DRAFT
ENVIRONMENTAL ASSESSMENT
CONSTRUCTION OF A NEW PUMP STATION

ALLIGATOR BAYOU PUMP STATION NO. 16,
PORT ARTHUR AND VICINITY, TEXAS,
HURRICANE FLOOD PROTECTION PROJECT
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

JEFFERSON COUNTY DRAINAGE DISTRICT NO. 7

AND

U.S. ARMY CORPS OF ENGINEERS

NOVEMBER 2012

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LIST OF ACRONYMS AND ABBREVIATIONS

ac – acre
APE – Area of Potential Effect
ASTM – American Society for Testing and Materials
BA – Biological Assessment
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS – Comprehensive Environmental Response, Compensation, and Liability Information System
CEQ – Council on Environmental Quality
CESQGs – Conditionally Exempt, Small-Quantity Generators
CFR – Code of Federal Regulations
CH – Critical Habitat
CORRACT – Corrective Action
CWA – Clean Water Act
cy – cubic yards
DD7 – Jefferson County Drainage District No. 7
DM – Design Memorandum
DRYC – Dry Cleaning
EA – Environmental Assessment
EFH – Essential Fish Habitat
EPA – US Environmental Protection Agency
ER – Engineering Regulation
ERNS – Emergency Response Notification System
ESA – Endangered Species Act
FEMA – Federal Emergency Management Agency
FMA – Flood Mitigation Assistance
FPPA – Farmland Protection Policy Act
GLO – General Land Office
gpm – gallons per minute
HEC-1 – Hydrologic Engineering Center – 1 Model
HEP – Habitat Evaluation Procedure
iHGM – Interim Tidal Fringe Hydrogeomorphic Model
LFUN – TCEQ Solid Waste Facilities and Unauthorized and Unpermitted Landfill
LOMA – Letter of Map Adjustment
LOMR – Letter of Map Revision
LQGs – Large-Quantity Generators
MSA – Metropolitan Statistical Area
MSL – Mean Sea Level
NDD – Natural Diversity Database
NEPA – National Environmental Policy Act
NFIP – National Flood Insurance Program
NFRAP – No Further Remedial Action Planned
NHPA – National Historic Preservation Act
NMFS – National Marine Fisheries Service
NOI – Notice of Intent
NPL – National Priority List
NRCS – Natural Resources Conservation Service
NRHP – National Register of Historic Places

NWI – National Wetland Inventory
NWS – National Weather Service
PRPs – Potentially Responsible Parties
PS – pump station
RCRA – Resource Conservation and Recovery Act
RCRA-G – RCRA Generators
RCRA-TSD – RCRA Treatment, Storage, or Disposal
RCRIS – Resource Conservation and Recovery Information System
RCT – Railroad Commission of Texas
RSLR – Relative Sea Level Rise
SALs – State Archeological Landmarks
SARA – Superfund Amendments and Reauthorization Act
SHPO – State Historic Preservation Officer
SQGs – Small-Quantity GeneratorsSWPPP – Storm Water Pollution Prevention Plan
TAC – Texas Administrative Code
TCEQ – Texas Commission on Environmental Quality
TCMP – Texas Coastal Management Program
T/E – Threatened and Endangered Species
THC – Texas Historical Commission
TMDL – Total Maximum Daily Load
TPDES – Texas Pollutant Discharge Elimination System
TPWD – Texas Parks and Wildlife Department
TSMASS – Texas State Minimum Archeological Survey Standards
TXIOP – Texas Innocent Owner/Operator Program
TXLUSTs – Texas Leaking Underground Storage Tanks
TXSPILL – Hazardous or Potentially Hazardous Substances Spills
TXUSTs – Texas Underground Storage Tanks
TXVCP – Texas Voluntary Cleanup Program
USACE – US Army Corps of Engineers
USC – United States Code
USFWS – US Fish & Wildlife Service
USDA – US Department of Agriculture
UT-BEG – University of Texas Bureau of Economic Geology

1.0 INTRODUCTION

1.1 PROJECT AUTHORITY

Jefferson County Drainage District No. 7 (DD7) (the Applicant) is a conservation and reclamation district and a political subdivision of the state of Texas established in 1946. The District covers an area of 107.42 square miles and encompasses the cities of Port Arthur, Groves, Nederland, and Port Neches, as well as unincorporated areas of Jefferson County. DD7 and the County are jointly responsible for many flood mitigation activities. Given the shared responsibility for flood mitigation, the County recognizes and supports the DD7's desire to obtain this project grant and understands that it will directly benefit both repetitive loss and insurable properties within the County.

The Proposed Project is construction of a new pump station at Alligator Bayou Pump Station No. 16 (PS 16) (the Project), sponsored by DD7, which will require issuance of Department of the Army Permit Application No. SWG-2007-00850 Amendment, and Section 408 authorization from the U.S. Army Corps of Engineers (USACE) for modification of the Federal Port Arthur and Vicinity, Texas, Hurricane Flood Protection Project (Hurricane Flood Protection Project). The purpose of this Environmental Assessment (EA) is to comply with the USACE's responsibilities under the National Environmental Policy Act (NEPA). This EA is required for purposes of evaluating an application submitted to the USACE under 33 USC Section 408 (Section 408) by DD7, and for a Department of Army permit. NEPA compliance is required under 33 CFR Section 230, ER 200-2-2), ER 1105-2-11, and the Council on Environmental Quality Guidelines, 40 CFR Parts 1500 to 1508. As part of the environmental review process, consultation letters have been sent to eight state and Federal resource agencies. This correspondence and responses from the various agencies are found in Appendix A (A.1-A.8).

1.2 PROJECT LOCATION

The area covered by DD7 is located in southern Jefferson County in southeast Texas. The DD7 district is bounded on the north by the John's Gully watershed; on the east by the Neches River; on the south by the Sabine-Neches Waterway and Sabine Lake; and on the west by Hillebrandt and Taylors Bayous.

The Proposed Project is located approximately two miles southwest of Port Arthur at the confluence of Alligator and Taylors Bayous, and consists of an improvement to PS 16 that would be accomplished by the construction of an additional low-flow pump station at the existing PS 16 facility. As part of the extensively modified DD7 interior drainage system, Alligator Bayou flow into Taylors Bayou is entirely controlled by PS 16 through the Hurricane Flood Protection Project levee. Taylors Bayou ultimately flows into the Sabine-Neches Canal (tidal portion) below Port Arthur, approximately two miles south of PS 16. The Canal flows south through Sabine Pass, where it enters the Gulf of Mexico, approximately 12 miles south of PS 16; although the system of canals is about 19 miles long. The locations of the existing pump station and the proposed pump station are illustrated in Figure 1. Figure 2 is a color aerial view of the project area. DD7 possesses a perpetual easement for the pump station locations.

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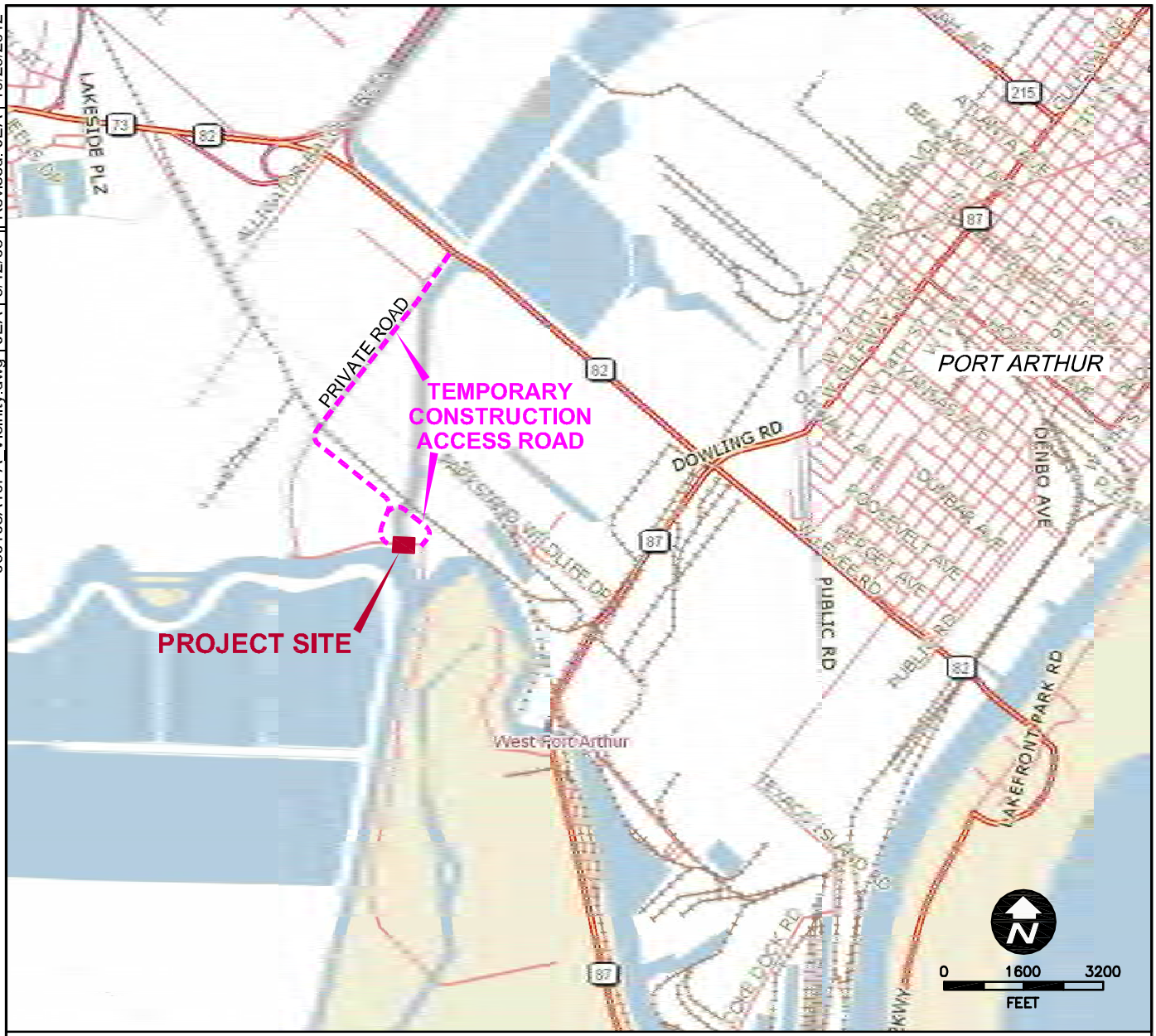
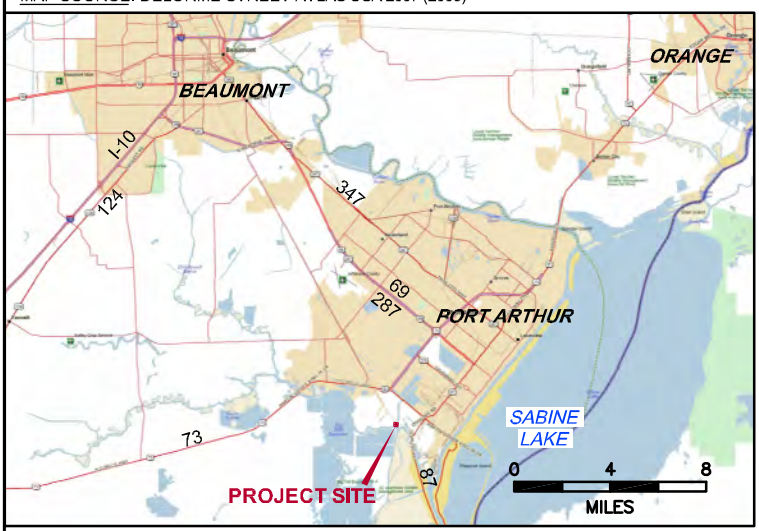


MAP SOURCE: DELORME STREET ATLAS USA 2007 (2006)



MAP SOURCE: DELORME STREET ATLAS USA 2007 (2006)

FIGURE 1

VICINITY MAP
PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

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"Do Not Scale This Drawing"

060108A12PA_Aerial.mxd | JEA | 10/27/08 || Revised: JEA | 10/31/2012

MAP SOURCE: JEFFERSON COUNTY DRAINAGE DISTRICT, 2006.

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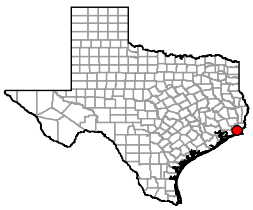

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FIGURE 2

2006 AERIAL PHOTOGRAPHY
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

1.3 PURPOSE AND NEED OF PROJECT

The existing PS 16 is part of the Hurricane Flood Protection Project, a system of levees, concrete and steel sheet pile floodwalls, and 12 pump stations constructed in the early 1980s to protect urban and industrial development at Port Arthur and surrounding communities from a 100-year event hurricane storm surge. The levee and floodwall system extends approximately 30 miles from Groves to the east, paralleling the Sabine Neches Canal to the south through the city of Port Arthur, and north, paralleling Taylor's Bayou, to the vicinity of the Jefferson County Airport. The levees range from 14 to 19 feet high. The system includes a series of 12 pump stations to drain the area behind the levees during high rainfall and flood events, and was authorized to provide protection within the levee system for a 50-year rainfall or flood event.

Within the Hurricane Flood Protection Project system, the main outfall channel system is controlled by the pump stations which convey storm water flow from within the levees to Taylors Bayou and the Port Arthur Canal. The normal water surface elevations within the levee system are held at +2.0 to + 3.0 feet MSL in order to maintain continuous low flow in Alligator Bayou and other interior drainages in the system. Prior to a forecast runoff event, the storage system is pumped down in order to provide additional storage capacity. Pumps are operated during and after the runoff event until levels again reach normal pre-storm water surface elevations. Natural drainages within the system have been channelized to improve conveyance to the pump stations, and to increase in-line storage during high-flow runoff events.

As originally constructed, PS 16 consists of a pump station with four pumps on the north bank of Alligator Bayou and a gravity drain structure with six gates, approximately 150 feet long, across the channel of Alligator Bayou, which provide total control over the flow of the bayou. Although authorized for a 50-year storm event, the original pump station and gravity drain structure at PS 16 provided capacity for only a 25-year storm event. Subsequent subsidence has rendered the gravity drain structure non-functional, resulting in only an 11.5-year storm event capacity for the remaining old pump station. As a result of the 2002 Jefferson County Master Drainage Study, DD7 identified PS 16 as needing restoration to its originally constructed 25-year storm event capacity.

The drainage basin controlled by PS 16 is large, at approximately 28,643 acres, protecting a population of about 100,000 people and significant industrial infrastructure. This drainage basin has been substantially altered through the years, with many of the secondary drainages channelized. Portions of the channelized drainage system that flow into PS 16 include Main A, Main B, Main C, and West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas (Figure 3). In addition to these conveyances, the system also includes 10 large detention basins with 8 large forebay detention areas for the pump stations, and 2 large regional detention ponds (4,000 acre-feet and 1,100 acre-feet, respectively), plus numerous small detention areas for commercial and residential developments. As a result of these modifications to the internal drainage system and on-going urban and industrial development, the remaining natural wetlands in the area behind the Hurricane Flood Protection Project levee system consist of depressional areas that no longer have surface water connectivity, and survive by rainfall events and groundwater sources.

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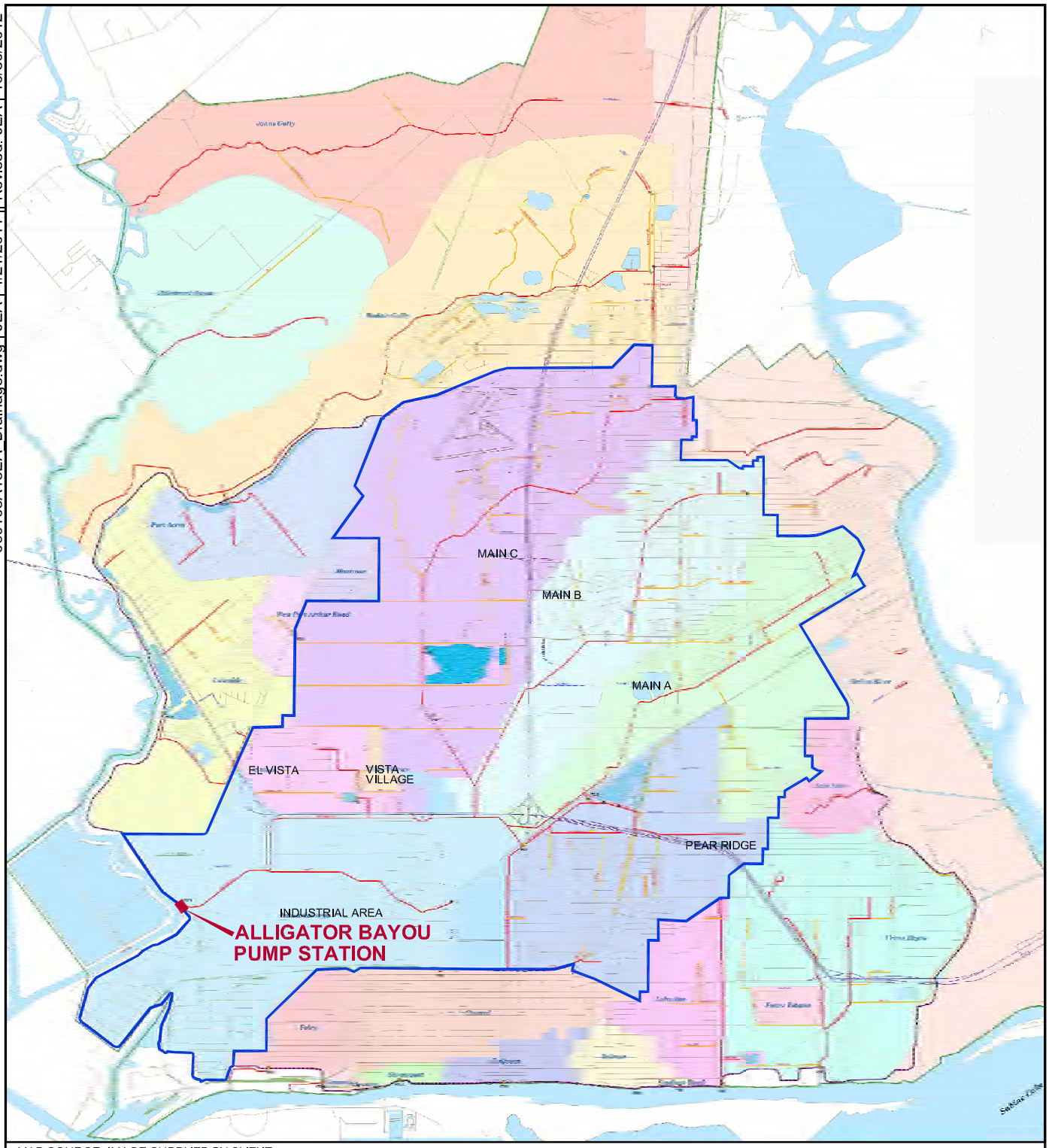

MAP SOURCE: IMAGE SUPPLIED BY CLIENT

LEGEND

ALLIGATOR BAYOU PUMP STATION DRAINAGE AREA

0 4500 9000

FEET

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"Do Not Scale This Drawing"

FIGURE 3

DRAINAGE AREA PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

On-going urban and industrial development and increased run-off coupled with decreased pumping efficiency has resulted in increased flooding in Jefferson County that averages once every 3 years, with $306,545 annual property damage. Based on the Jefferson County Hazard Mitigation Plan (2005; updated 2010), there are 530 FEMA Repetitive Loss properties in the county, 153 of which are located within DD7, with 12 of these properties on FEMA's "Top 10,000" repetitive loss list. As a result, DD7 has received a FEMA Hazard Mitigation Grant Program grant, DR 1791-014, for $24.4 million dollars for this project.

Major rainfall events now overwhelm the capacity of PS 16. DD7 is proposing improvements to PS 16 in order to restore its original 25-year storm event pumping capacity. As described below, the improvements would include retaining the original pump station and gravity drain structure and building a new pump station on the east bank of Alligator Bayou.

2.0 ALTERNATIVES ANALYSIS

2.1 ALTERNATIVE 1: NO ACTION

The No Action Alternative would result in increased flooding potential for homes, commercial structures, industry, and roads in the project area. This alternative does not achieve the stated purpose of providing the originally constructed 25-year storm event capacity for flood relief at PS 16.

2.2 ALTERNATIVE 2: PROPOSED PROJECT

The Proposed Project would achieve 25-year storm pumping capacity at PS 16. With the loss of function of the gravity drain structure, PS 16 is only capable of handling an 11.5-year event, yet based on the hydrological models developed for the *2002 COMPREHENSIVE STUDY AND DRAINAGE PLAN OF THE JEFFERSON COUNTY DRAINAGE DISTRICT NO. 7 SYSTEM AND SERVICE AREA*, more flow is now generated within the main outfall system during a 25-year storm event than the system was originally designed to accommodate, making restoration of capacity at PS 16 critical. The Proposed Project would include retaining the existing pump station on the west bank of Alligator Bayou and the gravity drain structure across Alligator Bayou, with construction of a second pump station on the east bank of Alligator Bayou. The new pump station would take over the continuous low-flow pumping, and, in concert with the existing pump station, would provide overall pumping capacity to handle a 25-year storm event at PS 16. The addition of more efficient pumps at the new pump station would replace the capacity provided by the now non-functional gravity drain structure. Maintaining two pumping stations at this location also provides redundancy in the event of a pump failure. The new pump station would add 1.5 million gallons per minute (gpm) of pumping capacity to the existing 2.25 million gpm capacity at PS 16, for a total 3.75 million gpm capacity for PS 16. As modeled, this increased capacity would mean that flood waters from a 25-year storm event would be removed from the system about 18 hours faster than is currently possible with the existing pumps.

The new pump station on the east bank of Alligator Bayou would consist of a 4-level concrete structure designed to withstand 200 mph winds (a Category 5 hurricane) housing six 250,000-gallon diesel

pumps, with office space, a bunk room, showers, potable water, generators, and fuel storage. Construction access would be from the immediately adjacent 57th Street, a non-public road, which is constructed on top of the Hurricane Flood Protection Levee in the project area. The construction site on the east bank of Alligator Bayou is currently mowed and maintained. The footprint of the new pump station and ancillary parking would cover 2.9 acres. Construction would require two temporary coffer dams (one on Taylors Bayou and one on Alligator Bayou), to allow construction in the dry; temporary staging areas; a temporary construction access road originating at Highway 82 with a temporary floating bridge across Alligator Bayou (see Figure 1); permanent excavated material placement areas with a capacity of 124,000 cu yds with concrete retainers and silt fencing to prevent sloughing or erosion of material into adjacent wetlands or waters of the US; and excavation (in the dry) on both the Alligator Bayou side and Taylors Bayou side to allow proper depth for pump operation. The excavated material would be stored for an indeterminate time for possible future use in levee repairs or improvements. A plan view of the proposed pump station is provided in Figure 4. A cross-section of the proposed pump station is provided in Figure 5. The coffer dams would be constructed with two sheet pile walls 30 feet apart and filled with clean soil. Material for the coffer dams would be obtained from a commercial dirt source, possibly Halbouty Detention Pond owned by DD7, a sand and clay pit that has been in operation for 40 years and which is also used for floodwater detention. Construction is anticipated to take 24 to 30 months to complete, with project completion anticipated in late 2014.

Direct construction impacts of the Proposed Plan are summarized as follows:

Wetlands permanently filled	0.10 ac
Wetlands permanently excavated	0.67 ac
Wetlands temporarily disturbed and restored	0.21 ac
Open water (Taylors Bayou) Excavated	1.07 ac
Open water (Taylors Bayou) temporarily disturbed and restored	0.11 ac
Open water (Alligator Bayou) temporarily filled (coffer dam)	0.37 ac
Existing upland used for excavated material placement	7.79 ac
Existing upland (levee) excavated to open water	2.32 ac
Existing upland (levee) converted to pump building and parking	2.90 ac
Existing upland (levee) used for temporary construction staging	1.51 ac
Total Project Footprint Impact	17.05 ac

The temporary construction access road would follow existing roads that require no modification and is not expected to have any material impact. The temporary floating bridge for construction access to the east side of Alligator Bayou would be located adjacent to the existing railroad bridge crossing of the bayou in an area with existing fill and graded banks on both sides of Alligator Bayou. No material impacts from the floating bridge are anticipated. A more detailed discussion of impacts is provided in Section 3.0.

While existing open water to be excavated totals 1.07 acre, only a zone of shallow (< 3 ft) open water adjacent to the wetland fringes along the shoreline is deemed to be impacted by conversion to deeper water. This zone is variable in width, but generally represents 20 to 30 feet from the shoreline. The acreage

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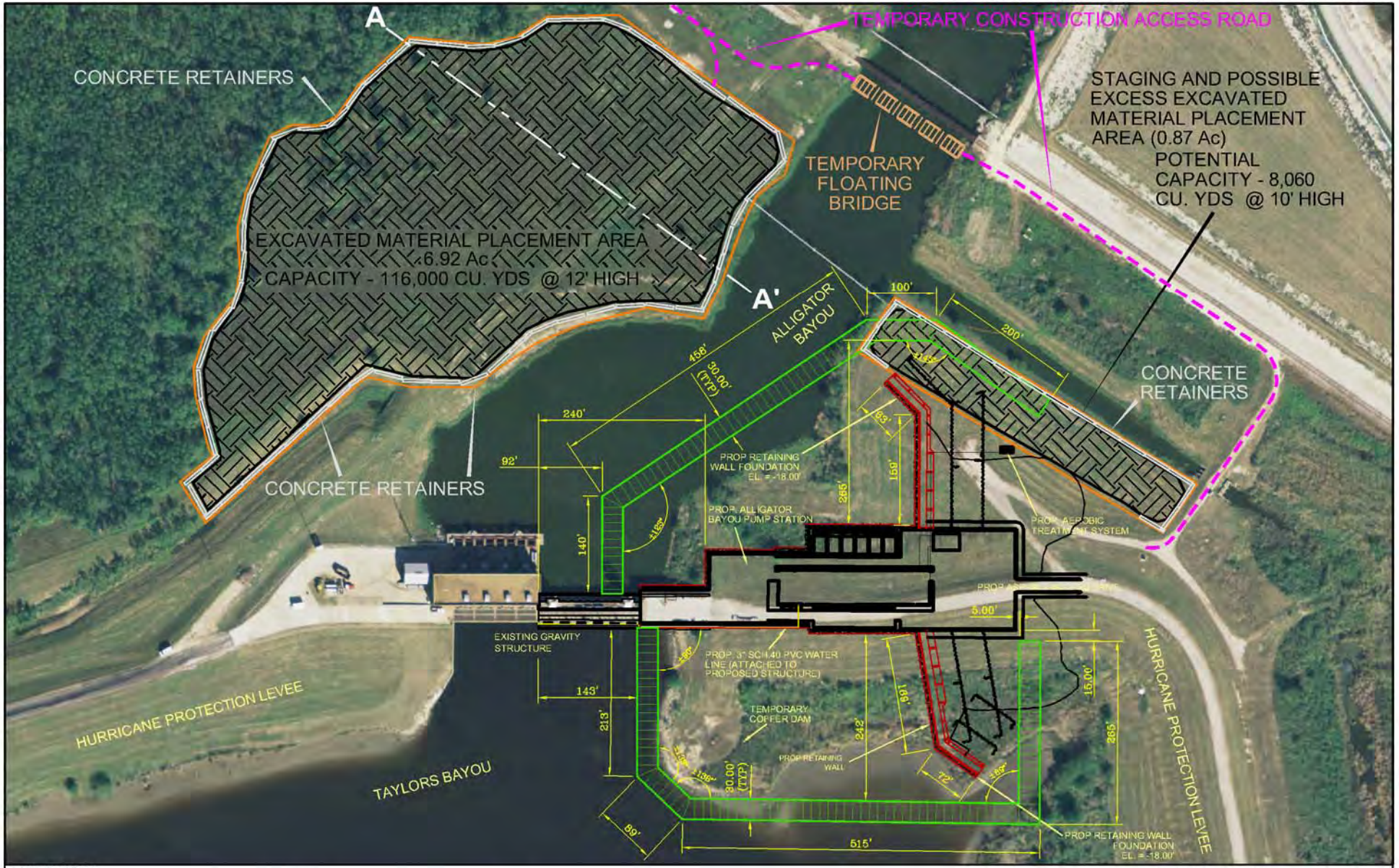

MAP SOURCE:

1. PROVIDED BY CARROLL & BLACKMAN, INC. (2008)
2. 2006 AERIAL: JEFFERSON COUNTY DRAINAGE DISTRICT (2008)

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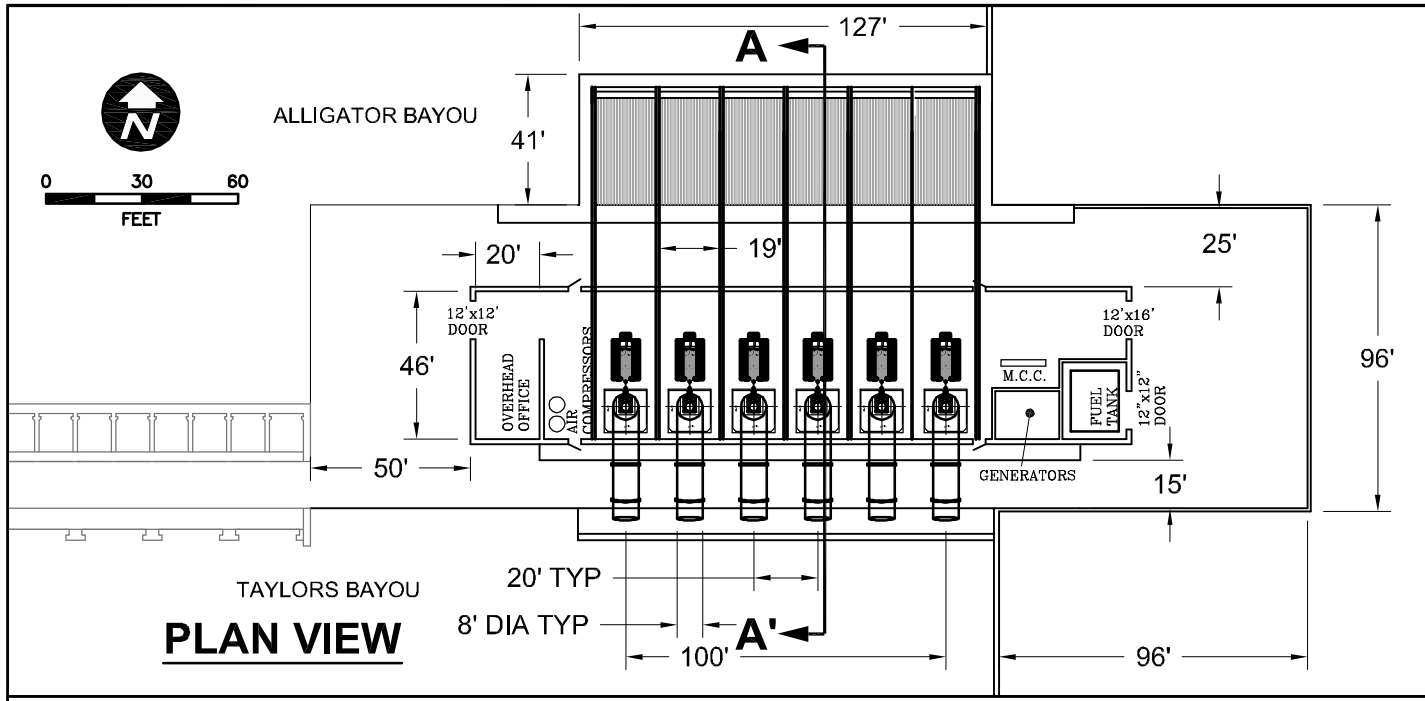
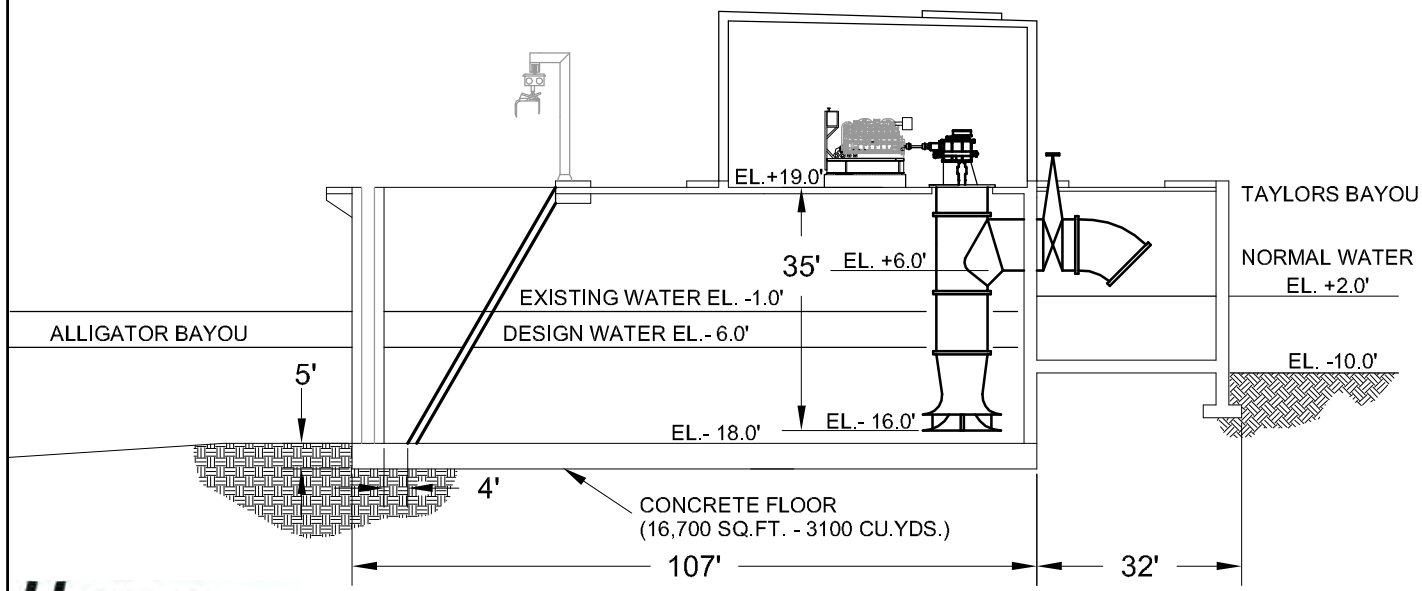
FIGURE 4

PLAN VIEW OF PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS



PLAN VIEW



CROSS-SECTION A-A'

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MAP SOURCE:
PROVIDED BY CARROLL & BLACKMAN, INC. (2008)

FIGURE 5

CROSS-SECTION OF PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU AND TAYLORS BAYOU
PORT ARTHUR,
JEFFERSON COUNTY, TEXAS

of this zone is 0.53 ac and is combined with the fringe marsh (0.77 ac) to represent 1.3 acres of estuarine emergent habitat in the HEP analysis. The balance of open water exceeding 3 ft in depth is not deemed to be materially impacted by additional deepening.

2.3 ALTERNATIVES CONSIDERED, BUT ELIMINATED FROM FURTHER CONSIDERATION

2.3.1 Additional Storage. The possibility of providing additional storage by construction of new detention basins was evaluated. However, this alternative was limited by lack of available land and was not deemed feasible.

2.3.2 Additional Pumping Capacity at the Existing Alligator Bayou Pump Station. A modification of the existing PS 16 was evaluated. The option of adding driven pumps at the existing station was considered, but insufficient room exists to add additional pumps at that facility. The only feasible change in the existing pump station would have been modification of the existing gravity drain structure. It was determined after Hurricane Rita that the gravity drain structure needed to remain in operation in order to provide emergency overflow capabilities in the event that the levee system was overtopped.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 PHYSICAL ENVIRONMENT

3.1.1 Geology and Soils

Jefferson County is located on the coastal plain of the upper Texas coast, an area of little topographic relief. Characterized as a strandplain-chenier system, the general project area consists of extensive fresh to saltwater marshes, with coastal prairies and urban and industrial development on the higher chenier strandplains. The Hurricane Flood Protection Project system of which Alligator Bayou PS 16 is a part, extends from high ground near Groves on the Neches River to the east, along the Sabine Neches Canal to the south, and extending northward paralleling Taylors Bayou to roughly the Jefferson County Airport on the north side of the city of Port Arthur. Alligator Bayou PS 16 is located roughly in the southwest corner of this larger flood protection system, which encompasses most of the naturally occurring high ground in this area and protects the city and industry of Port Arthur. A review of existing literature indicates that the Proposed Project is located in an area of outcropping sediments from Quaternary Alluvium of unconsolidated clay, silt, and sand originating from primarily stream channel, point-bar, natural levee, backswamp, and, to a lesser extent, coastal marsh and mud-flat depositional systems. Specifically, the project site is located on Neel-Urban land complex soils (NuC) (Figure 6) (NRCS, 2006a). The NuC soils consist of deep and very deep, somewhat poorly drained to well drained, very slowly permeable soils that have 2% to 5% slopes (NRCS, 2006b).

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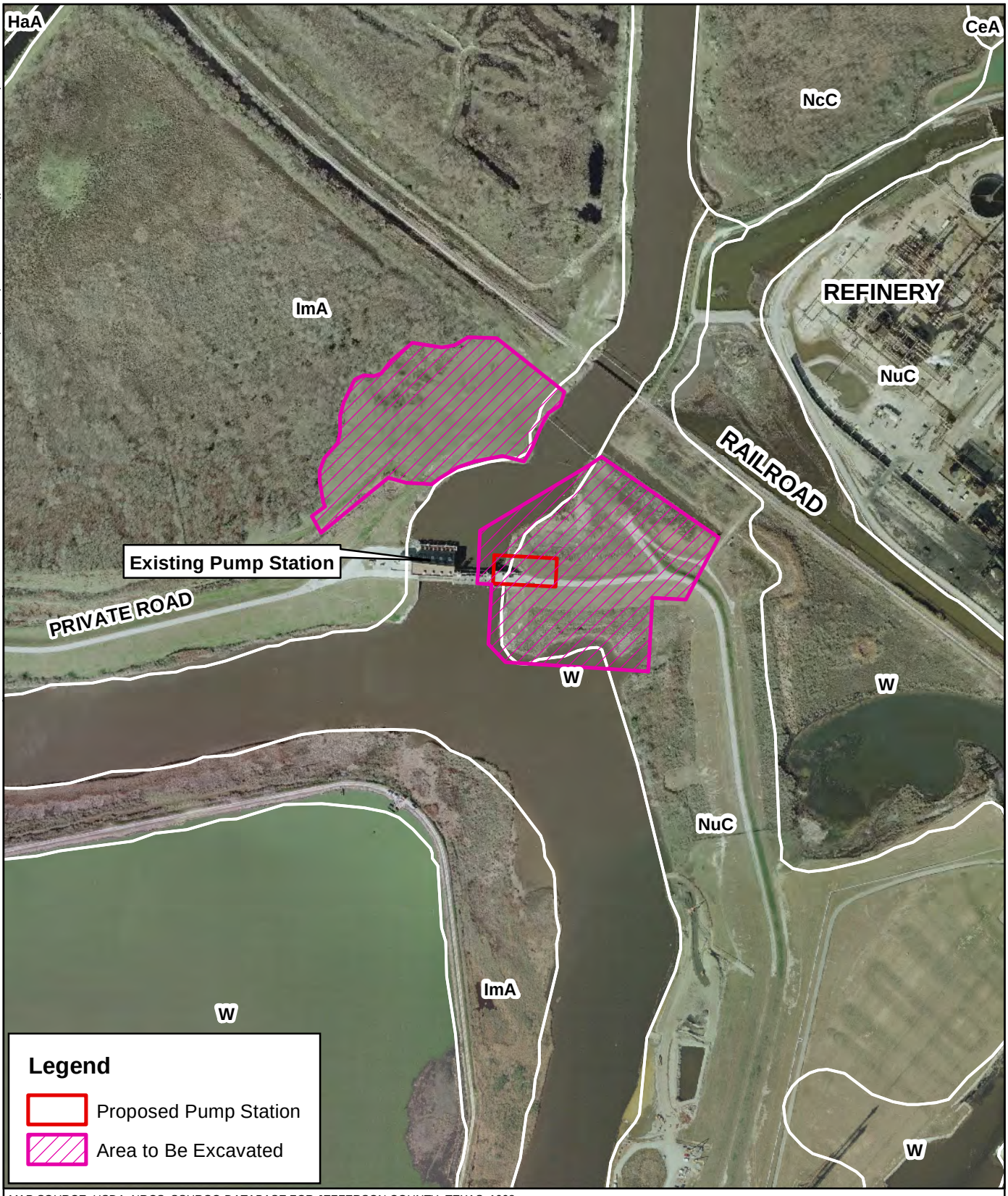

MAP SOURCE: USDA, NRCS, SSURGO DATABASE FOR JEFFERSON COUNTY, TEXAS, 1998.

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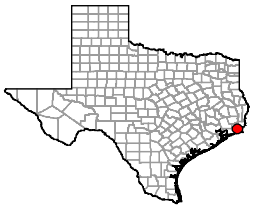

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FIGURE 6

SOILS MAP
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

3.1.1.1 No Action Alternative. The No Action Alternative would have no effect on geology or soils.

3.1.1.2 Proposed Project Alternative. The Proposed Project would have no effect on geology or soils. The Proposed Project site does not contain soils classified as Important Farmland and would therefore not be subject to regulation by the NRCS under the Farmland Protection Policy Act. The NRCS concurred that the project site is exempt from the FPPA on 4 May 2007 (Appendix A.1). The hydrologic effects of the project will not result in landform changes or alteration of soils within the benefit area for any of the alternatives considered.

3.1.2 Water Resources and Water Quality

On-site topography is generally flat and approximately 0 to 5 feet above MSL (USGS, 1974). The water surface in Taylors Bayou downstream of the project area is at or near sea level and is subject to tidal influence.

The Chicot Aquifer (in Holocene- and Pleistocene-age sediments) is the primary source of fresh groundwater in the Port Arthur area and is part of the Gulf Coast Aquifer System. The hydrogeologic units are laterally discontinuous fluvial-deltaic deposits of gravel, sand, silt, and clay that dip and thicken from northwest to southeast. Recharge to the Gulf Coast Aquifer System generally occurs through the percolation of fresh water (precipitation, stream flow, lakes, etc.) along the aquifers' areas of outcrop at the surface. The aquifers crop out in bands inland from and approximately parallel to the coast and become progressively more deeply buried and confined toward the coast. The Chicot, which comprises the youngest sediments, outcrops nearest to the coast. These outcrop areas are located a number of miles north and west of the project area. Groundwater movement is generally from the area of outcrop toward the southeast (down-dip), but may vary in the vicinity of natural discharge points (along stream banks) or artificial discharge points (groundwater wells).

A review of water well records at the Texas Water Development Board (TWDB) revealed no documented water wells on or within a 0.5-mile radius from the Proposed Project area (TWDB, 2006). Based on water well drillers' records, nearby water wells draw water from the Chicot Aquifer, which yields water at depths greater than 7 feet in the vicinity of the project area (TWDB, 2006). No evidence of water wells was present on the project site during the field reconnaissance effort. The results of this survey do not preclude the existence of an abandoned well. If a water well or casing is encountered during construction, work should be halted near the feature until the Texas Commission on Environmental Quality (TCEQ) is contacted.

Two segments of receiving streams for the Proposed Project are listed as impaired by TCEQ. Alligator Bayou (Segment 0702A) is rated Category 5c. Category 5c indicates the segment does not meet applicable water quality standards or is threatened for one or more uses by one or more pollutants. The ranking is based on toxicity in sediments for the lower reach of Alligator Bayou. The TCEQ designation also indicates that additional data and information will be collected before a TMDL is scheduled for the

stream segment. The Gulf Intracoastal Waterway, including the tidal portion of Taylors Bayou (Segment 0702) adjacent to the project, is not listed as impaired.

