TAYLOR ENGINEERING, INC.

Twin Rivers Shoreline Stabilization Project

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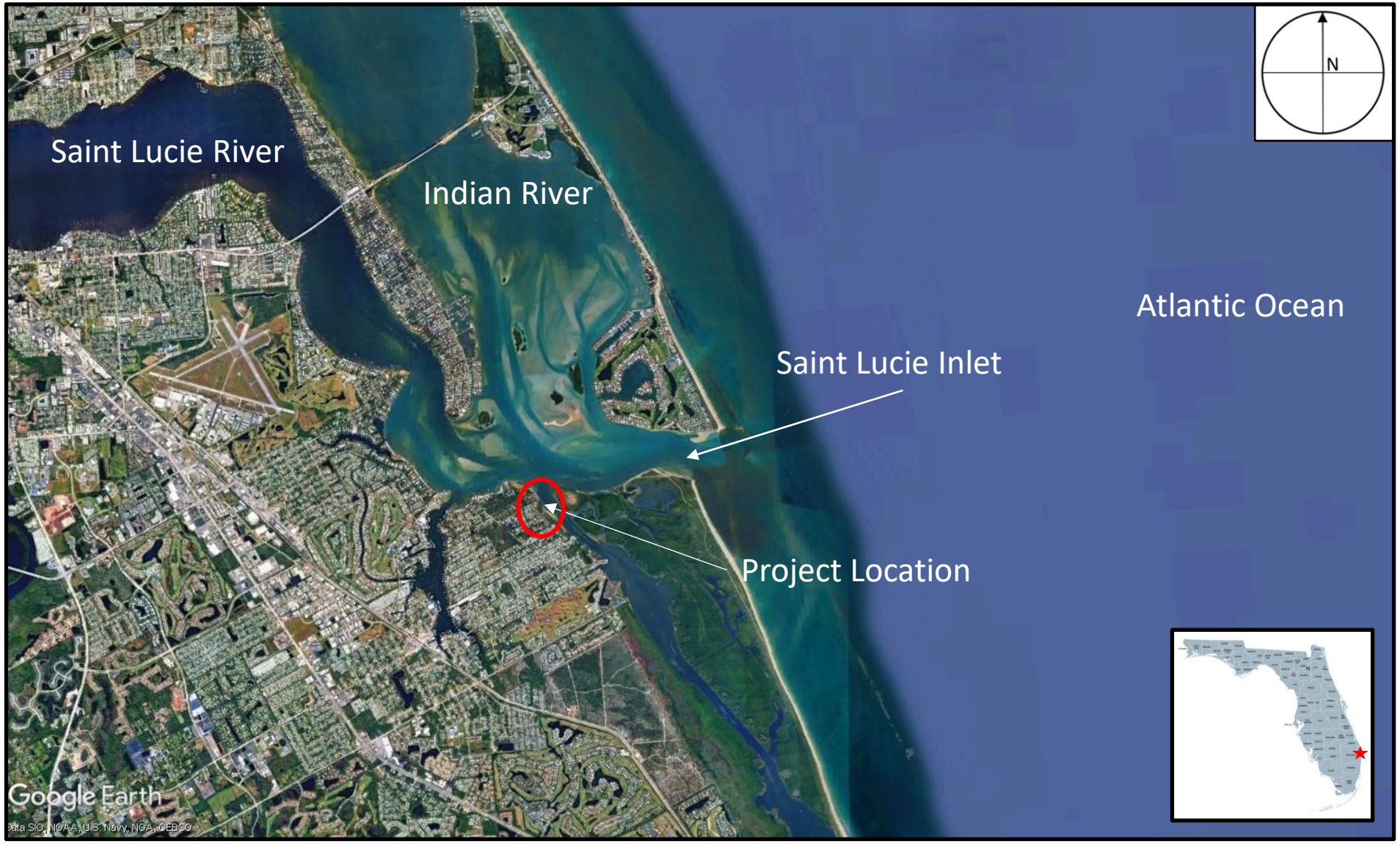
Presentation Outline

- Location
- Twin River's Park Overview
- Background and Existing Conditions
- Project Goals
- Data Collection
- Design Overview
- Permitting Mechanisms
- Construction Progress and Considerations
- Post-Construction Review

