Cameron Meadows Marsh Creation

UPPER BARATARIA TERRACING

National Conference on Beach Preservation Technology

February 8, 2024

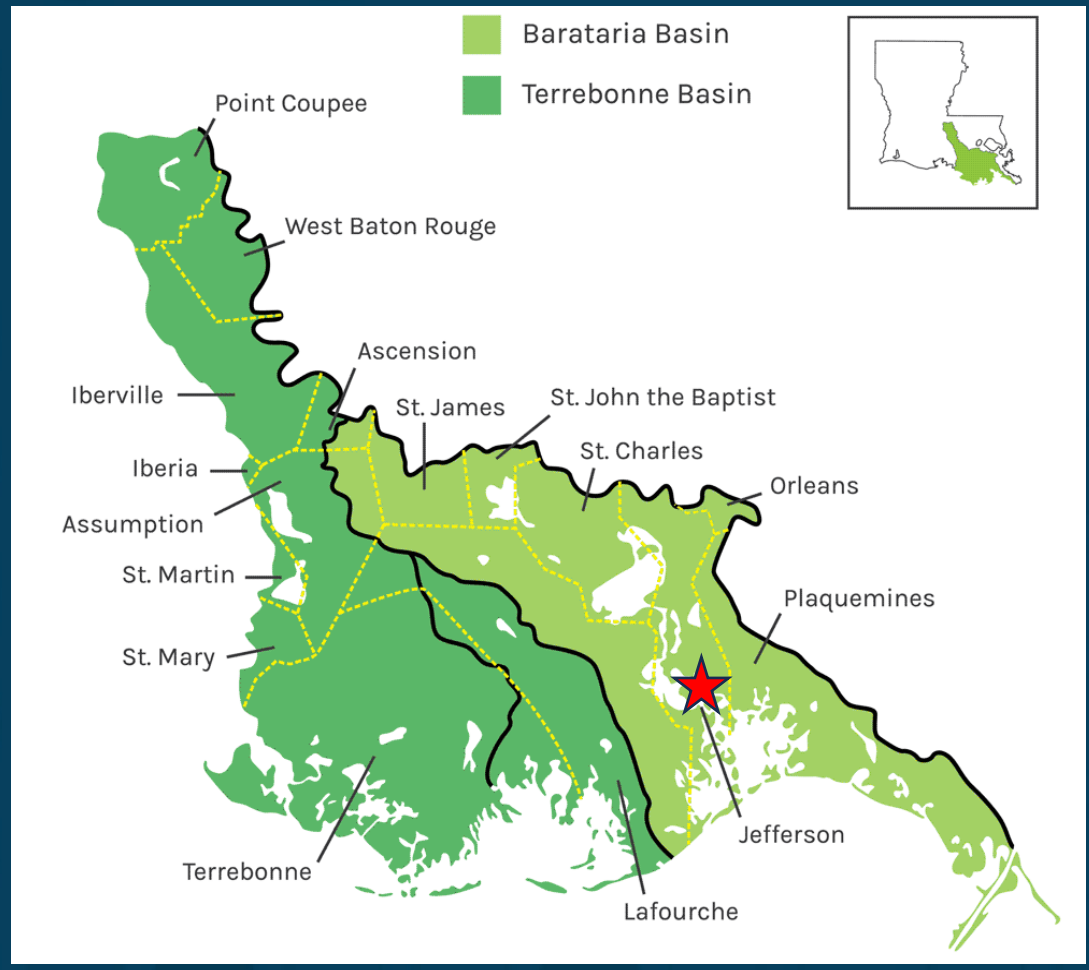
Project Location

PROJECT LOCATION

- Jefferson Parish, Louisiana
- Barataria-Terrebonne National Estuary Program (BTNEP) System
- Barataria Basin
- Barataria Landbridge
- Immediately South of “The Pen”

PROJECT TEAM

- Jefferson Parish – Owner
- Jefferson Parish School Board - Landowner
- Freese and Nichols – Engineer
- HydroTerra – Survey
- Eustis Engineering - Geotech



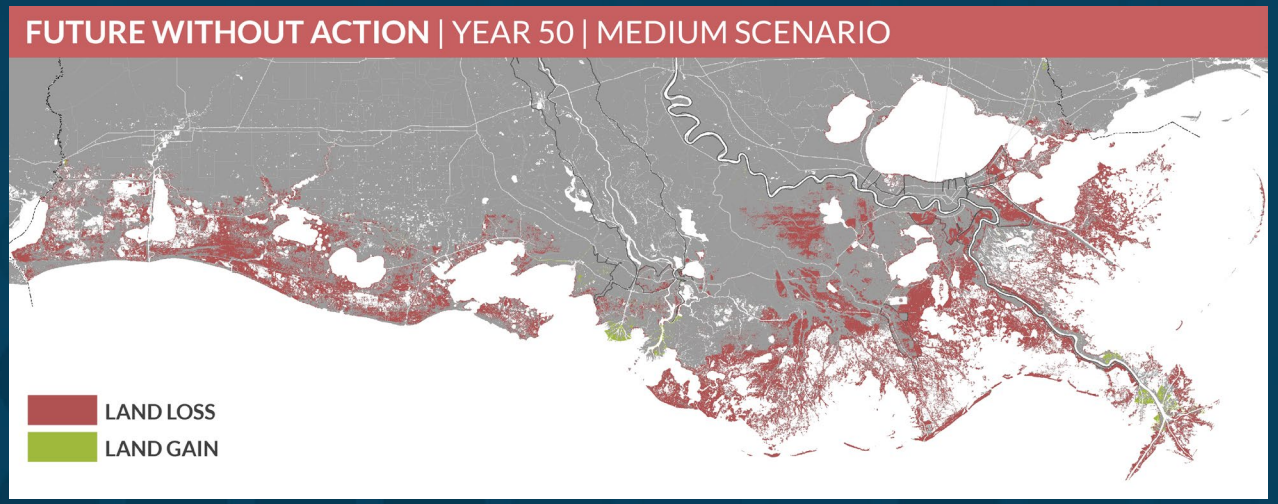
Threats & Special Circumstances

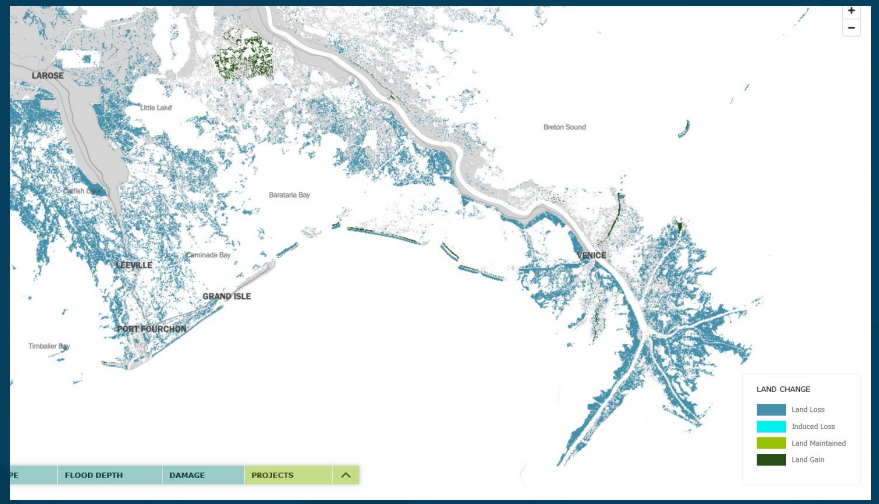
Barataria & Terrebonne Basins Have the Highest Land Loss Rates

