



GALVESTON BAY
FOUNDATION

Guardian of Galveston
Bay since 1987



Living Shorelines Case Study

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Living Shorelines Consultant

Mission

The mission of Galveston Bay Foundation is to preserve and enhancing Galveston Bay as a healthy and productive place for generations to come.

Vision

We envision a future Galveston Bay that is brimming with vitality, connected to people, and contributing to the community in every possible way.

Galveston Bay Foundation Program Areas



Education



Restoration



Water Protection



Conservation



Advocacy



Overview

White Project

Location: East Bay/Smith Point

Built: 240 LF Breakwater

Used: 195 tons/95 cyd concrete

Protected: ~300 ft shoreline protected

Restored: ~ 1 acre potential marsh

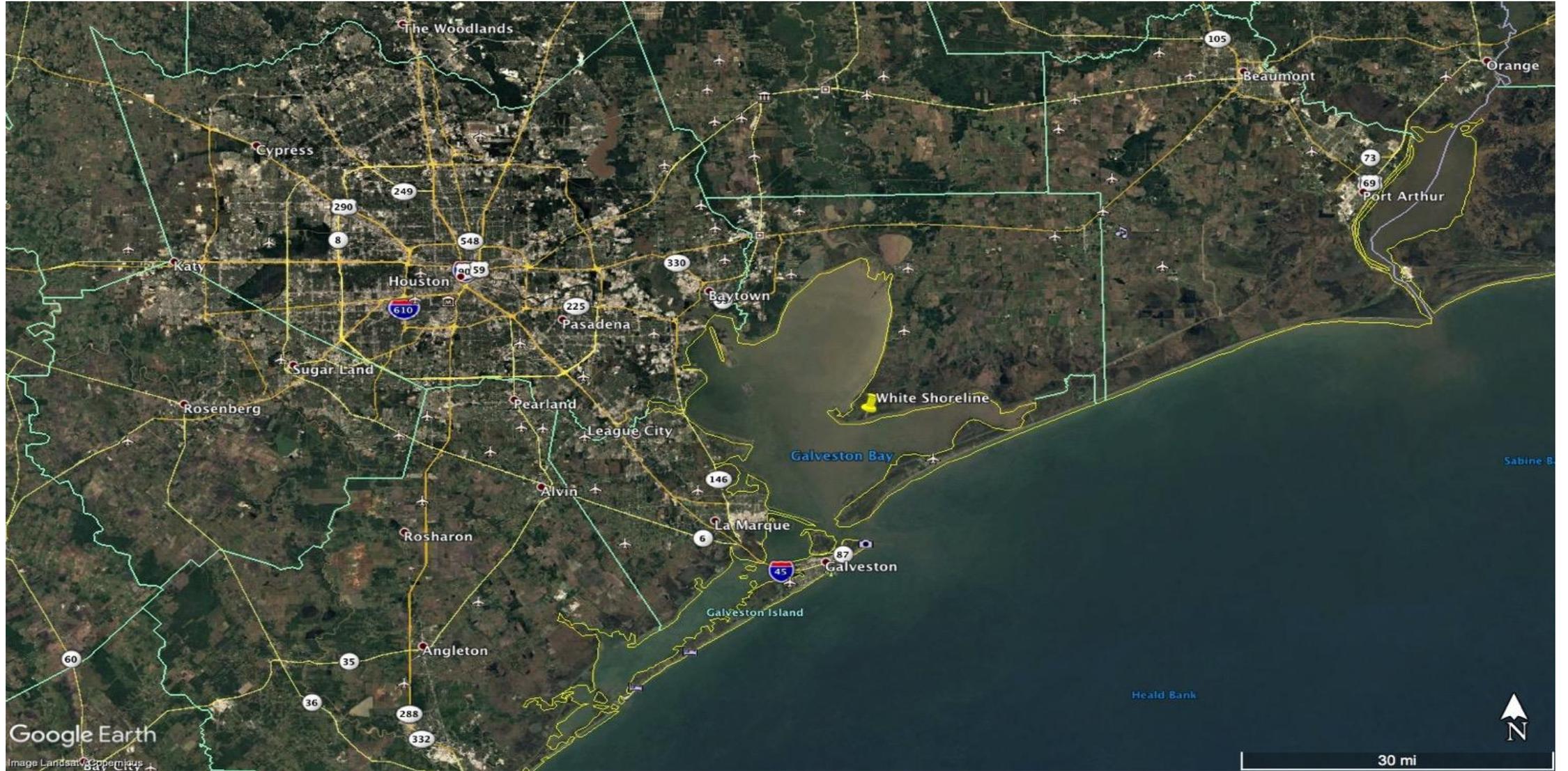
Cost: \$24,596.00

Google Earth

200 ft



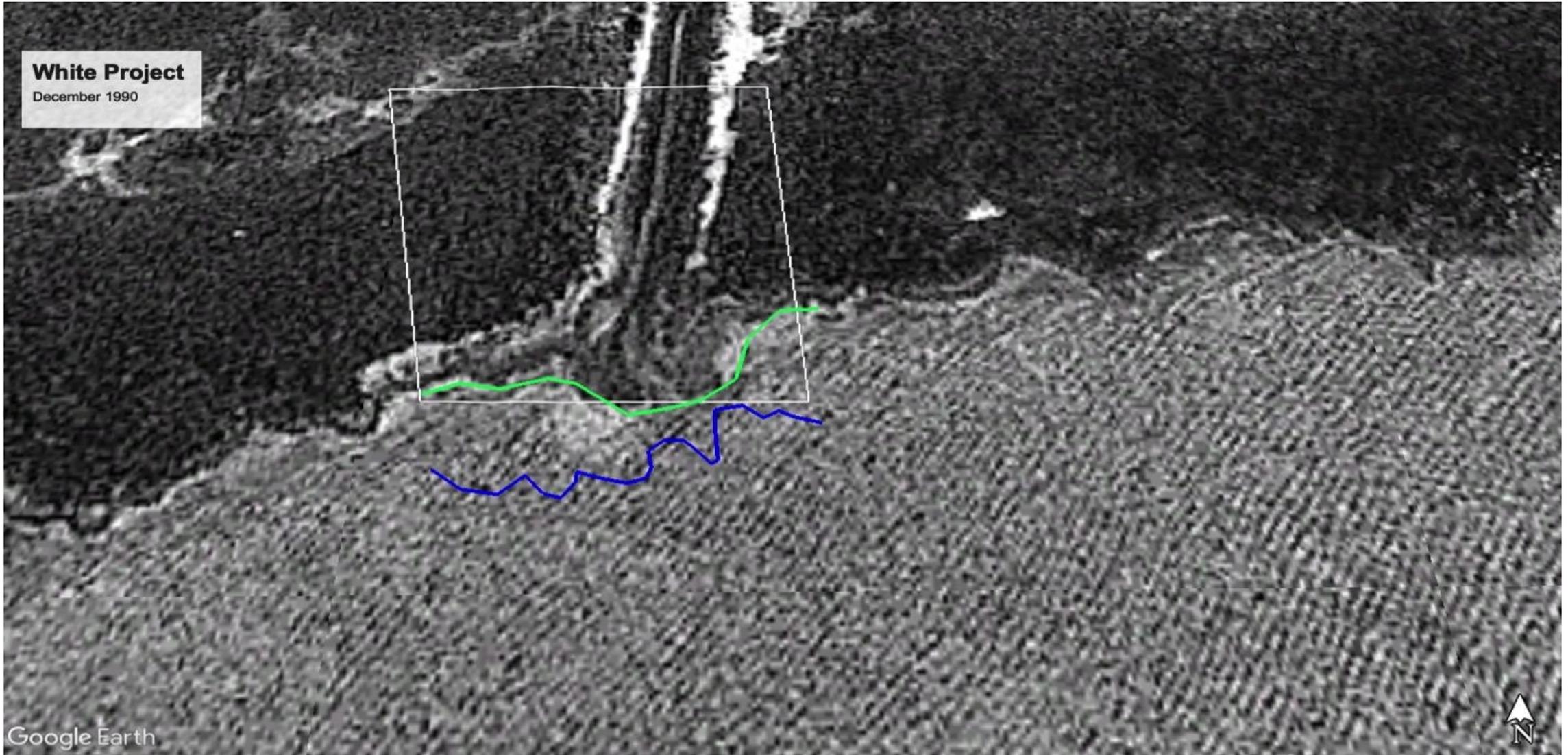
Project Location



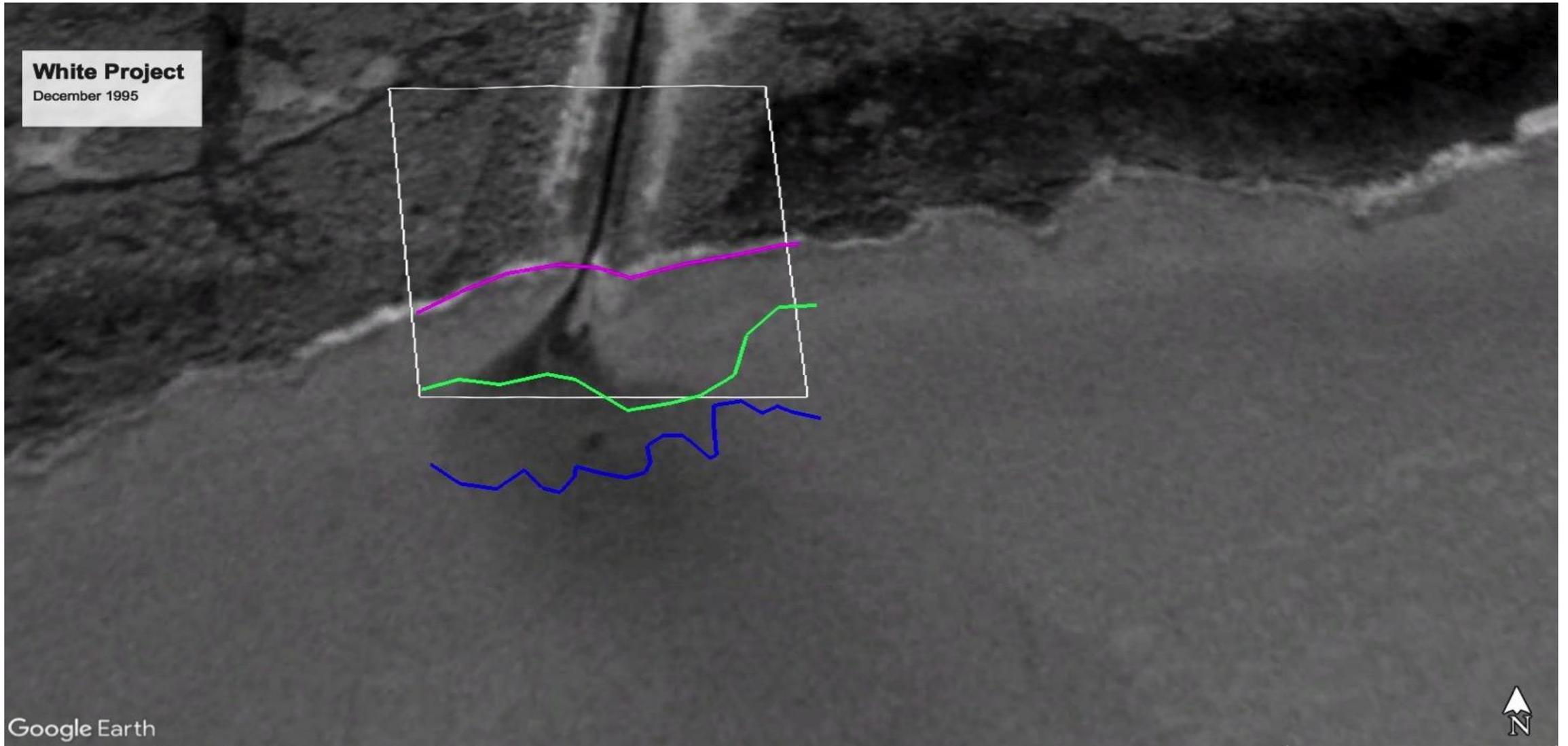
Project Site Erosion



Project Site Erosion



Project Site Erosion



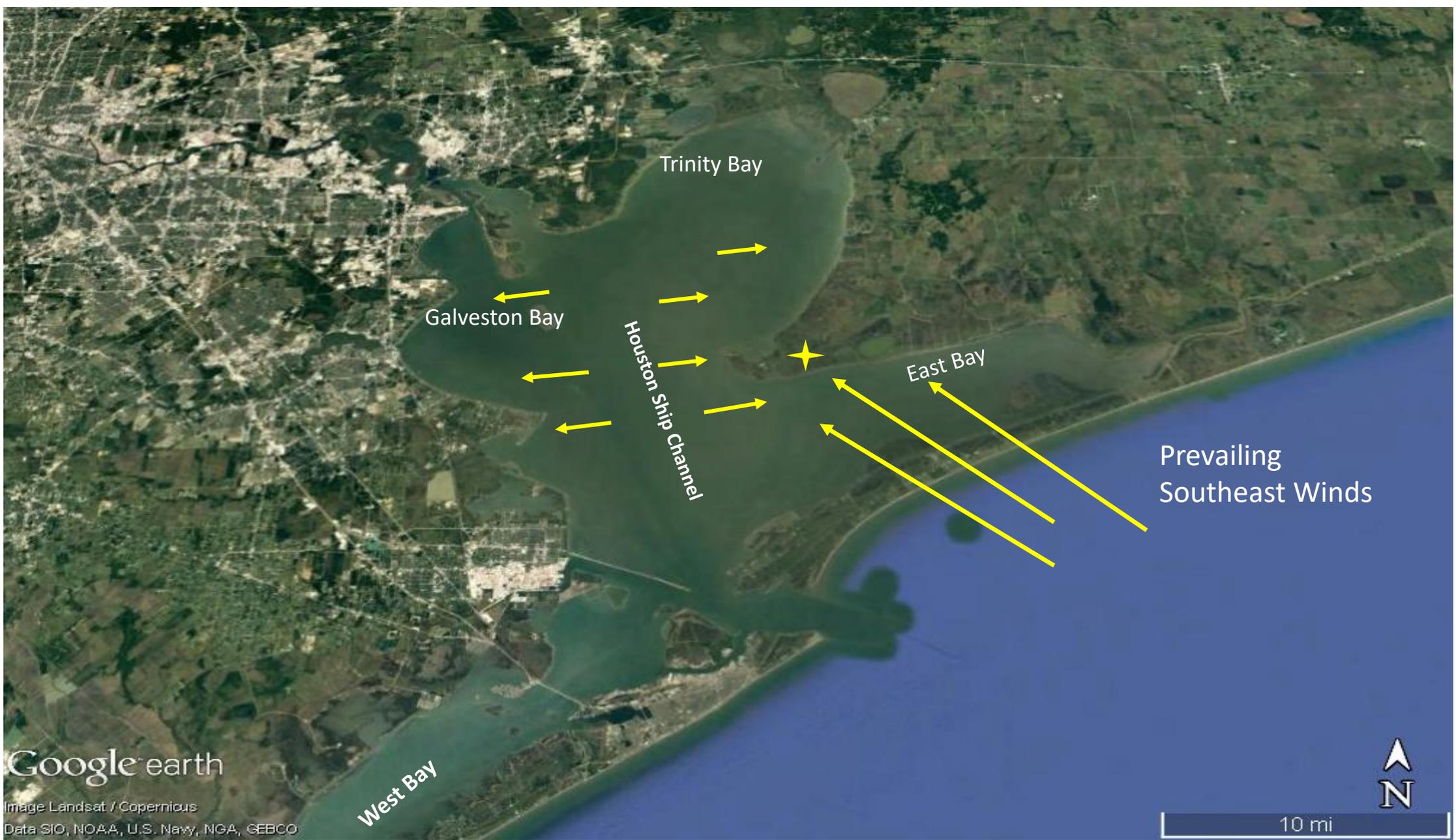
Project Site Erosion



- Land retreated 141 yds (423ft)

