

SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



SARASOTA COUNTY



www.charlotte-beachrestoration.com

www.beachstudy.com

SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



OBJECTIVES OF BCC PRESENTATION

- **Present:**
 - Project Overview
 - Conceptual Alternatives
 - Potential Funding Sources and Plans
- **Provide an Opportunity for Public Discussion**
- **Identify Modifications or Objections to Community Goals for Beach Management and Erosion Control & Develop Prioritized Order of Alternatives Based on Community Consensus**
- **Present Preliminary Cost Estimates & Continue Discussions Relative to Potential Project Funding and Community's "Willingness to Pay"**



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SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



PROJECT OVERVIEW

PROJECT FUNDING

50% STATE - DEP

31% - SARASOTA

19% - CHARLOTTE

32 MILES OF SHORELINE

SARASOTA = 21

CHARLOTTE = 11

CRITICAL EROSION AREAS

SARASOTA = 10.5 MI

CHARLOTTE = 6 MI



SARASOTA

SIESTA KEY

CASEY KEY

MANASOTA KEY

CHARLOTTE

MANASOTA KEY

KNIGHT ISLAND

DON PEDRO ISLAND

LITTLE

GASPARILLA

ISLAND

SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



GOALS OF THE STUDY

- **Site Characterization and Risk Assessment**
- **Identify Community Shoreline Needs**
- **Assess Feasibility of Erosion Control Projects**
- **Develop Conceptual Alternatives and Funding Plans**
- **Provide Public Education For Technical Components and Funding**
- **Build Public Consensus and Support and Assess Stakeholders “Willingness” To Pay**

