

# COASTAL TX PROTECTION AND RESTORATION FEASIBILITY STUDY

## Galveston Island HOA Briefing Study Update

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*"The views, opinions and findings contained in this report are those of the authors(s) and should not be construed as an official Department of the Army position, policy or decision, unless so designated by other official documentation."*



**US Army Corps  
of Engineers**





**Study Name:** Coastal Texas Protection & Restoration Feasibility Study

**Authorization:** Sec. 4091, Water Resources Development Act (WRDA) of 2007  
Public Law 110-114

**Appropriation:** 2014-2019 yr increments thru public law  
2020-2021 thru Bipartisan Budget Act of 2018

**Budget:** \$20.18 Million (\$12.282 Federal: \$7.898 Cost-shared)

**Non-Federal Sponsor:** Texas General Land Office

**Schedule:** Recon: 2014-2015  
Feasibility Study Start: Oct 2016  
Scheduled Completion: May 2021

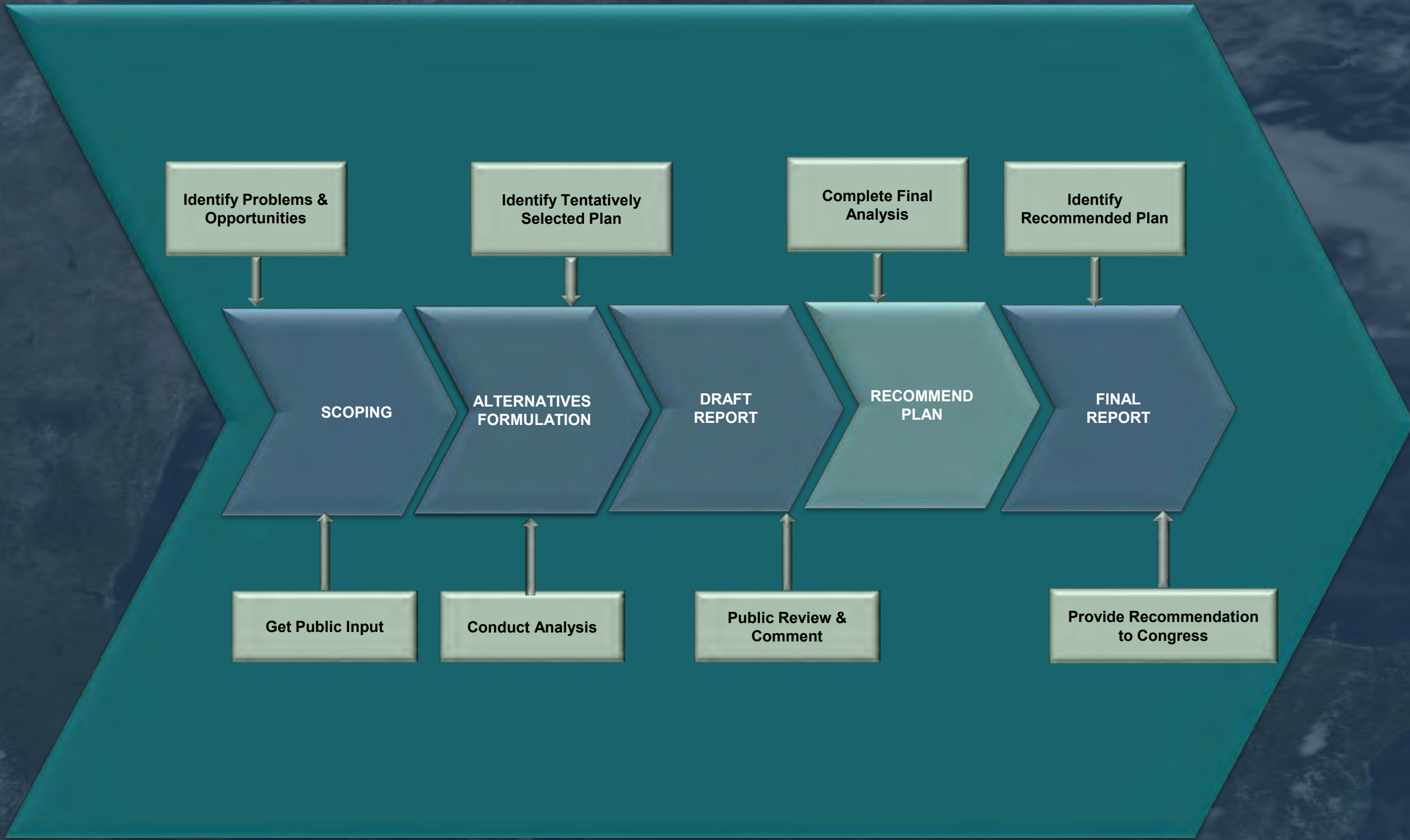
**Multi-Purpose:** Coastal Storm Risk Management and Ecosystem Restoration

**Scope:**

Develop a **comprehensive plan** to determine the feasibility of carrying out projects for flood damage reduction, **hurricane** and **storm damage reduction**, and **ecosystem restoration** in the coastal areas of the State of Texas.

