Prospectus for the Proposed: OLD RIVER MITIGATION BANK

Calcasieu Parish, Louisiana

January 10, 2011

Sponsor:
Stream Wetland Services, LLC
P.O. Box 40
Lake Charles, La
70602

Agent:
David Richard
P.O. Box 40
Lake Charles, La
70602

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1.0 INTRODUCTION

Stream Wetland Services, LLC (SWS) proposes the establishment of the Old River Mitigation Bank (ORMB). The ORMB will utilize 350,000 cubic yards of beneficially used dredged material to create 165 acres of Emergent Marsh and enhance 55 acres of existing Emergent Marsh. The project goal is to convert the existing shallow open-water area back to its original status of emergent wetlands and nourish an additional 55 acres of fragmented marsh. The project is located in Calcasieu Parish within the Calcasieu River Basin.

1.1 Site Location

The ORMB is located between the west end of Lyle Peters Rd. and the Calcasieu River channel, bound to the north by the Old Calcasieu River channel and to the south by an existing tidal marsh. The entire 165 acre creation site is currently a shallow open-water area with an average water depth of 18 inches. The project center is located at Latitude N30 9' 54.48" Longitude W93 18' 12.82". The project can be found within Township 10S Range 9W Sections 20 & 29 of Calcasieu Parish. Please see the attached Vicinity Map Figure 1.

2.0 PROJECT GOALS AND OBJECTIVES

The primary goal of this project is to provide compensatory mitigation for unavoidable impacts to "Waters of the United States" authorized through the issuance of Department of Army Permits pursuant to Sections 9 and 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act of 1972. This will be accomplished through the creation of 165 acres of Emergent Marsh and enhancement of 55 acres of fragmented marsh. Construction of the bank is planned in 2011, subject to USACE permit approval. This will be achieved by successfully completing the following project objectives.

1) *Restrict Tidal Exchange and Saltwater Intrusion*: To restore historical tidal exchange and hydrology, 7,400 linear feet of earthen containment dykes will be constructed around the perimeter of the Mitigation Site. The section of the containment dyke located along the Old Calcasieu River will be armored with 3,550 linear feet of man-sized rock. Additionally two thirty six (36) inch weir board structures will be installed to help control water exchange.
2) *Restore Historical Marsh Elevations*: To restore historical marsh elevations, 350,000 cubic yards of dredged material will be used beneficially. The dredged material will come from maintenance dredging of industrial ports located on the Calcasieu River, please see the attached Figure 8 showing the source of material and the anticipated route of discharge. Dredged materials will be pumped by hydraulic dredge and placed using a HDPE discharge pipe. Approximately 7,900 linear feet of training levees will be constructed within the Mitigation Site. These

training levees will help consolidate the dredged materials and assist in reaching the desired final elevations. Depending on the composition of the dredged material, hydraulic placement would likely be placed at a pre-settled elevation of +1.5' - +3.0' NAVD 88. The targeted settled elevation would be + 1.2' NAVD 88 with a tolerance of ± 0.5' NAVD 88. It is expected that the material will experience rapid consolidation within the first year once construction is complete.

The site will dewater during the dredging process through the existing fragmented wetland to the west resulting in the enhancement and nourishment of an additional 55 acres of emergent marsh.

3) *Restore Emergent Wetland Vegetation*: The following planting plan will utilize native wetland vegetation from a licensed nursery grower to achieve this project objective.
   - Multi-stem plugs (i.e. bare root plugs) of *Spartina alterniflora* cv. vermillion will be planted on five foot (5') to seven foot (7') centers throughout the Mitigation Area. Multi-stem plugs will also be placed along both sides of the earthen containment dykes and training levees on three foot (3') centers. Each plug will have a minimum of three live actively growing stems that are a minimum stem height of ten inches (10") from the stem-root interface to the stem tip. In addition, each plug will have a root mass of not less than two inches (2") in diameter at the root crown and not less than six inches (6") in length. Plants will be salt-hardened to a minimum of 10ppt within two weeks of installation if grown under upland nursery conditions.

   - Two inch (2") tube containers of both *Paspalum vaginatum* and *Spartina patens* will be planted on six foot (6') centers along the crown of the containment dykes and training levees. Each plant shall have a minimum of five stems at a minimum of eight inches (8") long.

Table 1

Mitigation Credit Type	Habitat Type	Acreage
Creation	Emergent Marsh	165
Enhancement	Emergent Marsh	55

3.0 ECOLOGICAL SUITABILITY OF THE SITE

It is well documented that Emergent Marsh serves an important role as nurseries for numerous fish, crab, and other shellfish. Additionally numerous species of migratory waterfowl and wading shorebirds depend on healthy stable marsh systems to provide suitable habitats for nesting, breeding and foraging. The project will also reduce turbidity

by trapping sediments from storm water runoff, produce detritus, encourage submerged aquatic vegetation, and increase the food production for furbearers, alligators and fisheries.

Healthy, stable marshes also perform as a buffer to maintain freshwater chemistry during high salinity events such as storm surges and drought.

3.1 Historical Ecological Characteristics of the Site

Prior to the construction of the Calcasieu Ship Channel and the GIWW in the 1940's, the project site was dominated by numerous emergent wetland vegetative species. The hydrologic alteration to the GIWW and the Calcasieu River was the means to which salt water intruded the area and began the conversion from pristine emergent marsh to what is now open water. Numerous wildlife species utilized the site for nesting, breeding, and foraging prior to its degradation. See Figures 6 & 7 that shows the historical condition of the site.

3.2 Current Ecological Characteristics of the Site

Currently 100% of the project site consists of shallow open water with an average water depth of eighteen inches (18"). The site is a perfect candidate for beneficial use since it is poor in habitat diversity and wildlife utilization. Additionally, this mitigation bank will provide synergistic effects with the surrounding emergent wetlands. See Figure 3.1 that shows the existing conditions of the project site.

The site currently experiences daily tidal influence from the Calcasieu River with an average daily range of ± 1.5'. The project site stays inundated throughout the year with exception during the winter months when a combination of strong Northerly winds and low tides temporarily dewater the area. Also, the site does receive storm water runoff from the Calcasieu River during major rainfall events. However, the site has no capacity to capture or filter river sediments since there is no presence of emergent vegetation. One of the goals of this project is to restore this function and value. These influences have been unrestricted since the deterioration of the Calcasieu River bank to the north of the project.