3.1.2.1 No Action Alternative. It is unlikely that there would be any changes to water quality under the No Action Alternative; however, flooding would increase.

3.1.2.2 Proposed Project Alternative. The Proposed Project would not affect groundwater, public water supplies, freshwater supply sources, or water conservation projects in the region, nor result in further deterioration of water quality in impaired segments. During the original 404/10 permit process, the Texas Commission on Environmental Quality (TCEQ) requested sediment testing in areas to be excavated for the project to determine if possible release of pollutants in the sediments might be a concern for disposal of excavated materials during construction. It is estimated that approximately 7,500cy of material will be excavated in Taylors and Alligator Bayous during construction. Sediment testing was conducted in accordance with TCEQ criteria in Alligator Bayou and Taylors Bayou. All samples had detectable concentrations of RCRA metals, namely arsenic, barium, chromium, lead, and mercury. The Alligator Bayou samples also had detectable concentrations of 4,4'-DDT. None of these contaminants were unexpected since the region has been in agricultural use for the past century, and these are all historically common constituents of agricultural chemicals that can be persistent in soils and sediments. All testing results for VOCs, Semi-VOCs, and all other herbicides/pesticides were below quantification limits. The sampling results were compared to the most recent Tier I Texas Risk Reduction Program (TRRP) Protective Concentration Limits (PCL) for residential soils. In all cases, the detected concentrations were well below the PCLs for every contaminant (Appendix A.3). As such, the sediment that will be excavated is not considered contaminated and no special handling is required.

This project was found compliant with Section 10 of the Rivers and Harbors Act of 1899, and Sections 401 and 404(b)(1) of the Clean Water Act under Department of the Army Permit No. SWG-2007-00850. Coordination of the subsequent application for amendment of this permit to address project design changes resulting from Section 408 engineering review of the project has not resulted in substantive comments or issues that will preclude completion of evaluation of the permit amendment upon approval of the Section 408 project review by USACE Headquarters.

Temporary erosion and sedimentation control measures for the Proposed Project would comply with the TCEQ Best Management Practices under the Texas Pollutant Discharge Elimination System (TPDES) program and include silt fencing along the lower edge of the construction zone, construction rock entrances to prevent tracking sediment off-site, and temporary coffer dams to be used in the aquatic areas (Alligator and Taylors Bayous) to help reduce sedimentation during construction. Permanent stabilization measures would include revegetation of the construction zone. Restoration of 25-year event functioning at PS 16 would not result in increased erosion on Taylors Bayou.

3.1.3 Floodplain Management (Executive Order 11988)

Executive Order 11988 mandates that all Federal agencies shall provide leadership and take action to reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and

welfare; and to restore and preserve the natural and beneficial values served by floodplains in carrying out their responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting federal activities and programs affecting land use, including, but not limited to, water and related land resources planning, regulating, and licensing activities.

There are many flood-mitigation activities within Jefferson County that are the joint responsibility of Jefferson County and DD7. Jefferson County has land use and permit authority over the land within its corporate boundaries that includes the project area. Given the shared responsibility for flood mitigation, Jefferson County recognizes and supports DD7's desire to construct this project that would help reduce the flooding of existing homes and roads in the benefit area. According to FEMA Flood Insurance Rate Maps, 100% of the project area is located within the 100-year and 500-year floodplains indicated as Zone A and X500 (FEMA, 1998) (Figure 7). The existing PS 16 and the Proposed Project are part of the Hurricane Flood Protection Project levee system, which forms the boundary between the 100-year and 500-year floodplains.

3.1.3.1 No Action Alternative. Under the No Action Alternative, impacts the floodplain within the Port Arthur Hurricane-Flood Protection Project levee system would continue. As development and impervious cover continue to increase within the protected area, flooding would increase.

3.1.3.2 Proposed Project Alternative. The Proposed Project would reduce 25-year event flood durations within the 100-year floodplain protected by the levee system. This project would not further modify the existing floodplain or induce increased development. The project would reduce the hazards and risks associated with floods and minimize the impacts of floods on human safety, health, and welfare. FEMA has previously determined that the project would have no significant effects on the 100- or 500- year floodplains (Appendix A.9).

3.1.4 Climate, Air Quality, and Sea Level Rise

Jefferson County is located in extreme southeastern Texas and exhibits a subtropical climate. Extremely high summer temperatures are rare due to sea breezes from the Gulf of Mexico, and winter cold temperatures are generally moderate due to the county's southern location. Average temperatures range from 53.3 degrees Fahrenheit ($^{\circ}$F) in January to 82.9 $^{\circ}$F in August. Relative humidity is high due to the nearby Gulf of Mexico. Yearly rainfall averages 55.21 inches and is distributed unevenly throughout the year. Heavy rains associated with tropical disturbances generally strike the area from June through August. Eighty to 100 inches of precipitation have not been uncommon in certain areas over the past several years.

The General Conformity Rule promulgated by the U.S. Environmental Protection Agency (EPA) for air quality mandates that the Federal government not engage in, support, or provide financial assistance for licensing or permitting, or approving an activity not conforming to an approved State Implementation Plan. The General Conformity Rule is applicable to nonattainment and maintenance areas. The Beaumont-Port Arthur area is classified as a maintenance area for air conformity.

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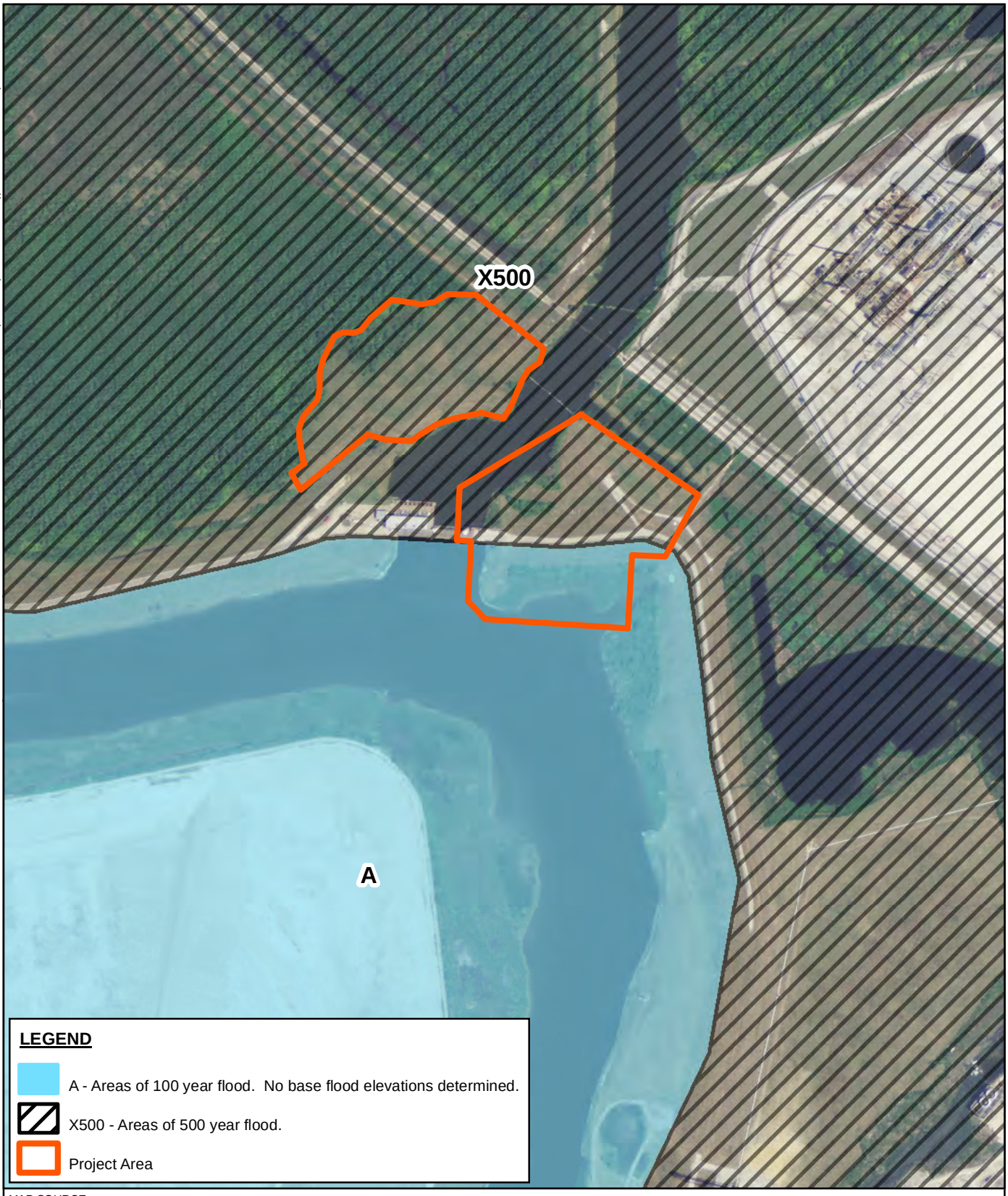


LEGEND

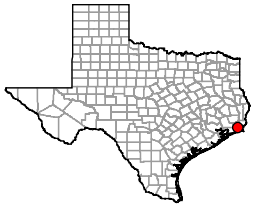
A - Areas of 100 year flood. No base flood elevations determined.

X500 - Areas of 500 year flood.

Project Area

MAP SOURCE:
1. FEMA, MAY 1998. SITE LOCATED ON FIRM PANEL 4803850430B.
2. AERIAL: NAIP; JEFFERSON COUNTY, TEXAS (2010)

0 250 500
FEET



Horizon Environmental Services, Inc.

FIGURE 7

FEMA FLOOD HAZARD MAP
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

As a result of a global climate change and melting glaciers and polar ice caps, the National Oceanic and Atmospheric Administration (NOAA) has observed a general trend of rising sea levels in the Gulf of Mexico. Impacts of sea level change were considered in the design of the Alligator Bayou Pump Station in accordance with EC 1165-2-211 (Incorporating Sea-Level Change Considerations in Civil Works Programs). Historic trends in local MSL are best determined from tide gauge records. The Center for Operational Oceanographic Products and Services (CO-OPS), of the National Oceanographic and Atmospheric Administration (NOAA), provides historic information and local MSL trends for tidal stations operated by NOAA/NOS in the US. Most US tide stations experienced a rise in local MSL during the 20th century. The highest rates of local MSL rise in the US have occurred along the Gulf Coast.

The closest gauge to Port Arthur is at Sabine Pass (8770570). At this gauge, the MSL trend is a rise of 5.66 mm/year, based on monthly MSL data from 1958 to 2006. This is equivalent to a change of 0.96 feet (low rate, historic sea level rise), 2.1 feet (intermediate rate, modified NRC curve I), or 3.64 feet (high rate, modified NRC curve III) by 2064, the expected life of the pump station (see Appendix F).

3.1.4.1 No Action Alternative. The No Action Alternative would not affect air quality.

3.1.4.2 Proposed Project Alternative. Minor and temporary diesel emissions and fugitive dust emissions from equipment during construction are possible. The new pump station would utilize 6 diesel engines and 2 backup diesel generators that are compliant with EPA Tier II criteria. The normal run times for the new diesel engines are anticipated to be about one pump running 30-60 minutes per week for "no rainfall event" flows. Run times during storm events would be highly variable depending on rainfall, but would be temporary and occasional.

TCEQ has conducted a review of the project for General Conformity impact in accordance with 40 CFR Part 93 and Title 30, Texas Administrative Code § 101.30 and has indicated that Jefferson County, in which the Proposed Project is located, is currently classified as a maintenance ozone area. Therefore, General Conformity rules apply. The two criteria pollutants of concern as precursors to ozone formation are volatile organic compounds (VOCs) and nitrogen oxides (NOx). An increase of 100 tons per year for VOCs or NOx, resulting from the Proposed Project, could trigger general conformity analysis. However, the TCEQ determined that the emissions from the Proposed Project would be expected to be well below the 100 tons per year significance level. Therefore, a General Conformity analysis would not be required (see Appendix A.3).

TCEQ has reviewed this information and has agreed with a finding of no significant impact as long as the construction and waste disposal activities are completed in accordance with applicable local, state, and federal statutes and regulations. Additionally, TCEQ indicated that any minimal dust and particulate emissions should be easily controlled by the use of standard dust mitigation techniques, and best management practices should be implemented to control storm water runoff (see Section 3.1.2).

Tidal influences and relative sea level rise (RSLR, Appendix F) were considered during the design phase of the new pump station. The projected intermediate rate of RSLR for this project area is 2.1 feet. The discharges from the proposed new pumps are located such that the flowline is at elevation +8.0

and is capable of pumping against a tide of +12.0 msl. The highest sustained high tide that could be found on record for this project area was +5.5 msl for 7 days immediately following Tropical Storm Francis. Otherwise the normal high tide is +2.0 to +3.0 msl. Additionally, the highest tide that the District has ever pumped against was associated with Hurricane Ike, an approximate elevation of +13.0 msl for approximately six hours. Therefore, the tide will not impact the proposed pump station especially in the lower part of the stage-frequency curve.

In addition, the finish floor elevation for the proposed pump station would be set at elevation +21.5 while the top of Hurricane Flood Protection Project levee ranges from +14.0 to +19.0 MSL. Based on tide elevations and the proposed finished floor elevations, project engineers have determined that any RSLR expected during the life of this project would not impact the performance of the proposed pump station.

3.2 BIOLOGICAL ENVIRONMENT

3.2.1 Terrestrial and Aquatic Environment

3.2.1.1 Proposed Project Construction Site Description. The Proposed Project site would be constructed immediately adjacent to the Hurricane Flood Protection Project levee separating Alligator Bayou from Taylors Bayou. Dominant plant species on and adjacent to the levee include bermudagrass (*Cynodon dactylon*), common reed (*Phragmites australis*), St. Augustine grass (*Stenotaphrum secundatum*), bedstraw (*Gallium uncinulatum*), curly dock (*Rumex crispus*), and dewberry (*Rubus trivialis*). Scattered sugarberry (*Celtis laevigata*) and baccharis (*Baccharis* sp.) are also present. A fringe of wetland vegetation is present along portions of Alligator and Taylors Bayous that includes spikerush (*Eleocharis* sp.), primrose willow (*Ludwigia decurrens*), common reed, sedge (*Carex* sp.), and marshhay cordgrass (*Spartina patens*).

Aquatic habitat is restricted to the bayous. Fish samples were not collected from the bayous during reconnaissance surveys of the area. Common fish species that could occur in the bayous in the project area include the western mosquitofish (*Gambusia affinis*), black bullhead (*Ameiurus melas*), variegated pupfish (*Cyprindon variegatus*), largemouth bass (*Micropterus salmoides*), alligator gar (*Lepisosteus spafula*), blacktail redhorse (*Moxostoma poecilurum*), rainwater killifish (*Lucania parva*), inland silversides (*Menidia beryllina*), several sunfish species (*Lepomis* spp.), and possibly 1 or 2 species of minnows (Cyprinidae). In addition to the fish species, the area could support frogs, turtles, snakes, crayfish, and numerous insect species. Estuarine or marine species that potentially inhabit Taylors Bayou downstream of the proposed structure include species such as the blue crab (*Callinectes sapidus*), brown shrimp (*Farfantepenaeus aztecus*), white shrimp (*Litopenaeus setiferus*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), croaker (*Micropogonias undulatus*), menhaden (*Brevoortia patronus*), and bay anchovy (*Anchoa mitchelli*).

3.2.1.2 Project Area Description. The 28,643-acre project area within the Hurricane Flood Protection Project levee system (see Figure 3) includes over 15,000 acres of urban and industrial development, with the remaining acreage including forested areas, open pasture land, water features (natural and manmade), and wetlands.

There are approximately 1,448 acres of forested areas within the general project area. Many of the present-day forested areas were historically open pastures or agricultural lands. Dominant species in the forested patches include Chinese tallow (*Triadica sebifera*), loblolly pine (*Pinus taeda*), and mixed oaks (*Quercus sp.*). There are also approximately 3,750 acres of open pastureland, much of which is utilized for grazing or hay production and approximately 2,134 acres of water features including numerous large water impoundments, detention basins, and miles of drainage ditches and canals. All of the interior natural drainages within the levee system have been modified for flood water conveyance and retain few natural functions or characteristics..

3.2.1.3 No Action Alternative. The No Action Alternative would result in continued and increased flooding that could place additional stresses on terrestrial plant and animal communities.

3.2.1.4 Proposed Project Alternative. Construction would impact 17.05 acres of levee and mowed property immediately adjacent to the levee, and including several wetland areas and open water areas of Taylors Bayou. These areas are characterized by largely non-native, invasive grasses. Based on hydrological modeling for Alligator Taylors Bayous, the Proposed Project would not change the overall project's hydraulic effects on the two waterways; therefore, no impacts to aquatic communities would be expected.

Coordination letters and project information requesting comments were sent to natural resource agencies including TCEQ, General Land Office of Texas (GLO), and National Marine Fisheries Service (NMFS). TCEQ responded on 27 April 2007 and 24 February 2011 that the project is consistent with the agency's environmental regulations and policies (Appendix A.3). GLO has determined that the Proposed Project is within the Texas Coastal Management Program (TCMP) boundary and is consistent with the TCMP (Appendix A.4). NMFS concurred that the Proposed Project would not present an adverse impact to Essential Fish Habitat with regard to the Magnuson-Stevens Fishery Management and Conservation Act (Appendix A.6). USFWS was additionally afforded the opportunity to comment on the project regarding USFWS's responsibilities under the Fish and Wildlife Coordination Act during the original 404/10 permit Public Notice period (5 December 2008 to 6 January 2009) (see Appendix A.2), but declined to comment.

3.2.2 Wetlands (Executive Order 11990)

Executive Order 11990 provides that, in order to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative, all Federal agencies shall provide leadership and shall take action to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of federal lands and facilities; (2) providing federally undertaken, financed, or assisted construction and improvements; and (3) conducting federal activities and programs affecting land use, including, but not limited to, water and related land resources planning, regulating, and licensing activities. This Order does not apply to the issuance by

federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-federal property.

The Port Arthur South, Texas, National Wetlands Inventory (NWI) map (USFWS, 1998) indicates 3 potential wetland areas on or immediately adjacent to the project site. The areas within and immediately adjacent to the project site are described as riverine, lower perennial, unconsolidated bottom, permanently flooded, excavated (R2UBHx), which is Alligator Bayou; estuarine, subtidal, unconsolidated bottom, subtidal, excavated (E1UBLx), which is Taylors Bayou; and estuarine, intertidal, emergent, persistent, irregularly flooded (E2EM1P).

Further review and a field reconnaissance effort by Horizon biologists determined that Alligator Bayou, Taylors Bayou, and several small wetland areas adjacent to Taylors Bayou and Alligator Bayou are the only "waters of the US" located within or adjacent to the construction footprint of the Proposed Project (Figure 8). Field photographs are provided in Appendix B.

Based on NWI mapping, the drainage area within the Hurricane Flood Protection Project levee system contains approximately 5,889 acres of wetlands (USFWS, 1998) including a multitude of wetland types encompassing freshwater emergent, freshwater forested/shrub, estuarine and marine, freshwater ponds, and lakes. Some examples include palustrine, emergent, persistent, seasonal (PEM1C), and palustrine, scrub/shrub, farmed (PSSf). Many of these wetland areas within the levee system include highly modified flood conveyance channels and detention basins.

3.2.2.1 No Action Alternative. The No Action Alternative would not impact wetlands or waters of the US.

3.2.2.2 Proposed Project Alternative. Approximately 0.98 acres of herbaceous/shrub wetland vegetation are present along the shorelines of Taylors and Alligator Bayous within the construction footprint of the Proposed Project (Figure 8). These wetland areas are sparsely vegetated with spikerush (*Eleocharis* sp.), marsh elder (*Iva frutescens*), common reed (*Phragmites australis*), sedge (*Carex* sp.), saltgrass (*Distichlis* spicata), and marshhay cordgrass (*Spartina patens*). They are situated above the mean high tide level of Taylors Bayou and are Section 404 jurisdictional. An additional 1.07 acres of open water in Taylors Bayou are also present within the construction footprint.

An application for permit under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act was originally submitted to the USACE for the new pump station in 2007. A Public Notice was issued by the USACE on 5 December 2008. Comments were received on the Public Notice from the Alabama-Coushatta Tribe of Texas, TCEQ, and TPWD. Responses to those comments were provided to the USACE on 20 March 2009. A permit was issued by the USACE for the project on 12 February 2010 (Department of the Army Permit No. SWG-2007-850). However, the footprint and design of the Proposed Project was altered and a new application was submitted 21 February 2012 to amend the issued permit. A decision on Department of the Army Permit Application No. SWG-2007-00850 Amendment will be reached at the conclusion of the USACE Section 408 review and coordination of this project.

"Do Not Scale This Drawing"

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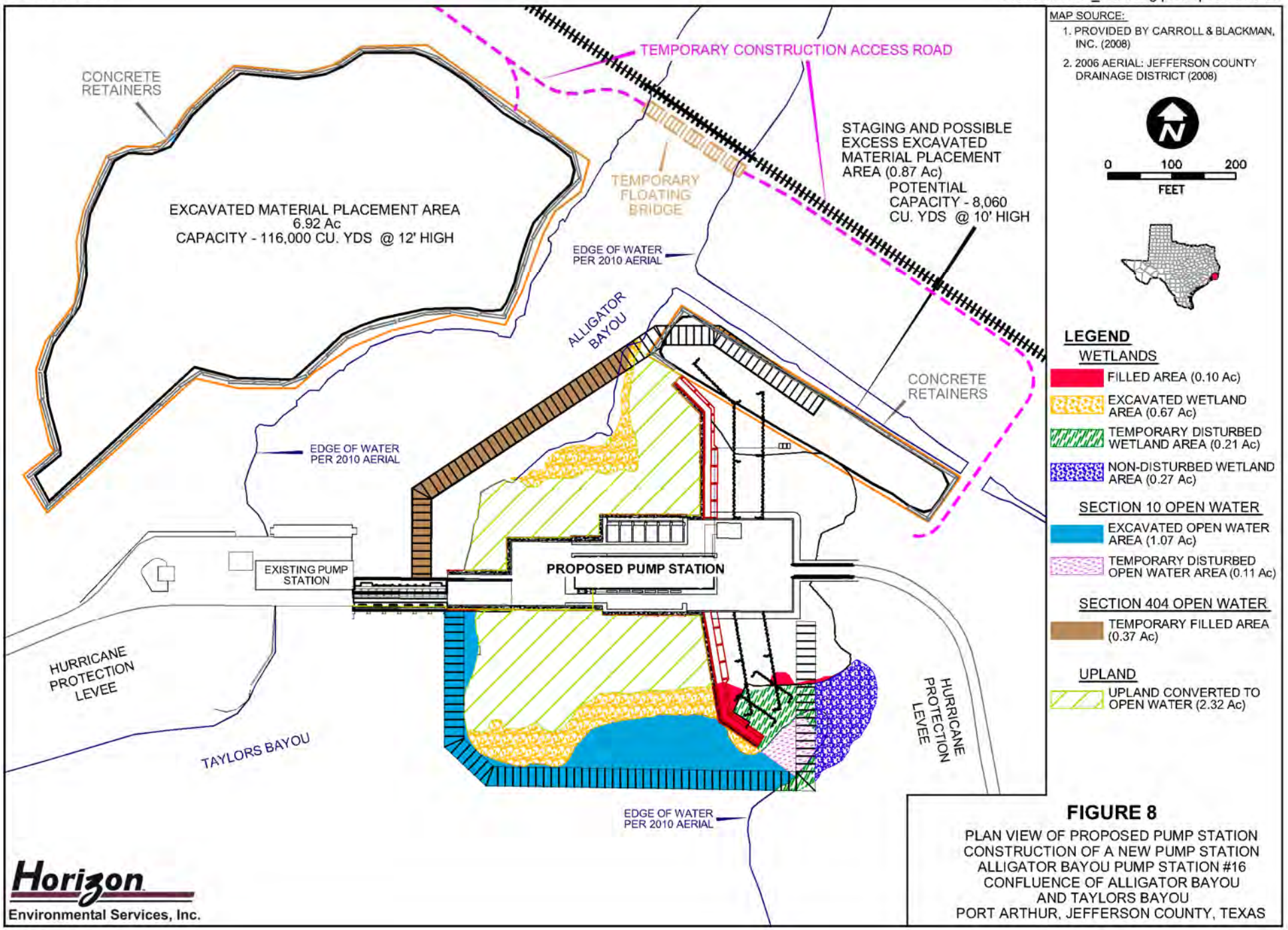


MAP SOURCE:

1. PROVIDED BY CARROLL & BLACKMAN, INC. (2008)
2. 2006 AERIAL: JEFFERSON COUNTY DRAINAGE DISTRICT (2008)

N

0 100 200

FEET

LEGEND

WETLANDS

- FILLED AREA (0.10 Ac)
- EXCAVATED WETLAND AREA (0.67 Ac)
- TEMPORARY DISTURBED WETLAND AREA (0.21 Ac)
- NON-DISTURBED WETLAND AREA (0.27 Ac)

SECTION 10 OPEN WATER

- EXCAVATED OPEN WATER AREA (1.07 Ac)
- TEMPORARY DISTURBED OPEN WATER AREA (0.11 Ac)

SECTION 404 OPEN WATER

- TEMPORARY FILLED AREA (0.37 Ac)

UPLAND

- UPLAND CONVERTED TO OPEN WATER (2.32 Ac)

Horizon
Environmental Services, Inc.

FIGURE 8

PLAN VIEW OF PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

3.2.3 Threatened or Endangered Species

The following threatened or endangered (T/E) species and designated critical habitats (CH) listed by the USFWS were reviewed for potential impacts from the Proposed Project.

TABLE 1
FEDERALLY LISTED T/E SPECIES OF POTENTIAL OCCURRENCE
IN JEFFERSON COUNTY, TEXAS

SPECIES	USFWS STATUS	NMFS STATUS	DETERMINATION
Piping Plover (*Charadrius melodus*)	Threatened	N/A	No effect; critical habitat in Texas, but not in Jefferson County; species unlikely in project area.
Atlantic hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	Endangered	No effect; critical habitat designated outside of Texas; species unlikely in project area.
Green sea turtle (*Chelonia mydas*)	Threatened	Threatened	No effect; critical habitat designated outside of Texas; species unlikely in project area.
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered	Endangered	No effect; species unlikely in project area.
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered	Endangered	No effect; critical habitat designated outside Texas; species unlikely in project area.
Loggerhead sea turtle (*Caretta caretta*)	Threatened	Threatened	No effect; species unlikely in project area.
Smalltooth sawfish (*Pristis pectinata*)	N/A	Endangered	No effect; species unlikely in project area.
West Indian Manatee (*Trichechus manatus*)	Endangered	N/A	No effect; species unlikely in project area.

(USFWS 2012; NMFS 2012; Appendix C)

Additionally, USFWS lists the following migratory bird species as being of potential transitory occurrence in many or all Texas counties during migration: Eskimo curlew (*Numenius borealis*), interior least tern (*Sterna antillarum athalossos*), and whooping crane (*Grus americana*). The Texas Parks and Wildlife Department list for Jefferson County (TPWD, 2012; Appendix C), lists a number of additional species. A Biological Assessment (BA) can be found as Appendix C. The following is a general summary of the BA findings for federally listed species.

Bald Eagle

The bald eagle has been delisted in Texas under the Endangered Species Act, but remains protected under the Federal Bald and Golden Eagle Protection Act. Bald eagle habitat in Texas is generally concentrated around rivers and undisturbed coastal habitat containing large, tall trees and a substantial body of water nearby. Eagle nests are often found in the ecotone between a forest and adjacent marsh, grassland, or body of water. No bald eagle nests have been reported from any areas near the Proposed Project, and potentially suitable nesting habitat is not present on or adjacent to the site. No bald eagle nests are known within the benefit area.

Brown Pelican

The brown pelican has been delisted in Texas under the Endangered Species Act, but remains protected under the Federal Migratory Bird Treaty Act. The brown pelican is found largely in coastal and near-shore areas. They typically loaf, roost, and nest on nearshore islands. None have been reported from the project area, and no suitable nesting habitat is present in the project area.

Piping Plover

Piping plover habitat in Texas consists of sandy beaches, swash zones, and tidal flats that provide marine worms, flies, beetles, spiders, crustaceans, mollusks, and other small marine invertebrates during the over-wintering portion of their migration. CH has been designated for piping plover in a number of areas on the Texas coast, but not near the project area. The closest designated CH is in the Bolivar-Galveston area, approximately 50 miles southwest of Port Arthur. There are no areas near the project area that would provide suitable habitat for the piping plover. There will be no impact to piping plovers or their habitat.

Sea Turtles

All 5 federally listed sea turtle species are known to occur along the Texas Coast. Due to the mobility of these species and their preference for marine and estuarine environments, there is very little chance that they would enter Taylors Bayou in the vicinity of the project area, which is almost 12 miles from the Gulf of Mexico. They would be unable to enter Alligator Bayou because of the pump station facility and gravity drain structure. In the unlikely event that sea turtles were present in Taylors Bayou, they would be able to avoid direct construction impacts. The minimal dredging associated with the project would be executed by barge-mounted trackhoe or dragline. There would be no pipeline or hopper dredging, Because of their high mobility, construction would not impact sea turtles should they be present. Project operation would likewise not impact these turtles.

3.2.3.1 No Action Alternative. The No Action Alternative has no effect on threatened or endangered species.

3.2.3.2 Proposed Project Alternative. No listed T/E species or potential habitats have been observed in the immediate vicinity of the project area. Any potential utilization of the site by migratory T/E species would be limited to brief transitory occurrences or fly-overs. A lack of suitable habitat for listed species makes their occurrence highly unlikely. There are no species proposed for listing or designated CH in the project area. It is concluded that the Proposed Project would have no effect on either designated critical habitat or threatened or endangered species.

3.3 HAZARDOUS, TOXIC, AND RADIOACTIVE WASTE (HTRW)

Database searches including TelALL Phase I Support Services, Inc. (TelALL) were conducted in 2007 and updated in April 2011, in order to provide an environmental database review of selected state and Federal agency records. TelALL conducted the database search for the project area using minimum search distances outlined in American Society for Testing and Materials (ASTM) Standard E-1527-05 (ASTM, 2006). Table 2 provides the number of known occurrences by category within the prescribed search distances from the project site as of April 2011. Detailed environmental data search records are on file and are not presented in this Environmental Assessment. Based on site inspection and these database searches, the Proposed Project site has a low probability for the occurrence of HTRW materials. Any hazardous or potentially hazardous materials discovered, generated, or used during construction/excavation of the project would be disposed of and handled by the Applicant in accordance with applicable local, state, and Federal regulations.

3.3.1 National Priority List Database

The National Priority List (NPL) is a priority subset of the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) list and contains those CERCLIS facilities or locations evaluated and confirmed as contaminated. The CERCLIS list was created by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in order to fulfill the need to track contaminated sites. The CERCLA was enacted in 1980 and amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986. These acts established broad authority for the government to respond to problems posed by the release, or threat of release, of hazardous substances, pollutants, or contaminants. The CERCLA also imposed liability on those responsible for releases and provided the authority for the government to undertake enforcement and abatement action against responsible parties. TelALL identified no NPL facilities on or within a 1.0-mile radius of the project area.

3.3.2 Comprehensive Environmental Response, Compensation, and Liability Information System Database

This database lists facilities reported to and identified by the EPA, pursuant to Section 103 of the CERCLA. The CERCLIS database contains sites that are either proposed to be listed or are listed on the NPL and sites that are in the screening and assessment phase for possible inclusion on the NPL. These sites are known to, or have the potential to, release hazardous substances or pollutants into the environment. TelALL identified no CERCLIS hazardous waste sites within the 0.5-mile search radius. No further remedial action planned (NFRAP) sites indicate a CERCLIS site that was designated as a site requiring no

further agency action by the EPA. TelALL identified no NFRAP sites on or within a 0.5-mile radius of the project area.

TABLE 2
SUMMARY OF ENVIRONMENTAL DATA SEARCH REPORT FINDINGS

DATABASE	ACRONYM	LAST UPDATED	MINIMUM SEARCH DISTANCE IN MILES	FINDINGS
National Priority List	NPL	03/2011	1.0	0
Comprehensive Environmental Response, Compensation, and Liability Information System	CERCLIS	03/2011	0.5	0
No Further Remedial Action Planned	NFRAP	03/2011	0.5	0
Resource Conservation and Recovery Act Information System - Treatment, Storage, or Disposal	RCRA-TSD	01/2011	1.0	0
Corrective Action	CORRACT	01/2011	1.0	0
Resource Conservation and Recovery Act Information System - Generators	RCRA-G	01/2011	0.25	0
Emergency Response Notification System	ERNS	02/2011	0.25	0
Texas Voluntary Cleanup Program	TXVCP	01/2011	0.5	0
Texas Innocent Owner/Operator Program	TXIOP	01/2011	0.5	0
Texas State Superfund	TXSSF	02/2011	1.0	0
TCEQ Solid Waste Facilities	TXLF	03/2011	1.0	0
Unauthorized and Un-permitted Landfill Sites	LFUN	03/2011	0.5	0
Texas Leaking Underground Storage Tanks	TXLUST	02/2011	0.5	0
Texas Underground Storage Tanks	TXUST	02/2011	0.25	0
Texas Aboveground Storage Tanks	TXAST	02/2011	0.25	0
Texas Spills List	TXSPILL	03/2011	0.25	0
Brownfield	BRNFD	01/2011	0.5	0
Dry Cleaner	DRYC	02/2011	0.5	0
Indian Reservation Underground Storage Tanks	IRUST	02/2011	0.25	0

3.3.3 Resource Conservation and Recovery Information System Database

TelALL derived the data contained in this list from the Resource Conservation and Recovery Information System (RCRIS) database, which attempts to track the status of those regulated under the Resource Conservation and Recovery Act (RCRA). The RCRA requires generators, transporters, treaters, storers, and disposers of hazardous waste to provide information concerning their activities to state environmental agencies, who, in turn, provide the information to regional and national EPA offices. The RCRA Treatment, Storage, or Disposal (RCRA-TSD) database is a subset of the RCRIS list that tracks facilities that fall under the treatment, storage, or disposal classification. TelALL reviewed the RCRA-TSD database for those facilities where treatment, storage, or disposal of hazardous waste takes place and identified no RCRA-TSD facilities on or within a 1.0-mile radius of the project area.

The RCRA Generators (RCRA-G) database is a subset of the RCRIS list that tracks facilities that generate or transport either small or large quantities of substances regulated under the RCRA. The RCRA classifies 3 generators, including conditionally exempt, small-quantity generators (CESQGs); small-quantity generators (SQGs); and large-quantity generators (LQGs). The CESQG produces less than 100 kilograms (kg) per month of hazardous waste; the SQG produces at least 100 kg per month, but less than 1000 kg per month of hazardous waste; and the LQG produces at least 1000 kg per month of hazardous waste. TelALL reviewed the RCRA-G database and found no facilities on or within a 0.25-mile radius of the project area.

The Corrective Action (CORRACT) database lists RCRIS sites that are currently subject to or have in the past been subject to corrective action. No facilities are listed as RCRIS violators that have been subject to corrective action on or within a 1.0-mile radius of the project area.

3.3.4 Emergency Response Notification System Database

The Emergency Response Notification System (ERNS) supports the release of notification requirements of Section 103 of the CERCLA, as amended; Section 311 of the Clean Water Act; and Sections 300.51 and 300.65 of the National Oil and Hazardous Substances Contingency Plan. Additionally, ERNS serves as a mechanism to document and verify incident location information as initially reported, and is utilized as a direct source of easily accessible data needed for analyzing oil and hazardous substances spills. TelALL reviewed the ERNS database and identified no oil or hazardous substance releases within the 0.25-mile search radius.

3.3.5 Texas Voluntary Cleanup Program and the Texas Innocent Owner/Operator Program

The Texas Voluntary Cleanup Program (TXVCP) was established to provide administrative, technical, and legal incentives to encourage the cleanup of contaminated sites in Texas. Since future lenders and landowners receive protection from liability to the State of Texas for cleanup of sites under the TXVCP, most of the constraints for completing real estate transactions at those sites are eliminated. As a result, many unused or under-used properties may be restored to economically productive or community-beneficial uses. After cleanup, the parties receive a certificate of completion from the TCEQ,

which states that all lenders and future landowners who are not potentially responsible parties (PRPs) are released from all liability to the State. TelALL identified no TXVCP participants within a 0.5-mile radius of the project area.

The Texas Innocent Owner/Operator Program (TXIOP) provides a certificate to an innocent owner or operator if his or her property is contaminated as a result of a release or migration of contaminants from a source or sources not located on the project area and he or she did not cause or contribute to the source or sources of contamination. TelALL identified no TXIOP participants on or within a 0.5-mile radius of the project area.

3.3.6 Texas State Superfund Database

The Texas State Superfund (TXSSF) database is a list of sites that the State of Texas has identified for investigation or remediation. The TXSSF sites are reviewed for potential upgrading to CERCLIS status by the EPA. TelALL identified no state or federal Superfund sites on or within a 1.0-mile radius of the project area.

3.3.7 TCEQ Solid Waste Facilities and Unauthorized and Unpermitted Landfill Sites

The TCEQ Solid Waste Facilities (TXLF) listing, derived from the permit files of the TCEQ, contains known active and inactive solid waste disposal, transfer, and processing stations registered within a municipality and/or county. Subchapter R of Chapter 361 of the State of Texas Health and Safety Code regulates land use on sites determined to be, or contain, solid waste landfills. Based on the review of all available information developed during this Environmental Assessment, Horizon found no evidence that suggests that a municipal solid waste landfill exists on the Proposed Project area. TelALL identified no TXLF facilities on or within a 1.0-mile radius of the project area.

Unauthorized and Unpermitted Landfill (LFUN) sites have no permit and are considered abandoned. All information about these sites was compiled by Texas State University San Marcos (formerly Southwest Texas State University) under contract with the TCEQ. TelALL identified no LFUN sites on or within a 0.5-mile radius of the project area.

3.3.8 Underground or Aboveground Storage Tanks

TelALL reviewed the TCEQ database listings that contain information on permitted Texas Underground Storage Tanks (TXUSTs), permitted Texas Aboveground Storage Tanks (TXASTs), and known Texas Leaking Underground Storage Tanks (TXLUSTs). According to TCEQ records, 4 diesel-containing TXASTs were identified at the Alligator Bayou Pump Station; all are currently in use. No TXUST facilities were identified on or within a 0.25-mile radius of the project area, and no TXLUST facilities were identified on or within a 0.5-mile radius of the project area.

3.3.9 TCEQ Spills List

The TCEQ tracks cases where emergency response is needed for cleanup of hazardous or potentially hazardous substances spills (TXSPILL). TelALL identified no TXSPILL cases within 0.25 miles of the project area.

3.3.10 Brownfields

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. TelALL identified no Brownfield sites on or within a 0.5-mile radius of the project area.

3.3.11 Dry Cleaners

House Bill 1366 requires all dry cleaning drop stations and facilities in Texas to register with the TCEQ and implement new performance standards at their facilities as appropriate. It also requires distributors of dry cleaning solvents to collect fees on the sale of dry cleaning solvents at certain facilities. TelALL identified no dry cleaner sites on or within a 0.5-mile radius of the project area.

3.3.12 No Action Alternative

Continued and increasing flooding within the Proposed Project drainage area would have the potential to entrain pollutants in floodwaters and transmit those pollutants to the pump station where they could be passed into Taylors Bayou.

3.3.13 Proposed Project Alternative

The Proposed Project Alternative would not impact any listed hazardous materials storage, treatment, or disposal areas. By reducing flooding within the benefit area, the potential for entrainment of pollutants in floodwaters and transmission downstream is reduced.

3.4 SOCIOECONOMICS

2010 US Census data indicate a population of 252,273 for Jefferson County. A demographic profile of the area shows that approximately 52% of the population is reported as white, 34% as black, 10% as Hispanic, and 4% as other. The project is not expected to affect the population of the area. The county population is the reference population for the Environmental Justice analysis below (Section 3.4.6). Local employment is dominated by manufacturing jobs, with the service industry and agricultural-related occupations also being common. The median household income is reported as $51,688 and is approximately $10,675 less than the US average.

3.4.1 Zoning and Land Use

The project area is not located within the corporate boundary of Port Arthur. The project is located on Alligator Bayou at the confluence with Taylors Bayou and is within the DD7 jurisdiction. There is no zoning applicable to the project site. The land use of the project site is currently open space/public infrastructure (flood control levee).

3.4.2 Visual Resources

Visual resources (aesthetics) are not expected to be substantially affected by the Proposed Project. Post-construction, the new pump station will be identical and adjacent to the original pump station.

3.4.3 Noise

The project site is in a remote location more than 2 miles from any residential areas or other sensitive noise receptors. Existing noise in the vicinity of the project site includes the noise generated by the existing pump station and industrial facilities to the northeast of the site.

3.4.4 Public Services and Utilities

The project site is located in a relatively remote area with minimal public services.

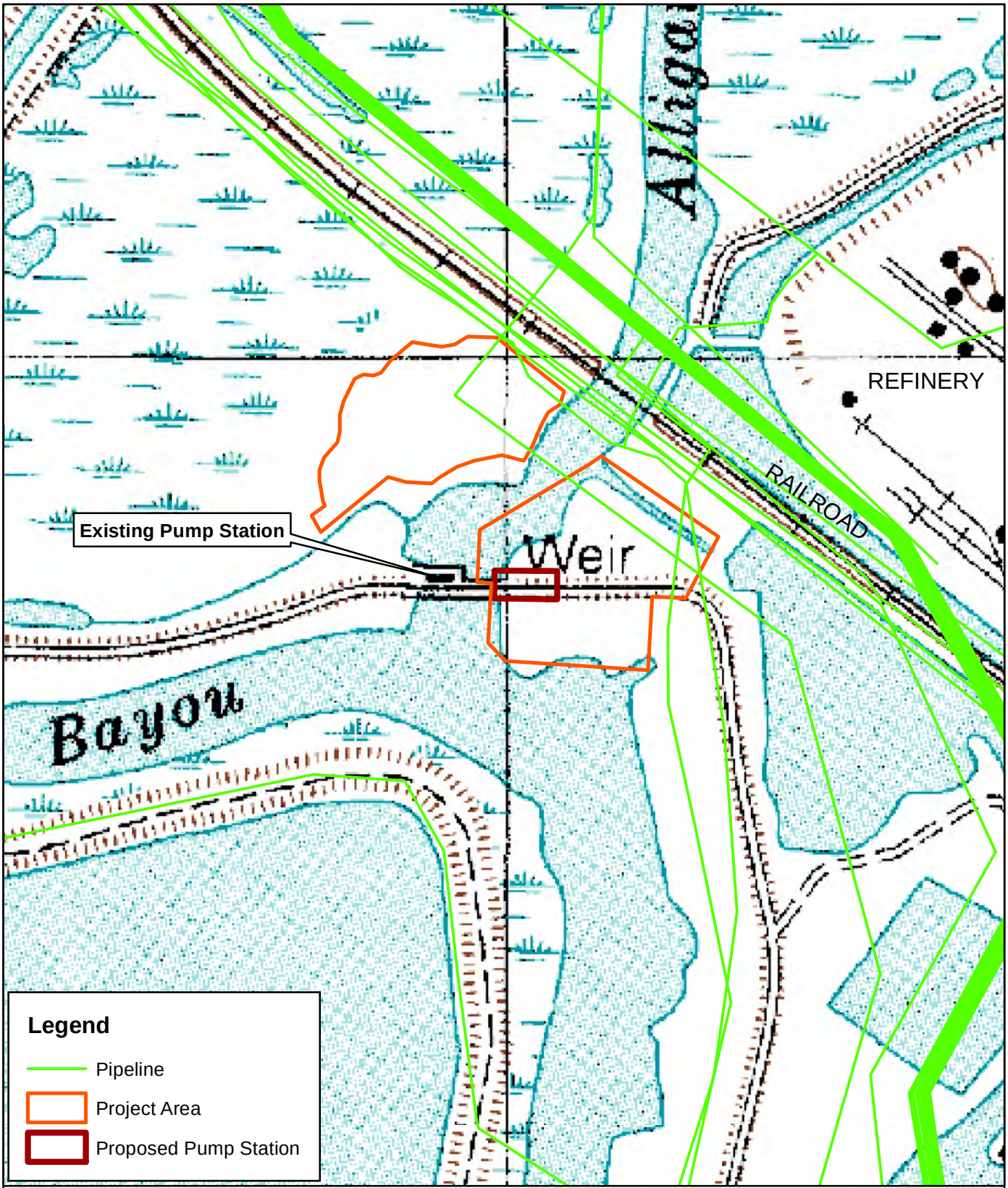
A review of the Railroad Commission of Texas (RCT) Well Location Database indicated that 25 pipelines are located within 0.5 miles of the project area. Table 3 describes the 23 pipelines that are currently in service. Figure 9 depicts the locations of the pipelines in proximity to the project area.