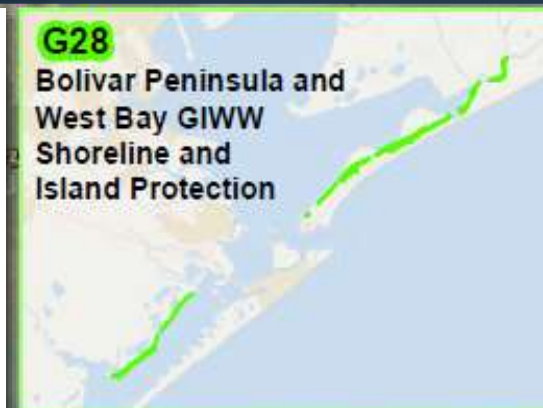
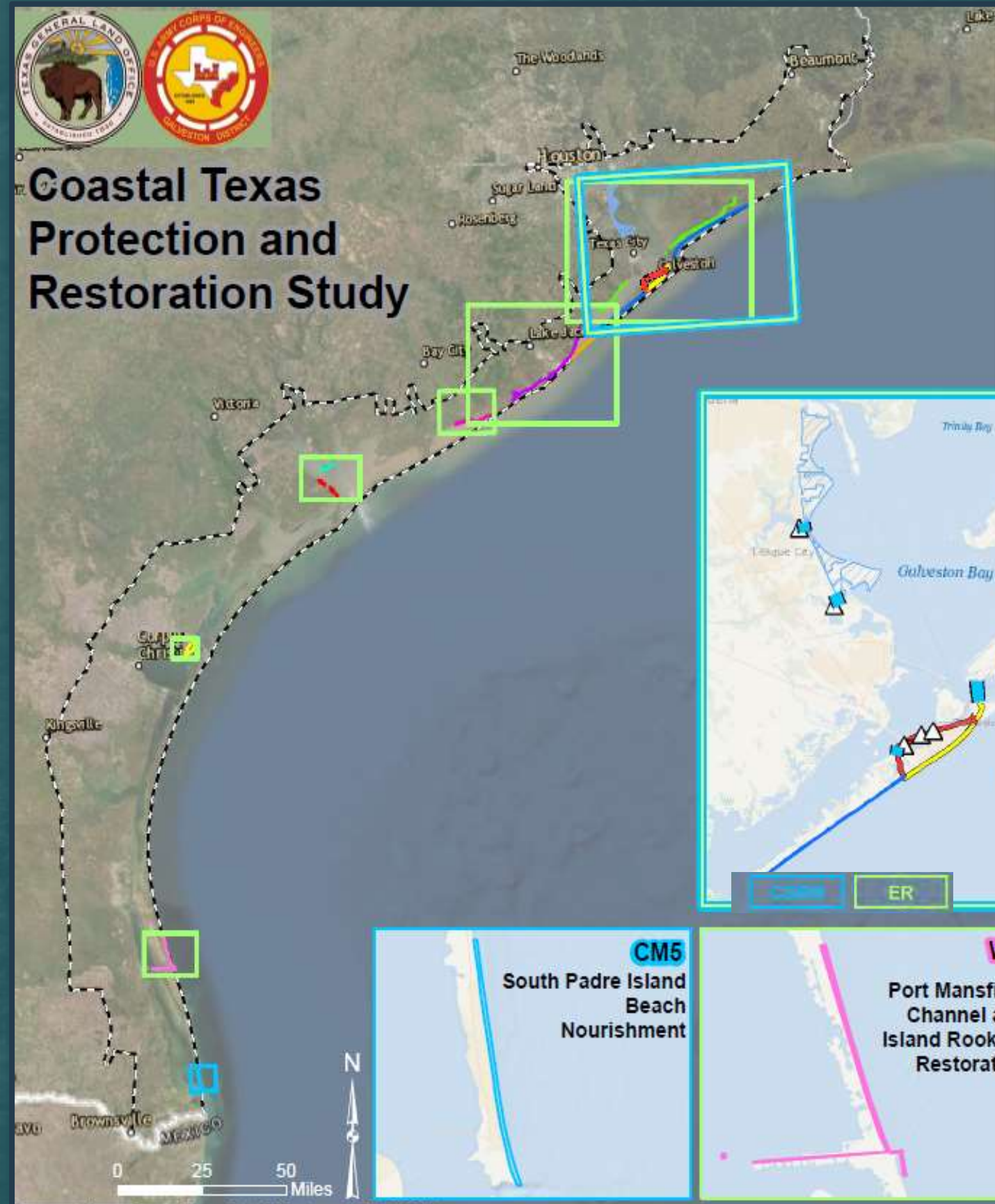
The comprehensive plan shall provide for the **protection, conservation, and restoration** of wetlands, barrier islands, shorelines, and related lands and features that **protect critical resources, habitat, and infrastructure** from the impacts of coastal storms, hurricanes, erosion, and subsidence







## Revised Coastal Resilience Comprehensive Strategy



### Coastal Storm Risk Management

- 2 large & 4 small sector gates
- 15 vertical lift gates
- 138 shallow water environmental gates
- 1 mi combi-wall tie-in
- 3 mi levee tie-in
- 45 mi of gulf-side dune/beach barrier
- 21 mi of ring barrier
- 8 pumping stations
- 16+ drainage structures
- 4-ft high extension of the seawall
- 150+ gated closures (roads & rail)
- non-structural measures anticipated
- 2 mi beach/dunes on South Padre
- 1,342 ac mitigation



### Ecosystem Restoration (6,000+ ac)

- 802 ac of breakwaters
- 848 ac of bird islands
- 2,052 ac of marshes
- 44 ac of oyster reefs
- 2,513 ac of dunes/beaches



## 1st Line: Hardened Perimeter at the Gulf Inlet

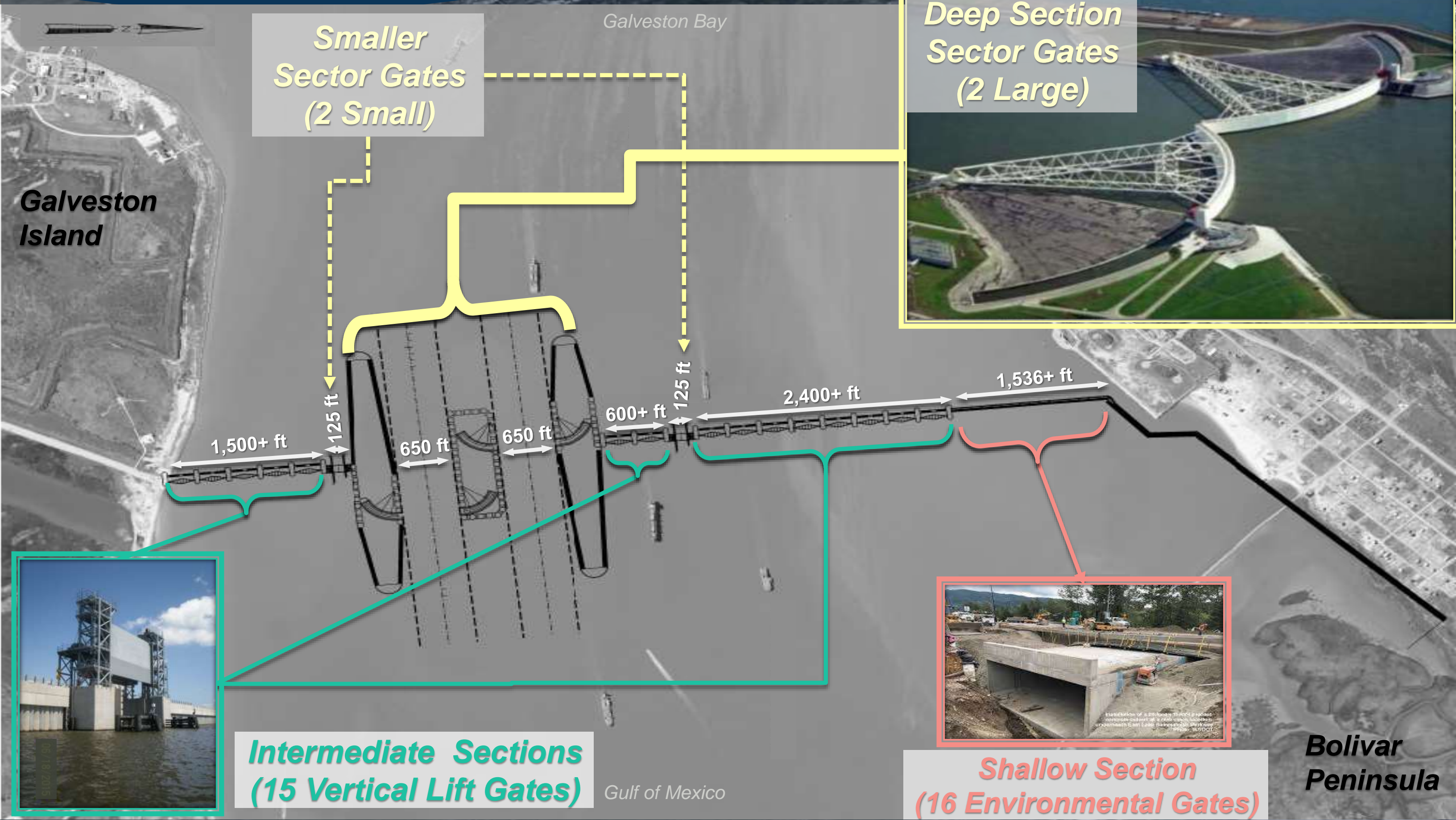
- ✓ **Storm Surge Gates**
- ✓ Dune Flanks
- ✓ Seawall Improvements

