

Draft Environmental Assessment

# **Fifi Island Restoration**

# **Rock Breakwater Extension**

Jefferson Parish, Louisiana

FEMA-1603-DR-LA

*May 2012*



**FEMA**

U.S. Department of Homeland Security  
Federal Emergency Management Agency, Region VI  
Louisiana Recovery Office  
New Orleans, Louisiana 70114

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## LIST OF ACRONYMS

BFE	Base Flood Elevation
BMPs	Best Management Practices
BOEMRE	Bureau of Energy Management and Regulatory Enforcement
CAA	Clean Air Act
CBRA	Coastal Barrier Resources Act
CBRS	Coastal Barrier Resources System
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CIAP	Coastal Impact Assistance Program
CUP	Coastal Use Permit
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	Decibel
DEA	Draft Environmental Assessment
DFIRM	Digital Flood Insurance Rate Map
DNL	Day-Night Average Sound Level
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EPA	United States Environmental Protection Agency
EO	Executive Order
ESA	Endangered Species Act
EDMS	Electronic Document Management System
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
GILD	Grand Isle Independent Levee District
LA GOHSEP	Louisiana Governor's Office of Homeland Security and Emergency Preparedness
LDA	Louisiana Office of State Lands, Division of Administration
LDEQ	Louisiana Department of Environmental Quality
LDNR	Louisiana Department of Natural Resources
LDWF	Louisiana Department of Wildlife and Fisheries
LRO	Louisiana Recovery Office
LUST	Leaking Underground Storage Tank
NAAQS	National Ambient Air Quality Standards
NAVD (1988)	North America Vertical Datum (1988)
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic & Atmospheric Administration
NRCS	Natural Resources Conservation Service
OSHA	Occupational Safety and Health Administration
PPT	Parts Per Thousand
RCRA	Resource Conservation and Recovery Act
RHA	Rivers and Harbors Act of 1899
SHPO	State Historic Preservation Office/Officer
SFHA	Special Flood Hazard Area
USACE	United States Army Corps of Engineers
USC	United States Code
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

## **1.0 INTRODUCTION**

### **1.1 Project Authority**

Hurricane Katrina made landfall on August 29, 2005, causing catastrophic damage to the eastern parishes of Louisiana including the Fifi Island and Grand Isle areas of Jefferson Parish. Maximum sustained winds at landfall were estimated at 120 miles per hour. A major federal disaster declaration was issued for the state of Louisiana due to damages from the hurricane. The declaration (FEMA-1603-DR-LA) was signed on August 29, 2005 by President George W. Bush, authorizing the Department of Homeland Security's Federal Emergency Management Agency (FEMA) to provide federal assistance in designated areas of Louisiana. FEMA administers this disaster assistance pursuant to the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), PL 93-288, as amended. Section 406 of the Stafford Act authorizes the FEMA Public Assistance Program to repair, restore, and replace facilities damaged as a result of the declared event.

This Environmental Assessment (EA) is being prepared in compliance with the National Environmental Policy Act of 1969 (NEPA), the President's Council on Environmental Quality (CEQ) regulations implementing NEPA (Title 40 of the Code of Federal Regulations [CFR] Parts 1500 to 1508), and FEMA's regulations implementing NEPA (44 CFR Parts 9 and 10).

The purpose of this EA is to analyze potential environmental impacts of the proposed project. FEMA will use the findings in this EA to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

### **2.0 PROJECT PURPOSE & NEED**

Grand Isle serves as a natural storm surge protection system for coastal Louisiana. This protection is being threatened as rapid land loss occurs on Grand Isle and other deteriorating barrier islands within the Barataria Basin. Fifi Island serves as a wave break to protect the Bayou Rigaud navigational channel and the northeast shoreline of Grand Isle from wave action when severe weather from the north produces high energy waves in Barataria Bay. This reach of shoreline contains a United States Coast Guard station, which is critical infrastructure for the safety of the surrounding area. It also contains residential development, industrial development, Grand Isle State Park, and the Sand Dollar Marina, which supports an economically important commercial and recreational fishing industry, and other recreational boating activities. Fifi Island has also experienced rapid land loss, especially on its eastern tip, leaving the Bayou Rigaud navigation channel and the northeast shoreline of Grand Isle unprotected. The proposed project's purpose and need is to continue efforts to restore land loss on Fifi Island and to provide additional abatement of destructive wave action affecting the Bayou Rigaud navigational channel and the economically viable commercial, residential, and industrial development along the northeast shoreline of Grand Isle, see Figure 1.



**Figure 1 - Project Location**

### **3.0 BACKGROUND**

A rock breakwater structure, approximately 2,200 feet in length, was constructed in 2004 at the northeast end of Fifi Island for land restoration and abatement of destructive wave action affecting the northeast shoreline of Grand Isle. The project was constructed through an interagency cooperative effort including the National Oceanic and Atmosphere Administration, State of Louisiana, Jefferson Parish, Grand Isle Independent Levee District (GILD) and the Bureau of Ocean Energy Management, Regulation, and Enforcement (BOEMRE). This U-shaped structure, which is designed for containment of dredged material, was constructed in conjunction with the United States Army Corps of Engineers (USACE) Fifi Island Dredged Material Placement Plan, a beneficial use plan for dredge spoil to restore and stabilize eroded portions of Fifi Island. Following the completion of this project, the GILD installed a 200-foot long, floating wave abatement facility, known as the Whisper Wave Breakwaters, at the northeast end of the structure, as a further effort to abate destructive wave action at Grand Isle. This facility was short-lived as a result of being completely destroyed by Hurricane Katrina in 2005. Jefferson

Parish, the applicant, initially requested and was approved for FEMA funding for the replacement of the Whisper Wave facility. Subsequent to this approval, the applicant requested that the funds be used toward the construction of the proposed improved project in lieu of replacement of the facility. Primary funding for the proposed improved project is from BOEMRE through its Coastal Impact Assistance Program (CIAP) and secondary funding is from FEMA related to the cost of replacement of the destroyed Whisper Wave facility, see Figures 2.



**Figure 2 – Existing Conditions at Proposed Project Area**

#### **4.0 ALTERNATIVES**

Three (3) alternatives were evaluated, No Action, Proposed Action, and Action Eliminated from Consideration.

##### **4.1 Alternative No. 1 - No Action**

This alternative would have no construction-related adverse environmental impacts. This alternative would also not provide for continued restoration of Fifi Island and additional wave abatement to further protect Grand Isle from destructive, erosion-causing wave action, including the abatement lost as a result of the destruction of the Whisper Waves facility by Hurricane Katrina.

## 4.2 Alternative No. 2 - Proposed Action

This alternative involves the construction of a 900-foot long rock breakwater structure connected to the northeast end of the existing breakwater structure to provide continued restoration of Fifi Island and additional wave abatement protection to the northeast shoreline of Grand Isle. The proposed project location is at Lat/Long: 29.26417/-89.96333. The construction would require the mobilization of a bucket dredge to create a 650-foot long and 50-foot wide flotation channel for equipment access, which would involve the removal and temporary placement of approximately 15,782 cubic yards of non-vegetated bottom material. This would result in approximately 1.5 acres of temporary bottom disturbance and displacement.

The flotation channel would provide access for the mobilization of a barge mounted excavator for placement of a geogrid, followed by approximately 2,565 cubic yards of crushed stone, and approximately 28,093 tons of rock rip-rap for the breakwater structure. The breakwater structure, which would permanently displace approximately 1.5 acres of water bottom, would have a 4 to 6 feet wide crown, an average base width of 80 feet, and a length of 900 feet. Approximately 2,288 linear feet of turbidity curtain would be placed around the construction area to reduce impacts to water quality in the surrounding aquatic environment. The footprint of the proposed breakwater structure includes the location of the destroyed Whisper Wave facility. The structure is designed to allow for future expansion into a rectangular shape for use as a dredged material containment area to support on-going maintenance dredging for commercial navigation along Bayou Rigaud and the Barataria Bay Waterway by the USACE. Consistent with the USACE beneficial use Dredged Material Placement Plan, the disposed material within the rectangular rock breakwater containment structure and would in turn provide a medium for Fifi Island restoration, including the development of marsh habitat, see Figure 3 and Construction Plans, Appendix A.





**Figure 3 – Proposed Project**

### **4.3 Alternative No. 3 - Action Eliminated from Consideration**

The original Fifi Island Restoration Extension project proposed through the state CIAP plan was a U-shaped rock dike enclosure similar to the existing project constructed in 2004, as described above. It was also proposed to reduce erosion and protect infrastructure on Grand Isle from wave energy coming from the north and included future filling of the rock dike containment with dredge material from maintenance dredging of adjacent navigation channels to create barrier island marsh habitat. The applicant was advised by the USACE that the containment area as proposed would be too small to be suitable for disposal of dredge material generated by a hydraulic pipeline cutterhead dredge, which is the type of equipment used for maintenance dredging in the area. The USACE suggested a larger containment area. The applicant determined that available CIAP funding was insufficient to support construction of a larger enclosure. Hence, the action was eliminated from consideration, see Figure 4.



**Figure 4 – Action Eliminated from Consideration**

## **5.0 AFFECTED ENVIRONMENT AND IMPACTS**

### **5.1 Land Use**

#### **5.1.1 Zoning**

The Jefferson Parish Council, for the purposes of promoting the health, safety, morals, convenience, order, prosperity and welfare of Jefferson Parish has adopted and established a zoning ordinance for Jefferson Parish in the state of Louisiana, administered by the parish Planning Department. The zoning ordinance, which is known as the Jefferson Parish Comprehensive Zoning Ordinance, divides the parish into various types of districts, which represent a zoning plan with revisions and amendments. The ordinance contains regulations with respect to the location, height, size of yards, courts and other spaces; the density of population; and the use of buildings, structures, and land for trade, industry, business, resident or other purposes. The applicant must ensure that the proposed project is in compliance with local zoning requirements.

#### **5.1.2 State Water Bottom Management**

The state of Louisiana Water Bottom Management (as defined in Louisiana Revised Statutes 41:1701-1714, revised January 2003) provides for the permitting and leasing of

structures and facilities on non-eroded waterways and for reclamation and fill of non-eroded areas. It also requires permits and leases to construct and maintain bulkheads and flood protection structures on navigable water bottoms.

