

# Meeting Outcomes and Agenda

- Engineering update
  - WeMo info/Shoreline erosion/shoreline condition
- Project Prioritization (inland) - poll or ranking – good expression of values? did we miss anything? Which are most important?
  - Risk/flood history/repetitive loss properties
  - Structures to protect
    - Evacuation routes, critical assets/infrastructure
    - Marsh protection / green infrastructure
  - Property ownership
  - Access points
  - Land use
- Regulations
  - State & Fed & CAMA ets.
- Survey (?)

An aerial photograph of the Nags Head coastline, showing a mix of residential areas, greenery, and sandy areas along the shore. The ocean is a deep blue, and the sky is clear.

The Town of Nags Head  
**Estuarine Shoreline Management Plan**

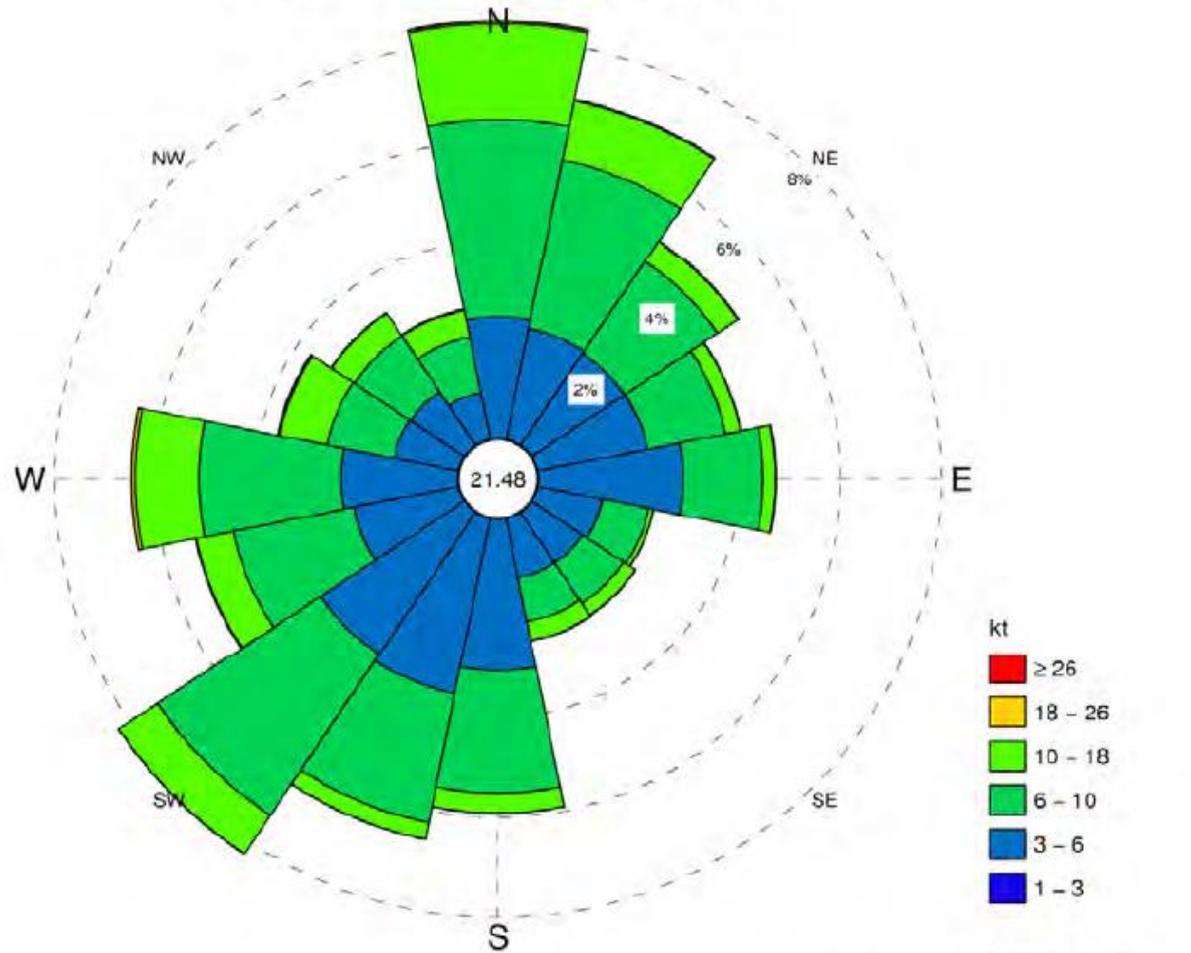
# Meeting Outcomes and Agenda

- Welcome 5 minutes
- Engineering/Typology Update 15 minutes
- Regulatory Overview 5 minutes
- Values for Project Prioritization (Discussion) 25 minutes
- Survey Intent & Content 10 minutes

