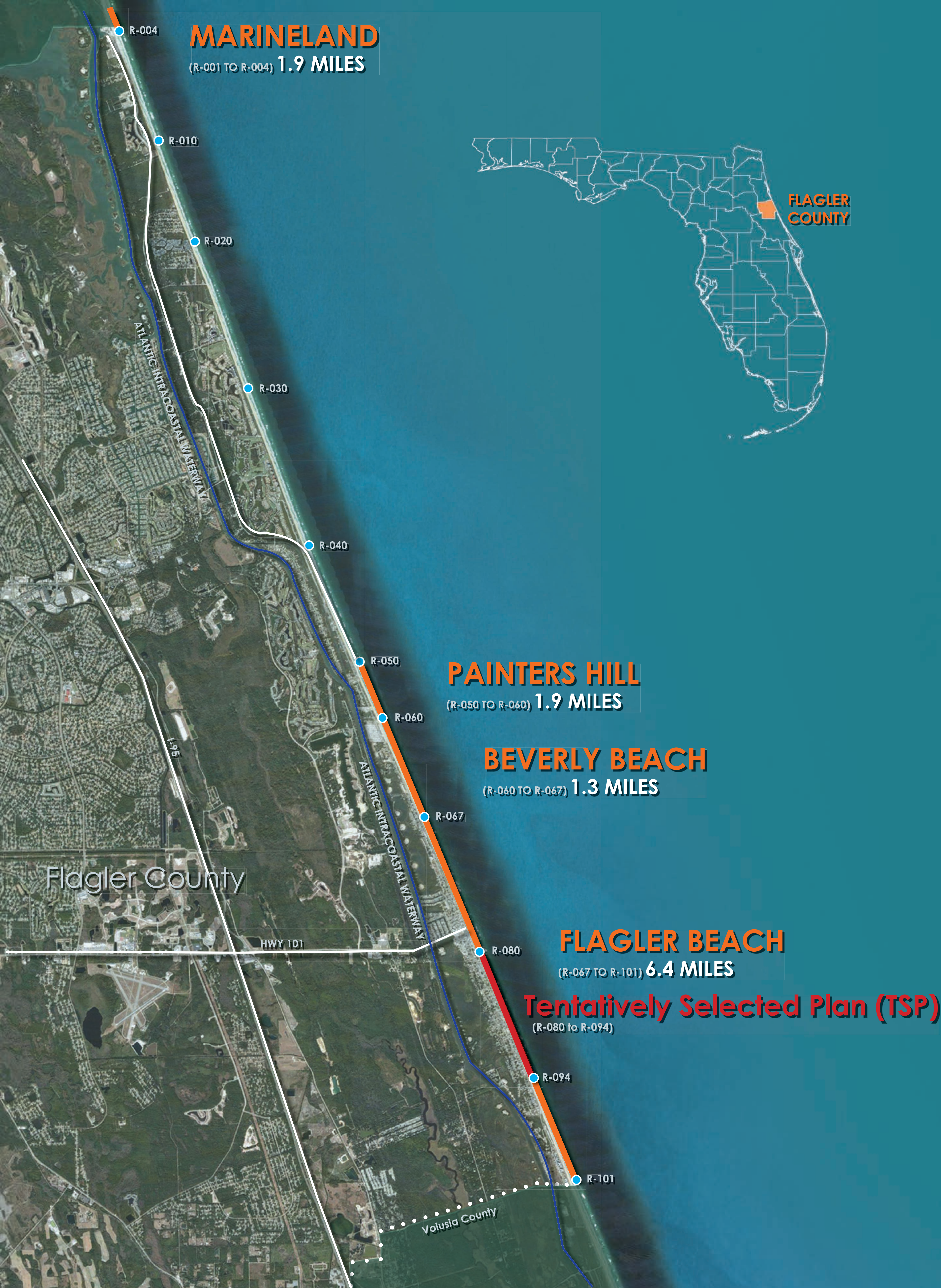


ENVIRONMENTAL CONSIDERATION

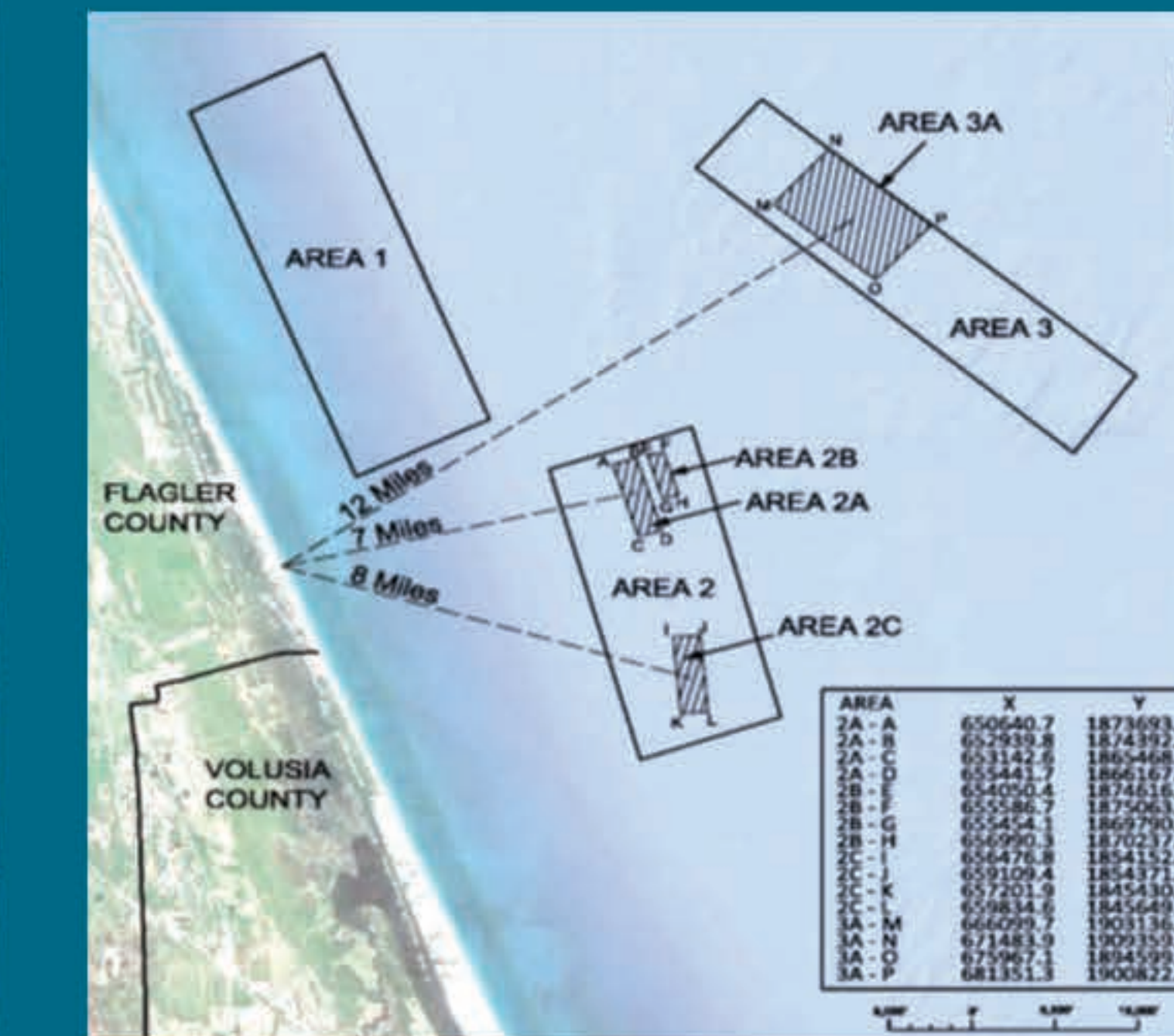


PROCESS (NATIONAL ENVIRONMENTAL POLICY ACT (NEPA))

NEPA is a federal law enacted in 1969. As required by NEPA, the Corps evaluates the potential environmental impacts to the human environment. The findings are explained in an Environmental Assessment (EA) and are available for public review and comment before any decisions are made or actions are taken. Findings compare the preferred alternative to the No-action alternative (Future without Project).



