Coastal Protection and Restoration Authority of Louisiana
Office of Coastal Protection and Restoration

2008 Operations, Maintenance, and Monitoring Report

for

Cote Blanche Hydrologic Restoration

State Project Number TV-04
Priority Project List 3

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St. Mary Parish

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2008 Operations Maintenance and Monitoring Report
For
Cote Blanche Hydrologic Restoration (TV-04)

Table of Contents

I. Introduction

The Cote Blanche Hydrologic Restoration area comprises 30,898 acres (12,504 ha) of freshwater marsh located in St. Mary Parish. The project boundaries include the Gulf Intracoastal Waterway (GIWW) to the north, Highway 317 to the east, East Cote Blanche Bay to the south and West Cote Blanche Bay to the west (Figure 1). The Cote Blanche marsh, and other marshes in this region, have experienced increased freshwater introduction from the GIWW and westward currents from the Atchafalaya delta (DeLaune et al. 1987). In 1949, the area was almost entirely brackish (93%) with a narrow band of saline (7%) marsh along the southwestern shoreline. By 1968, the marsh was classified 13% fresh, 39% intermediate, and 48% brackish. In 1978, the area was predominantly fresh (63%) and intermediate (37%) marsh, whereas by 1988 the entire area was classified as fresh marsh.

Historical information correlates the changes in marsh types with hydrologic alterations. Marsh type changes were documented in 1982 by the United States Fish and Wildlife Service (USFWS) using Ecological Atlas Maps and Vegetative Type Maps of the Louisiana Coastal Marshes (Chabreck et al. 1968; Chabreck and Linscombe 1978, 1988). Aerial photography and planimeter data show the percentages of each marsh type (United States Department of Agriculture [USDA] 1993) suggesting marsh types have become increasingly fresh. The marsh is dominated by *Sagittaria lancifolia* (bull tongue). Additional fresh water plant species present in the area are *Sagittaria latifolia* (broadleaf arrowhead), *Colocasia esculenta* (elephant ear), *Iris virginica* (Virginia iris), *Cicuta maculata* var. *maculata* (spotted water hemlock), *Spartina patens* (marshhay cordgrass), *Hydrocotyle sp.* (pennywort), *Hymenocallis occidentalis* (spider lily), *Physostegia intermedia* (obedient plant), *Schoenoplectus americanus* (chairmaker's bulrush), and *Alternathera philoxeroides* (alligator weed), which are well-adapted to increased water levels. Submerged aquatic vegetation in the project area consists of *Vallisineria americana* (water celery), *Zannichellia palustris* (horned pond weed), *Myriophyllum spicatum* (watermilfoil), *Ceratophyllum demersum* (coontail), and *Cabomba caroliniana* (fanwort). Woody vegetation in the project area, primarily located on spoil banks in the north west portion of the project area, include *Morella cerifera* (wax myrtle), *Persea palustris* (red bay), *Salix nigra* (black willow), and *Quercus virginiana* (live oak).

The GIWW and numerous oilfield canals have caused hydrologic changes within the project area. The Humble and Humble-F canals were dredged between 1937 and 1958; the British-American Canal and extensions from the Humble Canal were dredged between 1958 and 1974 (Figure 1). These major canals are believed to have increased tidal action and rapid water exchange between the interior marsh and East and West Cote Blanche Bays. Rapid water exchange and increased tidal fluctuations have caused breaches in spoil banks of interior canals and are likely responsible for erosion and conversion of fragmented marsh to open water. Rapid water exchange through canal systems is believed to have contributed to marsh deterioration in the area by accelerating erosion of organic soils. Although sediment-laden

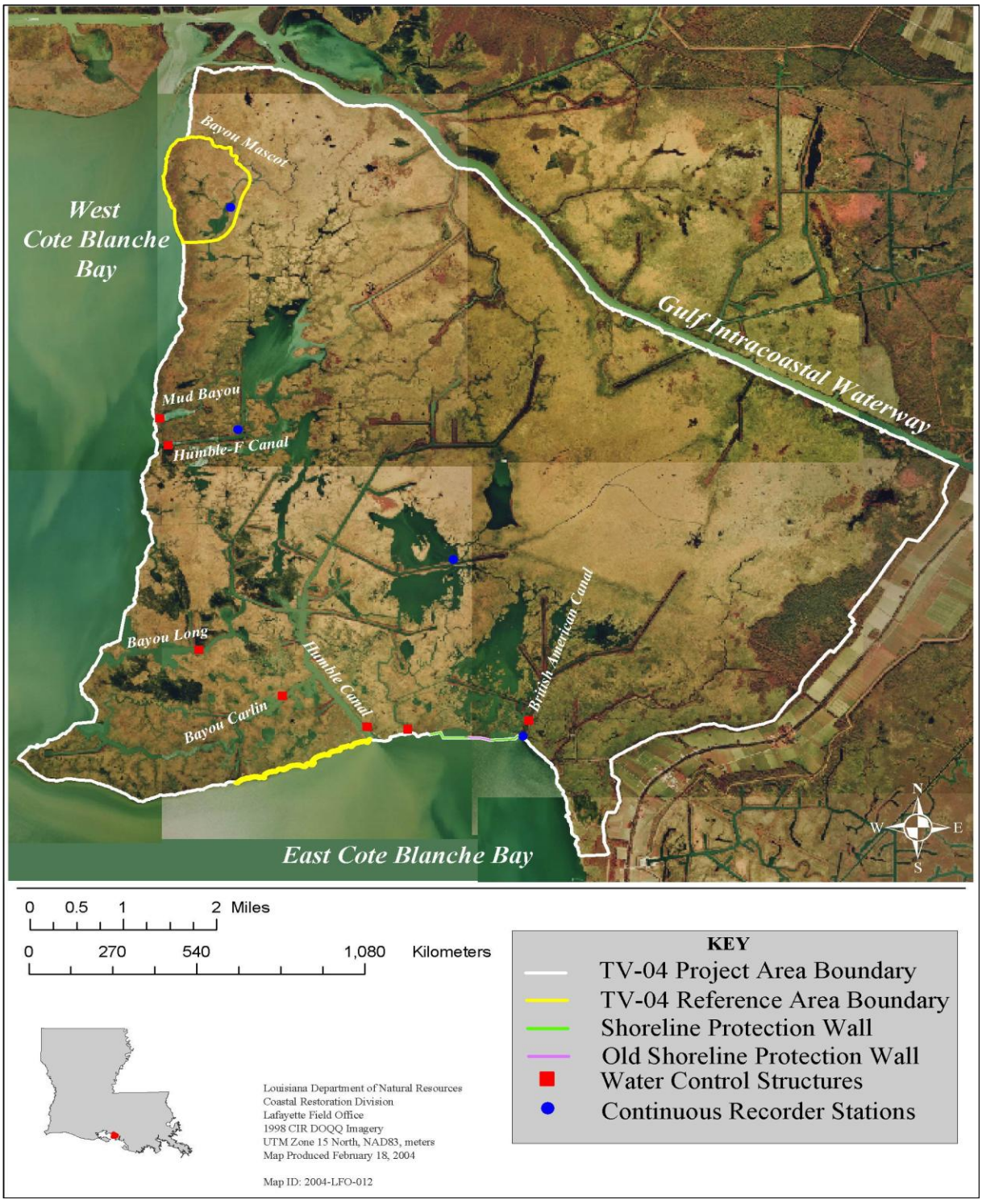

Figure 1. Cote Blanche Hydrologic Restoration (TV-04) project area boundary and features.

water is available from the bays and the GIWW, rapid water exchange appears to inhibit sediment and nutrient deposition (Louisiana Department of Natural Resources [LDNR 1999]).

Marsh degradation was first detected in 1952 aerial photography in an area west of the British-American Canal. Minimal marsh deterioration was detected prior to dredging, however, the dredging is blamed for accelerating marsh loss in the area. The average land loss rate for the project area was estimated at 73 acres/year (29 ha/yr) based on aerial photography from 1957 to 1990 (Britsch and Kemp 1990).

The estimated subsidence rate for the area is 0.07 in/year (0.18 cm/yr) (USDA 1993). A total of the upper 6–39 in (0.15–1.0 m) of the original soil column has been lost to erosion or other causes (USDA 1993). Areas that show the most land loss are adjacent to canals and have highly organic soils that cannot withstand water flow with high velocity (USDA 1969).

Shoreline erosion on the southern project boundary resulting from wave energy and breaches in adjacent canals was evident from aerial photography as early as 1952. Shoreline erosion rates averaged 10–15 ft/yr (3.0-4.6 m/yr) according to 1952, 1957, 1971, 1979, 1983, and 1990 aerial photography and surveys completed in 1995 by Miller Engineers & Associates. These measurements are consistent with an increase in shoreline erosion after 1978 for entire the Teche/Vermilion basin. Erosion rates averaged 10–12 ft/yr (3.0-3.7 m/yr) from 1941 to 1978 and increased to an average of 20–25 ft/yr (6.1-7.6 m/yr) from 1978 to 1983 for the basin.

The main focus of the project is hydrologic restoration, to create a lower energy environment by reducing the larger openings that penetrate fragile interior marsh and act as direct conduits for increased tidal influence. Water control structures were designed to reduce cross sectional areas of major waterways thereby passively reducing tidal fluctuation and rapid water exchange between bays and interior fragmented marshes. The plan also allows continued delivery of freshwater and sediments to the project area.

To achieve the specific goals of decreasing water level variability within the project area and decreasing the rate of marsh loss, 7 passive water control structures were constructed in 1999 in seven major water exchange avenues:

1) The weir at Mud Bayou (Figure 1) is constructed of steel sheet piling with rocks on each end, and the dimensions are 15 ft (4.57 m) wide and a sill elevation set at -5.5 ft (-1.68 m) North American Vertical Datum 1988 (NAVD 88).
2) The weir in Humble-F Canal consists of a combination steel sheet piling with rip rap/rock in the center. The weir crest length is 75 ft (22.86 m) and has a bottom width of 15 ft (4.57 m), and the sill elevation is set at -2.5 ft (-0.76 m) NAVD 88.

3) The weir in Bayou Long is constructed of steel sheet piling with rocks on each end. The weir crest length is 15 ft (4.57 m) and a sill elevation set at -3.5 ft (-1.07 m) NAVD 88.
4) The weir in Bayou Carlin is constructed of steel sheet piling with rocks on each end, and the weir crest length is 15 ft (4.57 m) and a sill elevation set at -3.5 ft (-1.07 m) NAVD 88.
5) The weir at the entrance of Humble Canal is constructed with steel sheet piling with a rip rap/rock center. The weir crest length is 75 ft (22.86 m) and the sill elevation is set at -7.0 ft (-2.13 m) NAVD 88 (figure 3).
6) The weir at the entrance of Jackson Bayou is constructed of steel sheet piling with rocks on each end, and the weir is 16 ft (4.88 m) and the sill elevation set at -3.5 ft (-1.07 m) NAVD 88.
7) The weir at the entrance of the British American Canal is constructed of steel sheet piling with a rip rap/rock fill, and the weir crest length is 15 ft (4.57 m) and a sill elevation of -2.5 ft (-0.76 m) NAVD 88.

To address the second objective and the specific goal of reducing shoreline erosion along the southern project boundary between the British American Canal and Jackson Bayou, a 4,140 ft (1.26 km) foreshore wall was constructed in two sections located on either side of, and overlapping the ends of an existing wooden bulkhead. The wall is composed of polyvinyl chloride (PVC) sheet piling attached to timber wales and supported by timber soldier and batter piling. Approximately 2 yd^3 of surface coarse aggregate limestone per linear ft. (1.53 m^3 per 0.3 m) was placed on each side of the PVC sheet piling and extended out from the sheet piling approximately 15 linear feet (4.57 m). Construction on the seven weirs and the wall was completed January 20, 1999.

II. Maintenance Activity

a. Project Feature Inspection Procedures

The purpose of the annual inspection of the Cote Blanche Hydrologic Restoration Project (TV-04) is to evaluate the constructed project features to identify any deficiencies and prepare a report detailing the condition of project features and recommended corrective actions needed. Should it be determined that corrective actions are needed, LDNR shall provide, in the report, a detailed cost estimate for engineering, design, supervision, inspection, and construction contingencies, and an assessment of the urgency of such repairs (O&M Plan, 2003). The annual inspection report also contains a summary of maintenance projects, if any, which were completed since completion of constructed project features and an estimated projected budget for the upcoming three (3) years for operation, maintenance and rehabilitation. The three (3) year projected operation and maintenance budget is shown in Appendix C.

An inspection of the Cote Blanche Hydrologic Restoration Project (TV-04) was held on April 1, 2008 under mostly cloudy skies and mild temperatures. In attendance were Stan Aucoin, Darrell Pontiff, Pat Landry & Tommy McGinnis of LDNR; Dale Garber of NRCS; and John Foret of NMFS (for other inspections).

The field inspection included a complete visual inspection of all features. Staff gauge readings, when available, were used to determine approximate elevations of water, rock weirs, earthen embankments, steel bulkhead structures and other project features. Photographs were taken at each project feature (see Appendix B) and Field Inspection notes were completed in the field to record measurements and deficiencies (see Appendix D).

b. Inspection Results

Site 1—Mud Bayou

The Mud Bayou structure appears to be holding up fairly well. The coating on the sheet piles is peeling. The steel is beginning to show signs of rust and will need to be monitored. Signage is ok. (Photos: Appendix B, Photos 1-3).

Site 2—Humble F Canal

The Humble F Canal structure and signage are stable. The coating on the sheet piles is rusting on this structure and will be monitored as well. The south arrow sign is missing. (Photos: Appendix B, Photos 4-6).

Site 3—Bayou Long

The Bayou Long structure and signage are stable. The coating on the sheet piles is rusting on this structure and will be monitored as well. Staff gauges are gone at this site. (Photos: Appendix B, Photo 7)

Site 4—Bayou Carlin

The Bayou Carlin structure and signage are stable. The coating on the sheet piles is rusting on this structure and will be monitored as well. (Photos: Appendix B, Photo 8)

Site 5—Humble Canal

The Humble Canal structure has some minor damages that will be addressed as part of the School Bus Bayou repairs beginning in the summer of 2007. The shoreline at the south end of the rock riprap dike has experienced some erosion and the marsh area remaining is narrow and now subject to being breached allowing water to flow around the weir. Budget limitations will not allow this area to be addressed; however, Miami Corporation has proposed to address this area with mitigation dollars in the future. In the meantime, it will continue to be monitored. The "handrail" on the west side of the barge bay notch, actually a railing of 3 inch pipe that is approximately 2 feet above normal water levels that marks that reach of the sheet pile weir as being non-navigable to boaters, is broken and approximately 8-10 feet of same is missing. The balance of the north "handrail", approximately 40 feet in length, is slightly bent towards the bay. The NW nav-aid sign is missing and will need to be replaced. One of the staff gauges needs to be replaced. (Photos: Appendix B, Photos 9-11, 14).

Site 6—Jackson Bayou

The Jackson Bayou structure and signage are stable. The coating on the sheet piles is rusting on this structure and will be monitored as well. (Photos: Appendix B, Photos 18-20).

Site 7—British American Canal

The British American Canal and signage are stable. The coating on the sheet piles is rusting on this structure and will be monitored as well. One of the directional arrows is missing, but may not need to be replaced at this time. (Photos: Appendix B, Photos 21-24).

Site 8—PVC Wall

The PVC shoreline protection wall and signage are stable. Several pile caps are missing but no damage to the timber piles was noticed. Previous attempts to replace these pile caps have been unsuccessful. The piles will be monitored and should the need arise, will be painted or coated for protection. Sheet piles in several locations are missing. Replacement of these sheet piles may not be possible due to the rock at the base. There aren't enough missing to cause any problems as of yet. (Photos: Appendix B, Photos 25-26).

School Bus Bayou

Construction of the foreshore rock dike and the low level weirs was completed in September, 2007. Though the dike has settled, it is still functioning as intended. Signage along the bay shore and at School Bus Bayou is stable. There was exposed geotextile fabric in the center of School Bus Bayou on both the east and west weirs. Apparently, rock at the bottom of the bayou has been completely displaced. This condition will be monitored. (Photos: Appendix B, Photos 12-13, 15-17).

c. Maintenance Recommendations

i. Immediate/ Emergency Repairs

None

ii. Programmatic/ Routine Repairs

Automatic Power, Inc. will inspect, repair and/or replace US Coastguard lights as necessary.

d. Maintenance History

General Maintenance: Below is a summary of completed maintenance projects and operation tasks performed since January 1999, the construction completion date of the Cote Blanche Hydrologic Restoration Project.

2001 Maintenance Project – LDNR: This maintenance project included the placement of 12”-14” of paving stone spread out around the wingwalls of the weirs at Mud Bayou, Humble F Canal, Bayou Long, Humble Canal, Jackson Bayou and British American Canal to “harden” the area while still allowing flow in extreme tidal events to pass around the structure without washing away the existing bank. Also included was the replacement of approximately 100 pile caps along the PVC wall, the replacement of day markers at Humble F Canal with signs mounted to the weir instead of on driven pylons, and the construction of revetment/foreshore dike along the west bank of the British American Canal from the weir to the canals convergence with Cote Blanche Bay. The costs associated with the engineering, design and construction of the Cote Blanche Maintenance Project are as follows:

Construction------	$287,919.80
E & D, construction oversight, as-builts------	$ 31,690.79
Project Total------	$319,610.59

2005 Maintenance Project – LDNR: This maintenance project included rock repair at six of the structures, replacement of warning signs and channel markers. This project was a result of damages that occurred during Hurricane Lili in 2002.