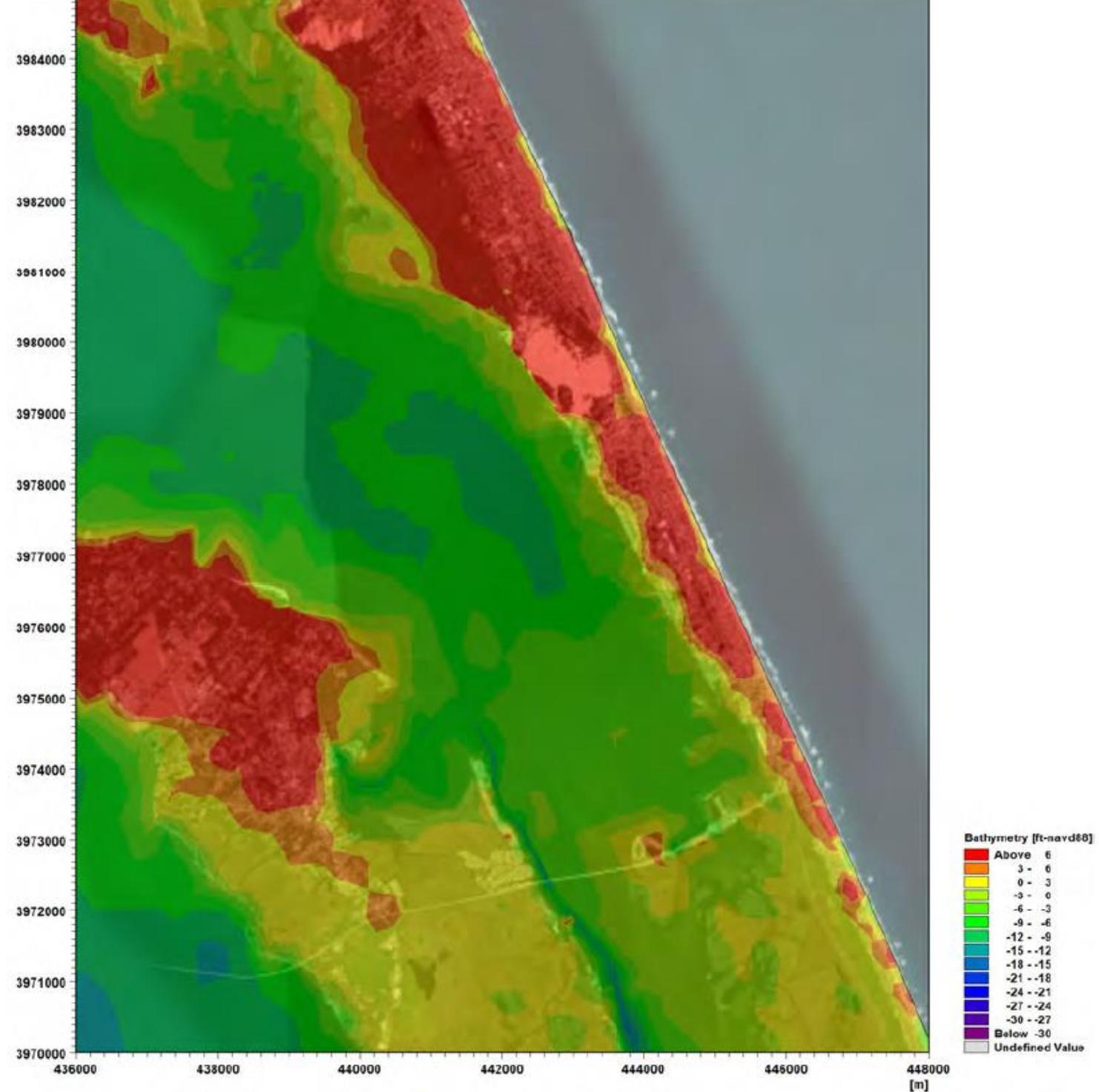
# Engineering Synthesis

- WEMo – Wave Exposure Model
- Shoreline Erosion
- Shoreline Condition

Wind Speed (Annual)  
 Station KFFA – Kill Devil Hills, North Carolina  
 Period 29-Feb-2004 to 05-Aug-2021



Direction FROM is shown  
 Center value indicates calms below 1 kt  
 Total observations 416211, calms 89399  
 About 5.66% of observations missing



# WEMo Waves

- Generates wave heights and frequencies for predictable events and exceptional storms