In addition to the creation of 165 Acres of Emergent Marsh, the site will provide enhancement to 55 acres of broken marsh. These 55 acres has steadily been eroding due to increased salinities resulting from the deepening and widening of the Calcasieu River due to the demands of industrial expansion. In addition, Hurricane Rita in 2005 and Hurricane Ike in 2008 have accelerated the loss of wetlands within the project area causing the interior marsh to open up as both vegetation and soils were washed out during the storm surge. These 55 acres will benefit from the nourishment this project will provide.

The proposed ORMB is located approximately 2 miles north of the Calcasieu-Sabine Basin River Study Area (conducted in 1990). Although the ORMB is outside the study area, it will have positive impacts on reducing water turbidity in the Calcasieu River

Basin. On page 56 of the study, it refers to large open bodies of water within fragmented marshes as being one of the primary sources of sediment that causes water clarity issues in the basin. The ORMB will restore 160 of open water to emergent marsh.

3.3 General Need for the Project in this Area

The general need for the ORMB lies in the 165 acres of created Emergent Marsh and 55 acres of enhancement, which will provide compensatory mitigation for the CEMVN, authorized projects within HUC 08080206 & HUC 08080202 watersheds. These watersheds contain portions of Vermillion, Cameron, and Calcasieu Parishes. Continual exploration for oil and gas, and industrial and port expansion within these watersheds have created a demand for restoration credits. Currently there is little or no supply of emergent marsh mitigation credits available.

3.4 Technical Feasibility

The construction work necessary to create the bank involves common coastal restoration practices. Additionally, the construction will coincide with maintenance dredging of private docks that are located adjacent to the mitigation site. This beneficial use project will prevent the disposal of approximately 350,000 cubic yards of river sediment within an upland disposal site. Similar beneficial use projects within the same hydrologic basin have been performed by SWS with great success.

4.0 ESTABLISHMENT OF THE MITIGATION BANK

4.1 Site Restoration Plan

To accomplish the project goals and achieve the ecological benefits, dredged materials will be pumped by hydraulic dredge and placed using a HDPE discharge pipe. The discharge pipe will be routed through the adjacent marsh platform using excavators and/or airboats. From the primary route, smaller lines will branch off and be used to fill each zone of the project area. Diffusers shall be installed on the end of the discharge pipe to reduce scour (erosion) that could occur immediately adjacent to the discharge point. Once a compartment or zone is formed and the discharge pipe is in place, the area will be flooded with material and water from the hydraulic dredge until the designed grade is achieved. To ensure a mosaic of marsh and water is created, the distal portions of the zones are intended to become small discrete ponds or meandering channels. A land/water ratio of 80/20 will be achieved.

Prior to filling the site with river sediment, approximately 3,550 linear feet of man-sized rock and 7,400 linear feet of earthen containment dykes will be constructed to retain the dredged spoil material. The containment dykes will be constructed to an elevation of +5.0 NAVD88. Two 36” weir board structures will be installed to control water elevations within the project area.

The Mitigation Bank will be divided into six different zones by the construction of the training levees referenced earlier. Multiple discharge points within the project area as per the attached

drawings will be utilized. This will allow materials to be stacked in small increments as maintenance dredging is conducted over a 3 to 10 year period. Some zones may require more than one discharge attempt in order to reach the targeted elevations.

To accommodate soil consolidation and settling, the dredged material will be placed to an initial elevation greater than the elevation required for establishment of marsh vegetation. Depending on the composition of the dredged spoil material, hydraulic placement will likely be at a pre-settlement elevation of +1.5 feet - +3.0 feet NAVD88. The targeted settled elevation will be +1.2 NAVD88 with a tolerance of ±0.5'. It is expected that the material will experience rapid consolidation within the first year after each dredging cycle. During this period, existing vegetation from the adjacent wetlands will begin to colonize the project site. In addition to natural colonization, vegetative plantings through sprigging will be performed in accordance with the conceptual planting plan described below.

The project will be constructed over a 10 year period as maintenance dredging is conducted in the Calcasieu River. Construction of the containment and training levees will be conducted during year one. Placement of beneficially used sediment will be conducted in increments of 50,000 to 100,000 cubic yards per dredge cycle over the 10 year period. Surface acreage created during each dredge cycle will range from 10-25 acres based on the volume of material placed.

Planting Plan

- Multi-stem plugs (i.e. bare root plugs) of *Spartina alterniflora* cv. vermillion will be planted on five foot (5') by seven foot (7') spacing's throughout the disposal area. Multi-stem plugs will also be placed along both sides of the earthen containment dykes and training levees on 3 (3') foot centers. Each plug will have a minimum of three live and actively growing stems that are a minimum stem height of ten inches (10") from the stem-root interface to the stem tip. In addition, each plug will have a root mass of not less than two inches (2") in diameter at the root crown and not less than six inches (6") in length. Plants will be salt-hardened to a minimum of 10ppt within two weeks of installation if grown under upland nursery conditions.

- Two inch (2") tube containers of both joint *Paspalum vaginatum* and *Spartina patens* will be planted on six foot (6') centers along the crown of the containment dykes and training levees. Each plant shall have at least five stems a minimum of eight inches (8") long.

4.2 Current Site Risks

The Old River Mitigation Bank site will not only create 165 acres of emergent marsh, but will also provide synergistic effects to adjacent wetlands. This bank will serve as a source of nourishment to the broken fragmented marsh adjoining the property to the west and contribute to the enhancement of an additional 55 acres. Additionally, it will reduce tidal amplitude and frequency to all adjoining wetlands. Also, it will help reduce storm surge effects for the community located along the eastern boundary of the project.

There are no known encumbrances, mortgages, or liens within the project area. There are pipeline right-of-ways which cross the project area; they will not impact the surface of the wetland restoration site.

4.3 Long-Term Sustainability of the Site

The management practices of Old River Mitigation Bank will utilize the natural process of vertical accretion to sustain the project goals and objectives. Hydrologic restoration thru the use of water control structures will help facilitate this natural process. It is well documented in similar restoration projects that water management is the key to sustainable marsh. The mitigation site will also capture river sediments from upstream runoff that will serve as a source of continual source nourishment for the site. Two aluminum thirty six inch (36") weir board pipe structures will be used to control water flow rates and patterns. The structures will be set seasonally to mimic historical hydrologic conditions to the benefit of both fisheries and waterfowl species.