## Next Lines: Lateral and Interior Features

- ✓ Ring Barrier
- ✓ Upper West Bay – Clear Creek, Dickinson & Non-Structural
- ✓ GIWW Breakwaters
- ✓ Oyster Reefs
- ✓ ER Site-specific restoration features (e.g., marsh creation)

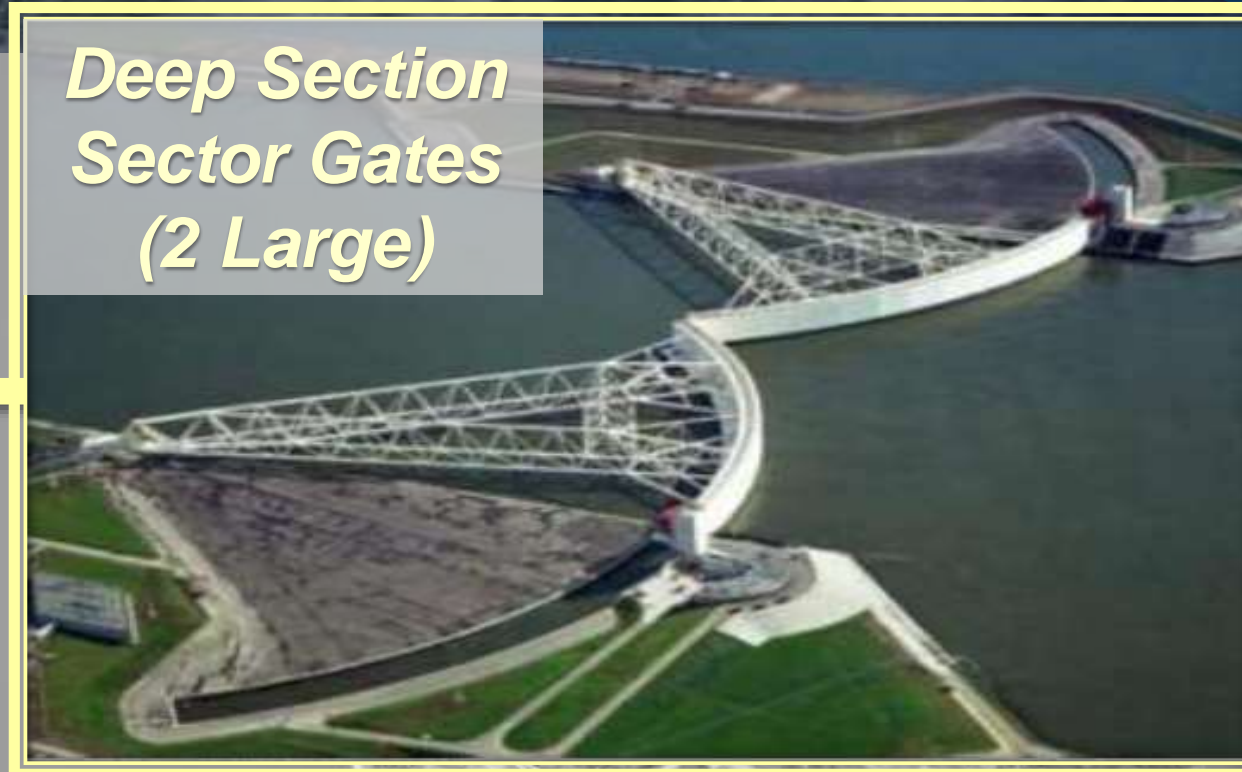


# STORM SURGE GATES (DESIGN IN PROGRESS)



**Smaller Sector Gates (2 Small)**

**Deep Section Sector Gates (2 Large)**



**Galveston Island**



**Intermediate Sections (15 Vertical Lift Gates)**



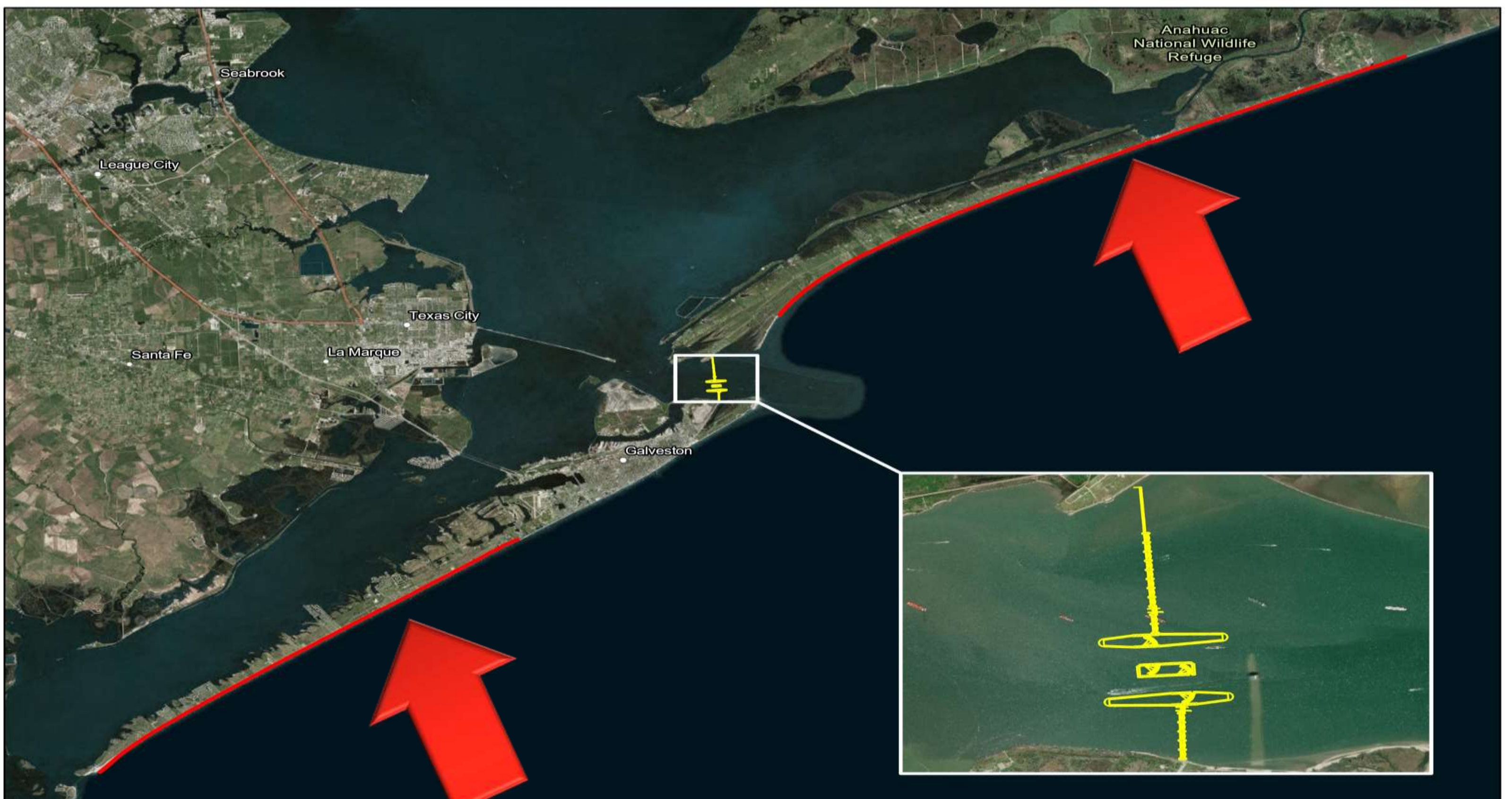
**Shallow Section (16 Environmental Gates)**