Project Cost	$84,500.00*

- This cost was reimbursed by FEMA

Navigational Light Maintenance – LDNR: Automatic Power, Inc. performed the following navigational light maintenance:

Humble Canal (1/29/07)	$525.00
Humble Canal (2/12/07)	$2,320.00
Humble Canal (4/30/07)	$595.00
Humble Canal (8/13/07)	$1,032.00
Humble Canal (11/6/07)	$544.20
Humble Canal (2/25/07)	$539.00

2007 School Bus Bayou Maintenance – LDNR: This maintenance event consisted of the installation of approximately 3,500 linear feet of foreshore rock dike along the northern shoreline of Cote Blanche Bay just west of the Humble Canal and in the vicinity of School Bus Bayou. Also, two low level rock weirs were installed on the eastern and western side of Humble Canal where School Bus Bayou crosses. Associated costs are as follows:

Construction	$1,500,000.00
E&D/Const. oversight	$63,328.45
Total	$1,563,328.45

III. Operation Activity

a. Operation Plan

There are no active operations associated with this project.

b. Actual Operations

There are no active operations associated with this project.

IV. Monitoring Activity

CWPPRA projects will be monitored with CRMS-*Wetlands* stations for future reports and existing data collected specifically for this project area. Three project specific data recorders were removed from the project and reference areas on March 8, 2007 following approval from the federal sponsor (NRCS). There are 7 CRMS-*Wetlands* sites physically located in the project area (Figure 1) and 7 sites were chosen as reference for this project.

a. Monitoring Goals

The objectives of the Cote Blanche Hydrologic Restoration Project are:

1. Reduce water exchange between marshes of Cote Blanche and West and East Cote Blanche Bays to prevent scouring of interior marsh and protect approximately 30,898 ac (12,504 ha) of fresh marsh.

2. Protect shoreline on southern boundary between Jackson Bayou and British-American canals from wave erosion.

The following goals will contribute to the evaluation of the above objectives:

1. Decrease variability in water level within the project area.

2. Reduce erosion rate of shoreline along southern project boundary.

3. Decrease rate of marsh loss.

b. Monitoring Elements

Aerial Photography:
To document vegetated and non-vegetated areas, near vertical color-infrared aerial photography (1:24,000 scale with ground controls) were obtained in 1997 (pre-construction) and in 2002. The original photographs were checked for flight accuracy, color correctness, and clarity and were subsequently archived. Aerial photographs were scanned, mosaicked, and georectified by USGS/NWRC personnel according to standard operating procedures (Steyer et al. 1995, revised 2000). Photography is scheduled for 2009 and 2015 post-construction.

Shoreline Change:
Using GPS, shoreline position was documented as-built in 1998, post-construction 2001 and post-construction 2004 and 2007. Shoreline position mapping is scheduled for 2010, 2013 and 2016 post-construction to track shoreline changes and movement over time. Shoreline positions will be compared to historical data sets available in digitized format for years 1952,

1957, 1971, 1979, 1983, and 1990, and shoreline survey information that are available from Miller Engineers and Associates from 1958–1975. The shoreline change rate for the project area was also compared to the shoreline change rate of a reference area located west of the foreshore dike. The rate of shoreline erosion was calculated by measuring the difference in shoreline position at 34 randomly selected sites along the project (9 sites) and reference (25 sites) area shorelines. At each site, a line perpendicular to both shorelines was drawn using GIS (Geographic Information System) software. The length of each line, representing the change in shoreline position for the period 2001-2004, was measured and converted to a yearly rate.

Water Level:

To monitor water levels within and adjacent to the project area, 4 continuous recorders were placed in project interior open water areas and reference areas to the north and south in 1997. Water-level data is used to document frequency, magnitude, and duration of marsh inundation.

CRMS Supplemental

In addition to the project specific monitoring elements listed above, a variety of other data is collected at CRMS-*Wetlands* stations which can be used as supporting or contextual information. Data types collected at CRMS sites include hydrologic from continuous recorder (mentioned above), vegetative, physical soil characteristics, discrete porewater, surface elevation, and land:water analysis of 1 km^2 area encompassing the station. For this report, data from sites within the project area is compared to data from sites outside the project area in a traditional project versus reference manner. In the future, data collected from the CRMS network over a sufficient amount of time to develop valid trends will be used to develop integrated data indices at different spatial scales (local, basin, coastal) to which we can compare project performance.

Soil cores were collected one time (within a year of site establishment) to describe soil properties (bulk density and percent organic matter). Three, 4" (10.16-cm) diameter cores were collected to a depth of 24 cm and divided into 6, 4-cm sections at the site. The soil was processed by the Department of Agronomy and Environmental Management at Louisiana State University.

To determine plant species, percent cover and the quality of the species, a species cover and floristic quality index (FQI) was utilized which qualifies cover values combined with quality classifications so that invasive species and those indicative of disturbance or destabilization get lower scores than those that indicate stable marshes

Soil surface elevation change utilizing a combination of sediment elevation tables (RSET) and vertical accretion from feldspar horizon markers are being measured twice per year at each site. This data will be used to describe general components of elevation change and establish accretion/subsidence rates. The RSET will be surveyed to a known elevation datum (ft, NAVD88) so it can be directly compared to other elevation variables such as water level.

CRMS sites inside (488, 490, 496, 517, 544, 545, and 551) and outside (489, 493, 494, 527, 532, 543, and 549) were used for this report.

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c. Preliminary Monitoring Results and Discussion

Aerial Photography:

Analysis of aerial photography taken in January 1997 pre-construction indicated a land-to-water ratio of 90% land to 10% water within the project area. Approximately 73% of the project area was classified as fresh marsh. Land-to-water ratios in the shoreline reference area, and the hydrographic reference area were 99.6 % land to 0.4% water, and 94.9% land to 5.1% water, respectively (Figure 3). Analysis of aerial photography taken in December of 2002 indicated a land-to-water ratio of 82.8% land and 17.2% water in the project area. The shoreline reference area ratios in 2002 were 76.2 % land and 23.8% water. The hydrographic reference area was 95.5% land to 4.5% water (Figure 4).

The USGS GIS analysis of the digital NWI habitat data derived from photo interpretation of the January 1997 aerial photography yielded the distribution of habitat types preconstruction (Figure 3) and postconstruction in 2002 (Figure 4). Habitat types identified in the project area were agriculture/range, floating aquatics, fresh marsh, open water, submerged aquatics, upland forested, upland scrub shrub, urban, vegetated mud flat, wetland forested, and wetland scrub shrub. Habitat types identified in the hydrographic reference area were floating aquatics, fresh marsh, open water, wetland forested, and wetland scrub shrub.

OCPR GIS analysis of shoreline change was performed using the following methods. The vegetated edge of the shoreline was recorded using a differentially corrected Global Positioning System (dGPS). The line features for each dataset were overlaid digitally in a GIS and features cleaned to ensure correct topology. Polygon features were then created for all areas within closed intersections of the two polyline datasets. The generated polygon features represent the total change in land area as defined by the difference in shoreline position during the sampling interval. The total area for all polygons between the line features was calculated and each polygon feature was defined as gain or loss. The total land area in acres of gain and loss was then calculated.

Hurricane Lili, a Category 4 storm with sustained winds of 145 mph that weakened to a Category 2 with winds just over 100 MPH at time of landfall, struck the Louisiana coast near the project area on October 3, 2002. Ad hoc post-Hurricane Lili analysis by USGS using Landsat TM satellite imagery suggests a loss of approximately 1,765 acres (714.3 ha) of land between February 2 and October 16, 2002 (Figure 5).

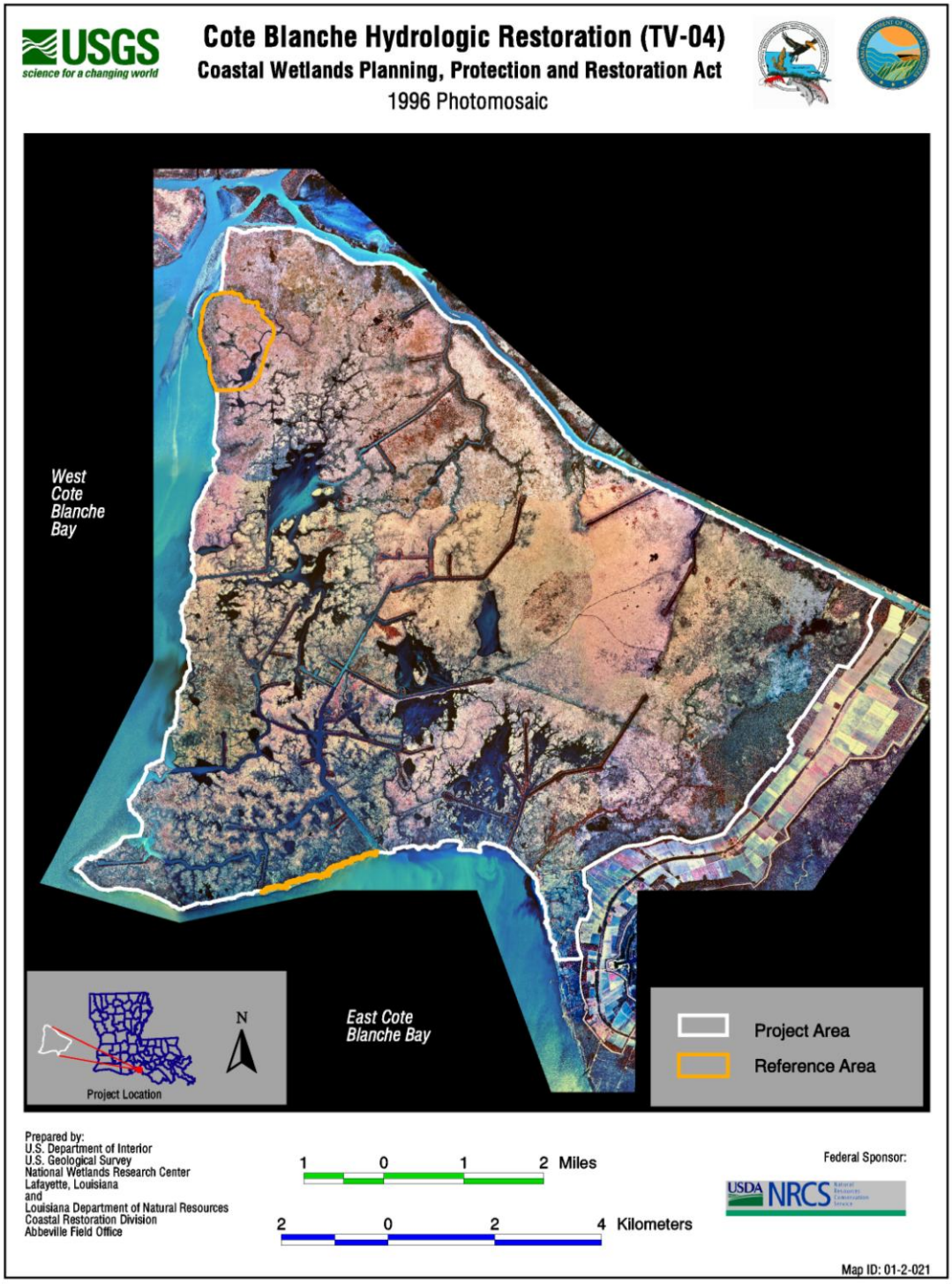

Figure 2. Cote Blanche Hydrologic Restoration (TV-04) photomosaic from aerial photography taken November 1996.

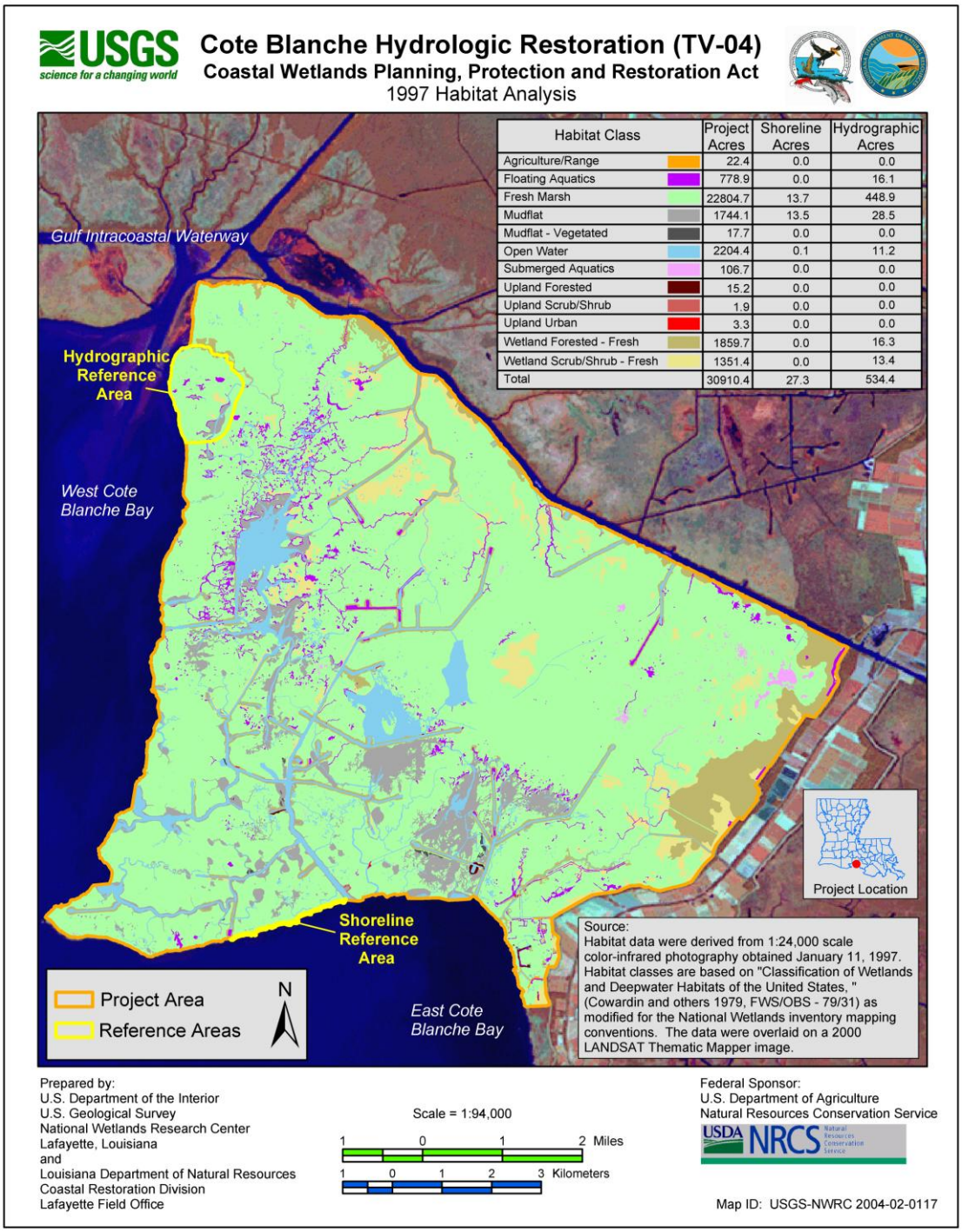

Figure 3. Cote Blanche Hydrologic Restoration (TV-04) 1997 GIS habitat analysis from photography taken January 1997.