5.0 PROPOSED SERVICE AREA

The Old River Mitigation Bank is located in Sections 20 & 29 of Township 10S Range 9W in Lake Charles, LA. The ORMB is located within USGS Cataloging Unit 08080206 which includes portions Calcasieu, Cameron, and Vermillion Parishes.

The proposed service area for the ORMB will include HUC 08080206 and 08080202, which includes Calcasieu, Cameron, Jefferson Davis, and Vermilion Parish. Considering a watershed approach, the HUC 08080206 will serve as the primary service area and HUC 08080202 will serve as the secondary services area where appropriate. Use beyond this area will be determined by the CEMVN on a case–by-case basis.

6.0 OPERATION OF THE MITIGATION BANK

6.1 Project Representatives

Sponsor:	Stream Wetland Services, LLC P.O. Box 40 Lake Charles, LA 70602 (337) 433-1055
Agent:	David Richard P.O. Box 40 Lake Charles, LA 70602 (337) 433-1055 ext. 119
Landowner:	Stream Family Limited Partnership

p.o. box 40
Lake Charles, LA 70602

Sponsor: Stream Wetland Services, L.L.C.
p.o. box 40
Lake Charles, LA 70602

6.2 Qualifications of the Sponsor

The ORMB is owned and managed by SWS, a company that has developed and currently manages 11 mitigation banks within the State of Louisiana. The management staff is comprised of Wetland Biologist and a licensed Forester who have a combined 41 years in the mitigation banking industry. SWS has also conducted numerous wetland restoration projects throughout coastal Louisiana and Texas. SWS is a licensed wetland plant nursery grower and has overseen the production and installation of over 1 million plants in the last 5 years. SWS has adequate funds and resources to establish the proposed ORMB.

6.3 Proposed Long-Term Ownership and Management Representatives

The land for the ORMB is owned by Stream Family Limited Partnership a sister company to SWS. This project site has been in the Stream Family Holdings since 1902. SWS will utilize its experienced staff of land managers and biologist to manage the ORMB so the Goals and Objectives are achieved.

6.4 Site Protection & Long-Term Strategy

Due to the Fragile nature of Louisiana Coastal Wetlands and in concert with the present requirements of the Louisiana Coastal Zone, and USACE Requirements, a twenty year term deed restriction and maintenance agreement signed by the sponsor shall be used to keep the site secured. This agreement will outline the levee maintenance and structural integrity of the site for the term to ensure hydrologic and vegetative restoration. The deed will be held by Stream Family Limited Partnership and recorded in the Calcasieu Parish Court House.

7.0 REFERENCES

Department of Defense, Department of the Army, Corps of Engineers *33 CFR Parts 325 and 332*, Federal Register, July 7, 2010

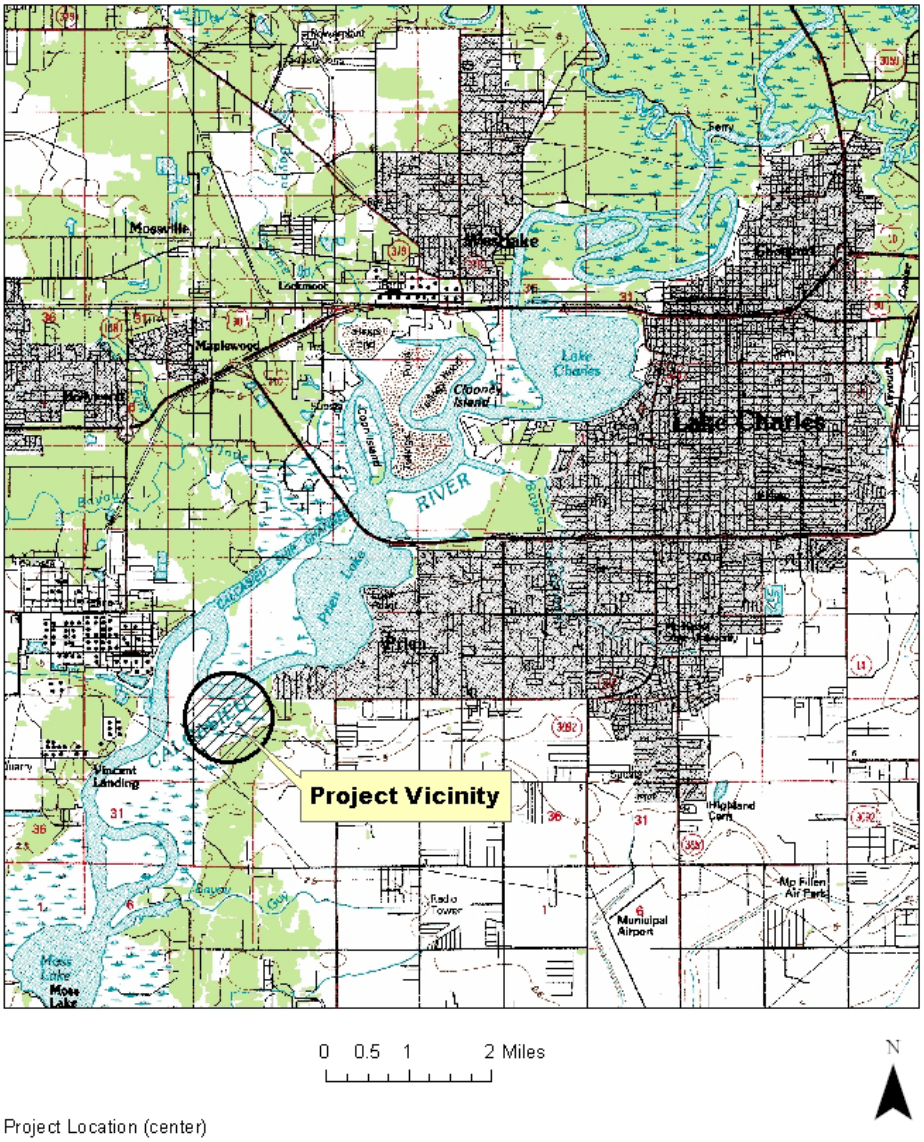
United State Department of Agriculture, Soil Conservation Service, Soil Survey of Calcasieu Parish, Louisiana, U.S. Government Printing Office, 1988

