rigorous model.

John Koefler: Would you be willing to give that model and other work to the National Science Foundation...

Dr. Grieshaber: I'm sure the National Science Foundation was part of the review. The levels of review were the ASCE, National Science Foundation, IPET; these models have been given to everyone. We want to know the right answer. If someone can find a flaw step up and tell us.

John Koefler: Well I asked you about a storm that sits out there three or four days and you used 24-hours and a 24-hour storm and that doesn't seem the storm that we fear.

Dr. Grieshaber: The storm that you are speaking of that will stay in one place for days ...

John Koefler: A huge storm that moves very slowly so that the surge gates are closed, the city is pouring water into the canal and we are here. A lot of can't evacuate and the water is going to come over the lowest place, which is right by us and we are part of what absorbs the water and we are not happy with that. We are the fail safe for the system. It doesn't feel very comfortable to us.

Nancy Allen: We need to move on to another speaker, sir. We will come back to you when we get everyone else who hasn't gone yet.



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State Senator Cynthia Willard-Lewis: To continue the discussion when I came in about the consistency and uniformity of the system and about the wall heights. Before Katrina we had variations in heights from parish to parish and from within the city. So now you've done this extensive modeling and come up with this target height that protects every part of the city and parishes from the perfect 100-year storm, but it's still different so could you speak to that for a second.

Ron Elmer: The model results show that your 100-year storm elevation is different from one spot to another. In Jefferson Parish on the lakefront the 100-year level is different than what it is at Seabrook and it's different from what it is in St. Bernard. The system is being built on the data that came out of these models.

State Senator Cynthia Willard-Lewis: Before Katrina, when we had the earthen levees that were subsiding going from Orleans to St. Bernard, there was a variation in the height of the levee systems even though they may have been along Paris Road, which is part Orleans and Jefferson Parish. I just raise that as an example and can you speak to that in terms of the same geographic zone would there be any differences or has that been corrected in the height of the levees.

Ron Elmer: There are differences in the height.....

State Senator Cynthia Willard-Lewis: But in the same zone?

Ron Elmer: For instance, the wall they are building along the MRGO, it starts out at 32 feet and when it gets here it is lower.

State Senator Cynthia Willard-Lewis: It's taking into factors the natural elevations or what?

Ron Elmer: It's taken into fact all the different geography that you have and how the storm surge affects those particular areas. As you can see you have a funnel here so if a storm surge comes in here obviously the water is going to stack up higher at the barrier than it will at this point because you are out here. That is just the way the water reacts with the storm; it varies throughout the system. At Seabrook for instance, the 100-year storm elevation is 10.5 feet. At the barrier it's 18.5 feet. So we are building the system to address those elevations that came out of the model.

State Senator Cynthia Willard-Lewis: I understand that at Seabrook it would be at one point and then the MRGO would be at another because you have distances separating; you got topography that is different. My concern again is an example is Paris Road, which connects Orleans and Jefferson, before all the extensive work, before there was all this review and science and modeling and projections for what would be the best most comprehensive system. There were differences in the elevation and it may have been because of subsidence over the years and no one was monitoring it. I don't know what caused it but I'm just trying to verify that has been remedied.

Dr. Grieshaber: What you are talking about is before we had a system in name only. What happened is that we were partially funded; we did not have a fully funded system. We built as Congress gave us money. So we went forward and built with the money as we had it and there were times when we had subsidence take place and we only had the funds to build up small portions of the areas that subsided. Today, we have a fully-funded system. We learned and were told that one of the problems was that you didn't have a system. The second problem was you didn't build it all at one time. Now we are not in that situation. The exact case you are talking about was one side got money for a levee raise and the other side didn't.



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State Senator Cynthia Willard-Lewis: So inequities have been adjusted have been in adjusted in this system approach, which is everyone is protected That's what we wanted to have on the record and I thank you for your response and to the recognition that it was a problem in the past and hopefully the corrections have been made to resolve it. I also want to ask about information that shares and communicate to the public about the jobs that have been given to local families from Orleans, St. Bernard Parishes. Everyone knows Shaw and they are a great company, but the question is to drive the jobs to the local level so families that were impacted where skills are available are a part of the rebuilding of their protection for their future. I think it just builds for greater trust and builds a great economics throughout. We realize this is the largest civil works project in the history of the Corps, \$800 million, so my question is do we have the data that shows the individuals and the corporations from Orleans Parish that have participated in the work?