- Terrebonne: ~502 Square Miles (~321,700 Acres) Lost Since 1932 (*BTNEP*)
- Barataria: ~432 Square Miles (~277,000 Acres) Lost Since 1932 (*BTNEP*)

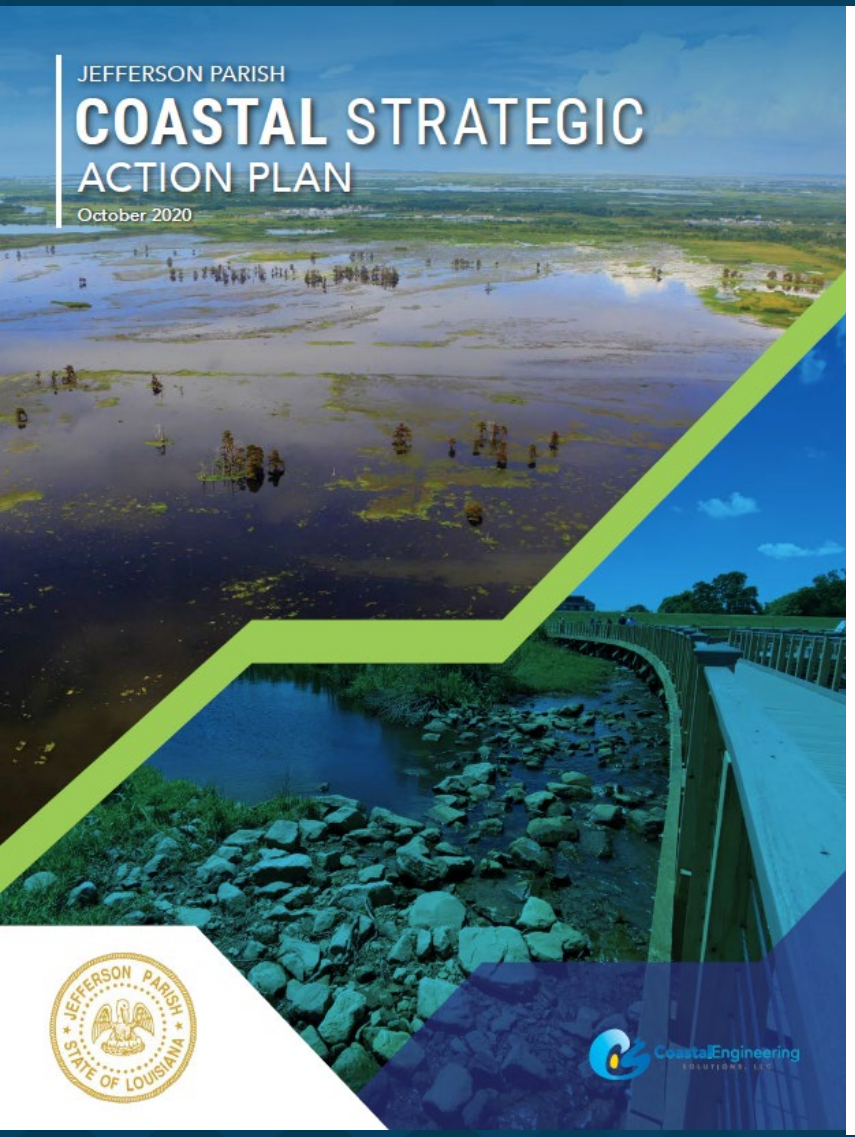
Barataria Land Bridge Critical to Louisiana Resiliency

- LA Comprehensive Master Plan for a Sustainable Coast (*CPRA 2023*)





Jefferson Parish Coastal Strategic Action Plan



UPPER BARATARIA TERRACING PROJECT JP-23

Department of Ecosystem & Coastal Management
Jefferson Parish Government
(504) 736-6719
JPCoastalZone@jeffparish.net

OVERVIEW

Proposed project is part of the Barataria Landbridge, located east of the Barataria Waterway and south of The Pen. The project would create a terrace field with in-situ borrow within an open water area for an estimated project cost between $1M and $2M.

STRATEGY

Terraces are a cost-effective option to create wetland habitat while reducing shoreline and interior marsh erosion due to wind-driven waves against the hurricane protection system.

PROGRESS TO DATE

This project is currently in the planning phase. Jefferson Parish has applied for a North American Wetlands Conservation Act Grant.

PROJECT MAGNITUDE
NON-TRADITIONAL **LOCAL** REGIONAL LARGE

ESTIMATED COST
≤1M 50M 100M ≥150M

ACRES
1 100 500 1000 ≥ 2000

PROJECT LEAD
CPRA JEFF PARISH GILD LILD **OTHER**

STATUS
CONCEPTUAL PLANNING DESIGN CONSTRUCTION

BARATARIA BASIN (BA)
Council District 1

UPPER BARATARIA TERRACING PROJECT JP-23

BARATARIA BASIN (BA)
Council District 1

https://www.jeffparish.net/departments/coastal-management/coastal-strategic-action-plan