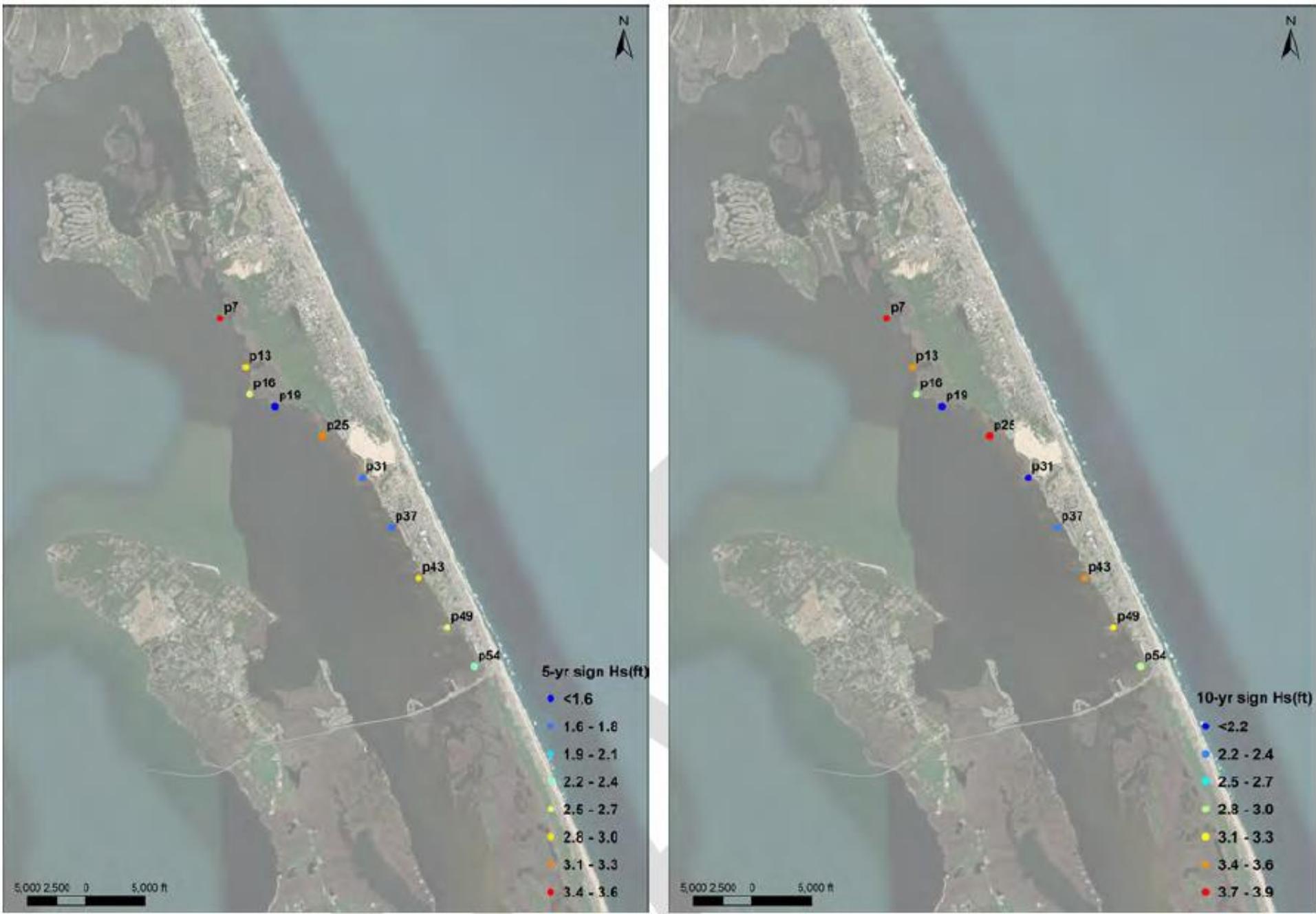
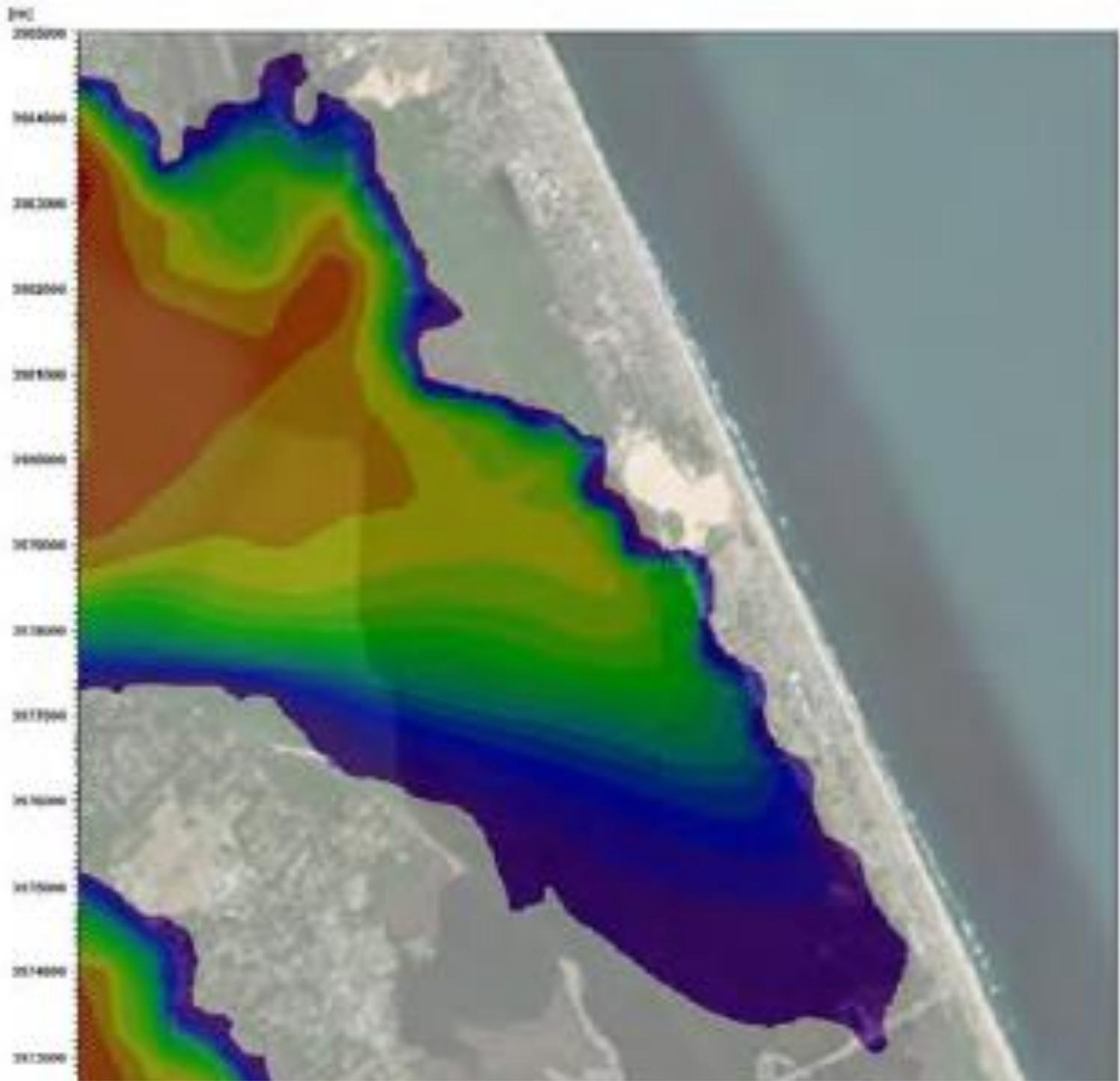
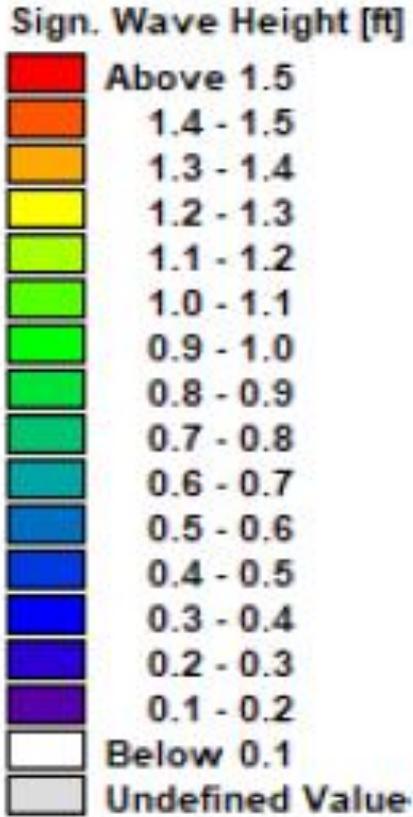