BORROW AREA 2A, B AND C



CULTURAL RESOURCES CONSIDERATION

- Archeological surveys have been completed for shoreline environment only
- The Corps is developing surveys for both the nearshore and borrow areas to determine the potential presence of any cultural resources
- The Corps will develop survey procedures in conjunction with Flagler County and the Bureau of Energy Management (BOEM) for both nearshore and offshore borrow areas.



ENVIRONMENTAL ASSESSMENT IDENTIFIES SPECIES OF CONCERN & SENSITIVE HABITATS WITH CONSIDERATION OF PROTECTED SPECIES & CRITICAL HABITATS

Coordination with applicable environmental regulatory agencies; avoid and minimize environmental impacts to the maximum extent practicable; monitor species during and after construction.

ENVIRONMENTAL ASSESSMENT SURVEYS & ANALYSIS

- Biological survey of resources
- Sea Turtle Nesting Data Analysis
- Fish Data Analysis
- Piping Plover and Shorebird Analysis
- Right Whale Wintering Habitat Study
- Nearshore and Borrow Area Sidescan Sonar Survey
- Geo-technical Survey of Sand Resources

ENVIRONMENTAL CONSEQUENCES & BENEFITS

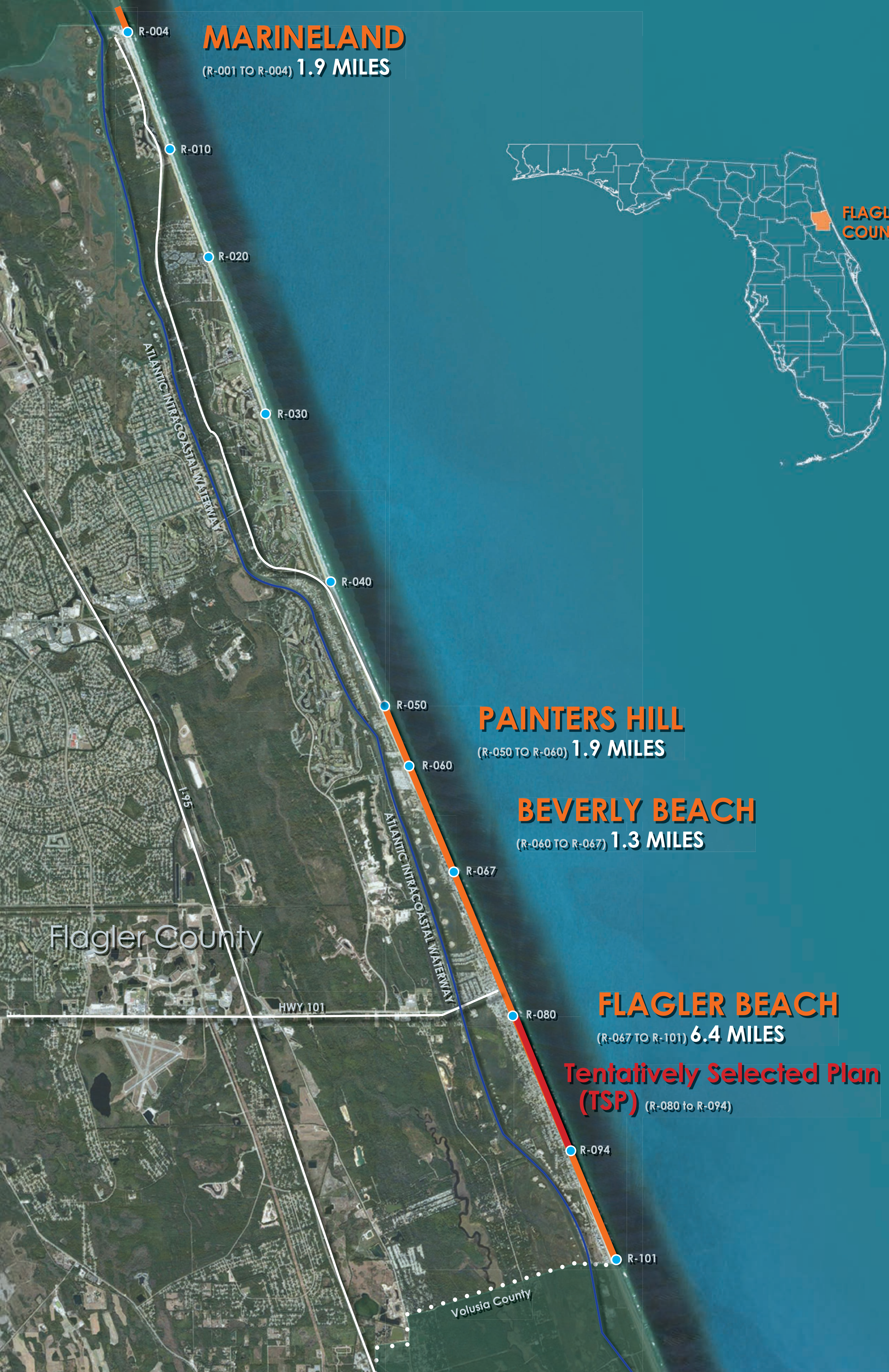
- Dune rehabilitation will reestablish living shoreline
- Establish high biodiversity for marine habitat
- Serves as nesting habitat for sea turtles
- Stabilize coastline by natural sand & dune vegetation
- Promote biodiversity of native plant species
- Provide aesthetic view to promote tourism



FLAGLER COUNTY FLORIDA HURRICANE & STORM DAMAGE REDUCTION STUDY



STUDY OVERVIEW



FLAGLER COUNTY HURRICANE AND STORM DAMAGE REDUCTION FEASIBILITY STUDY AND ENVIRONMENTAL IMPACT STATEMENT

GOAL
Reduce damages caused by erosion and coastal storms to coastal infrastructure along the Flagler County shoreline.

- OBJECTIVES**
- Reduce storm damages to coastal infrastructure
 - Maintain opportunities for recreational use of beach and nearshore areas
 - Maintain environmental quality and integrity
 - Maintain a safe hurricane evacuation route



CORPS CIVIL WORKS PROCESS & STUDY TIMELINE

Problem Identification
MAY 2002: The authority for conducting the study is contained in House Resolution 2676

Reconnaissance Study
MAR 2004: Reconnaissance Report indicates Federal interest in conducting a Feasibility Study

Feasibility Study (with integrated NEPA)
SEPT 2004: Feasibility Cost Sharing Agreement (FCSA) executed
2008: Feasibility Study initiated and scoping letter sent to local residents and agencies
2014: Feasibility Study completed and approved

Project Authorization and Appropriations
*2016: Project Authorized by Congress in a Water Resources Development Act (WRDA) Bill
*2016: Appropriations Granted in an Energy & Water Development Bill

Project Construction
*2017: Initial Project Construction
**Subject to Future Federal Funding*

- Six Step Planning Process**
- Specify Problems and Opportunities
 - Inventory and Forecast Conditions
 - Formulate Alternative Plans
 - Evaluate Effects of Alternative Plans
 - Compare Alternative Plans
 - Select Recommended Plan

PUBLIC PARTICIPATION
The Jacksonville District invites the public to review and comment on the Draft Integrated Feasibility Study and Environmental Assessment.