**Bolivar Peninsula**

Galveston Bay

Gulf of Mexico

# NATURE-BASED SOLUTIONS: DUNE & BEACHES



# NATURE-BASED SOLUTIONS: DUNE & BEACHES







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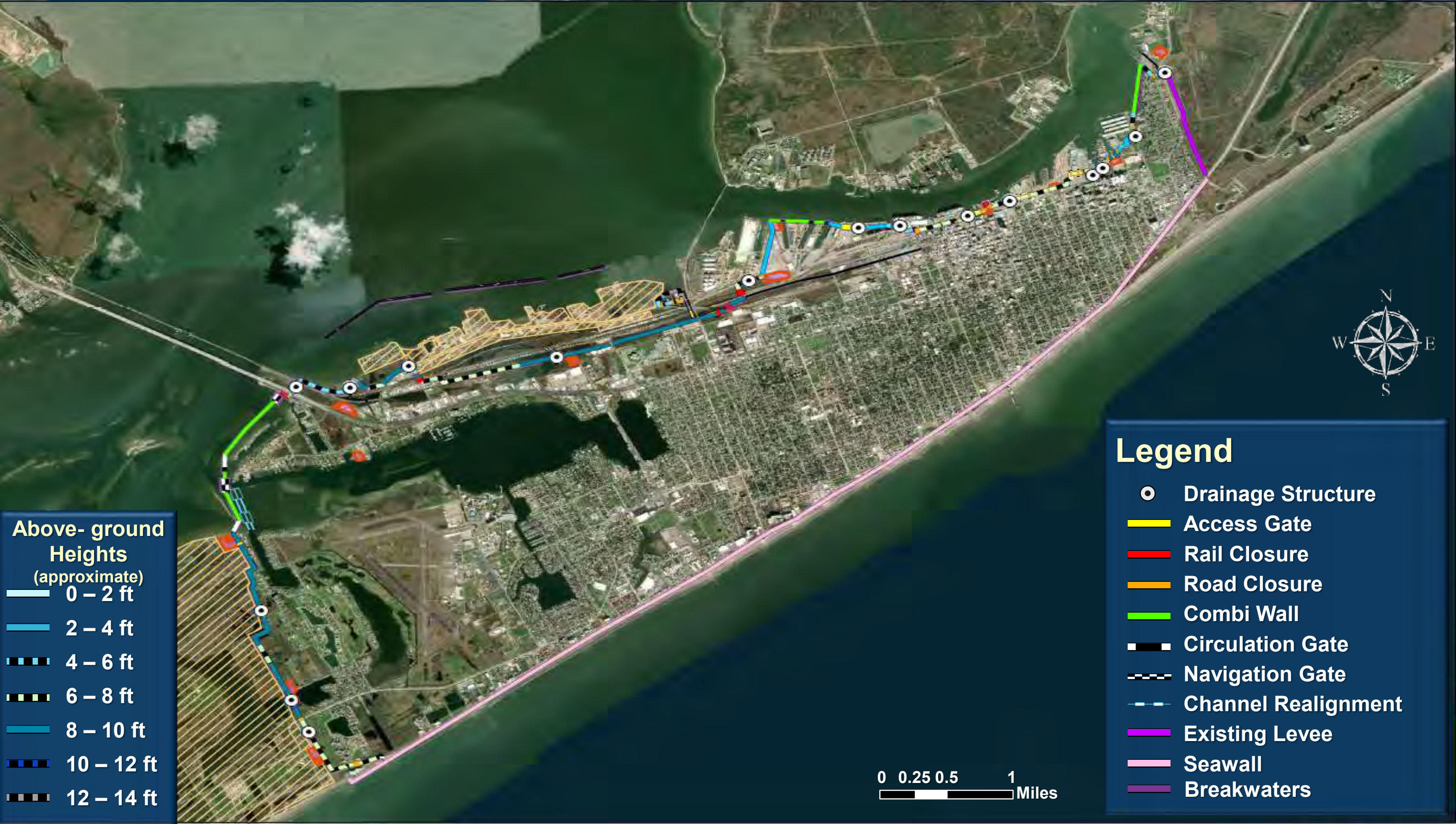
## Beach and Dune System Components

*(Drawing is representational and for illustrative purposes only. All dimensions are approximate)*

More information is available online at: [coastalstudy.texas.gov](http://coastalstudy.texas.gov)

# GALVESTON RING BARRIER

(DESIGN IN PROGRESS)