3.4.5 Traffic and Circulation

The Proposed Project is located in a remote area and would not interfere with major thoroughfares in Port Arthur. Access to the site will occur from Highway 82 and 57th Street.

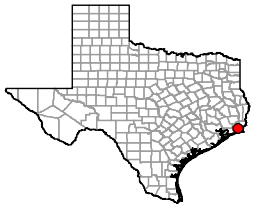
TABLE 3
IN-SERVICE PIPELINES WITHIN 0.5 MILES OF THE PROJECT AREA

Operator	Pipeline Diameter (inches)	Pipeline Product	No. of Pipelines
Air Products, LP	4.5	hydrogen gas	1
Buckeye Gulf Coast Pipelines, LP	6.63	natural gas liquids	1
Centana Intrastate Pipeline, LP	12.75	natural gas	1
Centana Intrastate Pipeline, LP	10.75	natural gas	2
Chevron Pipeline Company	8.63	EP mix/propane	2
Chevron Pipeline Company	10.75	ethylene	1
Enterprise Products Operating, LP	24	crude oil	1
Kinder Morgan Texas Pipeline, LP	16	natural gas	1
Praxair, Inc.	8.63	hydrogen gas	1
Premcor Pipeline Company	8.63	crude oil	2
Premcor Pipeline Company	10.75	crude oil	5
Premcor Pipeline Company	8.63	refined products	1
Premcor Pipeline Company	12.75	gasoline	1
Premcor Pipeline Company	12.75	fuel oil	1
Texas Gas Service Company	8.63	natural gas	1
Texas Petrochemicals, LP	8.63	crude butadiene	1



MAP SOURCE: USGS, 7.5' SERIES, PORT ARTHUR SOUTH TEXAS QUADRANGLE, 1993.

0 250 500
Feet



Horizon
Environmental Services, Inc.

FIGURE 9

OIL/GAS WELLS AND
PIPELINES LOCATION MAP
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

3.4.6 Environmental Justice (Executive Order 12898)

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," February 11, 1994, directs Federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse affects of Federal projects on the health of the environment of minority and low-income populations to the greatest extent practicable permitted by law. The Executive Order requires that minority and low-income populations not receive disproportionately high adverse human health or environmental impacts, and requires that representatives of any low-income populations not receive disproportionately high adverse human health or environmental impacts, and requires that representatives of any low-income or minority populations that could be affected by the Proposed Project be involved in the community participation and public involvement process.

Low income persons are defined as "a person whose household income is at or below the HHS poverty guidelines." The 2012 Department of Health and Human Services (HHS) guidelines indicate the poverty level for a family of four to be at or below an annual income level of $23,050. The 2009-2010 estimated median household income for the City of Port Arthur is $34,921; the City of Groves is $50,370; for the City of Port Neches is $55,682; and for the City of Nederland is $59,648; which are all well above the 2012 HHS poverty guideline.

The nearest residential areas to the Proposed Project site are more than 1.5 miles distant from the existing pump station. Construction equipment access will occur through a remote access point from Highway 82 and from Taylors Bayou. No residential structures are near the access route.

Within the benefit area, approximately 30% of census tracts exhibit 50% or greater low and moderate income populations. In general, these low to moderate income residential areas are located in lower areas that are subject to the most frequent flooding. The Proposed Project would significantly reduce flooding from 25-year and smaller storm events that would cause flooding in these low to moderate income population areas. Therefore, there is a direct benefit from the project for low to moderate income persons. However, benefits would apply to all economic and ethnic sectors of the benefit area.

3.4.7 Safety and Security

The pump station area is secured from public access. Construction equipment access will occur through a remote access point from Highway 82 and 57th Street. No residential structures are near the access point.

3.4.8 No Action Alternative

The No Action Alternative would result in the continued flooding potential for homes, structures, and roads in the project area. This alternative does not achieve the stated purpose of providing flood relief.

3.4.9 Proposed Project Alternative

The Proposed Project is not expected to significantly affect local employment or income, except for a temporary increase during construction. The project, however, would benefit the local economy by reducing flooding impacts on homes, structures, and infrastructure in the area.
The current land use of the project site (open space/public infrastructure) would not materially change due to the Proposed Project, but some vegetated open space would be converted to the new concrete structure for the new pump building. The new pump building would be very similar to the existing pump building but would result in an expansion of the pump station complex.

Following construction activities, there would be no significant noise-generating activities at the site. The only anticipated noises associated with the project would be due to the operation of heavy equipment during the construction phase. The closest sensitive noise receptors (residences) to the project site are approximately 2 miles away and would not be adversely affected by construction noise. The Proposed Project is not expected to impede the access of nearby residents to any public services or interfere with any existing pipelines. There are no anticipated long-term impediments to traffic due to construction or operation of the pumping station.

No minority or low income populations would be disproportionately affected due to construction of the Proposed Project. The benefits of the project from reduced flooding in the 28,083-acre benefit area would apply to all economic and ethnic sectors of the benefit area, including low-income residential areas, but may have greater potential benefits for low to moderate income populations. No project disturbances would occur in the internal drainage area where homes and other urban and industrial development is located. No significant safety or security issues are expected.

3.5 CULTURAL RESOURCES

The Area of Potential Effect (APE) for the project is determined to be the existing Hurricane Flood Protection Project levee. Since no physical disturbances would occur within the leveed area as a result of the project, it is not included in the APE for cultural resources. To determine the potential for impacts to significant cultural resources within the APE of the Proposed Project, Horizon conducted an initial archival review and consulted with the Texas Historical Commission (THC)/State Historic Preservation Officer (SHPO). The archival review and consultation were conducted in compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and the Antiquities Code of Texas (ACT).

Archival research conducted via the Internet at the THC's Texas Archeological Sites Atlas web site indicated no recorded archeological sites, historic structures, or cemeteries within a 0.6-mile (1-kilometer) radius of the proposed pump station improvements (THC, 2006). The Atlas did indicate that the area due south of the location of the pump station was previously surveyed in 1972 for the USACE with negative results.

The area containing the existing pump station consists of heavily impacted areas resulting from the initial construction of the pump station, levee, and road. In addition to the impacts from the pump station/levee construction, the soil within the APE of the proposed pump station improvements consists of fill material used to build up the area for previous construction. Overall, the impacts to the area from the initial construction of the existing pump station and levee are substantial enough to suggest little or no potential for significant cultural deposits. More importantly, the fact that the soil within the APE consists entirely of excavated materials also suggests a low potential for significant cultural deposits. The Hurricane Flood Protection Project levee is less 50 years old and as such is not potentially eligible for the National Register of Historic Places.

3.5.1 No Action Alternative

The No Action Alternative has no effect on cultural resources.

3.5.2 Proposed Project Alternative

Based on the fact that the area has previously been heavily disturbed and consists entirely of excavated deposits, the Proposed Project would have no effect on cultural resources. By letter dated 27 November 2006, the Texas SHPO concurred that no further research or field work was necessary and no resources were present (Appendix A.8).

4.0 CUMULATIVE IMPACTS

An assessment of cumulative impacts takes into consideration the consequences that past, present, and reasonable foreseeable future projects had, have, or will have on the natural and human environment. Every project must be considered on its own merits. Its impacts on the environment must be assessed in light of historical impacts, along with anticipated future activities in the area. Although a particular project may constitute a minor impact in itself, the cumulative impacts that result from a large number of such projects could cause a significant effect to the natural and human environment.

The impacts or expected impacts from this project include localized increased surface runoff, minor changes in hydrology in Alligator and Taylors Bayous, wetland loss, and temporary minor air-quality impacts. The overall impact that can be expected if the individual impacts are allowed to accumulate is loss of wetland function and value and increased erosion. Many of the historic impacts in the Taylors Bayou watershed occurred prior to the initiation of many environmental regulations. The project would provide for relief of 25-year event flooding in the 500-year floodplain within the Hurricane Flood Protection Project levee system. Development in Jefferson County has been slow to negligible in the prior decades, a trend

that does not appear to be changing. This project would not modify the base floodplain or support increased development. The project would reduce the hazards and risks associated with floods and minimize the impacts of floods on human safety, health, and welfare. The project should, however, lessen the economic burden felt by the existing residents through flood damage relief described previously. Based on the type of wetland being impacted, their low functional capacity relative to fish and wildlife and floodplain values and on balance, and the compensatory mitigation being offered, the project will result in minimal environmental impacts and minimal impacts on fish and wildlife values.

Several other projects in the project vicinity have resulted in wetland impacts, including modifications to or reconstruction of two salt-water barrier flood-gate structures upstream on Taylors Bayou, expansions at several local refineries, minor land development activities, and improvements or additions to transportive corridors (pipelines, transmission lines, roads). The permanent or temporary impacts from these activities have resulted in the loss or disturbance of several dozen acres of wetlands. No large-scale future projects have been identified in the immediate project area or the benefit area that would add substantially to cumulative impacts. When considering the overall impacts that will result from the project, in context with the overall impacts from similar past, present, and reasonably foreseeable future projects, their cumulative impacts are not considered to be significantly adverse. It is likely that future projects of any magnitude affecting wetlands or aquatic resources in the area will go through a comparable review process.

This project will provide enhanced protection for 153 repetitive-loss homes, as well as other structures, infrastructure, and roads in the area from future flood damage. The total avoided damages for these homes and roads are estimated at $64 million. The Proposed Project would utilize $16 million of public monies from various sources to provide enhanced flood relief for these flood-prone structures. The project would provide a positive economic benefit in terms of reduced liabilities.

The proposed construction of a new pump station would occur adjacent to the existing PS 16. This area has experienced significant modification in the past. No significant adverse impacts to aesthetic or environmental resources are expected. The Proposed Project would provide enhanced flood relief throughout the area. Benefits are expected for flood protection, local economics, and water quality.

5.0 PUBLIC PARTICIPATION

Copies of documentation from previous public coordination activities for the project are included in Appendix D. A Notice of Availability of the Draft Environmental Assessment produced by FEMA in 2008 was published in *The Beaumont Enterprise* and *The Port Arthur News* on 9 March 2008 requesting public comments (Appendix D). No comments were received.

An additional Public Notice advertising the application for a Department of the Army permit under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act was published by the USACE on 5 December 2008. Three comments were received, two from Texas state agencies and one from the Alabama-Coushatta Tribe of Texas. Responses to those comments are included in Appendix A.2.

As a result of project design changes, an amendment to the existing permit will be required. A Notice of Availability and Public Notice have been issued for proposed 404/10 permit amendment. For the Section 408 approval process, this EA will be released for public comment. Once the Section 408 USACE review is completed, if approval is given for construction of the Proposed Project and provided no other issues were identified, the Department of the Army permit amendment would be issued, and the project could proceed to construction.

6.0 MITIGATION, INCREMENTAL ANALYSIS, MONITORING, AND ADAPTIVE MANAGEMENT PLANS

Mitigation measures for construction of the Proposed Project would include restoration of tidal emergent marsh along the Taylors Bayou Diversion Channel, control of fugitive dust and particulates during construction, and application of best management practices to control storm water runoff under a Storm Water Pollution Prevention Plan.

Mitigation for the loss of 1.3 acres of wetlands and shallow open water as a result of construction of the Proposed Project has been evaluated using the Habitat Evaluation Procedure (HEP; Appendix I) and Interim Tidal Fringe Hydrogeomorphic Model (iHGM). Under the original Section 10/404 permit, the Applicant purchased 3 acres of forested wetlands and upland buffers adjacent to a 1955-acre private mitigation area upstream on Taylors Bayou. This, however, constituted out-of-kind mitigation for the impact, and precluded meaningful comparison using HEP models certified for Federal project evaluation. For the Section 408 project approval, HEP analysis was conducted and resulted in an in-kind mitigation proposal to restore 1.8 acres of tidal marsh consisting of smooth cordgrass (*Spartina alterniflora*) behind a recently constructed breakwater on the west shoreline of Taylors Bayou Diversion Channel near the project area. DD7 will retain the 3 acres of forested wetlands for future mitigation requirements.

Five alternative mitigation plans were considered using the Institute for Water Resources Planning Suite (IWR-Plan), as presented in Appendix E. Those mitigation plans included purchase of credits from a coastal marsh ecosystem mitigation bank, the proposed mitigation plan, the previously approved mitigation plan, a Nueces River estuary mitigation plan, and the no-action alternative. There are currently no mitigation banks that service the project area that have coastal herbaceous wetland credits, so this alternative was dropped from further consideration. The analysis of the other four alternatives using IWR-Plan resulted in two best-buy alternatives, the proposed plan and the no-action plan. However, the no-action alternative (no mitigation) is not acceptable because it does not achieve the stated goals of the proposed project and does not meet the guidelines in ER 1105-2-100.

The results of the analysis indicate that the proposed mitigation is the best option to compensate for loss of aquatic resources.

7.0 COORDINATION

Agency comment letters from previous coordination of this project for Department of the Army Permit No. SWG-2007-00850 are included in Appendix A. A summary of this previous coordination follows.

NRCS was asked to evaluate the proposed area as required by the FPPA (Appendix A.1). The NRCS concurred that the project was exempt from the FPPA on 4 May 2007. The NRCS does encourage the use of accepted erosion control methods during construction. Alligator Bayou, Taylors Bayou, and a small wetland area are the only "waters of the US" located within or adjacent to the Proposed Project area. Accepted erosion control methods will be used during the proposed construction activities.

TCEQ correspondence of 27 April 2007 and on 24 February 2011 concur that the project is consistent with the agency's environmental regulations or policies (Appendix A.3). GLO has been requested to determine whether the Proposed Project is within the Texas Coastal Management Program (CMP) boundary and subject to consistency review under the Texas CMP (Appendix A.4). A response addressing the originally Proposed Project was received 24 June 2008.

NMFS concurred on 1 May 2007 that the originally Proposed Project would not present an adverse impact to Essential Fish Habitat with regard to the Magnuson-Stevens Fishery Management and Conservation Act (Appendix A.6). SHPO concurrence can be found in Appendix A.8.

Public and agency coordination of the proposed permit amendment and this EA prepared for Section 408 approval will also be undertaken and documented in the Final EA.

8.0 REFERENCES

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APPENDIX A

AGENCY CONSULTATION

NOTE: The following agency correspondence in Appendices A.1 through A.9 included redundant maps and photographs, a single copy of which are provided in Appendix A.10 for reference. Some agency correspondence also included various data sets and other information specific to an agency's area of interest. Those data sets and information are not included herein for brevity, however, are on file with each agency as well at the USACE and can be provided upon request.

APPENDIX A.1

USDA NATURAL RESOURCES CONSERVATION SERVICE

Horizon™
Environmental Services, Inc.

24 April 2007

Mr. Ken McCain
Natural Resources Conservation Service
US Department of Agriculture
8330 College Street, Suite B
Beaumont, Texas 77707-2952

RE: Proposed Jefferson County Drainage District No. 7 Project:
Addition of Pumping Capacity to Alligator Bayou Pumping Station No. 16
Jefferson County, Texas
HJN 060108 EA

Dear Mr. McCain:

Jefferson County Drainage District No. 7 (DD7) is proposing improvements to its Alligator Bayou Pumping Station No. 16 (PS 16) in order to achieve relief of shallow flooding within the 24,083-acre drainage area flowing to PS 16. The proposed improvements will consist of the construction of a low-flow pump station on the bank of Alligator Bayou opposite PS 16. Horizon Environmental Services, Inc. (Horizon) has been contracted by DD7 to secure all applicable environmental clearances for the project.

The DD7-proposed project is located approximately 2 miles southwest of Port Arthur; more precisely, the proposed addition to PS 16 is located at north latitude 29.8626 and west longitude 93.9872 on Alligator Bayou. Alligator Bayou is now separated from Taylors Bayou by a hurricane protection levy and only communicates with Taylors Bayou via pumping. Taylors Bayou ultimately flows into the Sabine-Neches Canal (tidal portion) below Port Arthur. The canal flows south through Sabine Pass, where it enters the Gulf of Mexico.

Appendix 1 contains maps depicting the locations of the existing pump station and proposed pump station (Figure 1), NRCS-mapped soils within of the project area (Figure 2), and the project area on the FEMA floodplain map of the area (Figure 3). Note that the proposed pump station site is situated on the dividing line between the 500-year floodplain and the 100-year floodplain (the hurricane protection levee). On-site photographs are provided in Appendix 2.

The project area is located on Neel-Urban land complex soils (NuC) (Appendix 1, Figure 2) (NRCS, 2006a). The NuC soils consist of deep and very deep, somewhat poorly drained to well drained, very slowly permeable soils that have 2 to 5% slopes (NRCS, 2006b).

One of the main components of the DD7 system, PS 16 serves approximately 90,000 residents in the cities of Port Arthur, Port Neches, Groves, Nederland, and unincorporated areas of the county. The drainage area flowing to PS 16 is estimated to be 24,083 acres, which includes Main A, Main B, Main C, West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas contained within the hurricane protection levees for these communities. In turn, PS 16 pumps water out of the contained system into Taylors Bayou. However, more flow is actually generated within the main outfall system than PS 16 can remove in a peak flow situation or major storm event. The proposed additional pump station will add 1

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Certified WBE/DBE/HUB

million gallons per minute (gpm) of pumping capacity to the existing 2.6 million gpm capacity at PS 16. The proposed project will achieve relief of shallow flooding within the 24,083-acre DD7 drainage area by allowing PS 16 to pump water from the surrounding drainages within the contained drainage basin into Taylors Bayou more quickly, thereby reducing flooding incidents. The proposed improvements to PS 16 would not only maintain continuous low flow, but would provide backup capacity in the event that one or more of the existing pumps should become non-operational. This much-needed project will benefit the entire drainage area and has a cost/benefit ratio of 4.00. The proposed action is badly needed to reduce flooding of homes and roads in the area.

The project does not contain Important Farmland Soils and is exempt from the Farmland Protection Policy Act (FPPA). A completed Farmland Conversion Impact Rating form is attached in Appendix 3. Should you concur that the proposed project is exempt from the FPPA, please respond by letter or sign and date this letter below as your concurrence and return a signed copy. Your prompt attention to this matter would be greatly appreciated, as your signed concurrence letter is necessary to complete the application for a Flood Mitigation Assistance Program Grant with the Federal Emergency Management Agency.

Please call me should you have any questions concerning this project or if I can be of any further assistance.

Sincerely,
For Horizon Environmental Services, Inc.

James M. Wiersema

James M. Wiersema
Vice President

Wayne Smith 5/14/07
Concurrence / Date

APPENDIX A.2

US ARMY CORPS OF ENGINEERS

Public Notice

U.S. Army Corps Of Engineers
Galveston District

Permit Application No:	SWG-2007-00850 Amendment
Date Issued:	14 August 2012
Comments Due:	14 September 2012

U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT
AND
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PURPOSE OF PUBLIC NOTICE: To inform you of a proposal for work in which you might be interested. It is also to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest. The U.S. Army Corps of Engineers (Corps) is not the entity proposing or performing the proposed work, nor has the Corps taken a position, in favor or against the proposed work.

AUTHORITY: This application will be reviewed pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act.

APPLICANT:
Jefferson County Drainage District No. 7
P.O. Box 3244
Port Arthur, Texas 77643-3244
Telephone: 409-985-4369
POC: Mr. Phil Kelly

AGENT:
Horizon Environmental Services, Inc.
1507 South Interstate Highway 35
Austin, Texas 78741-2502
Telephone: 512-328-2430
POC: Mr. Lee Sherrod

LOCATION: The proposed project is located on the east bank of Alligator Bayou on the Port Arthur Hurricane Protection Levee, opposite the existing Alligator Bayou Pump Station No. 16 (PS 16), at the confluence of Alligator Bayou and Taylors Bayou, approximately 2 miles southwest of Port Arthur, in Jefferson County, Texas. Alligator Bayou is separated from Taylors Bayou by the hurricane protection levee and only communicates with Taylors Bayou via pumping. The hurricane protection levee is the dividing line between the 500-year floodplain and the 100-year floodplain. Taylors Bayou ultimately flows into the Sabine-Neches Canal (tidal portion) below Port Arthur. The canal flows south through Sabine Pass, where it enters the Gulf of Mexico. The proposed project can be located on the U.S.G.S. quadrangle map entitled: Port Arthur South, Texas. LATITUDE & LONGITUDE (NAD 83): Latitude: 29.8626 North; Longitude: -93.9872 West.

The compensatory mitigation site is located shoreward of a recently constructed rock breakwater along the west shoreline of the Taylors Bayou Diversion Channel, approximately 2 miles southwest of the project site, in Jefferson County, Texas. LATITUDE & LONGITUDE (NAD 83), Midpoint: Latitude: 29.8425 North; Longitude: -94.0124 West.

PROJECT DESCRIPTION: Department of the Army Permit SWG-2007-00850, issued to the applicant on 12 February 2010, authorized permanent excavation of 0.31 acres of open water (Taylors Bayou), permanent excavation of 0.21 acres of adjacent herbaceous wetlands (Taylors Bayou), and permanent fill of 0.037 acres of open water (Alligator Bayou), during construction of a new low-flow pump station. Approximately 970 linear feet of temporary steel sheet pile cofferdam was authorized, and the permit required sediment analyses of material to be excavated (58,500 cubic yards) in accordance with Texas Commission on Environmental Quality (TCEQ) criteria prior to construction, placement of contaminated material in a confined upland site approved for the contaminant of concern, and placement of uncontaminated material on uplands of hurricane protection levees near the project site, stabilized by seeding with grass. Compensatory mitigation consisted of enhancement and permanent preservation of a 3-acre forested upland/wetland complex containing 1.75 acres of forested wetlands and 1.25 acres of uplands; the area would be placed in a conservation easement held by a qualified third-party 501(c) (3) land trust. The authorized project has not been constructed, and the applicant proposes a modified project in which the new pump station would be constructed approximately 200 feet east of its originally-permitted location, with modified dimensions of some project features, modified impacts to waters of the U.S., and modified compensatory mitigation. The need for the adjusted project location was brought about by a 33 USC Section 408 review by the Corps, and to decrease steepness of the access road so that heavy machinery can travel from the existing pump station to the proposed pump station.

For the modified project, approximately 1,400 linear feet of temporary steel sheet pile cofferdam would initially be constructed around the construction site to allow excavation and construction in the dry. Construction of the cofferdam would result in 0.82 acre of temporary impact to waters of the U.S. (0.07 acre of estuarine emergent wetland and 0.75 acre of open water). The areas to be excavated consist mostly of man-made levee and access road with small herbaceous wetlands present at the lower ends of the levee toe slope on both ends of the proposed excavation area. The applicant conducted sediment sampling in the portions of Alligator and Taylors Bayous that would be excavated for construction of the pump station expansion and determined that the excavated materials could be disposed of on nearby levees utilizing appropriate best management practices for erosion and sedimentation control as specified in the Sampling Protocol. The new pump station, concrete wing walls, concrete slab, access road, and pumping machinery would then be constructed within the newly excavated area, with a bottom elevation at approximately 4.5 feet below sea level. Excavation and fill activities would permanently impact approximately 1.30 acre of waters of the U.S. (0.76 acre of herbaceous/shrub wetlands and 0.54 acre of open water habitat). Total excavation is estimated at 127,000 cubic yards (cy): 12,650 cy from Taylors Bayou (open water and adjacent wetlands), 7,454 cy from Alligator Bayou (open water and adjacent wetlands), and 106,896 cy from existing upland levee.

Approximately 6,000 cy would be reused for fill in the construction of the new pump station, and 121,000 cy would be stockpiled in two proposed excavated material placement areas for future use in levee repairs. These two placement areas would be permanently stabilized with concrete barriers and silt fence, and revegetated to prevent erosion into alligator Bayou or off-site.

Existing PS 16 is one of the main components of the Jefferson County Drainage District No. 7 system, serving approximately 90,000 residents in the cities of Port Arthur, Port Neches, Groves, Nederland, and unincorporated areas of the county. The drainage area flowing to PS 16 is estimated to be 37.6 square miles (24,083 acres), which includes Main A, Main B, Main C, West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas contained within the hurricane protection levees for these communities. In turn, PS 16 pumps water out of the contained system into Taylors Bayou. However, more flow is actually generated within the main outfall system than PS 16 can remove in a peak flow situation or major storm event. The applicant proposes to add the new low-flow pump station to the existing PS16 in order to relieve shallow flooding within the drainage area, and thereby prevent structure and road flooding. The project would allow PS 16 to pump water from surrounding drainages within the contained basin into Taylors Bayou more quickly, adding 1 million gallons per minute (gpm) of pumping capacity to the existing 2.6 million gpm capacity at PS 16, and from a lower elevation. The proposed improvements to PS 16 would maintain continuous low flow, reduce flooding incidents, and provide backup capacity in the event that one or more of the existing pumps should become non-operational.

AVOIDANCE AND MINIMIZATION: The applicant stated that they have avoided and minimized the environmental impacts by reducing the area to be excavated to the smallest size possible. Adjustments to the footprints of the cofferdams and staging areas have been made to minimize impacts to coastal waters and coastal wetlands. The project was designed so that it will not interfere with navigation.

MITIGATION: The applicant proposes to mitigate for the proposed aquatic resource impacts by planting smooth cordgrass (*Spartina alterniflora*), saltmarsh bulrush (*Scirpus robustus*), bulltongue (*Sagittaria lancifolia*), black rush (*Juncus roemerianus*), and giant bulrush (*Schenoplectis californicus*) behind a recently constructed rock breakwater along the west shoreline of the Taylors Bayou Diversion Channel. The area behind the breakwater averages 6 feet wide and is about 13,000 linear feet long (approximately 1.8 acre). The proposed mitigation area is owned by Jefferson County Drainage District No. 6, who constructed the rock breakwater to assist with abatement of erosion of existing levees along that shoreline that was threatening saltwater intrusion into the Texas Parks and Wildlife Department's J. D. Murphree Wildlife Management Area. The area behind the breakwater is currently sparsely vegetated (approximately 5 percent areal cover). Dense vegetation along this shoreline is desired by the Texas Parks and Wildlife Department to further stabilize the eroded area and to restore habitat conditions along an otherwise barren shoreline. The applicant would plant on 3-foot centers within the 1.8-acre area behind the breakwater in the spring. It is expected that the planted area would achieve at least 50 percent areal coverage within the first growing season and 100 percent areal coverage by the third through fifth growing seasons.

CURRENT SITE CONDITIONS: The project site is a constructed hurricane protection levee separating Alligator Bayou from Taylors Bayou. Dominant plant species on the levee include bermudagrass (*Cynodon dactylon*), common reed (*Phragmites australis*), St. Augustine grass (*Stenotaphrum secundatum*), bedstraw (*Gallium uncinulatum*), curly dock (*Rumex crispus*), and dewberry (*Rubus trivialis*) with scattered sugarberry (*Celtis laevigata*) and baccharis (*Baccharis sp.*). A fringe of wetland vegetation is present along portions of Alligator Bayou and Taylors Bayou that includes spikerush (*Eleocharis sp.*), primrose willow (*Ludwigia decurrens*), common reed, sedge (*Carex sp.*), and marshay cordgrass (*Spartina patens*).

NOTES: This public notice is being issued based on information furnished by the applicant. This project information has not been verified by the Corps. The applicant's plans are enclosed in 8 sheets and the proposed compensatory mitigation plan, Attachment 1, in 12 sheets.

A preliminary review of this application indicates that an Environmental Impact Statement (EIS) is not required. Since permit assessment is a continuing process, this preliminary determination of EIS requirement will be changed if data or information brought forth in the coordination process is of a significant nature.

Our evaluation will also follow the guidelines published by the U.S. Environmental Protection Agency pursuant to Section 404 (b)(1) of the Clean Water Act (CWA).

OTHER AGENCY AUTHORIZATIONS:

Consistency with the State of Texas Coastal Management Plan is required. The applicant has stated that the proposed activity complies with Texas' approved Coastal Management Program goals and policies and will be conducted in a manner consistent with said program.

This project incorporates the requirements necessary to comply with the TCEQ's Tier I project criteria. Tier I projects are those which result in a direct impact of three acres or less of waters of the state or 1,500 linear feet of streams (or a combination of the two is below the threshold) for which the applicant has incorporated best management practices and other provisions designed to safeguard water quality. The Corps has received a completed checklist and signed statement fulfilling Tier I criteria for the project. Accordingly, a request for 401 certification is not necessary and there will be no additional TCEQ review.

The proposed project will require Section 408 authorization from the Corps for modification of a Federal structure, the Port Arthur Hurricane Protection Levee.

NATIONAL REGISTER OF HISTORIC PLACES: The staff archaeologist has reviewed the latest published version of the National Register of Historic Places, lists of properties determined eligible, and other sources of information. The following is current knowledge of the presence or absence of historic properties and the effects of the undertaking upon these properties:

> The project has no potential to cause effects and coordination with the State Historic Preservation Office is not required.

THREATENED AND ENDANGERED SPECIES: Preliminary indications are that no known threatened and/or endangered species or their critical habitat will be affected by the proposed work.

ESSENTIAL FISH HABITAT: This notice initiates the Essential Fish Habitat consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. Our initial determination is that the proposed action would not have a substantial adverse impact on Essential Fish Habitat or Federally-managed fisheries in the Gulf of Mexico. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

PUBLIC INTEREST REVIEW FACTORS: This application will be reviewed in accordance with 33 CFR 320-332, the Regulatory Programs of the Corps, and other pertinent laws, regulations and executive orders. The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the proposal, will be considered: among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs and, in general, the needs and welfare of the people.

SOLICITATION OF COMMENTS: The Corps is soliciting comments from the public, Federal, State, and local agencies and officials, Indian tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Impact Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

This public notice is being distributed to all known interested persons in order to assist in developing facts upon which a decision by the Corps may be based. For accuracy and completeness of the record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition.

PUBLIC HEARING: The purpose of a public hearing is to solicit additional information to assist in the evaluation of the proposed project. Prior to the close of the comment period, any person may make a written request for a public hearing, setting forth the particular reasons for the request. The District Engineer will determine if the reasons identified for holding a public hearing are sufficient to warrant that a public hearing be held. If a public hearing is warranted, all known interested persons will be notified of the time, date, and location.

CLOSE OF COMMENT PERIOD: All comments pertaining to this public notice must reach this office on or before **14 September 2012**. Extensions of the comment period may be granted for valid reasons provided a written request is received by the limiting date. **If no comments are received by that date, it will be considered that there are no objections**. Comments and requests for additional information should be submitted to:

Denise Sloan
Regulatory Branch, CESWG-PE-RB
U.S. Army Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229
409-766-3962 Phone
409-766-6301 Fax
swg_public_notice@usace.army.mil

DISTRICT ENGINEER
GALVESTON DISTRICT
CORPS OF ENGINEERS

APPENDIX A.3

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Horizon™
Environmental Services, Inc.

24 April 2007

Mr. Mike Howard
Texas Commission on Environmental Quality
P.O. Box 13087
Austin, Texas 78711-3087

RE: Proposed Jefferson County Drainage District No. 7 Project:
Addition of Pumping Capacity to Alligator Bayou Pumping Station No. 16
Jefferson County, Texas
HJN 060108 EA

Dear Mr. Howard:

Jefferson County Drainage District No. 7 (DD7) is proposing improvements to its Alligator Bayou Pumping Station No. 16 (PS 16) in order to achieve relief of shallow flooding within the 24,083-acre drainage area flowing to PS 16. The proposed improvements will consist of the construction of a low-flow pump station on the bank of Alligator Bayou opposite PS 16. Horizon Environmental Services, Inc. (Horizon) has been contracted by DD7 to secure all applicable environmental clearances for the project.

The DD7-proposed project is located approximately 2 miles southwest of Port Arthur; more precisely, the proposed addition to PS 16 is located at north latitude 29.8626 and west longitude 93.9872 on Alligator Bayou. Alligator Bayou is now separated from Taylors Bayou by a hurricane protection levy and only communicates with Taylors Bayou via pumping. Taylors Bayou ultimately flows into the Sabine-Neches Canal (tidal portion) below Port Arthur. The canal flows south through Sabine Pass, where it enters the Gulf of Mexico.

Appendix 1 contains maps depicting the locations of the existing pump station and proposed pump station (Figure 1), a color infrared aerial view of the project area (Figure 2), and the project area on the FEMA floodplain map of the area (Figure 3). Note that the proposed pump station site is situated on the dividing line between the 500-year floodplain and the 100-year floodplain (the hurricane protection levee). On-site photographs are provided in Appendix 2.

One of the main components of the DD7 system, PS 16 serves approximately 90,000 residents in the cities of Port Arthur, Port Neches, Groves, Nederland, and unincorporated areas of the county. The drainage area flowing to PS 16 is estimated to be 24,083 acres, which includes Main A, Main B, Main C, West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas contained within the hurricane protection levees for these communities. In turn, PS 16 pumps water out of the contained system into Taylors Bayou. However, more flow is actually generated within the main outfall system than PS 16 can remove in a peak flow situation or major storm event. The proposed additional pump station will add 1 million gallons per minute (gpm) of pumping capacity to the existing 2.6 million gpm capacity at PS 16. The proposed project will achieve relief of shallow flooding within the 24,083-acre DD7 drainage area by allowing PS 16 to pump water from the surrounding drainages within the contained drainage basin into Taylors Bayou more quickly, thereby reducing flooding incidents.

CORPORATE HEADQUARTERS
1507 South IH 35 ★ Austin, Texas 78741 ★ 512.328.2430 ★ Fax 512.328.1804 ★ www.horizon-esi.com
Certified WBE/DBE/HUB

The proposed improvements to PS 16 would not only maintain continuous low flow, but would provide backup capacity in the event that one or more of the existing pumps should become non-operational.

This much-needed project will benefit the entire drainage area and has a cost/benefit ratio of 4.00. The proposed action is badly needed to reduce flooding of homes and roads in the area. All work would be performed in conformance with TPDES construction stormwater control guidelines using recommended BMPs during construction.

Please review the attached figures and information concerning the proposed project to determine if the project is consistent with your agency's environmental regulations or policies. Please respond by letter or sign and date this letter below as your concurrence and return a signed copy. Your prompt attention to this matter would be greatly appreciated, as your signed concurrence letter is necessary to complete the application for a Flood Mitigation Assistance Program Grant with the Federal Emergency Management Agency.

Please call me should you have any questions concerning this project or if I can be of any further assistance.

Sincerely,
For Horizon Environmental Services, Inc.

James M. Wiersema
Vice President

Concurrence / Date

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 27, 2007

Mr. James M. Wiersema
Vice President
Horizon Environmental Services, Inc.
1507 South IH 35
Austin, Texas 78741

Re: Proposed Jefferson County Drainage District No. 7 Project:
Addition of Pumping Capacity to Alligator Bayou Pumping Station No. 16
Jefferson County, Texas
HJN 060108 EA

Dear Mr. Wiersema:

This is in response to your letter of April 24, 2007, concerning the referenced project. It has been determined from a review of the information you provided that an Application for Approval of Reclamation Project need not be filed for this project.

Our findings indicate that as a participant in the National Flood Insurance Program (NFIP), Jefferson County has approval authority for projects affecting floodplains, within the County, per Section §16.236 of the Texas Water Code.

Thank you for bringing this matter to our attention.

Sincerely,

Mike Howard, CFM
NFIP State Coordinator

Horizon™
Environmental Services, Inc.

15 February 2011

Ms. Tangela Nieman
Intergovernmental Relations Division
Texas Commission on Environmental Quality
12100 Park 35 Circle
Austin, Texas 78753

RE: Proposed Jefferson County Drainage District No. 7 Project:
Alligator Bayou Pump Station No. 16 Expansion
Port Arthur, Jefferson County, Texas
HJN 060108 EA

Dear Ms. Nieman:

Jefferson County Drainage District No. 7 (DD7) is proposing improvements to its Alligator Bayou Pumping Station No. 16 (PS 16) in Port Arthur, Texas in order to achieve relief of shallow flooding within the 24,083-acre drainage area flowing to PS 16. The proposed improvements will consist of the construction of an additional low-flow pump station on the bank of Alligator Bayou opposite PS 16. This project has previously been reviewed by FEMA through a NEPA Environmental Assessment process with the issuance of a Finding of No Significant Impact (FONSI) and has additionally received a U.S. Army Corps of Engineers (USACE) Section 10/404 individual permit for placement of fill and structures in waters of the US. The project is now being additionally reviewed by the USACE under 33 USC 408 since it will modify a federally maintained USACE project (Port Arthur Hurricane Levee). This additional review mandates NEPA compliance and agency consultations. This consultation letter is provided to your office to elicit your comments on the proposed project as it pertains to resources under the purview of your agency. More specifically, we are requesting your review and comments regarding effects to air quality and conformance with the Clean Air Act.

The DD7-proposed project is located approximately 2 miles southwest of Port Arthur; more precisely, the proposed addition to PS 16 is located at north latitude 29.8626 and west longitude 93.9872 at the confluence of Alligator Bayou and Taylors Bayou. Alligator Bayou is now separated from Taylors Bayou by a hurricane protection levy and only communicates with Taylors Bayou via pumping. Taylors Bayou ultimately flows into the Sabine-Neches Canal (tidal portion) below Port Arthur. The canal flows south through Sabine Pass, where it enters the Gulf of Mexico.

Appendix 1 contains maps depicting the locations of the existing pump station and proposed pump station (Figure 1) and a color infrared aerial view of the project area (Figure 2). On-site photographs are provided in Appendix 2.

One of the main components of the DD7 drainage system, PS 16 serves approximately 90,000 residents in the cities of Port Arthur, Port Neches, Groves, Nederland, and unincorporated areas of the county. The drainage area flowing to PS 16 is estimated to be 24,083 acres, which includes Main A, Main B, Main C, West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas contained within the hurricane protection levees for these

communities. In turn, PS 16 pumps water out of the contained system behind the hurricane levee into Taylors Bayou. However, more flow is actually generated within the main outfall system than PS 16 can remove in a peak flow situation or major storm event. The proposed additional pump station will add 1 million gallons per minute (gpm) of pumping capacity to the existing 2.6 million gpm capacity at PS 16. The proposed project will achieve relief of shallow flooding within the 24,083-acre DD7 drainage area by allowing PS 16 to pump water from the surrounding drainages within the contained drainage basin into Taylors Bayou more quickly, thereby reducing flooding incidents. The proposed improvements to PS 16 would not only maintain continuous low flow, but would provide backup capacity in the event that one or more of the existing pumps should become non-operational.

The proposed action is badly needed to reduce flooding of homes and roads in the area. All work would be performed in conformance with TPDES construction stormwater control guidelines using recommended BMPs during construction.

Minor and temporary diesel emissions and fugitive dust emissions from equipment during construction are possible. The new pump station will utilize 6 diesel engines and 2 backup diesel generators. The engines will be compliant with EPA Tier II criteria since the production date of the engines was before the EPA changed to Tier III (see engine specifications in Attachment 3). The normal run times for the new diesel engines should be about one pump running 30 minutes-60 minutes per week for “no rainfall event” flows. Run times during storm events would be highly variable depending on rainfall, but would be temporary and occasional.

Please review the attached figures and information concerning the proposed project to determine if the project is consistent with your agency’s environmental regulations or policies. Please respond by letter at your earliest convenience. Your prompt attention to this matter would be greatly appreciated, as your correspondence is necessary to fulfill the NEPA requirements of 33 USC 408 review by the USACE.

Please call me should you have any questions concerning this project or if I can be of any further assistance.

Sincerely,
For Horizon Environmental Services, Inc.

C. Lee Sherrod
Vice President

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

February 24, 2011

Mr. Lee Sherrod
Horizon Environmental Services, Inc.
1507 South IH 35
Austin, TXS 78741

Re: TCEQ Grant and Texas Review and Comment System (TRACS) #2011-087, City of Port Arthur, Jefferson County - Proposed Jefferson County Drainage District No. 7 Project: Alligator Bayou Pump Station No. 16 Expansion

Dear Mr. Sherrod:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above-referenced project and offers following comments:

A review of the project for General Conformity impact in accordance with 40 CFR Part 93 and Title 30, Texas Administrative Code § 101.30 indicates that the proposed project is located in Jefferson County, which is currently classified as a maintenance ozone area. Therefore, General Conformity rules apply.

The two criteria pollutants of concern as precursors to ozone formation are volatile organic compounds (VOCs) and nitrogen oxides (NO_x). An increase of 100 tons per year for VOCs or NO_x, resulting from the proposed project, could trigger general conformity analysis. However, the emissions from the proposed project are expected to be well below the 100 tons per year significance level. Therefore, a General Conformity analysis will not be required.

Although any demolition, construction, rehabilitation or repair project will produce dust and particulate emissions, these actions should pose no significant impact upon air quality standards. Any minimal dust and particulate emissions should be easily controlled by the construction contractors using standard dust mitigation techniques.

We do not anticipate significant long term environmental impacts from this project as long as construction and waste disposal activities are completed in accordance with applicable local, state and federal statutes and regulations. We agree with a finding of no significant impact and have no objection to the release of funds for this project. We recommend that best management practices to control runoff from construction sites be utilized to prevent impact to surface and groundwater.

Thank you for the opportunity to review this project. If you have any questions, please contact Ms. Tangela Niemann at (512) 239-3786 or tangela.niemann@tceq.texas.gov.

Sincerely,

Jim Harrison, Director
Intergovernmental Relations Division

Horizon™
Environmental Services, Inc.

31 March 2010

Mr. Philip Kelley
General Manager
Jefferson County Drainage District No. 7
P.O. Box 3244
4401 Ninth Ave.
Port Arthur, TX 77642

Re: Alligator Bayou Pump Station Expansion
Sediment Sampling Results
HJN 060108-WQ

Dear Phil:

Per the condition of the USACE Permit (SWG-2007-00850), the TCEQ 401 Water Quality Certification, and the agreed Alligator Bayou Pump Station Sediment Sampling Protocol (attached), we have conducted sediment sampling in the portions of Alligator and Taylors Bayous that will be dredged for construction of the pump station expansion. On March 11, 2010, we took 3 samples of sediments from each water body as shown on Figure 1 attached. Samples were collected as a composite of sediment from the surface to a reasonable depth of penetration by a hand-held probe (2-4 feet). The samples were immediately placed on ice and transported to the laboratory in Austin for processing. Per the agreed Sampling Protocol, samples were analyzed for RCRA metals, volatile organic compounds (VOC), semi-volatile organic compounds (Semi-VOC), and herbicide/pesticide screen.