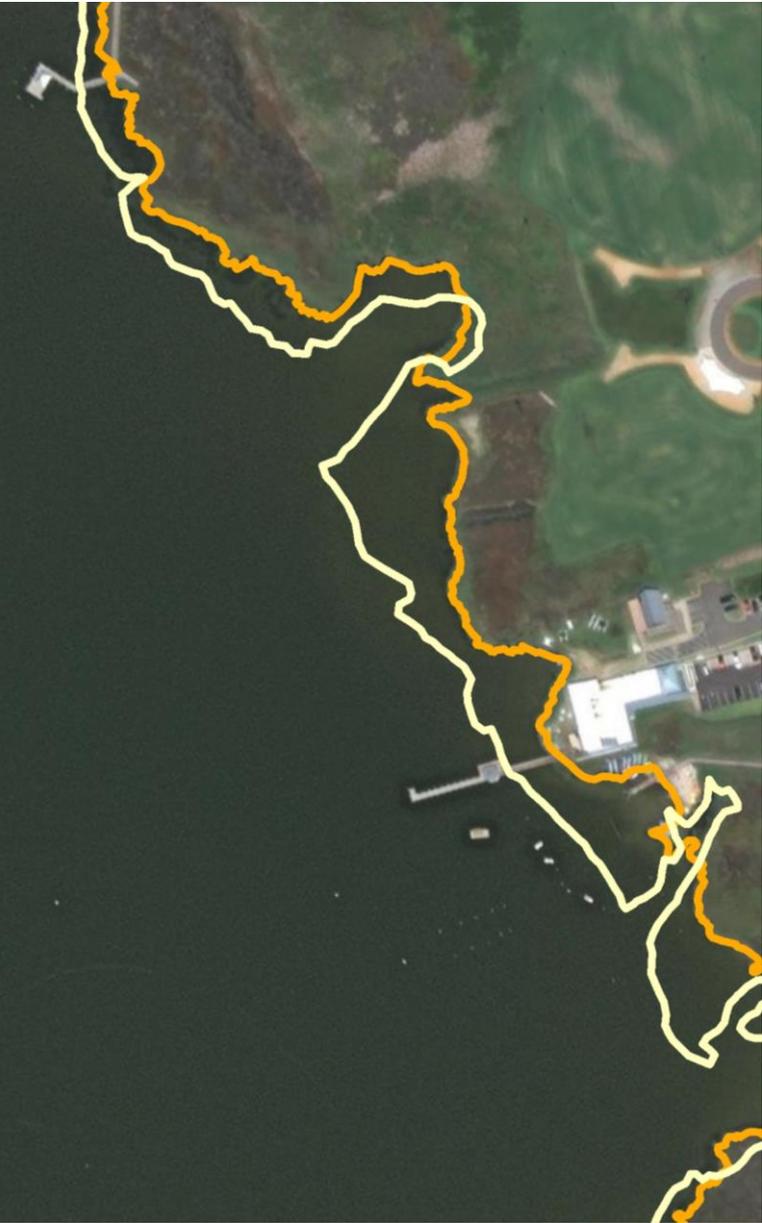
Figure 19: Significant Wave Height (Hs) for 5-year(left) and 10-year(right) return period