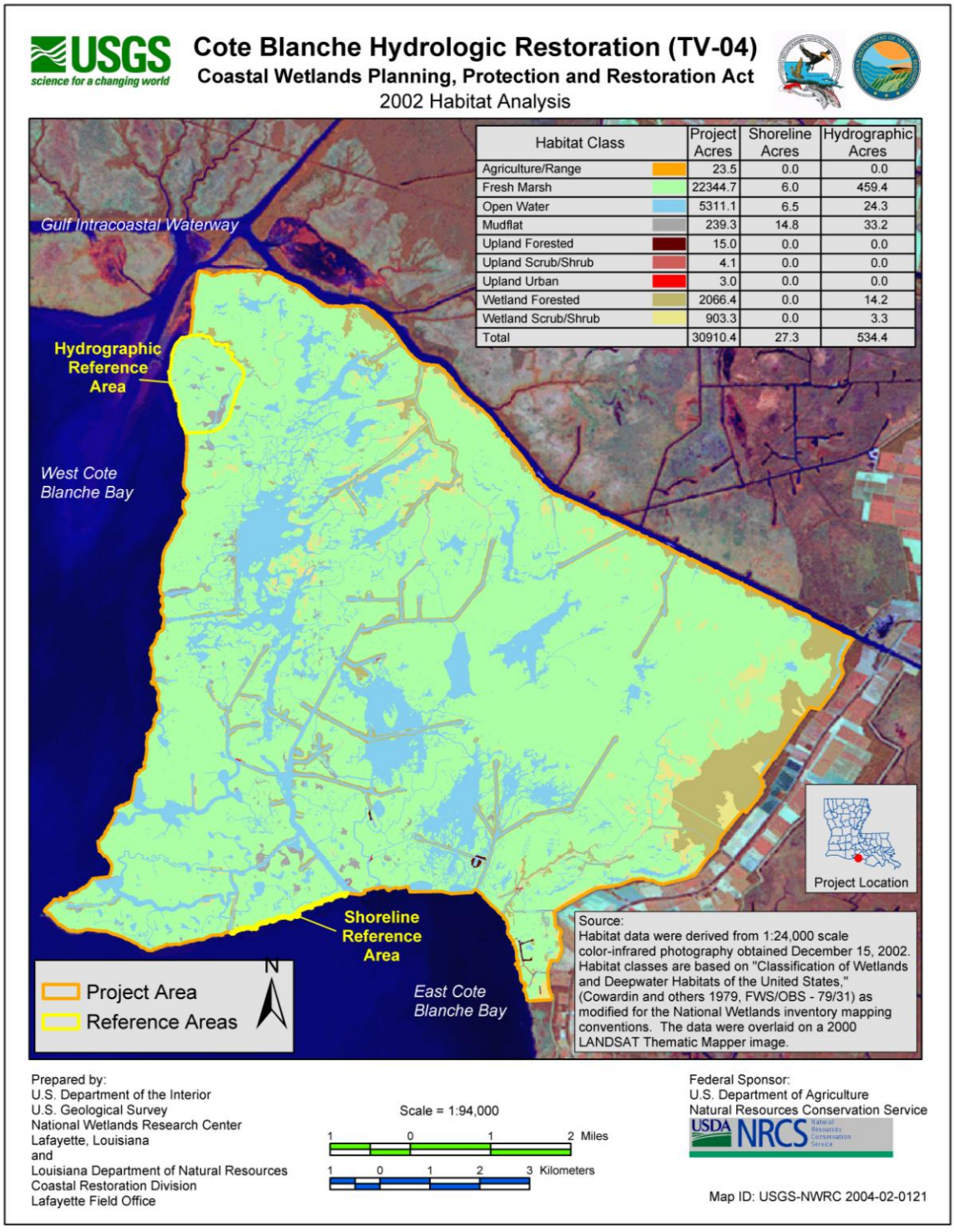

Figure 4. Cote Blanche Hydrologic Restoration (TV-04) 2002 habitat analysis from aerial photography taken December 2002.

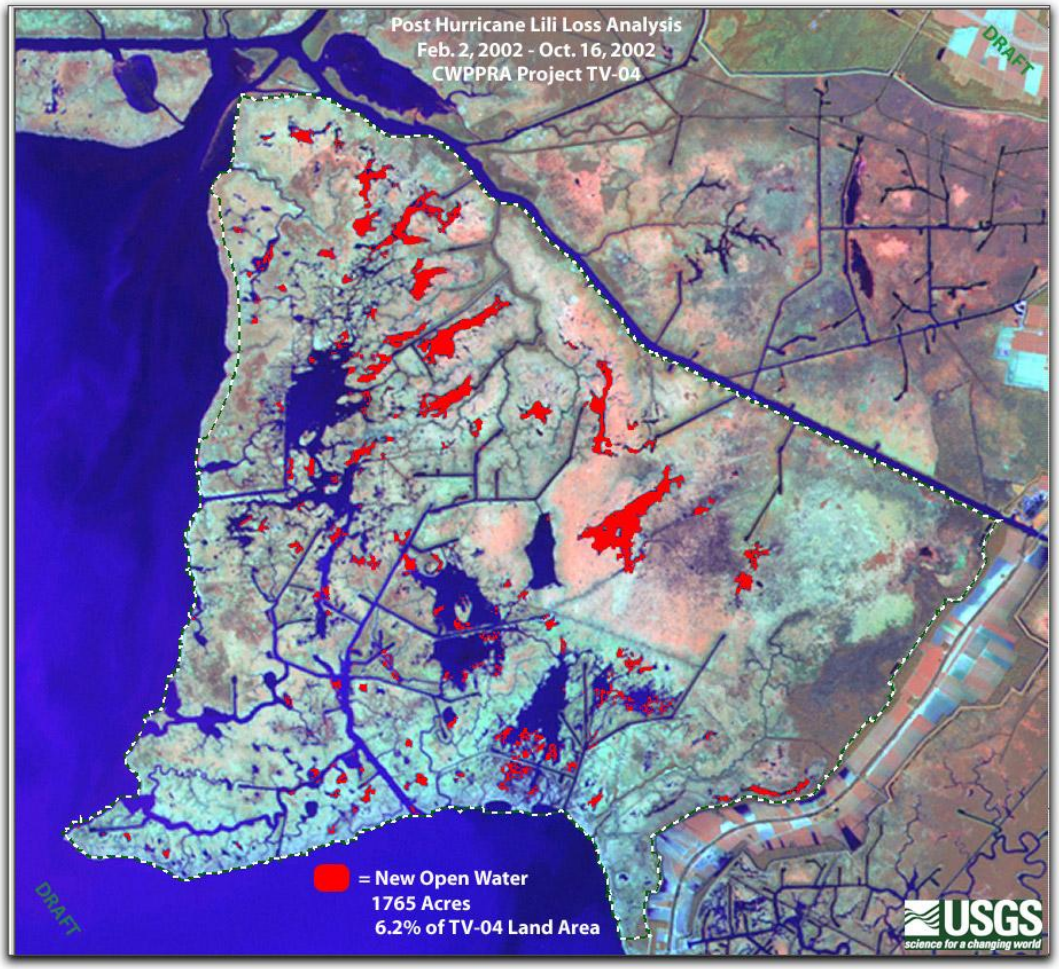

Figure 5. Satellite Imagery provided by USGS: Land:Water change February 2 – October 16, 2002 (pre-post hurricane Lili 10/3/02).

Shoreline Change:

Wetland gain/loss rates along the project and reference shoreline were determined from the three sets of post-construction data collected in the fall of 2001, 2004, and 2007. Data indicate a nearly stable project shoreline and a net loss of shoreline on the reference shoreline (Figure 6 and 7). From 1998 to 2007 project shoreline from Humble Canal to the east end of the PVC shoreline protection wall ending at the British American Canal had a net loss of only 0.01 m/yr. The combination PVC wall and wooden bulkhead shoreline protection extends from a point approximately 1,350 feet east of Jackson Bayou to the British American Canal so the area from Humble Canal to the west end of the PVC wall is open wave energies. The reference shoreline extending west from the Humble Canal had a net loss of 2.66 m/yr from 1998 to 2007. Shoreline position change rates for the project shoreline for the years 2004 through 2007 had a loss of 0.9 m/yr and an average loss on the reference shoreline of 2.5 m/yr.

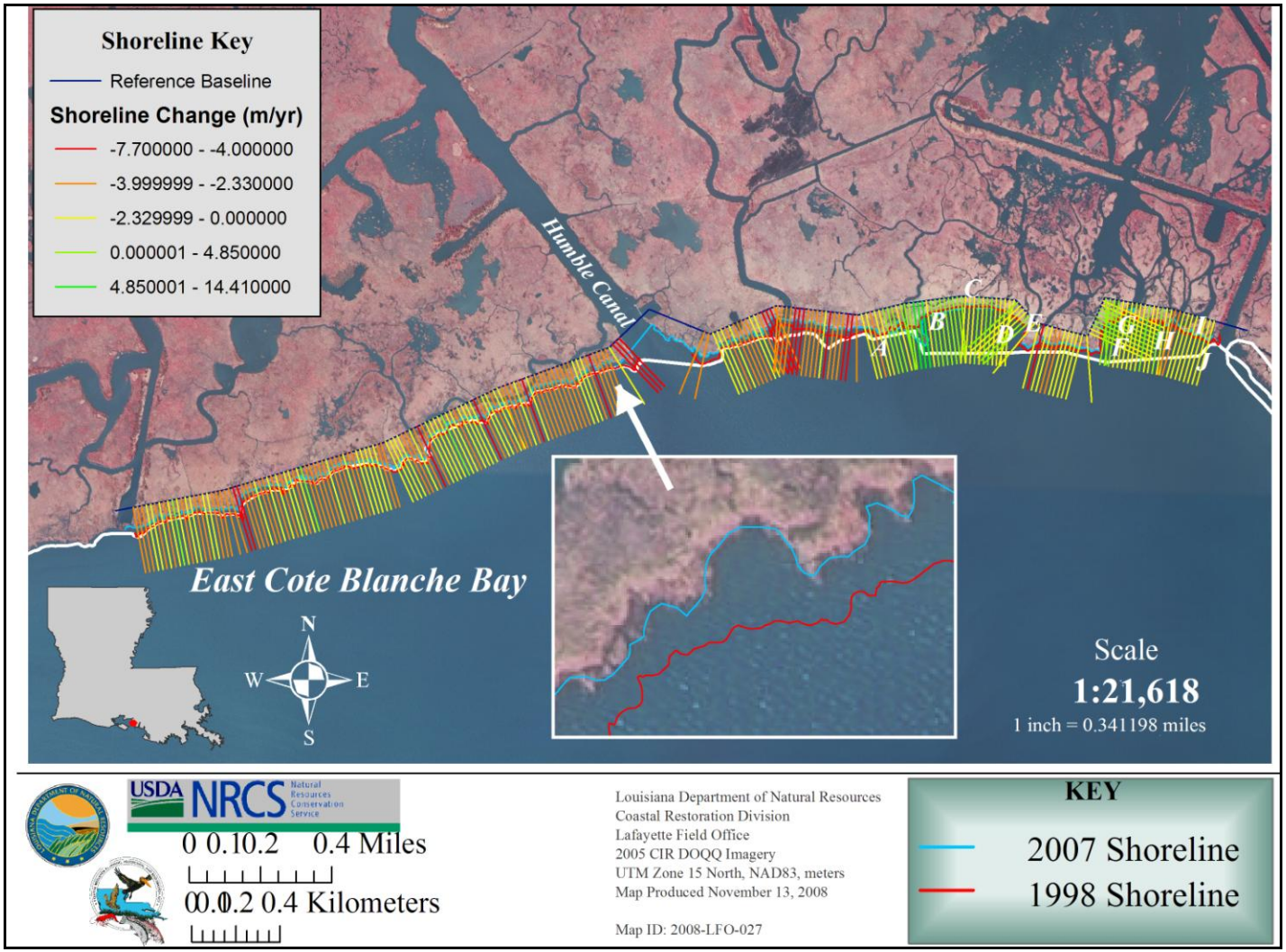

Figure 6. Cote Blanche Hydrologic Restoration (TV-04) shoreline change 1998 to 2007.

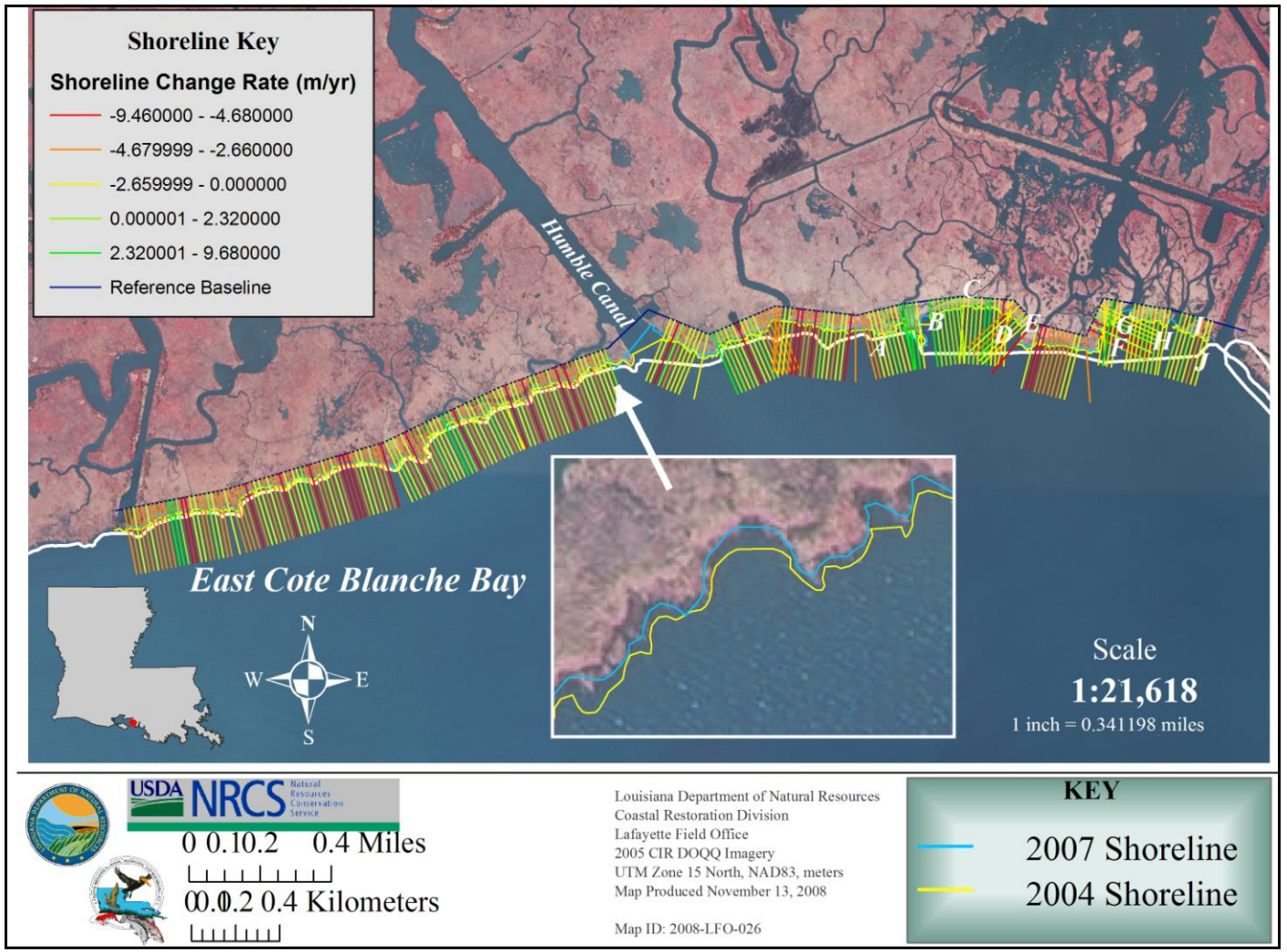

Figure 7. Cote Blanche Hydrologic Restoration (TV-04) change from 2004 to 2007.

Water Level and Salinity:

Hourly salinity and water level data have been collected at the following continuous recorder stations (table 1, figure 8):

Table 1.

Station	Data collection period
TV04-01R	6/19/1997 – 1/12/2005
TV04-02*	6/19/1997 – 8/20/2002
TV04-22*	10/16/2002 – 3/8/2007
TV04-03	6/19/1997 – 8/2/2006
TV04-04R	6/19/1997 – 3/8/2007

* The continuous recorder at TV04-02 was dislodged by Hurricane Lili in October 2002. The replacement station, TV04-22R was installed across the M-14 canal from the original TV04-02 location on a pipeline piling.

Daily means for water level range and salinity data are presented in Figures 9-16. In the project area marsh elevation averaged 1.33 ft (0.41 m) and 1.29 ft (0.39 m) NAVD 88 at Stations 2 and 3, respectively. Marsh elevation for the reference recorder at Station 1R in East Cote Blanche Bay was not established because there is no surrounding marsh. In the reference area at Station 4R, marsh elevation averaged 1.55 ft (0.47 m) NAVD 88. Salinity was only monitored incidentally and is used as ancillary data only. It was never identified as a condition to be addressed by the project.

Data was analyzed by assigning time periods for pre-construction, during construction, post-construction pre-Hurricane Lili, and post-construction post-Hurricane Lili. Station TV04-02 and TV04-22 data were combined because Station 22 replaced Station 2 after the Hurricane Lili and was placed directly across the M-14 canal from where Station 2 was located.

Daily mean salinity and range of water level to datum was calculated from hourly data and then calculated into weekly means. The difference in range was calculated between recorders located in the project and reference area as follows:

1. TV04-04R and TV04-01R (reference stations)
2. TV04-04R and TV04-02 (reference station and project station)
3. TV04-01R and TV04-03 (reference station and project station)
4. TV04-01R and TV04-02 (reference station and project station)
5. TV04-02 and TV04-03 (project station and project station)

Differences were tested among the stations listed above (comparisons # 1-5) in three ways; pre- and post- construction and post construction pre-Lili and post-construction post-Lili. Graphs were constructed for the period during construction for information purposes only.

Overall, comparisons of water level ranges revealed there were no differences between the two project stations (TV04-02 and TV04-03) or between the two reference stations (TV04-04R and TV04-01R). Reference station TV04-04R had lower water level range than project station TV04-02 both pre- and post-construction. TV04-04R was affected by weirs and is too far inland to be representative of the reference area for the project.

The project effect was clear in the comparisons of reference station TV04-01R with project station TV04-03, and reference station TV04-01R with project station TV04-02. Station TV04-01R had higher water level ranges than the project's recorders pre-construction which increased post-construction.