**Above-ground Heights**  
(approximate)

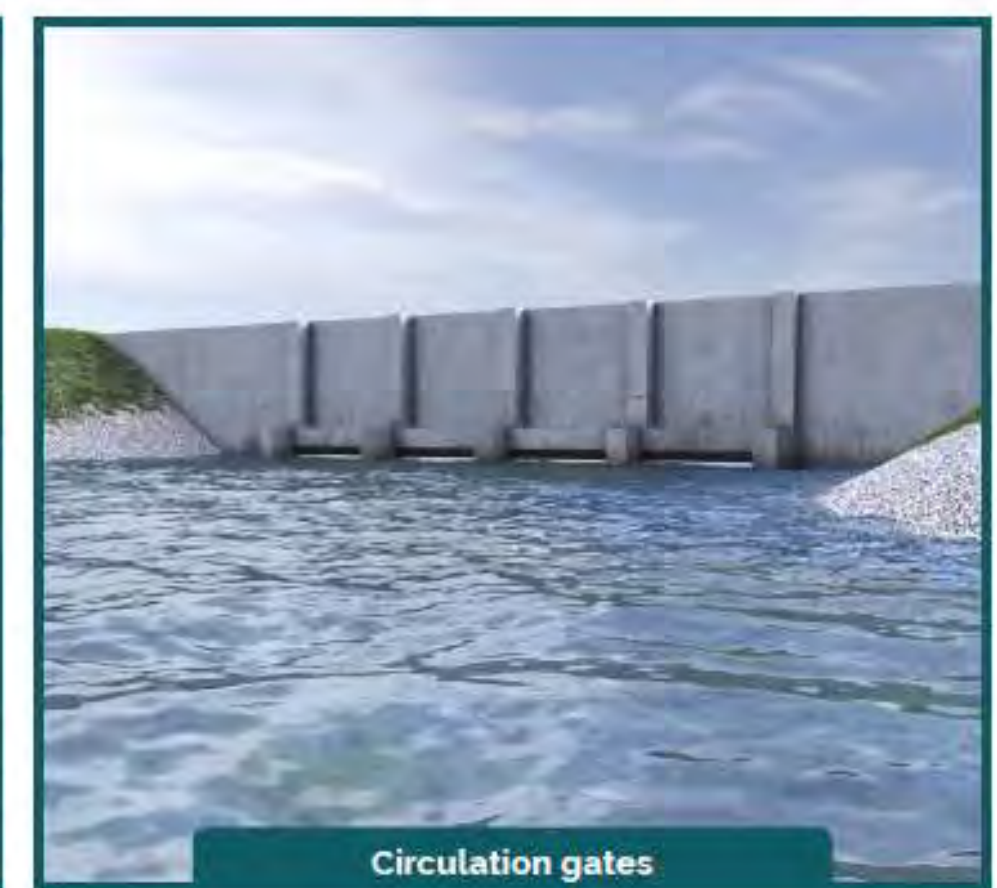
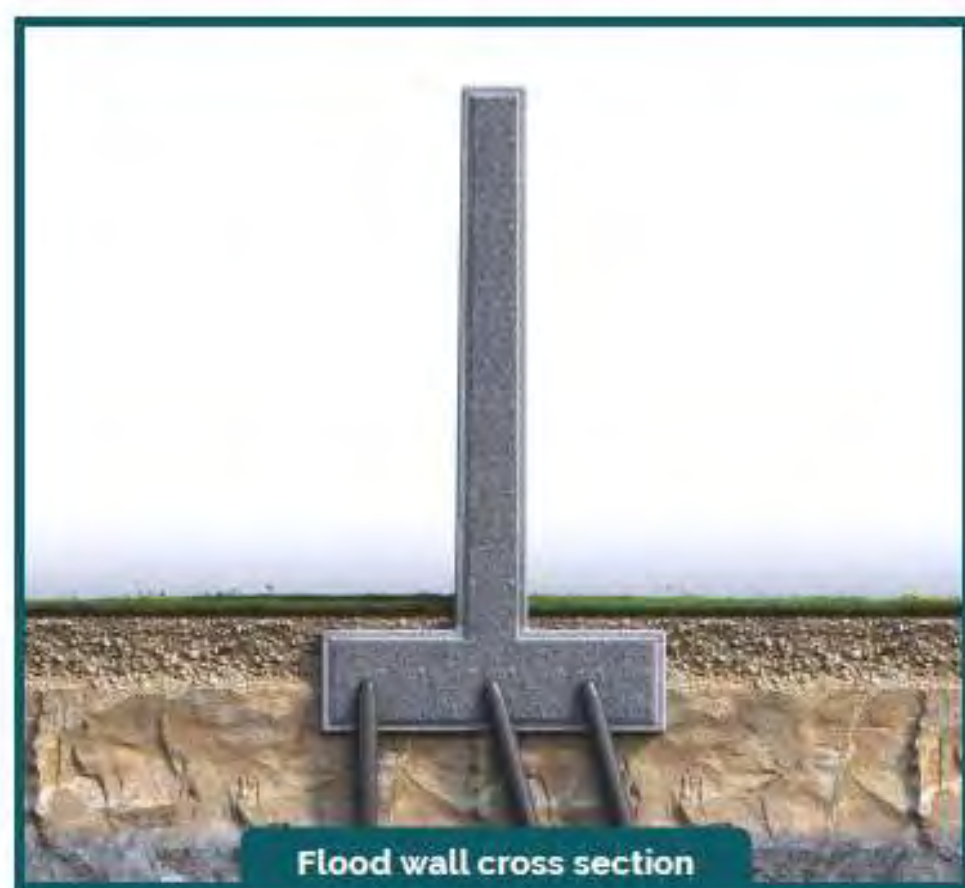
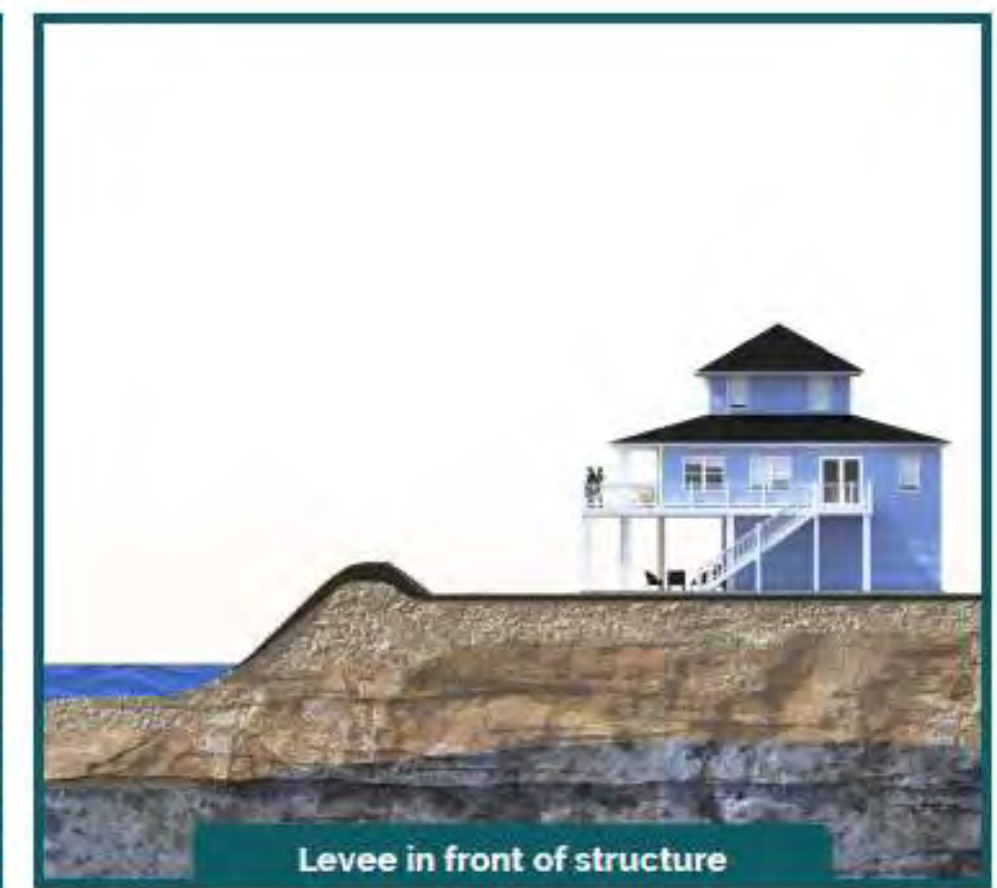
- 0 – 2 ft
- 2 – 4 ft
- 4 – 6 ft
- 6 – 8 ft
- 8 – 10 ft
- 10 – 12 ft
- 12 – 14 ft

### Legend

- Drainage Structure
- Access Gate
- Rail Closure
- Road Closure
- Combi Wall
- Circulation Gate
- Navigation Gate
- Channel Realignment
- Existing Levee
- Seawall
- Breakwaters



# GALVESTON RING BARRIER (DESIGN IN PROGRESS)



# GALVESTON RING BARRIER

(DESIGN IN PROGRESS)