Natural Resources Conservation Service, Calcasieu – Sabine Cooperative River Basin Study Report United States Department of Agriculture, 1990

FIGURES

FIGURE 1

VICINITY MAP



Project Location (center)

Latitude: N30 9' 54.48"
Longitude: W93 18 ' 12.82"

OLD RIVER MITIGATION BANK
T 10S R9W SEC 20,29
CALCASIEU PARISH, LA

FIGURE 2

SITE PLAN

FIGURE 3

SITE PLAN

0 500 1,000 2,000 3,000 4,000 Feet

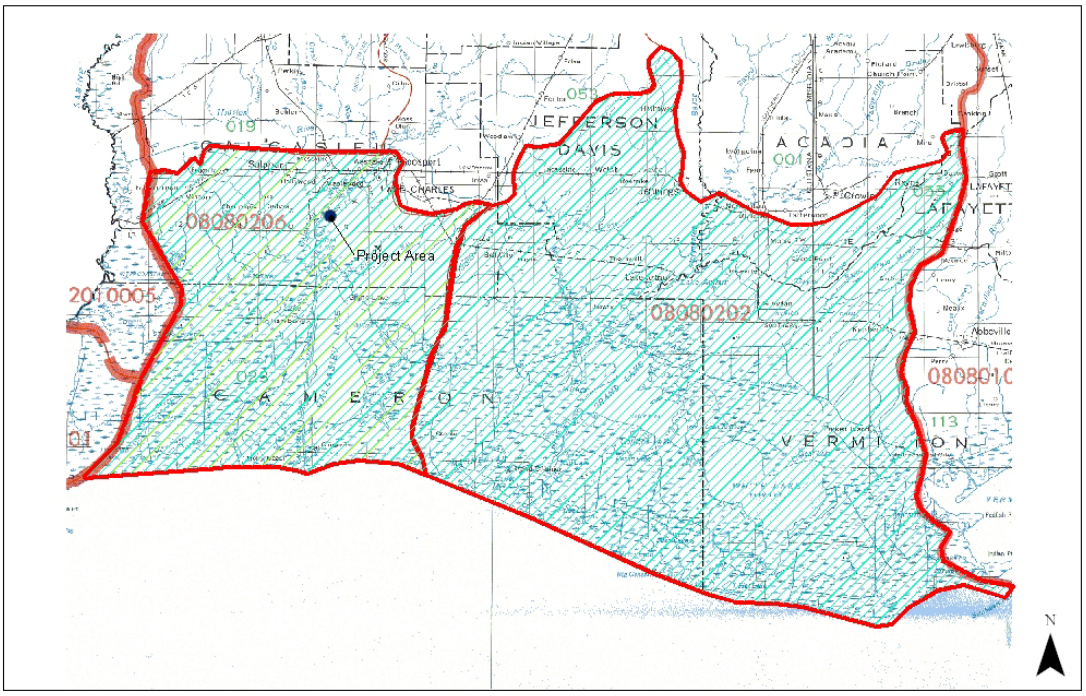
Legend

- 36 Weir Structure
- Earthen Training Levees
- Earthen Containment Levee
- Rock
- 55 Acre Marsh Enhancement Site
- 165 Acre Creation Area

OLD RIVER MITIGATION BANK
T 10S R9W SEC 20,29
CALCASIEU PARISH, LA

FIGURE 4

HYDROLOGIC CATALOGING UNIT MAP



Legend

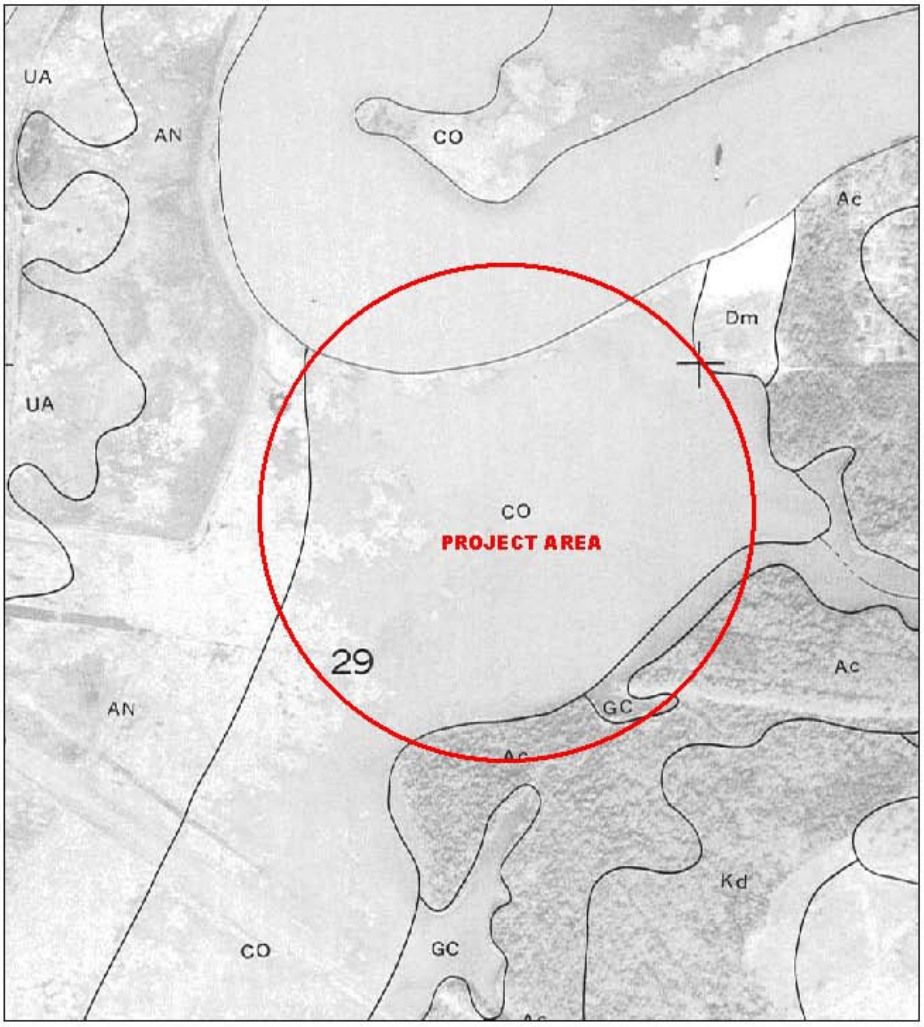
ORMB Secondary Service Area

ORMB Primary Service Area

OLD RIVER MITIGATION BANK
T 10S R9W SEC 20,29
CALCASIEU PARISH, LA

FIGURE 5

SOIL SURVEY MAP



Soil Type: Clovelly
Symbol: CO
Hydrologic Group: D
Flooding Frequency: Frequent
Duration: Very Long