Funding Analysis – Opportunity Matrix

Opportunity Name	Lead Agency/Org.	Funding Type	Minimum Reque	Maximum Reque	Match R	Available in 2020/20	RFP Timefran	Frequen	Eligible Project Types	Opportunity Description
Coastal and Marine Habitat Restoration Grants	NOAA	Federal	$75,000	$3,000,000	1:1	$4,000,000	April	Annual	Habitat restoration projects include, degraded or altered marine, estuarine, coastal, and freshwater, fish habitats, or techniques that provide species access	Supports restoration projects that use a habitat-based approach to rebuild productive and sustainable fisheries, contribute to the recovery and conservation of protected resources, promote healthy ecosystems, and yield community and economic benefits.
Fishing for Energy Partnership Grants	NFWF	Federal, Private	$100,000	$300,000	None	$500,000	March	Annual	Derelict Gear Removal, Management, Outreach & Education	Grant funding to support strategies to reduce the impacts of derelict fishing gear to marine and coastal environments and navigational safety.
Five Star Urban Waters Restoration Grants	NFWF	Federal, Private	$20,000	$50,000	1:1	$1,500,000	January	Annual	On-the-Ground Restoration; Environmental Outreach, Education & Training; Community Partnerships	Seeks to develop community capacity to sustain local natural resources for future generations by providing modest financial assistance to diverse local partnerships focused on improving water quality, watersheds and the species and habitats they support.
Marine Debris Prevention and Removal Grants	NOAA	Federal	$150,000	$750,000	1:1	$5,000,000	January	Annual	Marine Debris Remova, Marine Debris Prevention Programs	Funding that supports locally driven, community-based marine debris removal projects.
National Coastal Resilience Fund	NFWF	Federal, Private	$125,000	$5,000,000	1:1	$31,000,000	June	Annual	Community Capacity Building and Planning; Site Assessment and Preliminary Design; Final Design and Permitting; Restoration & Monitoring	Investments to restore and strengthen natural systems so they can protect coastal communities from the impacts of storms, floods, and other natural hazards and enable them to recover more quickly, and enhance habitats for fish and wildlife.
National Coastal Wetlands Conservation Grants	USFWS	Federal	-	$1,000,000	25%	$18,000,000	July	Annual	Acquisition, restoration, or enhancement of coastal wetlands	Grants to protect, restore and enhance coastal wetland ecosystems and associated uplands.
NEP Coastal Watersheds Grant Program	EPA (via Restore America's Estuaries)	Federal	$75,000	$250,000	25%	$1,000,000	November	Annual	Nutrient Reduction, Habitat Restoration, Coastal Flooding and Erosion Reduction	Habitat restoration projects include, but are not limited to, activities that contribute to the return of degraded or altered marine, estuarine, coastal, and freshwater, diadromous fish habitats to functioning habitats, or techniques that provide species access to their historic habitats.
North American Wetlands Conservation Act Grants	USFWS	Federal	$50,000	$1,000,000	1:1	$130,000,000	February, July	Biennial	Acquisition, restoration, enhancement, wetalnd establishment	Grants increase bird populations and wetland habitat, while supporting local economies and American traditions such as hunting, fishing, bird watching, family farming, and cattle ranching.
Partners for Fish and Wildlife Program	USFWS	Federal	-	$25,000	1:1	-	-	-	Restoration, enhancement, management on private lands	Provides technical and financial assistance to landowners interested in restoring and enhancing wildlife habitat on their land.

National Coastal Resilience Fund (2022)

Constructing Marsh Terraces in Upper Barataria Basin of Jefferson Parish (LA)

Grantee: Jefferson Parish Coastal Management

Grant Amount:. $2,489,500

Matching Funds:. $155,500

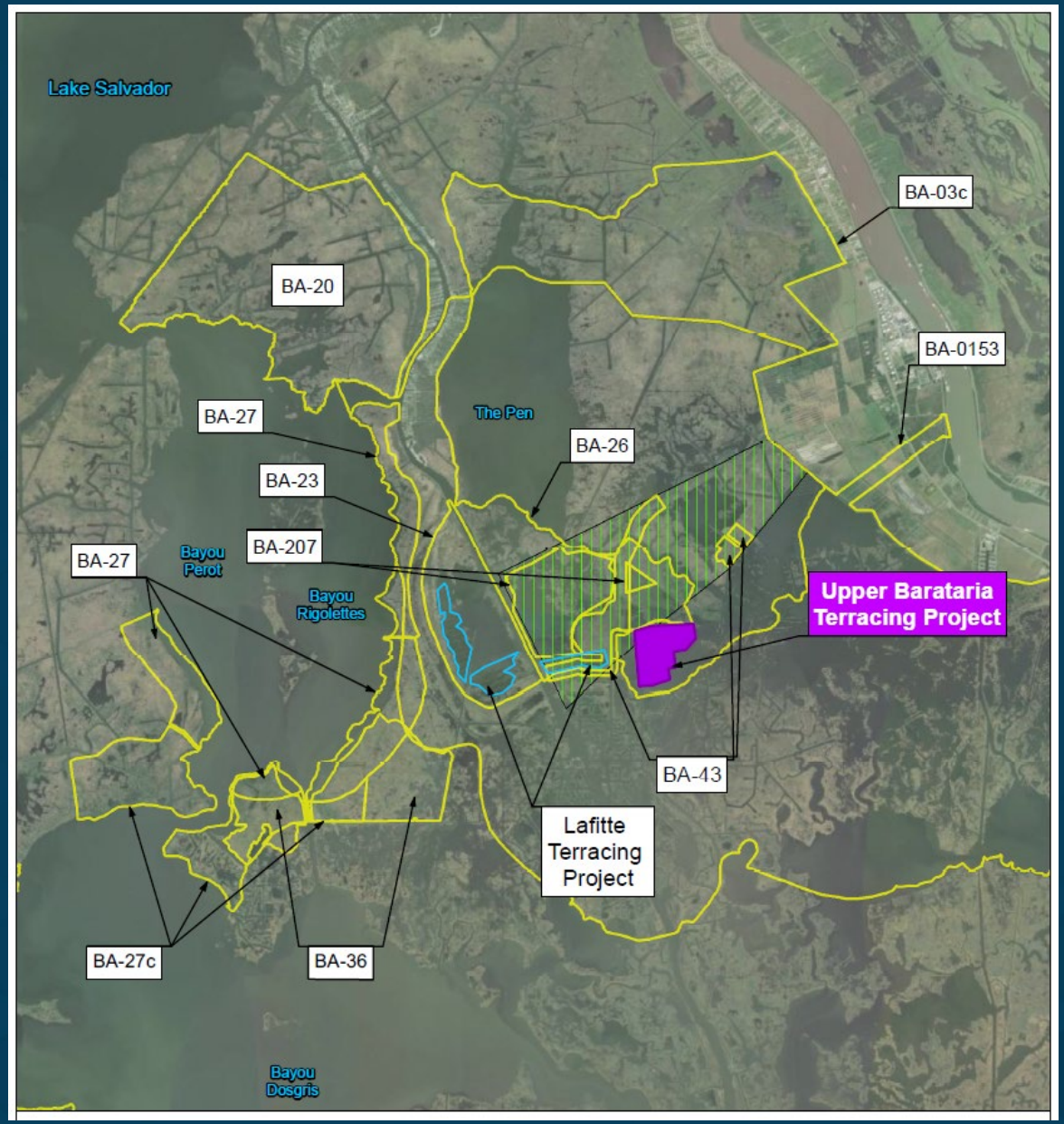
Total Project Amount:. $2,645,000

"Project will employ terrace platforms to capture sediments, protect critical habitat from wind and wave erosion and increase resiliency to coastal storms."