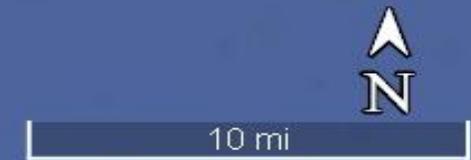
Erosion due to:

- Prevailing southeasterly winds
- Barge wakes
- Ship wakes



Google earth

Image Landsat / Copernicus
Data SIO, NOAA, U.S. Navy, NGA, GEBCO



Project Site Erosion



Project Site Erosion



Project Site Erosion



Project Site Erosion



Why a Living Shoreline?





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Unique Site Features



Google Earth

1000 ft

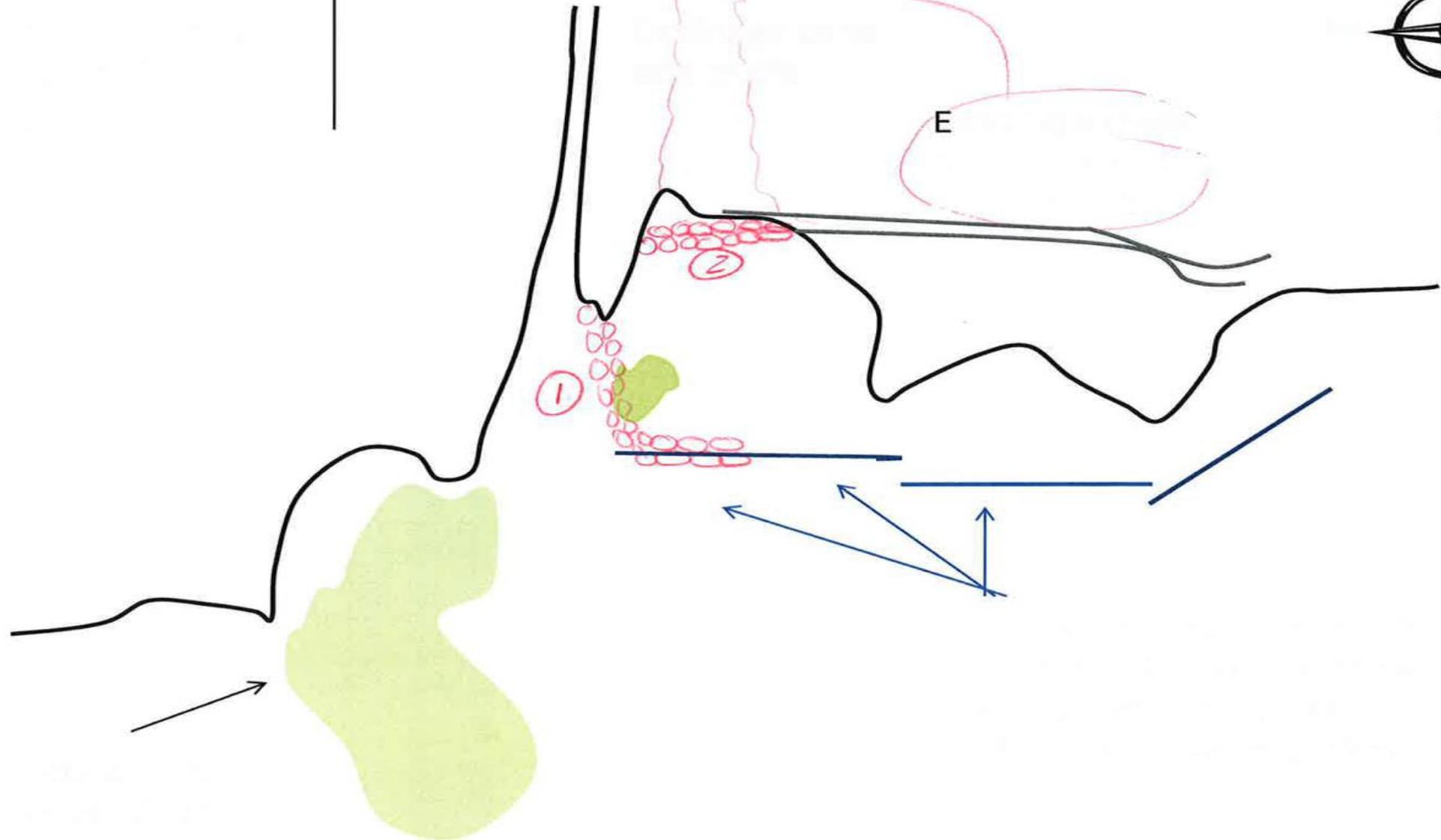
Design Challenges

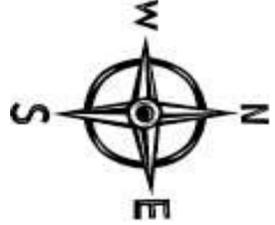


Design Solutions



Fancy Design Drawings



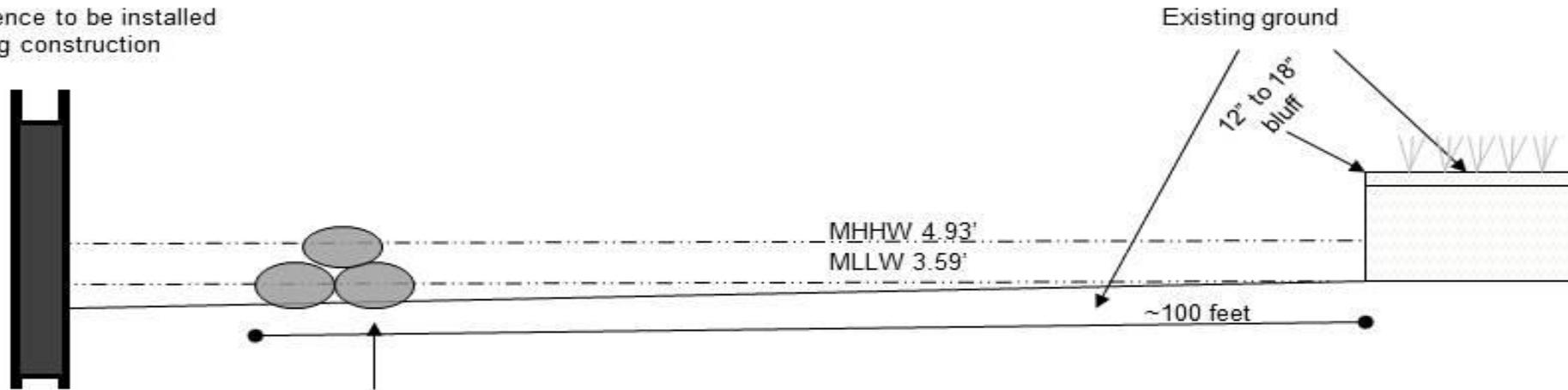


Trinity Bay

Cross Section Before

Upland →