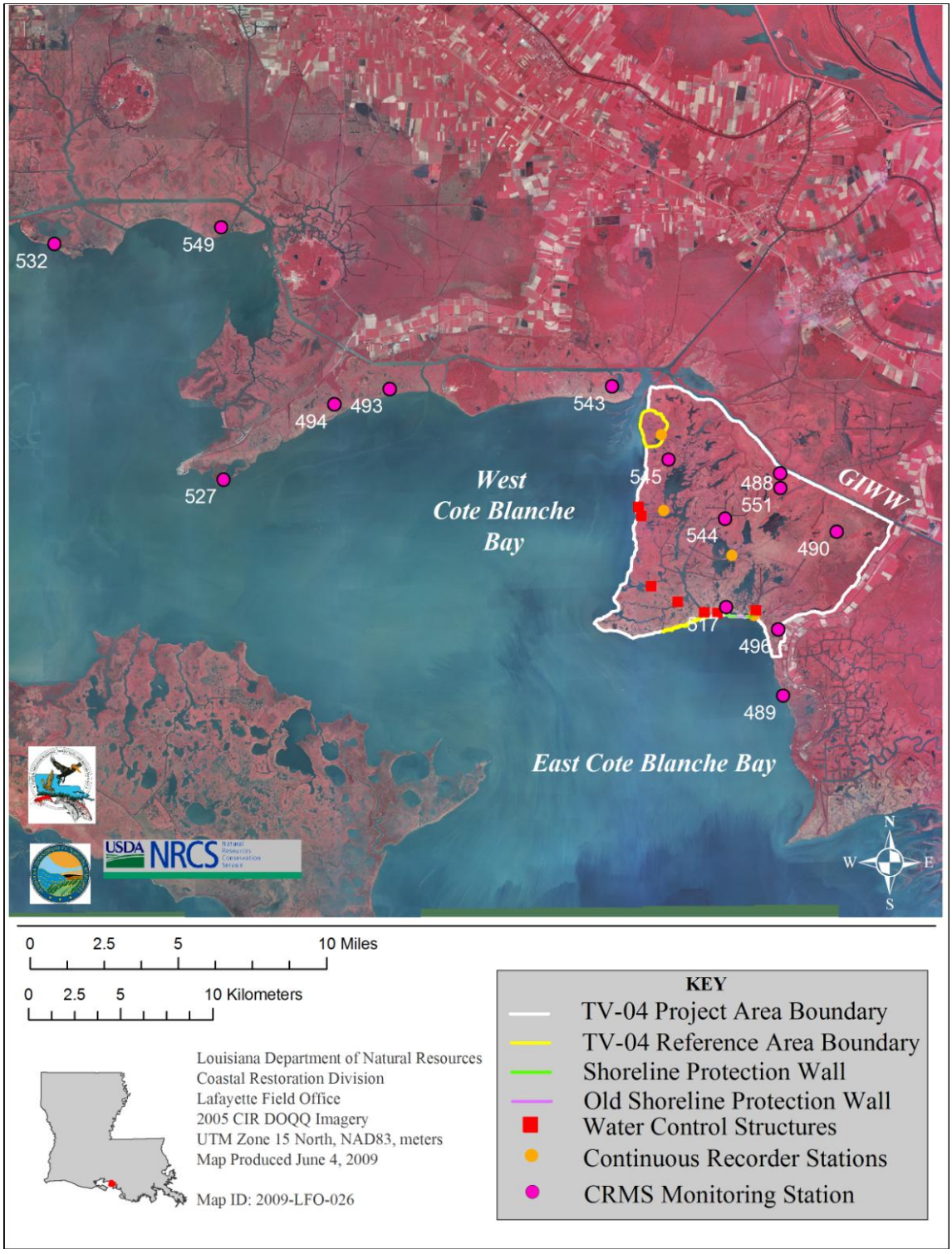

Figure 8. Location of project-specific monitoring stations and CRMS-*Wetlands* stations within the Cote Blanche Hydrologic Restoration (TV-04) project area and outside the project area used as reference stations**.**

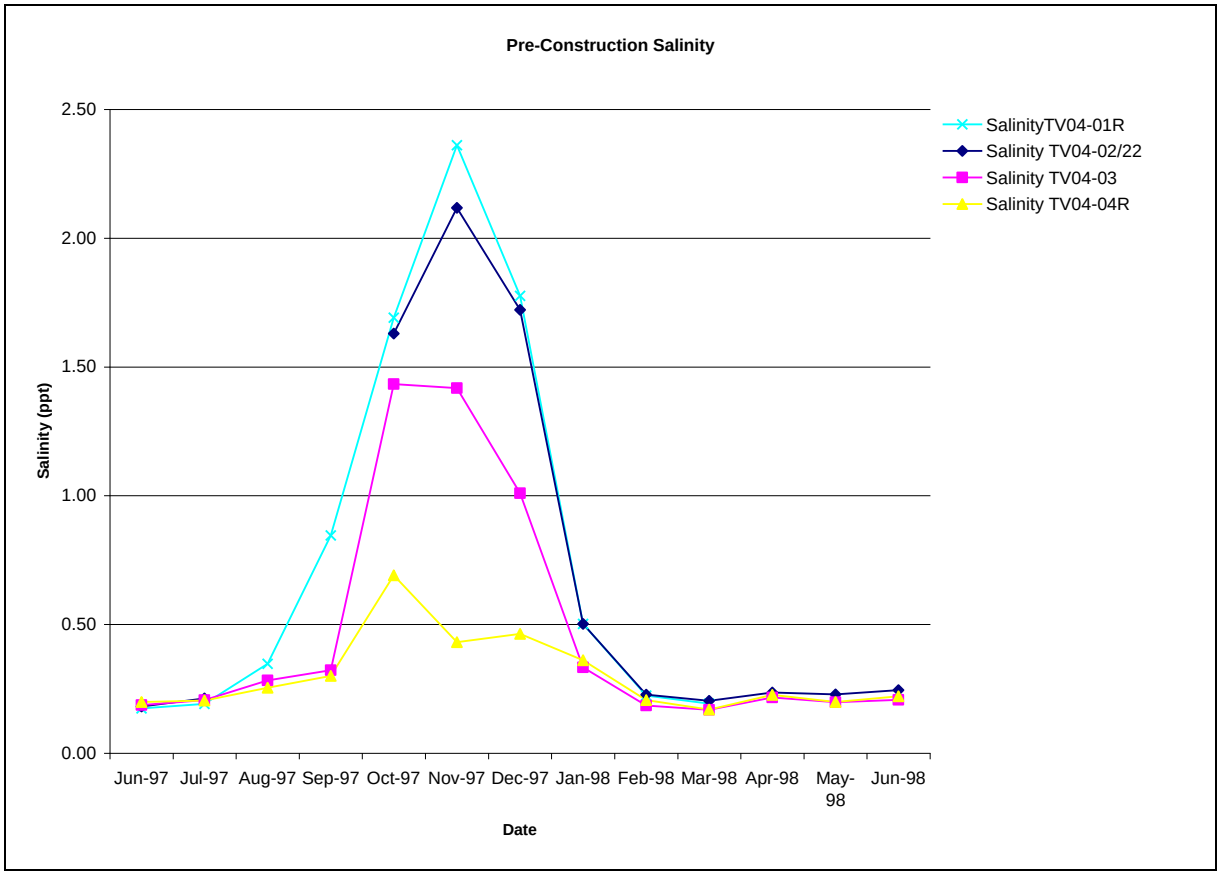

Figure 9. Pre-construction daily mean salinity at all monitored stations in the Cote Blanche Hydrologic Restoration project area from June 1997 to June 1998. Daily means are calculated from hourly YSI datasonde readings.

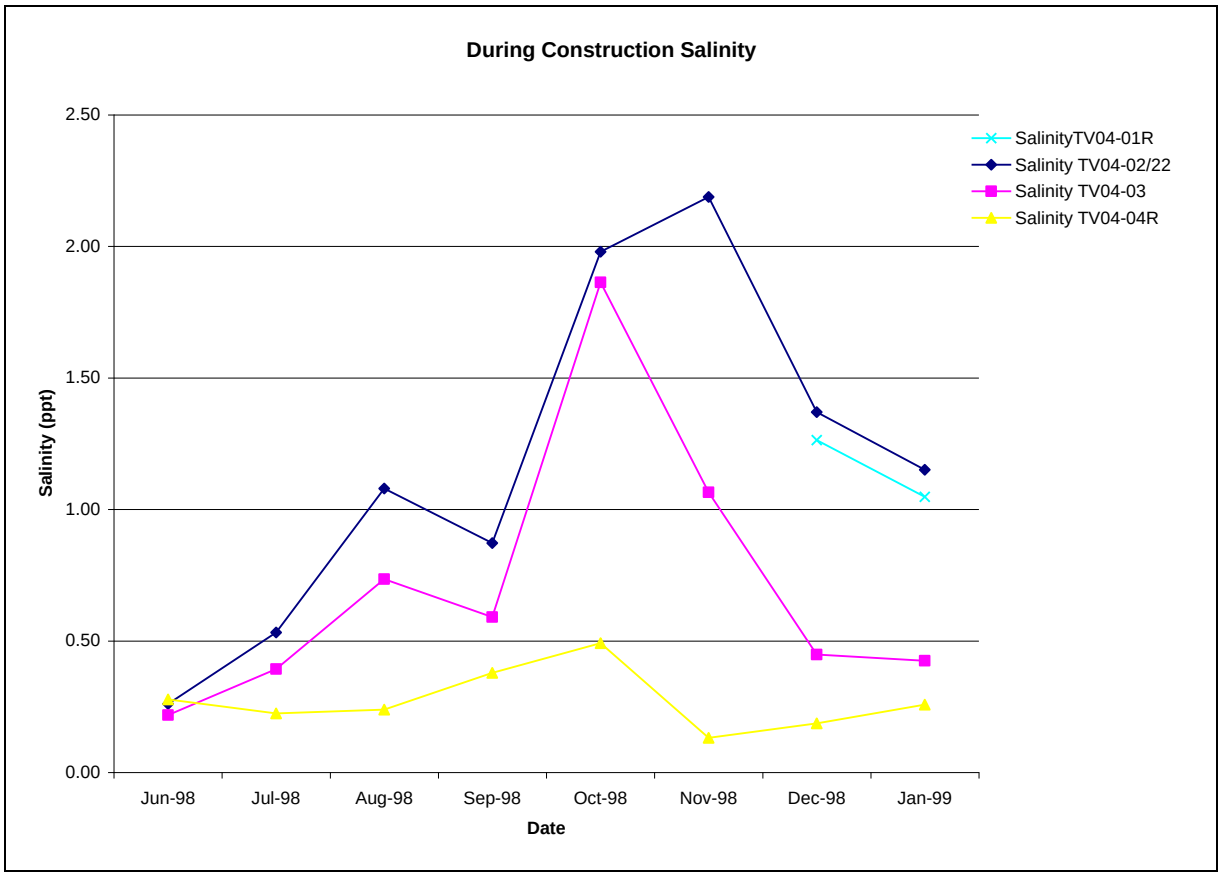

Figure 10. During construction daily mean salinity at all monitored stations in the Cote Blanche Hydrologic Restoration project area from June 1998 to January 1999. Daily means are calculated from hourly YSI datasonde readings.

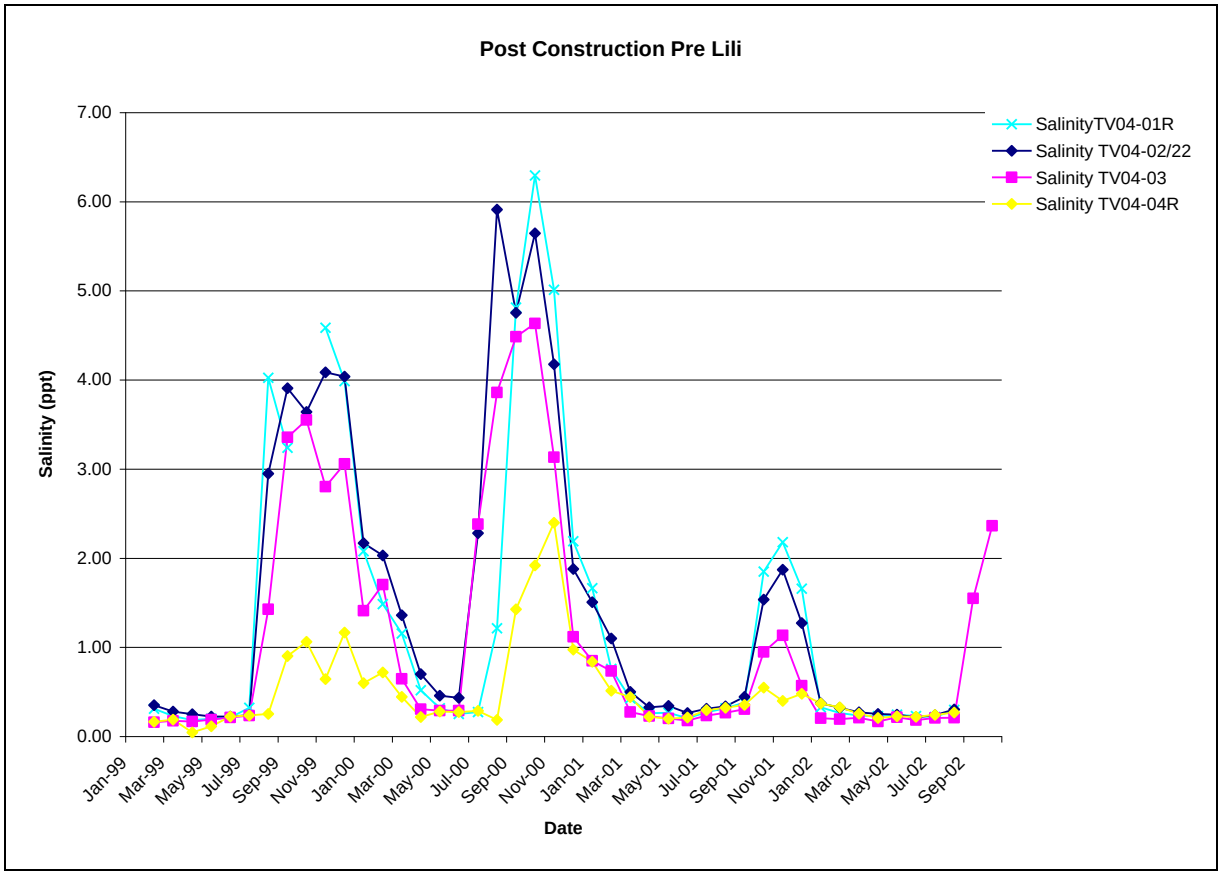

Figure 11. Post-construction, pre-Hurricane Lili daily mean salinity at all monitored stations in the Cote Blanche Hydrologic Restoration project area from January 2000 to September 2002. Daily means are calculated from hourly YSI datasonde readings.

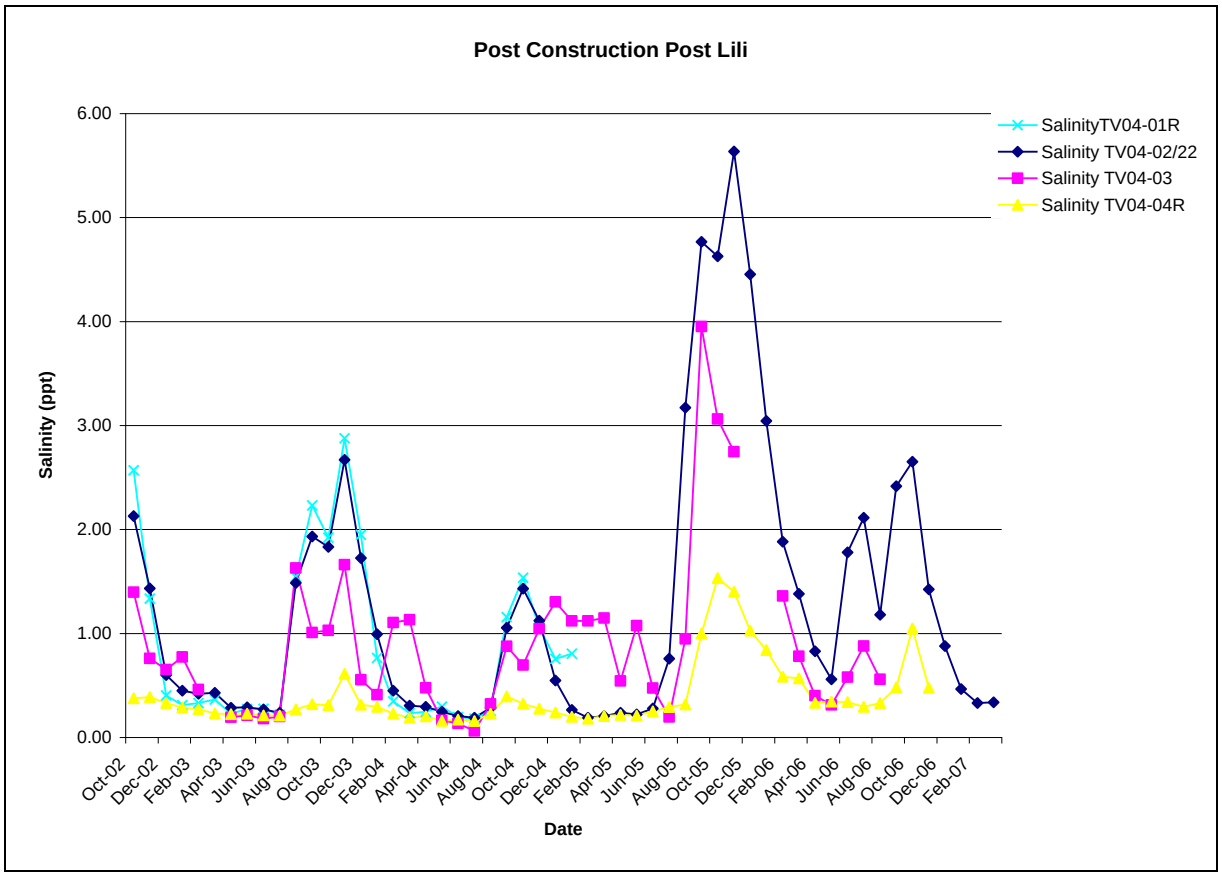

Figure 12. Post construction, pre Hurricane Lili daily mean salinity at all monitored stations in the Cote Blanche Hydrologic Restoration project area from October 2002 to March 2007. Daily means are calculated from hourly YSI datasonde readings.