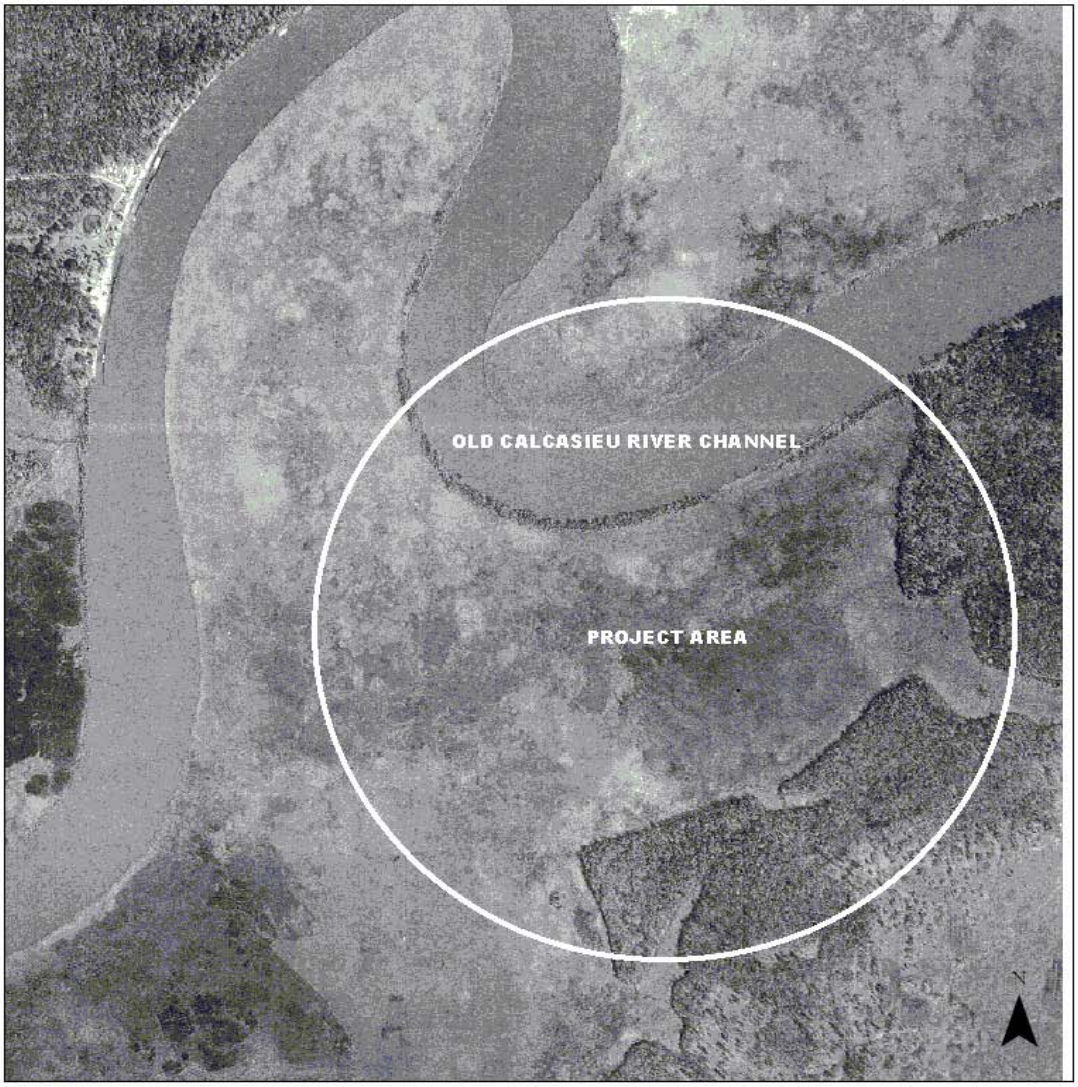
HIGH WATER TABLE
Depth: +1.0 - 0.5
Kind: Apparent
Months: Jan - Dec

