

TERREBONNE PARISH LIVING MITIGATION PROJECT

Silver Jackets Contributors:

- Terrebonne Parish Consolidated Government
- USACE, New Orleans District
- Louisiana CPRA
- LSU Ag Center / Sea Grants



SILVER JACKETS PROGRAM



The Silver Jackets Program provides a platform for Local, State, and Federal agencies to work together as a team to develop collaborative solutions to reduce flood risk and other natural disasters in the United States. This program facilitates partnerships that combine the resources, capabilities, and experience of various agencies and apply their combined knowledge to a flood risk management issue.

PROJECT SCOPE AND OBJECTIVES

Located just west of New Orleans, Terrebonne Parish is situated on the Gulf of Mexico and sees its share of tropical storms and hurricanes. The catastrophic loss of coastal wetlands over the past several decades have increased the flooding risk. The resilient people of the parish have a long history of adapting to the potential flood risk through multiple lines of defense including structural and non-structural approaches.

As an essential component in this coastal defense, a **living mitigation project** was envisioned to act as a bioshield against storm surge in a hurricane. The planning objective was to develop alternatives that utilize salt tolerant vegetation species to achieve the desired reduction in flood and wind damages.

Objectives of the Living Mitigation Project:

- Protect communities at flood risk (Houma, Upper Grand Caillou, and Chauvin)
- Protect public structures at flood risk (Parish wastewater plant, jail, landfill, fire stations, airport, and schools)
- Protect critical infrastructure at flood risk (Hwy 57, Hwy 56 and East Houma Surge Levee)

INVENTORY OF SITE CONDITIONS

The Silver Jackets Team collected the following data to develop a list of possible alternatives:

- Existing vegetation in the project area
- Soil salinity data
- Water quality, salinity and water level data
- Review existing literature regarding regional coastal projects

ALTERNATIVES CONSIDERED

The goal of the project is to reduce flood damages in Terrebonne Parish using living mitigation, or vegetative, techniques. Accomplishing this goal requires reduction of storm surge energy in coastal marshlands south of Houma, the southernmost metropolitan area of Terrebonne Parish and most susceptible to storm surge hazards.

The primary approaches considered were:

1. Increase the areal extent of interior marshlands, and
2. Increase the presence of woody vegetation along shorelines, terraces, embankments, and marshland fringes.

The Silver Jackets Team formulated, evaluated, and compared the following alternatives:

- Alternative 1:** Marsh Creation
- Alternative 2:** Terracing and Vegetative Planting
- Alternative 3:** Embankments and Vegetative Planting
- Alternative 4:** Fabric-Formed Terracing and Vegetative Planting
- Alternative 5:** Marsh Creation, Terracing, and Vegetative Planting
- Alternative 6:** Marsh Creation, Fabric-Formed Terracing, and Vegetative Planting

RECOMMENDED PLAN

Alternative 2: Terracing and Vegetative Planting was recommended due to its proven capacity to reduce wave energy and produce vigorous stands of wetlands vegetation coupled with lowest cost and large acreage creation. Benefits include:

- Woody shrub vegetation provides resistance to storm surge
- Woody shrub vegetation provides a vertical resistant to affect wind energy
- Immediately creates elevated ridges capable of deflecting storm surge energy
- Over time, terracing will produce marsh
- Does not completely alter surface water and flood water flow directions, as compared to embankments
- Flexible design and able to be rescaled post design (i.e. adding/removing terraces to accommodate budget variations)