The beds and bottoms of all navigable waters and the banks or shores of bays, arms of the sea, the Gulf of Mexico, and navigable lakes belong to the state of Louisiana, and the policy of the state is declared to be that these lands and water bottoms, referred to as "public lands", shall be protected, administered, and conserved to best ensure full public navigation, fishery, recreation, and other interests. Unregulated encroachments on these properties may result in injury and interference with the public use and enjoyment and may create hazards to the health, safety, and welfare of the citizens of the state.

To provide for the orderly protection and management of these state-owned properties and serve the best interests of all citizens, the lands and water bottoms, except those excluded and exempted and as otherwise provided by law, shall be under the management of the Louisiana Department of Natural Resources (LDNR). The Louisiana Office of State Lands, Division of Administration (LDA) is responsible for the control, permitting, and leasing of encroachments upon public lands, in accordance with the laws of the state of Louisiana and the United States.

The state of Louisiana owns the beds and bottoms of many waterways. This ownership generally extends to the average low water shoreline in rivers and other streams. The ownership in most lakes, bays, sounds, and similar water bodies and in the Gulf of Mexico extends to the mean high water line. Work planned in state-owned water bottoms requires coordination with the LDA. The proposed project is located in state-owned water bottoms and, therefore, it is incumbent on the applicant to coordinate with the LDA to determine if approval by that agency is required, see Appendix G.

Alternative 1 - No Action - This alternative would conform to local land uses and would not adversely impact nearby and adjacent land uses or zoning.

Alternative 2 - Proposed Action - This alternative must be properly coordinated with the LDA to determine if a permit is required and must comply with local zoning ordinances. Thereby, this alternative would comply with land use regulatory codes, would not adversely impact nearby or adjacent land uses and zoning, or represent an incompatible land use with near and adjacent uses.

## **5.2 Wetlands**

The USACE regulates the discharge of dredged or filled material into waters of the United States, including jurisdictional wetlands, pursuant to Section 404 of the Clean Water Act (CWA). Wetlands are identified as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. The USACE also regulates the building of structures in waters of the United States pursuant to the Rivers and Harbors Act of 1899 (RHA).

FEMA regulations found in 44 CFR Part 9 set forth the policy, procedures and responsibilities to implement and enforce Executive Order (EO) 11990, Protection of Wetlands. These regulations direct FEMA to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the values of wetlands related to federally funded projects.

Alternative 1 - No Action - This alternative would have no effect on wetlands or other waters of the United States and would not require permits under Section 404 of the CWA or Section 10 of the RHA.

Alternative 2 - Proposed Action – According to the USACE Environmental Assessment and Statement of Findings related to the Department of the Army permit issued on February 2, 2012 for this alternative, construction would take place in open water and would displace non-vegetated water bottoms with no impact on jurisdictional wetlands under Section 404 of the CWA. The United States Fish and Wildlife Service (USFWS) does include the proposed project area within its “Classification of Wetlands and Deepwater Habitats of the United States”, as a deepwater habitat, Code E1UBL4, characterized as follows:

- E Estuarine System - Deepwater tidal habitats and adjacent tidal wetlands that are influenced by water runoff and are often semi-enclosed by land, located along low-energy coastlines with variable salinity.
- 1 Subtidal Subsystem - Habitat substrate continuously submerged (i.e. below extreme low water).
- UB Unconsolidated Bottom – Includes all wetlands and deepwater habitats with at least 25% cover of particles smaller than stones (less than 6 – 7 cm) and vegetative cover less than 30%.
- L Subtidal (Saltwater) Water Regime – Substrate permanently flooded with tidal water.
- 4 Polyhaline Water Chemistry: 18 to 30 ppt.

The proposed project would adversely affect this habitat as a result of permanent displacement and temporary construction impacts. See Section 5.5, Proposed Action Alternative, for a description of proposed project impacts on both open water and deepwater habitats and measures included in the proposed project to reduce off-site turbidity and sedimentation impacts on aquatic habitats in areas surrounding construction activities.

### 5.3 Floodplains

Executive Order 11988, Floodplain Management, requires federal agencies to avoid direct or indirect support or development within or affecting the 1% annual chance special flood hazard area (SFHA), i.e. 100-year floodplain, whenever there is a practicable alternative (for “Critical Actions”, within or affecting the 0.2% annual chance SFHA, i.e., the 500-year floodplain). FEMA’s regulations for complying with EO 11988 are found in 44 CFR Part 9, Floodplain Management and Protection of Wetlands. The National Flood Insurance Program (NFIP) Preliminary Digital Flood Insurance Rate Map Panel (DFIRM) was used to determine the flood hazard zone for the proposed project location.

In compliance with FEMA policy implementing EO 11988, the proposed project was reviewed for possible impacts associated with occupancy or modification to a floodplain. Jefferson Parish enrolled in the NFIP on October 13, 1971. According to the NFIP preliminary DFIRM panel number 22 051C 0525 F, dated October 30, 2008, the proposed project site lies within special flood hazard area zone “VE” Elevation 11 (1% annual chance flood area, 100-year floodplain, base flood elevation [BFE] determined, a coastal high hazard velocity zone), see Appendix C.

Alternative 1 - No Action - This alternative involves no construction and no impacts on floodplains.

Alternative 2 - Proposed Action - This alternative involves the proposed construction of a rock breakwater structure, 900 feet long x 80 feet wide (average base width) x 4 to 6 feet wide (at the crown), within a special flood hazard area. The base elevation of the proposed structure ranges from -2 feet to -13 feet, NAVD88. This facility is functionally dependent upon its location in water to fulfill its intended purpose.

This EA forms part of the Eight-Step Planning Process outlined in 44 CFR Part 9. No acceptable practicable alternatives outside of the special flood hazard area were identified by Jefferson Parish or the Governor’s Office of Homeland Security and Emergency Preparedness (GOHSEP) that meet the proposed project objectives. Mitigation of potential adverse impacts, if any, must be accomplished by incorporation of mitigation and minimization measures including compliance with relevant codes and standards. The proposed project must be conducted in accordance with conditions for federal actions in the floodplain as set forth in EO 11988, Floodplain Management, and EO 11990, Protection of Wetlands, and the implementing regulation found at 44 CFR Part 9, Floodplain Management and Protection of Wetlands. These regulations apply to agency actions, which have the potential to affect floodplains or wetlands or their occupants, or which are subject to potential harm by location in floodplains or wetlands, see Appendix D.

Additionally, FEMA Public Assistance grant funded projects carried out in the floodplain or affecting the floodplain must be coordinated with the relevant floodplain administrator for a floodplain development permit and the action must be undertaken in compliance

with relevant, applicable, and required local codes and standards. This will reduce the risk of future flood loss, minimize the impacts of floods on safety, health, and welfare, and preserve and potentially restore beneficial floodplain values as required by EO 11988.

#### **5.4 Coastal Resources**

The Coastal Barrier Resources Act of 1982 (CBRA) established the John H. Chafee Coastal Barrier Resources System (CBRS), which is comprised of undeveloped coastal barriers along the Atlantic, Gulf, and Great Lakes coasts. The law encourages the conservation of hurricane prone, biologically rich coastal barriers by restricting federal expenditures that encourage development, such as federal flood insurance through the National Flood Insurance Program and FEMA's administration of disaster assistance pursuant to the Stafford Act. CBRA is a free-market approach to conservation. These areas can be developed, but federal taxpayers do not underwrite the investments. CBRA saves taxpayer dollars and encourages conservation at the same time. Approximately 3.1 million acres of land and associated aquatic habitat are part of the CBRS. The USFWS maintains the repository for CBRA maps enacted by Congress that depict the CBRS. The USFWS also advises federal agencies, landowners, and Congress regarding whether properties are in or out of the CBRS and what kind of federal expenditures are allowed in the CBRS.

LDNR regulates development in designated coastal zones under the Coastal Zone Management Act (CZMA) of 1978. The CZMA enables coastal states, which includes Louisiana, to designate state coastal zone boundaries and develop coastal management programs to improve protection of sensitive shoreline resources and guide sustainable use of coastal areas. The CZMA establishes a system of Coastal Use Permits (CUP) to regulate uses and activities in the coastal zone. These permits are required for projects which have a direct or indirect impact on coastal waters.

Alternative 1 - No Action - This alternative would have no effect on the CBRS or the Coastal Zone.

Alternative 2 - Proposed Action - This alternative is not located within a CBRS Unit, but would provide wave abatement protection for the Grand Isle State Park at the eastern end of Grand Isle, located within an area mapped as an Otherwise Protected Area (LA04P) within the CBRS, see Appendix C. Otherwise Protected Areas (OPA) are areas in which new federal flood insurance cannot be issued on buildings constructed after November 16, 1990, unless the building is used in a manner consistent with the purpose for which the area is protected. OPA's are generally used for conservation or recreation areas such as state parks and wildlife refuges.

This alternative is located in the designated Louisiana Coastal Management Zone, which is regulated by the LDNR. LDNR issued a conditional CUP for the proposed project on June 13, 2011, establishing consistency with the Louisiana Coastal Resource Program, see Appendix F.

## 5.5 Biological Resources

### 5.5.1 Essential Fish Habitat

The proposed project is located in an area that has been identified as Essential Fish Habitat (EFH) for various life stages of federally managed species including post larval and juvenile life stages of red drum, brown shrimp, white shrimp, and Gulf stone crab. The primary categories of EFH that would be affected by project implementation include estuarine emergent wetlands, mud substrates, and estuarine water column.

This information is provided in the 2005 generic amendment of the Fishery Management Plans for the Gulf of Mexico prepared by the Gulf of Mexico Fishery Management Council. The generic amendment was prepared as required by the Magnuson-Steven Fishery Conservation and Management Act (Magnuson-Stevens Act; P. L. 104-297).