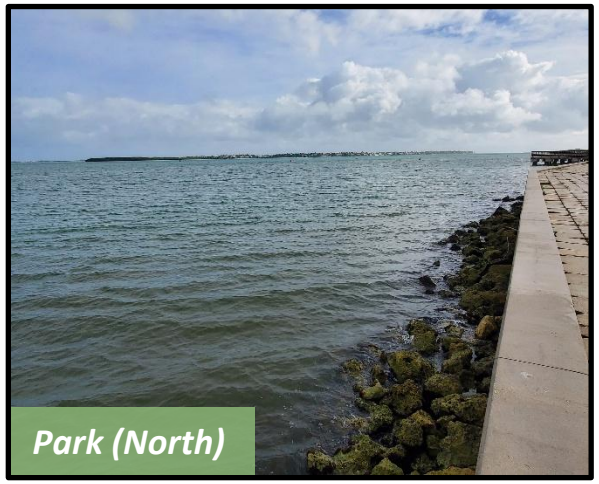
Geographic Location



Geographic Location

Twin River's Park Overview

- 1,400 feet of shoreline
  - 400 feet of seawall/revetment (north)
  - 700 feet of rock revetment/sill with dense mangrove forest (central area)
    - Restored post Hurr. Francis and Jeanne
    - ASBPA 2022 Best Restored Shores Award
  - Pile supported dock that aligns the waterfront
  - **300-foot section in the south experiencing severe ongoing erosion and undermining**
  - One of the largest gopher tortoise concentrations in the State


Park (North)

Park (Central)


Central Mangrove Planters


Gopher Tortoise

Existing Site Conditions Prior to Project

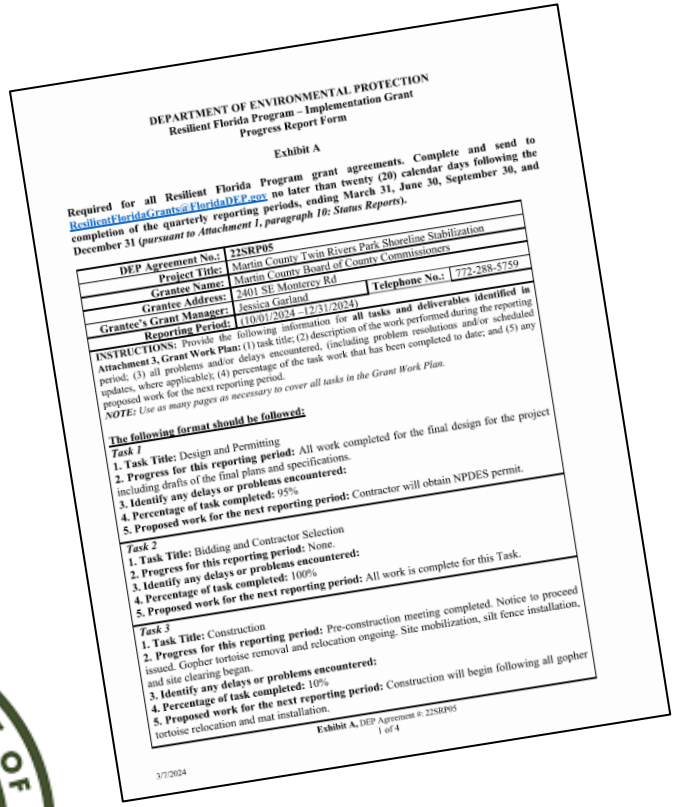
- 300 linear feet of severely eroded shoreline
  - Scarps up to 8 feet tall
- 100 feet of shoreline lost over past 25 years
- Mangrove forests align portions of the shoreline
- Dense seagrasses in the nearshore
- Primary cause of erosion
  - Extreme storm events
  - Boat wakes

Project Goals

- Stabilize and protect the eroding shoreline with nature-based features.
- Protect and enhance the critical habitat for local threatened species such as the Gopher Tortoise, West Indian Manatee and the Wood Stork.
- Preserve the park's natural character and safety of public access.