RIDGES LOWER STORM SURGE AND WAVE HEIGHT

1 Existing conditions: high wave energies on levee faces



2 Ridge restored using Mississippi River sediments



3 Vegetation can offset subsidence elevation losses over time



4 Vegetated ridge will reduce wave energy and wave overtopping



Multiple Lines of Defense



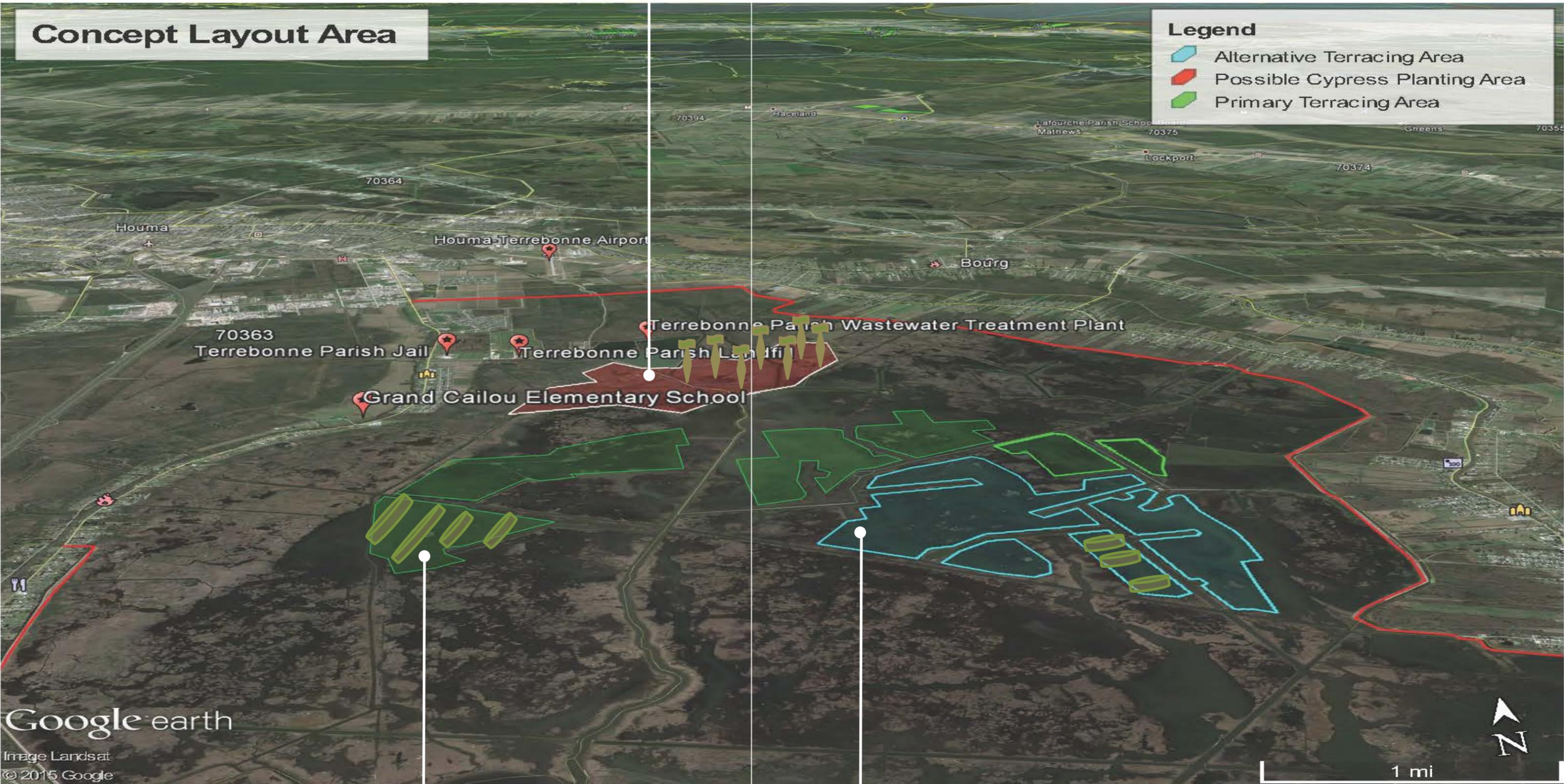
Preservation of wetland habitat and simultaneously providing flood protection for the residents of the parish is complex; requiring the full development of all of the components of the multiple lines of Defense.

Possible Cypress
Planting Area

Concept Layout Area

Legend

- Alternative Terracing Area
- Possible Cypress Planting Area
- Primary Terracing Area



Primary Terracing
Area

Alternative
Terracing Area