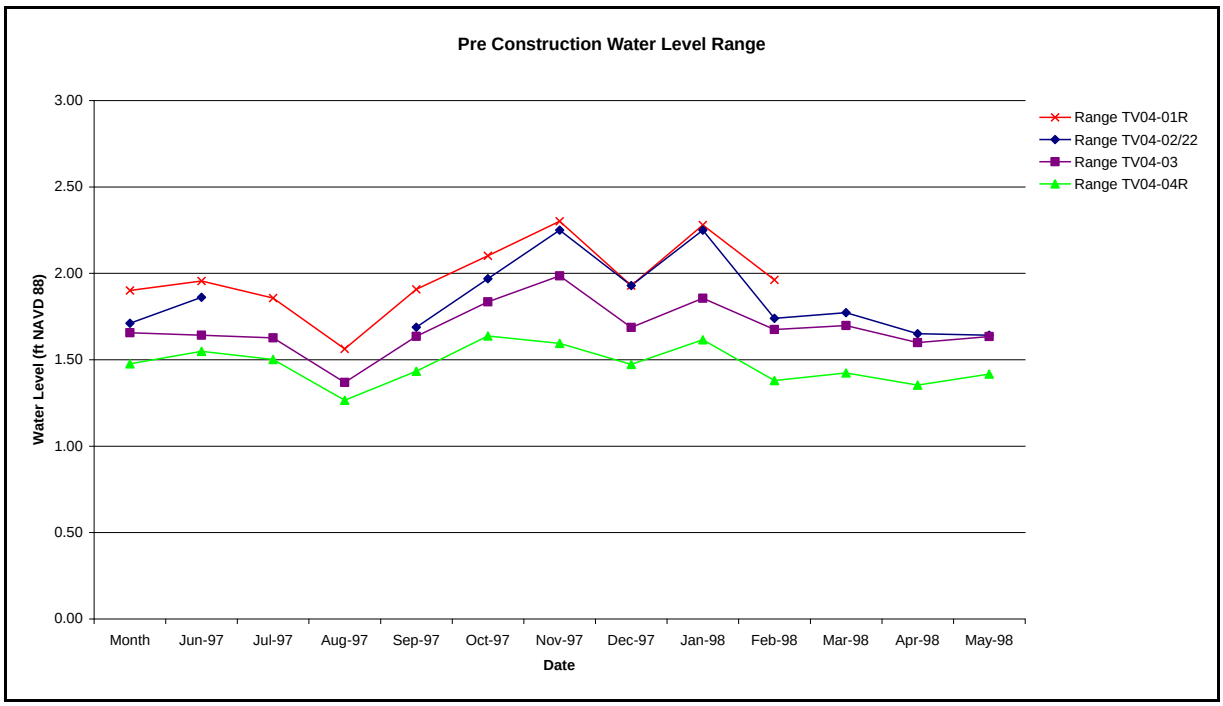

Figure 13. Pre-construction mean daily water level range at four YSI continuous recorder stations located in the Cote Blanche Hydrologic Restoration (TV-04) project area from June 19, 1997 to June 30, 1998.

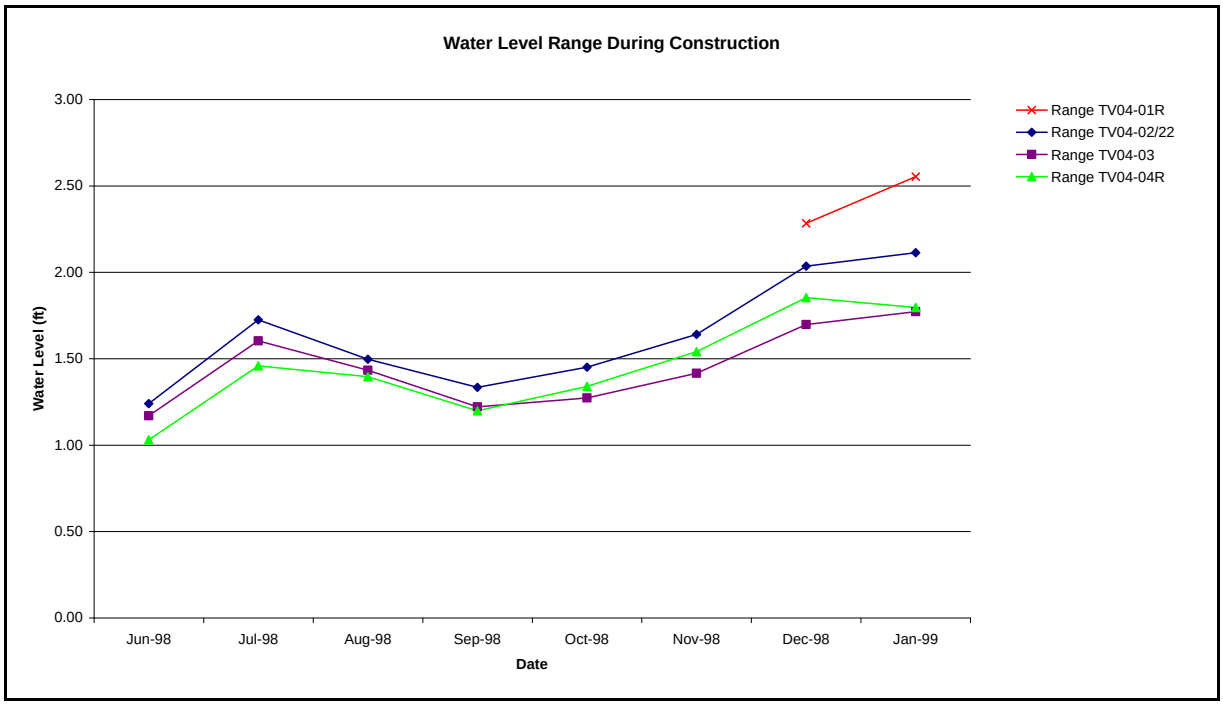

Figure 14. During construction mean daily water level range at four YSI continuous recorder stations located in the Cote Blanche Hydrologic Restoration (TV-04) project area from June 1998 to January 1999.

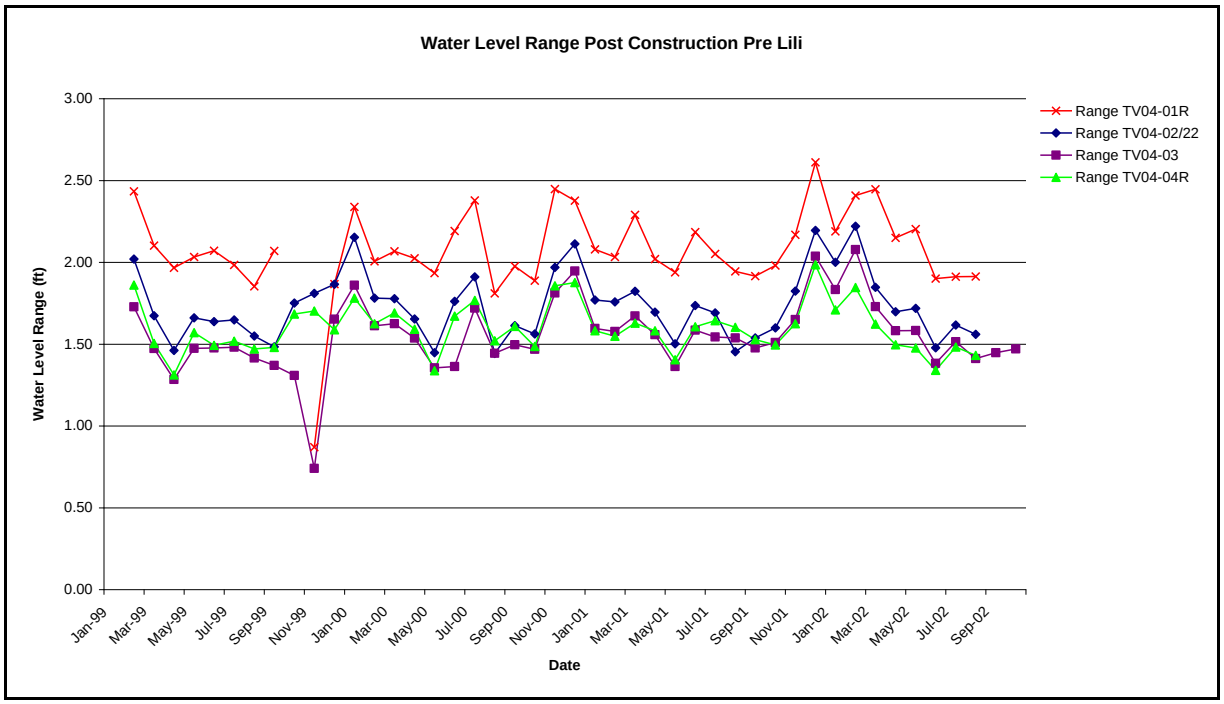

Figure 15. Post-construction, pre-Hurricane Lili mean daily water level range at four YSI continuous recorder stations located in the Cote Blanche Hydrologic Restoration (TV-04) project area from January 1999 to October 2002.

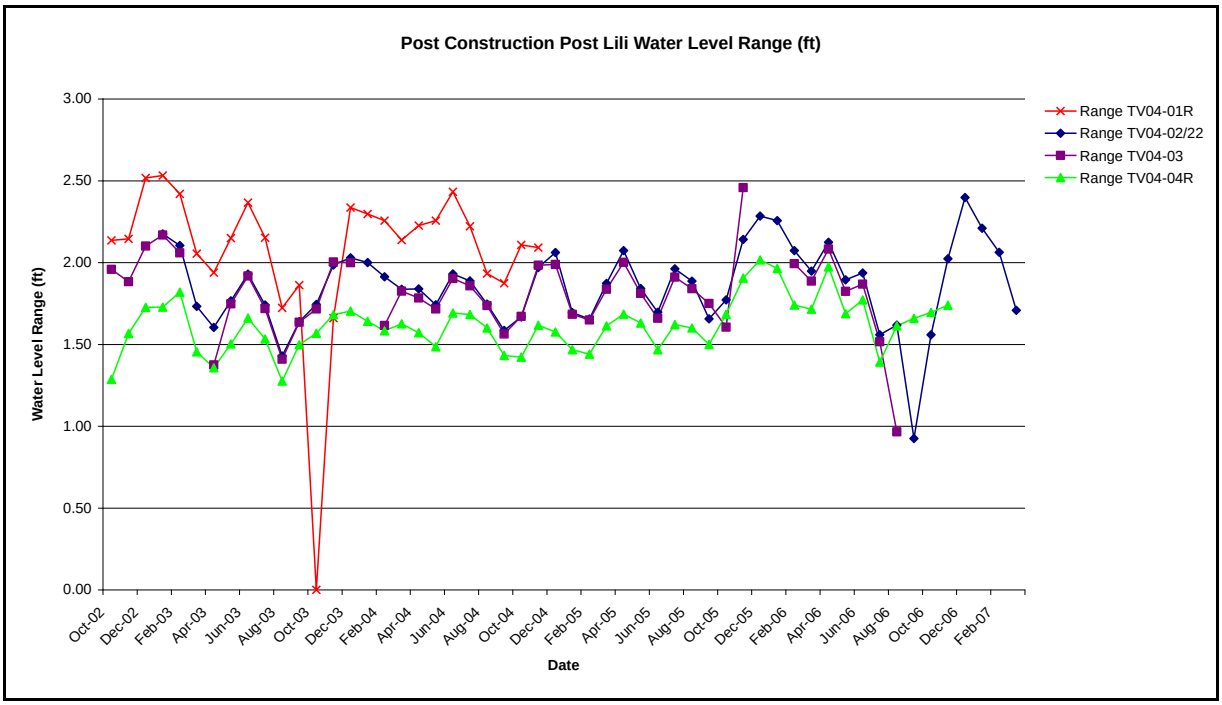

Figure 16. Post-construction, post-Hurricane Lili mean daily water level range at four YSI continuous recorder stations located in the Cote Blanche Hydrologic Restoration (TV-04) project area from October 2002 to March 2007.

CRMS-*Wetlands*:
CRMS sites were summarized by marsh type (table 2).

Table 2.

Marsh Type	Project/Reference	CRMS Site ID
Fresh	Project	CRMS0488
Fresh	Project	CRMS0490
Fresh	Project	CRMS0496
Fresh	Project	CRMS0545
Fresh	Project	CRMS0551
Fresh	Reference	CRMS0543
Intermediate	Project	CRMS0517
Intermediate	Project	CRMS0544
Intermediate	Reference	CRMS0489
Intermediate	Reference	CRMS0493
Intermediate	Reference	CRMS0494
Intermediate	Reference	CRMS0527
Intermediate	Reference	CRMS0532
Intermediate	Reference	CRMS0549

Soil properties were summarized within a site by depth so that three measurements from each core were averaged for a depth. The sites were then classified by vegetation type and project and reference means were calculated for the CRMS sites being used. No soils data was available for CRMS 545.

In both the project and reference areas, the fresh marsh had lower bulk densities and higher percent organic matter than the intermediate marsh which is to be expected (Table 2, figures 17a-17b). The project area was more organic than the reference area in both marsh types.

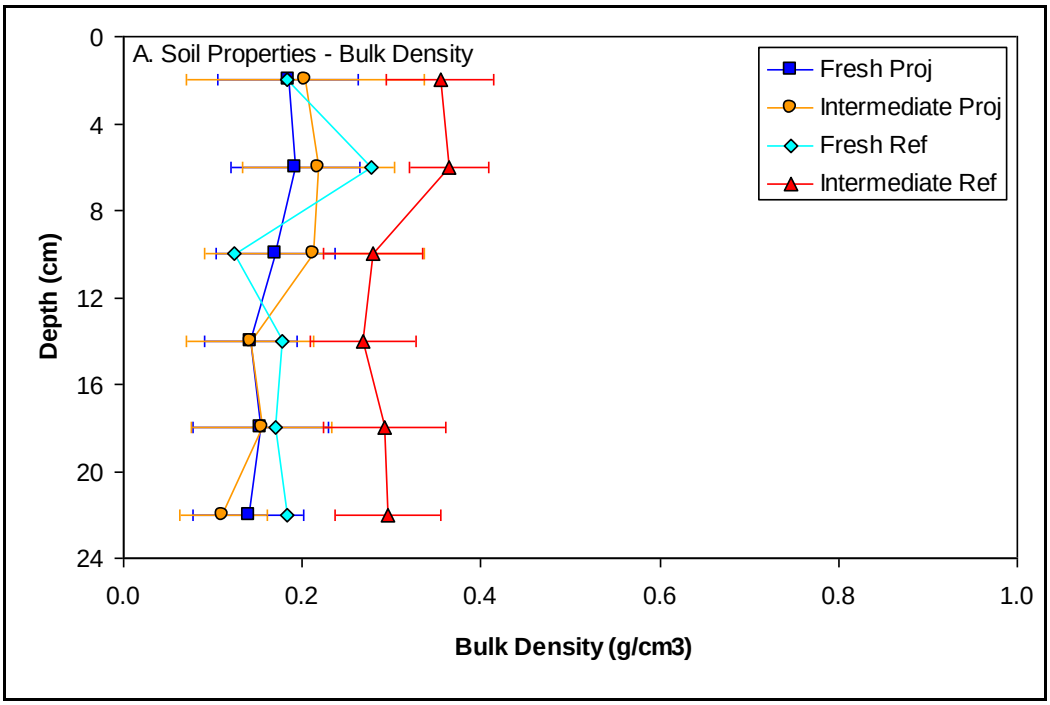

Figure 17a. Mean ± Standard error of soil variables collected at project and reference CRMS-Wetlands stations.