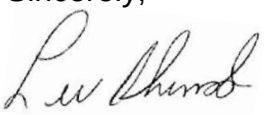
The sampling results are summarized in Table 1. The actual laboratory report is provided in Attachment A. All samples had detectable concentrations of RCRA metals, namely arsenic, barium, chromium, lead, and mercury. The Alligator Bayou samples also had detectable concentrations of 4,4'-DDT. None of these are particularly surprising since the region has been in agricultural use for the past century and these are all historically common constituents of agricultural chemicals that can be persistent in soils and sediments. All testing results for VOCs, Semi-VOCs, and all other herbicides/pesticides were below quantification limits.

To determine the proper disposal location and procedures for dredged materials, the agreed Sampling Protocol specified that the sampling results would be compared to the most recent Tier I Texas Risk Reduction Program (TRRP) Protective Concentration Limits (PCL) for residential soils. Table 1 also lists the 2009 TRRP PCL concentrations for the detected contaminants for comparison. In all cases, the detected concentrations were well below the PCLs for every contaminant. In accordance with the agreed Sampling Protocol, the dredged materials from the pump station construction can be

disposed of on the nearby levee tops utilizing appropriate BMPs for erosion and sedimentation control as specified in the Sampling Protocol.

Please call with any questions.

Sincerely,



C. Lee Sherrod
Vice President

c: Allen Sims
Susannah Reilly, TCEQ
Denise Sloan, USACE
Kenny Jaynes, USACE

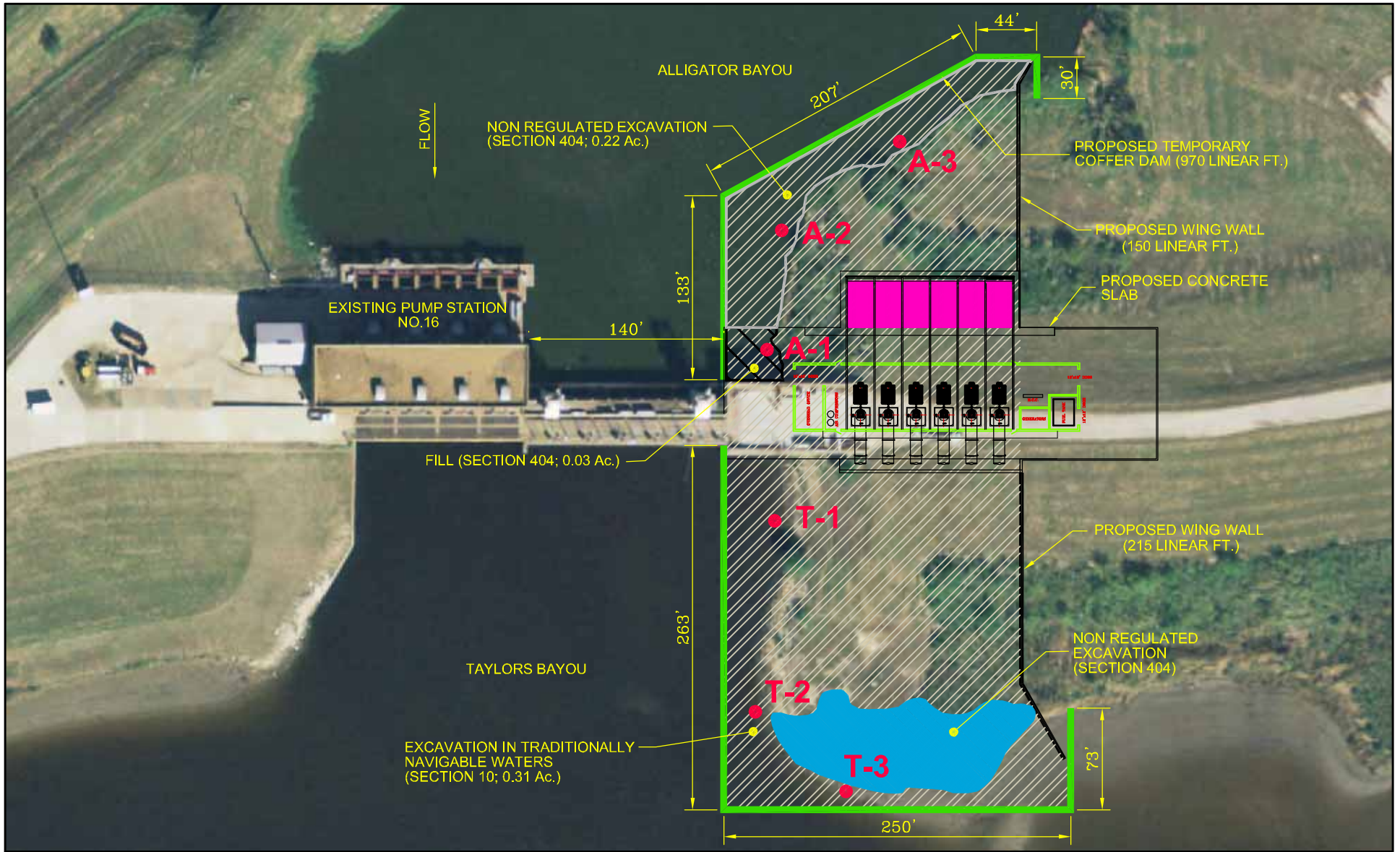
Table 1: Alligator Bayou Sediment Sampling Results

Parameter	Result	Units	2009 TRRP–PCL (Res Soil)[1]
Station T-1			
Arsenic	3.73	mg/Kg	24
Barium	105	mg/Kg	8000
Chromium	18.1	mg/Kg	30000
Lead	49.2	mg/Kg	500
Mercury	0.0318	mg/Kg	8.3
All Other Parameters	BQL		
Station T-2			
Arsenic	9.82	mg/Kg	24
Barium	52.8	mg/Kg	8000
Chromium	19.5	mg/Kg	30000
Lead	19.6	mg/Kg	500
All Other Parameters	BQL		
Station T-3			
Arsenic	14.5	mg/Kg	24
Barium	71.5	mg/Kg	8000
Chromium	21.1	mg/Kg	30000
Lead	16.6	mg/Kg	500
All Other Parameters	BQL		
Station A-1			
Arsenic	3.47	mg/Kg	24
Barium	132	mg/Kg	8000
Chromium	39.4	mg/Kg	30000
Lead	92.1	mg/Kg	500
Mercury	0.0482	mg/Kg	8.3
4,4'-DDT	15.2	µg/Kg	5.4 E+03
All Other Parameters	BQL		
Station A-2			
Arsenic	3.31	mg/Kg	24
Barium	108	mg/Kg	8000
Chromium	58	mg/Kg	30000
Lead	92.8	mg/Kg	500
Mercury	0.0508	mg/Kg	8.3
4,4'-DDT	16.2	µg/Kg	5.4 E+03
All Other Parameters	BQL		
Station A-3			
Arsenic	2.79	mg/Kg	24
Barium	106	mg/Kg	8000
Chromium	37.5	mg/Kg	30000
Lead	47	mg/Kg	500
Mercury	0.0354	mg/Kg	8.3
4,4'-DDT	31.8	µg/Kg	5.4 E+03
All Other Parameters	BQL		

BQL – Below Quantification Limits
mg/kg - Milligrams per kilogram
µg/kg – Micrograms per kilogram
[1] TRRP-PCL - 2009 Texas Risk Reduction Program Protective Concentration Limits for Residential Soils

"Do Not Scale This Drawing"

060108A17WQ_Sampling.dwg | JEA | 3/12/10



MAP SOURCE:

1. PROVIDED BY CARROLL & BLACKMAN, INC. (2008)
2. 2006 AERIAL: JEFFERSON COUNTY DRAINAGE DISTRICT (2008)

Horizon Environmental Services, Inc.

0 50 100
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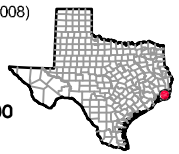

LEGEND

- LIMITS OF EXCAVATION
- WETLAND (0.21 Ac.)
- CONCRETE STRUCTURES (0.39 Ac - 950 Cu.Yds.)
- PROPOSED FILL IN WATERS OF THE U.S. (1600 SQ.FT.)
- SAMPLE LOCATION

FIGURE 1

SEDIMENT SAMPLING LOCATIONS
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

AGREED SEDIMENT SAMPLING PROTOCOL
BETWEEN APPLICANT AND THE TCEQ
ALLIGATOR BAYOU PUMP STATION
SWG-2007-00850

The Applicant and the TCEQ have agreed to this sediment sampling protocol and implementation of BMPs for non-contaminated dredged materials disposal.

The lower segment of Alligator Bayou (Segment 0702A) is designated as impaired with sediment toxicity (2008 Texas 303(d) List). In a previous study of sediment and water chemistry of Alligator Bayou (Parsons, 2003), the following parameters were determined to exceed lowest screening values and could represent concern for toxic effects on aquatic life.

Metals

Arsenic
Barium
Cadmium
Chromium
Copper
Lead
Nickel
Zinc
Mercury

Semi-Volitiles

2-Methylnaphthalene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(g,h,i)perylene
Bis(2-ethylhexyl)phthalate
Chrysene
Flouranthene
Flourene
Phenanthrene
Pyrene

Pesticides

4,4'-DDE

Prior to dredging and disposal of sediments for the proposed pump station expansion, sediment samples will be collected for analysis to include the above parameters from Alligator Bayou and from Taylors Bayou within the footprint of the proposed pump station. Three composite grab samples will be collected with a core sampling devise to a depth of 4 feet below sediment

surface from each water body within the footprint of the proposed pump station. Each sample will be composited from the 4 ft column. The samples will be immediately taken for laboratory analysis. Samples will be analyzed for RCRA metals, VOCs, Semi-VOCs, and herbicide/pesticide screen, including the above parameters previously determined to be present in Alligator Bayou sediments.

If contaminants in sediments do not exceed TRRP Tier 1 PCL levels for residential soils, dredged materials will be placed on the adjacent hurricane levees using appropriate BMPs to control runoff and sedimentation. The typical method of adding wet dredged materials to the top of existing levees involves the initial excavation of a trench on the top of the levee, then placement of the wet materials in the trench. Little or no runoff results from this method. Silt fence or hay bales may also be placed along the top edges of the levee to control any runoff that might occur during precipitation events before revegetation is complete. Dredged materials will be revegetated for permanent stabilization.

If dredged materials are determined in accordance with the sampling protocols to contain contaminants that exceed TRRP Tier 1 PCL levels for residential soils, those dredged materials will either be remediated to acceptable TRRP levels and disposed of in nearby dredged material disposal cells operated by the Sabine Neches Navigation District or will be taken to a State-permitted, land-based hazardous materials disposal site based on contaminant classification in accordance with 30 TAC 335 Subchapter R 335.501-508.

References:

Parsons. 2003. *Assessment of the Presence and Causes of Ambient Water Toxicity in Alligator Bayou, Segment 0702A.* Prepared for the TMDL Program, Texas Commission on Environmental Quality.

APPENDIX A.4

TEXAS GENERAL LAND OFFICE

Horizon™
Environmental Services, Inc.

24 April 2007

Tammy S. Brooks
Program Specialist, Coastal Coordination
Texas General Land Office
P. O. Box 12873
Austin, Texas 78711-2873

RE: Proposed Jefferson County Drainage District No. 7 Project:
Addition of Pumping Capacity to Alligator Bayou Pumping Station No. 16
Jefferson County, Texas
HJN 060108 EA

Dear Ms. Brooks:

Jefferson County Drainage District No. 7 (DD7) is proposing improvements to its Alligator Bayou Pumping Station No. 16 (PS 16) in order to achieve relief of shallow flooding within the 24,083-acre drainage area flowing to PS 16. The proposed improvements will consist of the construction of a low-flow pump station on the bank of Alligator Bayou opposite PS 16. Horizon Environmental Services, Inc. (Horizon) has been contracted by DD7 to secure all applicable environmental clearances for the project.

The DD7-proposed project is located approximately 2 miles southwest of Port Arthur; more precisely, the proposed addition to PS 16 is located at north latitude 29.8626 and west longitude 93.9872 on Alligator Bayou. Alligator Bayou is now separated from Taylors Bayou by a hurricane protection levy and only communicates with Taylors Bayou via pumping. Taylors Bayou ultimately flows into the Sabine-Neches Canal (tidal portion) below Port Arthur. The canal flows south through Sabine Pass, where it enters the Gulf of Mexico.

Appendix 1 contains maps depicting the locations of the existing pump station and proposed pump station (Figure 1), a color infrared aerial view of the project area (Figure 2), and the project area on the FEMA floodplain map of the area (Figure 3). Note that the proposed pump station site is situated on the dividing line between the 500-year floodplain and the 100-year floodplain (the hurricane protection levee). On-site photographs are provided in Appendix 2.

One of the main components of the DD7 system, PS 16 serves approximately 90,000 residents in the cities of Port Arthur, Port Neches, Groves, Nederland, and unincorporated areas of the county. The drainage area flowing to PS 16 is estimated to be 24,083 acres, which includes Main A, Main B, Main C, West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas contained within the hurricane protection levees for these communities. In turn, PS 16 pumps water out of the contained system into Taylors Bayou. However, more flow is actually generated within the main outfall system than PS 16 can remove in a peak flow situation or major storm event. The proposed additional pump station will add 1 million gallons per minute (gpm) of pumping capacity to the existing 2.6 million gpm capacity at PS 16. The proposed project will achieve relief of shallow flooding within the 24,083-acre DD7 drainage area by allowing PS 16 to pump water from the surrounding drainages within the contained drainage basin into Taylors Bayou more quickly, thereby reducing flooding incidents.

CORPORATE HEADQUARTERS
1507 South IH 35 ★ Austin, Texas 78741 ★ 512.328.2430 ★ Fax 512.328.1804 ★ www.horizon-esi.com
Certified WBE/DBE/HUB

The proposed improvements to PS 16 would not only maintain continuous low flow, but would provide backup capacity in the event that one or more of the existing pumps should become non-operational. This much-needed project will benefit the entire drainage area and has a cost/benefit ratio of 4.00. The proposed action is badly needed to reduce flooding of homes and roads in the area.

Please review the attached figures and information concerning the proposed project to determine if the project is consistent with your agency's environmental regulations or policies. Please respond by letter or sign and date this letter below as your concurrence and return a signed copy. Your prompt attention to this matter would be greatly appreciated, as your signed concurrence letter is necessary to complete the application for a Flood Mitigation Assistance Program Grant with the Federal Emergency Management Agency.

Please call me should you have any questions concerning this project or if I can be of any further assistance.

Sincerely,
For Horizon Environmental Services, Inc.

James M. Wiersema
Vice President

Concurrence / Date

Coastal Coordination Council

P.O. Box 12873 ♦ Austin, Texas 78711-2873 ♦ (800) 998-4GLO ♦ FAX (512) 475-0680

June 24, 2008

Mr. Lee Sherrod
Horizon Environmental Services Inc
1507 South IH 35
Austin Texas 78741

Re: Proposed Jefferson County Drainage District No. 7 Project: Addition of Pumping Capacity to Alligator Bayou Pumping Station No. 16, Jefferson County, Texas - HJN 060108 EA

Dear Mr. Sherrod:

Based on information provided to the Texas Coastal Management Program (CMP) on the above project, it has been determined that it will likely not have adverse impacts on coastal natural resource areas in the coastal zone and is consistent with the goals and policies of the CMP.

If you have any questions or concerns, please contact me at (512) 463-9212 or at tammy.brooks@glo.state.tx.us.

Sincerely,

Tammy S. Brooks
Consistency Review Coordinator
Texas General Land Office

APPENDIX A.5

US FISH AND WILDLIFE SERVICE

24 April 2007

Ms. Catherine Yeargan
US Fish and Wildlife Service
Ecological Services Field Office – Clear Lake
17629 El Camino Real, Suite 211
Houston, Texas 77058-3051

RE: Proposed Jefferson County Drainage District No. 7 Project:
Addition of Pumping Capacity to Alligator Bayou Pumping Station No. 16
Jefferson County, Texas
HJN 060108 EA

Dear Ms. Yeargan:

Jefferson County Drainage District No. 7 (DD7) is proposing improvements to its Alligator Bayou Pumping Station No. 16 (PS 16) in order to achieve relief of shallow flooding within the 24,083-acre drainage area flowing to PS 16. The proposed improvements will consist of the construction of a low-flow pump station on the bank of Alligator Bayou opposite PS 16. Horizon Environmental Services, Inc. (Horizon) has been contracted by DD7 to secure all applicable environmental clearances for the project.

The DD7-proposed project is located approximately 2 miles southwest of Port Arthur; more precisely, the proposed addition to PS 16 is located at north latitude 29.8626 and west longitude 93.9872 on Alligator Bayou. Alligator Bayou is now separated from Taylors Bayou by a hurricane protection levy and only communicates with Taylors Bayou via pumping. Taylors Bayou ultimately flows into the Sabine-Neches Canal (tidal portion) below Port Arthur. The canal flows south through Sabine Pass, where it enters the Gulf of Mexico.

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One of the main components of the DD7 system, PS 16 serves approximately 90,000 residents in the cities of Port Arthur, Port Neches, Groves, Nederland, and unincorporated areas of the county. The drainage area flowing to PS 16 is estimated to be 24,083 acres, which includes Main A, Main B, Main C, West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas contained within the hurricane protection levees for these communities. In turn, PS 16 pumps water out of the contained system into Taylors Bayou. However, more flow is actually generated within the main outfall system than PS 16 can remove in a peak flow situation or major storm event. The proposed additional pump station will add 1 million gallons per minute (gpm) of pumping capacity to the existing 2.6 million gpm capacity at PS 16. The proposed project will achieve relief of shallow flooding within the 24,083-acre DD7 drainage area by allowing PS 16 to pump water from the surrounding drainages within the contained drainage basin into Taylors Bayou more quickly, thereby reducing flooding incidents.

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The proposed improvements to PS 16 would not only maintain continuous low flow, but would provide backup capacity in the event that one or more of the existing pumps should become non-operational. This much-needed project will benefit the entire drainage area and has a cost/benefit ratio of 4.00. The proposed action is badly needed to reduce flooding of homes and roads in the area.

Federally listed threatened or endangered (T/E) species known to occur in Jefferson County include piping plover (*Charadrius melodus*), green sea turtle (*Chelonia mydas*), Atlantic hawksbill sea turtle (*Eretmochelys imbricata*), Kemp's ridley sea turtle (*Lepidochelys kempii*), leatherback sea turtle (*Dermochelys coriacea*), and loggerhead sea turtle (*Caretta caretta*) (USFWS, 2006). Additionally, the USFWS lists the following migratory bird species as being of potential occurrence in many or all Texas counties: Eskimo curlew (*Numenius borealis*), interior least tern (*Sterna antillarum athalossos*), and whooping crane (*Grus americana*).

The project area is described as a dredged canal with uplands on both sides and a narrow fringe of wetland vegetation along the edges of the canal. Dominant plant species along the banks include sugarberry (*Celtis laevigata*), giant reed (*Arundo donax*), St. Augustine grass (*Stenotaphrum secundatum*), bedstraw (*Gallium uncinulatum*), curly dock (*Rumex crispus*), and dewberry (*Rubus trivialis*). A narrow fringe of wetland vegetation is present along the upland canal that includes spikerush (*Eleocharis* sp.), primrose willow (*Ludwigia decurrens*), common reed (*Phragmites australis*), sedge (*Carex* sp.), and marshhay cordgrass (*Spartina patens*).

Horizon observed no federally listed T/E species or potential habitats on or within the immediate vicinity of the project area. Currently, we are seeking data concerning T/E species on the project site. TPWD data indicate no known occurrences of T/E species on the project site (TPWD, 2007). We are requesting that you notify us if your database indicates any occurrences of T/E species on the project site. Your prompt attention to this matter would be greatly appreciated, as your response is important in completing the application for a Flood Mitigation Assistance Program Grant from the Federal Emergency Management Agency.

Horizon is currently preparing an Environmental Assessment (EA) for this project, which will be released for agency and public comment in the near future. The EA comment response period will afford the USFWS an opportunity to comment on potential impacts or other concerns.

Please call me should you have any questions concerning this project or if I can be of any further assistance.

Sincerely,
For Horizon Environmental Services, Inc.

James M. Wiersema

James M. Wiersema
Vice President

References:

(TPWD) Texas Parks and Wildlife Department. Natural Diversity Database, T/E and Rare Species Elemental Occurrences. Wildlife Division, Habitat Assessment Program, Austin, Texas. 4 April 2007.

(USFWS) Endangered Species List web site, http://ifw2es.fws.gov/EndangeredSpecies/Lists/ListSpecies.cfm. Accessed 7 August 2006.

Ashley Caldwell

From: Jim Wiersema
Sent: Wednesday, May 23, 2007 1:04 PM
To: Ashley Caldwell
Cc: Lee Sherrod
Subject: USFWS consultation on HJN 060108

Ashley,

Yesterday, May 22, 2007 I was contacted via phone by Cathy Nemec of the US Fish and Wildlife Service's Houston, Texas office in response to our coordination letter seeking threatened or endangered sitings in the vicinity of the proposed Alligator Bayou Pump Station No. 16 expansion project site. Ms. Nemec informed me that the Service was not aware of any sitings of threatened or endangered species in the area of the project site. She indicated that no further consultation on this issue is required at this time. She made the point that the service does not make" no effect" rulings regarding projects. I pointed out to her that the Service , other interested agencies and the public would soon have access to the Environmental Assessment for the project for their review and comment.

Please insert this email into the project file and into the appropriate EA Appendix for USFWS coordination letters. Ms. Nemec indicated that this would be an acceptable means of recording our coordination since the Service is providing verbal and not written responses.

Jim Wiersema
Vice-President/Partner
Horizon Environmental Services, Inc.
Office: 512.328.2430
Fax: 512.328.1804
www.horizon-esi.com

We've Moved!!
Our new office address is:

1507 South IH 35
Austin, Texas 78741

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Division of Ecological Services
17629 El Camino Real #211
Houston, Texas 77058-3051

November 2010

Thank you for your request for threatened and endangered species information in the Clear Lake Ecological Services Field Office's area of responsibility. According to Section 7(a)(2) of the Endangered Species Act and the implementing regulations, it is the responsibility of each Federal agency to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any federally listed species.

Please note that while a Federal agency may designate a non-Federal representative to conduct informal consultation or prepare a biological assessment, the Federal agency must notify the U.S. Fish and Wildlife Service (Service) in writing of such designation. The Federal agency shall also independently review and evaluate the scope and contents of a biological assessment prepared by their designated non-Federal representative before that document is submitted to the Service.

A county by county listing of federally listed threatened and endangered species that occur within this office's work area can be found at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/default.cfm. You should use the county by county listing and other current species information to determine whether suitable habitat for a listed species is present at your project site. If suitable habitat is present, a qualified individual should conduct surveys to determine whether a listed species is present.

After completing a habitat evaluation and/or any necessary surveys, you should evaluate the project for potential effects to listed species and make one of the following determinations:

- **No effect** – the proposed action will not affect federally listed species or critical habitat (i.e., suitable habitat for the species occurring in the project county is not present in or adjacent to the action area). No coordination or contact with the Service is necessary. However, if the project changes or additional information on the distribution of listed or proposed species becomes available, the project should be reanalyzed for effects not previously considered.

- **Is not likely to adversely affect** – the project may affect listed species and/or critical habitat; however, the effects are expected to be discountable, insignificant, or completely beneficial. Certain avoidance and minimization measures may need to be implemented in order to reach this level of effects. The Federal agency or the designated non-Federal representative should seek written concurrence from the Service that adverse effects have been eliminated. Be sure to include all of the information and documentation used to reach your decision with your request for concurrence. The Service must have this documentation before issuing a concurrence.

- **Is likely to adversely affect** – adverse effects to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial. If the overall effect of the proposed action is beneficial to the listed species but also is likely to cause some adverse effects to individuals of that species, then the proposed action "is likely to adversely affect" the listed species. An "is likely to adversely affect" determination requires the Federal action agency to initiate formal Section 7 consultation with this office.

Regardless of your determination, the Service recommends that you maintain a complete record of the evaluation, including steps leading to the determination of affect, the qualified personnel conducting the evaluation, habitat conditions, site photographs, and any other related articles.

The Service's Consultation Handbook is available online to assist you with further information on definitions, process, and fulfilling Endangered Species Act requirements for your projects at http://endangered.fws.gov/consultations/s7hndbk/s7hndbk.htm.

If we can further assist you in understanding a federal agency's obligations under the Endangered Species Act, please contact Donna Anderson, Moni Belton, Kelsey Gocke, David Hoth, Charrish Stevens, or Arturo Vale at 281/286-8282.

Sincerely,

Edith Erfling

Edith Erfling
Field Supervisor, Clear Lake Field Office

APPENDIX A.6

NATIONAL MARINE FISHERIES SERVICE

Horizon™
Environmental Services, Inc.

24 April 2007

Heather Young
National Marine Fisheries Service
4700 Avenue U
Galveston, Texas 77551

RE: Proposed Jefferson County Drainage District No. 7 Project:
Addition of Pumping Capacity to Alligator Bayou Pumping Station No. 16
Jefferson County, Texas
HJN 060108 EA

Dear Ms. Young:

Jefferson County Drainage District No. 7 (DD7) is proposing improvements to its Alligator Bayou Pumping Station No. 16 (PS 16) in order to achieve relief of shallow flooding within the 24,083-acre drainage area flowing to PS 16. The proposed improvements will consist of the construction of a low-flow pump station on the bank of Alligator Bayou opposite PS 16. Horizon Environmental Services, Inc. (Horizon) has been contracted by DD7 to secure all applicable environmental clearances for the project.

The DD7-proposed project is located approximately 2 miles southwest of Port Arthur; more precisely, the proposed addition to PS 16 is located at north latitude 29.8626 and west longitude 93.9872 on Alligator Bayou. Alligator Bayou is now separated from Taylors Bayou by a hurricane protection levy and only communicates with Taylors Bayou via pumping. Taylors Bayou ultimately flows into the Sabine-Neches Canal (tidal portion) below Port Arthur. The canal flows south through Sabine Pass, where it enters the Gulf of Mexico.

Appendix 1 contains maps depicting the locations of the existing pump station and proposed pump station (Figure 1), a color infrared aerial view of the project area (Figure 2), and the project area on the FEMA floodplain map of the area (Figure 3). Note that the proposed pump station site is situated on the dividing line between the 500-year floodplain and the 100-year floodplain (the hurricane protection levee). On-site photographs are provided in Appendix 2.

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The proposed improvements to PS 16 would not only maintain continuous low flow, but would provide backup capacity in the event that one or more of the existing pumps should become non-operational. This much-needed project will benefit the entire drainage area and has a cost/benefit ratio of 4.00. The proposed action is badly needed to reduce flooding of homes and roads in the area.

The area downstream of the proposed structure is estuarine in nature. A such, essential fish habitat for the red drum (*Sciaenops ocellatus*), white shrimp (*Litopenaeus setiferus*), and brown shrimp (*Farfantepenaeus aztecus*), all species with management plans, will be present. The additional pumping capacity at PS 16 will allow for the more effective transfer of freshwater runoff through Taylors Bayou into the Sabine-Neches Canal and to the Gulf of Mexico while protecting the 24,083 acres drained above the pump station from flooding. The new capacity will also assure a continuous low flow of water through the estuarine area during low-flow periods, which should improve the water quality in that area. We seek your concurrence that the proposed project will essentially maintain the status quo and not present an adverse impact when considered under the aegis of the Magnuson-Stevens Fishery Management and Conservation Act.

Please review the attached figures and information concerning the proposed project and respond by letter or sign and date this letter below as your concurrence and return a signed copy. Your prompt attention to this matter would be greatly appreciated, as your signed concurrence letter is necessary to complete the application for a Flood Mitigation Assistance Program Grant with the Federal Emergency Management Agency.

Please call me should you have any questions concerning this project or if I can be of any further assistance.

Sincerely,
For Horizon Environmental Services, Inc.

James M. Wiersema

James M. Wiersema
Vice President

Concurrence 05/01/2007 Date

Rusty Swafford
Team Leader
Habitat Conservation Division

APPENDIX A.7

TEXAS PARKS AND WILDLIFE DEPARTMENT

Horizon™
Environmental Services, Inc.

2 April 2007

Ms. Dorinda Scott
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78742

RE: Proposed Jefferson County Drainage District No. 7 Project:
Addition of Pumping Capacity to Alligator Bayou Pumping Station No. 16
Jefferson County, Texas
HJN 060108 EA

Dear Ms. Scott:

Jefferson County Drainage District No. 7 (DD7) is proposing improvements to its Alligator Bayou Pumping Station No. 16 (PS 16) in order to achieve relief of shallow flooding within the 24,083-acre drainage area flowing to PS 16. The proposed improvements will consist of the construction of a low-flow pump station on the bank of Alligator Bayou opposite PS 16. Horizon Environmental Services, Inc. (Horizon) has been contracted by DD7 to secure all applicable environmental clearances for the project.

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Horizon observed no federally listed T/E species or potential habitats on or within the immediate vicinity of the project area. Currently, we are seeking data concerning T/E species on the project site. We are requesting that you notify us if your database indicates any occurrences of T/E species on the project site. Your prompt attention to this matter would be greatly appreciated, as your response is important in completing the application for a Flood Mitigation Assistance Program Grant from the Federal Emergency Management Agency.

Horizon is currently preparing an Environmental Assessment (EA) for this project, which will be released for agency and public comment in the near future. The EA comment response period will afford the TPWD an opportunity to comment on potential impacts or other concerns.

Please call me should you have any questions concerning this project or if I can be of any further assistance.

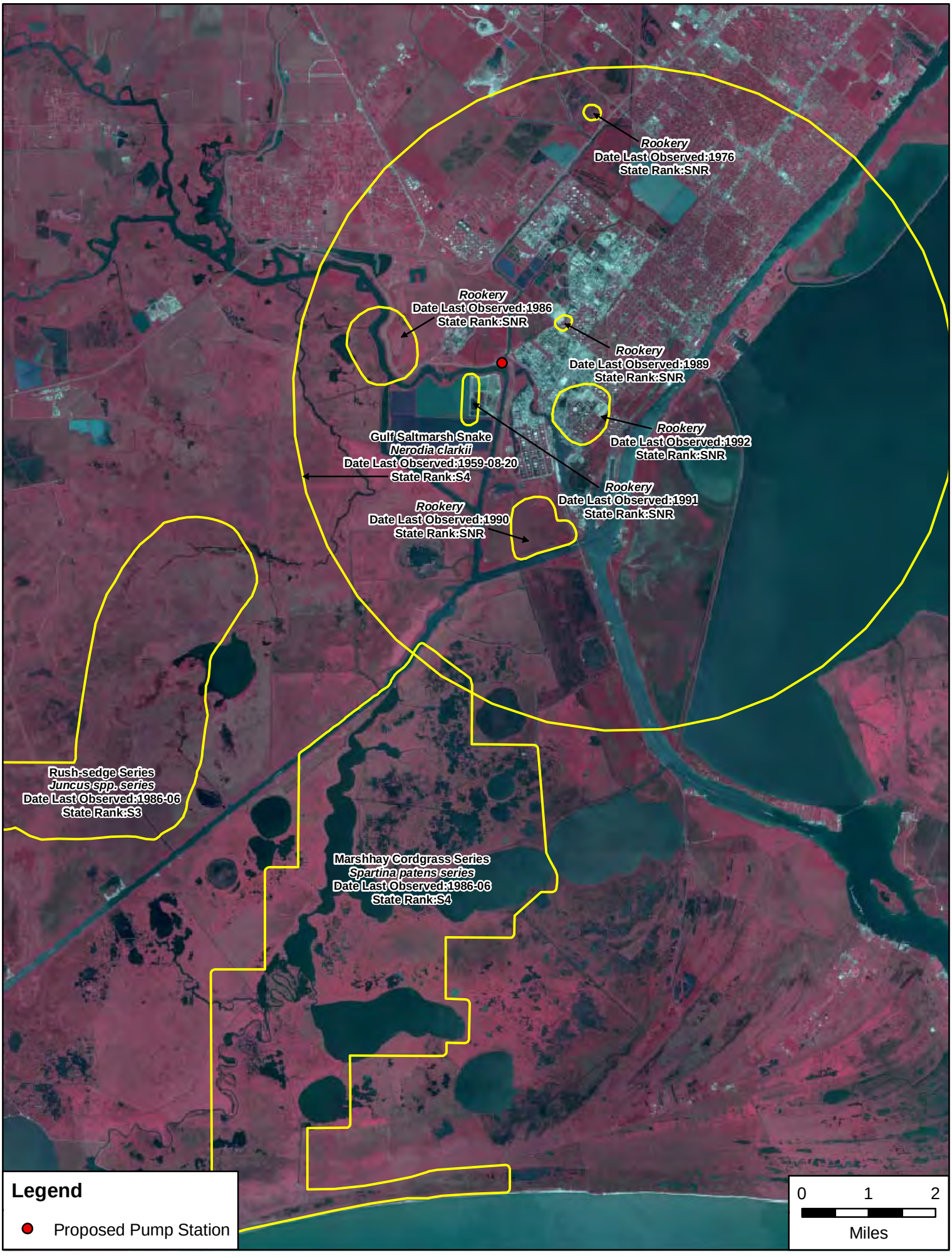
Sincerely,
For Horizon Environmental Services, Inc.

James M. Wiersema

James M. Wiersema
Vice President

References:

(USFWS) Endangered Species List web site, http://ifw2es.fws.gov/EndangeredSpecies/Lists/ListSpecies.cfm. Accessed 7 August 2006.


Rookery
Date Last Observed:1976
State Rank:SNR
Rookery
Date Last Observed:1986
State Rank:SNR
Rookery
Date Last Observed:1989
State Rank:SNR
Rookery
Date Last Observed:1992
State Rank:SNR
Gulf Saltmarsh Snake
Nerodia clarkii
Date Last Observed:1959-08-20
State Rank:S4
Rookery
Date Last Observed:1991
State Rank:SNR
Rookery
Date Last Observed:1990
State Rank:SNR
Rush-sedge Series
Juncus spp. series
Date Last Observed:1986-06
State Rank:S3
Marshhay Cordgrass Series
Spartina patens series
Date Last Observed:1986-06
State Rank:S4
Legend
Proposed Pump Station
0
1
2
Miles

APPENDIX A.8

TEXAS HISTORICAL COMMISSION

Horizon™
Environmental Services, Inc.

20 October 2006

Mr. Ed Baker
Texas Historical Commission
P.O. Box 12276
Austin, Texas 78711-2276

RE: Initial Consultation
Proposed Flood Mitigation Project (Alligator Bayou Pump Station Improvements)
Jefferson County Drainage District No. 7
Jefferson County, Texas
Texas Antiquities Code / Section 106 (USACE)
HJN 060108 EA

Dear Mr. Baker:

The Jefferson County Drainage District No. 7 (DD7) is proposing the renovation of the Alligator Bayou Pump Station that was damaged last year by Hurricane Rita (maps enclosed). DD7's proposed renovations consist of the addition of a second pump station on the opposite (east) side of Alligator Bayou from an existing pump station. The Area of Potential Effect (APE) of the proposed additional pump station will consist of a 100 ft (30.5 m) by 300 ft (91.5 m) pad within a previously disturbed area that encompasses a portion of the existing levee and a concrete road that leads to the levee. The Alligator Bayou pump station and levee plays a role in the overall drainage of Jefferson County. As the project is for DD7, it falls under the regulations of the Texas Antiquities Code. Additionally, the project also falls under the regulations of Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, since it will require a Section 404 permit issued by the US Army Corps of Engineers (USACE). DD7 has contracted with Horizon Environmental Services, Inc. (Horizon) to obtain the necessary environmental clearances for the project.

Archival Review

Archival research conducted via the Internet at the Texas Historical Commission's (THC's) *Texas Archeological Sites Atlas* web site indicated no recorded archeological sites, historic structures, or cemeteries within a 0.6 mile (1 km) radius of the proposed pump station improvements. The Atlas did show that the area due south of the location of the pump station was previously surveyed in 1972 for the USACE with negative results.

Soils

The soils within the APE are classified as Neel-Urban land complex (NuC), 2 to 5 percent slopes, rarely flooded, tidal. Neel series soils are described as clayey soils that have been

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Environmental Services, Inc.

dredged from bays and marshes. Furthermore, they are described as mixed soils that have been randomly deposited by draglines and dredging.

Discussion and Recommendations

The area containing the existing pump station consists of heavily impacted areas resulting from the initial construction of the pump station, levee, and road. In addition to the impacts from the pump station/levee construction, the soil within the APE of the proposed pump station improvements consists of fill material used to build up the area for earlier construction. Overall, the impacts to the area from the initial construction of the existing pump station and levee are substantial enough to suggest little or no potential for significant cultural deposits. More importantly, the fact that the soil within the APE consists entirely of dredge materials also suggests a low potential for significant cultural deposits.

Based on the facts that the area is heavily disturbed and consists entirely of dredge deposits, it is Horizon's that DD7's proposed Alligator Bayou Pump Station Improvement project will have no effect on significant cultural resources. Horizon therefore recommends that no formal cultural resources investigations are warranted and that cultural resources clearance be granted for the undertaking.

On behalf of DD7, Horizon is requesting documented consultation with your office in compliance with the Texas Antiquities Code and Section 106 of the NHPA. Should you concur with Horizon's recommendations, please sign below and return. Should you have any questions, please do not hesitate to call me at (512) 328-2430.

Sincerely,

Russ Brownlow

Russ Brownlow, MA, RPA
Principal / Cultural Resources Director
Horizon Environmental Services, Inc.

NO HISTORIC
PROPERTIES AFFECTED
PROJECT MAY PROCEED
By William A. Martin
for F. Lawerence Oaks
State Historic Preservation Officer
Date 11/27/06
Track#

Concurrence / Date

APPENDIX A.9

FEDERAL EMERGENCY MANAGEMENT AGENCY

U. S. Department of Homeland Security
FEMA Region VI
800 N Loop 288
Denton, TX 76209

FEMA

June 25, 2008

MEMORANDUM FOR: Mark Price

FROM: Donald R. Fairley, REM

SUBJECT: HMGP DR-1606-TX, Project #32, Drainage Improvements-Alligator Bayou, Jefferson County, Texas, Environmental Assessment and Finding of No Significant Impact

The purpose of this memorandum is to notify you that the Hazard Mitigation Grant Program (HMGP) project for Drainage Improvements at Alligator Bayou, Jefferson County, Texas has been cleared under the National Environmental Policy Act (NEPA). The Code of Federal Regulations, 44 CFR Part 10, requires that the Federal Emergency Management Agency (FEMA) take into account environmental considerations when authorizing or approving major actions. Clearance of this project required an Environmental Assessment (EA). Based on the findings of the attached EA, coordination with the appropriate agencies, comments from the public and applicant adherence to the project conditions set forth in the Finding of No Significant Impact (FONSI), FEMA has determined that the proposed project qualifies as a major federal action that will not significantly affect the quality of the natural and human environment, nor does it have the potential for significant cumulative effects. As a result of the FONSI, an EIS will not be prepared (44 CFR Part 10.9) and upon publication of the Notice of Availability of the Final EA and FONSI in the newspaper of record, the project may proceed.

Please ensure the applicant does not begin construction until 15 days after the NOA of the Final EA and FONSI and the final public notice for work in the floodplain in accordance with Executive Orders 11988 and 11990 and 44 CFR Part 9.12 has been published. Please provide this office with a copy of the final public notice and tear sheet from the newspaper. Also the applicant must not begin earth disturbing activities until the final Section 404 of the Clean Water Act permit is received from the US army Corps of Engineers as required by the FONSI. Failure to comply with the conditions listed in the FONSI may jeopardize Federal Funds.

Please note that this transmittal is a notification that this project has been cleared under NEPA only. **This is not a notice of final approval or eligibility.** Any change beyond the approved scope of work for this project will require additional environmental review by FEMA.

cc: Kathy Reimer, Hazard Mitigation Specialist
Connie Dill, Hazard Mitigation Specialist

Enclosure: Finding of No Significant Impact (FONSI)

FINDING OF NO SIGNIFICANT IMPACT

FOR

JEFFERSON COUNTY DRAINAGE DISTRICT NO. 7
ALLIGATOR BAYOU PUMP STATION EXPANSION PROJECT
HAZARD MITIGATION GRANT PROGRAM

BEAUMONT, JEFFERSON COUNTY, TEXAS

BACKGROUND

The Jefferson County Drainage District No. 7 (DD7) has applied to the Federal Emergency Management Agency (FEMA), through the Texas Department of Public Safety, Governor's Division of Emergency Management, for assistance with the construction of an additional low-flow pump station on the bank of Alligator Bayou opposite the existing Pump Station #16 (PS 16) at the outfall of Alligator Bayou into Taylors Bayou in Port Arthur, Texas in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council for Environmental Quality (CEQ) regulations implementing regulations of NEPA (40 CFR Parts 1500 – 1508), the National Historic Preservation Act, and the implementing regulations of FEMA (44 CFR Parts 9 and 10). The drainage area flowing to PS 16 is estimated to be 24,083 acres, which includes Main A, Main B, Main C, West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas contained within the hurricane protection levees for these communities. Pump Station #16 is one of the main components of the DD7 system, serving approximately 90,000 residents in the cities of Port Arthur, Port Neches, Groves, Nederland, and unincorporated areas of the county. FEMA is proposing to provide assistance for this project through the Hazard Mitigation Grant Program.

In accordance with 44 Code of Federal Regulations (CFR) for FEMA, Subpart B – Agency Implementing Procedures, Part 10.9, an Environmental Assessment (EA) was prepared pursuant to Section 102 of the National Environmental Policy Act of 1969, as implemented by the regulations promulgated by the President's Council on Environmental Quality (40 CFR Parts 1500 – 1508). The purpose of the EA was to analyze the potential environmental impacts of the proposed floodwater management structures in the City of Port Arthur, Jefferson County, Texas, and to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).

In the EA process, FEMA considered two alternatives: (1) No Action; and, (2) The Proposed Action, the construction of an additional pump station.

In response to the risk to human health and safety associated with the occurrence of flooding in the Alligator Bayou watershed, Alternative 2, the Proposed Action, has been selected based on the needs of the population within the cities of Port Arthur, Port Neches, Groves, Nederland, and unincorporated areas of the county to reduce the flood hazard potential within the Alligator Bayou watershed and mitigate the impacts of flooding to the surrounding homes.

A legal notice was posted in two local newspapers, *The Beaumont Enterprise* and *The Port Arthur News*, on March 9, 2008 announcing the availability of the Draft Environmental Assessment for public review at the Beaumont Public Library, at the offices of the Jefferson County Drainage District #7 and at the offices of Horizon Environmental Services, Inc. (Austin, TX). No public comments were received during the 30-day public comment period which began March 9 and ended April 9.

FINDINGS

Based upon the conditions and information contained in the EA for the Alligator Bayou Pump Station Expansion Hazard Mitigation Project (document dated April 2007) and in accordance with FEMA's regulations in 44 CFR Part 10 (Environmental Considerations) and Executive Orders 11988 (Floodplain Management), 11990 (Protection of Wetlands), and 12898 (Environmental Justice), FEMA has made the following determinations:

The proposed project, as described in the EA, will not result in any significant adverse impacts to existing land use, water resources (surface water, groundwater, wetlands, waters of the United States, and floodplains), air quality, noise, biological resources (vegetation, fish and wildlife, state-and federally listed threatened or endangered species and critical habitats), safety issues, hazardous materials and waste, and cultural resources, or result in disproportionately high or adverse effects on minority or low-income populations. The proposed action is also in compliance with all relevant federal, state, and local laws.