Comments/Questions

US Army Corps of Engineers Jacksonville District

See Privacy Act Statement on reverse side

SUBJECT/EVENT: _____
DATE: _____

COMMENTS/QUESTIONS

NAME AND TITLE (PLEASE PRINT): _____
MAILING ADDRESS: _____
CITY: _____ STATE: _____ ZIP CODE: _____
PHONE NUMBER: _____
EMAIL ADDRESS: _____

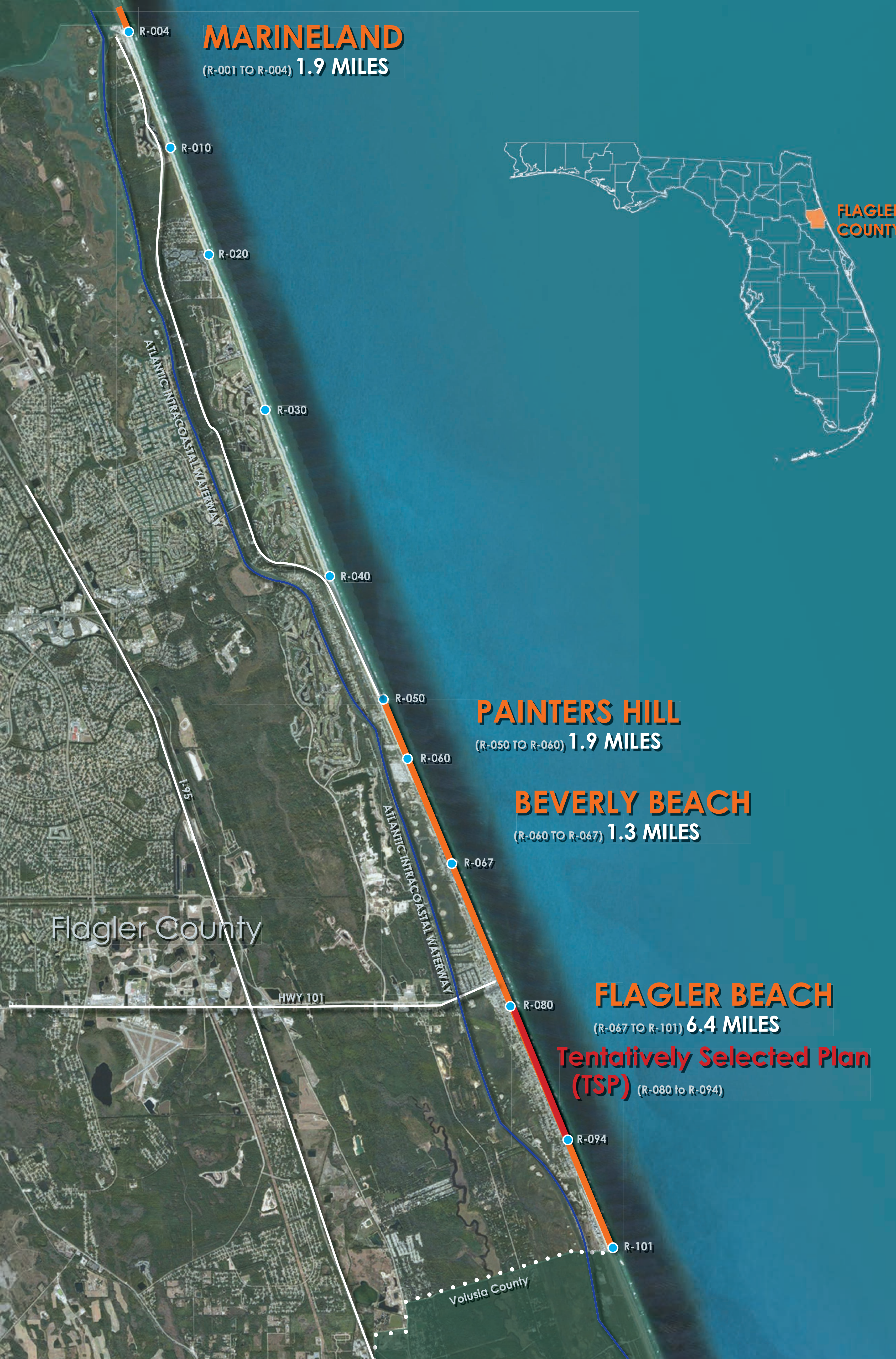
PARTICIPATE TODAY
Please provide your comments on the Flagler County Hurricane and Storm Damage Reduction Study. The Draft Study and Environmental Assessment are available online at <http://1.usa.gov/1fCScyH>.

- Comments may be submitted:
1. Using a comment sheet provided here today
 2. Electronically entering them at: FlaglerHSDR.Comments@usace.army.mil
 3. Writing and mailing them to:
U.S. Army Corps of Engineers
Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019
attn: Kathleen McConnell



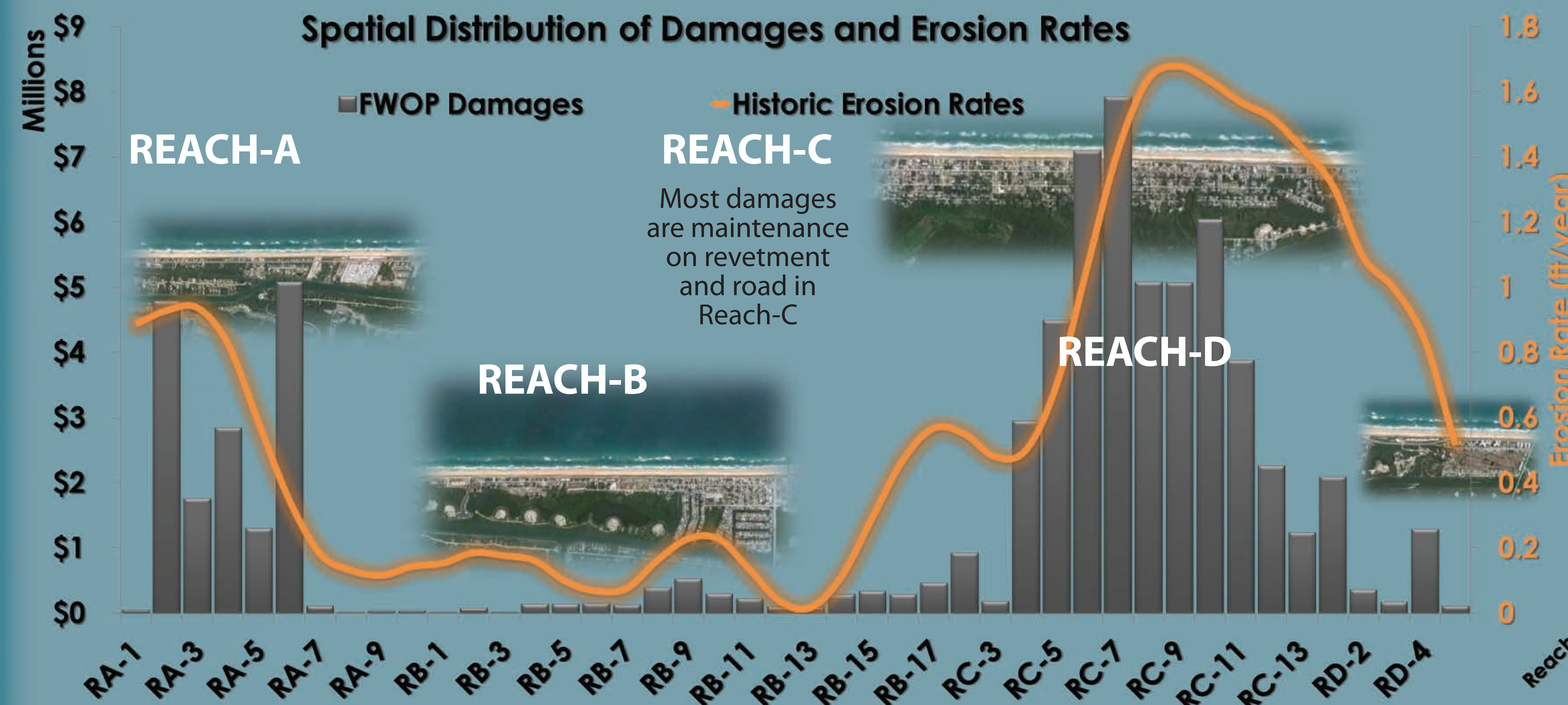
FLAGLER COUNTY FLORIDA HURRICANE & STORM DAMAGE REDUCTION STUDY