Upper Barataria Terracing

PROJECT METRICS

- 450 Acres of Marsh Restoration
- Built with On-Site Material
- Stabilized with Native Marsh Vegetation
- Capture & Stabilize Sediment (BA-0153)
- Reduce Fetch & Erosion to Adjacent Marsh
- 20-Year Conservation Easement
- Joint Permit Received (DNR/USACE)
- Adjacent to BA-207 (NOAA)



Terraces: A Tool for Landscape Restoration

TERRACE EXAMPLE: West Bay Land Building

- Sediment Retention Enhancement Devices (SREDs) built by USACE
- Built in West Bay Sediment Diversion (MR-03) Outfall Area

Terraces: A Tool for Landscape Restoration

Habitat Creation

- Low elevation intertidal zones (edge habitat- foraging)
- High supratidal areas (terrace crown – refuge, foraging and nesting)

Reduction of Fetch & Tidal Forcing

- Erosion reduction & marsh protection
- Increased water clarity (promotes SAV)

Sediment Capture

- Land-building
- Marsh restoration

Birds, Wildlife, and Habitat Benefits

Waterfowl: Northern Pintail, Mottled Duck, Wood Duck, Canvasback, American Widgeon

- Iconic Waterfowl, Priority NAWCA Species
- Terrace Habitat Utilization & Surrounding Open Water Areas

Other Birds:

- American Bittern, Reddish Egret (emergent wetlands)
- Forester's Tern, American Oystercatcher, Black Skimmer (bare ground & mudflats on terrace slopes)
- Brown Pelican (LA State Bird – open water & mudflats)

Essential Fish Habitat (EFH) for Red Drum, Shrimp, Reef Fish & Coastal Migratory Pelagics

Public Benefits and Access

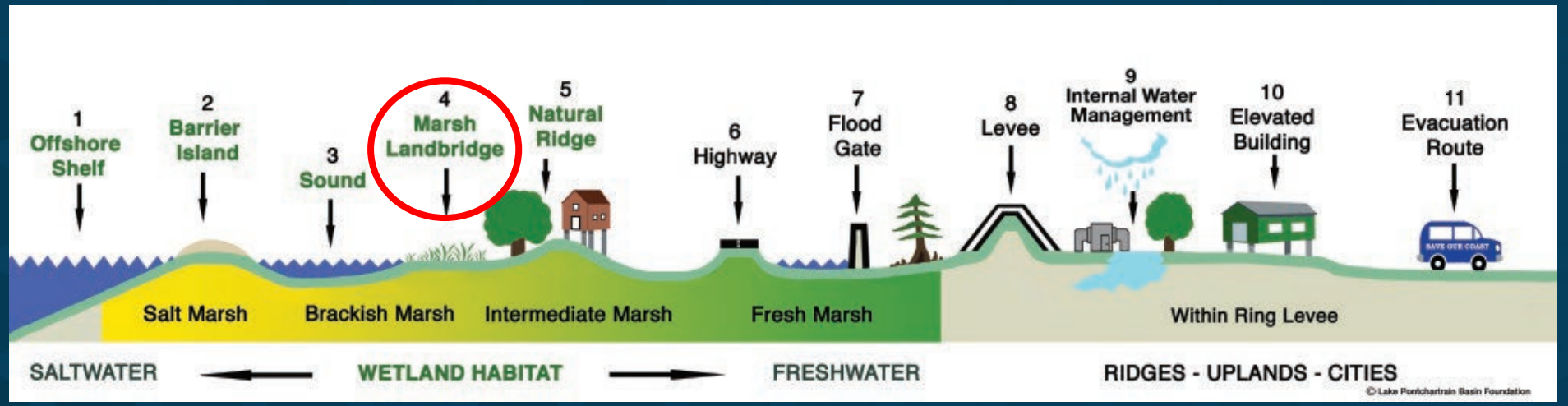
Local Economic Benefits

- Increased Recreational Fishing & Hunting Opportunities
- Commercial Guides Supporting Fishing & Hunting

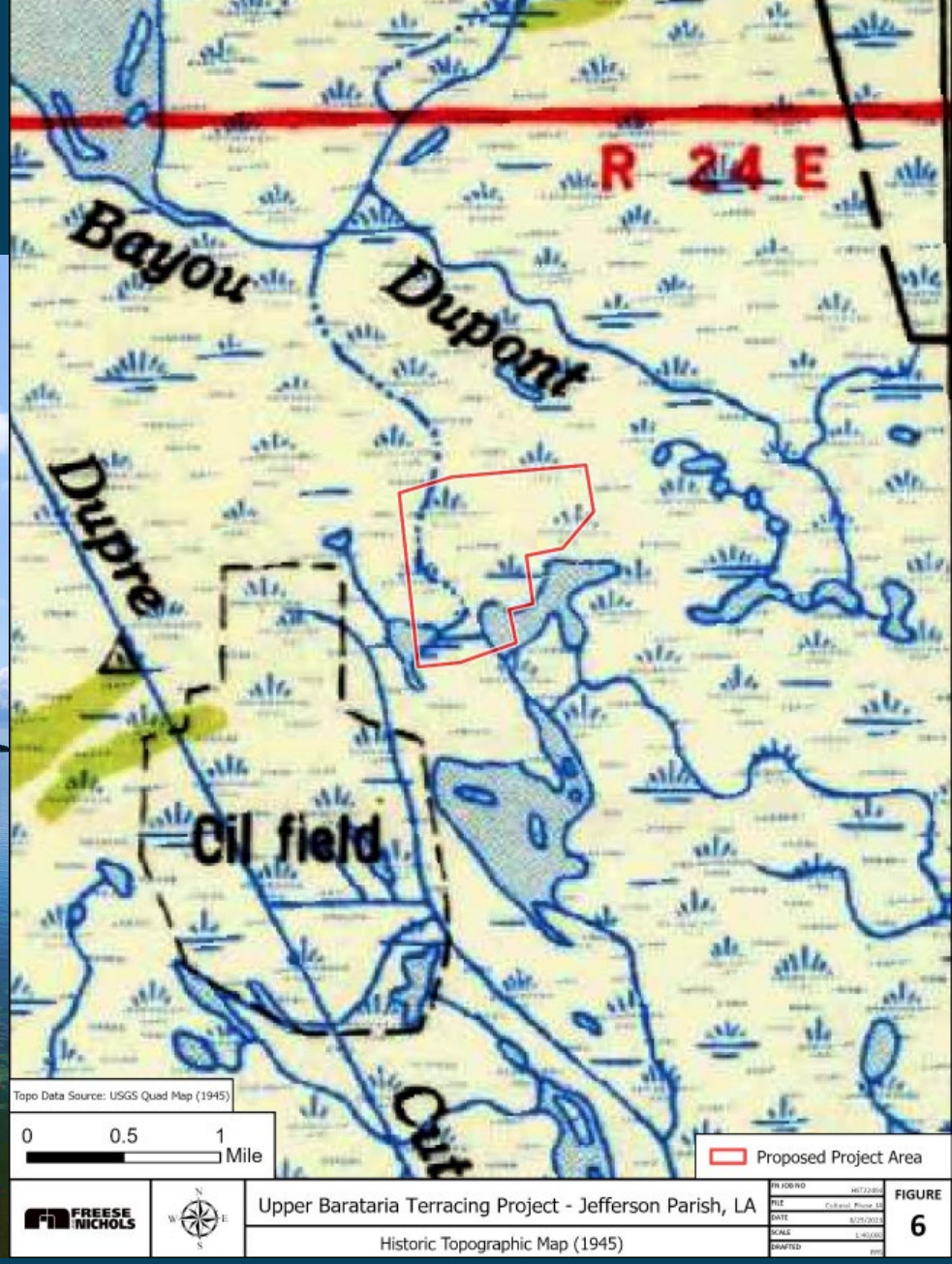
Public Access

- Site is Publicly Accessible for Recreation via Open Water
- School Board Property - Hunting Leases