CONDITIONS

The following conditions and all other conditions identified in the EA must be met as part of this project. Failure to comply with these conditions may jeopardize federal funds:

1. In accordance with 44 CFR, Part 65.3 – Identification and Mapping of Special Hazard Areas, if floodplain boundaries will be changed as a result of the project, the applicant will submit to FEMA a Letter of Map

Revision (LOMR) not later than six month after the date such information becomes available.

2. Permit No. SWG-2007-850 must be received from the U.S. Army Corps of Engineers, Galveston District for the proposed improvements in waters of the US prior to any ground disturbing activities associated with this project.

3. For haul routes and staging areas, priority will be given to non-residential haul routes and previously developed areas to minimize disturbance to the residents in the project area, schools, and existing trees.

4. Excavated materials will not be stockpiled or disposed of in jurisdictional waters of the U.S., including wetlands, or in designated floodplain areas, unless the appropriate federal, state, and local permits are secured.

5. Following construction activities, exposed soils will be vegetated with native species to prevent future soil erosion.

6. Dust control measures such as water suppression and engineered controls (e.g., using mesh covers) will be utilized during construction to control dust emissions resulting from the loading and transportation of debris by trucks.

7. To reduce the potential impact on trees located outside the construction Right-of-Way (ROW), the applicant will establish temporary fences around the drip lines of the affected trees to prevent the encroachment of personnel and construction equipment on the root systems.

CONCLUSIONS

Based on the findings of the attached EA, coordination with the appropriate agencies and adherence to the project conditions set forth in the EA and this FONSI, FEMA has determined that the proposed project qualifies as a minor federal action that will not significantly affect the quality of the natural and human environment. As a result of this FONSI, an EIS will not be prepared (44 CFR, Part 10.8) and the proposed project as described in the attached EA may proceed.

APPROVAL

Donald R. Fairley, REM
Regional Environmental Officer
FEMA Region VI

Date: 6/25/2008

William Peterson
Regional Administrator
FEMA Region VI

Date: 6/25/2008

APPENDIX A.10

APPENDIX A AGENCY LETTER ATTACHMENTS

AGENCY LETTER

ATTACHMENT A

PROJECT FIGURES

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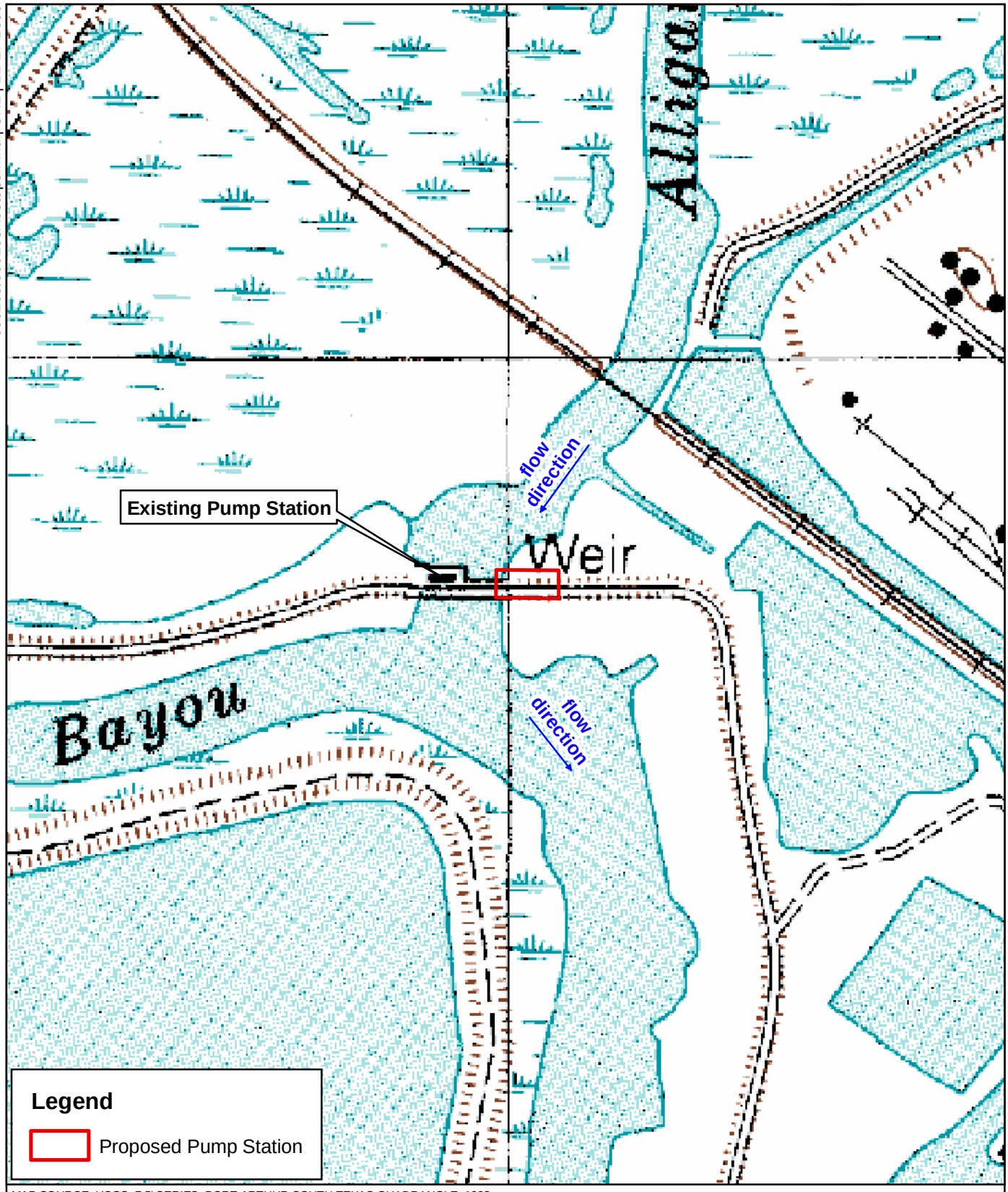

MAP SOURCE: USGS, 7.5' SERIES, PORT ARTHUR SOUTH TEXAS QUADRANGLE, 1993.

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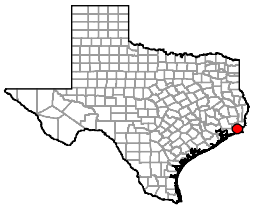

Horizon Environmental Services, Inc.

FIGURE 1

PROJECT LOCATION MAP
ADDITION OF PUMPING CAPACITY TO
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

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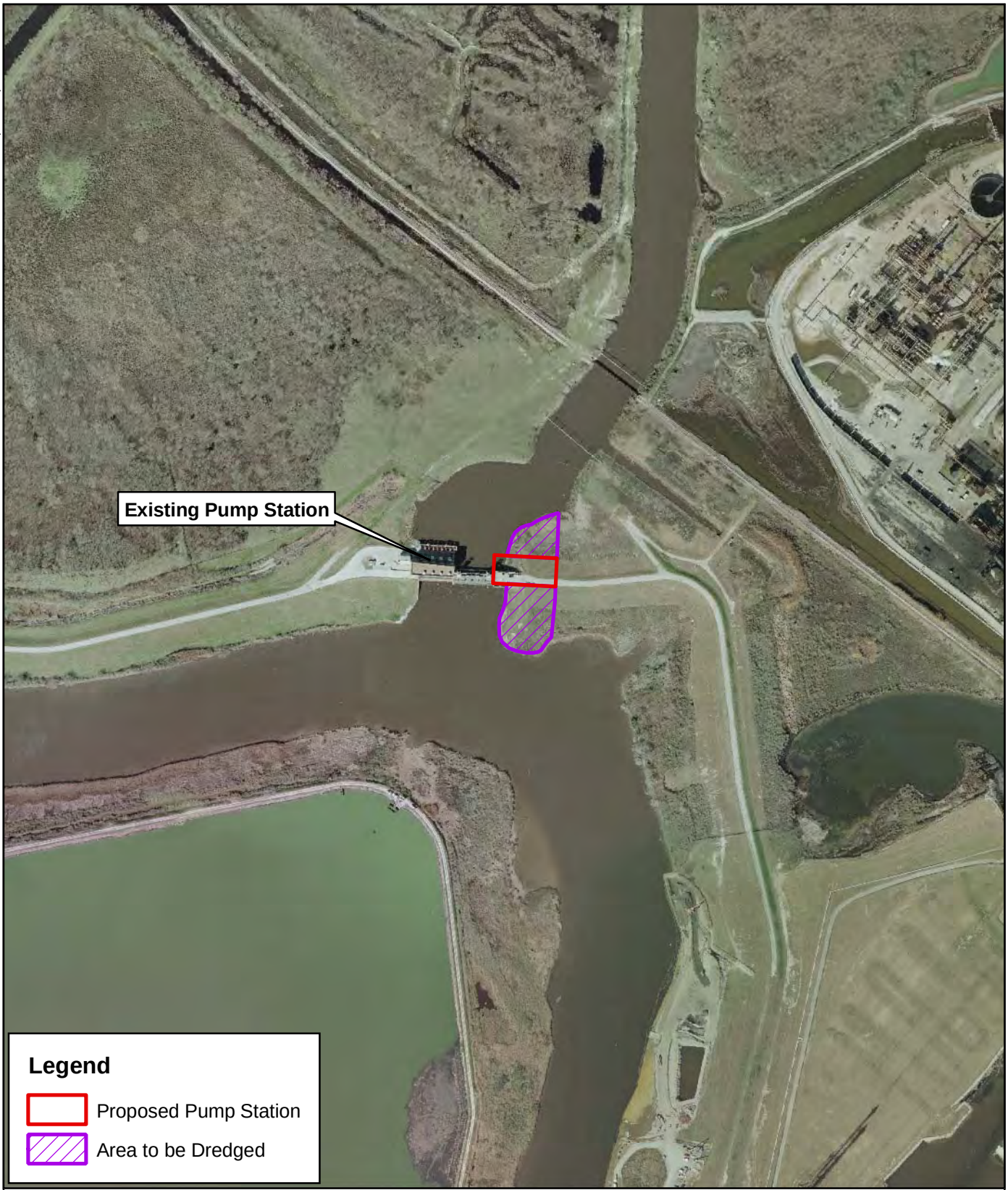

MAP SOURCE: JEFFERSON COUNTY DRAINAGE DISTRICT, 2001.

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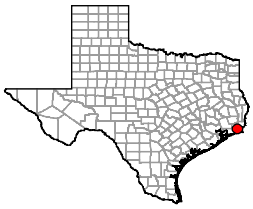
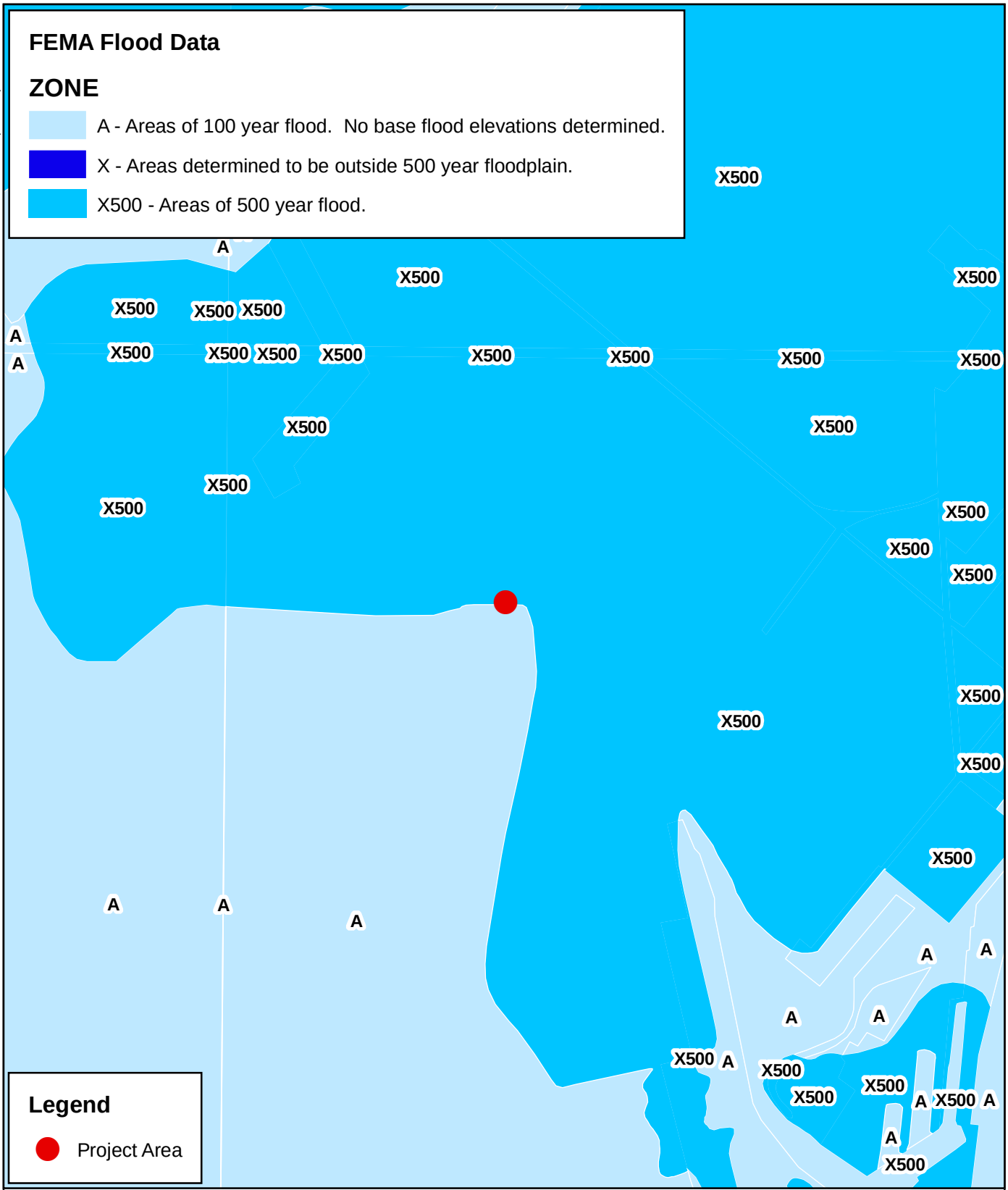


Horizon Environmental Services, Inc.

FIGURE 2

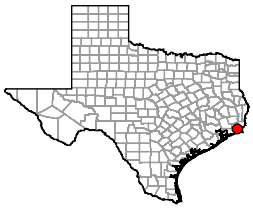
2001 AERIAL PHOTOGRAPH
ADDITION OF PUMPING CAPACITY TO
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

060108/060108A04fema.mxd | CNL | 12-27-2006



MAP SOURCE: FEMA, MAY 1998. SITE LOCATED ON FIRM PANEL 4803850430B.

0 0.25 0.5
Miles



Horizon Environmental Services, Inc.

FIGURE 3

FEMA FLOOD HAZARD MAP
ADDITION OF PUMPING CAPACITY TO
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

AGENCY LETTER

ATTACHMENT B

PROJECT AREA PHOTOGRAPHS

PHOTO 1
East bank of Alligator Bayou, north of PS 16, facing north

PHOTO 2
View of PS 16 from east bank of Alligator Bayou, facing west

PHOTO 3
Location of proposed pump station in foreground, facing west

PHOTO 4
East bank of Alligator Bayou, intake side of PS 16, facing south (material in foreground to be removed)

APPENDIX B

ON-SITE PHOTOGRAPHS

PHOTO 1
East bank of Alligator Bayou, north of PS 16, facing north

PHOTO 2
View of PS 16 from east bank of Alligator Bayou, facing west

PHOTO 3
Location of proposed pump station in foreground, facing west

PHOTO 4
East bank of Alligator Bayou, intake side of PS 16, facing south (material in foreground to be removed)

PHOTO 5
Bank southeast of PS 16, output side, facing southeast

PHOTO 6
East of PS 16, south of existing levee, facing north

PHOTO 7

View from east bank of Alligator Bayou of output side of PS 16, facing northwest

PHOTO 8

View of west bank of Alligator Bayou from PS 16, facing west

PHOTO 9
East bank of Alligator Bayou, facing southwest

PHOTO 10
View of west bank of Alligator Bayou from PS 16, facing east

PHOTO 11
View of existing intake pumps, facing west

PHOTO 12
General overview of project area, facing west

PHOTO 13
Overview of project area, facing west

PHOTO 14
Area south of levee on east bank of Alligator Bayou, facing north

APPENDIX C

BIOLOGICAL ASSESSMENT

APPENDIX C

BIOLOGICAL ASSESSMENT

CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION NO. 16,
PORT ARTHUR AND VICINITY, TEXAS
HURRICANE FLOOD PROTECTION PROJECT
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

JEFFERSON COUNTY DRAINAGE DISTRICT NO. 7

AND

U.S. ARMY CORPS OF ENGINEERS
GALVESTON DISTRICT

NOVEMBER 2012

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1.0 INTRODUCTION

The Proposed Project, the construction of a new pump station at Alligator Bayou Pump Station No. 16 (PS 16) (the project), sponsored by Jefferson County Drainage District No. 7 (DD7), will require Section 408 authorization from the U.S. Army Corps of Engineers (USACE) for modification of a Federal structure, the Port Arthur and Vicinity, Texas Hurricane Flood Protection Project (Hurricane Flood Protection Project) and issuance of Department of the Army Permit Application No. SWG-2007-00850 Amendment. The purpose of this Biological Assessment (BA) is to fulfill the U.S. Army Corps of Engineers' (USACE) requirements as outlined under Section 7(a) of the Endangered Species Act (ESA) of 1973 as amended and further described in 50 CFR 402.12 and Engineering Regulation (ER) 1105-2-100.

2.0 PROPOSED PROJECT AND PROJECT AREA DESCRIPTION

The Proposed Project and project area are described in detail in the Environmental Assessment of which this BA is an appendix. The Proposed Project would achieve 25-year storm pumping capacity at PS 16. With the loss of function of the gravity drain structure, PS 16 is only capable of handling an 11.5-year event, yet based on the hydrological models developed for the *2002 COMPREHENSIVE STUDY AND DRAINAGE PLAN OF THE JEFFERSON COUNTY DRAINAGE DISTRICT NO. 7 SYSTEM AND SERVICE AREA*, more flow is now generated within the main outfall system during a 25-year storm event than the system was originally designed to accommodate, making restoration of capacity at PS 16 critical. The Proposed Project would include retaining the existing pump station on the west bank of Alligator Bayou and the gravity drain structure across Alligator Bayou, with construction of a second pump station on the east bank of Alligator Bayou. The new pump station would take over the continuous low-flow pumping, and, in concert with the existing pump station, would provide overall pumping capacity to handle a 25-year storm event at PS 16. The addition of more efficient pumps at the new pump station would replace the capacity provided by the now non-functional gravity drain structure. Maintaining two pumping stations at this location also provides redundancy in the event of a pump failure. The new pump station would add 1.5 million gallons per minute (gpm) of pumping capacity to the existing 2.25 million gpm capacity at PS 16, for a total 3.75 million gpm capacity for PS 16. As modeled, this increased capacity would mean that flood waters from a 25-year storm event would be removed from the system about 18 hours faster than is currently possible with the existing pumps.

The new pump station on the east bank of Alligator Bayou (Figure 1) would consist of a 4-level concrete structure designed to withstand 200 mph winds (a Category 5 hurricane) housing six 250,000-gallon diesel pumps, with office space, a bunk room, showers, potable water, generators, and fuel storage. Construction access would be from the immediately adjacent 57th Street, a non-public road, which is constructed on top of the Hurricane Flood Protection Levee in the project area. The construction site on the east bank of Alligator Bayou is currently mowed and maintained. The footprint of the new pump station and ancillary parking would cover 2.9 acres. Construction would require two temporary coffer dams (one on Taylors Bayou and one on Alligator Bayou), to allow construction in the dry; temporary staging areas; a temporary construction access road originating at Highway 82 with a temporary floating bridge across

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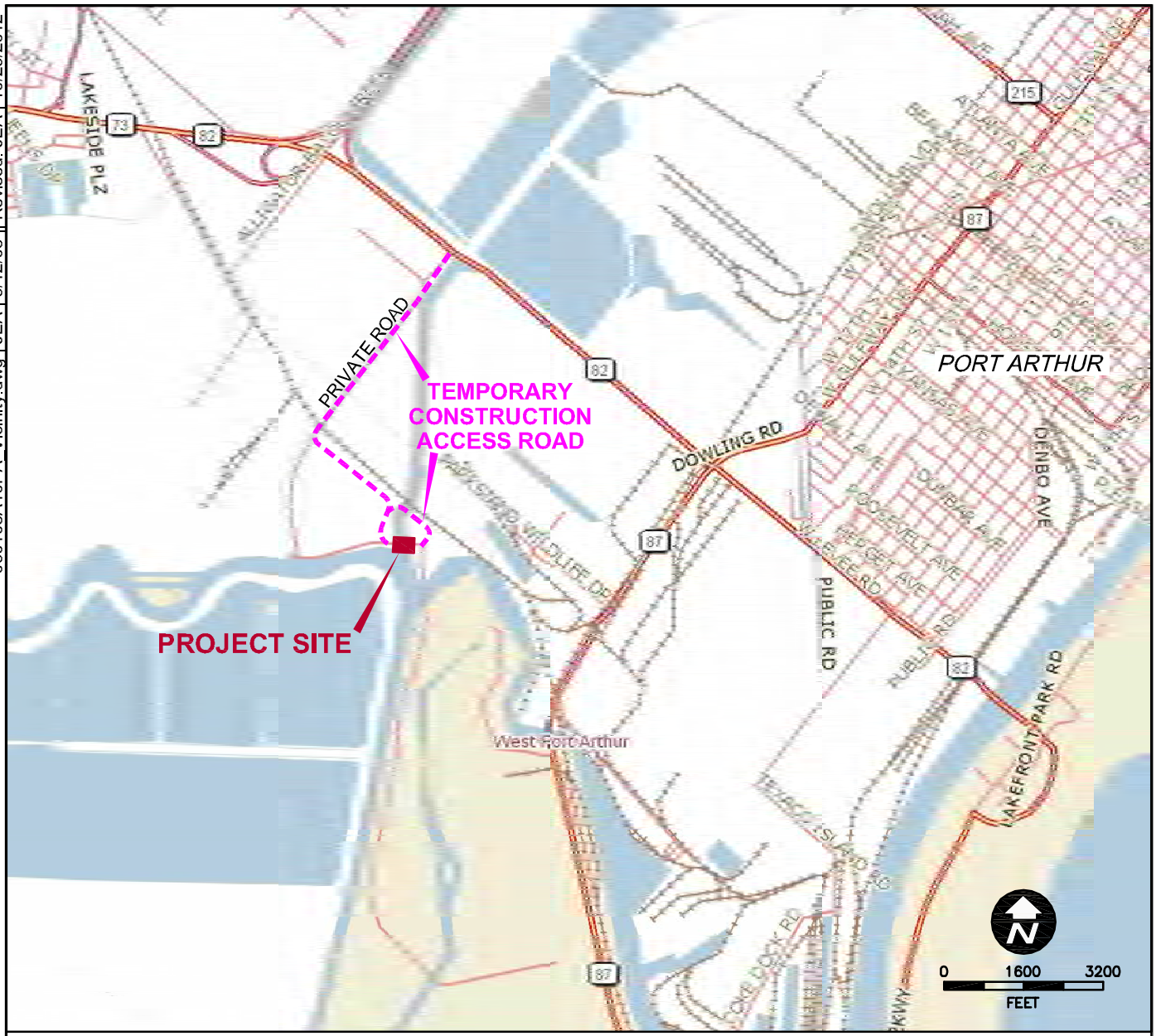
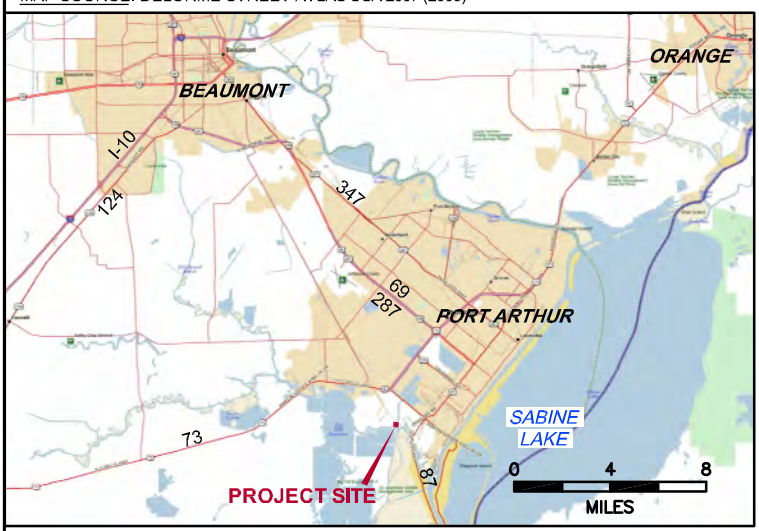


MAP SOURCE: DELORME STREET ATLAS USA 2007 (2006)



MAP SOURCE: DELORME STREET ATLAS USA 2007 (2006)

FIGURE 1

VICINITY MAP
PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

Horizon Environmental Services, Inc.

"Do Not Scale This Drawing"

Alligator Bayou; permanent excavated material placement areas with a capacity of 124,000 cu yds with concrete retainers and silt fencing to prevent sloughing or erosion of material into adjacent wetlands or waters of the US; and excavation (in the dry) on both the Alligator Bayou side and Taylors Bayou side to allow proper depth for pump operation. The excavated material would be stored for an indeterminate time for possible future use in levee repairs or improvements. The coffer dams would be constructed with two sheet pile walls 30 feet apart and filled with clean soil. Material for the coffer dams would be obtained from a commercial dirt source, possibly Halbouty Detention Pond owned by DD7, a sand and clay pit that has been in operation for 40 years and which is also used for floodwater detention. Construction is anticipated to take 24 to 30 months to complete, with project completion anticipated in late 2014.

Direct construction impacts of the Proposed Plan are summarized as follows:

Wetlands permanently filled	0.10 ac
Wetlands permanently excavated	0.67 ac
Wetlands temporarily disturbed and restored	0.21 ac
Open water (Taylors Bayou) Excavated	1.07 ac
Open water (Taylors Bayou) temporarily disturbed and restored	0.11 ac
Open water (Alligator Bayou) temporarily filled (coffer dam)	0.37 ac
Existing upland used for excavated material placement	7.79 ac
Existing upland (levee) excavated to open water	2.32 ac
Existing upland (levee) converted to pump building and parking	2.90 ac
Existing upland (levee) used for temporary construction staging	1.51 ac
Total Project Footprint Impact	17.05 ac

The temporary construction access road would follow existing roads that require no modification and is not expected to have any material impact. The temporary floating bridge for construction access to the east side of Alligator Bayou would be located adjacent to the existing railroad bridge crossing of the bayou in an area with existing fill and graded banks on both sides of Alligator Bayou. No material impacts from the floating bridge are anticipated.

The project construction footprint would impact 1.3 acres of fringe wetlands and shallow open water in the construction area on Taylors and Alligator Bayous. Proposed construction would occur on and immediately adjacent to the Hurricane Flood Protection Project levee separating Alligator Bayou from Taylors Bayou. Dominant plant species on the levee include bermudagrass (*Cynodon dactylon*), common reed (*Phragmites australis*), St. Augustine grass (*Stenotaphrum secundatum*), bedstraw (*Gallium uncinulatum*), curly dock (*Rumex crispus*), and dewberry (*Rubus trivialis*). Scattered sugarberry (*Celtis laevigata*) and baccharis (*Baccharis* sp.) are also present. A fringe of wetland vegetation is present along portions of Alligator Bayou and Taylors Bayou that includes spikerush (*Eleocharis* sp.), primrose willow (*Ludwigia decurrens*), common reed, sedge (*Carex* sp.), and marshhay cordgrass (*Spartina patens*).

Aquatic habitat is restricted to Alligator Bayou and Taylors Bayou. Fish samples were not collected from Alligator Bayou or Taylors Bayou during Horizon's reconnaissance survey of the area.

Common fish species that could occur in Alligator Bayou include the western mosquitofish (*Gambusia affinis*), black bullhead (*Ameiurus melas*), variegated pupfish (*Cyprindon variegatus*), largemouth bass (*Micropterus salmoides*), alligator gar (*Lepisosteus spafula*), blacktail redhorse (*Moxostoma poecilurum*), rainwater killifish (*Lucania parva*), inland silversides (*Menidia beryllina*), several sunfish species (*Lepomis* spp.), and possibly 1 or 2 species of minnows (Cyprinidae). In addition to the fish species, the area could support frogs, turtles, snakes, crayfish, and numerous insect species. Estuarine or marine species that potentially inhabit Taylors Bayou downstream of the proposed structure include species such as the blue crab (*Callinectes sapidus*), brown shrimp (*Farfantepenaeus aztecus*), white shrimp (*Litopenaeus setiferus*), red drum (*Sciaenops ocellatus*), spotted seatrout (*Cynoscion nebulosus*), croaker (*Micropogonias undulatus*), menhaden (*Brevoortia patronus*), and bay anchovy (*Anchoa mitchelli*).

3.0 THREATENED OR ENDANGERED SPECIES AND HABITAT DESCRIPTIONS

The following species and designated Critical Habitats (CH) listed by the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) were reviewed for potential impacts from the Proposed Project. The NMFS list also includes five species of whales, which will not be addressed in this BA.

TABLE 1: FEDERALLY-LISTED T/E SPECIES OF POTENTIAL OCCURRENCE IN JEFFERSON COUNTY, TEXAS

SPECIES	USFWS STATUS	NMFS STATUS	DETERMINATION
Piping Plover (*Charadrius melodus*)	Threatened	N/A	No effect; critical habitat in Texas, but not in Jefferson County; species unlikely in project area.
Atlantic hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	Endangered	No effect; critical habitat designated outside of Texas; species unlikely in project area.
Green sea turtle (*Chelonia mydas*)	Threatened	Threatened	No effect; critical habitat designated outside of Texas; species unlikely in project area.
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered	Endangered	No effect; species unlikely in project area.
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered	Endangered	No effect; critical habitat designated outside Texas; species unlikely in project area.
Loggerhead sea turtle (*Caretta caretta*)	Threatened	Threatened	No effect; species unlikely in project area.
Smalltooth sawfish (*Pristis pectinata*)	N/A	Endangered	No effect; species unlikely in project area.
West Indian Manatee (*Trichechus manatus*)	Endangered	N/A	No effect; species unlikely in project area.

(USFWS, NMFS 2012; Attachment A)

Additionally, the USFWS lists the following migratory bird species as being of potential transitory occurrence in many or all Texas counties during migration: Eskimo curlew (*Numenius borealis*), interior least tern (*Sterna antillarum athalossos*), and whooping crane (*Grus americana*). The Texas Parks and Wildlife Department (TPWD, 2012; Attachment A) lists a number of additional species for Jefferson County.

No listed T/E species or potential habitats have been observed on the proposed construction site or within the immediate vicinity of the project area. Any potential utilization of the site by migratory T/E species would be limited to brief transitory occurrences or fly-overs. A lack of suitable habitat for listed species makes their occurrence highly unlikely.

3.1 PIPING PLOVER

The piping plover *(Charadrius melodus)* was Federally listed as endangered on December 11, 1985, for the Great Lakes watershed and was listed as threatened throughout the remainder of its range from the Great Lakes area to Texas (50 FR 50726). Piping plovers typically inhabit shorelines of oceans, rivers, and inland lakes. Summer nest sites include sandy beaches, especially where scattered tufts of grass are present; sandbars; causeways; bare areas on emergent dredged material placement areas; as well as natural alluvial islands in rivers; gravel pits along rivers; silty flats; and salt-encrusted bare areas of sand, gravel, or pebbly mud on interior alkali lakes and ponds. On the wintering grounds which include the Texas Gulf Coast, these birds utilize beaches, mud and sand flats, and offshore dredged material islands (AOU, 1998; USFWS, 1995). No CH has been designated for this species in the project area.

Along the Texas coast, a correlation appears to exist between tidal height and habitat selection, with piping plovers actively feeding on tidal flats during periods of low tides, and on the Gulf beaches during high tides (Eubanks, 1991; Zonick, et al., 1998; Drake et al., 2000). Winter distribution studies along the Atlantic and Gulf coasts found piping plovers usually occurring in small, unevenly distributed groups along the coast; however, the sites with largest concentrations of plovers consisted of expansive sand flats or mud flats with sandy beach in close proximity (Nicholls and Baldassarre, 1990). Piping plover concentrations in Texas occur in Aransas, Brazoria, Calhoun, Cameron, Chambers, Galveston, Jefferson, Kleberg, Matagorda, Nueces, San Patricio and Willacy counties (USFWS, 1988). USFWS (1995) estimates that approximately 1,900 piping plovers, or approximately 35% of the known population, wintered along the Texas Gulf coast. CH for the wintering grounds has been designated in Texas by the FWS (66 FR 36074—36078). There are no areas of CH in project area. The closest critical habitat area (TX-37) is located 40 miles to the southwest at Rollover Bay, Chambers County, Texas. An October 2006 field survey by Lee Sherrod of Horizon Environmental Services, Inc. observed no piping plovers or habitat in and around the project area, which is located approximately 12 miles from the Gulf shoreline. It is concluded that neither the construction nor operation of the Proposed Project will impact piping plovers or their CH.

3.2 KEMP'S RIDLEY SEA TURTLE

Kemp's ridley sea turtle *(Lepidochelys kempii)* was listed as endangered throughout its range on December 2, 1970 (35 FR 18320). Populations of this species have declined since 1947, when an estimated 42,000 females nested in one day, to a total nesting population of approximately 1,000 in the mid-1980s, with 10,000 nests in 2005 and 12,000 in 2006 (Shaver, 2007). The recovery likely can be attributed to full protection of nesting females and their nests in Mexico and the requirement to use TEDs in shrimp trawlers both in the U.S. and in Mexico (NMFS, 2000).

Kemp's ridleys inhabit shallow coastal and estuarine waters, although rarely in bays, usually over sand or mud bottoms. Adults are primarily shallow-water benthic feeders that specialize on crabs, especially portunid crabs, while juveniles feed on sargassum and associated infauna, and other epipelagic species of the Gulf of Mexico (USFWS and NMFS, 1992). In some regions the blue crab *(Callinectes sapidus)* is the most common food item of adults and juveniles. Other food items include shrimp, snails, bivalves, sea urchins, jellyfish, sea stars, fish, and occasional marine plants (Pritchard and Marquez, 1973; Shaver, 1991; Campbell, 1995).

Adults are primarily restricted to the Gulf of Mexico, although juveniles may range throughout the Atlantic Ocean since they have been observed as far north as Nova Scotia (Musick, 1979) and in coastal waters of Europe (Brongersma, 1972). Important foraging areas include Campeche Bay, Mexico, and Louisiana coastal waters. Nesting has been documented from approximately 134 miles of the Tamaulipas coastline, and sporadic nesting has been reported from Bolivar Peninsula, Texas, southward to Isla Aquada, Campeche. There have been isolated nesting attempts scattered from North Carolina to Colombia. An intensive recovery program in Texas includes a hatchery on Padre Island National Seashore (PAIS) with release of hatchlings in Texas and Florida. Despite these efforts, Kemp's ridley turtles occur in Texas in small numbers and in many cases may well be in transit between crustacean-rich feeding areas in the northern Gulf of Mexico and breeding grounds in Mexico. They have nested sporadically in Texas in the last 50 years; however the number of nests has dramatically increased in recent years. In 1999, 16 Kemp's ridley nests were recorded in Texas, with 199 nests confirmed for 2011 (PAIS data),

Kemp's ridley turtles have been recorded as close as Boliver Peninsula, Chambers County, Texas. While nests have increased annually on Texas' beaches, it is very unlikely that this species will occur on beaches near the project area, where erosion has removed most sand from most beaches. In addition, the project area is connected to the Gulf of Mexico by 19 miles of man-made and man-modified waterways. It is highly unlikely that this species would occur in Taylors Bayou or the project area and it is concluded that the construction and operation of the Proposed Project will have no effect on this species.

3.3 ATLANTIC HAWKSBILL SEA TURTLE

The Atlantic hawksbill sea turtle (Hawksbill) *(Eretmochelys imbricata)* was federally listed as endangered on June 2, 1970 (35 FR 8495), with critical habitat designated in Puerto Rico on May 24, 1978 (43 FR 22224). The greatest threat to this species is harvest to supply the market for tortoiseshell and

stuffed turtle curios (Meylan and Donnelly, 1999). Hawksbills generally inhabit coastal reefs, bays, rocky areas, passes, estuaries, and lagoons, where they are typically found at depths of less than 70 feet. Like some other sea turtle species, hatchlings are sometimes found floating in masses of marine plants (e.g., sargassum rafts) in the open ocean (NFWL, 1980). Hawksbills reenter coastal waters when they reach a carapace length of approximately 8 to 10 inches. Coral reefs are widely recognized as the resident foraging habitat of juveniles, subadults, and adults. This habitat association is undoubtedly related to their diet of sponges, which need solid substrate for attachment. Hawksbills are also found around rocky outcrops and high energy shoals, which are also optimum sites for sponge growth. In Texas, juvenile hawksbills are associated with stone jetties (NMFS, 2000). They nest on undisturbed, deep-sand beaches, from high-energy ocean beaches to tiny pocket beaches several meters wide bounded by crevices of cliff walls. Typically, these sand beaches are low energy with woody vegetation, such as sea grape *(Coccoloba uvifera),* near the waterline (NRC, 1990). The hawksbill is typically a solitary nester, which makes it harder to monitor nesting activity and success (NMFS, 2000).

The hawksbill is circumtropical, occurring in tropical and subtropical seas of the Atlantic, Pacific, and Indian oceans (Witzell, 1983). This species is probably the most tropical of all marine turtles, although it does occur in many temperate regions. The hawksbill turtle is widely distributed in the Caribbean Sea and western Atlantic Ocean, with representatives of at least some life history stages regularly occurring in southern Florida and the northern Gulf of Mexico, especially Texas, south to Brazil (NMFS, 2000). In the continental U.S., the hawksbill nests only in Florida where it is sporadic at best (NFWL, 1980). Texas is the only state outside of Florida where hawksbills are sighted with any regularity. Most of these sightings involve post-hatchlings and juveniles, and are primarily associated with stone jetties. These small turtles are believed to originate from nesting beaches in Mexico (NMFS, 2000). As such, this species is not anticipated to be found in the project area, and it is concluded that there will be no effect to this species from the Proposed Project.

3.4 LEATHERBACK SEA TURTLE

The leatherback sea turtle *(Dermochelys coriacea)* was listed as endangered throughout its range on June 2, 1970 (35 FR 8495), with CH designated in the U.S. Virgin Islands on September 26, 1978 and March 23, 1979 (43 FR 43688—43689 and 44 FR 17710—17712, respectively). Current estimates are that 20,000 to 30,000 female leatherbacks exist worldwide.

The leatherback sea turtle is mainly pelagic, inhabiting the open ocean, and seldom approaches land except for nesting (Eckert, 1992). It is most often found in coastal waters when nesting or following concentrations of jellyfish (TPWD, 2000), during which it can be found in inshore waters, bays, and estuaries. It dives almost continuously, often to great depths. Leatherbacks nest only sporadically in some of the Atlantic and Gulf states of the continental U.S., with one nesting reported as far north as North Carolina (Schwartz, 1976). In the Atlantic and Caribbean, the largest nesting assemblages are found in the U.S. Virgin Islands, Puerto Rico, and Florida (NMFS, 2000).

Apart from occasional feeding aggregations such as a large occurrence of 100 turtles reported by Leary (1957) off Port Aransas in December 1956, or possible concentrations in the Brownsville Eddy in winter (Hildebrand, 1983), leatherbacks are rare along the Texas coast, tending to keep to deeper offshore waters where their primary food source, jellyfish, occurs. According to USFWS (1981), leatherbacks have never been common in Texas waters. No nests of this species have been recorded for over 60 years. The leatherback is unlikely to inhabit the project are due to a lack of habitat. As such, it is concluded that the Proposed Project will have no effect on this species.

3.5 GREEN SEA TURTLE

The green sea turtle *(Chelonia mydas)* was listed on July 28, 1978, as threatened except for Florida and the Pacific coast of Mexico (including the Gulf of California) where it was listed as endangered (43 FR 32808). The green sea turtle primarily utilizes shallow habitats such as lagoons, bays, inlets, shoals, estuaries, and other areas with an abundance of marine algae and submerged aquatic vegetation (SAV). Individuals observed in the open ocean are believed to be migrants en route to feeding grounds or nesting beaches (Meylan, 1982). Hatchlings often float in masses of sea plants (e.g., sargassum) in convergence zones. Coral reefs and rocky outcrops near feeding pastures often are used as resting areas. The adults are primarily herbivorous, while the juveniles consume more invertebrates. Foods consumed include SAV, macroalgae and other marine plants, mollusks, sponges, crustaceans, and jellyfish (Mortimer, 1982; Green, 1984). They prefer high energy beaches with deep sand, which may be coarse to fine, with little organic content.

The green sea turtle is a circumglobal species in tropical and sub-tropical waters. In U.S. Atlantic waters, it is found around the U.S. Virgin Islands, Puerto Rico, and continental U.S. from Massachusetts to Texas, where primarily small juveniles inhabit shallow bays and estuaries. Once they attain sexual maturity, they return to their natal beaches outside of Texas to nest. The green sea turtle is unlikely to be found in the project area due to lack of habitat and it is concluded that that there will be no effect to this species from the Proposed Project.

3.6 LOGGERHEAD SEA TURTLE

The loggerhead sea turtle *(Caretta caretta)* was listed as threatened throughout its range on July 28, 1978 (43 FR 32808). The loggerhead is found in the open seas as far as 500 miles from shore, but mainly over the continental shelf, and in bays, estuaries, lagoons, creeks, and mouths of rivers. It favors warm temperate and sub-tropical regions not far from shorelines. The adults occupy various habitats, from turbid bays to clear waters of reefs. Subadults occur mainly in nearshore and estuarine waters.

The loggerhead is widely distributed in tropical and subtropical seas, being found in the Atlantic Ocean from Nova Scotia to Argentina, Gulf of Mexico, Indian and Pacific oceans (although it is rare in the eastern and central Pacific), and the Mediterranean Sea (Rebel, 1974; Ross, 1982; Iverson, 1986). In the continental U.S., loggerheads nest along the Atlantic coast from Florida to as far north as New

Jersey (Musick, 1979) and sporadically along the Gulf coast. In recent years a few have nested on barrier islands along the Texas coast. The loggerhead is considered to be the most abundant turtle in Texas marine waters, preferring shallow inner continental shelf waters and occurring only very infrequently in the bays. Loggerheads are probably present year-round but are most noticeable in the spring when one of their food items, the Portuguese man-of-war, is abundant. Because of lack of habitat, this species is not expected to be found in the project area, and it is concluded there will be no effect to loggerhead sea turtles from the construction, operation, or maintenance of the Proposed Project.