# SW Winds

- Significant Wave Height (Hs) for SW wind direction and 10% exceedance value 1% - 23 kt
- Exceedance = the chance a value will be exceeded within a certain time



# Shoreline Erosion



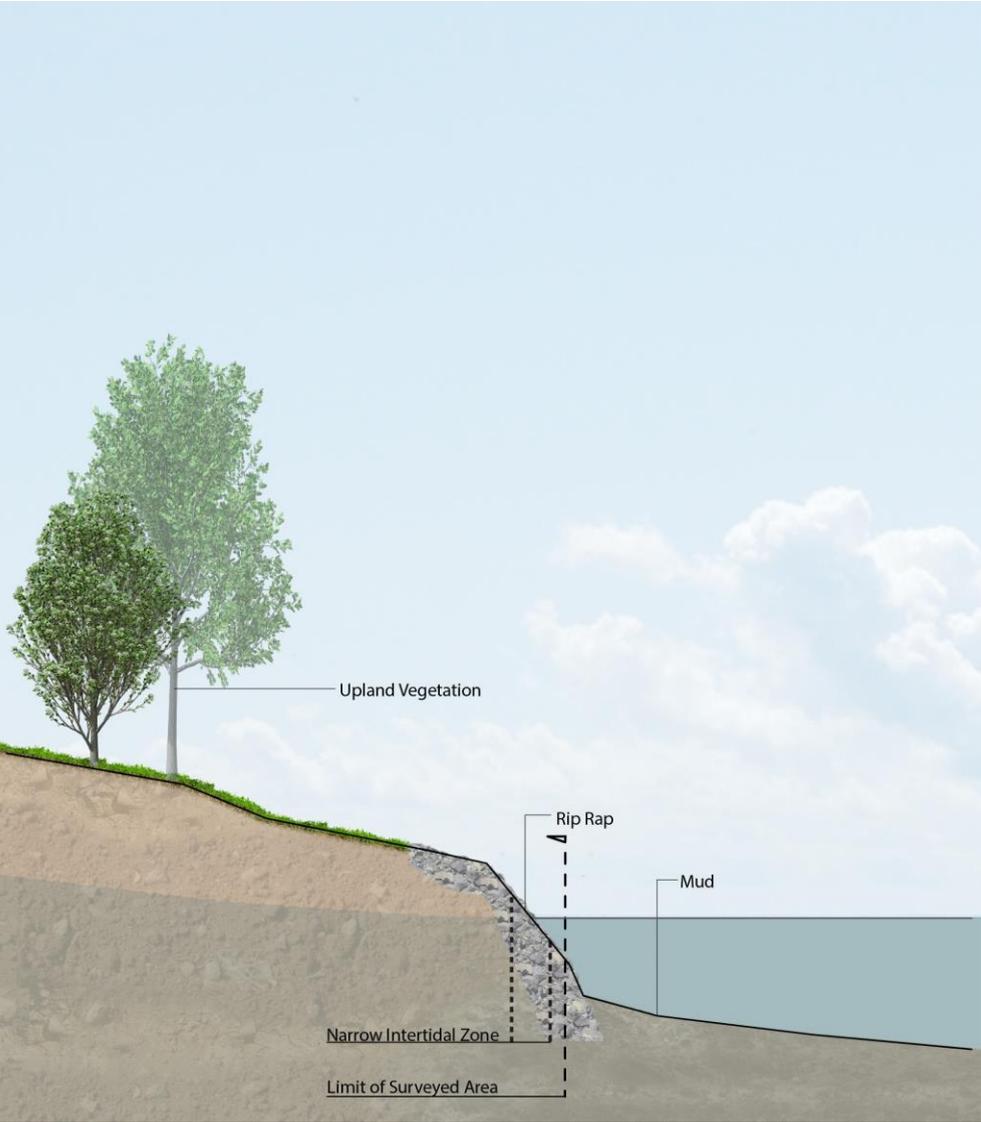
# Shoreline Character

	Feet	%
Salt- and brackish-water marshes	72,335.90	50%
Swamps	211.38	0%
Scrub-shrub wetlands	5,059.46	4%
<b>Exposed, man-made structures</b>	<b>20,159.71</b>	<b>14%</b>
Fine- to medium sand beaches	1,419.99	1%
<b>Exposed riprap</b>	<b>10,314.17</b>	<b>7%</b>
Sheltered man-made structures	18,852.57	13%
Sheltered riprap	761.32	1%
Sheltered, vegetated low banks	14,231.97	10%
<i>Total estuarine shoreline length</i>	<i>143,346.48</i>	<i>100%</i>