Grant Funding

- 50% project funded by FDEP Resilient Florida Program – Living Shorelines
  - Quarterly progress reports
  - Project metric tracking
  - Project administration
  - Task deliverable form
  - Design and permitting deliverables
  - Construction site observations and reports



DEPARTMENT OF ENVIRONMENTAL PROTECTION
Resilient Florida Program – Implementation Grant
Progress Report Form

Exhibit A

Required for all Resilient Florida Program grant agreements. Complete and send to ResilientFloridaGrants@FloridaDEP.gov no later than twenty (20) calendar days following the completion of the quarterly reporting periods, ending March 31, June 30, September 30, and December 31 (*pursuant to Attachment 1, paragraph 10: Status Reports*).

DEP Agreement No.:	22SRP05		
Project Title:	Martin County Twin Rivers Park Shoreline Stabilization		
Grantee Name:	Martin County Board of County Commissioners		
Grantee Address:	2401 SE Monterey Rd	**Telephone No.:**	772-288-5759
Grantee's Grant Manager:	Jessica Garland		
Reporting Period:	(10/01/2024 -12/31/2024)		

INSTRUCTIONS: Provide the following information for **all tasks and deliverables identified in Attachment 3, Grant Work Plan:** (1) task title; (2) description of the work performed during the reporting period; (3) all problems and/or delays encountered, (including problem resolutions and/or scheduled updates, where applicable); (4) percentage of the task work that has been completed to date; and (5) any proposed work for the next reporting period.
***NOTE:** Use as many pages as necessary to cover all tasks in the Grant Work Plan.*

The following format should be followed:

Task 1
1. Task Title: Design and Permitting
2. Progress for this reporting period: All work completed for the final design for the project including drafts of the final plans and specifications.
3. Identify any delays or problems encountered:
4. Percentage of task completed: 95%
5. Proposed work for the next reporting period: Contractor will obtain NPDES permit.

Task 2
1. Task Title: Bidding and Contractor Selection
2. Progress for this reporting period: None.
3. Identify any delays or problems encountered:
4. Percentage of task completed: 100%
5. Proposed work for the next reporting period: All work is complete for this Task.

Task 3
1. Task Title: Construction
2. Progress for this reporting period: Pre-construction meeting completed. Notice to proceed issued. Gopher tortoise removal and relocation ongoing. Site mobilization, silt fence installation, and site clearing began.
3. Identify any delays or problems encountered:
4. Percentage of task completed: 10%
5. Proposed work for the next reporting period: Construction will begin following all gopher tortoise relocation and mat installation.