OLD RIVER MITIGATION BANK
T 10S R9W SEC 20,29
CALCASIEU PARISH, LA

FIGURE 6

HISTORICAL PHOTO

1940

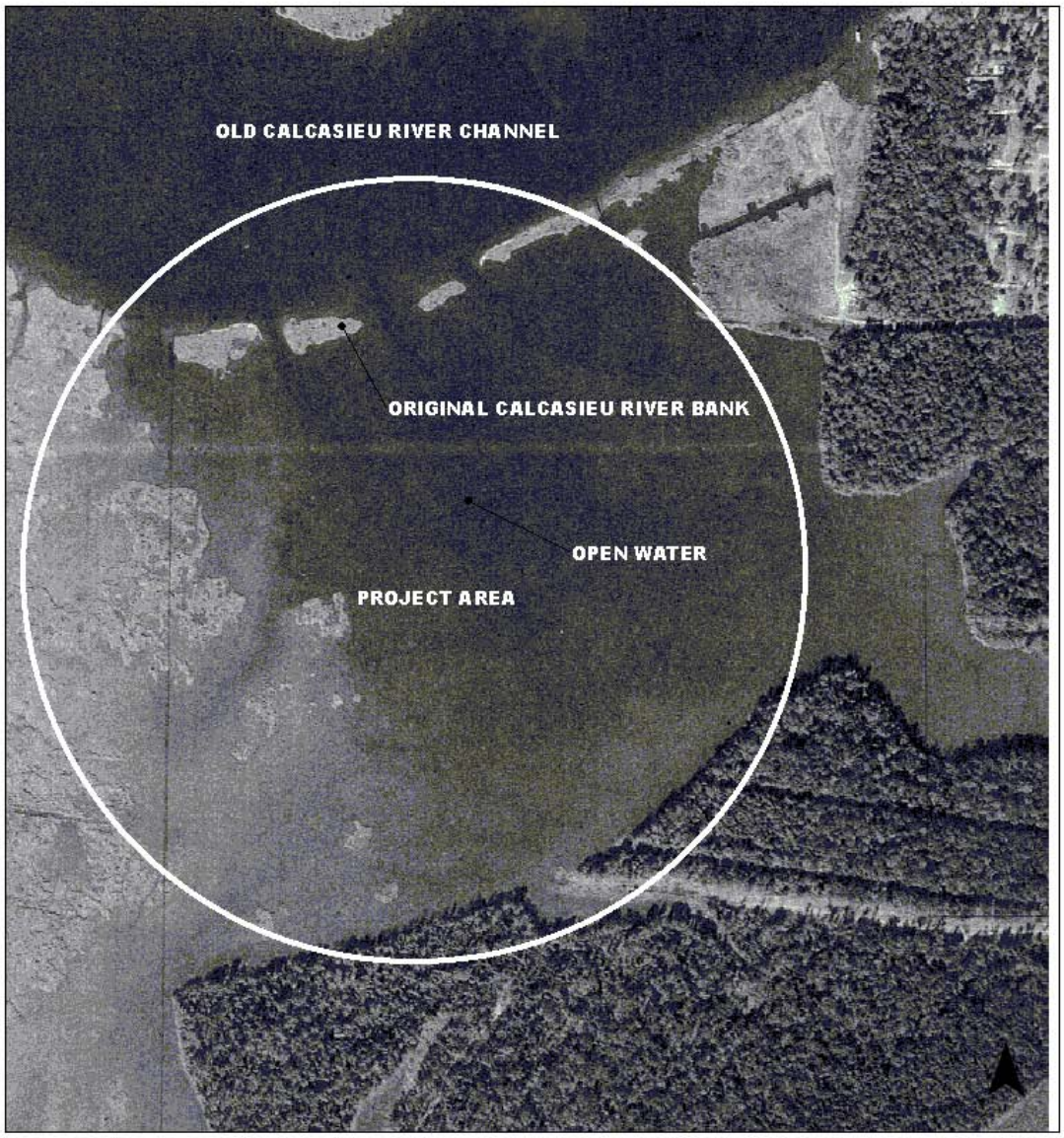


*** HISTORICAL PHOTO TAKEN 1940**

OLD RIVER MITIGATION BANK
T 10S R9W SEC 20,29
CALCASIEU PARISH, LA

FIGURE 7

HISTORICAL PHOTO
1974

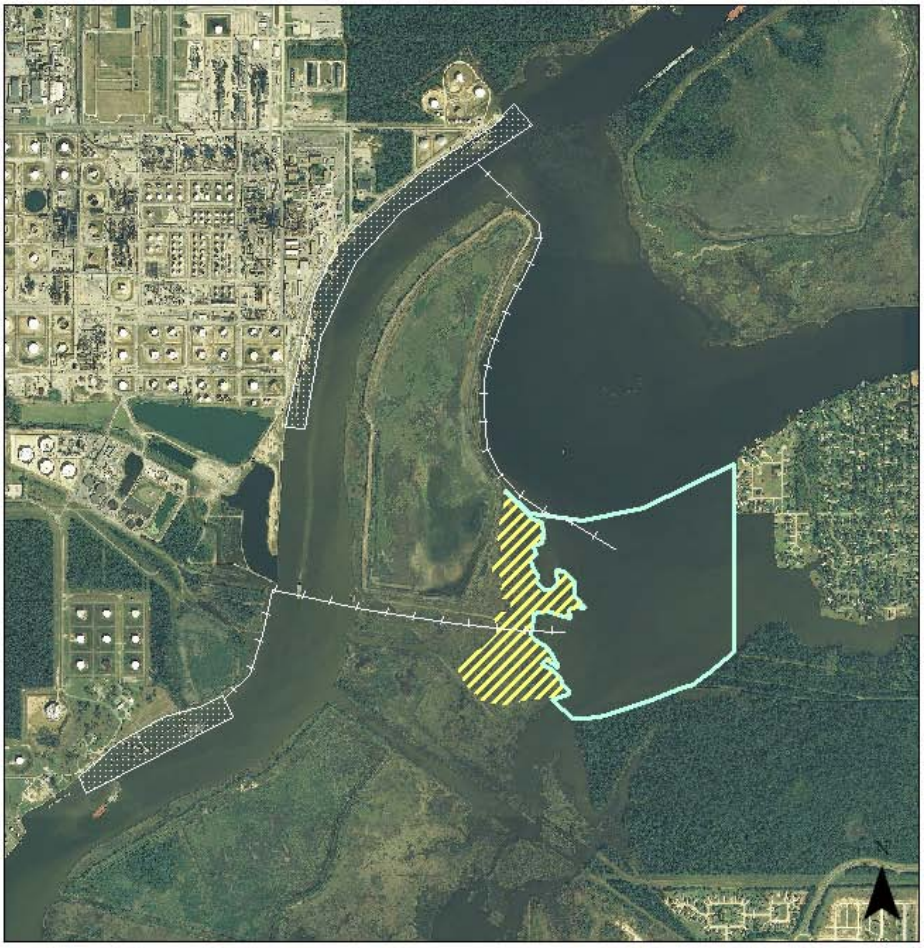


*** HISTORICAL PHOTO TAKEN 1974**

OLD RIVER MITIGATION BANK
T 10S R9W SEC 20,29
CALCASIEU PARISH, LA

FIGURE 8

SOURCE OF MATERIAL



0 600 1,200 2,400 3,600 4,800
Feet

Legend

- ORMB Tentative Discharge Pipe Route
- 55 Acre Marsh Enhancement Site
- 165 Acre Marsh Creation Site
- ORMB Source of Dredge Material