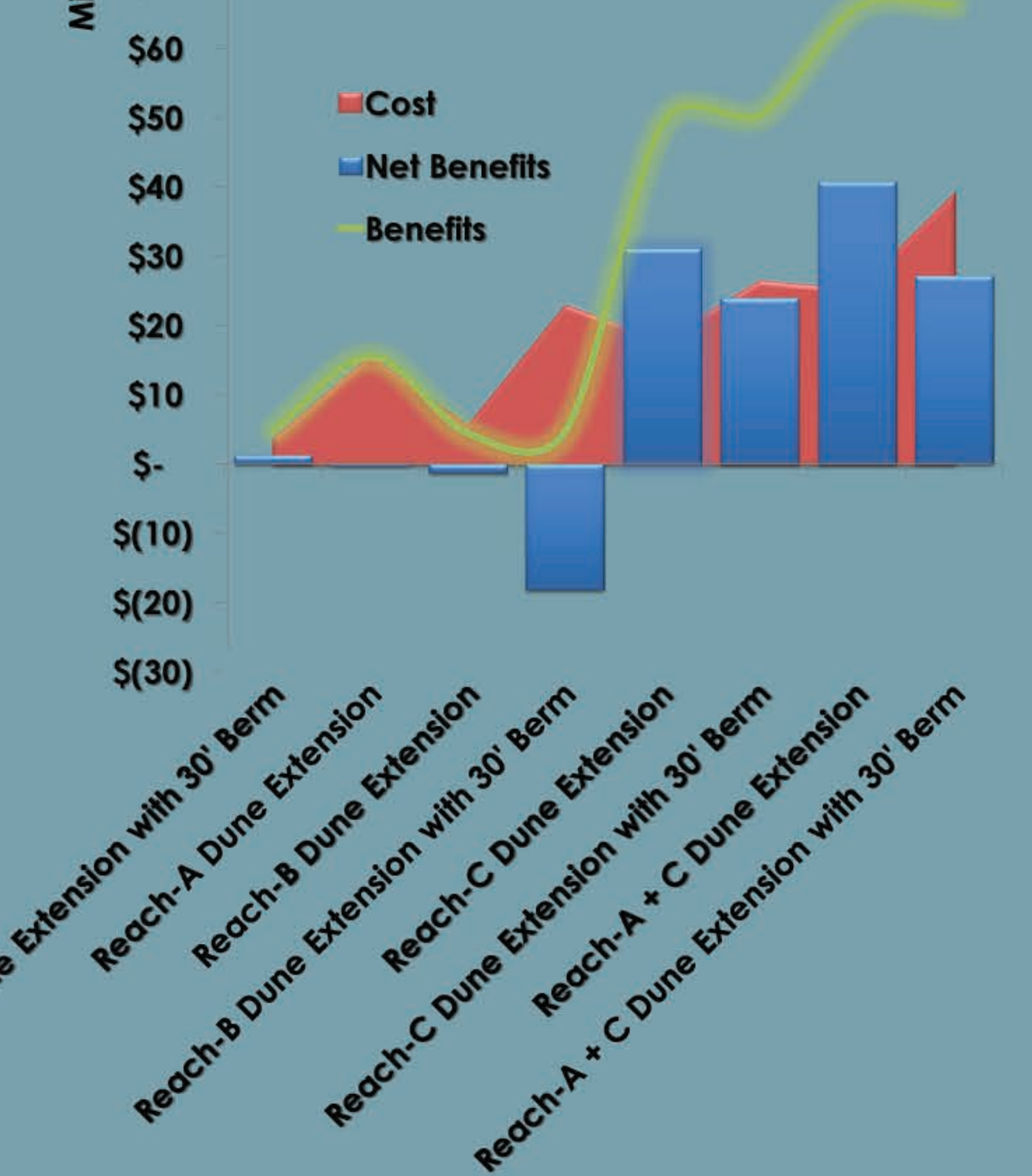


ECONOMIC CONSIDERATION

FUTURE WITHOUT PROJECT CONDITION



ALTERNATIVE EVALUATION

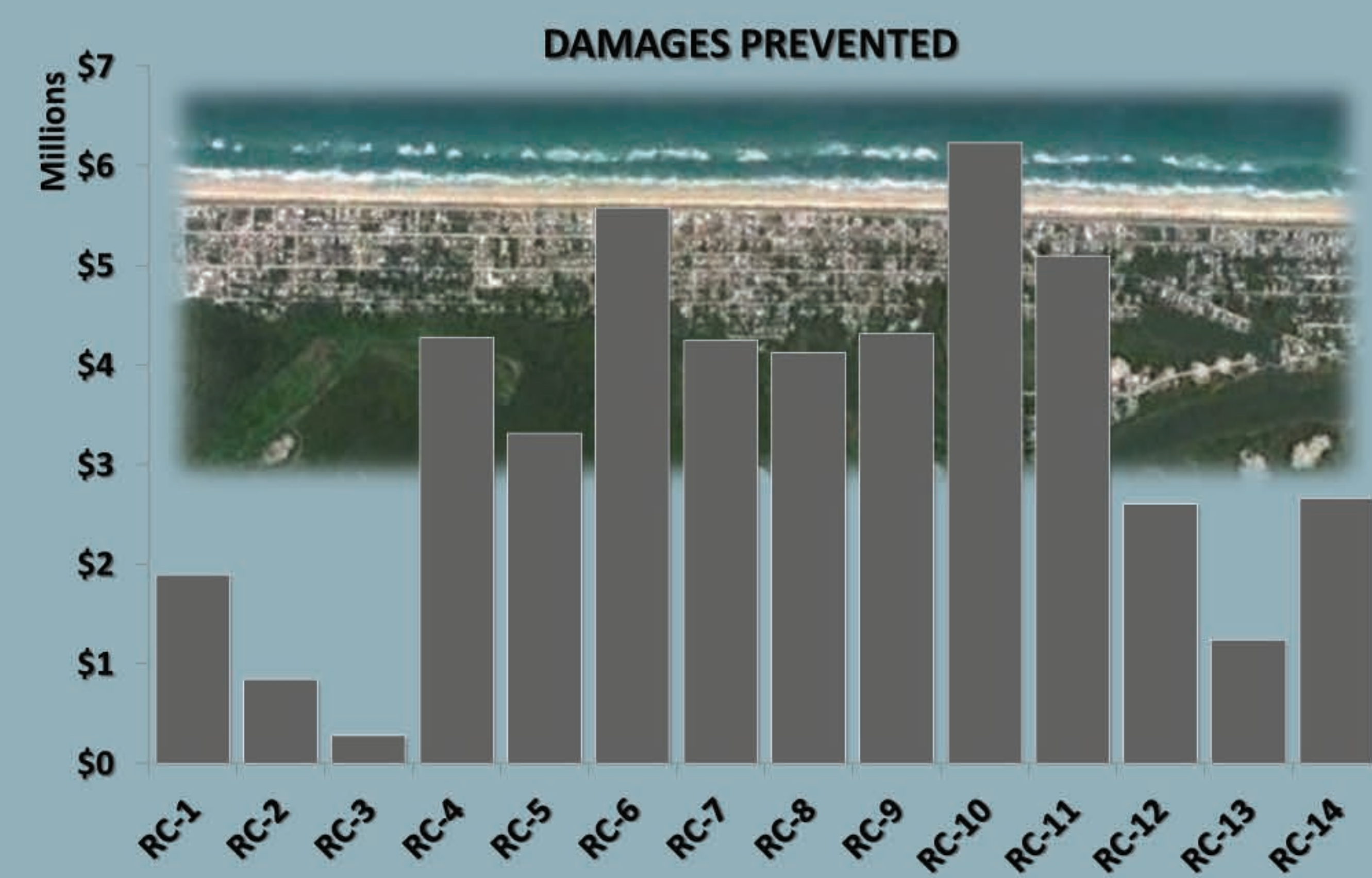
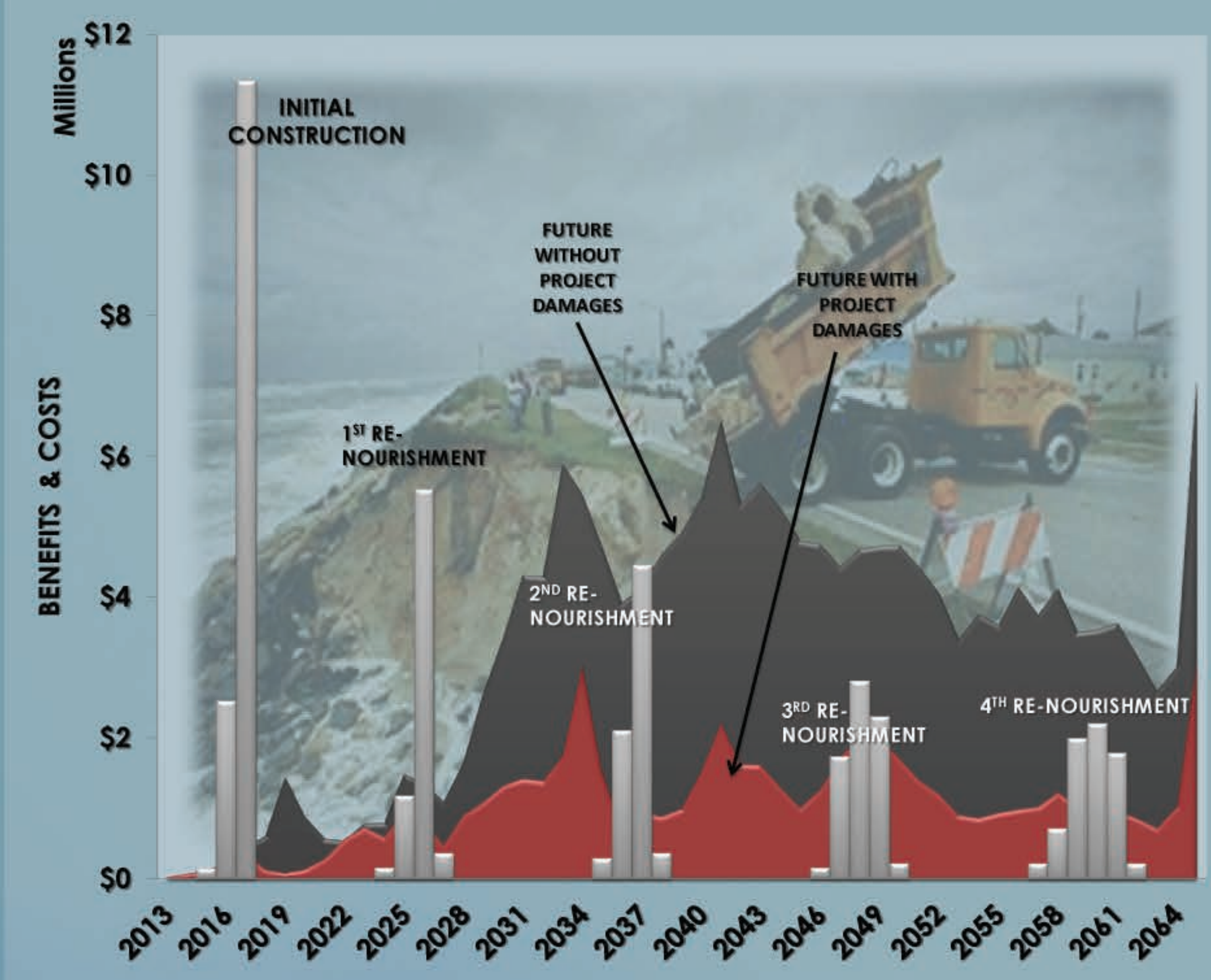


Reach-A has inadequate public access

Federal project could not economically be justified for Reaches-B & D

Dune nourishment in Reach-C meets study objectives and most reasonably maximizes national economic development

PLAN PERFORMANCE



Economic Summary in Average Annual Dollars	Summary
Price Level	FY14
Discount Rate	3.5%
Storm Damage Reduction Benefits	\$1,971,000
Recreation Benefits	\$72,000
Total Benefits	\$2,043,000
Cost	\$1,119,000
Net Benefits	\$924,000
Benefit Cost Ratio	1.83

FLAGLER COUNTY FLORIDA HURRICANE & STORM DAMAGE REDUCTION STUDY

HURRICANE & STORM DAMAGE REDUCTION ECONOMIC ANALYSIS

FEDERAL OBJECTIVE
Reasonably maximize net national economic development

STUDY OBJECTIVE
Develop plan to reduce risk of hurricane & storm damages

REASON FOR ECONOMIC ANALYSIS
Measure value of accomplishing study objective relative to the cost to determine federal interest