Exhibit A, DEP Agreement #: 22SRP05
1 of 4

3/7/2024

Data Collection

Desktop Analyses

Topographic Survey

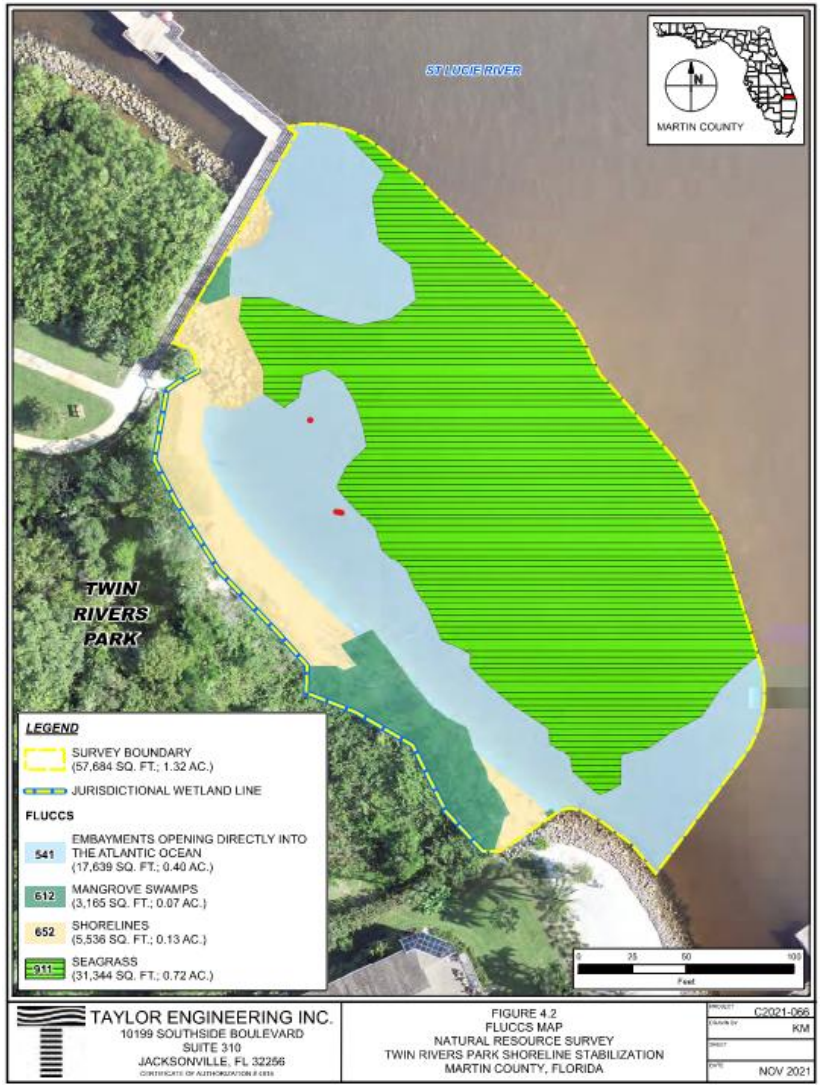
Bathymetric Survey

Natural Resource Survey

Gopher Tortoise Considerations/Relocation

- Over 70 GT burrows identified
  - 14 within corridor
- Recipient area on-site outside of construction area
- Robust exclusion measures installed
  - Double silt fences
  - Mobi-matts
  - Daily inspections