In addition to being designated as EFH for red drum, brown shrimp, and white shrimp, the proposed project area provides open water habitat for species such as the Atlantic croaker, black drum, Gulf menhaden, blue crab, and striped mullet. Some of these species serve as prey for other fish species managed under the Magnuson-Stevens Act by the Gulf of Mexico Fishery Management Council (e.g., mackerels, snappers, and groupers) and highly migratory species such as billfishes and sharks managed by National Marine Fisheries Service (NMFS).

### 5.5.2 Threatened and Endangered Species and Critical Habitat

Under provisions of the Endangered Species Act (ESA), federal agencies shall use their authorities to carry out programs for the conservation of listed species, and shall ensure any action authorized, funded or implemented by the agency is not likely to: (1) adversely affect listed species or designated critical habitats; (2) jeopardize the continued existence of proposed species; or (3) adversely modify proposed critical habitat (16 United States Code 1536).

The USFWS lists the following federally endangered and threatened animal species for Jefferson Parish (USFWS, 2011):

Common Name	Scientific Name	Status
Gulf Sturgeon	<i>Acipenser oxyrhynchus desotoi</i>	T
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	E
Brown pelican	<i>Pelecanus occidentalis</i>	R
Piping Plover	<i>Charadrius melodus</i>	T
Florida Manatee	<i>Trichechus manatus</i>	E
Green Sea Turtle	<i>Chelonia mydas</i>	T
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	E
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>	E

Common Name	Scientific Name	Status
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	E
Loggerhead Sea Turtle	<i>Caretta caretta</i>	T
(R) Recovery	(E) Endangered	(T) Threatened

Alternative 1 - No Action - This alternative would involve no construction and would have no impacts on threatened or endangered species or other fishery resources.

Alternative 2 - Proposed Action - This alternative would adversely impact bottom dwelling organisms through displacement and disturbance during construction. Free swimming, open water species of aquatic life, including the endangered and threatened species listed above would be able to maneuver away and avoid direct impact. Although the proposed breakwater would permanently displace open water and bottom habitat for aquatic life, its riprap stone surface-to-water interface would provide a stable substrate for colonization of lower forms of sedentary aquatic organisms. The proposed breakwater would also provide a stable above water substrate for perching and feeding by near-shore avian species. The proposed project includes the placement of turbidity curtains around the construction area to reduce off-site turbidity and sedimentation impacts on surround aquatic areas including habitats for Essential Fish, threatened and endangered species, and other aquatic life. Further, the USFWS, LDWF, and NMFS expressed no objection to the proposed project in response to the USACE's Public Notice dated May 23, 2011. This finding by the USFWS fulfills the requirements under Section 7(a)(2) of the ESA, see Appendix B.

## 5.6 Cultural Resources

The consideration of impacts to cultural resources is mandated under Section 106 of the National Historic Preservation Act (NHPA) as implemented by 36 CFR Part 800. Requirements include the identification of significant historic properties that may be impacted by the proposed action or alternatives within the project's area of potential effect. Historic properties are defined as archaeological sites, standing structures or other historic resources listed in or determined eligible for listing in the National Register of Historic Places. If adverse effects on historic, archaeological or cultural properties are identified, agencies must consider effects of their activities and attempt to avoid, minimize, or mitigate the impacts to these resources.

FEMA has reviewed this project in accordance with the Statewide Programmatic Agreement dated August 17, 2009 and amended on July 22, 2011 between the Louisiana State Historic Preservation Officer (SHPO), the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP), the Alabama-Coushatta Tribe of Texas, the Caddo Nation, the Chitimacha Tribe of Louisiana, the Choctaw Nation of Oklahoma, the Coushatta Tribe of Louisiana, the Jena Band of Choctaw Indians, the Mississippi Band of Choctaw Indians, the Quapaw Tribe of Oklahoma, the Seminole Nation of Oklahoma, the Seminole Tribe of Florida, the Tunica-Biloxi Tribe of



Louisiana, and the Advisory Council on Historic Preservation. The PA was created to streamline the Section 106 review process.

The project area is located at the eastern end of Fifi Island adjacent to Grand Isle in southern Jefferson Parish, Louisiana. The proposed site for the rock breakwater is a shallow submerged area adjacent to a dredged marine shipping lane entering Barataria Bay. The Area of Potential Effect (APE) for standing structures includes all areas within view shed of the proposed rock breakwater. There are no structures within the area of potential effects (APE). The archaeological APE for all ground disturbing activities is approximately 7 acres.

Alternative 1 - No Action - The no action alternative does not include any FEMA undertaking; therefore FEMA has no further responsibilities under Section 106 of the National Historic Preservation Act.

Alternative 2 - Proposed Action - The project area is submerged and is located a significant distance from a natural levee. In addition, the age of the surrounding delta deposits is less than 2,000 years old indicating that the project area is an unlikely location for prehistoric settlement. In addition, the severely eroded nature of many of the sites that have been recorded in the vicinity of the project area indicates that many sites in the vicinity have received significant damage from tidal action, especially those within submerged areas such as the current APE. For example, there is one archaeological site, 16JE124, within ½ mile of the project area although it will not be impacted by the proposed undertaking. The site consists of historic artifact scatter (one prehistoric sherd), wood pilings, and a brick pier that are poorly preserved due to severe wave and tidal erosion. The site is not eligible for the National Register of Historic Places. A marine remote sensing survey that cross-cut the current project area in an east/west direction failed to identify any shipwrecks or other archaeological sites. This study involved both side scan sonar and a recording proton precession magnetometer to identify both acoustic and magnetic anomalies. A single target within the current project area was identified but was not consistent with a shipwreck site. The study concluded that the anomaly was likely modern debris due to heavy marine vessel traffic or a pipeline. As a result of the lack of archival evidence indicating significant historic resources, the submerged nature of the project area, and the high level of erosion, FEMA has made a determination that no historic properties would be affected by the proposed undertaking.

SHPO concurrence with this determination was received February 15, 2010. Consultation with affected tribes including the Alabama-Coushatta Tribe of Texas, the Chitimacha Tribe of Louisiana, the Coushatta Tribe of Louisiana, the Jena Band of Choctaw Indians, the Mississippi Band of Choctaw Indians, the Seminole Nation of Oklahoma, the Seminole Tribe of Florida, and the Tunica-Biloxi Tribe of Louisiana was conducted per 36 CFR §800.2(c)(2)(i)(B). In addition, consultation with Choctaw Nation of Oklahoma was conducted in accordance with the Programmatic Agreement dated August 17, 2009. The Mississippi Band of Choctaw Indians concurred with FEMA's determination on January 27, 2010 and the Alabama-Coushatta Tribe of Texas concurred on February 9, 2010. FEMA has not received any responses within thirty days (30) of

receipt for any other tribes and therefore may proceed with funding under 36 CFR §800.3(c)(4). The applicant must comply with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) and the Inadvertent Discovery Clause, which can be found under the Environmental Review NHPA conditions.

## **5.7 Air Quality**

The Clean Air Act (CAA) of 1963, as amended, provides for federal protection of air quality by regulating air pollutant sources and setting standards for air pollutants. Under the CAA states adopt ambient air quality standards in order to protect the public from potentially harmful amounts of pollutants. Under the CAA, the United States Environmental Protection Agency (EPA) establishes primary and secondary air quality standards. Primary air quality standards protect the public health, including the health of “sensitive populations, such as people with asthma, children, and older adults.” Secondary air quality standards protect public welfare by promoting ecosystems health, and preventing decreased visibility and damage to crops and buildings. EPA has set National Ambient Air Quality Standards (NAAQS) for the following six criteria pollutants: ozone, particulate matter, nitrogen dioxide, carbon monoxide, sulfur dioxide, and lead.

Alternative 1 - No Action - This alternative would have no adverse impact on air quality.

Alternative 2 - Proposed Action - This alternative would have short-term impacts to air quality during construction. Particulate emissions from the generation of fugitive dust during project construction would be increased temporarily in the immediate project area as a result of this alternative. Other emission sources on site would be internal combustion engines and heavy construction equipment. Emissions from fuel-burning internal combustion engines (e.g., heavy equipment and earthmoving machinery) would temporarily increase the levels of some of the criteria pollutants, including carbon dioxide, nitrogen oxide, ozone, particulate matter, and non-criteria pollutants such as volatile organic compounds. To reduce the emission of criteria pollutants, fuel-burning equipment running times would be kept to a minimum and engines would be properly maintained.

## **5.8 Noise**

Noise is generally defined as unwanted sound. Sound is most commonly measured in decibels (dB) on the A-weighted scale, which is the scale most similar to the range of sounds that the human ear can hear. The Day-Night Average Sound Level (DNL) is an average measure of sound. The DNL descriptor is accepted by federal agencies as a standard for estimating sound impacts and establishing guidelines for compatible land uses. EPA guidelines, and those of many other federal agencies, state that outdoor sound levels in excess of 55 dB DNL are “normally unacceptable” for noise-sensitive land uses including residences, schools, or hospitals (EPA, 1974).

Alternative 1 - No Action - Under the No Action Alternative, there would be no short-term or long-term impact to noise levels because no construction would occur.

Alternative 2 - Proposed Action - This alternative would have short-term increases in noise levels during the construction period. Equipment and machinery utilized on the proposed project site would meet all local, state, and federal noise regulations. The short-term increases in noise levels are not likely to affect sensitive receptors in the area. This is especially the case since the proposed project is away from residential dwellings and would not involve excessive noise producing equipment such as pile drivers. Safety

## **5.9 Safety**

Safety and security issues considered in this EA include the health and safety of the general public, including area residents and motorists and that of the personnel involved in activities related to construction of the proposed project.

Alternative 1 - No Action - This alternative would have no safety-related impacts on highway transportation or commercial waterway navigation.

Alternative 2 - Proposed Action - This alternative would cause a minor, but temporary, increase in highway traffic due to the transport of construction equipment and vehicles to the site. This transport of construction equipment and vehicles would be controlled and monitored for safety as appropriate. Safe passage of commercial vessels using the Bayou Rigaud and Bayou Fifi navigation channels would be ensured by aids to navigation. The aids to navigation, including lighting and signage, would be provided in accordance with United States Coast Guard regulations for the safety of all vessels operating near the construction activities and near the proposed project once completed. All construction activities would be carried out in compliance with requirements of the Occupational Safety and Health Administration (OSHA).