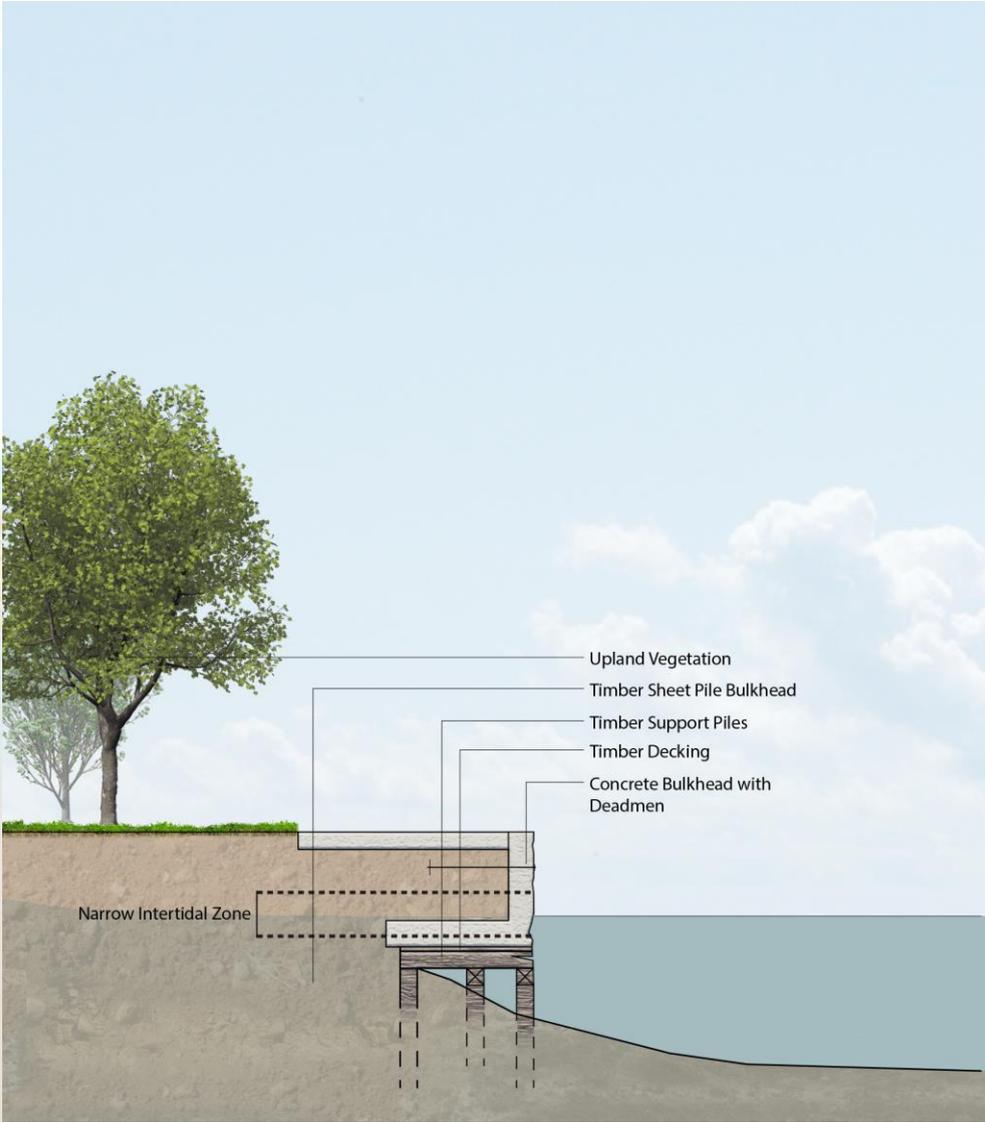
40% Hardened



# Engineering, Erosion & Character inform Typologies

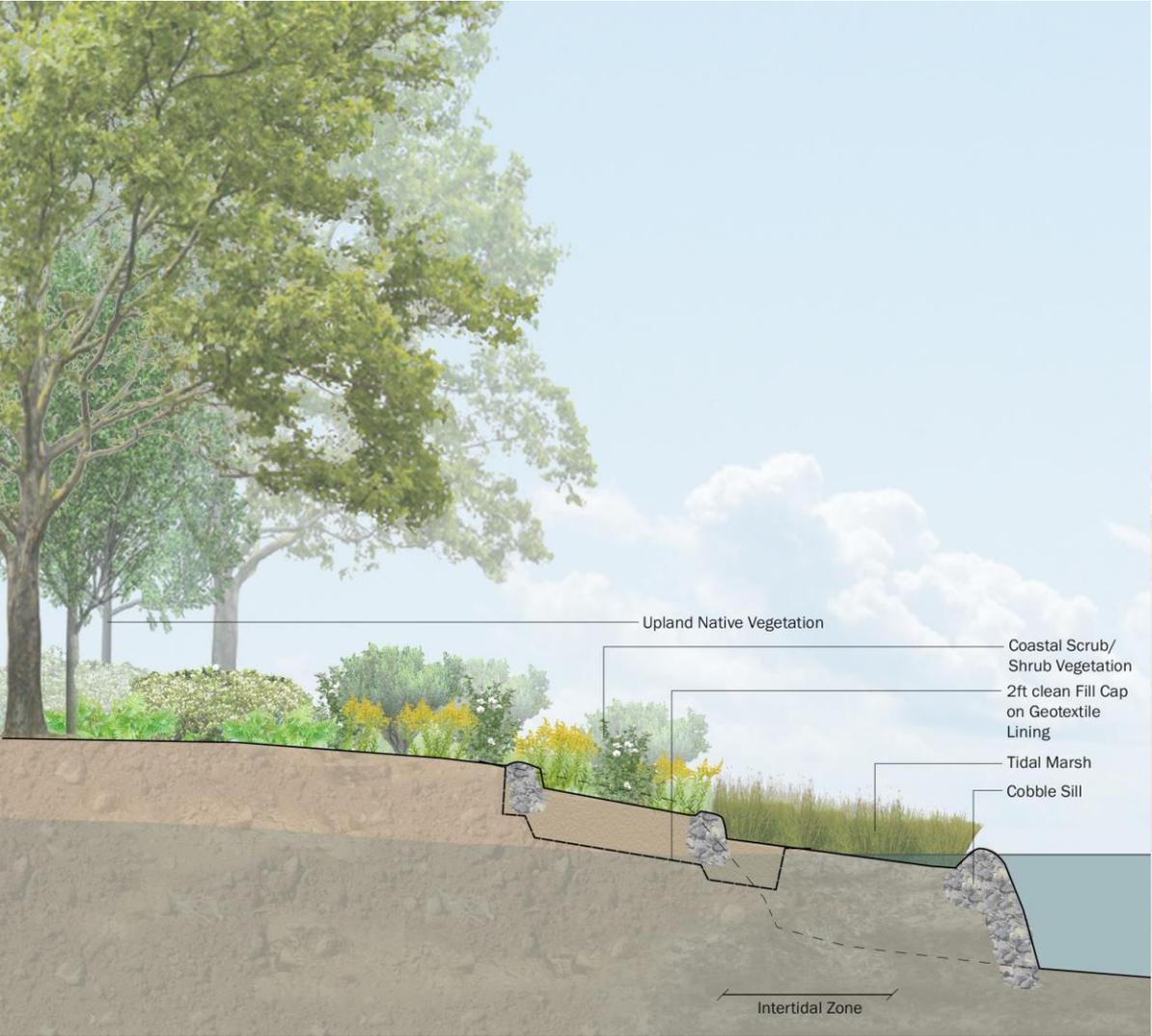


High Erosion + Medium Wave E + Rip Rap

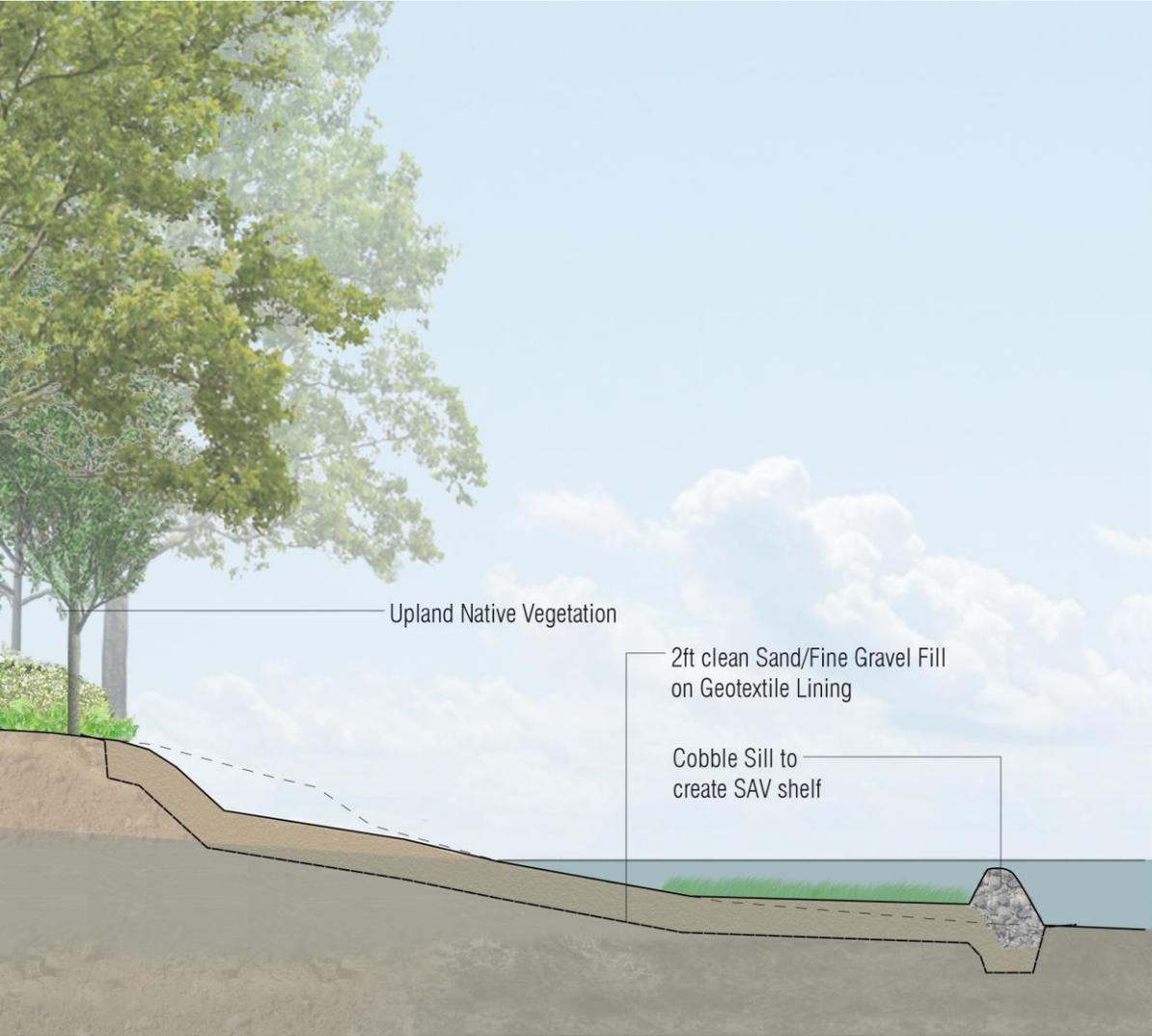


High Erosion + High Wave E + Bulkhead - concrete

# Existing Typologies get Proposed Typologies



Rip Rap on Steep Slope



Sandy shore on Low Slope

# Regulatory Overview

- USACE (United States Army Corps of Engineers)
- CAMA - Major & General Permits
- Resource Agencies
- North Carolina DCM (Division of Coastal Management)
- North Carolina DWR (Division of Water Resources)
- Zoning
  - SED-80, SPD-20
  - R-1, 2, & 3; C-2
  - PUD
- Section 11 Part 1- Land Disturbance/Stormwater/Erosion and Sediment Control



- 10 Residential
- 3 Unknown