Multiple Lines of Defense Strategy to Increase Resiliency

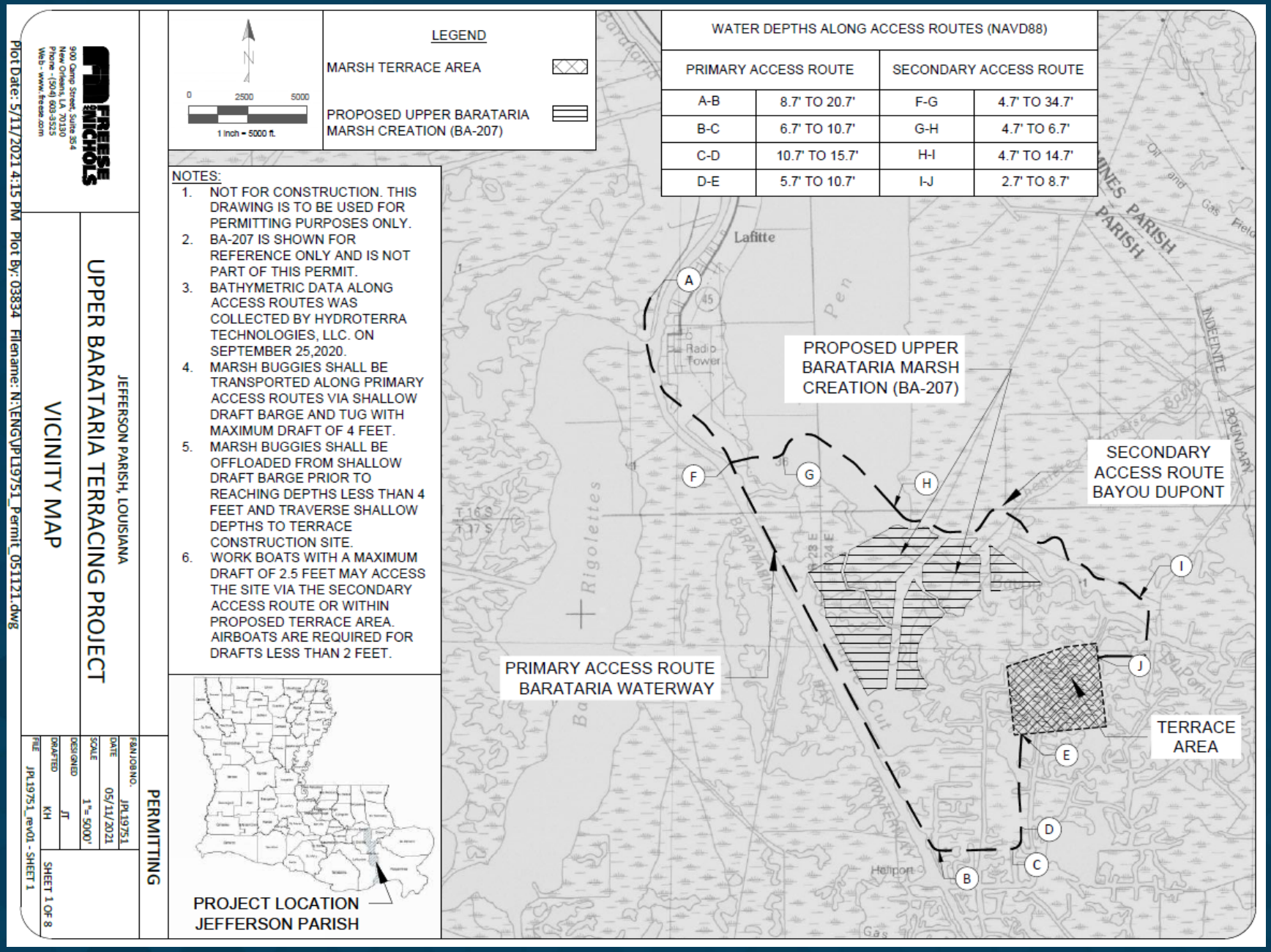


Current Conditions



Access Routes

- Primary:
  - Barataria Waterway
- Secondary:
  - Bayou Dupont
- Primary Access Point
  - Lafitte: 28 miles



Marsh Terrace Design Parameters

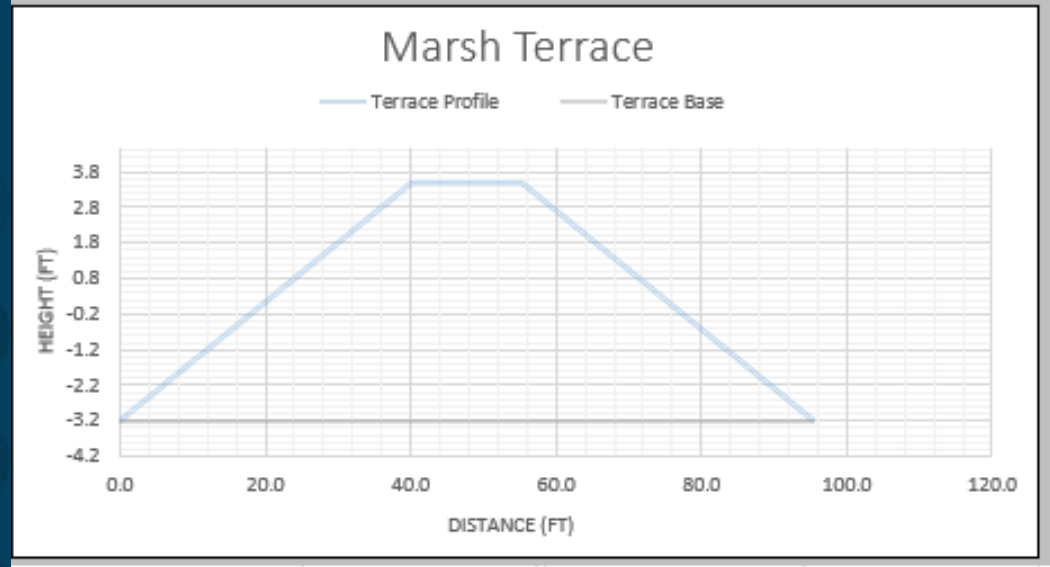
Ground Elev (ft, rel. datum)	-3.2	DesignArea (sq ft)	369.8
Starting Station	0	Unit Fill (cy/ft)	13.7
Crest Elev (ft, rel. datum)	3.5	Total Fill (cyd)	625,578
Terrace Height (ft)	6.7	Estimated Fill Cost ($)	$2,345,915.67
Crest Width (ft)	15	Cost/LF ($)	$51.37
Bottom Width (ft)	95	Area (SF per LF)	48.7
Lee Side Slope (1:H)	6	Planted Area (acres)	51.1
Stoss Side Slope (1:H)	6	Field Footprint (Acres)	315
Trc to Trc Spacing (ft)	300	Spacing (Toe-Bank)	79
Length (ft)	45,670	Planting Cost	357,548
Unit Cost ($/cyd)	$3.75	Total Cost	$ 2,703,463.69
Unit Cost ($/acre)	$7,000.00	Available Budget	$ 822,000.00
			1,881,464