3.7 WEST INDIAN MANATEE

The West Indian manatee (*Trichechus manatus*) was listed by USFWS as endangered on 11 March 1967 (32 FR 4001). Later it received protection under the ESA of 1973. The West Indian manatee inhabits shallow coastal waters, estuaries, bays, rivers, and lakes. Throughout most of its range, it appears to prefer rivers and estuaries to marine habitats, although manatees inhabit marine habitats in the Greater Antilles (Lefebvre et al., 1989). It is not averse to traveling through dredged canals or using quiet marinas. They prefer waters that are at least 1 to 2 meters (m) in depth; along coasts, they are often in water 3 to 5 m deep. Taylors Bayou in the vicinity of the project is about 18 inches deep. They usually avoid areas with strong currents. Manatees are primarily dependent upon submergent, emergent, and floating vegetation, with the diet varying according to plant availability. They range from the southeastern U.S. and coastal regions of the Gulf, through the West Indies and Caribbean, to northern South America. U.S. populations occur primarily in Florida, where they are effectively isolated from other populations by the cooler waters of the northern Gulf and the deeper waters of the Straits of Florida

The West Indian manatee historically inhabited the Laguna Madre, the Gulf, and tidally influenced portions of rivers. It is currently, however, extremely rare in Texas waters and the most recent sightings are likely individuals migrating or wandering from Mexican waters. Historical records from Texas waters include Cow Bayou, Sabine Lake, Copano Bay, the Bolivar Peninsula, and the mouth of the Rio Grande (Schmidly, 2004). In May 2005, a live manatee appeared in the Laguna Madre near Port Mansfield (Blankinship, 2005). Given the 19 miles of shallow, modified channels with control structures between the Gulf/Sabine Lake and the project area, it is extremely unlikely that a manatee would be found in the project vicinity, and it is concluded there will be no effect to manatees from the construction, operation, or maintenance of the Proposed Project.

3.8 SMALLTOOTH SAWFISH

The smalltooth sawfish was listed as endangered and critical habitat was designated by NMFS September 2, 2009 (74 FR 45353-45378). It is a tropical marine and estuarine species of circumtropical distribution. Its historic range in the U.S. was Texas to New York. It is most commonly found today in south and southwest Florida to the Dry Tortugas. Juveniles are associated with shallow water, red mangrove habitats. Since the 1990's, the distribution of smalltooth sawfish has been restricted to peninsular Florida, with extremely rare occurrences in other Gulf coast states. It is most often found in estuaries and the mouths of rivers. Given the distance from the Gulf of Mexico and Sabine Lake, it is

extremely unlikely that smalltooth sawfish would be found in the project area. As such, it is concluded there will be no effect to smalltooth sawfish from the construction, operation, or maintenance of the Proposed Project.

6.0 DETERMINATION OF EFFECT

It is concluded that proposed construction activities and operation and maintenance of the Proposed Project would have no effect on Critical Habitat or listed species in Jefferson County.

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ATTACHMENT A

Ecological Services

Southwest Region

Back to Start

List of species by county for Texas:

Counties Selected: Jefferson

Select one or more counties from the following list to view a county list:

Anderson
Andrews
Angelina
Aransas
Archer

View County List

Jefferson County

Common Name	Scientific Name	Species Group	Listing Status	Species Image	Species Distribution Map	Critical Habitat	More Info
green sea turtle	*Chelonia mydas*	Reptiles	E, T				P
hawksbill sea turtle	*Eretmochelys imbricata*	Reptiles	E				P
Kemp's ridley sea turtle	*Lepidochelys kempii*	Reptiles	E				P
leatherback sea turtle	*Dermochelys coriacea*	Reptiles	E				P
loggerhead sea turtle	*Caretta caretta*	Reptiles	T				P
piping Plover	*Charadrius melodus*	Birds	E, T				P

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Last Updated: September 20, 2012

The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants and their habitats for the continuing benefit of the American people.

Southeast Region

Endangered and Threatened Species and Critical Habitats under the Jurisdiction of the NOAA Fisheries Service

Texas

Listed Species	Scientific Name	Status	Date Listed
Marine Mammals			
blue whale	*Balaenoptera musculus*	Endangered	12/02/70
finback whale	*Balaenoptera physalus*	Endangered	12/02/70
humpback whale	*Megaptera novaeangliae*	Endangered	12/02/70
sei whale	*Balaenoptera borealis*	Endangered	12/02/70
sperm whale	*Physeter macrocephalus*	Endangered	12/02/70
Turtles			
green sea turtle	*Chelonia mydas*	Threatened[1]	07/28/78
hawksbill sea turtle	*Eretmochelys imbricata*	Endangered	06/02/70
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered	12/02/70
leatherback sea turtle	*Dermochelys coriacea*	Endangered	06/02/70
loggerhead sea turtle	*Caretta caretta*	Threatened[2]	09/22/11
Fish			
None			

Candidate Species:

NMFS maintains a list of species that are undergoing an ESA status review that NMFS has announced in a Federal Register Notice. They are called "candidate" species as they are being considered for listing under the ESA, but are not yet subject to a proposed listing rule. To view the candidate species list, please visit: http://www.nmfs.noaa.gov/pr/species/esa/other.htm

Species of Concern:

NMFS maintains a list of species for which there are concerns regarding their status and threats. Federal agencies and the public are encouraged to consider these species during project planning. To view the Species of Concern list and receive more information please visit: http://sero.nmfs.noaa.gov/pr/SOC.htm

[1] Green turtles are listed as threatened, except for breeding populations of green turtles in Florida and on the Pacific Coast of Mexico, which are listed as endangered.

[2] Northwest Atlantic Ocean (NWA) Distinct Population Segment (DPS) was listed as threatened. NMFS and USFWS issued a final rule changing the listing of loggerhead sea turtles from a single, threatened species to nine DPSs listed as either threatened or endangered in 2012 (76 FR 58868).

Last Revision: 8/7/2012 4:09:00 PM

JEFFERSON COUNTY

AMPHIBIANS		Federal Status	State Status
Pig frog	*Lithobates grylio*		

prefers permanent bodies of open water with emergent vegetation; active mainly at night; eats insects and crustaceans; mating and egg-laying March-September; male vocalization a pig-like grunt

BIRDS		Federal Status	State Status
American Peregrine Falcon	*Falco peregrinus anatum*	DL	T

year-round resident and local breeder in west Texas, nests in tall cliff eyries; also, migrant across state from more northern breeding areas in US and Canada, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Arctic Peregrine Falcon	*Falco peregrinus tundrius*	DL	

migrant throughout state from subspecies' far northern breeding range, winters along coast and farther south; occupies wide range of habitats during migration, including urban, concentrations along coast and barrier islands; low-altitude migrant, stopovers at leading landscape edges such as lake shores, coastlines, and barrier islands.

Bald Eagle	*Haliaeetus leucocephalus*	DL	T

found primarily near rivers and large lakes; nests in tall trees or on cliffs near water; communally roosts, especially in winter; hunts live prey, scavenges, and pirates food from other birds

Black Rail	*Laterallus jamaicensis*		

salt, brackish, and freshwater marshes, pond borders, wet meadows, and grassy swamps; nests in or along edge of marsh, sometimes on damp ground, but usually on mat of previous year's dead grasses; nest usually hidden in marsh grass or at base of Salicornia

Brown Pelican	*Pelecanus occidentalis*	DL	

largely coastal and near shore areas, where it roosts and nests on islands and spoil banks

Henslow's Sparrow	*Ammodramus henslowii*		

wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; a key component is bare ground for running/walking

Peregrine Falcon	*Falco peregrinus*	DL	T

both subspecies migrate across the state from more northern breeding areas in US and Canada to winter along coast and farther south; subspecies (F. p. anatum) is also a resident breeder in west Texas; the two subspecies' listing statuses differ, F.p. tundrius is no longer listed in Texas; but because the subspecies are not easily distinguishable at a distance, reference is generally made only to the species level; see subspecies for habitat.

Piping Plover	*Charadrius melodus*	LT	T

wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats

JEFFERSON COUNTY

BIRDS

		Federal Status	State Status
Reddish Egret	*Egretta rufescens*		T

resident of the Texas Gulf Coast; brackish marshes and shallow salt ponds and tidal flats; nests on ground or in trees or bushes, on dry coastal islands in brushy thickets of yucca and prickly pear

Snowy Plover	*Charadrius alexandrinus*		

formerly an uncommon breeder in the Panhandle; potential migrant; winter along coast

Southeastern Snowy Plover	*Charadrius alexandrinus tenuirostris*		

wintering migrant along the Texas Gulf Coast beaches and bayside mud or salt flats

Sprague's Pipit	*Anthus spragueii*	C	

only in Texas during migration and winter, mid September to early April; short to medium distance, diurnal migrant; strongly tied to native upland prairie, can be locally common in coastal grasslands, uncommon to rare further west; sensitive to patch size and avoids edges.

Swallow-tailed Kite	*Elanoides forficatus*		T

lowland forested regions, especially swampy areas, ranging into open woodland; marshes, along rivers, lakes, and ponds; nests high in tall tree in clearing or on forest woodland edge, usually in pine, cypress, or various deciduous trees

Western Snowy Plover	*Charadrius alexandrinus nivosus*		

uncommon breeder in the Panhandle; potential migrant; winter along coast

White-faced Ibis	*Plegadis chihi*		T

prefers freshwater marshes, sloughs, and irrigated rice fields, but will attend brackish and saltwater habitats; nests in marshes, in low trees, on the ground in bulrushes or reeds, or on floating mats

Wood Stork	*Mycteria americana*		T

forages in prairie ponds, flooded pastures or fields, ditches, and other shallow standing water, including salt-water; usually roosts communally in tall snags, sometimes in association with other wading birds (i.e. active heronries); breeds in Mexico and birds move into Gulf States in search of mud flats and other wetlands, even those associated with forested areas; formerly nested in Texas, but no breeding records since 1960

FISHES

		Federal Status	State Status
American eel	*Anguilla rostrata*		

coastal waterways below reservoirs to gulf; spawns January to February in ocean, larva move to coastal waters, metamorphose, then females move into freshwater; most aquatic habitats with access to ocean, muddy bottoms, still waters, large streams, lakes; can travel overland in wet areas; males in brackish estuaries; diet varies widely, geographically, and seasonally

Smalltooth sawfish	*Pristis pectinata*	LE	E

JEFFERSON COUNTY

FISHES		Federal Status	State Status

different life history stages have different patterns of habitat use; young found very close to shore in muddy and sandy bottoms, seldom descending to depths greater than 32 ft (10 m); in sheltered bays, on shallow banks, and in estuaries or river mouths; adult sawfish are encountered in various habitat types (mangrove, reef, seagrass, and coral), in varying salinity regimes and temperatures, and at various water depths, feed on a variety of fish species and crustaceans

INSECTS		Federal Status	State Status

Bay skipper *Euphyes bayensis*

apparently tidal sawgrass marsh only, probably covers same range of salinity as saw grass, nectarivore (butterfly), herbivore (caterpillar), larval foodplant is so far unconfirmed but is probably sawgrass, diurnal; two well separated broods apparently peaking in late May and in September which suggests the larvae may well aestivate in summer and the next brood hibernate

MAMMALS		Federal Status	State Status
Black bear	*Ursus americanus*	T/SA;NL	T

bottomland hardwoods and large tracts of inaccessible forested areas; due to field characteristics similar to Louisiana Black Bear (LT, T), treat all east Texas black bears as federal and state listed Threatened

Louisiana black bear	*Ursus americanus luteolus*	LT	T

possible as transient; bottomland hardwoods and large tracts of inaccessible forested areas

Plains spotted skunk *Spilogale putorius interrupta*

catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie

Rafinesque's big-eared bat	*Corynorhinus rafinesquii*		T

roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures

Red wolf	*Canis rufus*	LE	E

extirpated; formerly known throughout eastern half of Texas in brushy and forested areas, as well as coastal prairies

Southeastern myotis bat *Myotis austroriparius*

roosts in cavity trees of bottomland hardwoods, concrete culverts, and abandoned man-made structures

MOLLUSKS		Federal Status	State Status

Creeper (squawfoot) *Strophitus undulatus*

small to large streams, prefers gravel or gravel and mud in flowing water; Colorado, Guadalupe, San Antonio, Neches (historic), and Trinity (historic) River basins

JEFFERSON COUNTY

MOLLUSKS

		Federal Status	State Status
Fawnsfoot	*Truncilla donaciformis*		

small and large rivers especially on sand, mud, rocky mud, and sand and gravel, also silt and cobble bottoms in still to swiftly flowing waters; Red (historic), Cypress (historic), Sabine (historic), Neches, Trinity, and San Jacinto River basins.

Little spectaclecase	*Villosa lienosa*		

creeks, rivers, and reservoirs, sandy substrates in slight to moderate current, usually along the banks in slower currents; east Texas, Cypress through San Jacinto River basins

Louisiana pigtoe	*Pleurobema riddellii*		T

streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; not generally known from impoundments; Sabine, Neches, and Trinity (historic) River basins

Sandbank pocketbook	*Lampsilis satura*		T

small to large rivers with moderate flows and swift current on gravel, gravel-sand, and sand bottoms; east Texas, Sulfur south through San Jacinto River basins; Neches River

Southern hickorynut	*Obovaria jacksoniana*		T

medium sized gravel substrates with low to moderate current; Neches, Sabine, and Cypress river basins

Texas heelsplitter	*Potamilus amphichaenus*		T

quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins

Texas pigtoe	*Fusconaia askewi*		T

rivers with mixed mud, sand, and fine gravel in protected areas associated with fallen trees or other structures; east Texas River basins, Sabine through Trinity rivers as well as San Jacinto River

Wabash pigtoe	*Fusconaia flava*		

creeks to large rivers on mud, sand, and gravel from all habitats except deep shifting sands; found in moderate to swift current velocities; east Texas River basins, Red through San Jacinto River basins; elsewhere occurs in reservoirs and lakes with no flow

Wartyback	*Quadrula nodulata*		

gravel and sand-gravel bottoms in medium to large rivers and on mud; Red, Sabine, Neches River basins

REPTILES

		Federal Status	State Status
Alligator snapping turtle	*Macrochelys temminckii*		T

perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps, bayous, and ponds near deep running water; sometimes enters brackish coastal waters; usually in water with mud bottom and abundant aquatic vegetation; may migrate several miles along rivers; active March-October; breeds April-October

Atlantic hawksbill sea turtle	*Eretmochelys imbricata*	LE	E

Gulf and bay system, warm shallow waters especially in rocky marine environments, such as coral reefs and jetties, juveniles found in floating mats of sea plants; feed on sponges, jellyfish, sea urchins, molluscs, and crustaceans, nests April through November

JEFFERSON COUNTY

REPTILES

		Federal Status	State Status
Green sea turtle	*Chelonia mydas*	LT	T

Gulf and bay system; shallow water seagrass beds, open water between feeding and nesting areas, barrier island beaches; adults are herbivorous feeding on sea grass and seaweed; juveniles are omnivorous feeding initially on marine invertebrates, then increasingly on sea grasses and seaweeds; nesting behavior extends from March to October, with peak activity in May and June

Gulf Saltmarsh snake *Nerodia clarkii*

saline flats, coastal bays, and brackish river mouthss

Kemp's Ridley sea turtle	*Lepidochelys kempii*	LE	E

Gulf and bay system, adults stay within the shallow waters of the Gulf of Mexico; feed primarily on crabs, but also snails, clams, other crustaceans and plants, juveniles feed on sargassum and its associated fauna; nests April through August

Leatherback sea turtle	*Dermochelys coriacea*	LE	E

Gulf and bay systems, and widest ranging open water reptile; omnivorous, shows a preference for jellyfish; in the US portion of their western Atlantic nesting territories, nesting season ranges from March to August

Loggerhead sea turtle	*Caretta caretta*	LT	T

Gulf and bay system primarily for juveniles, adults are most pelagic of the sea turtles; omnivorous, shows a preference for mollusks, crustaceans, and coral; nests from April through November

Northern scarlet snake	*Cemophora coccinea copei*		T

mixed hardwood scrub on sandy soils; feeds on reptile eggs; semi-fossorial; active April-September

Sabine map turtle *Graptemys ouachitensis sabinensis*

Sabine River system; rivers and related tributaries, ponds and reservoirs with abundant aquatic vegetation; basks on fallen logs and exposed roots; eats insects, crustaceans, mollusks, and aquatic plants; breeding and egg-laying March-May, with hatchlings appearing in early fall

Texas diamondback terrapin *Malaclemys terrapin littoralis*

coastal marshes, tidal flats, coves, estuaries, and lagoons behind barrier beaches; brackish and salt water; burrows into mud when inactive; may venture into lowlands at high tide

Texas horned lizard	*Phrynosoma cornutum*		T

open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September

Timber/Canebrake rattlesnake	*Crotalus horridus*		T

swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland; limestone bluffs, sandy soil or black clay; prefers dense ground cover, i.e. grapevines or palmetto

JEFFERSON COUNTY

PLANTS

Federal Status State Status

Chapman's orchid *Platanthera chapmanii*

in Texas, appears restricted to wetland pine savannas and savanna swales in hillside seepage bogs, two very restricted and declining habitats in the State; flowering July-August

Florida ladies-tresses *Spiranthes brevilabris var. floridana*

Moist to wet, relatively open sites of pine-dominated landscapes, mesic pine uplands, open scrub pinelands with saw palmetto, Catahoula sandstone barrens, meadows, open grassy lawns, pitcher plant and seepage bogs, wet prairies, wet savannahs, and flatwoods. Delicate, nearly ephemeral, orchid with winter rosette. Flowers Apr-May.

APPENDIX D

PUBLIC COORDINATION

Public Notice

U.S. Army Corps Of Engineers Galveston District

Permit Application No: SWG-2007-00850
Date Issued: 5 December 2008
Comments Due: 6 January 2009

U.S. ARMY CORPS OF ENGINEERS, GALVESTON DISTRICT
AND
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

PURPOSE OF PUBLIC NOTICE: To inform you of a proposal for work in which you might be interested. It is also to solicit your comments and information to better enable us to make a reasonable decision on factors affecting the public interest.

AUTHORITY: This application will be reviewed pursuant to Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act.

APPLICANT: Jefferson County Drainage District No. 7
P.O. Box 3244
Port Arthur, Texas 77642-3244

AGENT: Horizon Environmental Services, Inc.
1507 South Interstate Highway 35
Austin, Texas 78741-2502
Telephone: 512-328-2430
POC: Mr. Lee Sherrod

LOCATION: The project is located at Alligator Bayou Pumping Station No. 16 (PS 16), at the confluence of Alligator Bayou and Taylors Bayou, approximately 2 miles southwest of Port Arthur, in Jefferson County, Texas. The project can be located on the U.S.G.S. quadrangle map entitled "Port Arthur South, Tex. – La." Approximate UTM Coordinates in NAD 27 (meters): Zone 15; Easting: 405150; Northing: 3303950. Directions to the site: from the intersection of Highway (Hwy) 73 and Hwy 82 in Port Arthur, proceed east on Hwy 82 for 1.36 miles to a private levee road. Proceed south on the private levee road for about 1 mile to the pump station.

PROJECT DESCRIPTION: The applicant proposes to add a low-flow pump station to the existing PS 16 in order to relieve shallow flooding within the 24,083-acre Jefferson County Drainage District No. 7 drainage area, and thereby prevent structure and road flooding. The project would allow PS 16 to pump water from the surrounding drainages within the contained drainage basin into Taylors Bayou more quickly and from a lower elevation. The proposed improvements to PS 16 would maintain continuous low flow, reduce flooding incidents, and provide backup capacity in the event that one or more of the existing pumps should become non-operational.

Approximately 970 linear feet of temporary steel sheet pile cofferdam would be installed around the Alligator Bayou and Taylors Bayou work area to allow for pump-out of water and work in the dry. Excavation of the site would be by bucket excavator, and all excavated material would be spread on uplands of the existing hurricane levee. Excavation of Taylors Bayou would permanently impact approximately 0.31 acre of existing open water. The adjacent herbaceous wetland (0.21 acre) lies above the ordinary high water mark of Taylors Bayou. Fill would be placed in 0.037 acre of Alligator Bayou open water to construct the northwest corner of the new concrete pump station. No other fill would occur in waters of the U.S. except for the short ends of the proposed wing walls where they extend into Alligator Bayou and Taylors Bayou. The new structure floor would be formed and poured concrete.

Alligator Bayou and the associated tributaries inside of the hurricane protection levees (upstream of the pumping station) are all maintained, trapezoidal drainage facilities that act as a linear detention basin for flood waters. These ditches have been deepened and leveed to add detention capacity for storm runoff. Due to the historic deepening and isolation by levees, these ditches do not support abutting or adjacent wetlands. The few remaining wetlands that exist within the hurricane levee protection area are depressions that derive hydrology from collection of precipitation. The lowering of the water level in Alligator Bayou or any of its tributaries would not affect any of these wetland areas.

The applicant has not proposed mitigation for regulated impacts in Taylors Bayou and Alligator Bayou, citing relatively low quality of the open water areas.

NOTES: This public notice is being issued based on information furnished by the applicant. The applicant's plans are enclosed in 4 sheets.

A preliminary review of this application indicates that an Environmental Impact Statement (EIS) is not required. Since permit assessment is a continuing process, this preliminary determination of EIS requirement will be changed if data or information brought forth in the coordination process is of a significant nature.

Our evaluation will also follow the guidelines published by the U.S. Environmental Protection Agency pursuant to Section 404 (b)(1) of the Clean Water Act (CWA).

OTHER AGENCY AUTHORIZATIONS: Texas Coastal Zone consistency certification is required. The applicant has stated that the project is consistent with the Texas Coastal Management Program goals and policies and will be conducted in a manner consistent with said program.

Although this project would result in a direct impact of three acres or less of waters of the state or 1,500 linear feet of streams (or a combination of the two is below the threshold), the best management practices (BMP's) available on the BMP checklist form are not applicable to this project. Therefore, Texas Commission on Environmental Quality (TCEQ) certification is required. Concurrent with processing of this application, the TCEQ is reviewing this application under Section 401 of the CWA and in accordance with Title 30, Texas Administrative Code Section 279.1-13 to determine if the work would comply with State water quality standards. By virtue of an agreement between the U.S. Army Corps of Engineers (Corps) and the TCEQ, this public notice is also issued for the purpose of advising all known interested persons that there is pending before the TCEQ a decision on water quality certification under such act. Any comments concerning this application may be submitted to the Texas Commission on Environmental Quality, 401 Coordinator, MSC-150, P.O. Box 13087, Austin, Texas 78711-3087. The public comment period extends 30 days from the date of publication of this notice. A copy of the public notice with a description of work is made available for review in the TCEQ's Austin office. The complete application may be reviewed in the Corps office listed in this public notice. The TCEQ may conduct a public meeting to consider all comments concerning water quality if requested in writing. A request for a public meeting must contain the following information: the name, mailing address, application number, or other recognizable reference to the application, a brief description of the interest of the requester, or of persons represented by the requester; and a brief description of how the application, if granted would adversely affect such interest.

NATIONAL REGISTER OF HISTORIC PLACES: The staff archaeologist has reviewed the latest published version of the National Register of Historic Places, lists of properties determined eligible, and other sources of information. The following is current knowledge of the presence or absence of historic properties and the effects of the undertaking upon these properties:

> The proposed work and/or structures are of such limited nature and scope that little likelihood exists for the proposed project to impinge upon a historic property, even if present within the affected area.

THREATENED AND ENDANGERED SPECIES: Preliminary indications are that no known threatened and/or endangered species or their critical habitat will be affected by the proposed work.

ESSENTIAL FISH HABITAT: This notice initiates the Essential Fish Habitat consultation requirements of the Magnuson-Stevens Fishery Conservation and Management Act. Our initial determination is that the proposed action would not have a substantial adverse impact on Essential Fish Habitat or federally managed fisheries in the Gulf of Mexico. Our final determination relative to project impacts and the need for mitigation measures is subject to review by and coordination with the National Marine Fisheries Service.

PUBLIC INTEREST REVIEW FACTORS: This application will be reviewed in accordance with 33 CFR 320-330, the Regulatory Programs of the Corps, and other pertinent laws, regulations and executive orders. The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonably may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the proposal, will be considered: among those are conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs and, in general, the needs and welfare of the people.

SOLICITATION OF COMMENTS: The Corps is soliciting comments from the public, Federal, State, and local agencies and officials, Indian tribes, and other interested parties in order to consider and evaluate the impacts of this proposed activity. Any comments received will be considered by the Corps to determine whether to issue, modify, condition or deny a permit for this proposal. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Impact Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

This public notice is being distributed to all known interested persons in order to assist in developing facts upon which a decision by the Corps may be based. For accuracy and completeness of the record, all data in support of or in opposition to the proposed work should be submitted in writing setting forth sufficient detail to furnish a clear understanding of the reasons for support or opposition.

PUBLIC HEARING: Prior to the close of the comment period any person may make a written request for a public hearing setting forth the particular reasons for the request. The District Engineer will determine whether the issues are substantial and should be considered in the permit decision. If a public hearing is warranted, all known interested persons will be notified of the time, date, and location.

CLOSE OF COMMENT PERIOD: All comments pertaining to this Public Notice must reach this office on or before **6 January 2009**. Extensions of the comment period may be granted for valid reasons provided a written request is received by the limiting date. **If no comments are received by that date, it will be considered that there are no objections**. Comments and requests for additional information should be submitted to:

Denise Sloan
Regulatory Branch, CESWG-PE-RB
U.S. Army Corps of Engineers
P.O. Box 1229
Galveston, Texas 77553-1229
409-766-3962 Phone
409-766-6301 Fax

DISTRICT ENGINEER
GALVESTON DISTRICT
CORPS OF ENGINEERS

Federal Emergency Management Agency

PUBLIC NOTICE

Notice of Availability of the Draft Environmental Assessment for the Alligator Bayou Pump Station Expansion Project in Alligator Bayou Watershed
Port Arthur, Texas
Flood Mitigation Assistance Program

The Jefferson County Drainage District No. 7 (DD7) has applied to the Federal Emergency Management Agency (FEMA) for assistance with the construction of an additional low-flow pump station on the bank of Alligator Bayou opposite the existing Pump Station #16 at the outfall of Alligator Bayou into Taylors Bayou in Port Arthur, Texas in accordance with the National Environmental Policy Act of 1969 (NEPA), the Council for Environmental Quality (CEQ) regulations implementing regulations of NEPA (40 CFR Parts 1500 – 1508), the National Historic Preservation Act, and the implementing regulations of FEMA (44 CFR Parts 9 and 10). The drainage area flowing to PS 16 is estimated to be 24,083 acres, which includes Main A, Main B, Main C, West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas contained within the hurricane protection levees for these communities. Pump Station #16 is one of the main components of the DD7 system, serving approximately 90,000 residents in the cities of Port Arthur, Port Neches, Groves, Nederland, and unincorporated areas of the county. This Notice of Availability also serves as the Initial Public Notice for work in the floodplain in accordance with 44 CFR Part 9.6. An Environmental Assessment (EA) is being prepared to assess the potential impacts of the proposed action on the human and natural environment.

The EA evaluates alternatives that provide for compliance with applicable environmental laws. The alternatives to be evaluated include (1) No Action; and, (2) The Proposed Action, the construction of an additional pump station.

The draft Environmental Assessment is available for review between March 9, 2008, and April 9, 2008, at the Beaumont Public Library located at 801 Pearl Street; at the Jefferson County Drainage District No. 7 Offices located at 4401 Ninth Avenue Port Arthur, Texas; and at the offices of Horizon Environmental Services, Inc., located at 1507 South IH 35, Austin, Texas.

Written comments regarding this proposed project can be mailed to C. Lee Sherrod, Horizon Environmental Services, Inc., 1507 South IH 35, Austin, Texas 78741. Electronic comments can also be submitted to lee_sherrod@horizon-esi.com. Comments should be received no later than 5 p.m. on April 9, 2008.

_____
Phil Kelly, General Manager

Federal Emergency Management Agency
PUBLIC NOTICE
Notice of Availability of the Final Environmental Assessment (EA)
and
Finding of No Significant Impact (FONSI)
Alligator Bayou Pump Station Expansion Project
Hazard Mitigation Grant Program
Port Arthur, Texas,

Interested persons are hereby notified that the Federal Emergency Management Agency (FEMA) is proposing to assist in funding the construction of an additional low-flow pump station on the bank of Alligator Bayou opposite the existing Pump Station #16 (PS 16) at the outfall of Alligator Bayou into Taylors Bayou in Port Arthur, Texas. In accordance with the National Environmental Policy Act (NEPA) of 1969, National Historic Preservation Act (NHPA), Executive Order 11988, Executive Order 11990, and the implementing regulations of FEMA, an environmental assessment (EA) was prepared to assess the potential impacts of the Proposed Action on the human and natural environment. This announcement also provides public notice for work within the regulated floodplain, in accordance with Executive Orders 11988 and 11990 and 44 CFR Part 9.12. The draft EA was released for public comment on March 9, 2008. No comments were received during the 30-day public comment period. The EA has been finalized and a Finding of No Significant Impact (FONSI) has been made.

The reasons for the decision not to prepare an Environmental Impact Statement (EIS) are as follows:

1. No significant adverse environmental impacts have been identified to existing land use, water resources (surface water, groundwater, waters of the United States, wetlands, and floodplains), air quality, noise, biological resources (vegetation, fish and wildlife, State- and Federally-listed threatened or endangered species and critical habitats), safety, hazardous materials and waste, or cultural resources; no disproportionately high or adverse effects on minority or low-income populations would occur, and;

2. The project is necessary to meet the needs of the citizens of the local community.

No further environmental review of this project is proposed to be conducted prior to the release of FEMA funds. Copies of the Final EA and FONSI can be obtained by contacting: Donald R. Fairley, REM, FEMA Regional Environmental Officer, 800 North Loop 288, Denton, TX 76201-3698, or at Donald.Fairley@dhs.gov. The FONSI is also available on the World Wide Web on the FEMA website at http://www.fema.gov/ehp/docs.shtm.

APPENDIX E

MITIGATION, INCREMENTAL ANALYSIS, MONITORING, AND ADAPTIVE MANAGEMENT PLANS

APPENDIX E

MITIGATION, INCREMENTAL ANALYSIS, MONITORING, AND ADAPTIVE MANAGEMENT PLANS

FOR

CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION NO. 16,
PORT ARTHUR AND VICINITY, TEXAS,
HURRICANE FLOOD PROTECTION PROJECT,
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

PREPARED FOR:

JEFFERSON COUNTY DRAINAGE DISTRICT NO. 7

AND

U.S. ARMY CORPS OF ENGINEERS

NOVEMBER 2012

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1.0 INTRODUCTION AND PROPOSED PROJECT DESCRIPTION

The Proposed Project would provide for improvements to the existing Alligator Bayou pump station, Pump Station (PS) 16, located at the confluence of the Taylors and Alligator Bayous in Jefferson County, Texas. The existing pump station is operated and maintained by Jefferson County Drainage District No. 7 (DD7), and is part of the larger Port Arthur and Vicinity Hurricane Flood Protection Project (Hurricane Flood Protection Project), a levee system with pump stations that protect Port Arthur and surrounding communities and industry. The proposed improvement would add an additional pump station on the south bank of Alligator Bayou opposite PS16 (Attachment A). Project construction would impact 1.3 acres of fringe wetlands and shallow open water along Taylors and Alligator Bayous. Mitigation for unavoidable impacts resulting from the proposed improvements would be accomplished by creating 1.8 acres of tidal marsh dominated by *Spartina alterniflora* behind a recently constructed rock breakwater along the west shoreline of the Taylors Bayou Diversion Channel (Figure 1). A Habitat Evaluation Procedure (HEP) analysis was performed to support this mitigation plan.

Recent guidance issued by the USACE requires monitoring for mitigation plans, updates previous requirements, and supplements regulatory guidelines. Mitigation guidance includes:

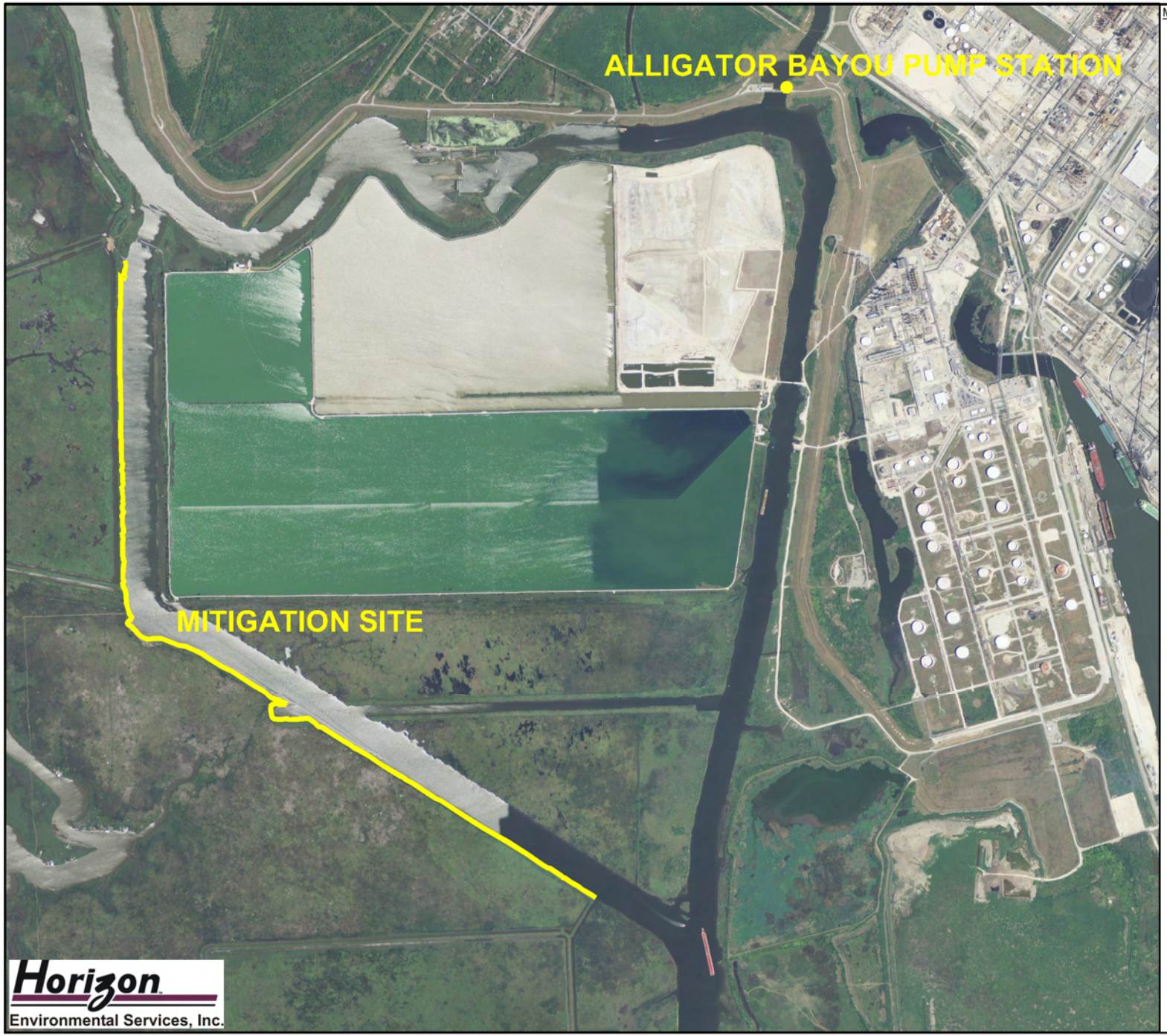
- Memorandum for Commanders, Major Subordinate Commands, Subject: implementation Guidance for Section 2036 (a) of the Water Resources Development Act of 2007 (WRDA 07) – Mitigation for Fish & Wildlife and Wetland Losses, CECW-PC, dated 31 August 2009.
- Section 906(d) of the Water Resources Development Act 1986 (33 USC 2283 (d)), as amended.
- ER 1105-2-100 dated 22 April 2000, Planning Guidance Notebook.
- Compensatory Mitigation for Losses of Aquatic Resources; Final Rule; Federal Register, Volume 73, No. 70, April 10, 2008.
- Conference Report to Accompany H.R. 14945, Report 110-280, dated July 31, 2007, Joint Explanatory Statement of the Committee of Conference.

2.0 PURPOSE

This document describes the monitoring and contingency/adaptive management plans as required by the Section 2036 guidance referenced above for mitigation proposed for alterations to the Alligator Bayou Pump Station. The monitoring plan described in this document is conceptual, and is based on the net functional costs of unavoidable resource impacts and the functional benefits of proposed in-kind mitigation as evaluated using species HEP modeling.

"Do Not Scale This Drawing"

060108A67PA_Breakwater.dwg | JEA | 10/19/2012



MAP SOURCE:
NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP);
BIG HILL BAYOU, TEXAS QUADRANGLE (NE QUARTER; 2010)
PORT ARTHUR SOUTH, TEXAS QUADRANGLE (NW QUARTER; 2010)

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FEET

Horizon Environmental Services, Inc.

FIGURE 1

MITIGATION SITE
ALLIGATOR BAYOU
PUMP STATION
JEFFERSON COUNTY,
TEXAS

This document provides the mitigation, monitoring, and contingency/adaptive management plan to offset impacts associated with the construction of an additional pump station adjacent to Pump Station No. 16 at the confluence of Taylors Bayou and Alligator Bayou in Jefferson County. The existing pump station is operated and maintained by Jefferson County Drainage District No. 7 (DD7). The proposed alterations and mitigation plan have been previously approved under USACE Permit SWG-2007-00850.

3.0 MITIGATION PLAN

Section 2036 (a) guidance of WRDA 07, issued August 31, 2009, requires that the General Reevaluation Report and Preliminary Draft Supplemental Environmental Impact Statement contain a specific plan to mitigate unavoidable impacts to fish and wildlife resources. Adverse impacts to these resources must be avoided or minimized to the extent practicable, and the remaining unavoidable impacts must be compensated to the extent justified.

3.1 MITIGATION PLANNING OBJECTIVES

Paragraph C-3(e)(8)(a)(3) of ER 1105-2-100 requires the development of planning objectives to guide mitigation plan formation, to determine the appropriate mitigation management features, and to establish performance standards for evaluating each increment of mitigation management. The following mitigation planning objectives were established to evaluate restoration and mitigation measures considered for the project.

- Replace lost habitat quality at no less than a one-to-one basis as measured by Average Annualized Habitat Units (AAHUs) for a minimum of 0.02 AAHUs of wetlands.
- Replace habitat in-kind to the maximum extent practicable.
- Contribute to shoreline stabilization and restore habitat along the Taylors Bayou Diversion Channel shoreline, and reduce saltwater intrusion into the J.D. Murphree Wildlife Management Area.
- Meet goal of no net loss of wetlands.

3.2 COMPARISON OF THE MITIGATION PLAN WITH PLANNING OBJECTIVES

In-kind compensatory mitigation for unavoidable project impacts to 0.02 AAHUs of tidal wetlands would be accomplished by planting *Spartina alterniflora* within an approximate 1.8-acre site behind a recently constructed rock breakwater along the west shoreline of the Taylors Bayou Diversion Channel. The mitigation site is currently owned by Jefferson County Drainage District No. 6 (DD6). DD6 recently constructed the breakwater to reduce erosion of existing levees along the shoreline that was threatening saltwater intrusion into the J.D. Murphree Wildlife Management Area, owned and managed by Texas Parks and Wildlife Department (TPWD). Dense marsh development and maturation along this shoreline is desired by TPWD to further stabilize the eroded areas and to restore habitat conditions along an otherwise barren shoreline. The 1.8 acres of compensatory mitigation would provide for 0.16 AAUs over the 50-year period of analysis, providing overall benefits of 0.14 AAHUs in excess of the 0.02

AAHUs associated with the 1.3 acres of impacts, supporting the goal of no-net-loss of wetlands in terms of both function and acres.

3.3 COST EFFECTIVENESS AND INCREMENTAL COST ANALYSIS

Five alternative mitigation plans were considered. Purchase of credits from a coastal marsh ecosystem mitigation bank, the proposed mitigation plan, the previously approved mitigation plan, a Nueces River estuary mitigation plan, and the no-action alternative were evaluated.

Purchase Credits from a Mitigation Bank

There are currently no mitigation banks that service the project area that have coastal herbaceous wetland credits. This alternative was dropped from further consideration.

Proposed Mitigation Plan

The proposed mitigation plan will aid in stabilization and hasten the restoration of the eroding western shoreline of the Taylors Bayou Diversion Channel adjacent to the J.D. Murphree Wildlife Management Area. Planting will occur in the area behind a recently constructed breakwater that is currently sparsely vegetated (approximately 5%). Dense vegetation along this shoreline is desired by TPWD to further stabilize the eroded areas and to restore habitat conditions along an otherwise barren shoreline. The goal of the mitigation will be the restoration of 1.8 acres of estuarine marsh on the potentially erosive edges of the diversion channel. The planting of marsh vegetation will significantly aid stabilization of erosive channel edges and hasten marsh development and maturation with a resultant increase in the functional values of the entire area. The cost to implement this plan, including a 5-year monitoring period and invasive species controls was estimated at $23,000. HEP analysis of this mitigation scenario resulted in a gain of 9 HUs in the first year.

Previously Approved Mitigation Plan

The originally approved mitigation plan included the preservation of a 3-acre area containing forested wetlands and upland buffer areas adjacent to a 1955-acre dedicated preservation site upstream on Taylors Bayou. While this area has been considered very high value for preservation by the resource agencies, it is out-of-kind compensation for the project impacts. The only improvement that could be demonstrated for this mitigation site was invasive species control. The cost of the mitigation plan was $30,000 and a gain of only 1 HU was demonstrated for the first year due to management actions.

Nueces River Estuary Mitigation Plan

Mitigation opportunities are available in the lower Nueces River estuary on either private or public properties. The opportunities include planting of marsh grass on recently deposited dredged materials under beneficial use scenarios. The beneficial gains for this type of mitigation would be very

similar to the gains for the proposed mitigation (9 HU) in the first year. The cost for this scenario is estimated at $35,000 due to the added cost of land acquisition and/or environmental easement acquisition. This mitigation is in-kind, but is outside of the Taylors Bayou watershed.

No Action Alternative

The no-action alternative (no mitigation) is not acceptable because it does not achieve the goals of the proposed project and does not meet the guidelines in ER 1105-2-100.

Incremental Cost Analysis

An incremental cost analysis of the proposed mitigation plan, the previously-approved mitigation plan, and a third alternative (purchase of mitigation land in the Neches River estuary) was conducted using the USACE Institute for Water Resources Planning Suite (IWR Plan) guidance and software.

Of the plans analyzed in the IWR Plan, only the proposed plan and the no-action plan were indicated as Best-Buys (Table 1).

Table 1: Plan Analysis

Plan Name	Cost ($1000)	Output (HUs)	Cost Effective
No Action Plan	0	0	Best Buy
Proposed Mitigation Plan	23	9	Best Buy
Previously Approved Plan	30	1	No
Nueces River Estuary Plan	35	9	No

The total and average costs of the plans are shown in Table 2.

Table 2: Total and Average Cost

Plan Name	Cost ($1000)	Output (HUs)	Average Cost
No Action Plan	0	0	0
Proposed Mitigation Plan	23	9	2.56
Previously Approved Plan	30	1	30.0
Nueces River Estuary Plan	35	9	3.89

Table 3 shows the incremental cost of the two best buy plans.

Table 3: Incremental Cost of Best Buy Plans

Plan Name	Output (HU)	Cost ($1000)	Average Cost ($1000/HU)	Incremental Cost ($1000)	Inc. Output (HU)	Inc. Cost Per Output
No Action Plan	0.00	0.00				
Proposed Plan	9.00	23.00	2.5556	23.0000	9.0000	2.5556

Figure 2 indicates the Cost effectiveness of each of the plans. The previously approved plan and Nueces River Estuary plan are considered non cost effective. Figure 3 is a representation of the incremental cost and output for the only Best Buy plan, the proposed mitigation plan.

The results of the analysis indicate that the proposed mitigation plan is the best option to compensate for loss of aquatic resources.