## **5.10 Hazardous Materials**

The management of hazardous materials is regulated under various federal and state environmental and transportation laws and regulations, including the Resource Conservation and Recovery Act (RCRA) the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Emergency Planning and Community Right-to-Know Act, the Hazardous Materials Transportation Act, and the Louisiana Voluntary Investigation and Remedial Action statute. The purpose of the regulatory requirements set forth under these laws is to ensure the protection of human health and the environment through proper management (identification, use, storage, treatment, transport, and disposal) of these materials. Some of these laws provide for the investigation and cleanup of sites already contaminated by releases of hazardous materials, wastes, or substances.

The proposed project would involve substantial bottom excavation necessary to provide water depths for equipment access and to prepare the bottom for the placement of the breakwater structure. The excavation would disturb and release any encountered

hazardous materials. However, a reference search for records of hazardous waste locations was made and no such records were found, see Appendix E.

Alternative 1 - No Action - This alternative would not disturb any hazardous materials or create any potential hazard to human health.

Alternative 2 - Proposed Action - This alternative, which includes the handling and use of petroleum fuels and lubricants in the operation of construction equipment, would comply with OSHA and EPA requirements. Compliance with these requirements would minimize the potential for accidental spills and maximize containment should they occur.

### **5.11 Environmental Justice**

EO 12898, entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Socioeconomic and demographic data for the project area were reviewed to determine if the proposed action would have a disproportionate impact on minority or low-income persons.

Alternative 1 - No Action - This alternative would have no adverse, disproportionate socioeconomic impacts on minority and low-income residents residing in the vicinity of the proposed project.

Alternative 2 - Proposed Action - This alternative would have no adverse, disproportionate impacts on low-income or minority residents residing in the vicinity of the proposed project. According to the 2000 United States Census, 96.5 % of the Grand Isle, Louisiana population is white, 0.7 % is African American, and 2.8% is categorized as other.

## **6.0 CUMULATIVE IMPACTS**

According to CEQ regulations, cumulative impacts represent 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 1508.70). In accordance with NEPA and to the extent reasonable and practical, this EA considered the combined effect of the Proposed Action Alternative and other actions occurring or proposed in the vicinity of the proposed project site.

The entire Louisiana Gulf Coast is undergoing recovery efforts after Hurricane Katrina and Rita caused extensive damages. The recovery efforts in the region include demolition, reconstruction, and new construction related to damaged buildings, facilities, and infrastructure. These projects, as well as the proposed project, inherently cause

cumulative temporary adverse impacts on air quality, noise, traffic, and surface water resources in the Louisiana Gulf Coast Region. However, the proposed project also adds to the cumulative positive impacts of numerous other projects throughout the Louisiana coastal zone funded by the BOEMRE's CIAP. These projects are continuing to be put into place to reduce the erosion and direct destruction of natural shorelines and those shorelines with economically important infrastructure.

## **7.0 CONDITIONS AND MITIGATION MEASURES**

Based upon the studies and consultations undertaken in this EA, several conditions must be met and mitigation measures must be taken by the applicant prior to and during project implementation.

- If human bone or unmarked grave(s) are present with the project area, compliance with the Louisiana Unmarked Human Burial Sites Preservation Act (R.S. 8:671 et seq.) is required. The applicant shall notify the law enforcement agency of the jurisdiction where the remains are located within twenty-four hours of the discovery. The applicant shall also notify FEMA and the Louisiana Division of Archaeology at 225-342-8170 within seventy-two hours of the discovery.
- If during the course of work, archaeological artifacts (prehistoric or historic) are discovered, the applicant shall stop work in the vicinity of the discovery and take all reasonable measures to avoid or minimize harm to the finds. The applicant shall inform their Public Assistance (PA) contacts at FEMA, who will in turn contact FEMA Historic Preservation (HP) staff. The applicant will not proceed with work until FEMA HP completes consultation with the SHPO.
- Applicant must take appropriate measures to minimize potential short-term effects to air quality from construction related activities, such as increased dust and equipment exhaust emissions.
- Applicant must install and maintain any safety lights, signs, and signals prescribed by the US Coast Guard, through regulations or otherwise, during construction and on the completed project.
- Applicant must notify the US Coast Guard, approximately one (1) month before project commencement or future maintenance work involving the use of floating construction equipment (barge mounted cranes, floating dredge equipment, dredge discharge lines, etc.) in the waterway, to allow a Notice to Mariners, if required, to be prepared.
- If hazardous materials are encountered in the project area during the proposed construction, applicant must initiate appropriate measures for the proper assessment, remediation, and management of the contamination in accordance with applicable federal, state, and local regulations.

- Applicant must initiate appropriate measures during construction to prevent, minimize, and control spills of hazardous materials and any hazardous and non-hazardous wastes generated must be disposed of in accordance with applicable federal, state, and local requirements.
- Applicant must ensure that construction activities will not disrupt submerged or buried utility lines.
- Applicant must install turbidity curtains around the construction area to reduce adverse impacts to water quality and habitat within the surrounding aquatic environment.
- Applicant must coordinate with the Jefferson Parish Planning Department to ensure that the proposed project is in compliance with local zoning requirements.
- Applicant must coordinate with the Office of State Lands, Division of Administration, to determine if the proposed project constructed on a state-owned water bottom requires approval.
- Applicant must coordinate all construction-related activities with the local floodplain administrator and comply with the floodplain ordinance.
- Applicant is responsible for obtaining any required permits and/or clearances in accordance with applicable local, state, and federal regulations prior to the commencement of any construction-related activities.
- The proposed project must not interfere with the public's right to free navigation on all navigable waters of the United States.

## **8.0 PUBLIC INVOLVEMENT AND AGENCY CONSULTATION**

FEMA is the lead federal agency for conducting the NEPA compliance process for this proposed Public Assistance project. It is the responsibility of the lead agency to conduct the preparation and review of NEPA documents in a way that is responsive to the needs of the Jefferson Parish community while meeting the spirit and intent of NEPA and complying with all NEPA provisions. As part of the development of early interagency coordination related to the proposed action, state and federal resource protection agencies were notified of the proposed project through the USACE's Joint Public Notice with the LDEQ dated May 23, 2011 related to the Department of the Army permit issued for the proposed project on February 2, 2012. The agencies that responded are LDEQ, LDWF, USFWS, and NMFS. There were no objections to the project, as proposed, from these responding agencies subsequent to the notifications. LDEQ stated that a water quality certification was issued on July 8, 2011. Agency comments are attached in Appendix B.

FEMA is also inviting the public to comment on the proposed action during a fifteen (15) day comment period. The public comment period will be for 15 days, from May 4, 2012

to May 19, 2012. The Draft EA and Draft FONSI can be reviewed during this period at the Grand Isle Library Cybermobile, 2757-1 LA Highway 1, Grand Isle, LA 70358. A copy of the Public Notice is attached in Appendix D.

## **9.0 LIST OF PREPARERS**

Keith Whittinghill - Environmental Specialist, Technical Assistance Contractor

Tiffany Winfield – Deputy Environmental Liaison Officer, FEMA, LRO

LeSchina Holmes - Lead Environmental Protection Specialist, FEMA, LRO

Daphne Owens - Historic Preservation Specialist, Technical Assistance Contractor

## 10.0 REFERENCES

Environmental Protection Agency. Envirofacts. [Online] Available: <http://www.epa.gov/enviro/>

Louisiana Department of Natural Resources. Coastal Zone Management Act. [Online] Available: <http://dnr.louisiana.gov/crm/coastmgt/coastmgt.asp>

National Oceanic and Atmospheric Administration. Coastal Barrier Resources Act. [Online] Available: [http://www.csc.noaa.gov/cmfp/reference/Coastal\\_Barrier\\_Resources\\_Act.htm](http://www.csc.noaa.gov/cmfp/reference/Coastal_Barrier_Resources_Act.htm) Accessed January 17, 2010.

U.S. Census Bureau. 2000 Census Data. [Online] Available: <http://factfinder.census.gov/home/saff/main.html>

U.S. Fish and Wildlife Service. Endangered Species Data. [Online] Available: <http://www.fws.gov/endangered/wildlife/htm>

U.S. Fish and Wildlife Service. Coastal Barrier Resources Act (CBRA). [Online] Available: <http://www.fws.gov/CBRA/>

U.S. Fish and Wildlife Service 2009. National Wetlands Inventory Maps. <http://www.fws.gov/wetlands/Data/mapper.html>. Accessed January 16, 2010.

LDEQ Electronic Data Management System (EDMS) - <http://edms.deq.louisiana.gov/app/doc/querydef.aspx>

LDNR Strategic Online Natural Resource Information System (SONRIS) GIS Site - <http://sonris.com/>

EPA Envirofacts - <http://oaspub.epa.gov/enviro/enviroFACTS.quickstart?minx=-89.99760&miny=29.24177&maxx=-89.92893&maxy=29.28670&cLat=29.26417&cLon=-89.96333&pSearch=29.26417,%20-89.96333>

LDNR Strategic Online Natural Resource Information System (SONRIS) GIS Site - <http://sonris.com/>

The State of Louisiana Waterbottom Permits and Leases Sub-Program: (Louisiana Revised Statutes 41:1701-1714)

EPA Noise Control Act of 1972, 42 U.S.C. §4901 et seq. (1972), EPA April 4, 1974 Press Release

Jefferson Parish Comprehensive Zoning Ordinance.



Preliminary DFIRM Panel: 22 051C 0525

Executive Order 11988: Floodplain Management

Executive Order 11990: Protection of Wetlands

Executive Order 12198: Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

FEMA's Programmatic Agreement dated August 17, 2009.