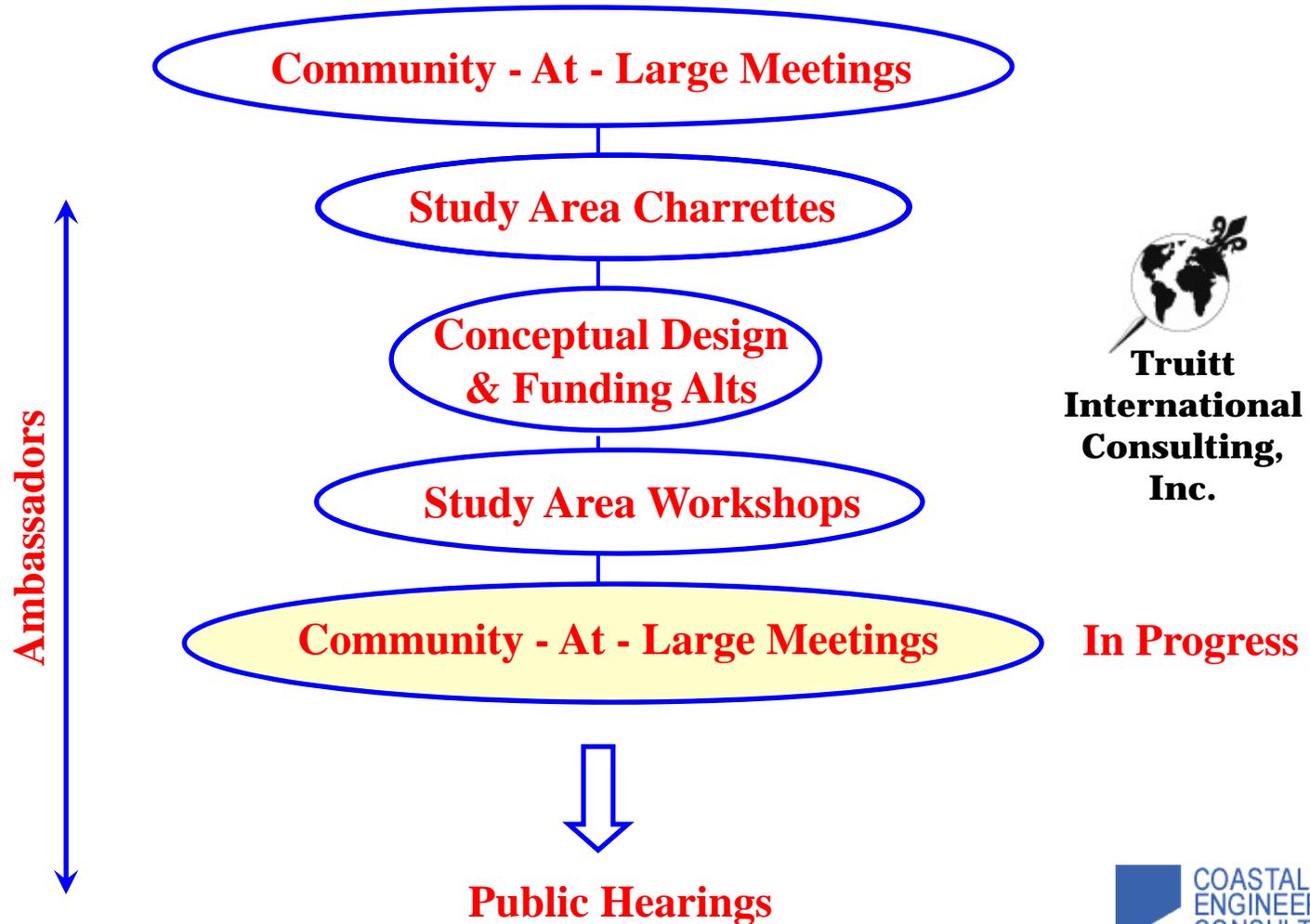


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PUBLIC INVOLVEMENT PROCESS



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SITE CHARACTERIZATION

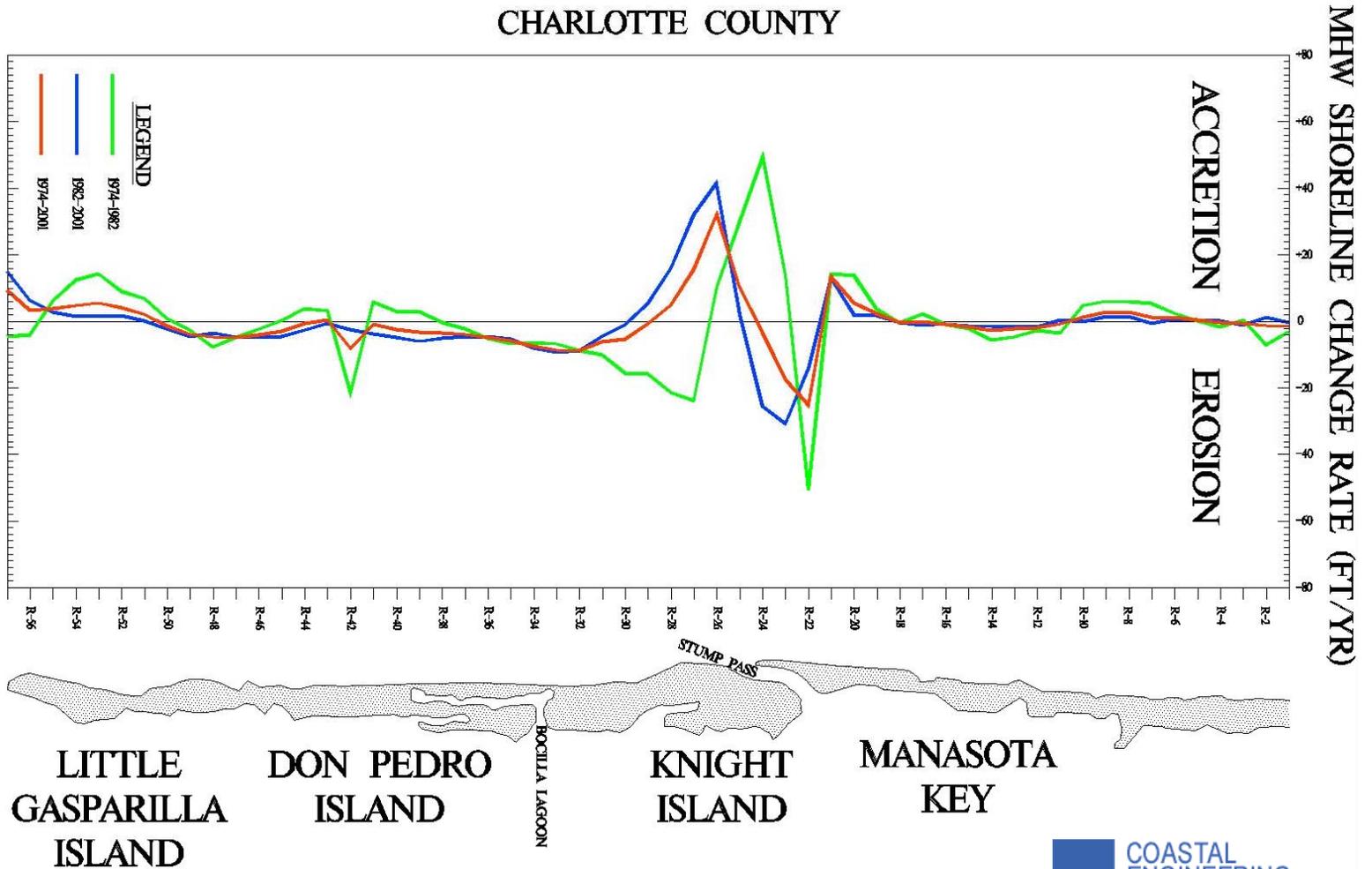
- **Beach Profile Surveys**
- **Aerial Photography**
- **Historical Erosion Analysis**
- **Wave Climate and Design Criteria**
- **Erosion Modeling & Risk Assessment**
- **Sand Source Inventory**
- **Natural Resources**