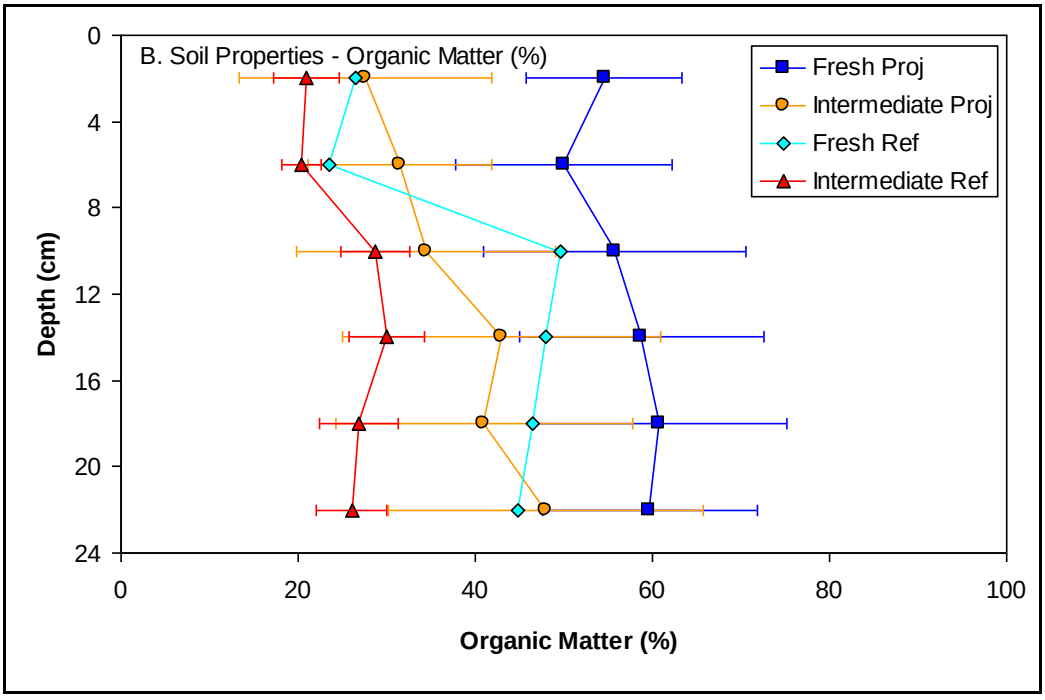

Figure 17b. Mean ± Standard error of soil variables collected at project and reference CRMS-Wetlands stations.

Soil Surface Elevation Change, Accretion, and Shallow Subsidence:

Elevation change, accretion, and shallow subsidence rates for representative stations within the marsh types and project/reference areas are summarized below (table 3, figures 18-21). In the fresh marsh portion of the project area (CRMS 488), the elevation change rate appears to be high at 4 cm/yr. The rate accounts for all of the vertical accretion plus another subsurface, most likely root growth input. The fresh marsh reference site (CRMS 544) has an elevation change rate equal to the accretion rate suggesting all of the material accreted is contributing to elevation with very little shallow subsidence.

The intermediate project site (CRMS 543) has an accretion rate almost twice as high as the elevation change rate which gives 0.6 cm/yr of shallow subsidence. The intermediate reference site (CRMS 549) is accreting and gaining elevation at a higher rate but also has twice as much accretion as elevation change with a subsidence rate of 1.1 cm/yr. The intermediate marsh is subsiding more quickly than the fresh marsh at both the project and reference sites. All sites have a positive elevation change rate above the rate of sea level rise predicted for the region (0.56 cm/yr based on the NOAA Sabine Pass tidal gauge).

Table 3. Rates of accretion, elevation change, and shallow subsidence from representative sites in fresh and intermediate marsh types in the project and reference areas.

			Rates (cm/yr)*		
Marsh Type	Proj/Ref	Site ID	Accretion	Elevation Change	Shallow Subsidence
Fresh	Project	CRMS0488	2.87	4.07	-1.20
Fresh	Reference	CRMS0544	1.44	1.39	0.05
Intermediate	Project	CRMS0543	1.25	0.65	0.60
Intermediate	Reference	CRMS0549	2.16	1.07	1.09

*Rates presented are preliminary and should not be used for decision making until at least five years of data have been collected.

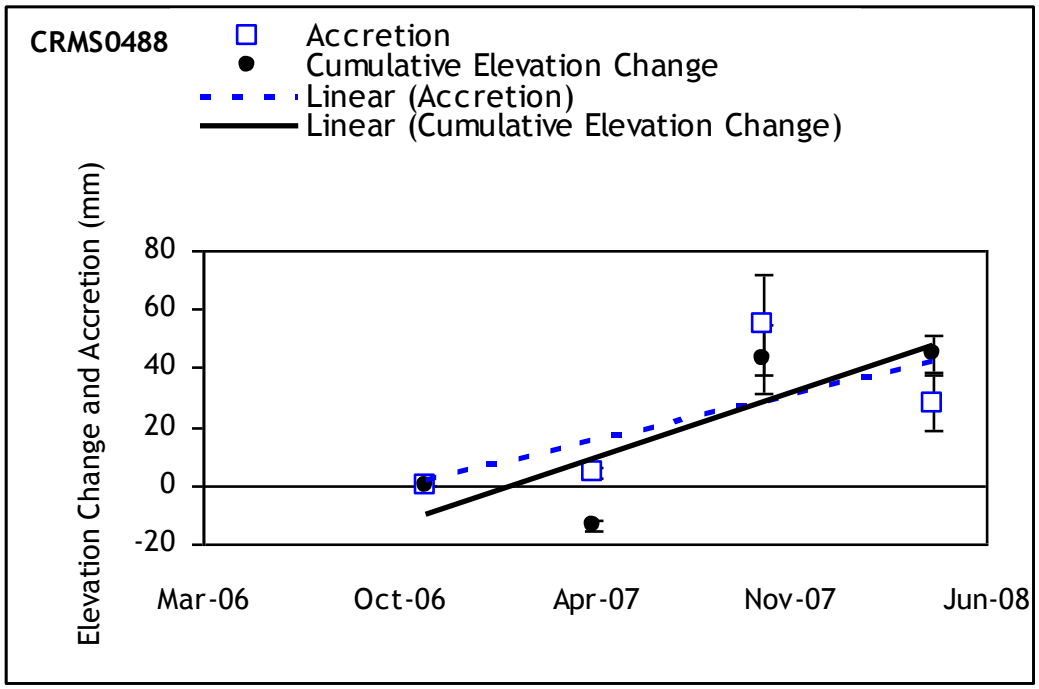

Figure 18. Elevation change and accretion at CRMS0488 (fresh, project).

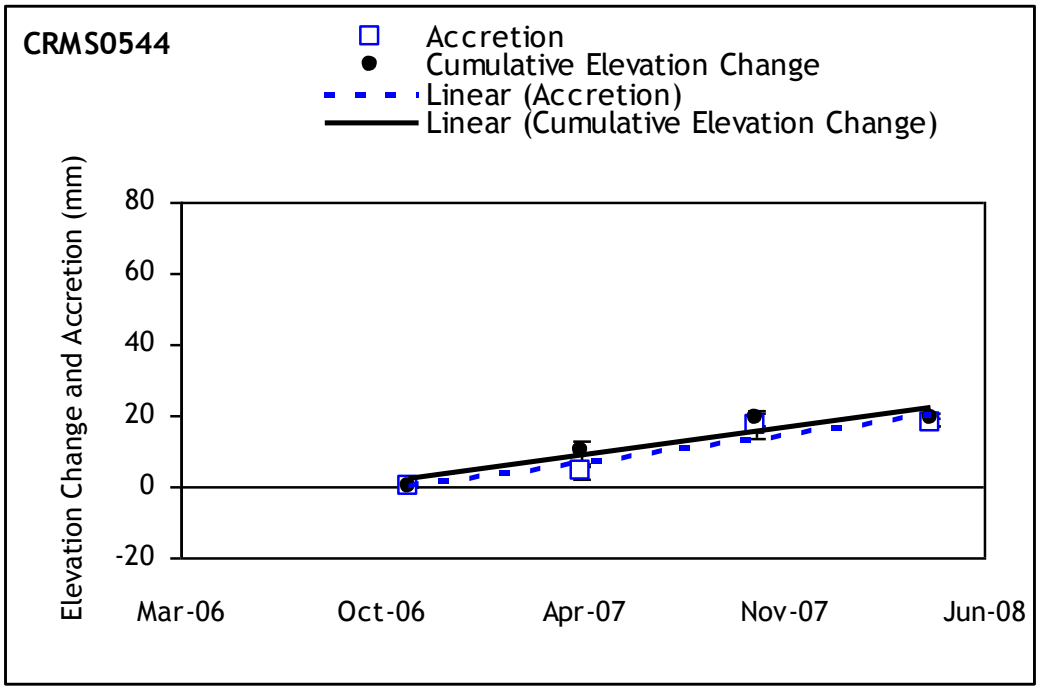

Figure 19. Elevation change and accretion at CRMS0544 (fresh, reference).

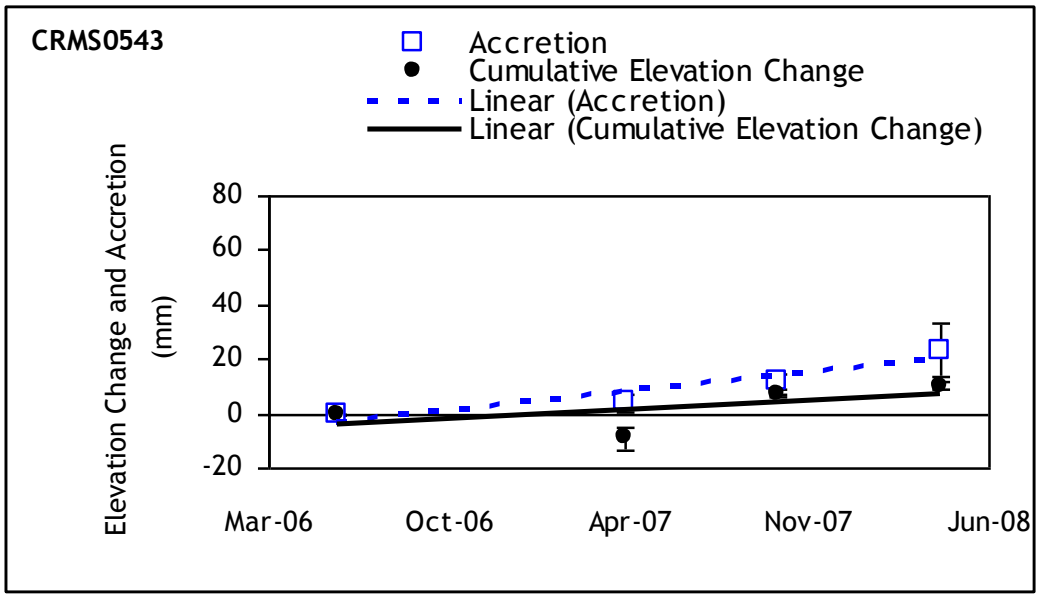

Figure 20. Elevation change and accretion at CRMS0543 (intermediate, project).

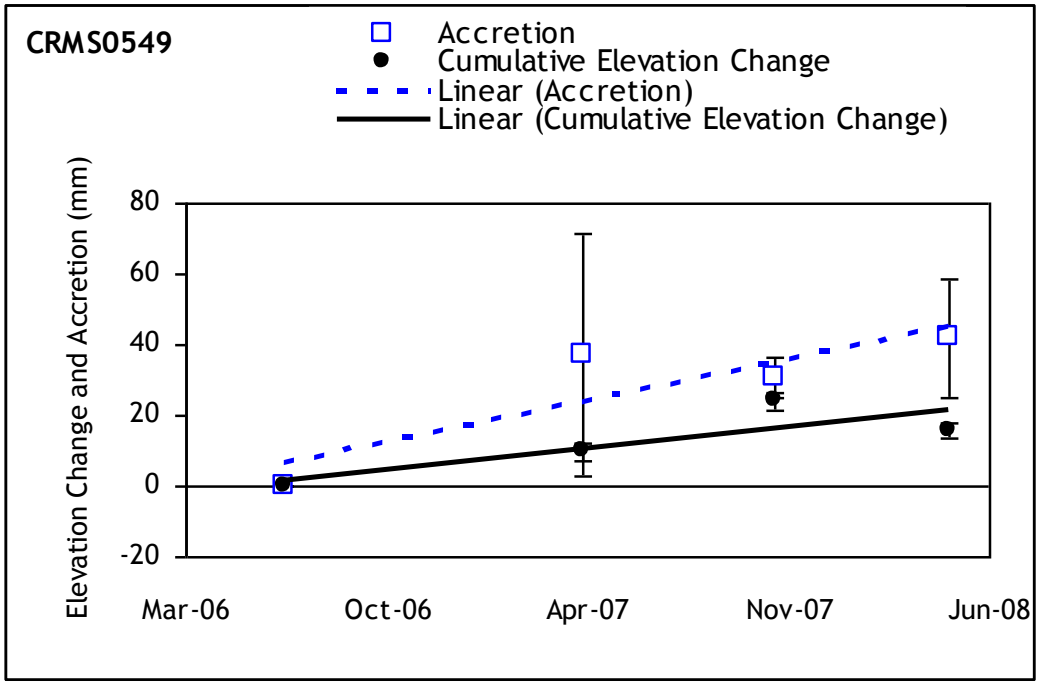

Figure 21. Elevation change and accretion at CRMS0549 (intermediate, reference).

Vegetation:

Mean cover and FQI score decreased for all fresh marsh project stations from 2006 to 2007 (figure 22a and 22b). Because there were no vegetation data recorded in the project area prior to 2006 nor were there any major storm events in that one year period, probable cause for the decrease cannot be determined. It is noted that in 2007 *Vigna luteola*, an opportunistic species, had become the dominant plant over the co-dominant species *Spartina patens*, *Panicum hemitomon* and *Eleocharis* sp.for 2006. The project intermediate stations showed a slight decrease in mean cover and a slight increase in the FQI score (figure 23a and 23b). *S. patens* and *V. luteola* co-dominated in 2006 but by 2007 *V. luteola* had also dominated the stations.

Mean cover and FQI score increased for all fresh marsh reference stations from 2006 to 2007 (figure 22a and 22b). The fresh marsh reference station, 543, showed *V. luteola* as the dominant plant species with an increase in cover from 2006 to 2007. *Sagittaria lancifolia* and *Cicuta maculata*, which can tolerate moderate disturbances, increased in cover as much as *V. luteola*. The reference intermediate stations showed an increase in mean percent cover and only a slight increase in FQI score (figure 23a and 23b). The 2006 intermediate stations showed *S. patens* as dominant but by the 2007 *V. luteola* had replaced *S. patens* as the dominant species.

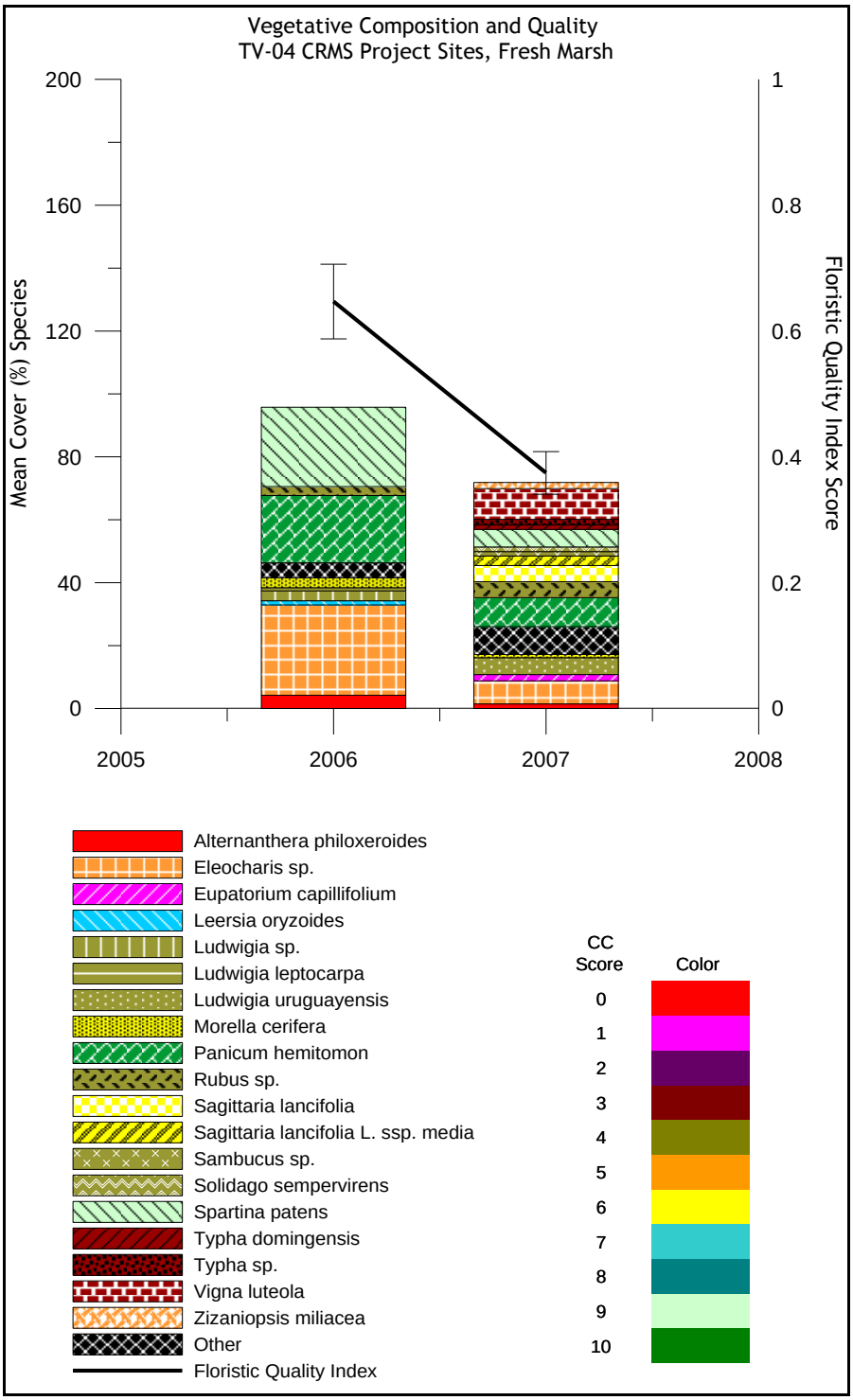

Figure 22a. Percent coverage of species and floristic quality index of collected from CRMS sites 488, 490, 496, 545, and 551 within the fresh marsh portion of the project area for 2006 and 2007. Values are means of 10 stations within the site; therefore, the sum of % coverage of individual species can be greater than 100 %.