## ECOSYSTEM RESTORATION MEASURES



Marsh  
Restoration



Beach  
Restoration



Oyster Reef  
Restoration



Island  
Restoration

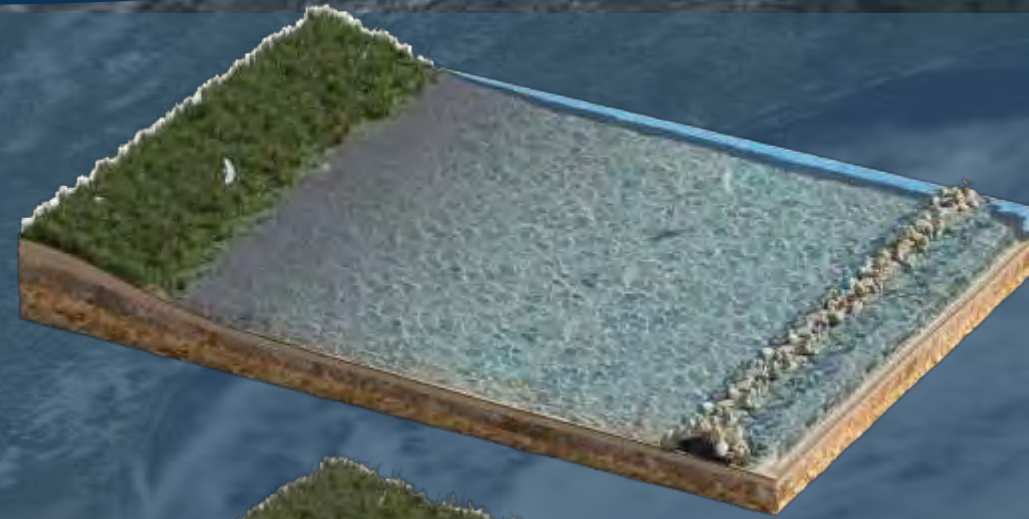


Breakwater  
Creation



Hydrologic  
Restoration

Breakwaters



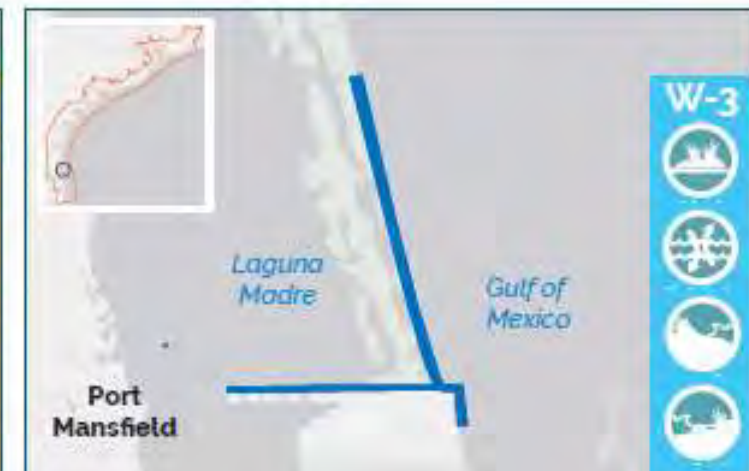
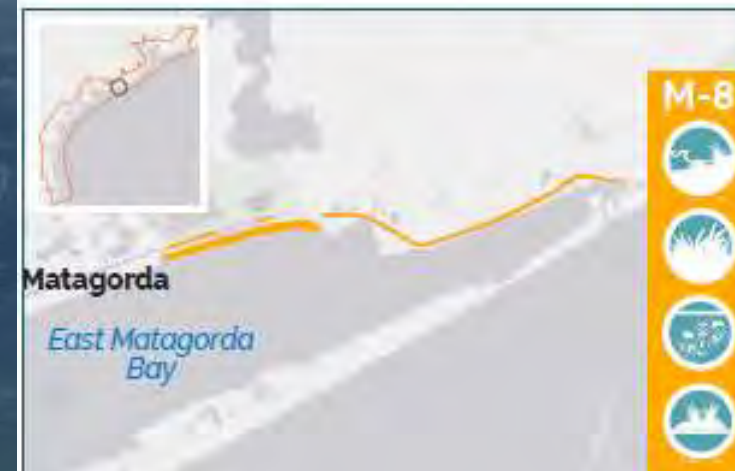
Marshes



Beaches



Oyster Reefs



## Environmental Impact Analysis

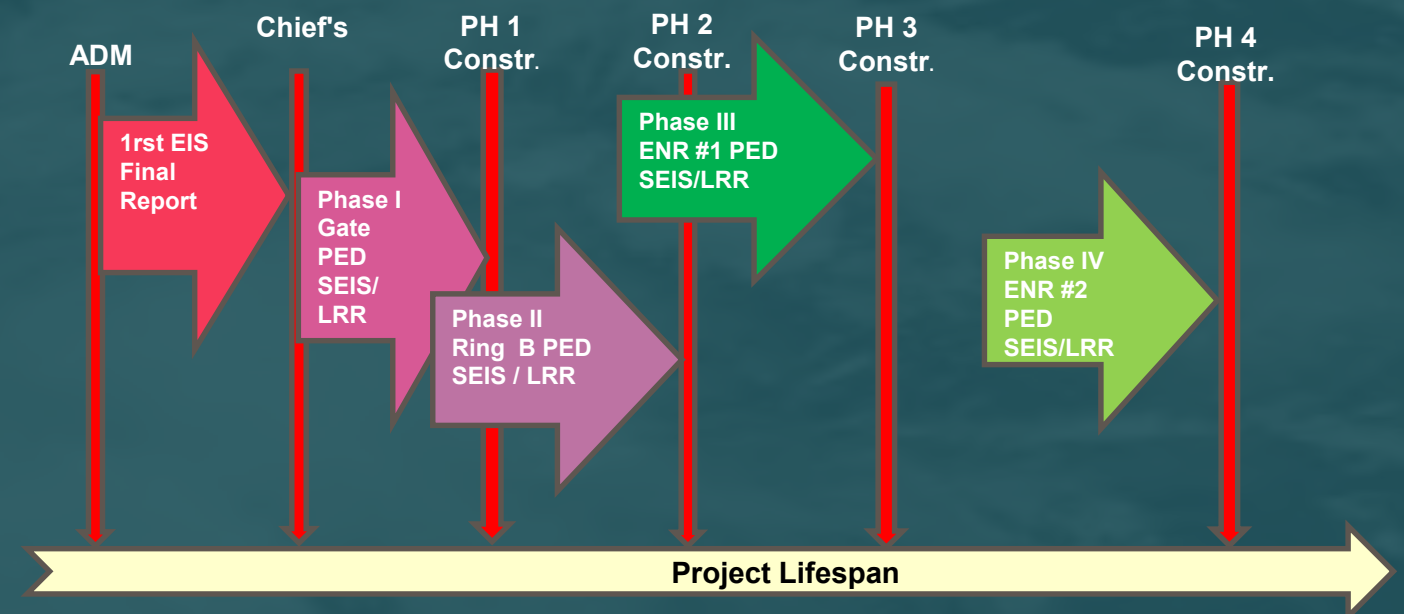
- NEPA is the nation's foremost environmental law
- NEPA drives our process by requiring the identification of direct, indirect and cumulative impacts
- Tiered NEPA has been authorized for this study