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HISTORICAL EROSION ANALYSIS

CHARLOTTE COUNTY

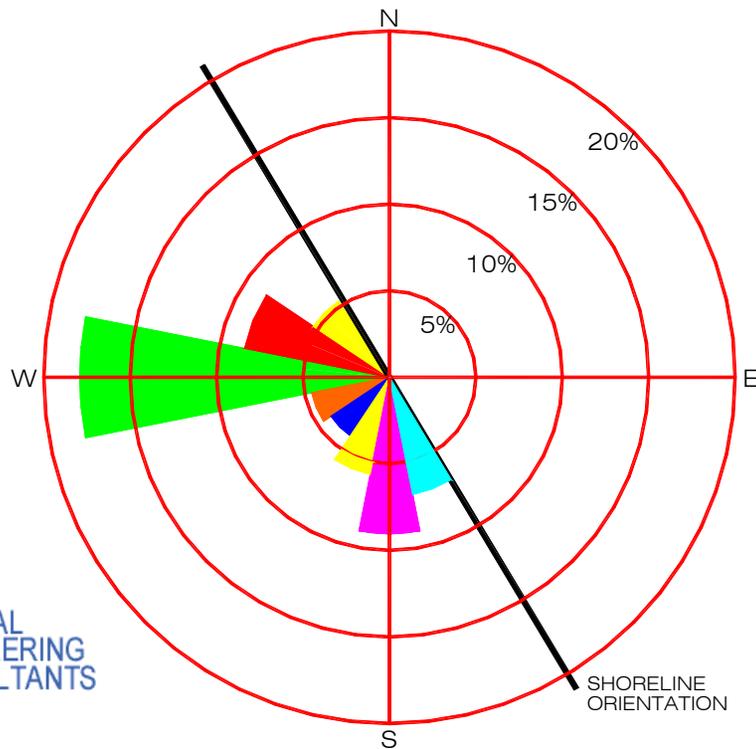


SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



WAVE CLIMATE AND DESIGN CRITERIA

WAVE DIRECTION,
PERCENT OCCURRENCE



SELECTED W.I.S. DATA FROM
STATION 19 FOR INPUT INTO MODEL

COLOR CODE	WAVE DIRECTION & TYPE	WAVE ANGLE TO SHORE (AZIMUTH)	HEIGHT (HMO) (FEET)	PERCENT OCCURRENCE
Yellow	NORTH WEST SWELL	-77° (316°)	0.82	1.68%
	NORTH WEST SEA	-75° (314°)	0.75	3.62%
Red	WEST NORTH WEST SWELL	-53° (292°)	0.69	1.12%
	WEST NORTH WEST SEA	-53° (292°)	0.72	7.43%
Light Green	WEST SWELL	-31° (270°)	0.69	2.76%
	WEST SEA	-31° (270°)	1.44	15.17%
Orange	WEST SOUTH WEST SWELL	-7° (246°)	0.52	0.63%
	WEST SOUTH WEST SEA	-8° (247°)	2.23	3.96%
Blue	SOUTH WEST SWELL	17° (222°)	0.49	0.79%
	SOUTH WEST SEA	15° (224°)	1.80	3.28%
Yellow	SOUTH SOUTH WEST SWELL	35° (204°)	0.66	0.99%
	SOUTH SOUTH WEST SEA	36° (203°)	1.61	4.73%
Magenta	SOUTH SWELL	57° (182°)	0.72	1.12%
	SOUTH SWELL	59° (180°)	1.02	7.93%
Cyan	SOUTH SOUTH EAST SWELL	81° (158°)	0.79	0.58%
	SOUTH SOUTH EAST SEA	81° (158°)	0.75	6.32%