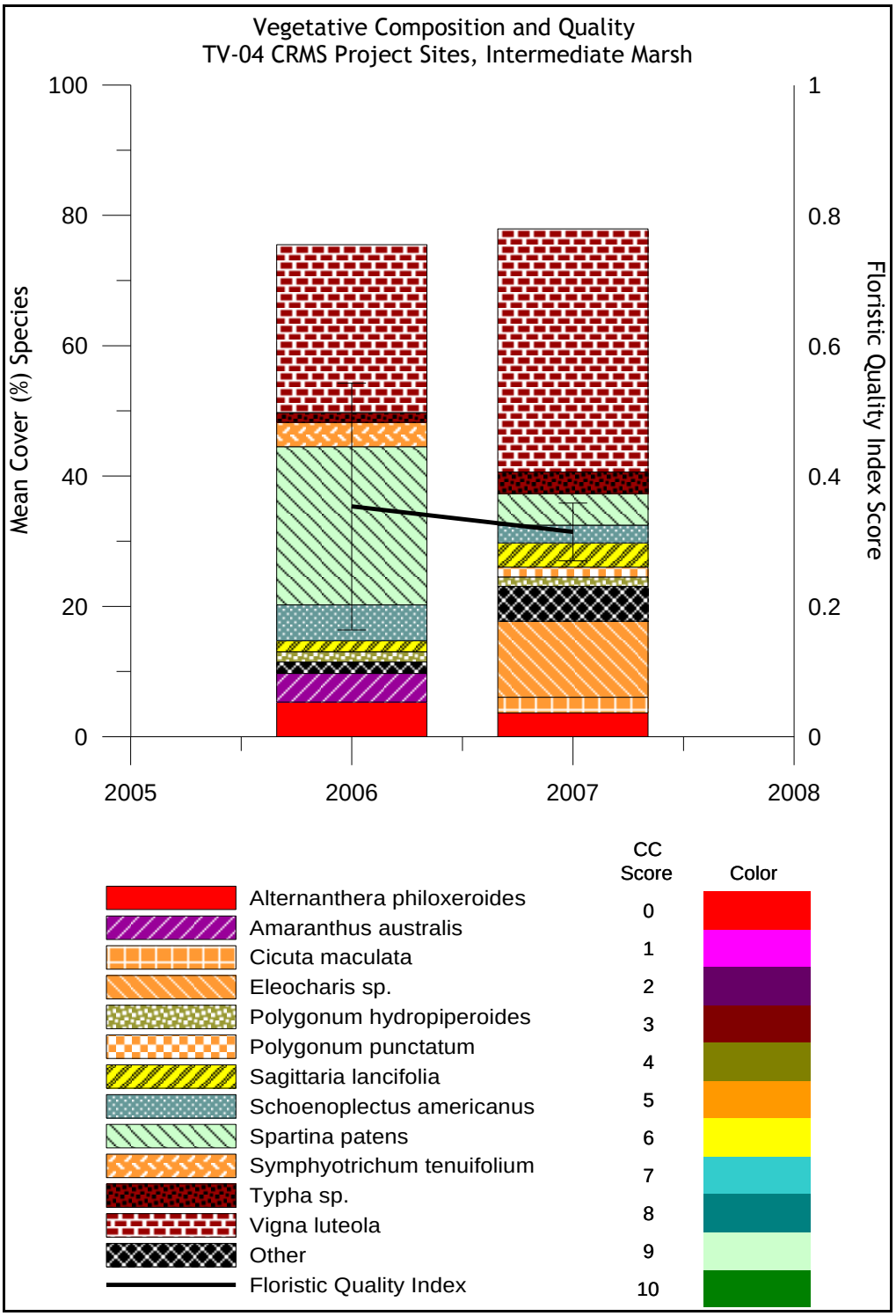

Figure 22b. Percent coverage of species and floristic quality index of collected from CRMS sites 517 and 544, within the intermediate marsh portion of the project area for 2006 and 2007. Values are means of 10 stations within the site; therefore, the sum of % coverage of individual species can be greater than 100 %.

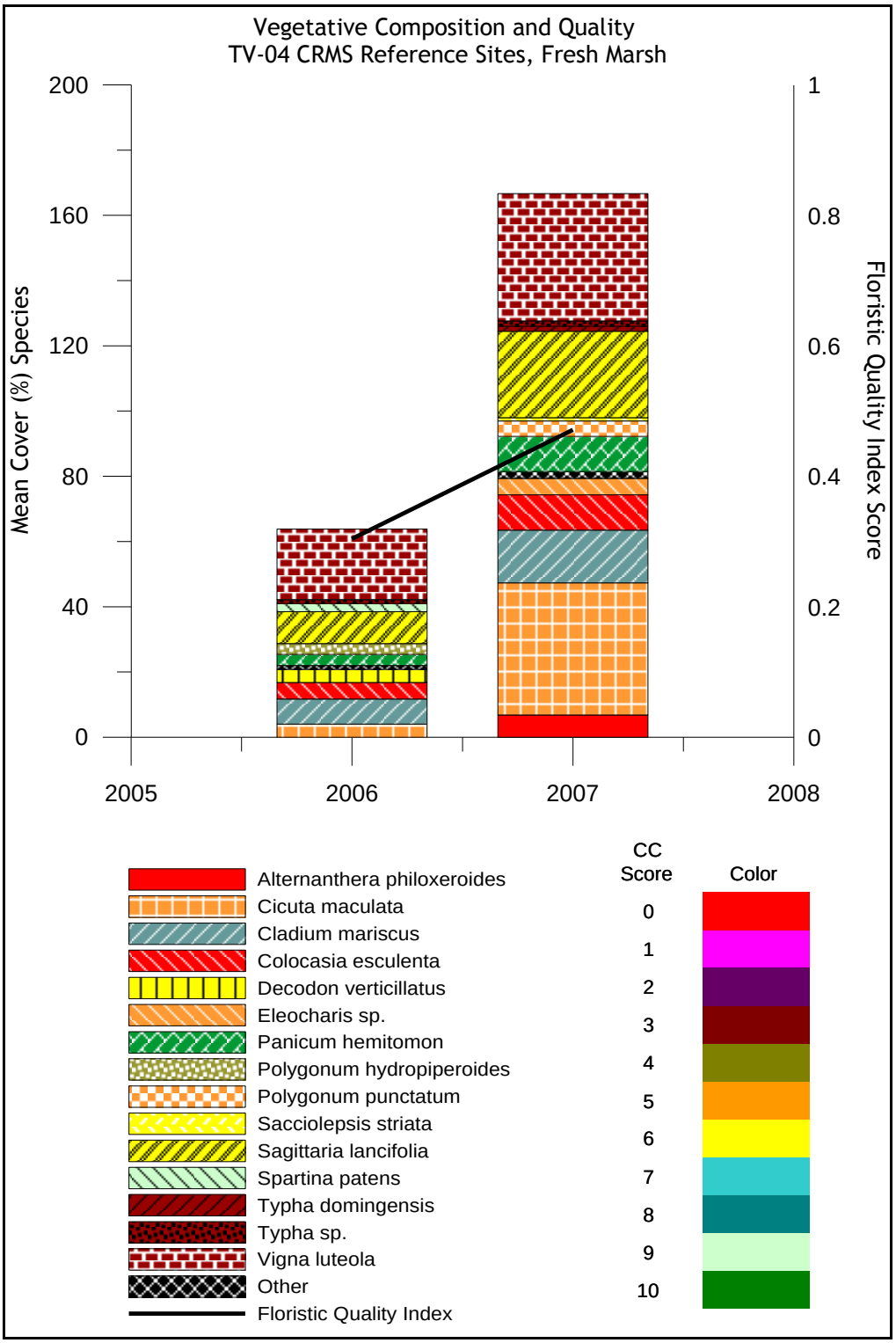

Figure 23a. Percent coverage of species and floristic quality index of collected from CRMS reference site 543 in the fresh marsh areas of the Teche/Vermilion Basin in 2006 and 2007. Values are means of 10 stations within the site; therefore, the sum of % coverage of individual species can be greater than 100 %.

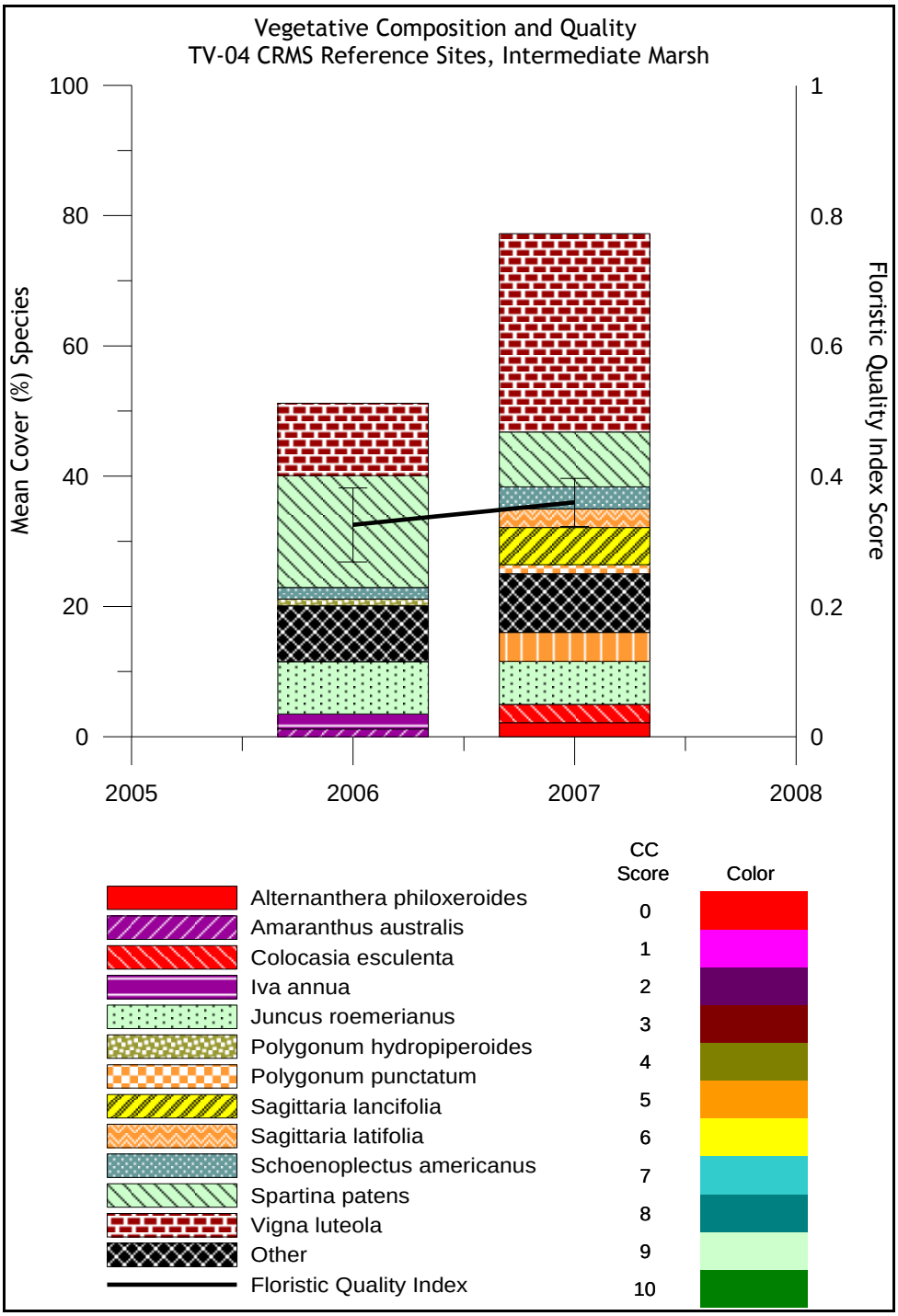

Figure 23b. Percent coverage of species and floristic quality index of collected from CRMS reference sites 489, 493, 494, 527, 532, and 549 in the intermediate marsh areas of the Teche/Vermilion Basin in 2006 and 2007. Values are means of 10 stations within the site; therefore, the sum of % coverage of individual species can be greater than 100 %.

V. Conclusions

a. Project Effectiveness

The project areas experienced a land loss of 8% while the hydrographic reference area lost 4% land. Most of this loss is likely due to damage from Hurricane Lili and is not a project effect.

Inundation data for the two interior marsh stations varied greatly. However, post construction water level range data inside the project area was less variable than the two reference stations suggesting that weirs may have had an effect on reducing the range of water level for the year 2004 as compared to pre-construction data.

The project does appear to be accomplishing the goal of reducing the southern boundary's shoreline erosion rate. Shoreline change results suggest that the shoreline protection wall is functioning and providing shoreline protection and stabilization.

b. Recommendations

Overall, the structural components of the Cote Blanche Hydrologic Restoration Project are in good condition and functioning as designed. The rock weirs at the intersections of School Bus Bayou and Humble Canal will be monitored. Maintenance requirements for CY 2009:

- Replace Coast Guard sign at Humble Canal
- Verify staff gauges in the area
- Continue to monitor O&M dike elevation and functionality

c. Lessons Learned

VI. Literature Cited

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APPENDIX A
(Inspection Photographs)

Photo 1—North side of Mud Bayou Structure

Photo 2—South side of Mud Bayou structure

Photo 3—Signage at Mud Bayou

Photo 4—Signage at Humble F Canal

Photo 5—North side of Humble F Structure

Photo 6—South side of Humble F Structure

Photo 7—Bayou Long Structure and signage

Photo 8—Bayou Carlin Structure and signage

Photo 9—East side of Humble Canal Structure

Photo 10—West side of Humble Canal Structure

Photo 11—Missing sign and Nav-Aid lights at Humble Canal

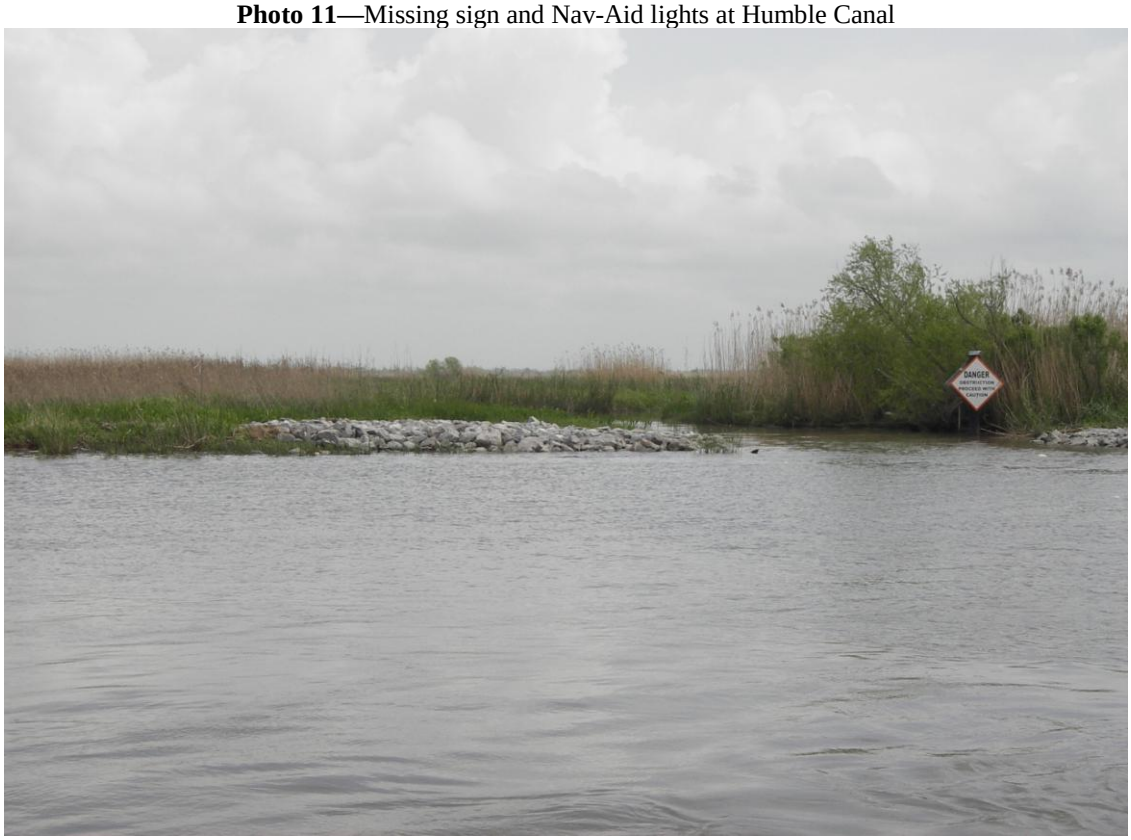

Photo 12—Eastern weir at School Bus Bayou

Photo 13—Western weir at School Bus Bayou

Photo14—Rock dike near Humble Canal

Photo 15—Typical good section of School Bus dike

Photo 16—West tie-in of School Bus dike

Photo 17—Typical settled section and signage of School Bus dike

Photo 18—Jackson Bayou structure and signage

Photo 19—West side of Jackson Bayou structure

Photo 20—East side of Jackson Bayou structure

Photo 21—British American Canal structure and signage

Photo 22—West side of British American structure

Photo 23—East side of British American structure

Photo 24—Rock along British American Canal

Photo 25—Rock and PVC wall near British American Canal

Photo 26—Typical section of PVC wall and signage

APPENDIX B
(Three Year Budget Projection)