Mangrove/Sea Grass Considerations




Mangroves


Paddle Sea Grass (Halophilia decipiens)


Johnson Sea Grass (Halophilia johnsonii)

- 0.07 AC Mangroves
- 0.21 AC Shoal Grass
- 0.47 AC Johnsons Sea Grass
- 0.04 AC Paddle Grass

Coastal Conditions Review

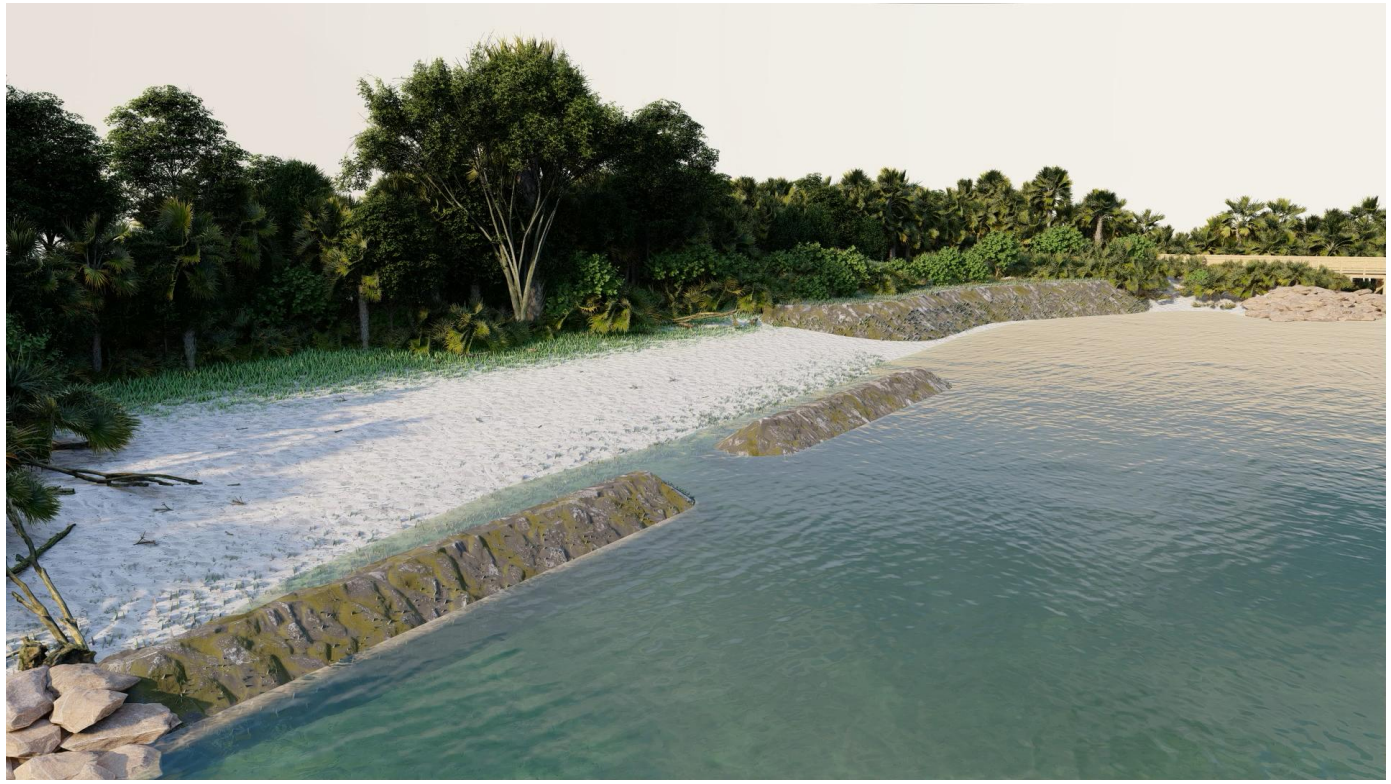
- Design Storm
  - 2050 SLR
  - 25-year return period
- Significant Wave Height
  - 3.5 ft
- Peak Wave Period
  - 3.2 sec
- Stone Size
  - Limestone Armor Stone, W_{50}: 918 lbs