REACH-A

Mostly residential structures seaward of A1A

REACH-B

Low erosion rates
Development landward of A1A

REACH-C

FDOT revetment/ Seawall High erosion rates
Development landward of A1A

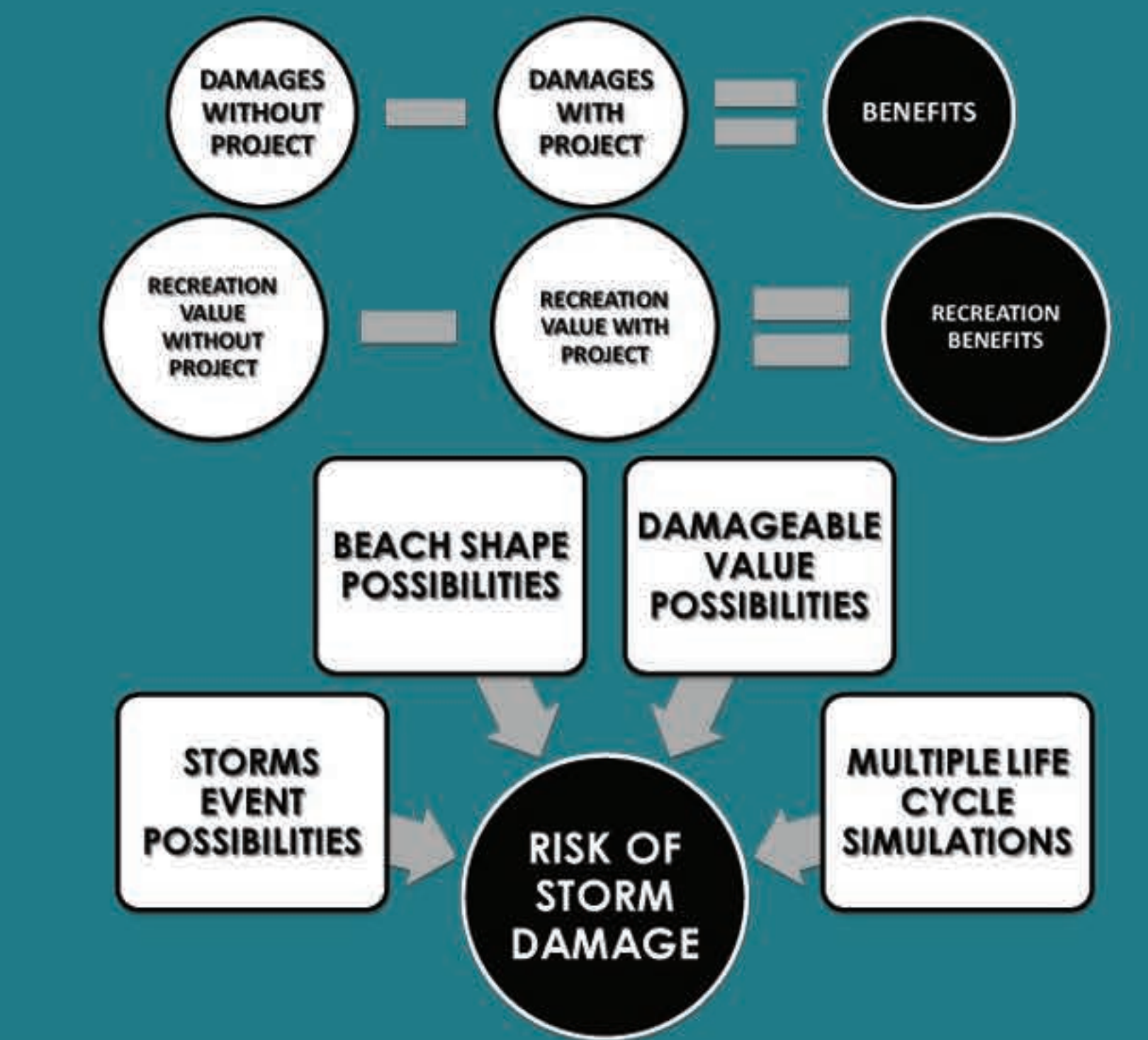
REACH-D

Gamble Rogers Park
Some Development landward of A1A

DECISION CRITERIA

- Benefits/Cost > 1**
- National Economic Development Plan = Plan that most reasonably maximizes Net National Economic Development Benefits
- Benefits**
- Storm Damage Reduction
 - Recreation
- Cost**
- Initial Construction
 - Periodic Renourishment
 - Maintenance
 - Mitigation & Monitoring

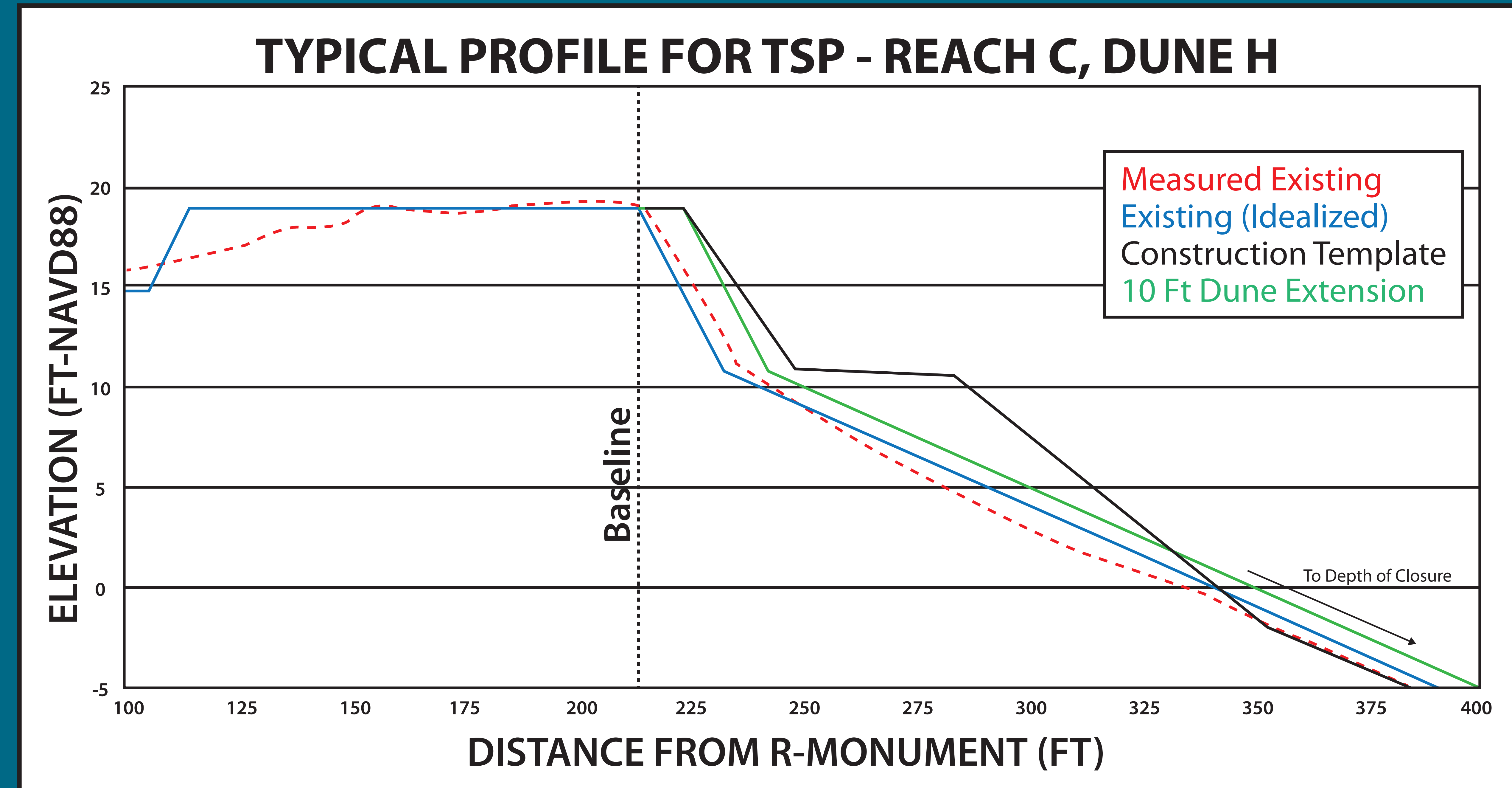
ANALYTICAL METHODS



ENGINEERING CONSIDERATION

FLAGLER COUNTY PHYSICAL CONDITIONS

- Net littoral transport from north to south
- Dominant winds from the northeast
- Mean monthly wave heights range from 2.26 feet in July to 4.49 feet in November
- Mean ocean tidal range of 4.2 feet
- Historic sea level rise estimated at 0.0079 feet/year
- On average the bluff (dune) is about 10 feet higher than the beach berm