- 1 Vacant Land (Private)
- 1 Secondary Improvement

The State of North Carolina  
Jockey's Ridge State Park

- 2 Recreation
- 68 Residential
- 3 Property owners association
- 1 County of Dare
- 2 Secondary Improvement
- 1 Vacant Land (Dare County)
- 2 Vacant Land (Nags Head)
- 10 Vacant Land (Private)

- 3 Recreation
- 1 Retail
- 1 Restaurant
- 1 Condo (undeveloped)

- 3 Recreation
- 2 Retail
- 62 Residential
- 2 Hotel, Motel, Cottage
- 2 Multi-Use
- 10 Secondary Improvement
- 14 Vacant Land (Private)
- 2 Restaurant

Town of Nags Head/The Nature Conservancy  
Nags Head Woods Preserve

# Spatial Prioritization & Values

Roads/Bridges

Water lines

Homes

Business

Docks/piers

Marsh

Conservation areas

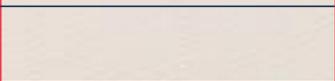
Viewsheds

Recreation access

Sandy beach



# Rate your concern about these management issues

	Very	Somewhat	Less/not
Changes to shoreline appearance and character			
Loss of marsh habitat			
Water quality in the estuary			
Land loss along the estuarine shoreline			
Erosion alongside bulkheads			
Flooding from the estuarine side			
			
			



# Which of the following estuarine shoreline benefits are most important to you?

	Least	Somewhat	Neutral	Important	Most Important
Cultural: Viewsheds, open character, natural vistas					
Recreational: Water access, recreational opportunities					
Ecological: Habitat and water quality					
Ecosystem services: Absorbing wave energy, protecting roads					

# Community Values Discussion



# Next Steps

- Legal & Permitting Analysis
- Shoreline Typologies
- Conceptual designs for 3 prioritized sites