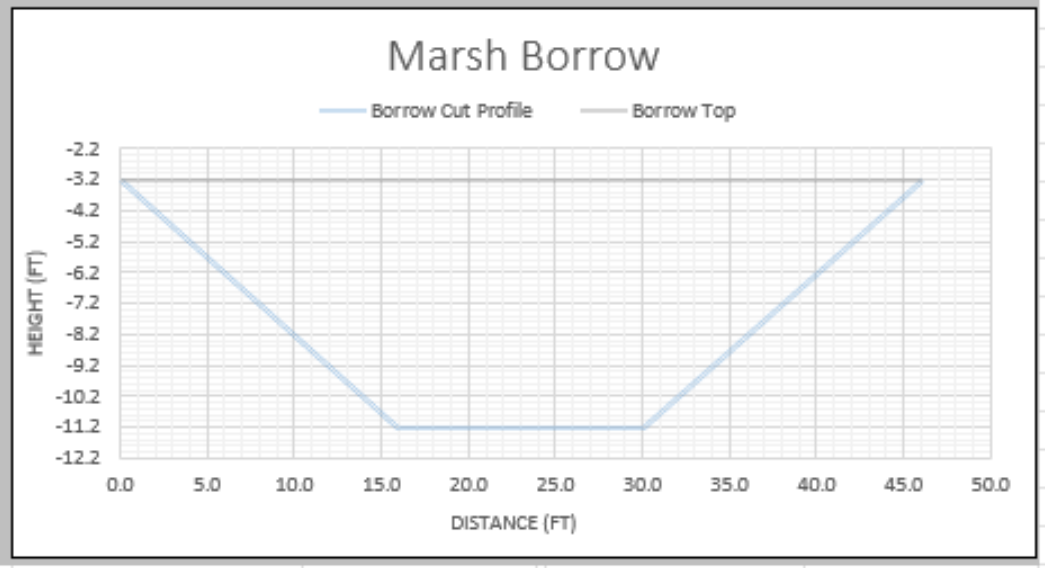
Marsh Borrow Area Design Parameters

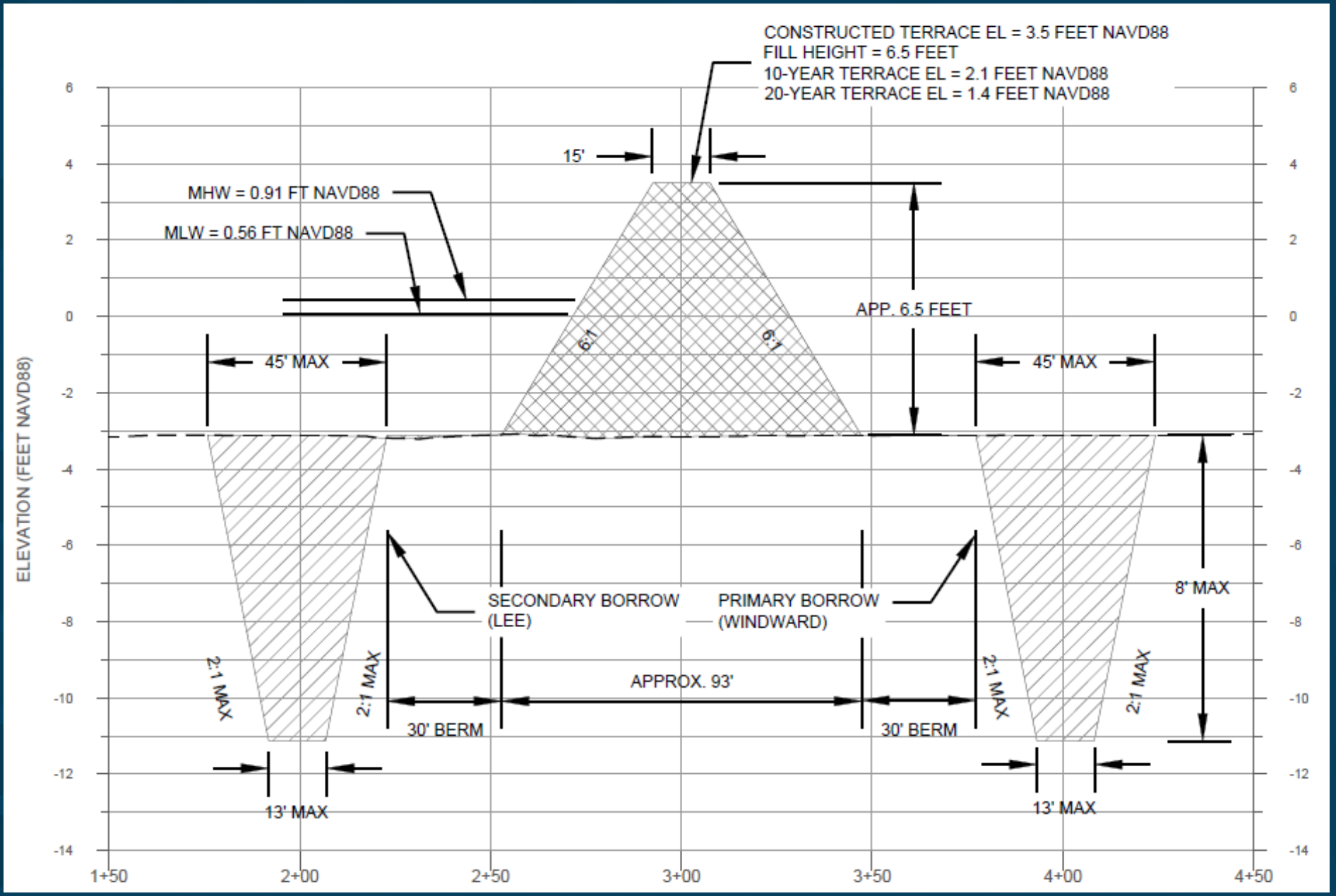
Ground	-3.2	Borrow Area (sq ft)	240.4
Starting Station	0	Unit Cut (cy/ft)	8.9
Bottom Elev (ft, rel. datum)	-11.2	Total Cut (cyd)	813,251
Borrow Depth (ft)	8	Estimated Cut Cost ($)	$2,345,915.67
Top Width (ft)	46	Cost/LF ($)	$51.37
Bottom Width (ft)	14	Borrow Adjustment	-35.0%
Lee Side Slope (1:H)	2		480.792
Stoss Side Slope (1:H)	2		1.3
Bern Width (feet)	30		17.8
Length (ft)	45,670		481
Unit Cost ($/cyd)	$2.88		813250.7644