Period	Sea Level Rise (ft)	Source
1992 – 2020	0.47	Virginia Key, measured
2020 – 2050	0.74	IPCC MED (Key West), projected
2020 – 2060	1.01	
2020 – 2070	1.33	

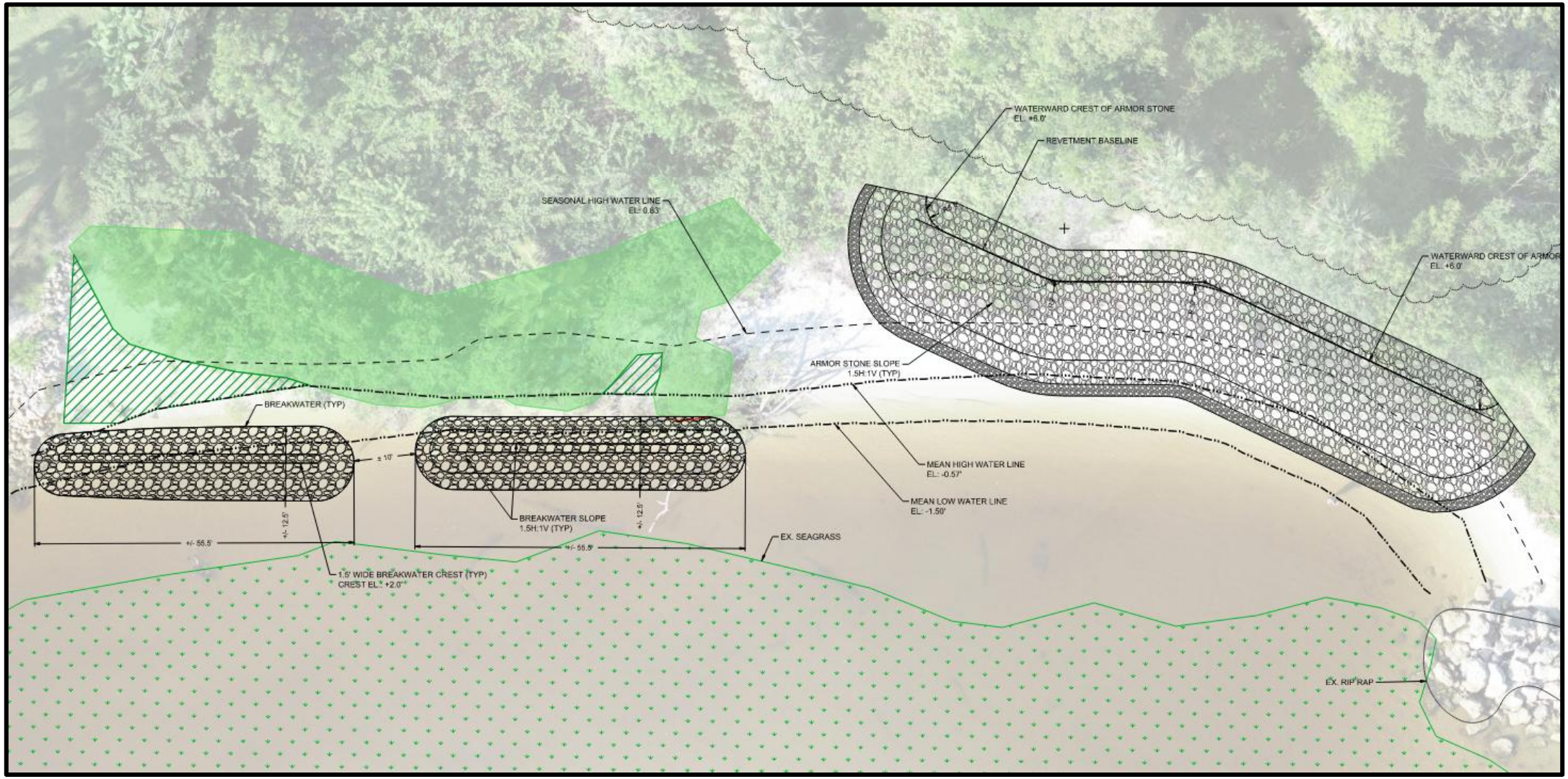
Annual Exceedance Probability	Return Period (yrs)	Significant Wave Height (ft)	Peak Wave Period (sec)
10%	10	2.4	2.8
4%	25	3.5	3.2
2%	50	3.9	3.4
1%	100	4.3	3.6