Jefferson Parish, LA Flood Insurance Study

USACE Fifi Island Dredge Material Placement Plan

Department of the Army (DA) Environmental Assessment and Statement of Findings Related to the DA Permit No. MVN-2011-1145-EOO Issued on February 2, 2012

**APPENDIX A**

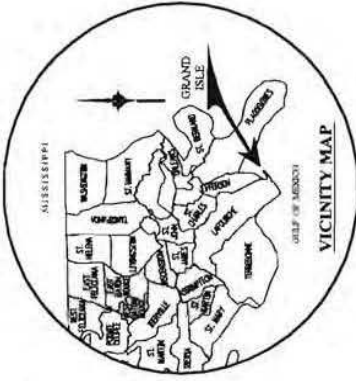
DRAFT

# JEFFERSON PARISH, LOUISIANA

## FIFI ISLAND ROCK BREAKWATER

### GRAND ISLE, LOUISIANA

SHEET NO.	DESCRIPTION OF SHEETS
1	TITLE SHEET
2	GENERAL NOTES
3	SUMMARY OF ESTIMATED QUANTITIES
4-6	TYPICAL SECTIONS
7	SURVEY DATA-SECTION LOCATIONS
8	DETAILS
9	MARINE HAZARD MARKERS
10-11	BORING INDEX AND LOG
12-13	CROSS SECTIONS



**JOHN F. YOUNG, JR.**  
PARISH PRESIDENT

**CHRISTOPHER L. ROBERTS**  
COUNCIL CHAIRMAN

**MICHAEL A. THOMAS**  
COUNCILMAN-AT-LARGE

**COUNCIL**

WILLIAM TOWNSEND  
ELTON M. LAGASSE  
BYRON L. LEE  
LOUIS J. CONGEMI  
CYNTHIA LEE-SHENG

DISTRICT NO. 1  
DISTRICT NO. 2  
DISTRICT NO. 3  
DISTRICT NO. 4  
DISTRICT NO. 5

RECOMMENDED FOR APPROVAL:

APPROVED BY: \_\_\_\_\_ DATE \_\_\_\_\_

ROBERT J. DELAUNE, P.E.  
DIGITAL ENGINEERING & IMAGING INC.

APPROVED BY: \_\_\_\_\_ DATE \_\_\_\_\_

HAMID ALZADEH, P.E.  
SUNNY COASTAL, INC.



527 W. ESPLANADE AVE. SUITE 200 • MONROE, LA 70001 • PH. (504) 835-1129

**100% SUBMITTAL**

DES. JOB: 68-04  
DECEMBER 2011

TYPE OF CONSTRUCTION:  
ROCK BREAKWATER PROTECTION EXTENSION AND FLOTATION CHANNEL DREDGING.

**GENERAL NOTES**

- CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, EXISTING ELEVATIONS AND CONDITIONS SHOWN ON THE PLANS PRIOR TO ORDERING MATERIAL, COMMENCEMENT OF CONSTRUCTION, AND PREPARATION OF SHOP DRAWINGS. ENGINEER SHALL BE NOTIFIED OF ALL DISCREPANCIES.
- THE CONTRACTOR SHALL DESIGN AND PROVIDE FOR ANY REQUIRED EXCAVATIONS AS SHOWN ON THE DRAWINGS AND INDICATED IN THE SPECIFICATIONS.
- THE CONTRACTOR SHALL ENSURE THE RECORD TURBIDITY CURTAIN DURING ALL DREDGING AND ROCK PLACEMENT OPERATIONS.
- VERTICAL CONTROL: N.A. VD 38 DATUM
- HORIZONTAL CONTROL: LOUISIANA STATE PLANE COORDINATE SYSTEM SOUTH ZONE NAD 83
- DIMENSIONS AND/OR ELEVATIONS MARKED WITH (U) ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ACTUAL DIMENSIONS IN THE FIELD WITH THE PROJECT REPRESENTATIVE.
- DETAILS MARKED (N.T.S.) ARE NOT SHOWN TO SCALE
- THE CONTRACTOR SHALL BE RESPONSIBLE TO ESTABLISH AND MAINTAIN TEMPORARY BENCHMARKS DURING CONSTRUCTION AS NEEDED.
- LOCATION OF UTILITIES INDICATED ON THE PLAN SHEET ARE FOR INFORMATIONAL PURPOSES ONLY AND ARE BASED IN PART ON INFORMATION PROVIDED BY THE RESPECTIVE UTILITY COMPANIES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO CONSTRUCTION.
- THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES CAUSED BY THE CONTRACTOR'S NEGLIGENCE. THE DAMAGE SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.
- CONTRACTOR SHALL VISIT THE SITE OF WORK AND COMPLETELY INFORM HIMSELF RELATIVE TO CONSTRUCTION.
- THE CONTRACTOR SHALL MAKE HIS OWN INTERPRETATION OF THE CHARACTER AND CONDITION OF THE MATERIALS WHICH WILL BE ENCOUNTERED ON THE WATER BOTTOM. THE CONTRACTOR AT HIS OWN EXPENSE MAY MAKE ADDITIONAL SURVEYS AND INVESTIGATIONS AS HE DEEMS NECESSARY TO DETERMINE CONDITIONS WHICH WILL AFFECT PERFORMANCE OF THE WORK.

**UTILITY NOTE**

PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL CALL LOUISIANA ONE CALL (DOTTE) AT 1-800-375-2829 TO LOCATE ANY UTILITY LINES IN THE AREA WHICH THE OWNER DOES NOT KNOW ABOUT. ADDITIONALLY, THE CONTRACTOR SHALL PERFORM A MAGNETOMETER SURVEY WHERE THE CONSTRUCTION WORK WILL BE LOCATED.

**ABBREVIATION**

- APPROX. - APPROXIMATE
- AVG. - AVERAGE
- C/L - CENTER LINE
- EL - ELEVATION
- EL OR ELEV - ELEVATION
- GALV - GALVANIZED
- MIN - MINIMUM
- MINW - MEAN HIGH WATER
- MHW - MEAN HIGH WATER
- MWL - MEAN LOW WATER
- N.T.S. - NOT TO SCALE
- TYP. - TYPICAL

**LEGEND**

- [Symbol] - MARSH
- [Symbol] - SPILL
- [Symbol] - ELEVATION CHANNEL
- [Symbol] - ROCK BREAKWATER
- EL - ELEVATION @ CENTER OF TIDY

DESIGNATION	DESCRIPTION	ELEVATION (NAVD 83)	LOCATION (NAD 83)
876 1724 TIDAL 11	2.4 MI (3.9 KM) NORTHEASTERLY ALONG STATE ROAD 1 FROM THE POST OFFICE IN GRAND ISLE, THEN 0.8 MI (1.3 KM) SOUTHWEST ALONG STATE ROAD 1, THEN 0.5 MI (0.8 KM) ALONG SEMPER ROAD THAT LEADS TO THE US COAST GUARD BASE. THE BENCHMARK IS SET FLUSH IN TOP OF A CONCRETE BULKHEAD NEXT TO THE SMALL BOAT HOUSE, 46.63 M (152.95 FT) WEST OF THE ENTRANCE DOORS TO THE COAST GUARD ADMINISTRATION BUILDING, 19.50 M (64.00 FT) WEST OF THE CENTER OF THE CONCRETE BULKHEAD, AND 7.38 M (24.21 FT) NORTH OF THE NE RILE OF THE NOAA TIDE STATION PLATFORM.	3.00	X-1 133 712.187 Y-1 65278 141

**BENCHMARK MONUMENTATION**

PROJECT NO. 659404  
DATE: DECEMBER 2011  
SCALE: NONE  
SHEET NO. 2

JEFFERSON PARISH, LOUISIANA  
GRANDE ISLE, LOUISIANA  
DIGITAL engineering

DRAWING INDEX AND GENERAL NOTES

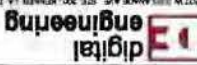
100% SUBMITTAL

**SUMMARY OF ESTIMATED QUANTITIES BASE BID**

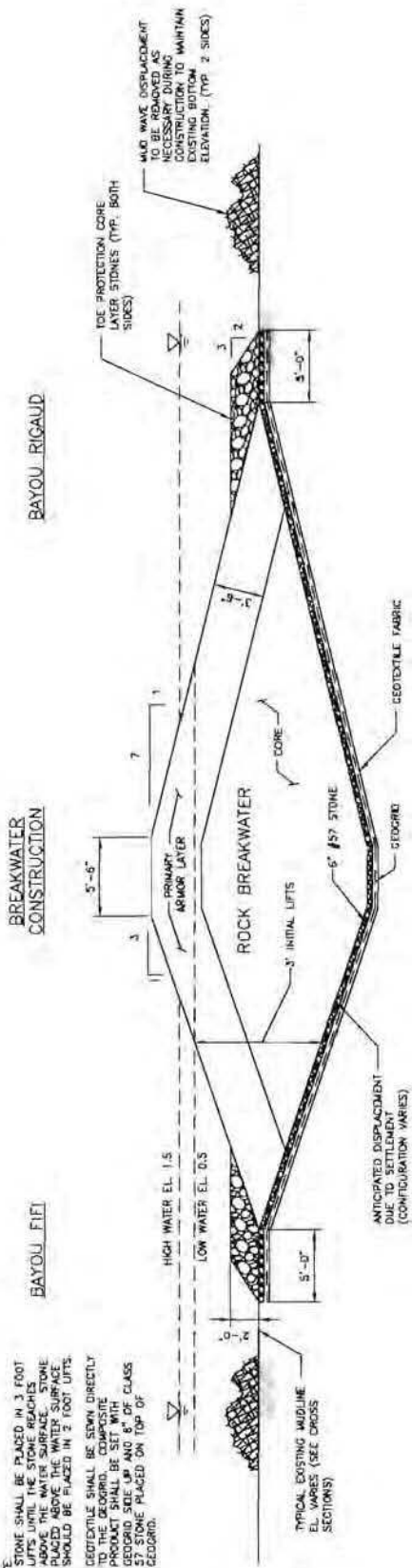
ITEM NO.	DESCRIPTION	UNIT	QUANTITY
1	MOBILIZATION & DEMOBILIZATION	LUMP SUM	1
2	RIP-RAP	TON	28,083
3	#57 STONE (NET SECTION) *	CU. YD.	2,585
4	GEOGRID	SQ. YD.	8,714
5	GEOTEXTILE	SQ. YD.	8,714
5	TURBIDITY CURTAIN	LIN. FT.	2,288
7	FLOTATION CHANNEL	CU. YD.	15,782
8	MARINE HAZARD MARKERS	EACH	2

\* #57 STONE SHALL BE CLASS A (SIZE 57) CRUSHED LIMESTONE AS PER LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES (2008 EDITION) TABLE 1003-1.