Figure 2:

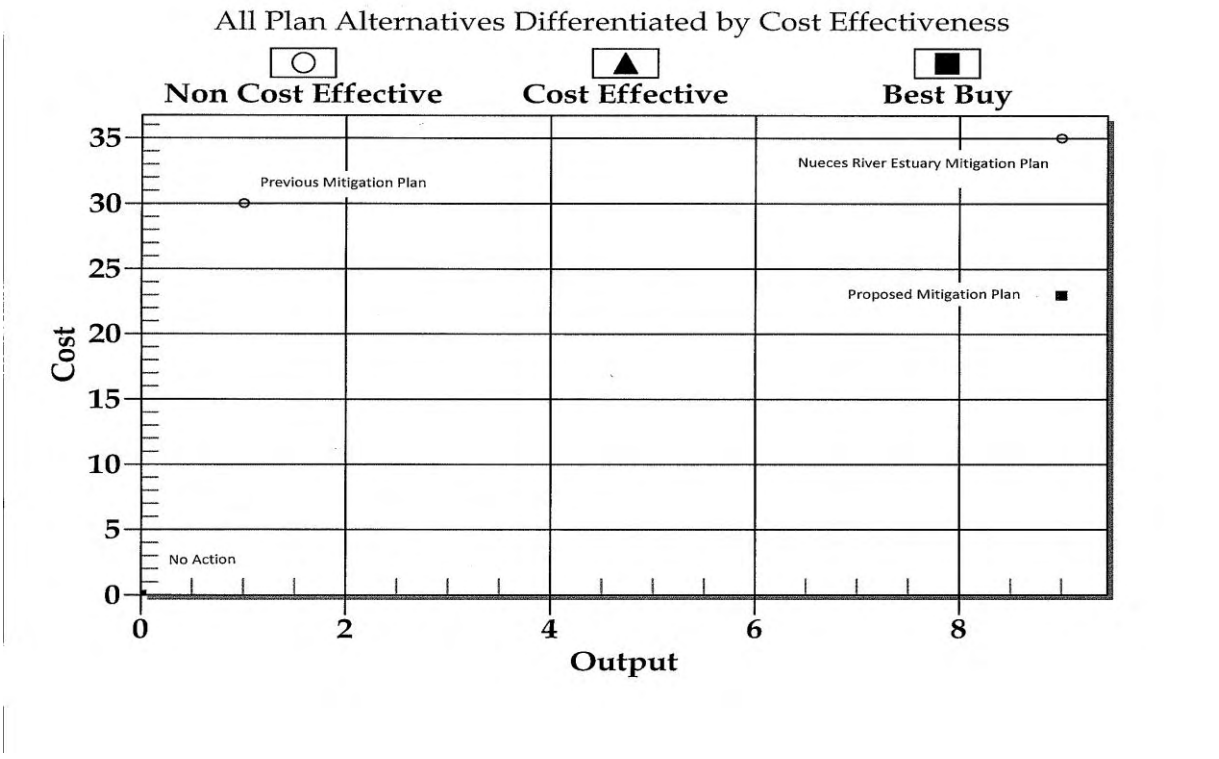
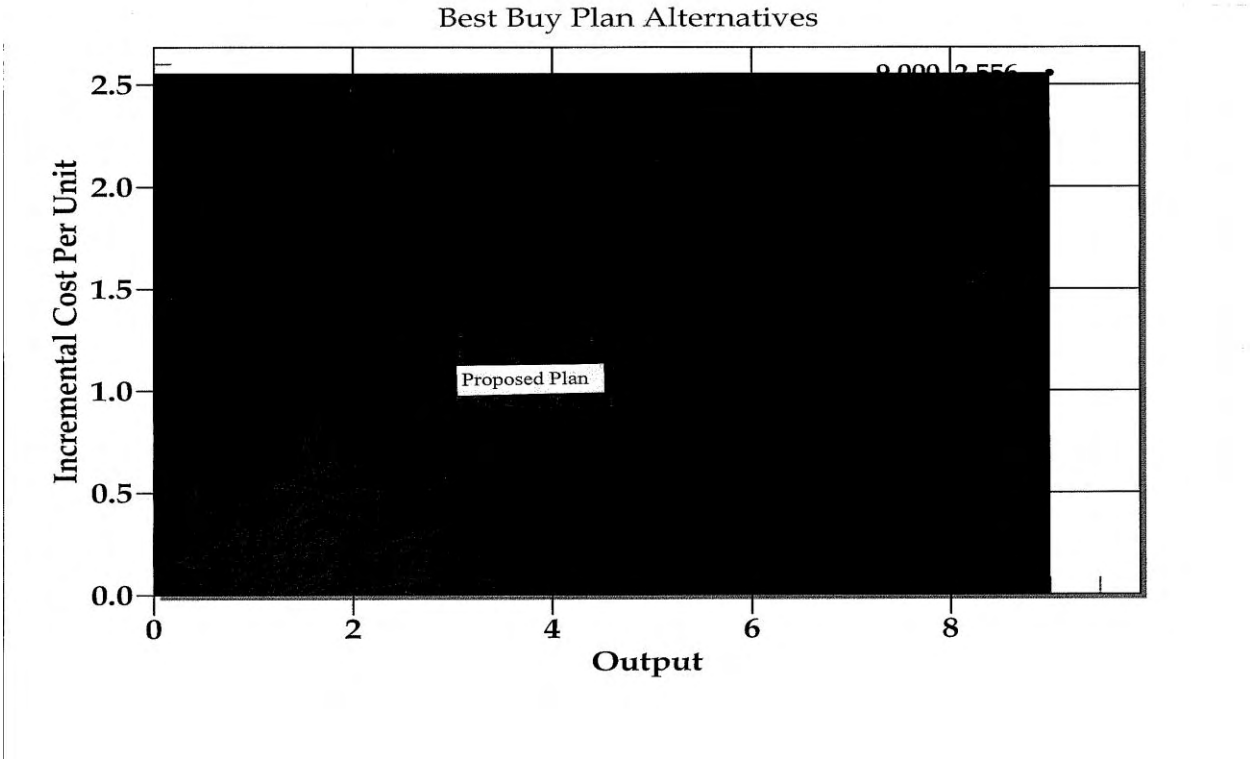


Figure 3:



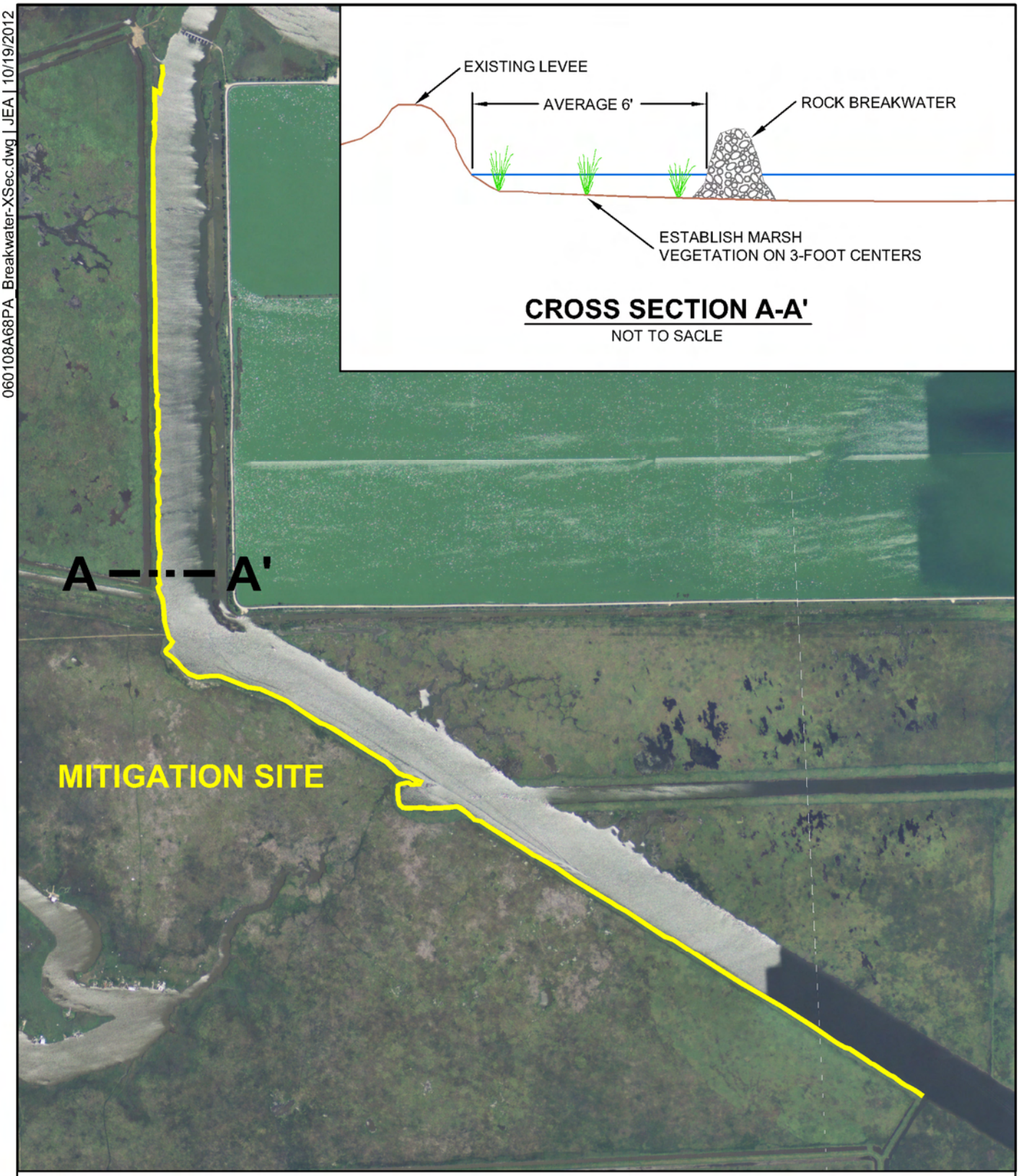
4.0 IMPLEMENTATION

4.1 MITIGATION PLAN

The mitigation site is currently a shallow open water area approximately 6 feet wide located behind a recently constructed 2.5-mile-longrock breakwater (Figure 4). The proposed planting area is currently sparsely vegetated (approximately 5%) with smooth cordgrass (*Spartina alterniflora*), common reed (*Phragmites australis*), and saltmarsh bulrush (*Scirpus robustus*) (see photos in Attachment B). Restoration of 1.8 acres of intertidal herbaceous wetlands would be accomplished by planting 8,712 plants or sprigs of emergent tidal marsh plants, predominantly smooth cordgrass (Spartina alterniflora), on 3 ft-centers in the area behind the breakwater to provide enhanced stabilization of the shoreline and restore marsh habitat.

Smooth cordgrass was determined to be the best species for planting at this site due to its salt tolerance and rapid growth capabilities. Other species that could be planted may include saltmarsh bulrush (*Scirpus robustus*), bulltongue (*Sagittaria lancifolia*), black rush (*Juncus roemerianus*), and giant bulrush (*Schenoplectis californicus*). These plant species are also salinity tolerant and provide wildlife food and/or cover benefits. All plant species under consideration for planting are present in nearby marshes, which would facilitate transplantation. Plants would be transplanted from nearby donor areas as bare-root individual stems, or 2-inch or larger plugs.

060108A68PA_Breakwater-XSec.dwg | JEA | 10/19/2012



MAP SOURCE:
NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP);
BIG HILL BAYOU, TEXAS QUADRANGLE (NE QUARTER; 2010)
PORT ARTHUR SOUTH, TEXAS QUADRANGLE (NW QUARTER; 2010)

N

0 600 1200
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Horizon Environmental Services, Inc.

FIGURE 2

MITIGATION SITE AND CROSS SECTION
ALLIGATOR BAYOU PUMP STATION
JEFFERSON COUNTY, TEXAS

"Do Not Scale This Drawing"

A mitigation access agreement between DD6 and DD7 would be initiated concurrent with start of site construction activities that result in impacts to waters of the US. Mitigation planting would be anticipated to occur in the spring of 2013 (March to May) depending on schedule of permit approval and commencement of construction in jurisdictional areas. It is estimated that the planting effort would take approximately one week to complete.

4.2 MAINTENANCE PLAN

Due to the presence of Chinese tallow, cattails, and common reed (*Phragmites australis*), in adjacent areas, the restored marsh would be closely monitored for the presence of these species. Invading non-desirable species would be treated with careful annual herbicide application during the annual site inspections. Although not currently present in numbers that represent a problem, the following species are also deemed to be potential nuisance species within the mitigation site: black willow (*Salix nigra*), eastern false-willow (*Baccharis halimifolia*), giant salvinia (*Salvinia molesta*), and deep-rooted sedge (*Cyperus enterianus*). If annual monitoring determines that their populations represent a discernible percentage of the total vegetative cover, these species would also be controlled with herbicide application. Other than invasive species control, no other significant maintenance requirements are expected; the mitigation site should be a generally self-sustaining marsh protected by the rip rap breakwater.

A mitigation access agreement between DD6 and DD7 would be initiated concurrent with start of site construction activities that result in impacts to waters of the US. Mitigation planting would be anticipated to occur in the spring of 2013 (March to May) depending on schedule of permit approval and commencement of project construction. It is estimated that the planting effort would take approximately one week to complete.

4.3 MONITORING PLAN

Monitoring mitigation is a critical part of the mitigation process. The purpose of monitoring is to: obtain an objective assessment of project progress towards pre-determined project goals and success criteria; identify and correct problems through an adaptive management approach; and ensure that USACE Galveston District and the non-Federal sponsor meet their mitigation obligations.

4.3.1 Ecological Performance Standards

Performance standards establish the basis for determining the ecological success of mitigation measures. Success criteria are used to objectively evaluate the progress of mitigation plans in achieving predetermined objectives, and to determine whether corrective actions need to be implemented. Because habitat functions are difficult to measure directly, success criteria may be based on an assessment of the structural attributes of restored habitats and evaluated according to the best available scientific understanding of the relationship of these attributes with ecosystem functioning. In this way, structural attributes serve as surrogate measures of habitat function. Once site conditions have met or surpassed predetermined structural thresholds, it is assumed that the desired functions are either currently being provided or will be provided given time. Success criteria for the proposed mitigation would pertain to

percent survival of plantings, control of invasive, noxious, and/or exotic plant species, and vegetative cover requirements.

Field data would be collected to determine the percent survival of vegetation planted within 60 days and 5 and 10 years. Success criteria for plant survivorship target is a minimum survivorship of 75 percent of the original planting density at 60 days post planting and 50 percent of original planting density at 1 year after the initial planting. This criterion ensures that the mitigation areas will have the requisite acres of desired vegetation. Invasive, noxious, and/or exotic plant species shall comprise less than 5 percent areal coverage of mitigation sites and will be measured annually for 5 years after construction. This criterion ensures that the mitigation areas will not be overrun by invasive, noxious, and/or exotic plants before native vegetation has developed sufficient cover to prevent the establishment of these undesired plant species. To evaluate vegetative cover requirements, percent foliar cover will be measured annually for 5 years following construction. This criterion ensures that the mitigation sites will provide sufficient vegetative cover for the full period of analysis to produce the total benefits needed to mitigate for project impacts.

4.3.2 SUCCESS CRITERIA

1. Minimum plant survivorship shall be 75 percent of the original planting density at 60 days post planting and 50 percent of original planting density at 1 year after the initial planting.

2. Desirable species shall achieve a minimum aerial coverage of 80% within 5 growing seasons following the initial planting.

3. Invasive/Non-native species would not consist of more than 5 percent of the aerial coverage per acre. Invasive or non-native species are to be considered, but not limited to: common reed, Chinese tallow, cattail, eastern false-willow, giant salvinia, deep-rooted sedge, and black willow.

4.3.3 MONITORING REQUIREMENTS

Vegetation sampling procedures approved by the USACE to annually survey and document the percent survival of planted vegetation and the aerial coverage of noxious plant species will be used to survey, document, and report the survival of planted vegetation at the mitigation site. This monitoring information must be submitted to the USACE in an annual report, that would include, but not be limited to: percent aerial coverage per acre of desirable species, percent aerial coverage per acre of invasive/non-native plant species, and photos of the mitigation site. In addition to the initial survey report, monitoring reports would be submitted to the USACE District Engineer bi-annually for the first year following the initial transplanting effort and annually for the next four years. This would be a total of five years.

4.3.4 CONTINGENCY PLAN AND ADAPTIVE MANAGEMENT

The following contingency plan has been developed to guide corrective actions where monitoring demonstrates that mitigation is not achieving ecological success as measured by the success criteria. If monitoring determines that the vegetation survival, coverage, and composition do not meet ecological success criteria, planting would be employed to restore the requisite acres of to produce the total benefits needed to mitigate for project impacts as follows:

1. A transplant survival survey of the planted mitigation area would be performed within 60 calendar days following the conclusion of the initial planting effort. If at least 75% survival of transplants is not achieved within 60 calendar days of planting, a second planting effort would be completed within 60 calendar days of completing the initial survival survey. If optimal seasonal requirements for replanting desirable species are not suitable when replanting would be required, the USACE must approve all replanting schedules.

2. If, after one year from the initial planting effort (or subsequent planting efforts), the site does not have at least 50% aerial coverage of desirable species that are not considered invasive or non-native, an additional planting effort would be completed within 60 calendar days of completing the annual survey.

3. If the mitigation area has been determined to be unsuccessful by USACE, the sponsor would be required to take the necessary corrective measures, as approved by USACE, to correct the failed components of the mitigation plan within 6 months of this determination. Once the corrective measures were completed, the sponsor would notify USACE and the monitoring process would start over. This 5-year cycle would continue until the mitigation project is considered successful. The number, species, spacing, and location of vegetation to be re-planted would be determined after reviewing monitoring data. Additional or alternate methods for addressing the control of invasive, noxious, and/or exotic plant species would be developed if monitoring reveals that the proposed methods for control do not achieve the desired or target level specified in the success criteria, or if the methods prove to be highly successful and invasive species control could be performed less frequently using the same or different methods to save costs.

4. The sponsor may choose to cease monitoring of the mitigation area and provide an alternative mitigation plan. This alternative mitigation plan would consist of preservation, enhancement, and/or mitigation banking. The alternative mitigation plan would mitigate the failure of the 1.8 acre mitigation area, must be approved by USACE, and must be implemented within 6 months of approval.

Should the mitigation area be damaged as a result of catastrophic disturbance events (e.g., severe flooding associated with intense storms and hurricanes), an assessment of the nature and extent of the damage and recommend measures to correct or restore the mitigation areas to pre-damage or target conditions would be made.

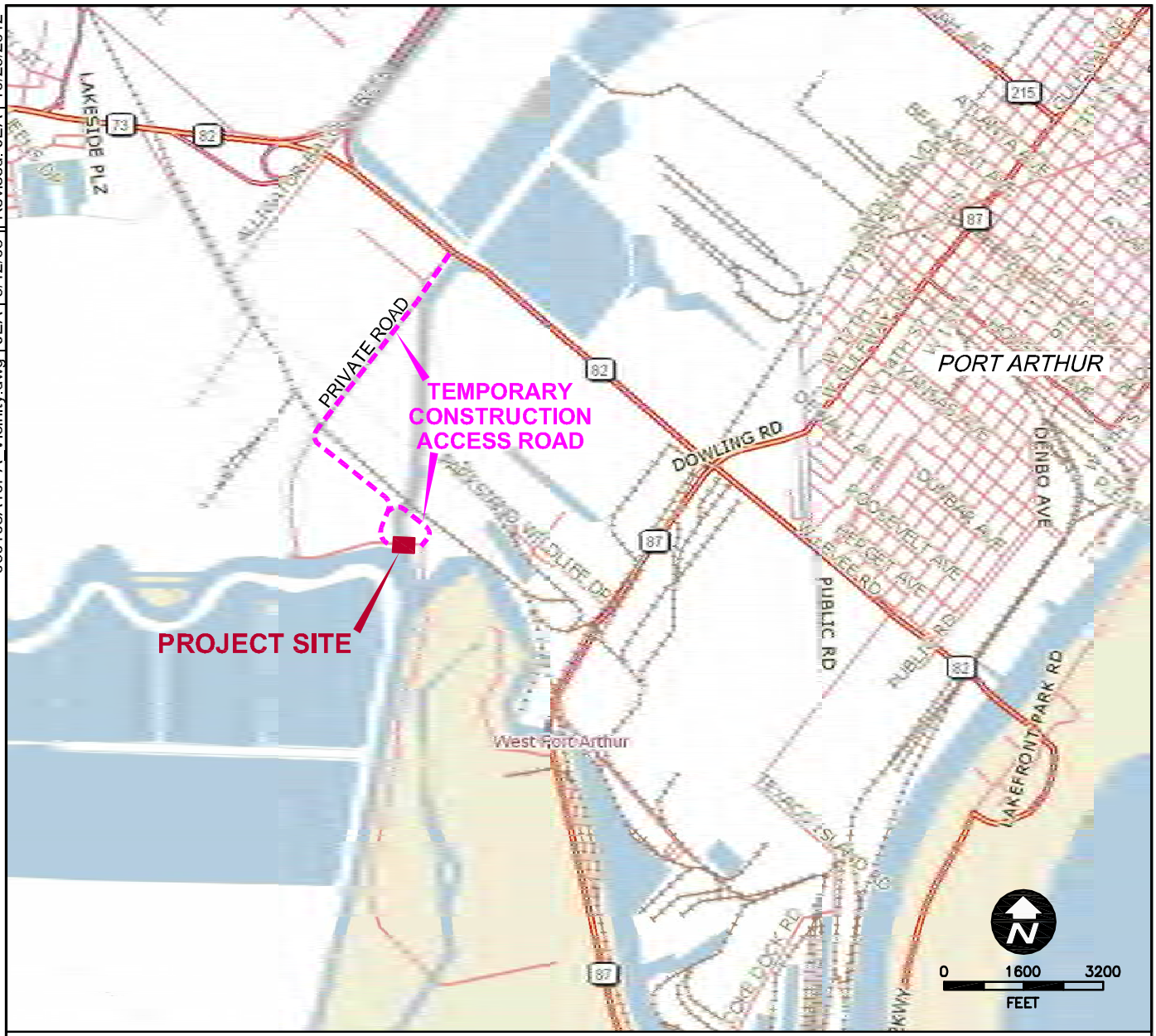
4.3.5 PROJECT CLOSURE

Monitoring activities will cease and the project will be formally closed when it is determined that the desired mitigation site conditions have met the monitoring ecological success criteria as specified above. The contingency plan/adaptive management process described above is intended to allow periodic modifications in order to achieve the necessary functional mitigation for project impacts at the end of the period of analysis and ensure that the presence of undesirable vegetation is minimized. Evaluation of the data collected during the last scheduled annual report will determine if it is appropriate to close monitoring of the mitigation features. Monitoring would continue until it has been demonstrated that the mitigation has met the ecological success criteria as documented by the District Engineer and determined by the Division Commander.

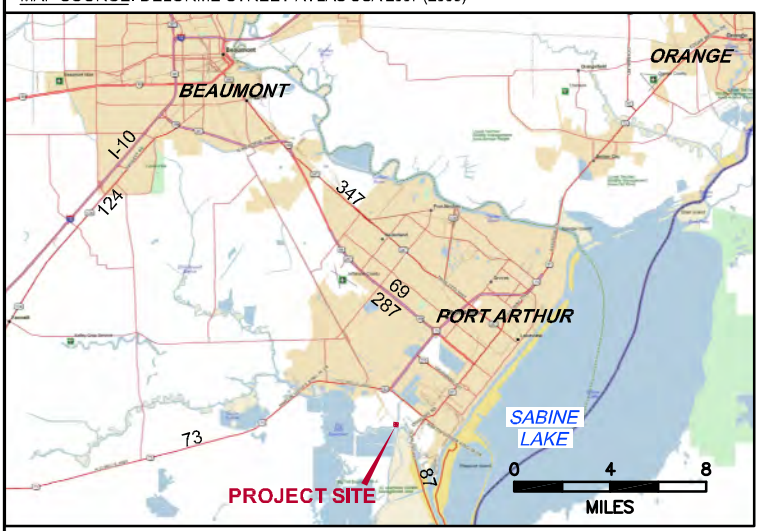
ATTACHMENT A

ALLIGATOR BAYOU PUMP STATION PROJECT PLANS

060108A10PA_Vicinity.dwg | JEA | 6/12/08 || Revised: JEA | 10/29/2012



MAP SOURCE: DELORME STREET ATLAS USA 2007 (2006)



MAP SOURCE: DELORME STREET ATLAS USA 2007 (2006)

FIGURE 1

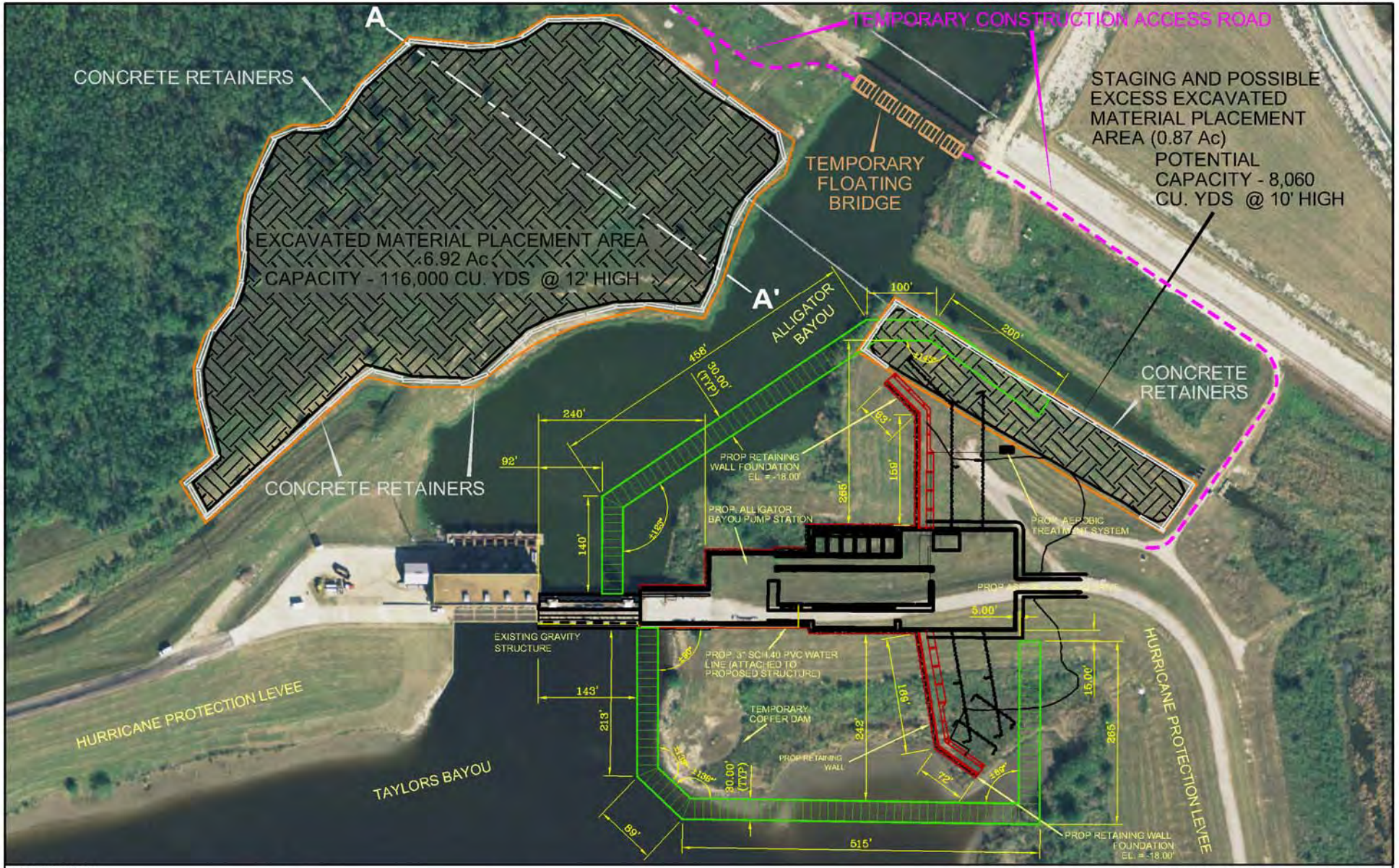
VICINITY MAP
PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

Horizon Environmental Services, Inc.

"Do Not Scale This Drawing"

"Do Not Scale This Drawing"

060108A21PA_Plan.dwg | JEA | 12/5/2011 || Revised: JEA | 10/31/2012



MAP SOURCE:

1. PROVIDED BY CARROLL & BLACKMAN, INC. (2008)
2. 2006 AERIAL: JEFFERSON COUNTY DRAINAGE DISTRICT (2008)

Horizon Environmental Services, Inc.

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FIGURE 4

PLAN VIEW OF PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

"Do Not Scale This Drawing"

060108A26PA_Plan.dwg | JEA | 10/31/2012

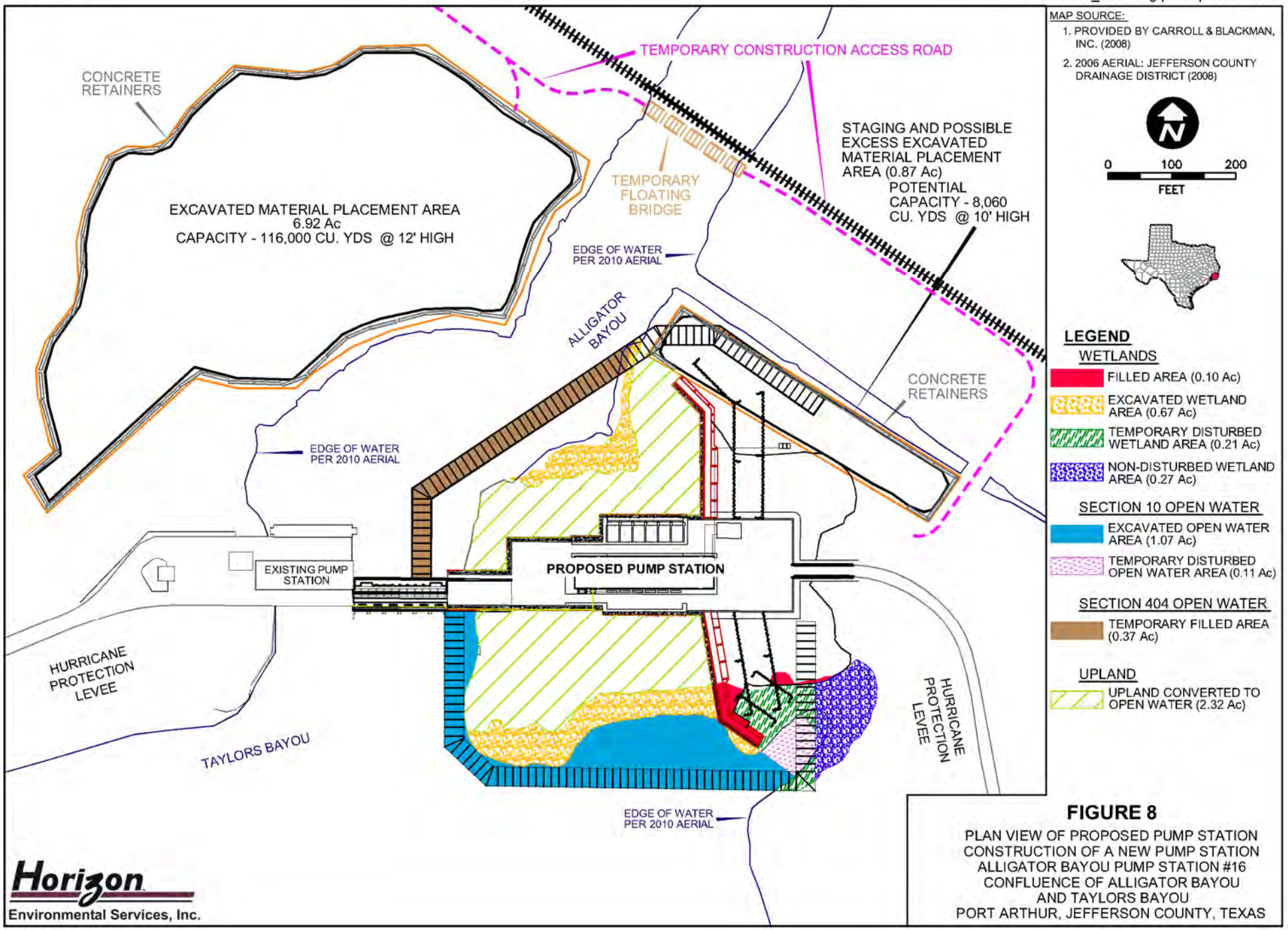


FIGURE 8

PLAN VIEW OF PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS

Horizon
Environmental Services, Inc.

ATTACHMENT B

MITIGATION SITE PHOTOS

Photo 1: Bank of Taylors Bayou Diversion Channel

Photo 2: Bank of Taylors Bayou Diversion Channel

APPENDIX F

RELATIVE SEA LEVEL RISE CALCULATION

Relative Sea Level Rise Calculation

Recent climate research by the Intergovernmental Panel on Climate Change predicts continued or accelerated global warming through the 21st century. The USACE requires all phases of Civil Works programs to consider impacts from sea-level change (USACE, 2009).

Relative sea level rise (RSLR) rates were calculated for the project area through 2064. This project involves the construction of the additional pump station capacity at Alligator Bayou Pump Station #16. Construction of the new pump station is not expected to affect future RSLR therefore RSLR is expected to be the same with or without the project. Consequently, the future RSLR described below should satisfy the requirement to calculate the future RSLR "with" and "without" project conditions.

A low rate of RSLR is calculated as required (USACE, 2009) using the historical rate of sea-level change. Data from the Sabine Pass tide gage (CO-OPS station 8770570) in Sabine Pass were used since the gage is closest to Port Arthur. The gage also meets the requirements described in Appendix C (USACE, 2009) for use in calculating RSLR because it is the nearest tide station to the proposed project area with over 40 years of data. The period-of-record for the Sabine Pass tide gage extends from 1958 to present. The historic RSLR rate at the tide station is 5.88mm/yr (Mean Sea Level Trend, 8770570, Sabine Pass, Texas, NOAA, 2009). Use of the historic RSLR rate of 5.88 mm/yr indicates a RSLR of 0.153 m will occur over the period from 1986 to 2012 (Table 1). The sea level is estimated to rise 0.294 m over the project period from 2014 to 2064 at the historic RSLR rate (Table 1) (Figure 1).

Table 1. Calculated relative sea level rise in meters from 1986.

	2014 Project Construction	2064 End of Project
Low Rate, Historic Sea-Level Rise	0.153 m	0.294 m
Intermediate Rate, Modified NRC Curve I	0.182 m	0.642 m
High Rate, Modified NRC Curve III	0.234 m	1.11 m

The predicted intermediate or high sea level rise is calculated using the equation in USACE (2009).

$$\text{Intermediate or high sea level rise} = (0.0017 + 0.00469)(t_2 - t_1) + b(t_2^2 - t_1^2)$$

Where:

- t_1 = time in years between the project construction date and 1986
- t_2 = time in years between the relevant project date, 2064 and 1986
- 0.0017 = value assigned for eustatic sea level rise in mm (USACE, 2009)
- 0.00418 = relative sea level rise rate for Sabine Pass in mm (NOAA, 2009). Calculated by
- subtracting the eustatic sea level rise rate of 0.0017 mm from the measured mean sea level rise rate at Sabine Pass in Sabine Pass of 0.00588 mm.
- b = 0.0000236, value assigned to this coefficient for intermediate sea level rise for NRC Curve I or b = 0.0001005 assigned for high sea level rise for NRC Curve III provided in USACE (2009).

The intermediate RSLR calculated for the project area is estimated to be 0.642 m above the sea level in 1986 in 2064 when the project is complete (Table 1) (Figure 1). The predicted high sea level rise is calculated using the equation in USACE (2009) and is intended to accommodate sea level rise resulting from the possible rapid loss of ice from Antarctica and Greenland. The high RSLR calculated for the project area is estimated to be 1.11 m above the sea level in 1986 in 2064 when the project is complete (Table 1) (Figure 1).

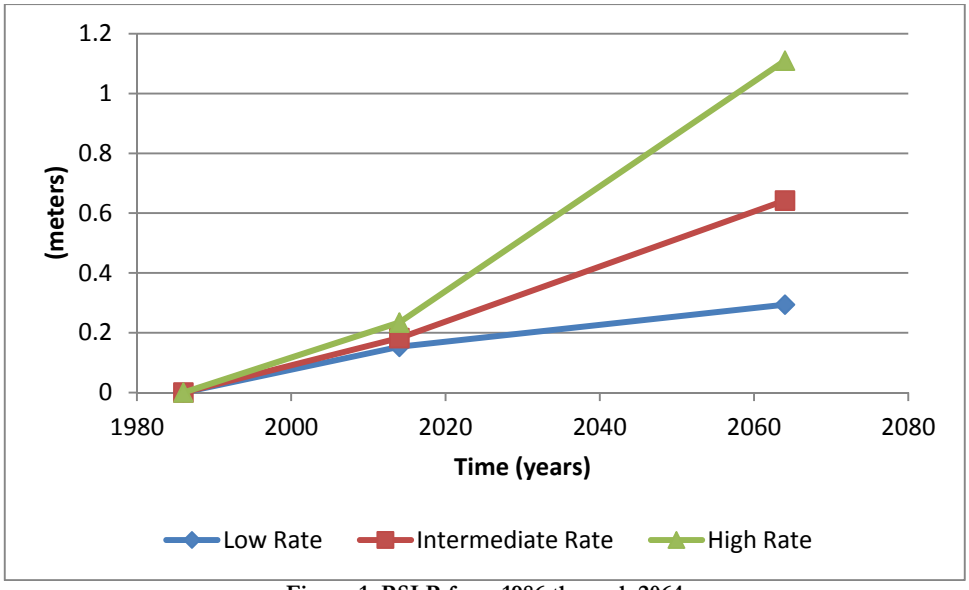


Figure 1: RSLR from 1986 through 2064

APPENDIX G

ENVIRONMENTAL ASSESSMENT NOTICE OF AVAILABILITY

DEPARTMENT OF THE ARMY
GALVESTON DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1229
GALVESTON, TEXAS 77553-1229

NOVEMBER 9, 2012

DEPARTMENT OF DEFENSE

Department of the Army; Corps of Engineers

Notice of Availability for the Draft Environmental Assessment for Section 408 Evaluation, Construction of a New Pump Station, Alligator Bayou Pump Station No. 16, Port Arthur and Vicinity, Texas, Hurricane Flood Protection Project, Port Arthur, Jefferson County, Texas.

AGENCY: Department of the Army, U.S. Army Corps of Engineers

ACTION: Notice of Availability

SUMMARY: The U.S. Army Corps of Engineers (USACE), Galveston District (District) announces the release of the Draft Environmental Assessment (EA) for 33 U.S.C. 408 (Section 408) evaluation of modifications to the Federal Alligator Bayou Pump Station No. 16, Port Arthur and Vicinity, Texas, Hurricane Flood Protection Project, Port Arthur, Texas.

DATES: The USACE, Galveston District will provide the Draft EA for review November 9 through November 23, 2012.

FOR FURTHER INFORMATION CONTACT: Questions about the proposed action and the Draft EA should be addressed to Ms, Carolyn Murphy (409) 766-3044. Written inquiries and comments should be sent to the USACE, Galveston District, Attn: Ms. Carolyn Murphy, P.O. Box 1229, Galveston, TX 77553-1229 or emailed to carolyn.e.murphy@usace.army.mil.

PURPOSE: This public notice is to inform interested parties that the USACE, Galveston District has prepared a draft Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), Public Law 91-190, regulations for implementing the Procedural Provisions of the NEPA, 40 Code of Federal Regulations (CFR) 1500-1508, USACE's regulation ER 200-2-2 (Environmental Quality: Policy and Procedures for Implementing NEPA, 33 CFR 230), and other pertinent laws, regulations, and executive orders. This notice is being distributed to interested state, Federal, and local agencies, private organizations and individuals in order to assist in collecting facts and recommendations concerning proposed modification by Jefferson County Drainage District No. 7 to the Federal Port Arthur and Vicinity, Texas, Hurricane Flood Protection Project. The decision to approve Section 408 modification of the existing Federal project will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed action on the public interest. This project has also undergone NEPA review under Department of the Army Permit No. SWG-2007-00850 and a subsequent application for amendment of that permit, as well as under a 2008 Federal Emergency Management Agency (FEMA) EA and Finding of No Significant Impact (FONSI) for Alligator Bayou Pump Station Expansion Project, Hazard Mitigation Grant Program, Port Arthur, Texas.

PROJECT LOCATION: The Port Arthur and Vicinity, Texas, Hurricane Flood Protection Project is located in southern Jefferson County in southeast Texas. The proposed project modification is located approximately two miles southwest of Port Arthur at the confluence of Alligator and Taylors Bayous, at Pump Station (PS) 16 on the flood protection levee.

PROJECT DESCRIPTION: The Proposed Project would restore 25-year storm pumping capacity at PS 16 through the construction of an additional pumping facility on Alligator Bayou at PS16. The new pump station on the east bank of Alligator Bayou would consist of a 4-level concrete structure designed to withstand 200 mph winds (a Category 5 hurricane) housing six 250,000-gallon diesel pumps, with office space, a bunk room, showers, potable water, generators, and fuel storage. The footprint of the new pump station and ancillary parking would cover 2.9 acres. Construction would require two temporary coffer dams, staging areas, and excavated material placement areas. The total construction impact footprint would be 17.2 acres. Mitigation of impacts to 1.3 acres of fringe wetlands would be accomplished by restoration of 1.8 acres of tidal marsh dominated by *Spartina alterniflora* behind a recently constructed rock breakwater on the west shoreline of the Taylors Bayou Diversion Channel near the project area. This EA has been prepared as part of a Section 408 evaluation of proposed modifications to the Federal Port Arthur and Vicinity, Texas, Hurricane Flood Protection Project.

NEED FOR WORK: The existing PS 16 is part of the Port Arthur and Vicinity, Texas, Hurricane Flood Protection Project, a system of levees, concrete and steel sheet pile floodwalls, and 12 pump stations constructed in the early 1980s to protect urban and industrial development at Port Arthur and surrounding communities from a 100-year event hurricane storm surge. The levee and floodwall system extends approximately 30 miles with levees ranging from 14 to 19 feet high. The system includes a series of 12 pump stations to drain the area behind the levees during high rainfall and flood events, and was authorized to provide protection within the levee system for a 50-year rainfall or flood event; however, the system was constructed to provide only 25-year event protection. Over the last 30 years, subsidence has compromised the functioning of the existing PS 16 to the point that it only provides protection for an 11.5-year storm event. The Proposed Project would provide additional pumping capacity such that 25-year event protection would be re-established.

PROPOSED WORK: The work would consist of the construction of a new pump station on the east bank of Alligator Bayou, as described above, that would work in concert with the existing PS16 facility on the west bank of the bayou to restore 25-year storm event capacity at this location.

COMPLIANCE WITH LAWS AND REGULATIONS: PS 16 is one of 12 pump stations authorized for the Federal Port Arthur and Vicinity, Texas, Hurricane Flood Protection Project. Approval for modification of PS 16 is being sought under Section 408. Jefferson County Drainage District No. 7 has also applied for an amendment to Department of the Army Permit No. SWG-2007-00850 for construction of this project.
The draft EA will be coordinated with the U.S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and other Federal, state, and local agencies. Our initial determination is that the proposed action will not have any adverse impacts on threatened or endangered species or Essential Fish Habitat or federally-managed fisheries in the Gulf of Mexico.
The following is a list of Federal, State, and local agencies with which these activities are being coordinated:

U.S. Environmental Protection Agency, Region 6
U.S. Department of Commerce
U.S. Department of the Interior
U.S. Coast Guard
Budget and Planning Office, Office of the Governor of Texas
Texas Historical Commission
Texas Parks and Wildlife Department
Texas Commission on Environmental Quality
Texas General Land Office
The Texas Office of State-Federal Relations
Texas Department of Transportation
Texas Water Development Board

EVALUATION FACTORS: The decision whether to approve Section 408 modifications to PS 16 will be based on an evaluation of the probable impact of the proposed activity on the public interest. That decision will reflect the national concern for both protection and utilization of important resources as well as public and environmental safety and economic concerns.