Design Criteria/Approach

- Nature-Based Approach
- Native limestone structures to enhance habitat
  - Two segmented breakwaters
  - Limestone revetment
    - Preserve shoreline access for recreational activities
- Native Plantings
  - White, Red, and Black Mangroves
  - Sea Grapes
  - Buttonwoods

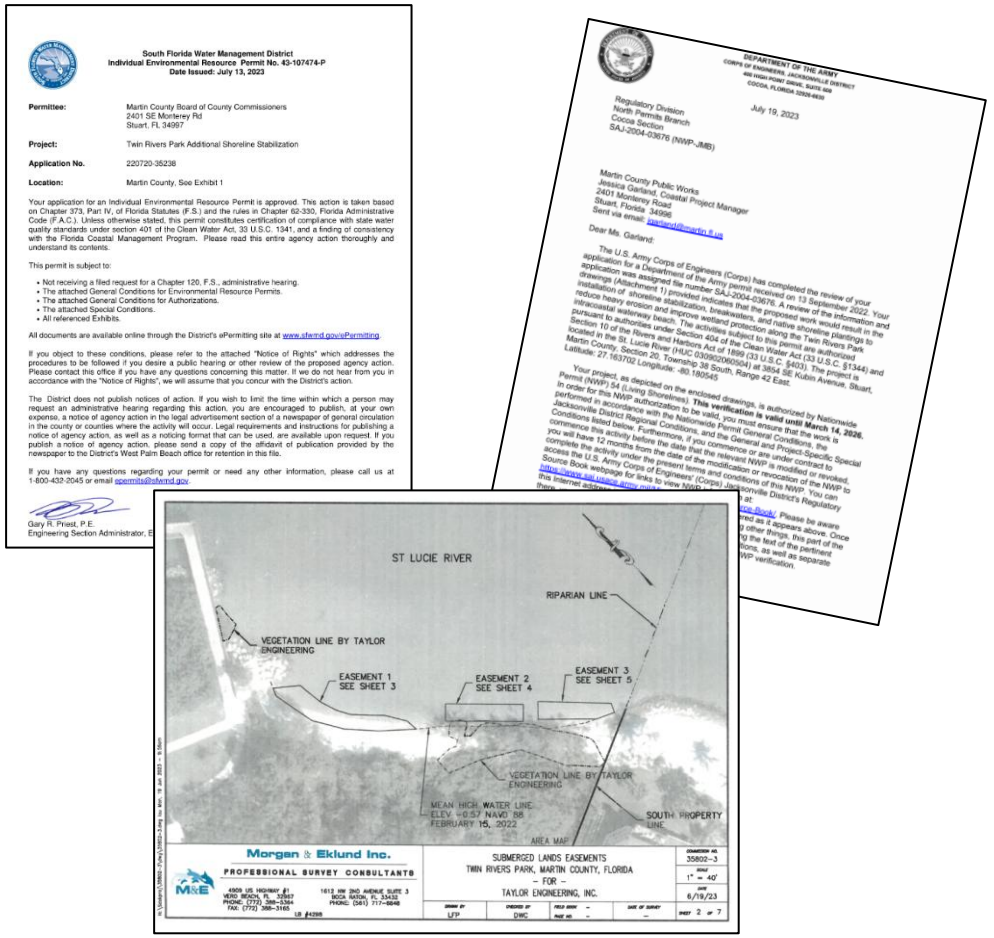


Site Plan


WATERWARD CREST OF ARMOR STONE
EL. +6.0'
REVETMENT BASELINE
SEASONAL HIGH WATER LINE
EL: 0.63'
WATERWARD CREST OF ARMOR
EL. +6.0'
ARMOR STONE SLOPE
1.5H:1V (TYP)
BREAKWATER (TYP)
± 10'
MEAN HIGH WATER LINE
EL: -0.57'
MEAN LOW WATER LINE
EL: -1.50'
BREAKWATER SLOPE
1.5H:1V (TYP)
+/- 12.5'
+/- 55.5'
EX. SEAGRASS
1.5' WIDE BREAKWATER CREST (TYP)
CREST EL. +2.0'
EX. RIP RAP

Permitting Mechanisms

- FDEP
  - Sovereignty Submerged Lands Easement
- USACE
  - Nationwide Permit 54 (Living Shorelines)
- SFWMD
  - Individual Environmental Resource Permit



Construction Progress and Overview

- Construction Start: Nov 2024
- Completion: May 2025
- 842 tons of limestone armor
- 213 Sea Grapes
- 141 Button Woods
- Mangrove Planting
  - 40 Red
  - 53 Black
  - 37 White


Mobilization


Filling Voids (Revetment)