FLAGLER COUNTY FLORIDA HURRICANE & STORM DAMAGE REDUCTION STUDY



Name	Reach CduneH
Description	10-foot seaward extension of the existing dune and beach profile in Reach-C
Shoreline Length	2.6 miles
# of Anticipated Nourishment Events	5
Average Nourishment Interval	11 years
FDEP Monuments	R80 - R94
Average Volume of each nourishment event (cubic yards)	320,000
Total Volume over life of project (cubic yards)	1,600,000



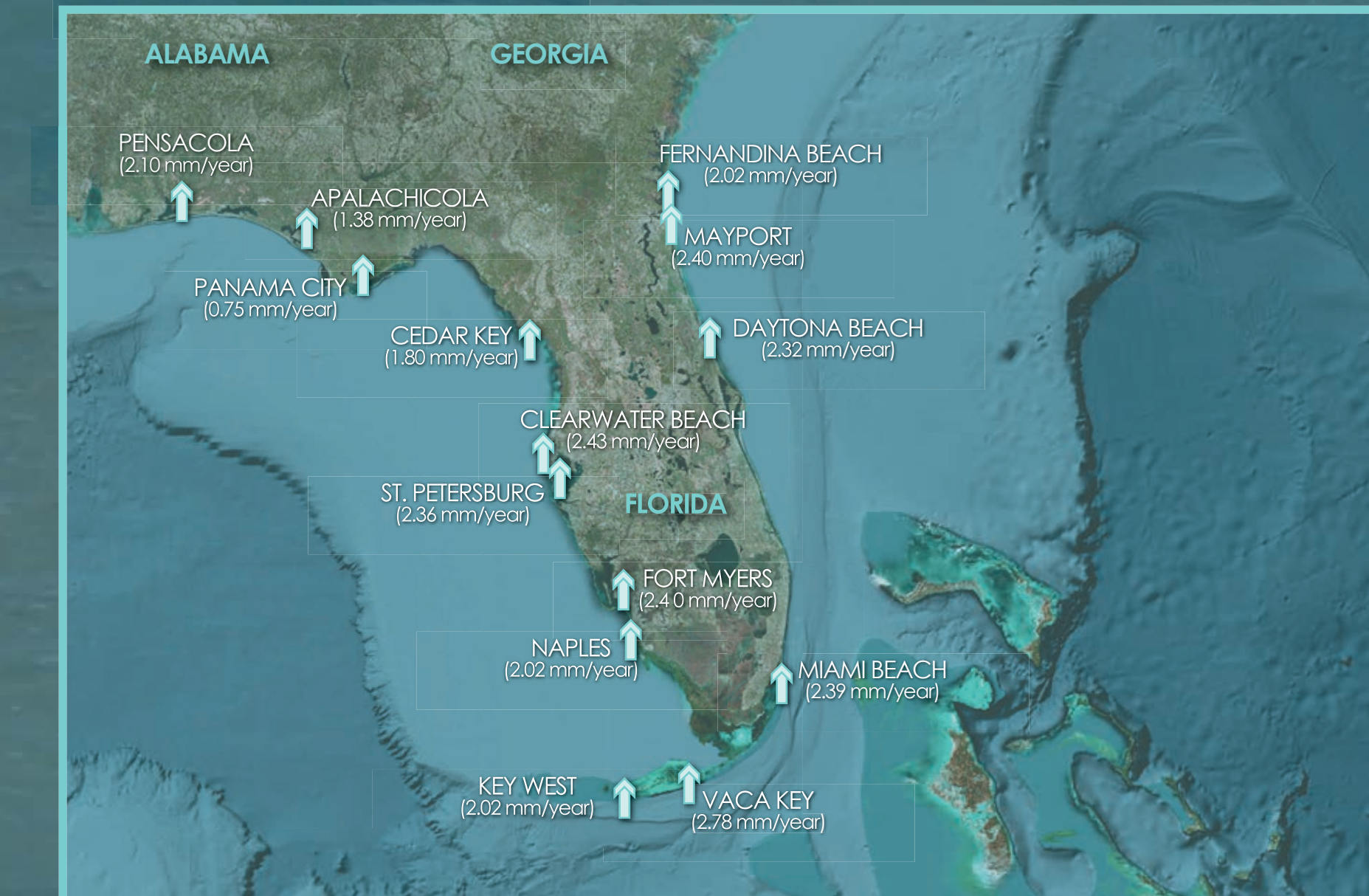
FLORIDA BEACH BASICS

FLORIDA BEACHES GEOLOGY



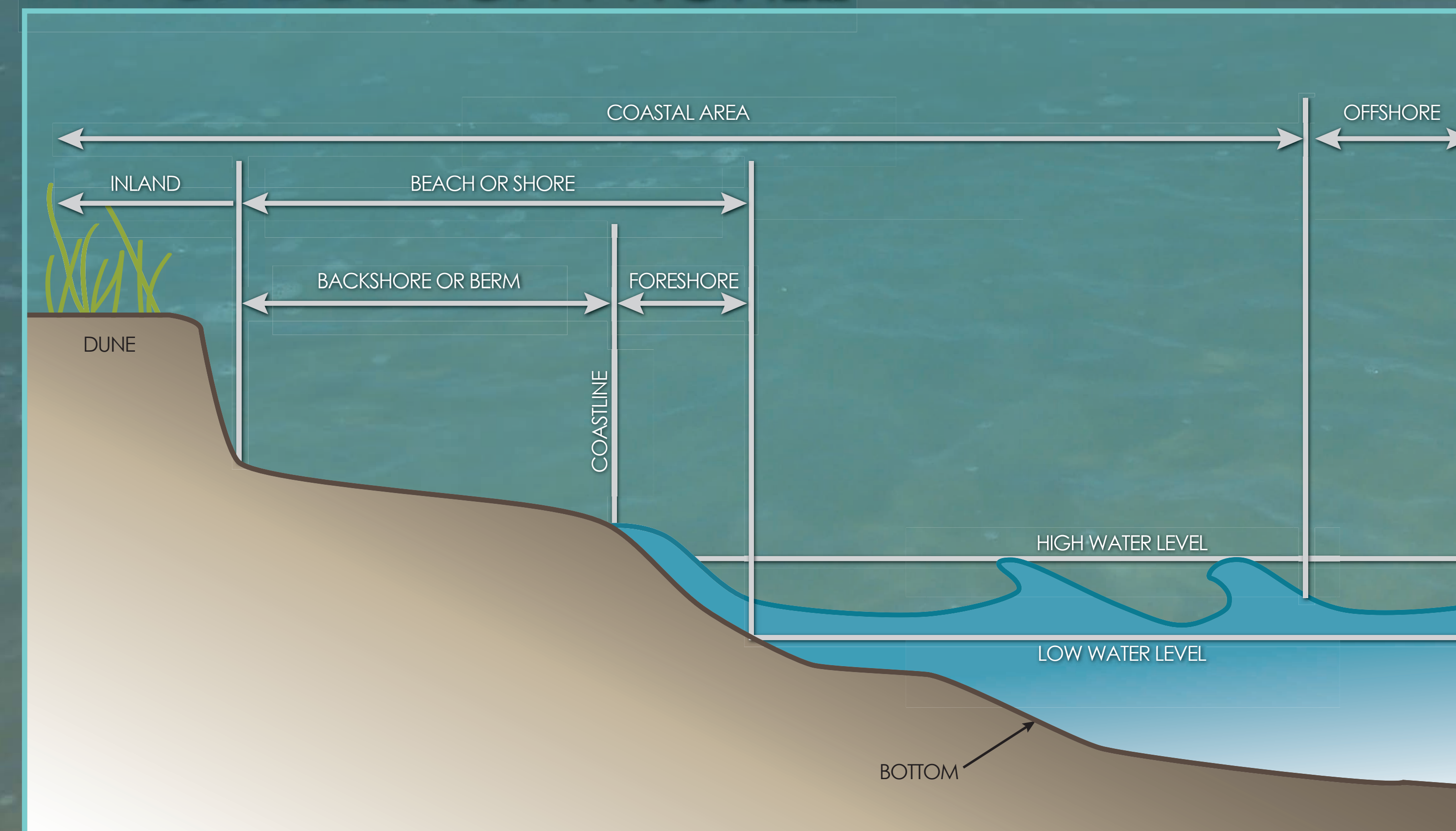
- About 13,000 years ago the Florida coastline was much farther seaward.
- Even at that time people were drawn to the beaches. The coastline was a great place to live for the same reasons it is today.
- As glaciers melted, sea level rose and about 5,000 years ago the shoreline reached a shape similar to what it is today.
- The paleo-indian infrastructure was highly mobile. As the coastline moved landward, they could likely relocate with relative ease.