OLD RIVER MITIGATION BANK
T 10S R9W SEC 20,29
CALCASIEU PARISH, LA

FIGURE 9

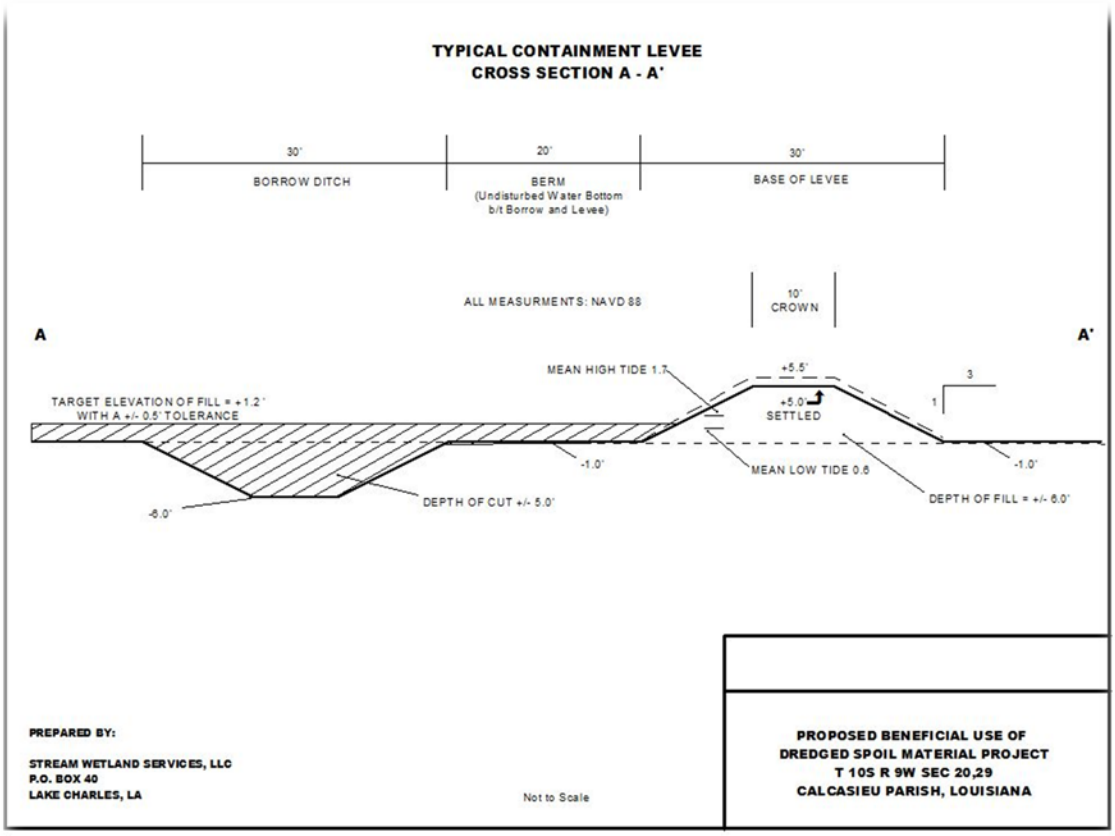

TYPICAL CONTAINMENT LEVEE
CROSS SECTION A - A'
30'
BORROW DITCH
20'
BERM
(Undisturbed Water Bottom
b/t Borrow and Levee)
30'
BASE OF LEVEE
ALL MEASURMENTS: NAVD 88
10'
CROWN
A
A'
MEAN HIGH TIDE 1.7
+5.5'
+5.0'
SETTLED
3
1
TARGET ELEVATION OF FILL = +1.2'
WITH A +/- 0.5' TOLERANCE
-1.0'
MEAN LOW TIDE 0.6
-1.0'
-6.0'
DEPTH OF CUT +/- 5.0'
DEPTH OF FILL = +/- 6.0'
PREPARED BY:
STREAM WETLAND SERVICES, LLC
P.O. BOX 40
LAKE CHARLES, LA
Not to Scale
PROPOSED BENEFICIAL USE OF
DREDGED SPOIL MATERIAL PROJECT
T 10S R 9W SEC 20,29
CALCASIEU PARISH, LOUISIANA