Ron Elmer: On the Shaw contract in particular, we do have the data that shows all the small business firms that got subcontracts from Shaw that are locally owned, Louisiana-owned or if they are from out of state.

State Senator Cynthia Willard-Lewis: Along with that, what percentage of the total value is there?

Ron Elmer: We can get that to you.

Nancy Allen: Just speaking for the whole system, of the 14 billion dollars, we have awarded more than two billion dollars to small businesses and I think more than 75% of those are local or Louisiana small businesses. We have a very active small business program and Ned Foley, who is our deputy for small businesses, would probably be the best person to package that information so we will take that back to him. We can also speak to all the companies who are getting the big contracts.

State Senator Cynthia Willard-Lewis: We don't want the history and the relationship to be as it was with our beautiful National Guard \$200 million project and very little work was given to locals and to small businesses.

Ron Elmer: We do incentivize for the contractors to use small and locally-owned businesses.

State Senator Cynthia Willard-Lewis: I think those type of incentives are great, and yes we recognize Louisiana corporations, but again the devastation was here in New Orleans and in St. Bernard and Plaquemines, and again to help build the economy of the businesses that were destroyed is prudent and wise particularly if the same skill sets are there. If there is an incentive for those communities who lost homes, businesses, employees, I think that type of thought process...and I know you have to deal with federal regulations and rules, but that again drives the dollar into the community and builds trusts and builds relationships. My last questions as I move to the state, the issue of insurance and the fact that insurance premiums continue to rise in this region even though you are doing this great work and Congress has extended this unheard of amount of money to push forward our protections of this region that will benefit from the work being done by people committed to making this region safer, but the insurance industry acts as if nothing has happened or changed because rates continue to increase. Can you speak a little bit to certification and communication with the insurance industry, being our state commissioner, has he been on tour of the closure of the MRGO. It's a significant project.

Nancy Allen: We do have someone here from FEMA, but homeowners insurance in not FEMA.



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State Senator Cynthia Willard-Lewis: We are really proud Mr. FEMA as we probably need both. If it's all about risk reduction, which the projects have been about risk reduction then there should be a corresponding reduction in the rates that people are paying because right now people are being driven out of their homes because of increasing insurance premiums and being at that the national level. I was in a debate about insurance and the region I represent the companies paid nothing because people were told their homes were destroyed by flood and that's a national program so thank you for all the advance on that and the good work you are doing now and the public assets that are coming up. Since you are here, I'll let you know we need our schools back in the 9th Ward so we appreciate your help in getting that done, but anything that would help from the national perspective to recognize all of the work that the Corps is doing so that there is a corresponding decrease in flood insurance rates and we had that same discussion with our commission of insurance on homeowners.

Mike Hunnicut: I agree with you. We have done some preliminary estimates and looked at the future outcome and what it's projected to be. I'm from St. Bernard Parish so I live on the same island that you live on. I've looked at some of the data and the data shows me that because of a lot of improvements the city and St. Bernard has done with drainage, the levee improvements, we will see an improvement and our flood elevation levels dropping. It won't be the whole community, but it will be parts of it. So there will be areas that will be taken out of flood hazard areas and put into non-special flood areas, which will reduce flood insurance.

State Senator Cynthia Willard-Lewis: Would you keep us posted on those meetings and timelines?

Mike Hunnicut: With the flood insurance and the maps and until the levees are completed FEMA will be redoing the official maps, which won't be until 2012. Right now, to keep everyone at ease, flood insurance has been frozen for this area. We are not increasing or decreasing anything. What we will be doing is redevelop the maps and we will be holding public hearings in the five parish areas affected by the levees.