SEA LEVEL



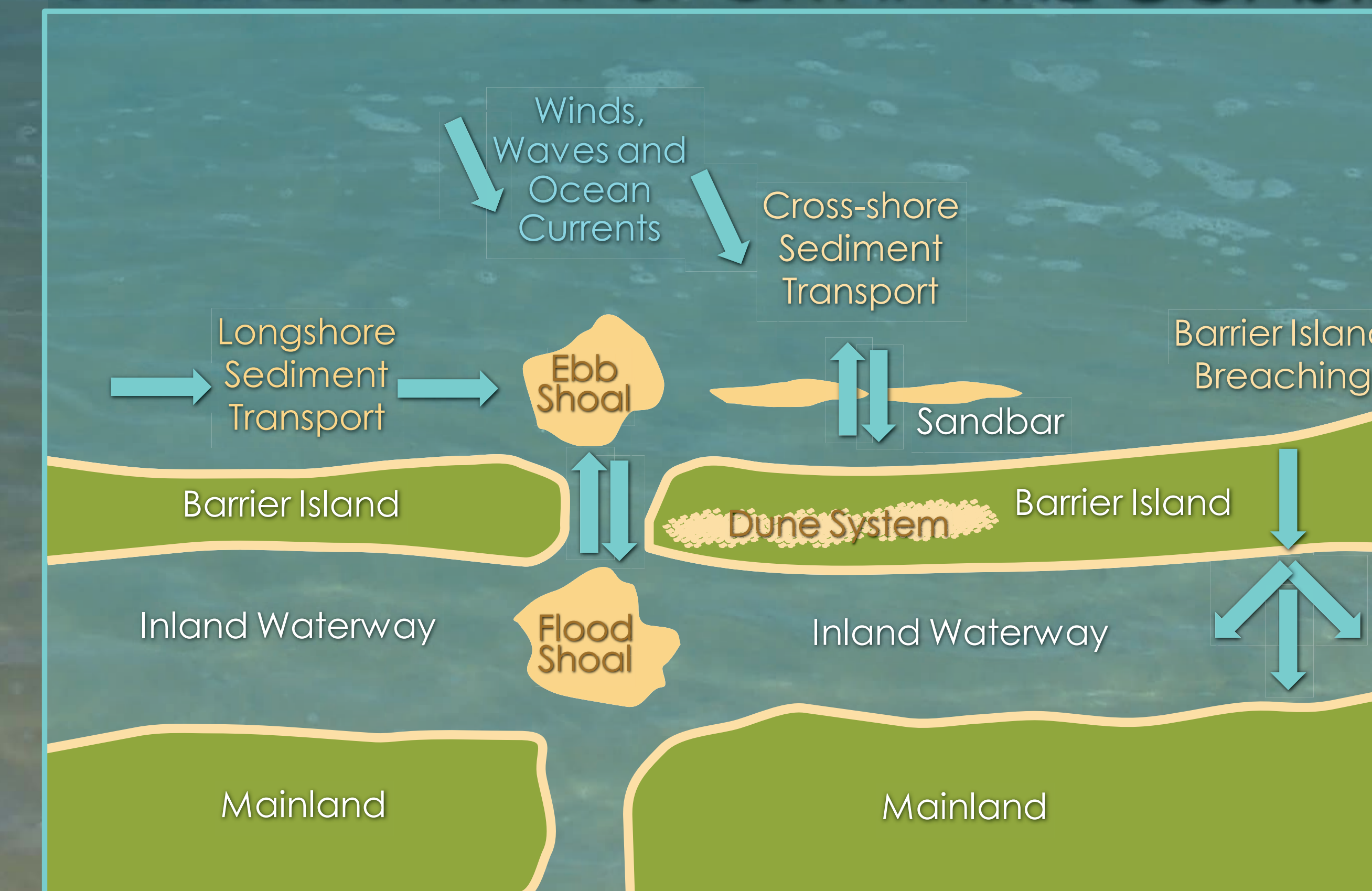
- Rates of relative local mean sea level observed at long term tide stations (minimum of 30 years of data) around Florida indicate that sea level is rising between 0-3 mm/year or 0-1 feet per century. (Source: NOAA)
- Recent climate research by the Intergovernmental Panel on Climate Change (IPCC) predicts continued or accelerated global warming for the 21st Century and possibly beyond, which will cause a continued or accelerated rise in global mean sea-level.

TYPICAL BEACH PROFILE



Coastal beaches function as a system. The beach not only includes the dunes and berm, or the dry part of the beach, but also the wet part of the beach that slopes underwater.

SEDIMENT TRANSPORT IN THE COASTAL ZONE



The coastal zone – where land, sea and sky all interact – is a complex system of sediment movement that ultimately defines the morphology, or shape of a natural coastline. Captive to the forces of wind, waves and currents, sediment within the coastal system is forever moving. As sediment is transported throughout the system by natural forces, the coastline both erodes as sand is transported away from the beach and accretes as sand is deposited onto the beach.

The process of sediment moving perpendicular to the shoreline is called cross-shore transport. Long-shore sediment transport describes sediment movement parallel to the coastline. At inlets, tidal currents can transport sediment along with other forces to create shoals. Sand deposited on the inside of the inlet creates flood shoals, and sand deposited seaward of the inlet creates ebb shoals. Aeolian transport (wind-driven) moves sand from or to dunes and dry beaches. During storms the forces that drive sediment movement intensify and changes to the natural system can be greater.

MODERN COASTAL DEVELOPMENT

Decades of beachfront development has interrupted the natural and necessary movement of sediment and interfered with coastal processes at our nation's beaches. Because people highly value the economic, recreational and environmental resources on the coasts, there is public interest in protecting our nation's beaches.

Hurricane and Storm Damage Reduction projects can help safeguard the public's investment in our nation's coasts.