FIGURE 10

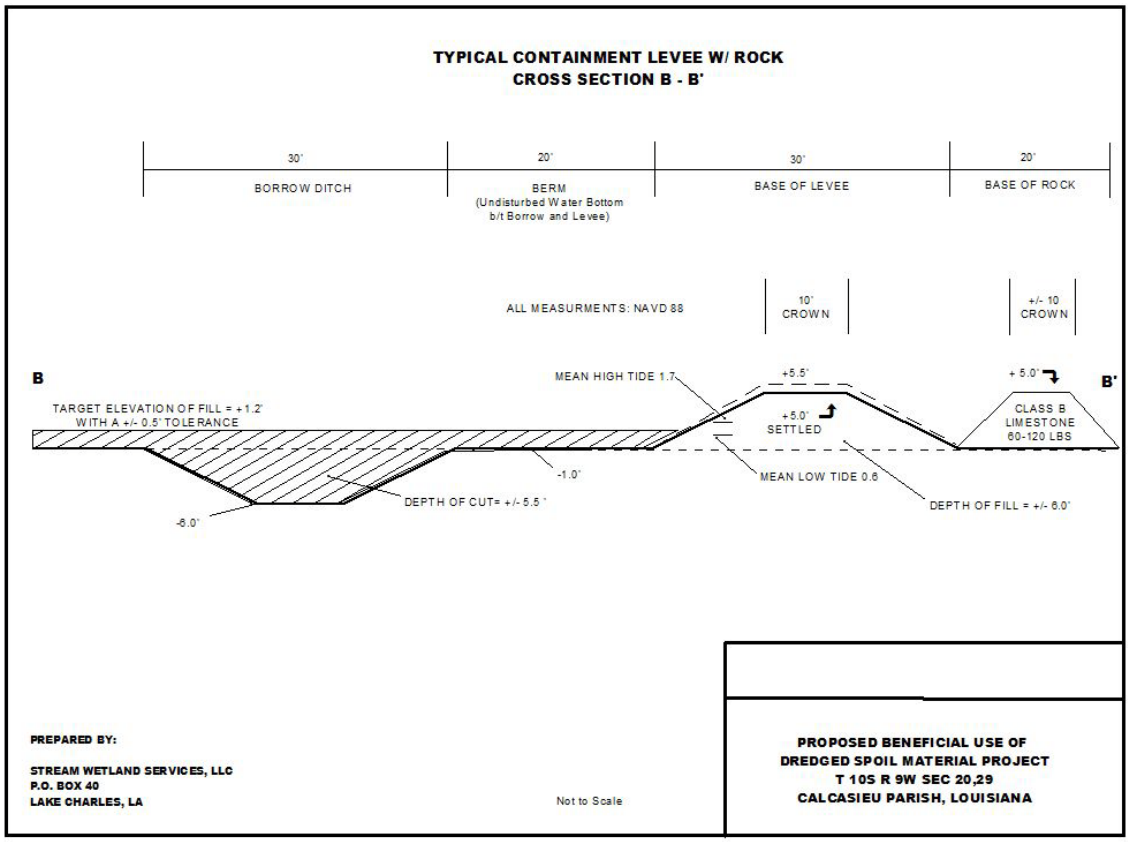
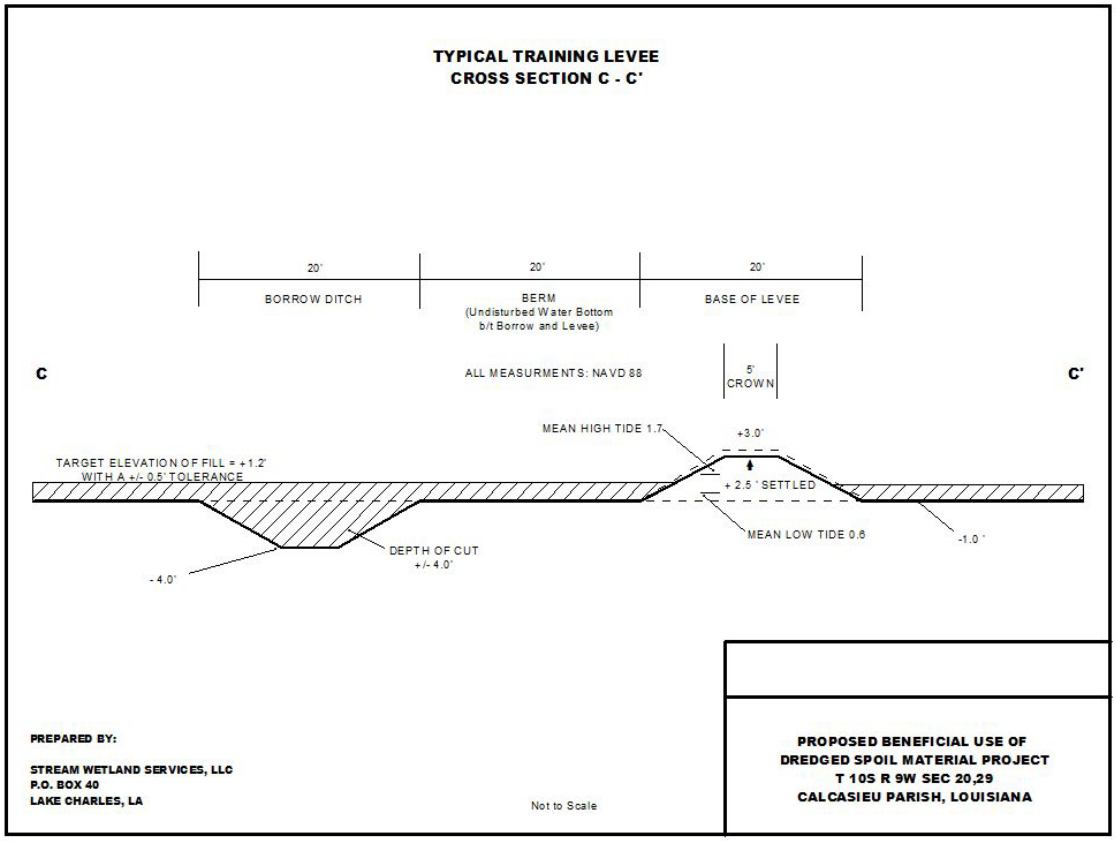

TYPICAL CONTAINMENT LEVEE W/ ROCK
CROSS SECTION B - B'
30'
BORROW DITCH
20'
BERM
(Undisturbed Water Bottom
b/t Borrow and Levee)
30'
BASE OF LEVEE
20'
BASE OF ROCK
ALL MEASURMENTS: NAVD 88
10'
CROWN
+/- 10
CROWN
B
B'
MEAN HIGH TIDE 1.7
+5.5'
+ 5.0'
TARGET ELEVATION OF FILL = +1.2'
WITH A +/- 0.5' TOLERANCE
+5.0'
SETTLED
CLASS B
LIMESTONE
60-120 LBS
-1.0'
MEAN LOW TIDE 0.6
DEPTH OF CUT= +/- 5.5 '
DEPTH OF FILL = +/- 6.0'
-6.0'
PREPARED BY:
STREAM WETLAND SERVICES, LLC
P.O. BOX 40
LAKE CHARLES, LA
Not to Scale
PROPOSED BENEFICIAL USE OF
DREDGED SPOIL MATERIAL PROJECT
T 10S R 9W SEC 20,29
CALCASIEU PARISH, LOUISIANA

FIGURE 11


TYPICAL TRAINING LEVEE
CROSS SECTION C - C'
20'
20'
20'
BORROW DITCH
BERM
(Undisturbed Water Bottom
b/t Borrow and Levee)
BASE OF LEVEE
C
ALL MEASURMENTS: NAVD 88
5'
CROWN
C'
MEAN HIGH TIDE 1.7
+3.0'
TARGET ELEVATION OF FILL = +1.2'
WITH A +/- 0.5' TOLERANCE
+ 2.5 ' SETTLED
MEAN LOW TIDE 0.6
-1.0 '
DEPTH OF CUT
+/- 4.0'
- 4.0'
PREPARED BY:
STREAM WETLAND SERVICES, LLC
P.O. BOX 40
LAKE CHARLES, LA
Not to Scale
PROPOSED BENEFICIAL USE OF
DREDGED SPOIL MATERIAL PROJECT
T 10S R 9W SEC 20,29
CALCASIEU PARISH, LOUISIANA