**100% SUBMITTAL**

		107 W. BIRLAHAR AVE. STE. 200 - MONROE, LA 70001 PH: (504) 835-4119 PROJECT NO. 100	
DESIGNED BY: MJC	CHECKED BY: MJC	DATE: 12/15/11	SCALE: NONE
PROJECT NO. 100	PROJECT NAME: F11 ISLAND RESTORATION PROJECT	PROJECT NO. 009-004	DATE: DECEMBER 2011
JEFFERSON PARISH, LOUISIANA GRAND ISLE, LOUISIANA SUMMARY OF ESTIMATED QUALITIES		PROJECT NO.	SHEET NO. 3

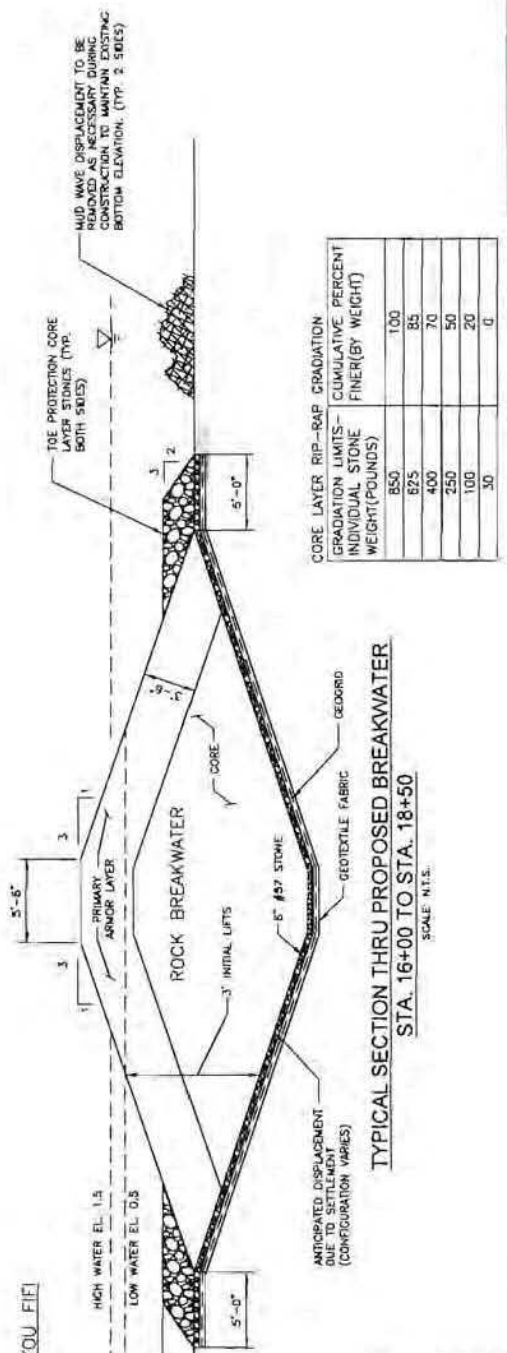
- NOTE:  
 1. STONE SHALL BE PLACED IN 3 FOOT LIFTS UNTIL THE STONE REACHES ABOVE THE WATER SURFACE. STONE PLACED ABOVE THE WATER SURFACE SHOULD BE PLACED IN 3 FOOT LIFTS.  
 2. GEOTEXTILE SHALL BE SEWN DIRECTLY TO THE GEORRID. COMPOSITE PRODUCT SHALL BE SET WITH 5# STONE PLACED ON TOP OF GEORRID.



TYPICAL SECTION THRU PROPOSED BREAKWATER  
 STA. 10+00 TO STA. 15+00  
 SCALE: N.T.S.

PRIMARY ARMOR LAYER RIP-RAP GRADATION

GRADATION LIMITS - INDIVIDUAL STONE WEIGHT (POUNDS)	CUMULATIVE PERCENT FINER (BY WEIGHT)
1000	100
925	50
850	0



TYPICAL SECTION THRU PROPOSED BREAKWATER  
 STA. 16+00 TO STA. 18+50  
 SCALE: N.T.S.

CORE LAYER RIP-RAP GRADATION

GRADATION LIMITS - INDIVIDUAL STONE WEIGHT (POUNDS)	CUMULATIVE PERCENT FINER (BY WEIGHT)
850	100
825	85
400	70
250	50
100	20
30	0

100% SUBMITTAL

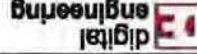
NO.	REVISION

DESIGNED BY	CHECKED BY
DATE	SCALE

NO.	REVISION	DATE	BY

PROJECT NO. 055-04  
 DATE: DECEMBER 2011  
 SCALE:  
 SHEET NO. 5

JEFFERSON PARISH LOUISIANA  
 FIFI ISLAND RESTORATION PROJECT  
 GRANDE ISLE, LOUISIANA

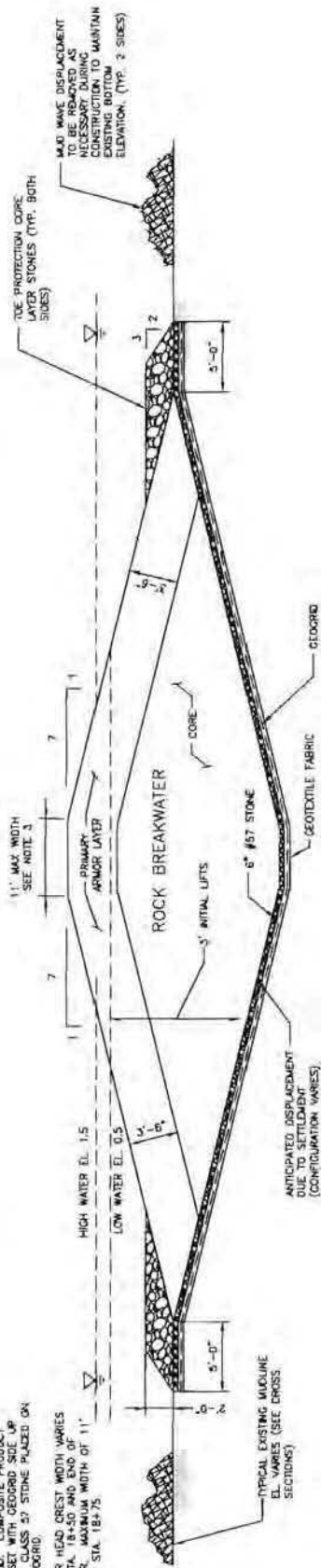


BAYOU RIGAUD

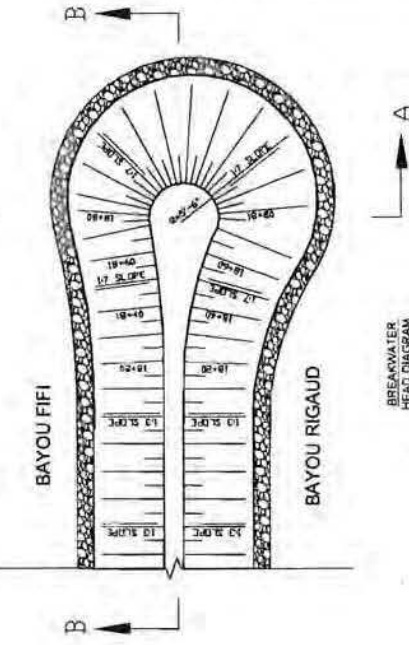
BREAKWATER CONSTRUCTION SECTION A-A

BAYOU FIFI

- NOTE:
1. STONE SHALL BE PLACED IN 3 FOOT LIFTS UNTIL THE STONE REACHES ABOVE THE WATER SURFACE. STONE PLACED ABOVE THE WATER SURFACE SHOULD BE PLACED IN 2 FOOT LIFTS.
  2. GEOTEXTILE SHALL BE SEWN DIRECTLY TO THE GEOROD. COMPOSITE PRODUCT SHALL BE SEWN WITH GEOROD SIDE UP TOP OF GEOROD.
  3. BREAKWATER HEAD CREST WIDTH VARIES FROM 18+50 TO 18+75. MAXIMUM WIDTH OF 11' OCCURS AT STA. 18+75.



TYPICAL SECTION THRU PROPOSED BREAKWATER  
 STA. 18+50 TO STA. 19+00  
 SCALE: N.T.S.



BREAKWATER HEAD DIAGRAM  
 (NOT TO SCALE)

PRIMARY ARMOR LAYER RIP-RAP GRADUATION

GRADUATION LIMITS - INDIVIDUAL STONE WEIGHT (POUNDS)	CUMULATIVE PERCENT FINER (BY WEIGHT)
1000	100
925	50
650	0

BREAKWATER CONSTRUCTION SECTION B-B

TYPICAL SECTION THRU PROPOSED BREAKWATER HEAD  
 STA. 18+50 TO STA. 19+00  
 SCALE: N.T.S.