Nancy Allen: We can certainly reach out to the insurance commissioner to see if he wants to do a tour and in fact, we invite anyone who would like to see the projects we can coordinate a group tour. We can take you up on the barrier and other areas. Do we have other questions from those who have not had time to ask questions or make comments?

John Koefler: Three minutes isn't very long so I haven't been able to tell you what a good job you are doing. I want to thank you for all your work and you can't help it if you have orders that may preclude you from doing things that we wanted. I wanted to make a note here about my question about the coordination necessary about levee work and the lock project. Do you remember Hurricane Gustav when the head of the levee work, Karen Durham -Aguilera saying don't worry it's just sloshing and lapping and nothing to be concerned about. But actually we were very fortunate I think because what had happened was the Galvez Street Wharf had been removed from that area of the seawall but there wasn't any coordination or care for repairing the wall, which was weaker than the rest of the wall. There was no one watching over that and that created a crisis. One place where it was worse was in Katrina where the lock work was doing excavation beside the levee wall that broke, there was no coordination between people looking over the levee for hurricane protection and doing the project work and we know what happened there; we got flooded. I'm not asking for you to accept liability for that as I know you are under orders for that too, but this is a very important issue for us. In asking that question I'm not trying to stump you or get something I don't feel...I ask it as a legitimate questions so we know what needs to be done out there and it's not just one project or another, but that someone somewhere in or outside the Corps is watching out for the whole. We are right were all this happens. We have three different levees, we have the Corps Lock Project levee controls, we have the Hurricane Protection Levee, we have the



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Nancy Allen: We can do that now, but I'm just not sure everyone can see the red on the map, but we will show you each spot. Everywhere on this map where there is a red line that is where we are doing some form of remediation work. What we are doing here along the Michoud Canal, that is a proposed stabilization berm and near there is relief wells.

Female Engineer: [Inaudible]

Ron Elmer: Stability berm right here, we have deep soil mixing here, over here we have another stability and here we have a concrete slab. On the east side just across from the lake, we have buttress wall along here, south of here there is a stability berm and concrete slab and on the west side we have all relief wells.

Theola Garret: Someone made the comment that in the post-Katrina levee that you put up that there are deep wells in that also?

Ron Elmer: There were relief wells already in place before Katrina as that was the standard practice for that type of issue. There were relief wells in the system prior to Katrina. After Katrina we did add additional relief wells and after Gustav, we added more here.

Theola Garret: In the last meeting you said with the deep wells the water goes into the drainage system so I'm still saying that if you are in the middle of a storm and it's raining on your side and you are getting a lot of water, but if you have a lot of deep wells on that side you are going to get more water into the

Ron Elmer: But it's not a lot of water. All those parameters were taken into consideration in the analysis.

Theola Garret: I was just looking at all the areas outside the Industrial Canal so making comments I would prefer having something else noted.

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Vanessa Gueringer: I'm just going to say this. What we feel in this neighborhood is that we don't feel like there has been any consistency to the height of these levees. To tell us that there are levees that are being raised to 32 feet and we are still at 12 feet really upsets us. To tell us that you've done all these computer generated analysis of eight feet of water lapping over into the canal and we are at 12-foot levees, doesn't sit well. To say in your report that all the IERs in the New Orleans area say that they protect population, except this one. This one in your report is said to protect the IHNC, it does not say that it is advanced protection to protect the population. When you all came last year to this neighborhood with the port to talk about the lock expansion project, to hear you say 15 years of traffic jams, bridges being out, devaluation of our property, trucks driving all day, pile driving, then you would pump \$47 million into the community, by then we will be a ghost town. There is no consistency or urgency to provide protection for this, the most flooded area in the city. You all want to sit here and control what mother nature wants to do. You say it's going to be eight feet and that a storm won't sit over the canal and dump

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Ron Elmer: First of all, we do have a sense of urgency. We are working extremely hard to have all these systems in place next hurricane season. Right now we envision we will be done on time, that's our schedule. As far as it goes, every individual living behind this system when it's done will have the same level of protection. I don't know any other way to put it...well then you know more than our engineers and our scientists.

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