ENVIRONMENTAL DOCUMENTATION: A preliminary review of this proposed action indicates that an Environmental Impact Statement (EIS) is not required. This preliminary determination of an EIS requirement will be changed if information brought forth in the coordination process is of a significant nature. Based on this determination, a draft EA has been prepared. The EA assesses potential impacts to the human and natural environment that would result from the proposed action. The document is available online on both Jefferson County Drainage District No. 7 and Galveston District websites:

http://www.dd7.org

http://www.swg.usace.army.mil/BusinessWithUs/PlanningEnvironmentalBranch/DocumentsforPublicReview.aspx

CDs of the Draft EA can be requested from Jefferson County Drainage District No. 7's agent, Horizon Environmental Services, Inc., Attn: C. Lee Sherrod, 1507 South IH 35, Austin, TX 78741; or email at lee_sherrod@horizon-esi.com.

PUBLIC COMMENT: Persons desiring to express their views or provide information to be considered in evaluating the impact of approval of Section 408 modification of a Federal project are requested to mail or email their comments within 15 days of the date of this notice to:

District Engineer
U.S. Army Engineer District, Galveston
ATTN: Ms. Carolyn Murphy, CESWG-PE-PR
P.O. Box 1229
Galveston, Texas 77553-1229

All comments must be post-marked or received by November 23, 2012. Any person who has an interest that may be affected by this action may request a public hearing. The request must be submitted in writing within 15 days of the date of this notice and must clearly set forth the interest that may be affected and the manner in which the interest may be affected by this activity. Any questions concerning the proposed action may be directed to Ms. Carolyn Murphy at (409) 766-3044.

Dolan Dunn
Chief, Planning, Environmental
and Regulatory Division
Galveston District

APPENDIX H

RESPONSE TO COMMENTS

APPENDIX I

HABITAT EVALUATION PROCEDURE ANALYSIS

APPENDIX I

HABITAT EVALUATION PROCEDURE ANALYSIS FOR CONSTRUCTION OF A NEW PUMP STATION ALLIGATOR BAYOU PUMP STATION NO. 16, PORT ARTHUR AND VICINITY, TEXAS HURRICANE FLOOD PROTECTION PROJECT PORT ARTHUR, JEFFERSON COUNTY, TEXAS

PREPARED FOR:

JEFFERSON COUNTY DRAINAGE DISTRICT NO. 7

AND

U.S. ARMY CORPS OF ENGINEERS

NOVEMBER 2012

INTRODUCTION

USACE planning studies depend on non-monetary evaluation methodologies to quantify inherent ecological processes, structure, dynamics and the functions ecosystems carry out in nature. The Habitat Evaluation Procedure (HEP) methodology is an environmental accounting process developed to appraise habitat suitability for fish and wildlife species in response to potential change (USFWS 1980a-c).

In HEP, a Suitability Index (SI) is a mathematical relationship that reflects a species' or community's sensitivity to a change in a limiting factor (i.e., variable) within the habitat type. These suitability relationships are depicted using scatter plots and bar charts (i.e., suitability curves). The SI value (Y-axis) ranges from 0.0 to 1.0, where an SI = 0.0 represents a variable that is extremely limiting, and an SI = 1.0 represents a variable in abundance (not limiting) for the species or community. In HEP, a Habitat Suitability Index (HSI) model is a quantitative estimate of habitat conditions for an evaluation species or community. HSI models combine the SIs of measurable variables into a formula depicting the limiting characteristics of the site for the species/community on a scale of 0.0 (unsuitable) to 1.0 (optimal).

HEP is an objective, quantifiable, reliable and well-documented process used nationwide to generate environmental outputs for proposed projects and operations in the natural resources arena. HEP provides an impartial look at environmental effects, and delivers measurable products to the decision-maker for comparative analysis. The following sections provide the details of the application of the HEP techniques to the Alligator Bayou plan.

PROPOSED PROJECT

The Proposed Project is located approximately two miles southwest of Port Arthur at the confluence of Alligator and Taylors Bayous, and consists of an improvement to PS 16 that would be accomplished by the construction of an additional low-flow pump station at the existing PS 16 facility on the south bank of Alligator Bayou. As part of the extensively modified DD7 interior drainage system, Alligator Bayou flow into Taylors Bayou is entirely controlled by PS 16 through the Port Arthur and Vicinity, Texas, Hurricane Flood Protection Project (Hurricane Flood Protection Project) levee. Taylors Bayou ultimately flows into the Sabine-Neches Canal (tidal portion) below Port Arthur, approximately two miles south of PS 16. The Canal flows south through Sabine Pass, where it enters the Gulf of Mexico, approximately 12 miles south of PS 16; although the system of canals is about 19 miles long.

The drainage basin controlled by PS 16 is large, at approximately 28,643 acres, protecting a population of about 100,000 people and significant industrial infrastructure. This drainage basin has been substantially altered through the years, with many of the secondary drainages channelized. Portions of the channelized drainage system that flow into PS 16 include Main A, Main B, Main C, and West Port Arthur Road, Pear Ridge, Central, El Vista, Vista Village, and Montrose drainage areas. In addition to these conveyances, the system also includes 10 large detention basins with 8 large forebay detention areas

for the pump stations, and 2 large regional detention ponds (4,000 acre-feet and 1,100 acre-feet, respectively), plus numerous small detention areas for commercial and residential developments. As a result of these modifications to the internal drainage system and on-going urban and industrial development, the remaining natural wetlands in the area behind the Hurricane Flood Protection Project levee system consist of depressional areas that no longer have surface water connectivity, and survive by rainfall events and groundwater sources.

The Proposed Project would achieve 25-year storm pumping capacity at PS 16. With the loss of function of the gravity drain structure, PS 16 is only capable of handling an 11.5-year event, yet based on the hydrological models developed for the *2002 COMPREHENSIVE STUDY AND DRAINAGE PLAN OF THE JEFFERSON COUNTY DRAINAGE DISTRICT NO. 7 SYSTEM AND SERVICE AREA*, more flow is now generated within the main outfall system during a 25-year storm event than the system was originally designed to accommodate, making restoration of capacity at PS 16 critical. The Proposed Project would include retaining the existing pump station on the west bank of Alligator Bayou and the gravity drain structure across Alligator Bayou, with construction of a second pump station on the east bank of Alligator Bayou. The new pump station would take over the continuous low-flow pumping, and, in concert with the existing pump station, would provide overall pumping capacity to handle a 25-year storm event at PS 16. The addition of more efficient pumps at the new pump station would replace the capacity provided by the now non-functional gravity drain structure. Maintaining two pumping stations at this location also provides redundancy in the event of a pump failure. The new pump station would add 1.5 million gallons per minute (gpm) of pumping capacity to the existing 2.25 million gpm capacity at PS 16, for a total 3.75 million gpm capacity for PS 16. As modeled, this increased capacity would mean that flood waters from a 25-year storm event would be removed from the system about 18 hours faster than is currently possible with the existing pumps.

The new pump station on the east bank of Alligator Bayou would consist of a 4-level concrete structure designed to withstand 200 mph winds (a Category 5 hurricane) housing six 250,000-gallon diesel pumps, with office space, a bunk room, showers, potable water, generators, and fuel storage. Construction access would be from the immediately adjacent 57th Street, a non-public road, which is constructed on top of the Hurricane Flood Protection Levee in the project area. The construction site on the east bank of Alligator Bayou is currently mowed and maintained. The footprint of the new pump station and ancillary parking would cover 2.9 acres. Construction would require two temporary coffer dams (one on Taylors Bayou and one on Alligator Bayou), to allow construction in the dry; temporary staging areas; a temporary construction access road originating at Highway 82 with a temporary floating bridge across Alligator Bayou (see Figure 1); permanent excavated material placement areas with a capacity of 124,000 cu yds with concrete retainers and silt fencing to prevent sloughing or erosion of material into adjacent wetlands or waters of the US; and excavation (in the dry) on both the Alligator Bayou side and Taylors Bayou side to allow proper depth for pump operation. The excavated material would be stored for an indeterminate time for possible future use in levee repairs or improvements. A plan view of the proposed pump station is provided in Figure 4. A cross-section of the proposed pump station is provided in Figure 5. The coffer dams would be constructed with two sheet pile walls 30 feet apart and filled with clean soil. Material for the coffer dams would be obtained from a commercial dirt

source, possibly Halbouty Detention Pond owned by DD7, a sand and clay pit that has been in operation for 40 years and which is also used for floodwater detention. Construction is anticipated to take 24 to 30 months to complete, with project completion anticipated in late 2014.

Direct construction impacts of the Proposed Plan are summarized as follows:

Wetlands permanently filled	0.10 ac
Wetlands permanently excavated	0.67 ac
Wetlands temporarily disturbed and restored	0.21 ac
Open water (Taylors Bayou) Excavated	1.07 ac
Open water (Taylors Bayou) temporarily disturbed and restored	0.11 ac
Open water (Alligator Bayou) temporarily filled (coffer dam)	0.37 ac
Existing upland (previous fill area) used for excavated material placement	7.79 ac
Existing upland (levee) excavated to open water	2.32 ac
Existing upland (levee) converted to pump building and parking	2.90 ac
Existing upland (levee) used for temporary construction staging	1.51 ac
Total Project Footprint Impact	17.05 ac

The temporary construction access road would follow existing roads that require no modification and is not expected to have any material impact. The temporary floating bridge for construction access to the east side of Alligator Bayou would be located adjacent to the existing railroad bridge crossing of the bayou in an area with existing fill and graded banks on both sides of Alligator Bayou. No material impacts from the floating bridge are anticipated. See project plans in Attachment C.

While existing open water to be excavated totals 1.07 acre, only a zone of shallow (< 3 ft) open water adjacent to the wetland fringes along the shoreline is deemed to be impacted by conversion to deeper water. This zone is variable in width, but generally represents 20 to 30 feet from the shoreline. The acreage of this zone is 0.53 ac and is combined with the fringe marsh (0.77 ac) to represent 1.3 acres of estuarine emergent habitat in the HEP analysis. The balance of open water exceeding 3 ft in depth is not deemed to be materially impacted by additional deepening.

PROJECT SITE CHARACTERISTICS

The project area is described as a constructed hurricane protection levee separating Alligator Bayou from Taylors Bayou. Dominant plant species on the levee include bermudagrass (*Cynodon dactylon*), common reed (*Phragmites australis*), St. Augustine grass (*Stenotaphrum secundatum*), bedstraw (*Gallium uncinulatum*), curly dock (*Rumex crispus*), and dewberry (*Rubus trivialis*). Scattered sugarberry (*Celtis laevigata*) and baccharis (*Baccharis* sp.) are also present. A fringe of wetland vegetation is present along portions of Alligator Bayou and Taylors Bayou that includes spikerush (*Eleocharis* sp.), primrose willow (*Ludwigia decurrens*), common reed, sedge (*Carex* sp.), and occasional marshhay cordgrass (*Spartina patens*). Wetland shrub cover is characterized by marsh elder (*Iva*

frutescens). Aquatic habitat is restricted to the shallow open water of Alligator Bayou and Taylors Bayou ranging from 0 (MHT line) to 3 feet deep.

HABITAT SUITABILITY INDEX CALCULATIONS

The delineation of habitats within the project site and mitigation site were based on mapping efforts using aerial photography and physical site characteristies. One major habitat category (estuarine emergent / open water) was identified on both the project site and the mitigation site and four target species – brown and white shrimp, speckeled trout and marsh wren - that utilized this habitat type were identified and assessed for in the HEP analysis. The variables and their descriptions for the published HSI models for these target species are provided in Attachment A. All of these HSI models have been approved for use in USACE in planning studies.

Field data collection efforts were conducted in July 2011. Due to the small size of the project site and mitigation site, data measurements or estimates were made based on the entirety of the sites rather than subset sampling locations.

The field data collected for the habitat variables for each species were applied to the appropriate Suitability Index (SI) graphs in the published HSI models. Habitat Suitability Indices were then calculated using the published formulae. The resultant SI and HSI values are shown in Tables 1 through 3 (Attachment B).

HABITAT UNITS

HSI values were multiplied by the acreage of the respective habitats for each target species to arrive at the Habitat Units (HU) for each species. The period of analysis was 6 years with target years of TY0 (2011 or preconstruction), TY1 (2013 or completion of construction), TY2 (2014 or first full growing season after construction), TY4 (2016 or third full growing season after construction), and TY6 (2018 or fifth full growing season after construction). The proposed mitigation plan (planting of *Spartina alterniflora* for shoreline stabilization) was also analyzed for five full growing seasons past construction (to 2018) to be commensurate with the time period of the project impacts.

PROJECT IMPACTS

TABLE 1 – PERMANENT IMPACTS TO WATERS OF THE US

Type Impact		Waterbody	Cowardin Class	Acreage
Permanent Fill		Taylors Bayou (Sect 10/404)	Emergent Herb/shrub	0.10
Excavation		Taylors Bayou (Sect 10/404)	Shallow Open Water	0.53
Excavation		Taylors/Alligator Bayou (Sect 10/404)	Emergent Herb/shrub	0.67
Total	**--**	**--**	**Emergent Herb/shrub**	**0.77**
Total	**--**	**--**	**Open Water**	**0.53**
TOTAL				**1.30**

The attached exhibits (Attachment C) include maps depicting the locations of the existing pump station and proposed pump station, site plans, and detailed impacts to waters of the US.

Within the 24,000 acre benefit area of the project, no additional impacts to wetlands are anticipated.

PROPOSED MITIGATION

The western shoreline of the Taylors Bayou Diversion Channel was historically estuarine emergent marsh backed by a saltwater exclusion levee protecting the freshwater marshes of the J.D. Murphree Wildlife Management Area. This shoreline has suffered from erosion in recent decades that has caused almost total loss of marsh habitats and potential compromise of the protection levee that prevents saltwater intrusion into the thousands of acres of fresh marshes in the wildlife management area. Texas Parks and Wildlife Department has been pursuing stabilization and restoration efforts of this shoreline. Recently, DD6 agreed to construct a rip rap breakwater along the shoreline to reduce further erosion from high flood flows in the diversion channel.

The proposed mitigation plan would include planting smooth cordgrass (*Spartina alterniflora*) behind this recently constructed rock breakwater along the west shoreline of the Taylors Bayou Diversion Channel (Figure 1). The area behind the breakwater averages 6 feet wide and is about 13,000 linear feet long (approximately 1.8 acres). The area behind the breakwater is currently sparsely vegetated (approximately 5%). Dense vegetation along this shoreline is desired by Texas Parks and Wildlife Department to further stabilize the eroded areas and to restore habitat conditions along an otherwise barren shoreline. Smooth cordgrass would be planted on 3 ft centers within the area behind the breakwater (1.8 acres) in the spring of 2013 (TY1, year of construction). It is expected that the planted area will achieve at least 50% coverage within the first growing season (2013) and 100% by the 3rd (2016) through 5th (2018) growing seasons.

WITH-PROJECT FUTURE ASSUMPTIONS

The Alligator Bayou Pump Station Expansion project is estimated to have a one year construction period and total environmental impacts from this project will be felt within that one year (TY1 - 2013). Attachment C (project plans) shows the anticipated construction plans and the acreage of impacts for the project area. To be conservative in the analysis it is assumed the HSI values for all wetland habitats within the project footprint will go to zero in the first year, even though some habitat value would actually remain for certain aquatic species. The mitigation site (1.8 acres of *Spartina* planting for shoreline stabilization along the Taylors Bayou Diversion Channel) will be planted concurrent with TY1 of construction. Five-year invasive species management of the mitigation area will help maintain HSI values over the 5 years of analysis post planting (TY1 to TY6). The following assumptions were made in the analysis for the project site and mitigation site:

"Do Not Scale This Drawing"

060108A20PA_Breakwater.dwg | JEA | 9/30/2011

MAP SOURCE:
NATIONAL AGRICULTURAL IMAGERY PROGRAM (NAIP);
BIG HILL BAYOU, TEXAS QUADRANGLE (NE QUARTER; 2010)
PORT ARTHUR SOUTH, TEXAS QUADRANGLE (NW QUARTER; 2010)

N

0 1000 2000
FEET

FIGURE 1

MITIGATION SITE
ALLIGATOR BAYOU
PUMP STATION
JEFFERSON COUNTY,
TEXAS

Horizon
Environmental Services, Inc.

TY0 - Project Site Baseline Conditions (2011)

TY1 – Project Site Completion of Construction (2013)

Estuarine emergent wetlands and existing shallow open water excavated to deep water or filled – 1.3 acres

HSI values for all wetlands are assumed to go to zero.

TY2 – Project Site – One Year Post-Construction (2014)

HSI values for all wetlands remain at zero.

TY4 – Project Site – Three Years Post-Construction (2016)

HSI values for all wetlands remain at zero.

TY6 – Project Site – Five Years Post-Construction (2018)

HSI values for all wetlands remain at zero.

TY0 - Mitigation Site Baseline Conditions (2011)

TY1 – Mitigation Site Completion of Planting (2013)

Planting of the area behind the rip-rap will be completed. HSIs are not expected to significantly increase.

TY2 – Project Site – One Year Post-Planting (2014)

The planted area behind the rip-rap is expected to result in approximately 50% aerial coverage of *Spartina alterniflora* after the first full growing season.

TY4 – Mitigation Site - Three Years Post-Planting (2016)

The planted area behind the rip-rap is expected to result in approximately 100% aerial coverage of *Spartina alterniflora* after the third full growing season.

TY6 – Mitigation Site – Five Years Post-Planting (2018)

The planted area behind the rip-rap is expected to remain at 100% aerial coverage of *Spartina alterniflora* after the fifth full growing season.

The calculation of HSIs and HUs for the various target species is shown in Tables 1-3 (Attachment B).

WITHOUT-PROJECT FUTURE ASSUMPTIONS

Impact site: Remains static, assume HSI values would not change, has remained relatively static for numerous years.

Mitigation site: It is likely that natural recruitment of *Spartina, Phragmites, Scirpus*, or other emergent species would increase to approximately 10% in TY2, 40% in TY4, and 80% in TY6 if planting did not occur.

RESULTS AND COMPARISON OF IMPACTS AND MITIGATION

The determination of net change of HUs is shown in Table 4 (Attachment B). Based on the described with- and without-project scenarios, the proposed project will result in the average loss of 0.02 AAHU over the 6 years of analysis (2011 to 2018). The described mitigation planting will result in a gain in AAHUs for the wetland habitats during the six year analysis period (2011 to 2018) of 0.16 AAHU for a net gain of 0.14 AAHU (1.8:1 ratio). Therefore, under these described assumptions for with and without project, no additional mitigation actions would be required beyond those described in the preferred project. The analysis demonstrates that the proposed plan adequately avoids, minimizes, and mitigates impacts to habitats in the project area.

REFERENCES:

U. S. Fish and Wildlife Service (USFWS). 1980a. Habitat as a Basis for Environmental Assessment, Ecological Services Manual 101. U.S. Fish and Wildlife Service, Department of the Interior, Washington, DC.

_____. 1980b. Habitat Evaluation Procedure (HEP), Ecological Services Manual 102. U.S. Fish and Wildlife Service, Department of the Interior, Washington, DC.

_____. 1980c. Standards for the Development of Habitat Suitability Index models, Ecological Services Manual 103. U.S. Fish and Wildlife Service, Department of the Interior, Washington, DC.

ATTACHMENT A

MODEL VARIABLES AND ASSUMPTIONS

HABITAT SUITABILITY INDEX MODEL VARIABLES AND ASSUMPTIONS
ALLIGATOR BAYOU PUMP STATION

WHITE AND BROWN SHRIMP (Estuarine Emergent)

V_1 – % of estuary covered by vegetation (emergent or seagrass)

- "estuary" is assumed to include aquatic and emergent portions of the site at or below mean high tide. For the project site, this would include open water areas and the narrow shoreline (0.54 ac). The onsite wetland area is situated above mean high tide and is rarely inundated, thus not contributing significantly to shrimp habitat. Only a very narrow fringe of vegetation exists along the immediate shoreline (~5% of the "estuary"). At the mitigation site, the "estuary" is the zone between the rock breakwater and the mean high tide line on the shore (1.8 ac). This area is presently sparsely vegetated (~5%).

V_2 – Substrate Composition (soft, muddy, or course)

- based on sediment sampling, sediments at the project site are muddy (silty clay). Sediments at the mitigation site are soft (silty). Substrate conditions are not expected to change at the project site or mitigation site.

V_3 – Mean salinity during the spring (ppt)

- Salinities were determined from quarterly water quality data from Taylors Bayou published by the TCEQ for 2010. Baseline spring data were derived by averaging values from February and May. It is estimated that the project will result in more continuous low-flow discharges of fresh water from Alligator Bayou into Taylors Bayou, thus reducing the mean salinity by 3 ppt. Salinities are not expected to significantly change at the mitigation site.

V_4 – Mean water temperature during the spring (°C)

- Water temperatures were determined from quarterly water quality data from Taylors Bayou published by the TCEQ for 2010. Spring data were derived by averaging values from February and May. Mean water temperatures are not expected to change significantly at the project site or mitigation site.

SPOTTED SEATROUT (Estuarine Emergent)

V_1 – Lowest monthly mean winter-spring salinity

- The lowest monthly mean water salinities were derived from quarterly water quality data from Taylors Bayou published by the TCEQ for 2010. The lowest winter-spring salinities occurred in February and the average was 1.45 ppt. It is estimated that the project will result in more continuous low-flow discharges of fresh water from Alligator Bayou into Taylors Bayou, thus reducing the mean lowest salinity below 1 ppt. Salinities are not expected to significantly change at the mitigation site.

V_2 – Highest monthly mean summer salinity

- Highest mean monthly water salinities were derived from quarterly water quality data from Taylors Bayou published by the TCEQ for 2010. The highest summer salinities occurred in May and the average was 13.23 ppt. It is estimated that the project will result in more continuous low-flow discharges of fresh water from Alligator Bayou into Taylors Bayou, thus

reducing the mean salinity by 3 ppt. Salinities are not expected to significantly change at the mitigation site.

V_3 – Lowest monthly mean winter temperature

- Lowest mean winter water temperatures were derived from quarterly water quality data from Taylors Bayou published by the TCEQ for 2010. The lowest winter temperatures occurred in February and the average was 11.28 °C. Mean water temperatures are not expected to change significantly at the project site or mitigation site.

V_4 – Highest monthly mean summer temperature

- Highest mean summer water temperatures were derived from quarterly water quality data from Taylors Bayou published by the TCEQ for 2010. The highest summer temperatures occurred in August and the average was 31.2 °C. Mean water temperatures are not expected to change significantly at the project site or mitigation site.

V_5 – % of the study area with submerged and emergent vegetation, submerged islands, and oyster reefs

- "Study area" is interpreted to include the open water and emergent marsh at the project site (total 1.3 ac) and at the mitigation site (total 1.8 ac). On the project site, approximately 60% of the emergent marsh area is vegetated and the open water area is void of vegetation or structure. The emergent marsh is 58 % of the total study area, thus the % of the total study area with vegetation or structure is 35%. At the mitigation site, 5% of the study area (between the breakwater and shoreline MHT) is vegetated. Planting of smooth cordgrass on 3 ft centers within the area behind the breakwater (1.8 acres) in the spring of 2012 is expected to achieve at least 50% coverage within the first growing season and 100% by the 3rd through 5th growing seasons. Under the without-project scenario, it is expected that natural recruitment of *Spartina, Phragmites, Scirpus*, or other emergent species would increase to approximately 40% in the 3rd year and 80% in year 5 if planting did not occur.

MARSH WREN (Estuarine Emergent)

V_1 – Growth form of emergent hydrophytes

- The project site is characterized by short herbaceous (*Eleocharis, Ludwigia,* and *Carex*) and shrub (*Iva frutescens*) cover. The mitigation site is characterized by cordgrass.

V_2 – percent canopy cover of emergent herbaceous vegetation

- Within the study area (1.3 ac), approximately 58% is emergent marsh with 60% vegetative cover, of which 50% is herbaceous. Thus, total herbaceous cover of the study area is 18%. At the mitigation site, 5% of the study area (between the breakwater and shoreline MHT) is vegetated with herbaceous species. Planting of smooth cordgrass on 3 ft centers within the area behind the breakwater (1.8 acres) in the spring of 2012 is expected to achieve at least 50% coverage within the first growing season and 100% by the 3rd through 5th growing seasons. Under the without-project scenario, it is expected that natural recruitment of *Spartina, Phragmites, Scirpus*, or other emergent herbaceous species would increase to approximately 40% in the 3rd year and 80% in year 5 if planting did not occur.

V_3 – Mean water depth (cm) in wetland

- The emergent wetland portion of the project site is above mean high tide, thus the mean water depth is 0. After construction, the mean water depth will be >20 cm. The mean water depth of the mitigation site is approximately 15 cm.

V_4 – percent canopy cover of woody vegetation

- Within the study area (1.3 ac), approximately 58% is emergent marsh with 60% vegetative cover, of which 50% is woody shrub. Thus total woody cover of the study area is 18%. The mitigation site does not contain woody species

ATTACHMENT B

DATA & CALCULATION TABLES

TABLE 1: White/Brown Shrimp Habitat Evaluation (Estuarine Emergent)

	Variable	Impact Site (Pre Con)	SI (Pre Con)	Impact Site (Years 1,3,5)	SI (Years 1,3,5)		Mitigation Site (Pre Con)	SI (Pre Con)	Mitigation Site With-Project(Y1)	SI With Project(Y1)	Mitigation Site With-Project(Y3)	SI With Project(Y3)	Mitigation Site With-Project(Y5)	SI With Project(Y5)		Mitigation Site WO-Project (Y1)	SI Without Project(Y1)	Mitigation Site WO-Project (Y3)	SI Without Project(Y3)	Mitigation Site WO-Project (Y5)	SI Without Project(Y5)
V_1	% of estuary covered by vegetation (%) (emergent or seagrass)	5	0.05	0	0		5	0.05	50	0.5	100	1	100	1		10	0.1	40	0.4	80	0.8
V_{2b}	Substrate Composition - Brown Shrimp (Soft=1, muddy=2, course=3	muddy	0.8	muddy	0.8		soft	1	soft	1	soft	1	soft	1		soft	1	soft	1	soft	1
V_{2w}	Substrate Composition - White Shrimp (Soft=1, muddy=2, course=3	muddy	0.6	muddy	0.6		soft	1	soft	1	soft	1	soft	1		soft	1	soft	1	soft	1
V_{3b}	Mean salinity during the spring (ppt) -Brown shrimp	7	0.65	4	0.4		7	0.65	7	0.65	7	0.65	7	0.65		7	0.65	7	0.65	7	0.65
V_{3w}	Mean salinity during the spring (ppt) - White shrimp	7	1	4	1		7	1	7	1	7	1	7	1		7	1	7	1	7	1
V_4	Mean water temperature during the spring (ºC)	25	1	25	1		25	1	25	1	25	1	25	1		25	1	25	1	25	1

HSI and HU CALCULATIONS

	IMPACT (pre)	IMPACT (yr 1, 3, 5)	MITIGATION With-Project (pre)	MITIGATION With-Project (YR1)	MITIGATION With-Project (YR3)	MITIGATION With-Project (YR5)	MITIGATION WO-Project (pre)	MITIGATION WO-Project (YR1)	MITIGATION WO-Project (YR3)	MITIGATION WO-Project (YR5)
Food/Cover Brown Shrimp (FCb) = $(SIV1^2 x SIV2brn)^{1/3}$	0.0007	0	0.0008	0.08	0.33	0.33	0.0008	0.003	0.05	0.21
Food/Cover White Shrimp (FCw) = $(SIV1^2 x SIV2wht)^{1/3}$	0.0005	0	0.0008	0.08	0.33	0.33	0.0008	0.003	0.05	0.21
Average FC Value	0.0006	0	0.0008	0.08	0.33	0.33	0.0008	0.003	0.05	0.21
Water Quality Brown Shrimp (WQb) = $(SIV3brn \times SIV4brn)^{1/2}$	0.81	0	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Water Quality White Shrimp (WQw) = $(SIV3wht \times SIV4wht)^{1/2}$	1	0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Average WQ Value	0.90	0	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
HSI = Smaller of FC or WQ										
HSI Brown Shrimp =	0.0007	0	0.0008	0.08	0.33	0.33	0.0008	0.003	0.053	0.213
HSI White Shrimp =	0.0005	0	0.0008	0.08	0.33	0.33	0.0008	0.003	0.053	0.213
Average HSI	0.0006	0	0.0008	0.08	0.33	0.33	0.0008	0.003	0.053	0.213
HU = HSI x Aces	**0.0008**	**0**	**0.00144**	**0.144**	**0.594**	**0.594**	**0.00144**	**0.006**	**0.096**	**0.384**

AVERAGE ANNUAL HABITAT UNIT CALCULATIONS

$(T_2 - T_1)$ $(((A_2 x HSI_2) + (A_1 x HSI_1))/3) + ((A_1 x HSI_2) + (A_2 x HSI_1))/6))$ = Habitat Units Between Target Years

T = Target Year, A = Acreage, HSI = Habitat Suitability Index

IMPACT SITE WITH PROJECT			IMPACT SITE WITHOUT PROJECT			MITIGATION SITE WITH PROJECT			MITIGATION SITE WITHOUT PROJECT		
TY0-TY1 =	0.0004	Habitat Units	TY0-TY1 =	0.0008	Habitat Units	TY0-TY1 =	0.07	Habitat Units	TY0-TY1 =	0.0037	Habitat Units
TY1-TY3 =	0.0000	Habitat Units	TY1-TY3 =	0.0013	Habitat Units	TY1-TY3 =	0.62	Habitat Units	TY1-TY3 =	0.0850	Habitat Units
TY3-TY5 =	0.0000	Habitat Units	TY3-TY5 =	0.0013	Habitat Units	TY3-TY5 =	0.99	Habitat Units	TY3-TY5 =	0.4000	Habitat Units
SUM	0.0004		SUM	0.0034		SUM	1.68		SUM	0.489	
AAHUs (5 years)=	0.0001	AAHU	AAHUs (5 yrs)=	0.0007	AAHU	AAHUs (5 yrs)=	0.34	AAHU	AAHUs (5 yrs):	0.098	

COMPENSATION CALCULATION

NET LOSS OF AAHU - IMPACT SITE	-0.0006	AAHU
NET GAIN OF AAHU - MITIGATION SITE	0.24	AAHU
TOTAL GAIN/LOSS	**0.24**	**AAHU**

TABLE 2: Spotted Seatrout Habitat Variables (Estuarine Emergent)

	Variable	Impact Site (Pre Con)	SI (Pre Con)	Impact Site (Years 1,3,5)	SI (Years 1,3,5)		Mitigation Site (Pre Con)	SI (Pre Con)	Mitigation Site With-Project(Y1)	SI With Project(Y1)	Mitigation Site With-Project(Y3)	SI With Project(Y3)	Mitigation Site With-Project(Y5)	SI With Project(Y5)		Mitigation Site WO-Project (Y1)	SI Without Project(Y1)	Mitigation Site WO-Project (Y3)	SI Without Project(Y3)	Mitigation Site WO-Project (Y5)	SI Without Project(Y5)
V_1	Lowest monthly mean winter-spring salinity	1.45	0	<1	0		1.45	0	1.45	0	1.45	0	1.45	0		1.45	0	1.45	0	1.45	0
V_2	Highest monthly mean summer salinity	13.23	0.7	10.23	0.4		13.23	0.7	13.23	0.7	13.23	0.7	13.23	0.7		13.23	0.7	13.23	0.7	13.23	0.7
V_3	Lowest monthly mean winter temperature	11.28	0.6	11.28	0.6		11.28	0.6	11.28	0.6	11.28	0.6	11.28	0.6		11.28	0.6	11.28	0.6	11.28	0.6
V_4	Highest monthly mean summer temperature	31.2	1.0	31.2	1.0		31.2	1.0	31.2	1.0	31.2	1.0	31.2	1.0		31.2	1.0	31.2	1.0	31.2	1.0
V_5	% study area with submerged and emergent vegetation, submerged islands, and oyster reefs	35	0.7	0	0		5	0.1	50	1.0	100	1	100	1		10	0.2	40	0.8	80	1

HSI and HU CALCULATIONS

	IMPACT (pre)	IMPACT (yr 1, 3, 5)	MITIGATION With-Project (pre)	MITIGATION With-Project (YR1)	MITIGATION With-Project (YR3)	MITIGATION With-Project (YR5)	MITIGATION WO-Project (pre)	MITIGATION WO-Project (YR1)	MITIGATION WO-Project (YR3)	MITIGATION WO-Project
Water Quality (WQ) = $(SIV_1 \times SIV_2)^{1/2}$ or $(SIV_3 \times SIV_4)^{1/2}$ whichever is lower	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Food / Cover (FC) = SIV_5	0.70	0.00	0.10	1.00	1.00	1.00	0.10	0.20	0.80	1.00
HSI = WQ or FC, whichever is lower	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.20	0.00	0.00
HU = HSI x Acres	0.00	0.00	0.18	0.00	0.00	0.00	0.18	0.36	0.00	0.00

AVERAGE ANNUAL HABITAT UNIT CALCULATIONS

$(T_2 - T_1)$ $(((A_2 x HSI_2) + (A_1 x HSI_1))/3) + ((A_1 x HSI_2) + (A_2 x HSI_1))/6))$ = Habitat Units Between Target Years

T = Target Year, A = Acreage, HSI = Habitat Suitability Index

IMPACT SITE WITH PROJECT			IMPACT SITE WITHOUT PROJECT			MITIGATION SITE WITH PROJECT			MITIGATION SITE WITHOUT PROJECT		
TY0-TY1 =	0.00	Habitat Units	TY0-TY1 =	0.00	Habitat Units	TY0-TY1 =	0.09	Habitat Units	TY0-TY1 =	0.27	Habitat Units
TY1-TY3 =	0.00	Habitat Units	TY1-TY3 =	0.00	Habitat Units	TY1-TY3 =	0.00	Habitat Units	TY1-TY3 =	0.30	Habitat Units
TY3-TY5 =	0.00	Habitat Units	TY3-TY5 =	0.00	Habitat Units	TY3-TY5 =	0.00	Habitat Units	TY3-TY5 =	0.00	Habitat Units
SUM	0.00		SUM	0.00		SUM	0.09		SUM	0.57	
AAHUs (5 years)=	0.00	AAHU	AAHUs (5 yrs)=	0.00	AAHU	AAHUs (5 yrs)=	0.02	AAHU	AAHUs (5 yrs)=	0.11	

COMPENSATION CALCULATION

NET LOSS OF AAHU - IMPACT SITE	0.00	AAHU
NET GAIN OF AAHU - MITIGATION SITE	-0.10	AAHU
TOTAL GAIN/LOSS	**-0.10**	**AAHU**

TABLE 3: Marsh Wren Habitat Variables (Estuarine Emergent)

	Variable	Impact Site (Pre Con)	SI (Pre Con)	Impact Site (Years 1,3,5)	SI (Years 1,3,5)		Mitigation Site (Pre Con)	SI (Pre Con)	Mitigation Site With-Project(Y1)	SI With Project(Y1)	Mitigation Site With-Project(Y3)	SI With Project(Y3)	Mitigation Site With-Project(Y5)	SI With Project(Y5)		Mitigation Site WO-Project (Y1)	SI Without Project(Y1)	Mitigation Site WO-Project (Y3)	SI Without Project(Y3)	Mitigation Site WO-Project (Y5)	SI Without Project(Y5)
V_1	Growth form of emergent hydrophytes	short herb and shrubs (3)	0.1	open water	0		cordgrass	1.0	cordgrass	1.0	cordgrass	1.0	cordgrass	1.0		cordgrass	1.0	cordgrass	1.0	cordgrass	1.0
V_2	% canopy cover of emergent herbaceous vegetation	18	0.03	0	0		5	0.01	50	0.1	100	1.0	100	1.0		10	0.01	40	0.08	80	1.0
V_3	Mean water depth (cm) in wetland	0	0	>20	1.0		15	1.0	15	1.0	15	1.0	15	1.0		15	1.0	15	1.0	15	1.0
V_4	% canopy cover of woody vegetation	18	0.8	0	1.0		0	1.0	0	1.0	0	1.0	0	1.0		0	1.0	0	1.0	0	1.0

HSI and HU CALCULATIONS

	IMPACT (pre)	IMPACT (yr 1, 3, 5)	MITIGATION With-Project (pre)	MITIGATION With-Project (YR1)	MITIGATION With-Project (YR3)	MITIGATION With-Project (YR5)	MITIGATION WO-Project (pre)	MITIGATION WO-Project (YR1)	MITIGATION WO-Project (YR3)	MITIGATION WO-Project (YR5)
HSI = $(SIV_1 \times SIV_2 \times SIV_3)^{1/3} \times SIV_4$	0	0	0.003	0.033	0.333	0.333	0.003	0.003	0.027	0.333
HU = HSI x Acres	0	0	0.006	0.060	0.600	0.600	0.006	0.006	0.048	0.600

AVERAGE ANNUAL HABITAT UNIT CALCULATIONS

$(T_2 - T_1)$ $(((A_2 x HSI_2) + (A_1 x HSI_1))/3) + ((A_1 x HSI_2) + (A_2 x HSI_1))/6))$ = Habitat Units Between Target Years

T = Target Year, A = Acreage, HSI = Habitat Suitability Index

IMPACT SITE WITH PROJECT			IMPACT SITE WITHOUT PROJECT			MITIGATION SITE WITH PROJECT			MITIGATION SITE WITHOUT PROJECT		
TY0-TY1 =	0.00	Habitat Units	TY0-TY1 =	0.02	Habitat Units	TY0-TY1 =	0.03	Habitat Units	TY0-TY1 =	0.01	Habitat Units
TY1-TY3 =	0.00	Habitat Units	TY1-TY3 =	0.40	Habitat Units	TY1-TY3 =	0.55	Habitat Units	TY1-TY3 =	0.05	Habitat Units
TY3-TY5 =	0.00	Habitat Units	TY3-TY5 =	0.72	Habitat Units	TY3-TY5 =	1.00	Habitat Units	TY3-TY5 =	0.54	Habitat Units
SUM	0.00		SUM	1.14		SUM	1.58		SUM	0.59	
AAHUs (5 years)=	0.00	AAHU	AAHUs (5 yrs	0.23	AAHU	AAHUs (5 yrs)=	0.32	AAHU	AAHUs (5 yrs)=	0.12	

COMPENSATION CALCULATION

NET LOSS OF AAHU - IMPACT SITE	-0.23	AAHU
NET GAIN OF AAHU - MITIGATION SITE	0.20	AAHU
TOTAL GAIN/LOSS	**-0.03**	**AAHU**

TABLE 4: Summary of Habitat Units for Impact Site and Mitigation Site

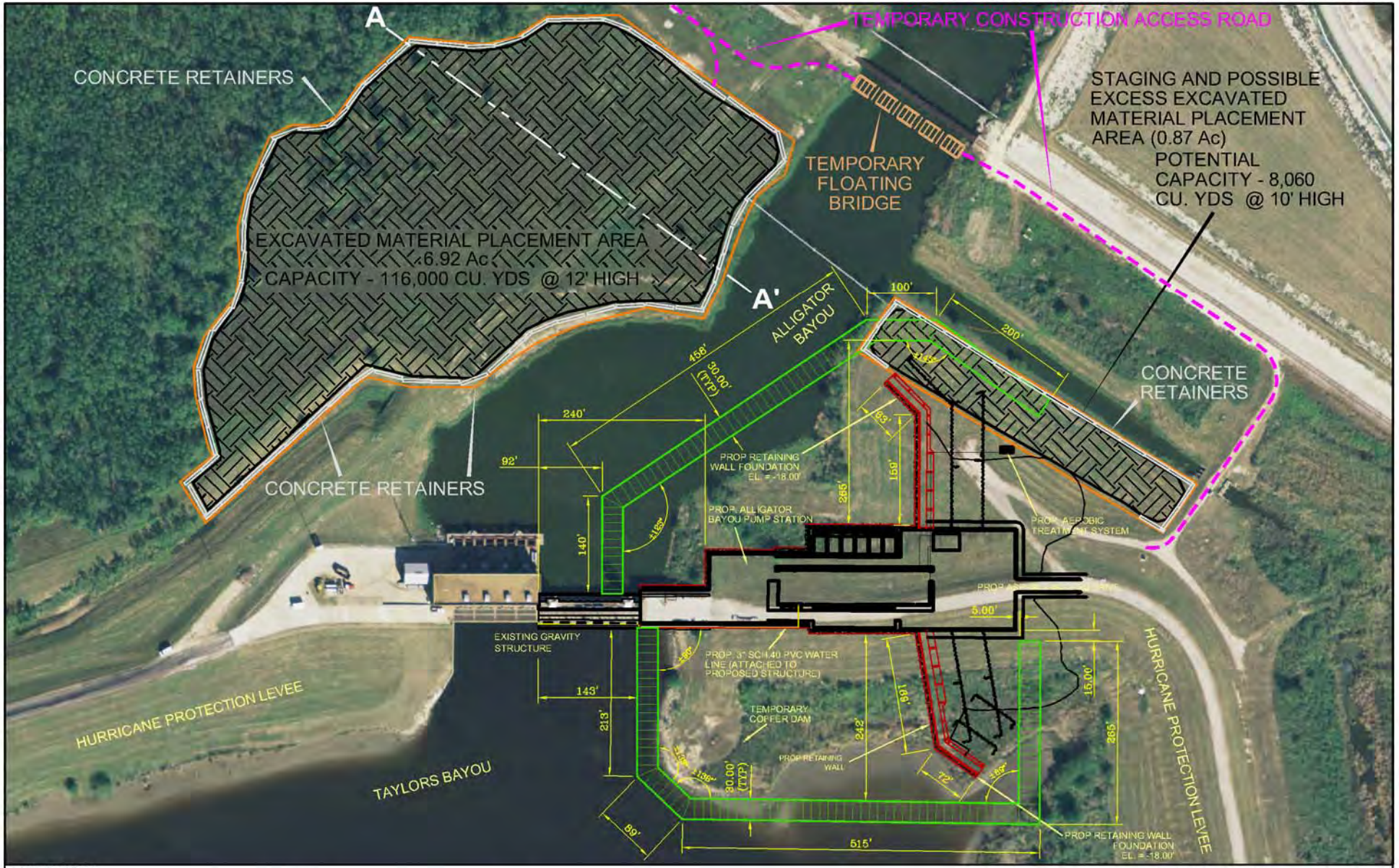
	IMPACT HU	MITIGATION HU	HU Gain-Loss		
Shrimp	-0.0006	0.24	0.24		
Spotted Seatrout	0.00	-0.10	-0.10		
Marsh Wren	-0.23	0.20	-0.03		
AVERAGE HU LOSS OR GAIN	-0.06	0.09	0.03	Ratio of Gain =	0.2

ATTACHMENT C

PROJECT PLANS

"Do Not Scale This Drawing"

060108A21PA_Plan.dwg | JEA | 12/5/2011 || Revised: JEA | 10/31/2012



MAP SOURCE:

1. PROVIDED BY CARROLL & BLACKMAN, INC. (2008)
2. 2006 AERIAL: JEFFERSON COUNTY DRAINAGE DISTRICT (2008)

Horizon Environmental Services, Inc.

0 100 200 FEET

FIGURE 4

PLAN VIEW OF PROPOSED PUMP STATION
CONSTRUCTION OF A NEW PUMP STATION
ALLIGATOR BAYOU PUMP STATION #16
CONFLUENCE OF ALLIGATOR BAYOU
AND TAYLORS BAYOU
PORT ARTHUR, JEFFERSON COUNTY, TEXAS