## Analyses Underway

- Direct Impacts
  - Habitat Evaluation Procedures (HEP)
    - Quality x Quantity of Species Habitat
  - Advanced Hydrologic Modeling
    - Salinity, Velocity & Sediment Transport
  - Particle Track Modeling
    - Larval Movement & Recruitment Success
- Indirect & Cumulative Impacts

## Mitigation Planning Underway

## Conceptual Tiered NEPA Approach

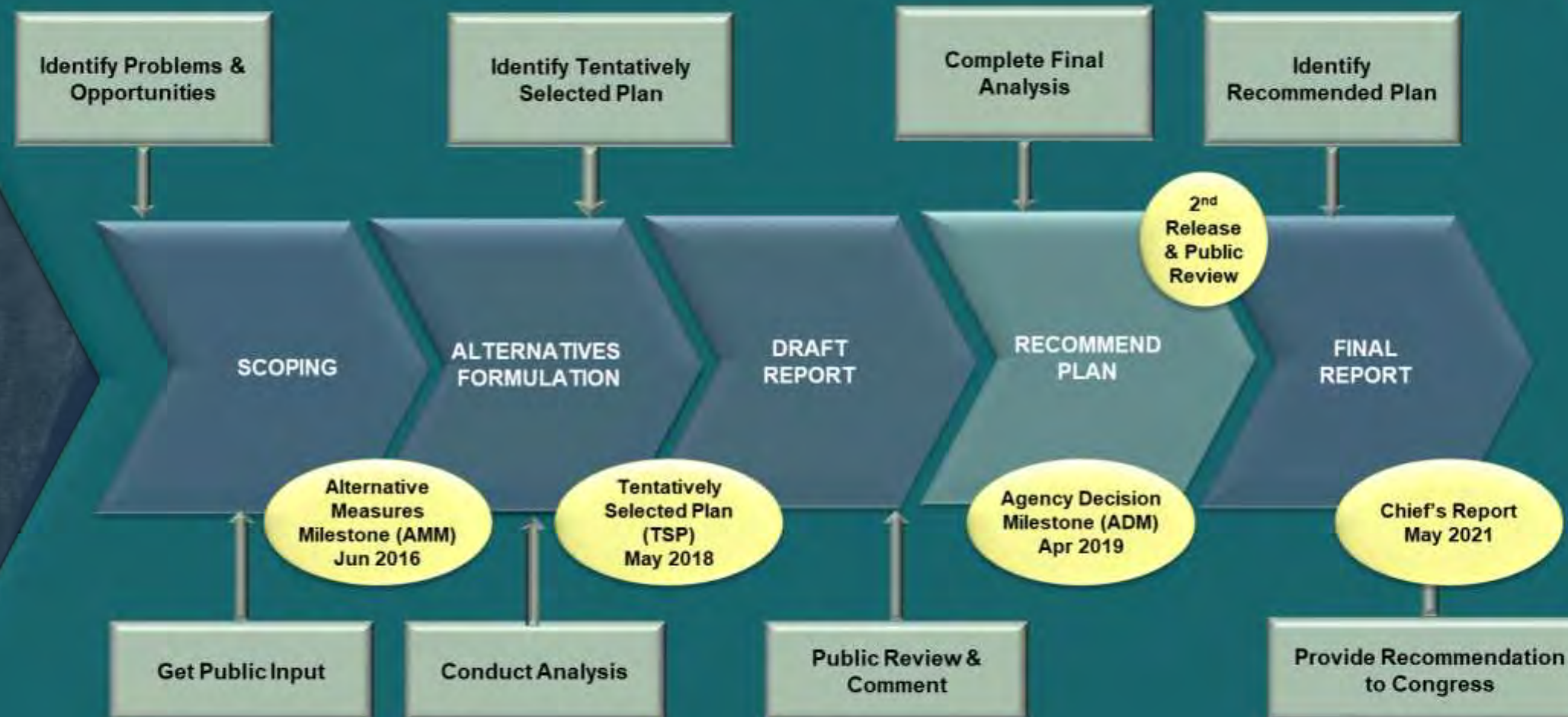


## Particle Track Modeling (PTM)



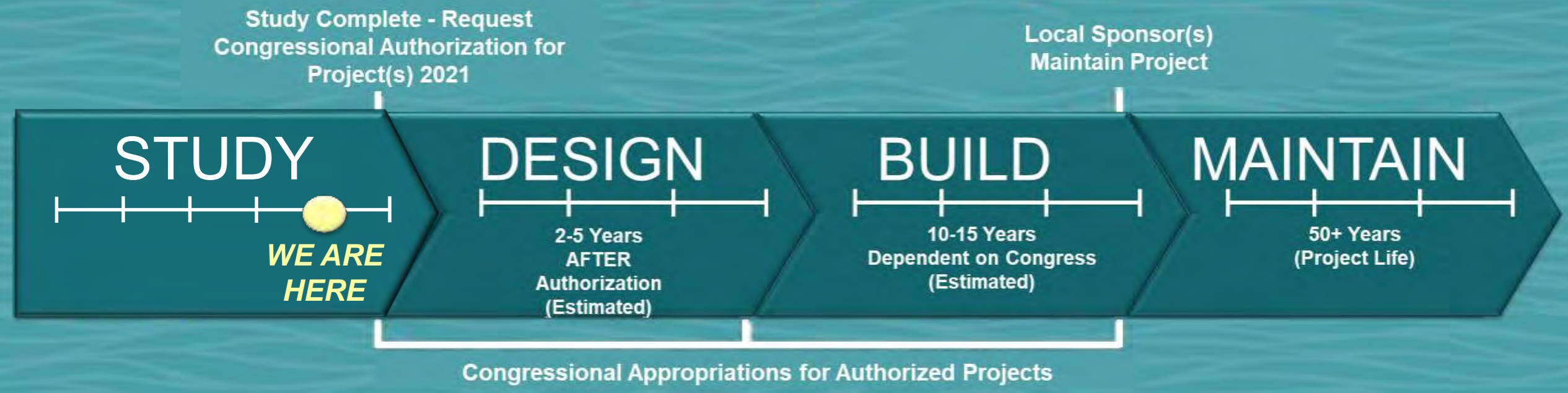


# STUDY





## ESTIMATED PROJECT SCHEDULE







- Formal Comment Period (45 days)
- Formal Meetings (NEPA Required)
- Public Open Houses
- CWGs
- Social Media
- Fact Sheets
- Email lists
- Stakeholder Briefings
- **GIS Storybook**

More opportunities to engage are on the project horizon . . . . remember Tiered NEPA!

## COASTAL TEXAS STUDY

### STUDY UPDATE

Representatives attend a Community Work Group Meeting in May 2019.