Silt fence to be installed during construction



~33.33yd³ of 18" rip-rap placed ~50 to 100' off shore to protect 200LF of shoreline filling ~0.014 acres of existing open water/wetland. Breakwater would be approx 3ft wide at base.

Not to scale

Breakwater calculation:

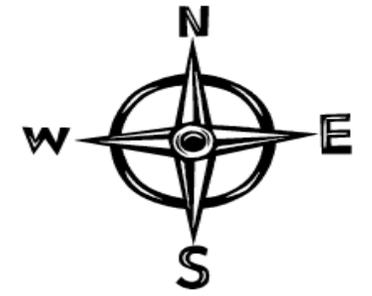
$$200\text{LF} \times 3\text{ft} = 6000\text{ft}^2$$

$$600\text{ft}^2 \times 1.5\text{ft high} = 900\text{cubic feet} = 33.33\text{yd}^3$$

$$600\text{ft}^2 = 0.014 \text{ acres}$$

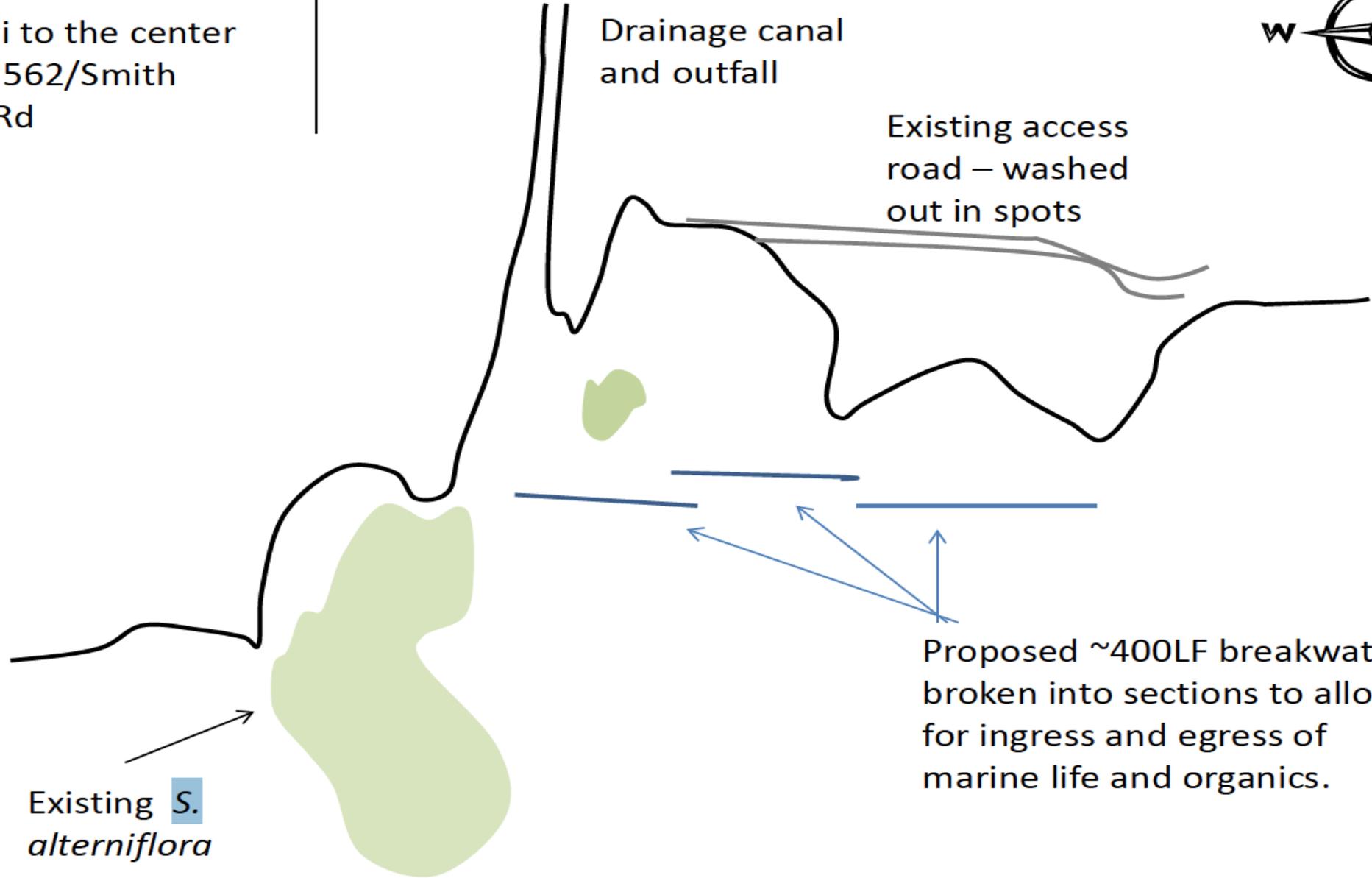
Materials were over-estimated to account for significant settling. If substrate permits, less material will be used.