CORE LAYER RIP-RAP GRADUATION

GRADUATION LIMITS - INDIVIDUAL STONE WEIGHT (POUNDS)	CUMULATIVE PERCENT FINER (BY WEIGHT)
850	100
625	85
400	70
350	50
100	20
30	0

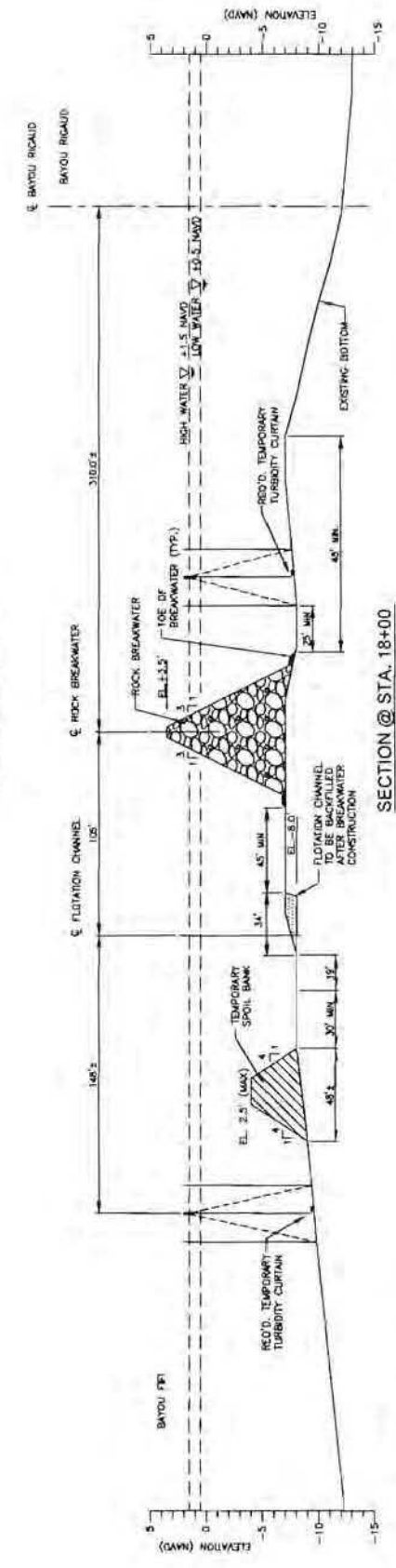
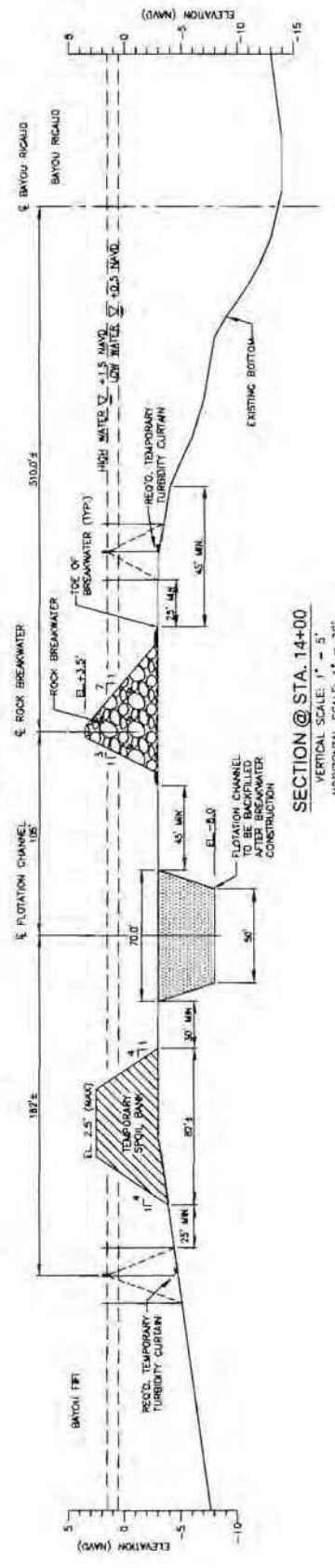
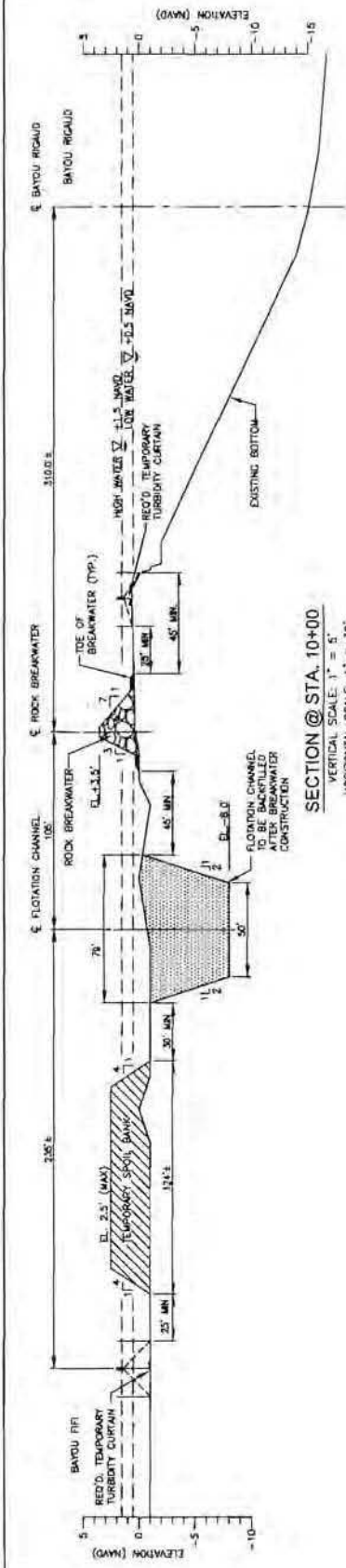
**100% SUBMITTAL**

NO.	REV.	DESCRIPTION

PROJECT NO.	055-004
DATE	DECEMBER 2011
SCALE	AS SHOWN
SHEET NO.	6

JEFFERSON PARISH, LOUISIANA  
 GRAND ISLE, LOUISIANA  
 TYPICAL SECTIONS

PROJECT NO. 055-004  
 DATE: DECEMBER 2011  
 SCALE: AS SHOWN  
 SHEET NO. 6



NOTE: FOR BREAKWATER FOUNDATION SEE SHEETS 4 & 5

**100% SUBMITTAL**

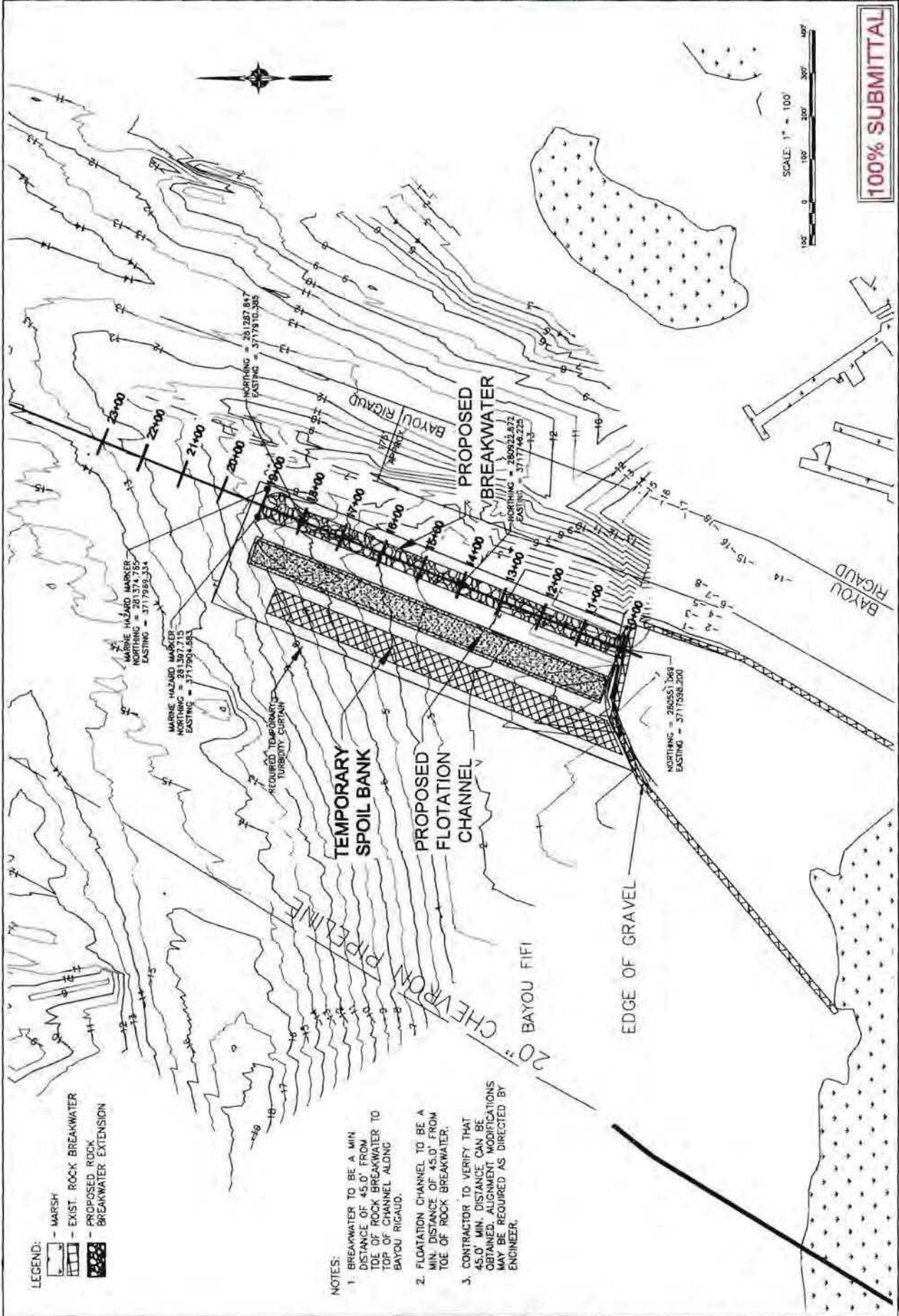


NO.	REVISION

DATE	2/27/11
BY	
CHECKED BY	
DATE	
PROJECT NO.	
PROJECT NAME	
SCALE	
SHEET NO.	