#### ABOUT THE STUDY

Serving as an important economic and industrial hub for the United States, the Texas Gulf Coast is home to a coastal ecosystem vital to the national economy that provides valuable

#### WE HEARD YOU!

The Coastal Texas Study has already begun considering the feedback received during the comment period for the Draft Integrated Feasibility Report and Environmental Impact Statement (DIFR-EIS). Based upon your input, the study team is:

- Establishing Texas General Land Office (GLO)-led Community Working Groups
- Dropping the barrier levee along Galveston Island and Bolivar Peninsula from the study completely, and investigating a dune-and-beach system along Bolivar Peninsula beach
- Re-aligning the Galveston Ring Barrier
- Evaluating non-structural measures on the west side of Upper Galveston Bay
- Exploring the use of st

Additionally, the study team will:

- Continue collaboration & Evacuation from DIFR at Galveston
- Further storm modeling
- Coordinate and hold a summer of 2020 (inclu
- Evaluate feedback re Design Workshop

More information is available at [CoastalStudy.Texas.gov](http://CoastalStudy.Texas.gov)

## COASTAL TEXAS STUDY

### NOTHING BUT THE FACTS

Large, long-term studies like the Coastal Texas Study often face misconceptions. The purpose of this document is to clear up some of these misconceptions and provide you with "Nothing But the Facts."

**Misconception: The proposed plan would protect only highly populated areas and not all parts of the Texas coastline that have been impacted by past weather events.**

The Coastal Texas Study includes a combination of ecosystem restoration (ER) and coastal storm risk management (CSR) measures located throughout the 18 coastal counties of the Texas Gulf Coast.

**THE STUDY AREA**  
The study area consists of the entire Texas Gulf coast, from the mouth of the Sabine River to the mouth of the Rio Grande, and includes the Gulf and tidal waters, barrier islands, estuaries, coastal wetlands, rivers and streams, and adjacent areas that make up the interrelated ecosystems along the coast of Texas.

**Misconception: The Coastal Texas Study is only being proposed to protect the industrial facilities in the Houston-Galveston area.**

The proposed features reduce risk to the community at large, not just the concentration of industrial facilities in Houston. Surrounding areas are filled with residences, as well as railways and port facilities that serve Houston, Galveston,

and the nation. Comprehensive risk reduction in the region requires a combined effort of federal, state, and private agencies increasing the area's ability to prepare for, withstand, respond, and adapt to coastal risk. Industries in the Houston area will contribute to risk reduction through investments in their own facilities that contribute to the success of the larger features.

**Misconception: The study would use eminent domain to acquire and demolish any property along the proposed barrier alignment.**

The non-federal sponsor will have the responsibility of acquiring all necessary real estate interests for the project and ensuring that relocation of utilities and facilities is accomplished. Where necessary, voluntary relocations and acquisitions will be pursued, and eminent domain would only be imposed by a local sponsor as a last resort.

**Misconception: The Coastal Texas Study is only considering past, historical flood events**

Over 600 storms that could potentially impact the Texas coast were modeled and analyzed. These possible tropical storms include the entire range of storm factors, such as storm intensity, storm size, forward speed and angle of approach on top of the landfall locations along the entire Texas coast. The storms range from very weak and small tropical storm events all the way to catastrophically strong and large Category 5 storms and beyond.

Based on this data, a sample of 170 storms was taken through the Advanced Circulation model (ADCIRC - Certified by the Federal Emergency Management Agency (FEMA) for use in performing storm surge analyses) to determine storm surge heights with and without the barrier systems. The storms that were selected were the most destructive scenarios for storm surge and wave conditions. Additional storm modeling is currently being conducted to optimize the plan.

More information is available online at: [coastalstudy.texas.gov](http://coastalstudy.texas.gov).

## COASTAL TEXAS STUDY

### Community Work Group Fact Sheet

Version 1.5, Updated July 26, 2019

#### Key Study Facts:

These key talking points are expanded on in the following pages.

- 1) The Coastal Texas Protection and Restoration Feasibility Study, also known as the Coastal Texas Study, involves engineering, economic, and environmental analyses on large-scale civil works projects.
- 2) The purpose of the Coastal Texas Study is to identify coastal storm risk management (CSR) and ecosystem restoration (ER) measures that would protect the health and safety of Texas coastal communities, reduce the risk of storm damage to industries and businesses critical to the Nation's economy, and address critical coastal ecosystems in need of restoration.
- 3) The goal of the Coastal Texas Study is to form a system of resilient, robust, and adaptable projects that will work

gressional authorization to identify and evaluate a of wetlands, barrier islands, shorelines, and related infrastructure from the impacts of coastal storms, comprised of the USACE and Texas General Land Office each consultants.

d GLO, and their public outreach consultants. 5.5-year study process.

es. coastal Texas Study process. truly examine what can be done to restore ecological

he feedback received during the public review and Environmental Impact Statement (DIFR-EIS) that

imately \$23 to \$32 billion.

ast were modeled and analyzed with the purpose of management alternatives and ecosystem restoration

within the Houston/Galveston area.

approach/strategy.

dy.

1

Coastal Texas Study - Nothing But the Facts Summer 2019 | Page 1



<http://CoastalStudy.Texas.gov>

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**COASTAL TEXAS STUDY**

Overview Alternatives Call to Action Resources Contacts

## Coastal Texas Protection & Restoration Feasibility Study

Planning and Environmental Documents for Public Review:  
Draft Integrated Feasibility Report and Environmental Impact Statement

The community is invited to review the plans and participate in a series of public meetings:

[LEARN MORE](#)

The U.S. Army Corps of Engineers, in partnership with the Texas General Land Office, began an examination in November 2015 of the feasibility of constructing projects for coastal storm risk management and ecosystem restoration along the Texas coast.

The Coastal Texas Protection and Restoration Feasibility Study, also known as the Coastal Texas Study, will involve engineering, economic and environmental analyses on large-scale projects, which may be considered by Congress for authorization and funding.

The feasibility study and report will be complete in 2021. The Coastal Texas Study recommendations will enhance resiliency in coastal communities and improve our capabilities to prepare for, resist, recover and adapt to coastal hazards.

**Coastal Storm Risk Management**

Develop and evaluate coastal storm risk management solutions to reduce the damage from tropical storms and hurricanes incurred by coastal communities and industries.

[MORE](#)

**Ecosystem Restoration**

Increase the net quality and quantity of coastal ecosystem resources by maintaining, protecting and restoring coastal Texas ecosystems, and fish and wildlife habitat.

[MORE](#)

**Environmental Impact Analyses**

An environmental impact statement will be completed under the procedures of the National Environmental Policy Act (NEPA).

[MORE](#)

Coastal Texas Study

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**Coastal Texas Study**  
July 30 at 12:10 PM

MISCONCEPTION: Rice University's SSPEED Center has proposed a less costly plan called the "Bay Park Plan" that can be built in less time and will have the same (or greater) level of protection with little or no environmental impacts.

While we believe the Bay Park Plan and our own Coastal Barrier Plan complement one another, more information is needed in order to make direct comparisons between them. Some key concerns include:

1) The Bay Park Plan is still in the concept pha... [See More](#)

You, Sharon Manzelia Tirpak and 2 others

Like Comment Share

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**Coastal Texas Study**  
July 29 at 10:33 AM

We are utilizing a "multiple lines of defense" approach to develop a system of comprehensive, resilient, and sustainable coastal storm risk management solutions. For more information, please visit <http://coastalstudy.texas.gov/>.

**MULTIPLE LINES OF DEFENSE ON THE TEXAS COAST**

Gulf of Mexico Barrier Islands Bays & Estuaries Inland

Beach & Dune Restoration Existing Sea Level Projected Sea Level Rise Cyster Reefs Marsh Restoration Shoreline Stabilization Levees Man-made Barriers Elevated Buildings

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