~1.5mi to the center
of FM 562/Smith
Point Rd



Drainage canal
and outfall

Existing access
road – washed
out in spots



Existing **S.**
alterniflora

Proposed ~400LF breakwater
broken into sections to allow
for ingress and egress of
marine life and organics.

Plan View Post-shoreline Modification

East Bay

Improvement



Improvement

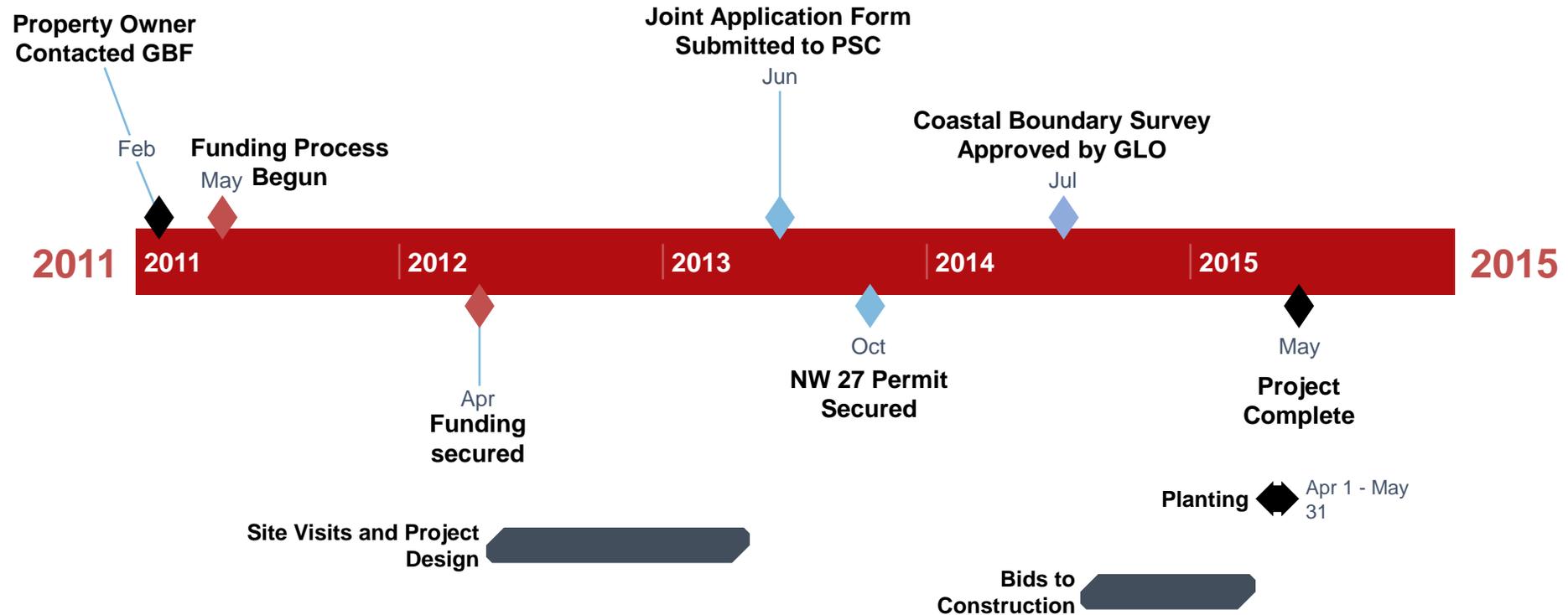


Google Earth

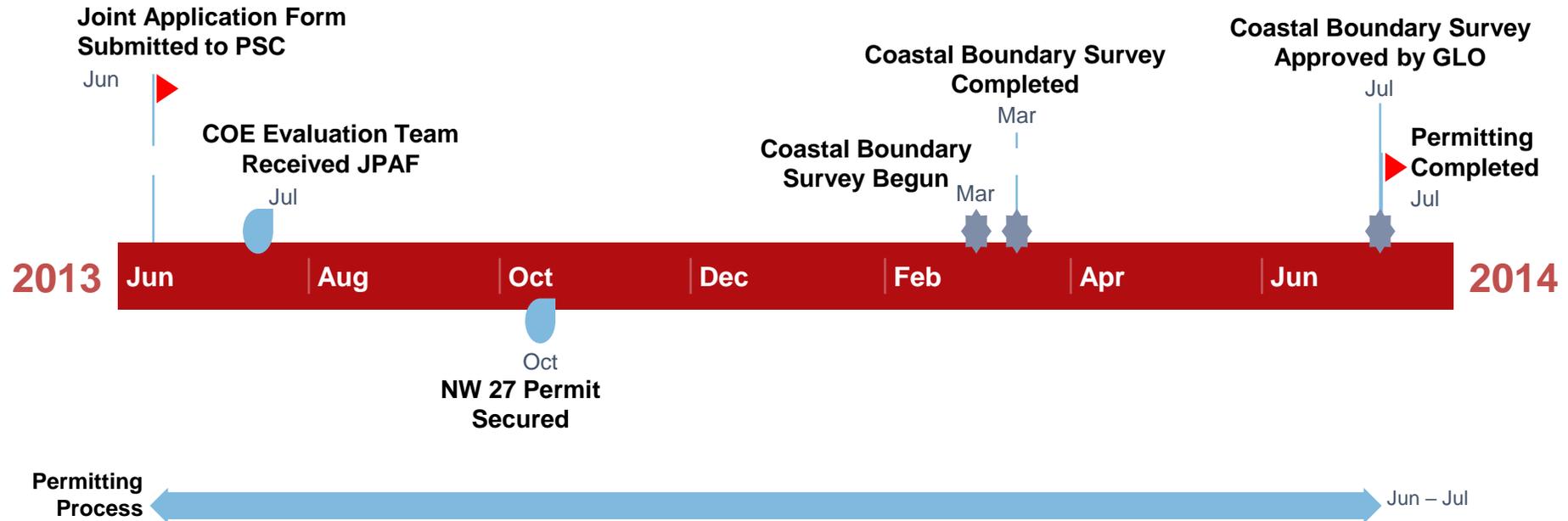




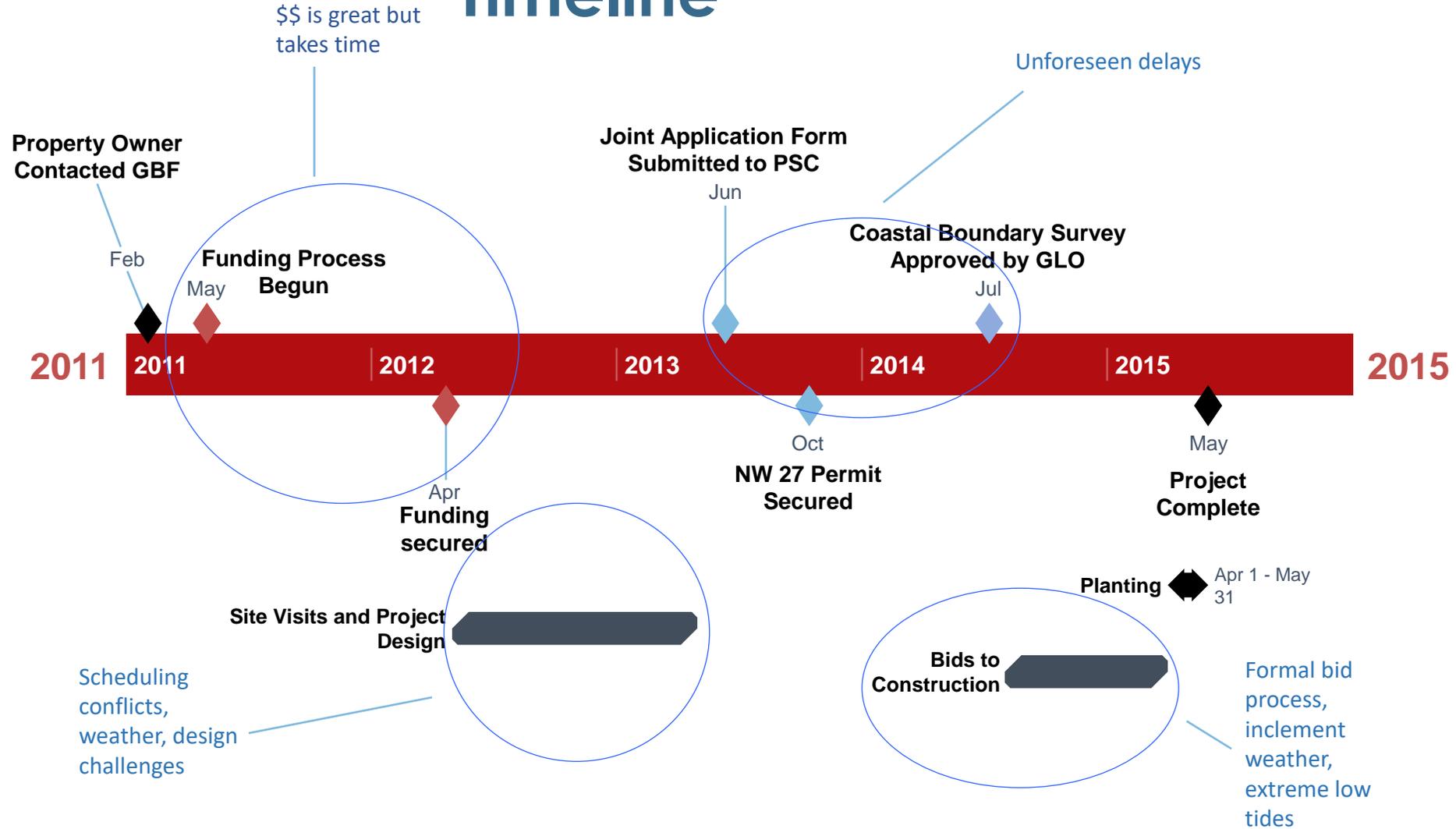
Project Timeline



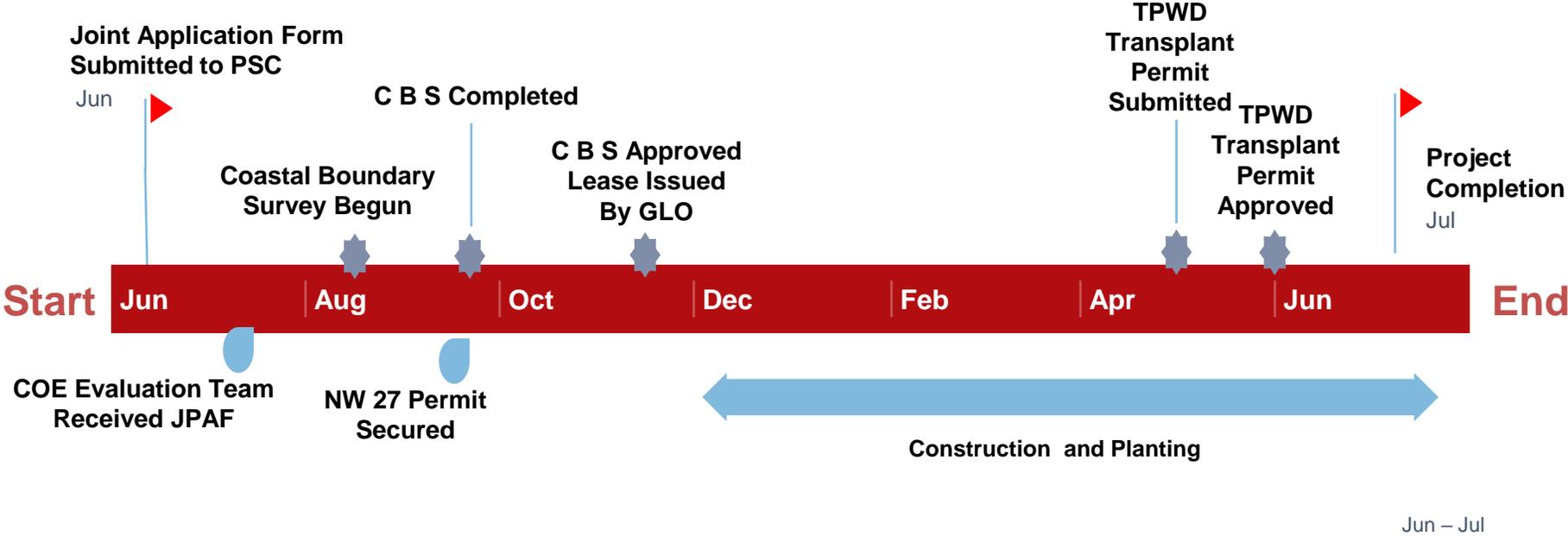
White Permitting Timeline



White Project Timeline



Potential Timeline





Gotchas

Time project based on construction method

- By land: fall/winter when tides are blown out
- By sea: spring/summer when water levels are high to float barges

Make time for the project

- The quicker the project goes, the less likely delays will crop up
- At best, the project will take months.

Utilize Local/Regional Resources

- Texas Parks and Wildlife
- US Fish and Wildlife
- NRCS
- Permit Services Center
- Local NGO's
 - Galveston Bay Foundation
 - Coastal Bend Bays and Estuaries
 - The Nature Conservancy

Go to the Pros

- Environmental Design Firms
- Contractors with Living Shoreline Experience

Advice for Beginners

Get Involved With Galveston Bay Foundation

- **Become a Member:** Galveston Bay Foundation is a membership-based organization. Visit galvbay.org to become a member today!
- **Join an Event:** Galveston Bay Foundation has an event for everyone. Many would not happen without the help of our volunteers!
- **Report Pollution:** Pollution reports are automatically sent to the proper authorities via our mobile Galveston Bay Action Network app. Download the free app on Apple or Google Play stores or visit galvbay.org/GBAN.