COTE BLANCHE/ TV-04 / PPL 3

Three-Year Operations & Maintenance Budgets 07/01/2008 - 06/30/2011

Project Manager	O & M Manager	Federal Sponsor	Prepared By
Pat Landry	*Stan Aucoin*	*NRCS*	*Stan Aucoin*

	2008/2009	2009/2010	2010/2011
Maintenance Inspection	$ 5,570.00	$ 5,737.00	$ 5,909.00
Nav. Aid Inspections	$ 3,000.00	$ 3,000.00	$ 3,000.00
Administration	$ -	$ -	
Maintenance/Rehabilitation			

08/09 Description: Replace two staff gages, replace one nav.aid sign

E&D	$ 10,000.00
Construction	$ 3,000.00
Construction Oversight	$ -
Sub Total - Maint. And Rehab.	$ 13,000.00

09/10 Description:

E&D	$ -
Construction	$ -
Construction Oversight	$ -
Sub Total - Maint. And Rehab.	$ -

10/11 Description:

E&D	
Construction	
Construction Oversight	
Sub Total - Maint. And Rehab.	$ -

	2008/2009	2009/2010	2010/2011
Total O&M Budgets	**$ 21,570.00**	**$ 8,737.00**	**$ 8,909.00**

O &M Budget (3 yr Total)	**$ 39,216.00**
Unexpended O & M Budget	**$ 345,694.48**
Remaining O & M Budget (Projected)	**$ 306,478.48**

OPERATION AND MAINTENANCE BUDGET WORKSHEET

COTE BLANCHE HR/ PROJECT NO. TV-04 / PPL NO. 3

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$5,570.00	**$5,570.00**
General Structure Maintenance	LUMP	1	$0.00	**$0.00**
Engineering and Design	LUMP	1	$0.00	**$0.00**
Navigational Aid Inspection	LUMP	1	$3,000.00	**$3,000.00**
Construction Oversight	LUMP	1	$0.00	**$0.00**
ADMINISTRATION				
LDNR / CRD Admin.	LUMP	1	$0.00	$0.00
FEDERAL SPONSOR Admin.	LUMP	1	$0.00	$0.00
SURVEY Admin.	LUMP	0	$0.00	$0.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:	Verify staff gages				
	Secondary Monument	EACH	0	$0.00	$0.00
	Staff Gauge / Recorders	EACH	2	$5,000.00	$10,000.00
	Marsh Elevation / Topography	LUMP	0	$0.00	$0.00
	TBM Installation	EACH	0	$0.00	$0.00
	OTHER				$0.00
				TOTAL SURVEY COSTS:	**$10,000.00**

GEOTECHNICAL

GEOTECH DESCRIPTION:					
	Borings	EACH	0	$0.00	$0.00
	OTHER				$0.00
				TOTAL GEOTECHNICAL COSTS:	**$0.00**

CONSTRUCTION

CONSTRUCTION DESCRIPTION:	Replace Nav. Aid sign at Humble Canal.					
	Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	Rock Dike	0	0.0	0	$65.00	$0.00
	Bank Paving	0	0.0	0	$60.00	$0.00
		0	0.0	0	$0.00	$0.00
	Filter Cloth / Geogrid Fabric		SQ YD	0	$8.00	$0.00
	Navigation Aid		EACH	1	$0.00	$0.00
	Signage		EACH	1	$3,000.00	$3,000.00
	General Excavation / Fill		CU YD	0	$0.00	$0.00
	Dredging		CU YD	0	$0.00	$0.00
	Sheet Piles (Lin Ft or Sq Yds)			0	$0.00	$0.00
	Timber Piles (each or lump sum)			0	$0.00	$0.00
	Timber Members (each or lump sum)			0	$0.00	$0.00
	Hardware		LUMP	1	$0.00	$0.00
	Materials		LUMP	1	$0.00	$0.00
	Mob / Demob		LUMP	0	$0.00	$0.00
	Contingency		LUMP	0	$0.00	$0.00
	General Structure Maintenance		LUMP	1	$0.00	$0.00
	OTHER				$0.00	$0.00
	OTHER				$0.00	$0.00
	OTHER				$0.00	$0.00
					TOTAL CONSTRUCTION COSTS:	**$3,000.00**

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **$21,570.00**

OPERATION AND MAINTENANCE BUDGET 07/01/2009-06/30/2010

COTE BLANCHE HR /TV-04/PPL3

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$5,737.00	**$5,737.00**
General Structure Maintenance	LUMP	1	$0.00	**$0.00**
Engineering and Design	LUMP	1	$0.00	**$0.00**
Operations Contract	LUMP	1	$0.00	**$0.00**
Construction Oversight	LUMP	1	$0.00	**$0.00**

ADMINISTRATION

LDNR / CRD Admin.	LUMP	1	$0.00	$0.00
FEDERAL SPONSER Admin.	LUMP	0		$0.00
SURVEY Admin.	LUMP	0	$0.00	$0.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:					
Secondary Monument	EACH	0	$0.00	$0.00
Staff Gauge / Recorders	EACH	0	$0.00	$0.00
Marsh Elevation / Topography	LUMP	0	$0.00	$0.00
TBM Installation	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL SURVEY COSTS:	**$0.00**

GEOTECHNICAL

GEOTECH DESCRIPTION:					
Borings	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**

CONSTRUCTION

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric		SQ YD	0	$0.00	$0.00
Navagation Aid		EACH	1	$0.00	$0.00
Signage		EACH		$0.00	$0.00
General Excavation / Fill		CU YD	0	$0.00	$0.00
Dredging		CU YD	0	$0.00	$0.00
Sheet Piles (Lin Ft or Sq Yds)			0	$0.00	$0.00
Timber Piles (each or lump sum)			0	$0.00	$0.00
Timber Members (each or lump sum)			0	$0.00	$0.00
Hardware		LUMP	1	$0.00	$0.00
Materials		LUMP	1	$0.00	$0.00
Mob / Demob		LUMP	1	$0.00	$0.00
Contingency		LUMP	1	$0.00	$0.00
General Structure Maintenance		LUMP	1	$0.00	$0.00
OTHER				$0.00	$0.00
OTHER				$0.00	$0.00
OTHER				$0.00	$0.00
				TOTAL CONSTRUCTION COSTS:	**$0.00**

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **$5,737.00**

OPERATION AND MAINTENANCE BUDGET 07/01/2010-06/30/2011

COTE BLANCHE HR/TV-04/PPL3

DESCRIPTION	UNIT	EST. QTY.	UNIT PRICE	ESTIMATED TOTAL
O&M Inspection and Report	EACH	1	$5,909.00	**$5,909.00**
General Structure Maintenance	LUMP	1	$0.00	**$0.00**
Engineering and Design	LUMP	1	$0.00	**$0.00**
Operations Contract	LUMP	1	$0.00	**$0.00**
Construction Oversight	LUMP	1	$0.00	**$0.00**

ADMINISTRATION

LDNR / CRD Admin.	LUMP	1	$0.00	$0.00
FEDERAL SPONSER Admin.	LUMP	1	$0.00	$0.00
SURVEY Admin.	LUMP	1	$0.00	$0.00
OTHER				$0.00
			TOTAL ADMINISTRATION COSTS:	**$0.00**

MAINTENANCE / CONSTRUCTION

SURVEY

SURVEY DESCRIPTION:					
Secondary Monument	EACH	0	$0.00	$0.00
Staff Gauge / Recorders	EACH	0	$0.00	$0.00
Marsh Elevation / Topography	LUMP	0	$0.00	$0.00
TBM Installation	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL SURVEY COSTS:	**$0.00**

GEOTECHNICAL

GEOTECH DESCRIPTION:				
Borings	EACH	0	$0.00	$0.00
OTHER				$0.00
			TOTAL GEOTECHNICAL COSTS:	**$0.00**

CONSTRUCTION

CONSTRUCTION DESCRIPTION:					
Rip Rap	LIN FT	TON / FT	TONS	UNIT PRICE	
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
	0	0.0	0	$0.00	$0.00
Filter Cloth / Geogrid Fabric		SQ YD	0	$0.00	$0.00
Navagation Aid		EACH	0	$0.00	$0.00
Signage		EACH	0	$0.00	$0.00
General Excavation / Fill		CU YD	0	$0.00	$0.00
Dredging		CU YD	0	$0.00	$0.00
Sheet Piles (Lin Ft or Sq Yds)			0	$0.00	$0.00
Timber Piles (each or lump sum)			0	$0.00	$0.00
Timber Members (each or lump sum)			0	$0.00	$0.00
Hardware		LUMP	1	$0.00	$0.00
Materials		LUMP	1	$0.00	$0.00
Mob / Demob		LUMP	1	$0.00	$0.00
Contingency		LUMP	1	$0.00	$0.00
General Structure Maintenance		LUMP	1	$0.00	$0.00
OTHER				$0.00	$0.00
OTHER				$0.00	$0.00
OTHER				$0.00	$0.00
				TOTAL CONSTRUCTION COSTS:	**$0.00**

TOTAL OPERATIONS AND MAINTENANCE BUDGET: **$5,909.00**

APPENDIX C
(Field Inspection Notes)

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-04 Cote Blanche

Date of Inspection: April 1, 2008 Time:

Structure No. 7 British American Canal

Inspector(s):Stan Aucoin, Tommy McGinnis, Darrell Pontiff (DNR) Pat Landry (DNR), Dale Garber (NRCS); John Foret (NMFS)

Structure Description: Fixed crest weir, rock on banks and canal

Water Level Inside: Outside:

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	good				Some initial post construction rusting. No action needed.
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	good				
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Cables	N/A				
Signage /Supports	good				
Rip Rap (fill)	good				
Earthen Embankment	N/A				

What are the conditions of the existing levees?
Are there any noticeable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-04 Cote Blanche

Date of Inspection: April 1, 2008 Time:

Structure No. 2 Humble F Canal

Inspector(s):Stan Aucoin, Tommy McGinnis, Darrell Pontiff (DNR) Pat Landry (DNR), Dale Garber (NRCS); John Foret (NMFS)

Structure Description: Fixed crest weir, rock paving on bank

Water Level Inside: Outside:

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	good				Structure in good condition. Some slight rusting of pile caps. No immediate action necessary
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	good				
Timber Piles	good				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Cables	N/A				
Signage /Supports	good				
Rip Rap (fill)	good				
Earthen Embankment	N/A				

What are the conditions of the existing levees?
Are there any noticeable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-04 Cote Blanche

Date of Inspection: April 1, 2008 Time:

Structure No. 5 Humble Canal

Inspector(s):Stan Aucoin, Tommy McGinnis, Darrell Pontiff (DNR) Pat Landry (DNR), Dale Garber (NRCS); John Foret (NMFS)

Structure Description: Fixed crest weir, rock on banks and canal

Water Level Inside: Outside:

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	good				Some initial post construction rusting. No action needed.
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	fair				Handrail on western side of structure is damaged.
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	good				
USCG Lights	poor				NW nav-aid sign is missing and needs replacement.
Signage /Supports	poor				
Rip Rap (fill)	fair				
Earthen Embankment	N/A				

What are the conditions of the existing levees?
Are there any noticeable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-04 Cote Blanche

Date of Inspection: April 1, 2008 Time:

Structure No. 8 PVC wall

Inspector(s):Stan Aucoin, Tommy McGinnis, Darrell Pontiff (DNR) Pat Landry (DNR), Dale Garber (NRCS); John Foret (NMFS)

Structure Description: approximately 3800 linear feet of PVC wall

Water Level Inside: Outside:

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
PVC sheet piling / Caps	fair				PVC wall appears to be in post construction condition and holding up well.
Steel Grating					
Stop Logs					
Hardware	good				
Timber Piles	good				Some pile caps missing again. No immediate action necessary.
Timber Wales	good				
Galv. Pile Caps					
Cables					
Signage /Supports	good				All signs in place and in immediate post construction condition.
Rip Rap (fill)	good				Rock placed along the inside and outside of the PVC wall is still in place and functional. No action necessary.
Earthen Embankment					

What are the conditions of the existing levees?
Are there any noticeable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-04 Cote Blanche

Date of Inspection: April 1, 2008 Time:

Structure No. 3 Bayou Long

Inspector(s):Stan Aucoin, Tommy McGinnis, Darrell Pontiff (DNR) Pat Landry (DNR), Dale Garber (NRCS); John Foret (NMFS)

Structure Description: Fixed crest weir

Water Level Inside: Outside:

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	good				Structure in pristine post-construction condition. Some slight rusting of pile caps. No immediate action necessary.
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	good				
Timber Piles	good				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Cables	N/A				
Signage /Supports	good				
Rip Rap (fill)	N/A				
Earthen Embankment	N/A				

What are the conditions of the existing levees?
Are there any noticeable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-04 Cote Blanche

Date of Inspection: April 1, 2008 Time:

Structure No. 1 Mud Bayou

Inspector(s):Stan Aucoin, Tommy McGinnis, Darrell Pontiff (DNR) Pat Landry (DNR), Dale Garber (NRCS); John Foret (NMFS)

Structure Description: Fixed crest weir, rock paving on bank

Water Level Inside: Outside:

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	good				It appears the old bayou channel that existed to the marsh side of the structure appears somewhat wider.
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	good				
Timber Piles	good				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Cables	N/A				
Signage /Supports	good				
Rip Rap (fill)	good				
Earthen Embankment	N/A				

What are the conditions of the existing levees?
Are there any noticeable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-04 Cote Blanche

Date of Inspection: April 1, 2008 Time:

Structure No. 6 Jackson Bayou

Inspector(s):Stan Aucoin, Tommy McGinnis, Darrell Pontiff (DNR) Pat Landry (DNR), Dale Garber (NRCS); John Foret (NMFS)

Structure Description: Fixed crest weir

Water Level Inside: Outside:

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	good				Some slight rusting of pile caps. No immediate action necessary.
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	good				
Timber Piles	poor				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Cables	N/A				
Signage /Supports	good				
Rip Rap (fill)	N/A				
Earthen Embankment	N/A				

What are the conditions of the existing levees?
Are there any noticeable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-04 Cote Blanche

Date of Inspection: April 1, 2008 Time:

Structure No. 4 Bayou Carlin

Inspector(s):Stan Aucoin, Tommy McGinnis, Darrell Pontiff (DNR) Pat Landry (DNR), Dale Garber (NRCS); John Foret (NMFS)

Structure Description: Fixed crest weir

Water Level Inside: Outside:

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	good				Structure in pristine post-construction condition. Some slight rusting of pile caps. No immediate action necessary.
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	good				
Timber Piles	good				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Cables	N/A				
Signage /Supports	good				
Rip Rap (fill)	N/A				
Earthen Embankment	N/A				

What are the conditions of the existing levees?
Are there any noticeable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?

MAINTENANCE INSPECTION REPORT CHECK SHEET

Project No. / Name: TV-04 Cote Blanche

Date of Inspection: April 1, 2008 Time:

Structure No. School Bus Bayou SP

Inspector(s):Stan Aucoin, Tommy McGinnis, Darrell Pontiff (DNR)
Pat Landry (DNR), Dale Garber (NRCS); John Foret (NMFS)

Structure Description: Foreshore Rock Dike & Weirs

Water Level Inside: Outside:

Type of Inspection: Annual

Weather Conditions: Cloudy and Clear

Item	Condition	Physical Damage	Corrosion	Photo #	Observations and Remarks
Steel Bulkhead / Caps	N/A				
Steel Grating	N/A				
Stop Logs	N/A				
Hardware	N/A				
Timber Piles	N/A				
Timber Wales	N/A				
Galv. Pile Caps	N/A				
Cables	N/A				
Signage /Supports	Good			17	
Rip Rap (fill)					
School Bus Bayou	Good			15, 16	Some settlement of rock dike, will need to be monitored.
Low Level Weirs	Good			12, 13	Rock at bottom of each weir apparently washed out, floating fabric noticed.
Earthen Embankment	N/A				

What are the conditions of the existing levees?
Are there any noticeable breaches?
Settlement of rock plugs and rock weirs?
Position of stoplogs at the time of the inspection?
Are there any signs of vandalism?