JEFFERSON PARISH LOUISIANA  
 FIFI ISLAND RESTORATION PROJECT  
 GRANDE ISLE, LOUISIANA  
 SURVEY DATA / X-SECTION LOCATIONS

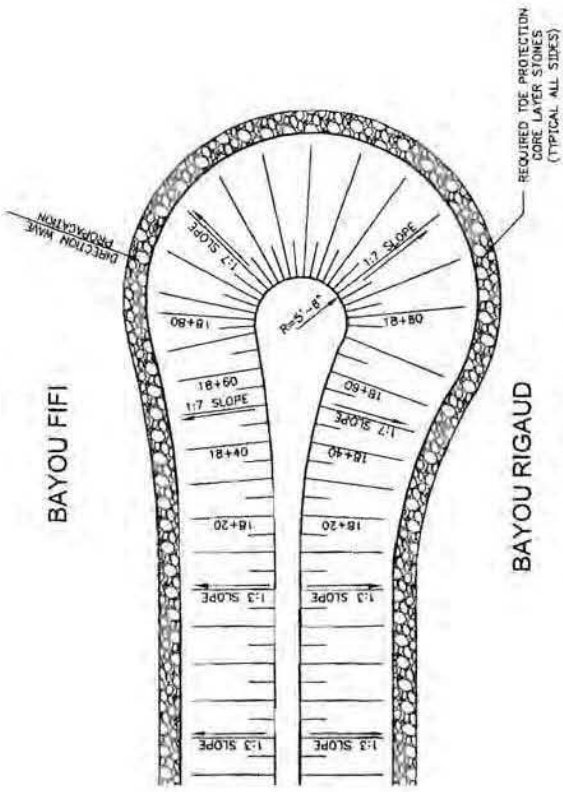
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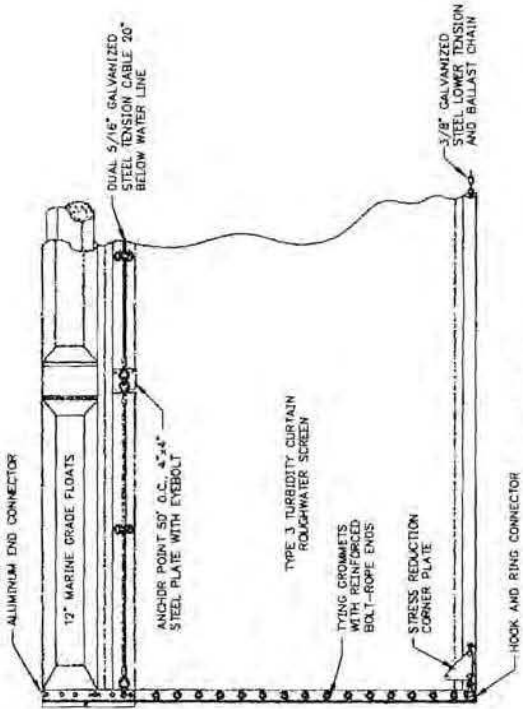
LEGEND:  
 - MARSH  
 - EXIST. ROCK BREAKWATER  
 - PROPOSED ROCK BREAKWATER EXTENSION

- NOTES:
1. BREAKWATER TO BE A MIN. DISTANCE OF 45.0' FROM TOE OF ROCK BREAKWATER TO TOP OF CHANNEL ALONG BAYOU RIGAUD.
  2. FLOTATION CHANNEL TO BE A MIN. DISTANCE OF 45.0' FROM TOE OF ROCK BREAKWATER.
  3. CONTRACTOR TO VERIFY THAT 45.0' MIN. DISTANCE CAN BE OBTAINED. ALIGNMENT MODIFICATIONS MAY BE REQUIRED AS DIRECTED BY ENGINEER.

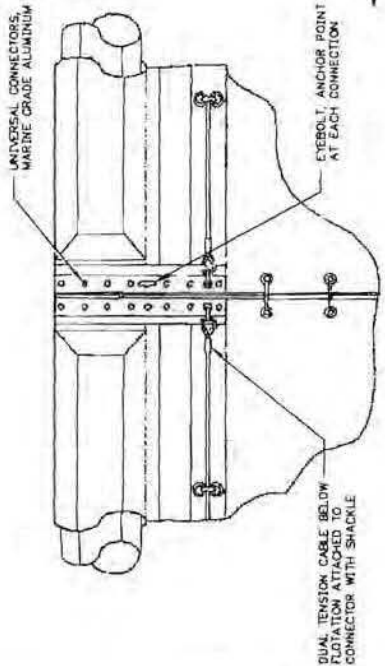
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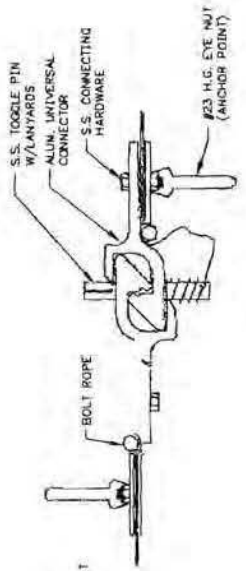
**BREAKWATER HEAD DIAGRAM**  
( NOT TO SCALE )

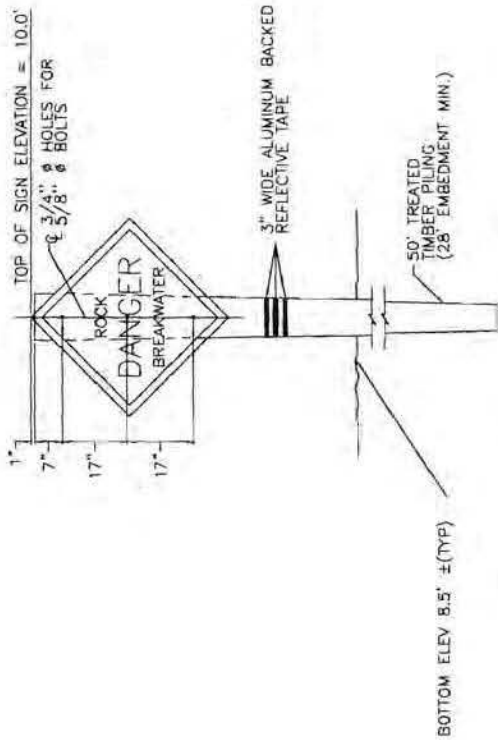


**ELEVATION VIEW**  
ROUGHWATER HEAVY DUTY  
TYPE 3 SILT BARRIER  
( NOT TO SCALE )

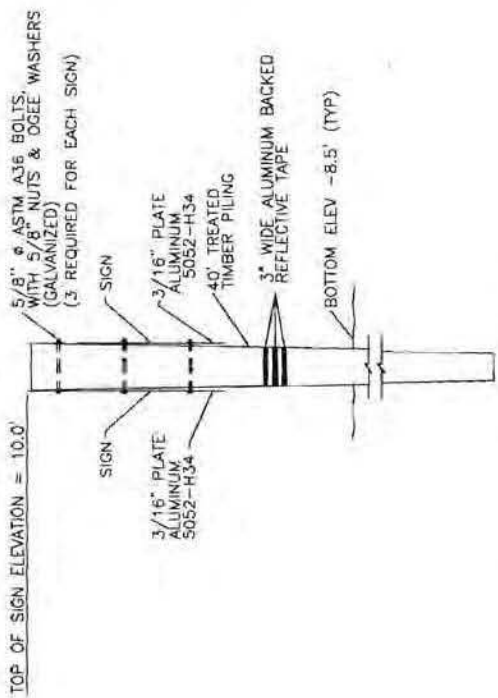


**DETAIL VIEW**  
ROUGHWATER HEAVY DUTY  
TYPE 3 SILT BARRIER  
( NOT TO SCALE )

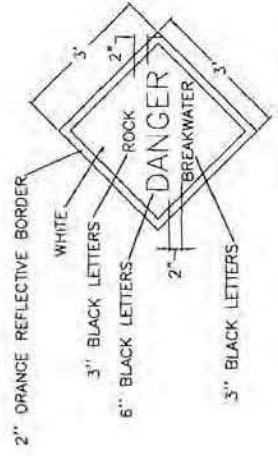




WARNING SIGN ELEVATION



WARNING SIGN SIDE DETAIL



SIGN DETAIL

NOTES:

- REFERENCES HEREIN TO THE "STANDARD SPECIFICATIONS" REFER TO THE "LA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES", LATEST EDITION, INCLUDING AMENDMENTS, BY THE DEPT. OF TRANSPORTATION AND DEVELOPMENT. MEASUREMENT AND PAYMENT WILL BE MADE AS DESCRIBED THEREIN, EXCEPT WHERE STATED OTHERWISE.
- FOUR WARNING SIGNS (TWO PER PILE) SHALL BE INSTALLED APPROXIMATELY 15 FEET IN FRONT OF STRUCTURE AS SHOWN ON THE DRAWINGS OR AS DIRECTED BY THE PROJECT ENGINEER. APPROXIMATE LOCATIONS OF THE WARNING SIGNS ARE SHOWN ON SHEET 7. ACTUAL LOCATIONS WILL BE DETERMINED IN THE FIELD BY ENGINEER.
- THE 2" BORDER ON THE WARNING SIGN WILL BE A REFLECTIVE MATERIAL OF ORANGE COLOR. THE LETTERING FIELD WILL BE A REFLECTIVE MATERIAL OF WHITE COLOR. THE LETTERING FOR THE WARNING SIGNS WILL BE BLACK. ALL SIGNS MUST MEET U.S. COAST GUARD STANDARDS; IN ACCORDANCE WITH 33 CFR 330.4 (a) (1). 4. NEOPRENE WASHERS SHALL BE PLACED BETWEEN THE SIGN AND THE PILING AT ALL POINTS OF CONTACT.
- HARDWARE FOR TIMBER CONNECTIONS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH SECTION 811.15 OF THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, AS PUBLISHED BY THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, LATEST EDITION.
- TIMBER PILES SHALL CONFORM TO SECTIONS 804 AND 1014 OF THE LOUISIANA STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, AS PUBLISHED BY THE LOUISIANA DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT, LATEST EDITION. PILES SHALL BE TREATED WITH A CREOSOTE SOLUTION CONFORMING TO AWPA P2 TO A MINIMUM RETENTION OF 16 PCF OR AWPA TREATMENT C1 USING WATER BORNE ACA OR CCA PRESERVATIVE WITH 2.5 lb/ft. RETENSION.
- TIMBER PILING SHALL BE 50-FEET IN LENGTH WITH A 12-INCH DIAMETER BUTT AND 7-INCH DIAMETER AT THE TIP.
- EXPOSED BOLT THREADS SHALL BE EITHER TACK WELDED TO NUTS, STRIPPED, OR DAMAGED BY OTHER APPROVED METHOD TO PREVENT EASY REMOVAL.

100% SUBMITTAL