Breakwater Construction

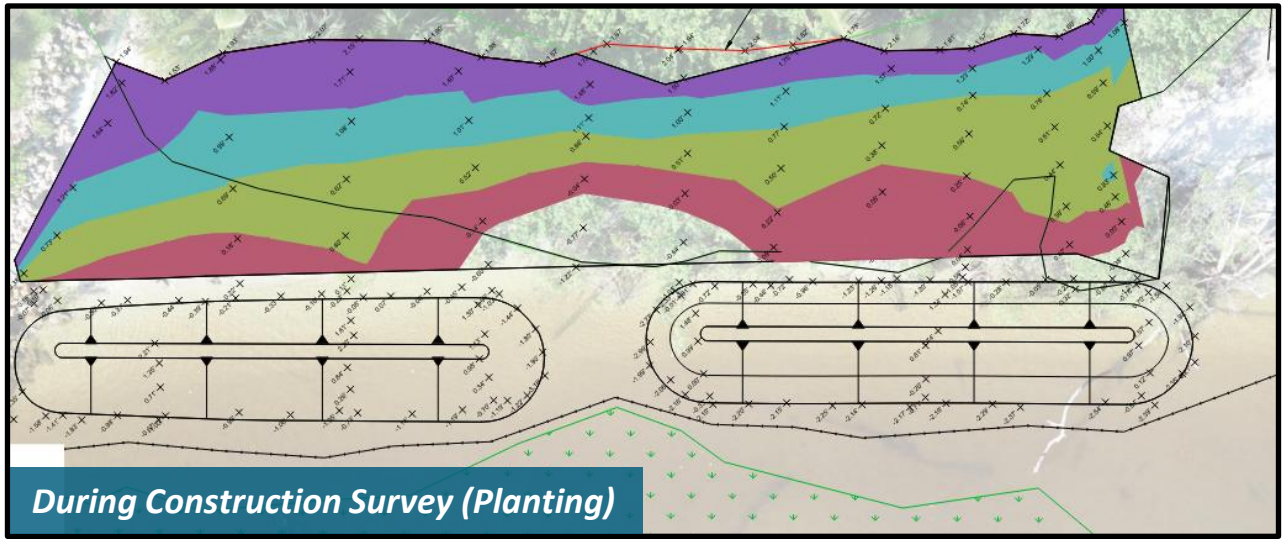

Plant Installation

During Construction Considerations

- Gopher Tortoise Exclusion Controls
  - Double silt fence
  - Mobi-matt corridor
- Updated seagrass survey
- Quarry Site Visit/ Weight Tests
- Pre-planting survey
  - Capture shoreline behavior
  - Identify suitable planting areas

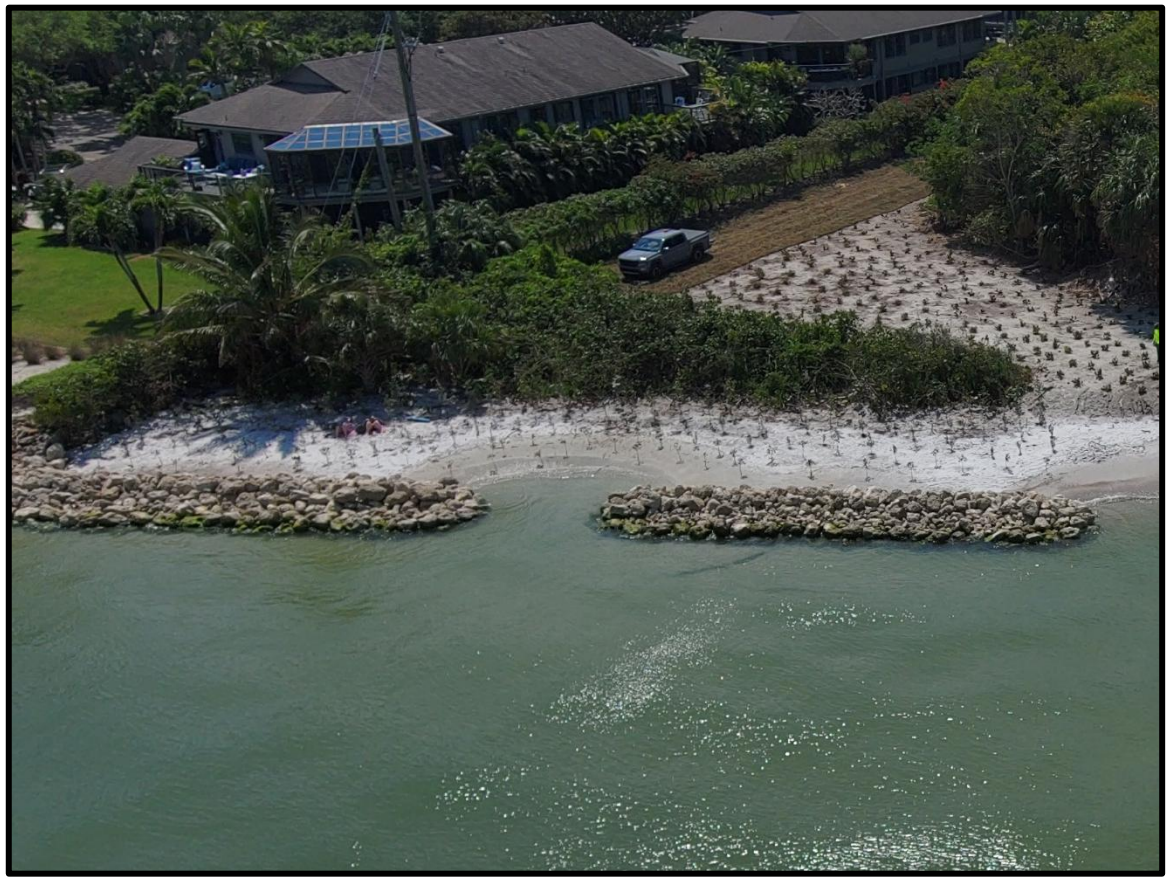
Mobi-Matt Corridor

Quarry Weight Test



During Construction Survey (Planting)

Post-Construction and Planting



1 Year Post-Construction and Planting






THANK YOU
Questions?