Profile Station	Terrace Profile	Terrace Base	Area
0.0	-3.2	-3.2	0.0
40.2	3.5	-3.2	134.7
55.2	3.5	-3.2	100.5
95.4	-3.2	-3.2	134.7

Profile Station	Borrow Cut Profile	Borrow Top	Area
0.0	-3.2	-3.2	0.0
16.0	-11.2	-3.2	64.0
30.0	-11.2	-3.2	112.4
46.0	-3.2	-3.2	64.0



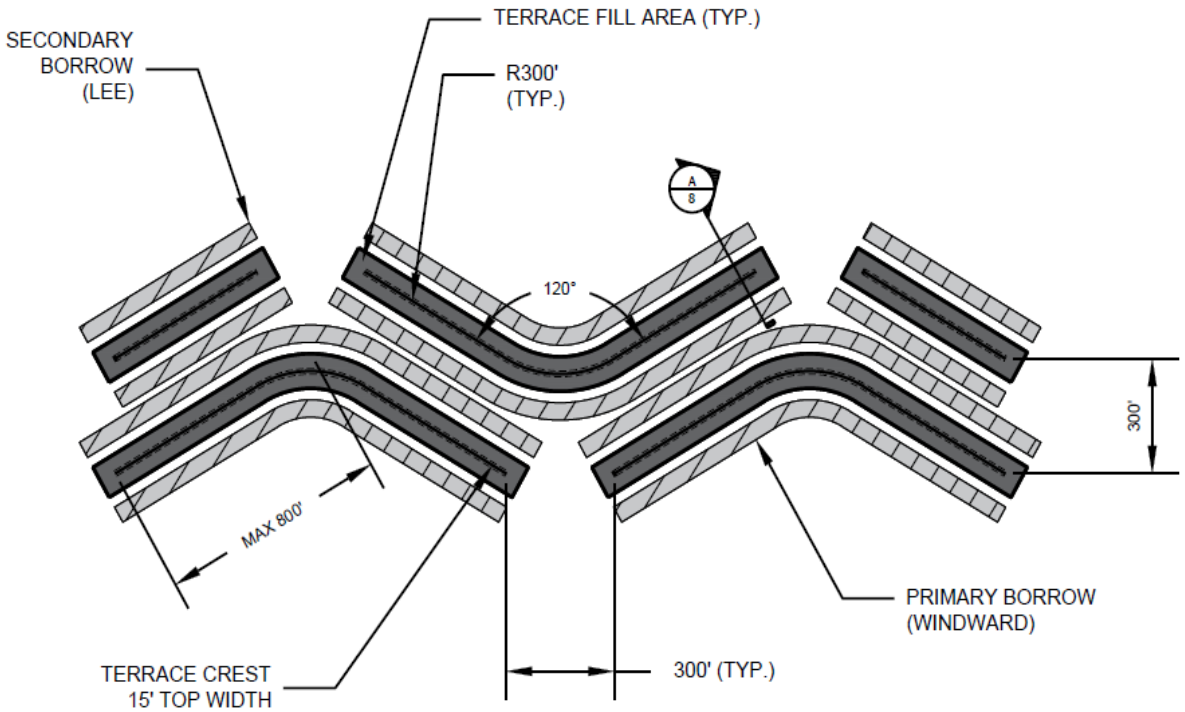




Terrace Side Slopes 6:1

Crown Width of 15 FT

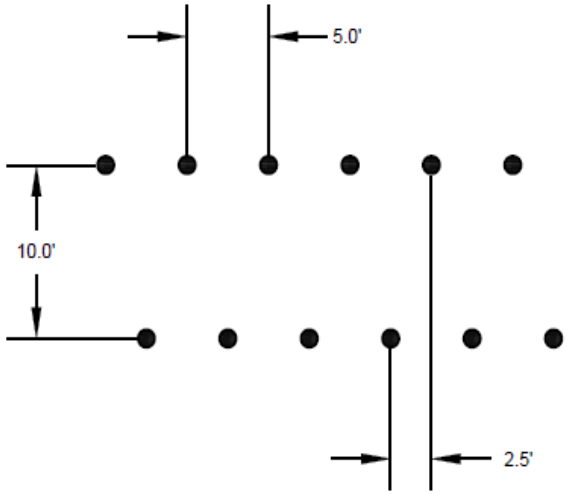
Top Elevation of 3.5 FT



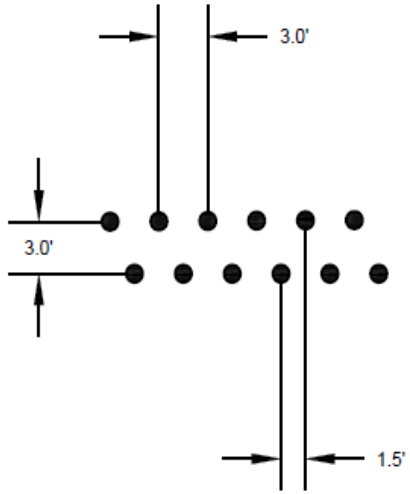
TYPICAL TERRACE PLAN

0 200 400

HORIZONTAL GRAPHIC SCALE IN FT



SEASHORE PASPALUM, BITTER PANICUM, MARSHAY CORDGRASS, SEA OATS & SALT GRASS SPACING DETAIL



SMOOTH CORDGRASS SPACING DETAIL

TYPICAL TERRACE PLANTING PLAN

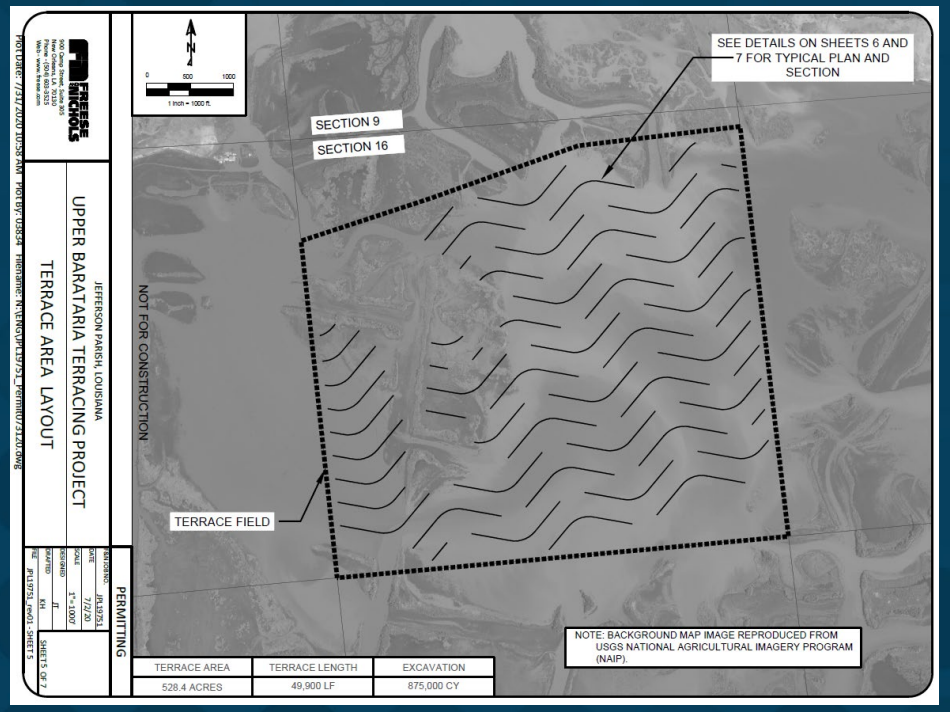
0 10 20

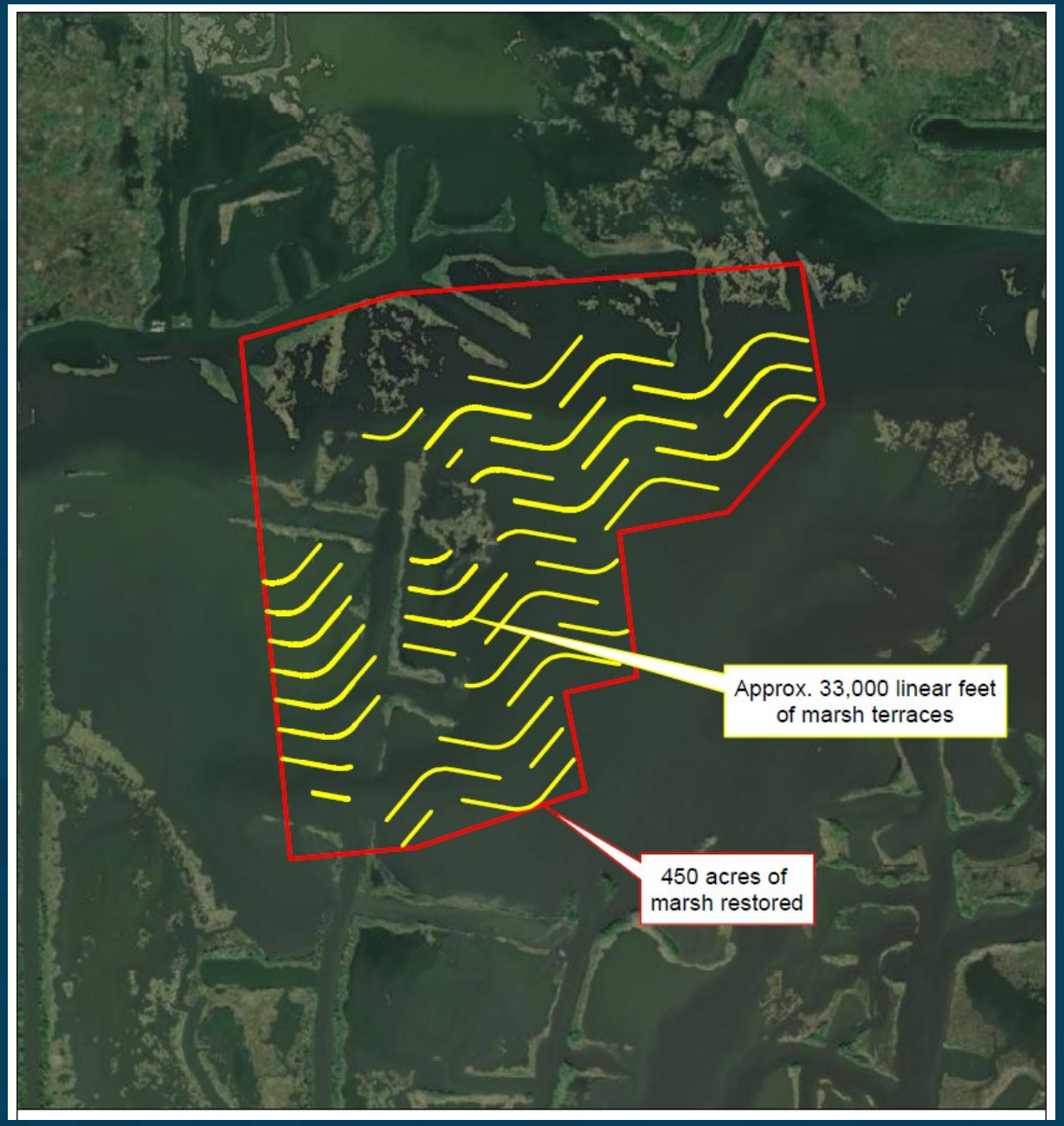
HORIZONTAL GRAPHIC SCALE IN FT

Terrace Design

Design to Maximize Footprint on School Board Property

- 49,900 LF Terraces
- 528.4 Acres Marsh Habitat





Monitoring

Marsh Restoration and/or Living Shorelines					
Metric (include units)	**Difference to Recommended Methods and Protocols (if any)**	**Spatial extent of metric monitoring**	**Baseline year**	**Frequency/ Timing**	**Data Limitations/ Considerations**
Percent Cover of biomass by species or cover type (% ranging from 0-100)	Successfully restored marsh will be determined by at least 80% survival of planted vegetation one year post-construction.	Survival of planted vegetation monitored on a per terrace basis, with each terrace targeted at 80% survival.	Not applicable – currently open water (but we know that at one time this area was marsh habitat that has now subsided).	Monitoring will occur quarterly over the course of the 1-year post construction monitoring period.	Drone imagery will be used to monitor survival of planted vegetation more efficiently on a quarterly basis.
Elevation (cm)	During construction of terrace platforms, surveys will be conducted to ensure that terraces are built to spec (including required elevation).	All terrace platforms will be surveyed during construction.	Not applicable – currently open water.	Monitoring will occur quarterly over the course of the 1-year post construction monitoring period.	Some settling of materials is expected to occur over the initial maintenance period, which will be reflected in the quarterly monitoring.
Shoreline Position	Terrace shorelines will be monitored to document erosion and/or subsidence for at least one year post-construction.	Terraces will be monitored on both sides along lateral extent of each terrace platform.	Not applicable – currently open water.	Monitoring will occur quarterly over the course of the 1-year post construction monitoring period.	Drone imagery will be used to monitor shoreline erosion and document changes on a quarterly basis.

Project Schedule

Consistency Determination Received (DNR)	June 28, 2021
Construction Permit Received (USACE)	May 23, 2022
NFWF Project Period Initiated	March 1, 2023
Final Engineering & Design	***October 2023***
Anticipated Bid Advertisement	November 2023
Construction Duration	120 Days
Monitoring Duration (Post-Construction)	1 Year

Questions?

Matt Salmon: (504) 291-3496, matthew.salmon@freese.com