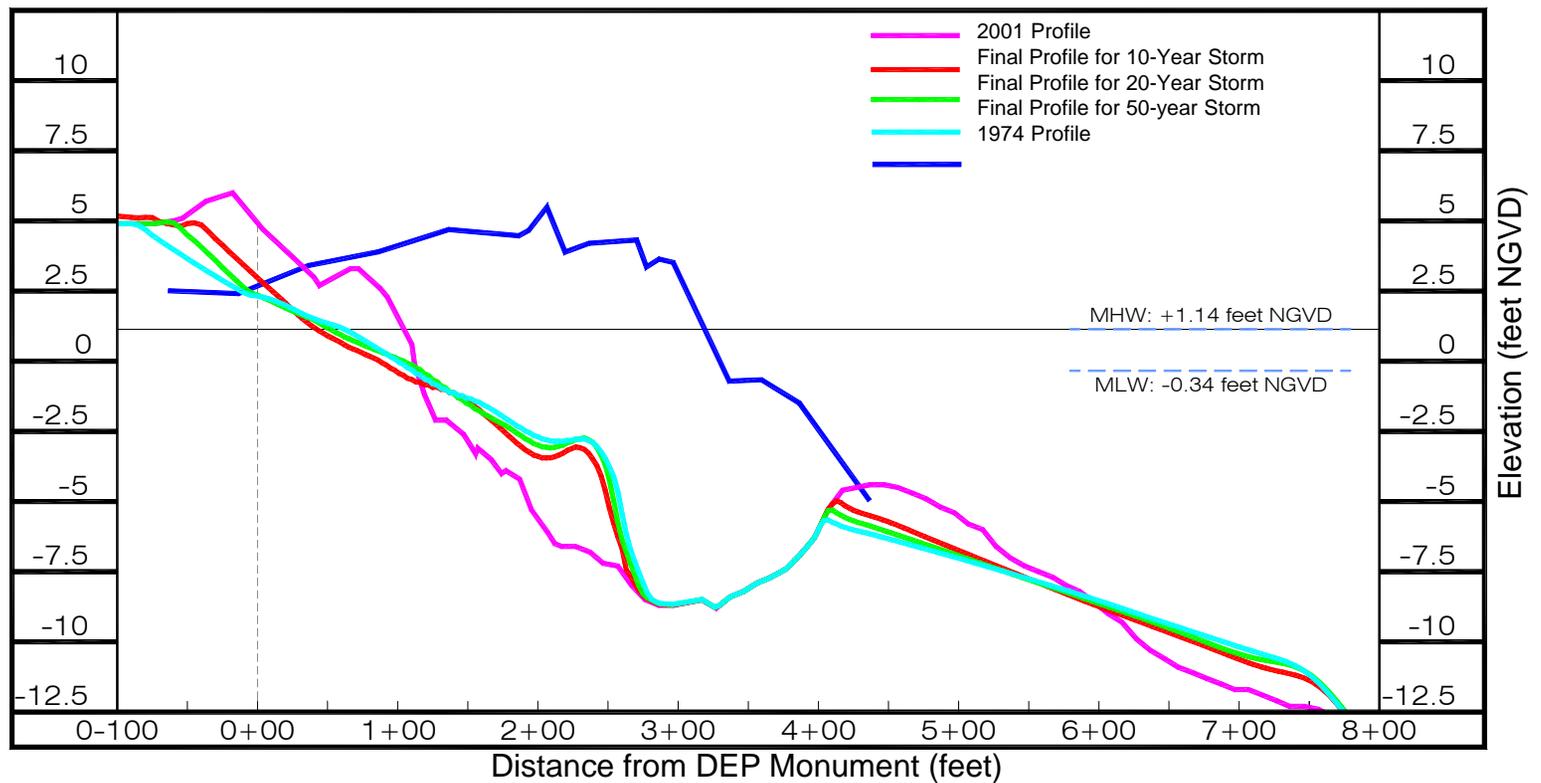


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STORM EROSION MODELING

DEP Monument R-35



Charlotte County
SBEACH Erosion Results

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RISK ASSESSMENT





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SAND SOURCE INVENTORY

- Existing Sand Resources
 - Location, Quality and Quantity
 - Additional Field Work Requirements
- Native Beach Analyses & Characterizations
 - Grain Size
 - Composition
 - Color



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CHARACTERIZATION OF NATURAL RESOURCES



SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



CONCEPTUAL ALTERNATIVES ASSESSMENT

- **Project Description**
- **Concept Plans**
- **Performance & Maintenance Intervals**
- **Natural Resources Impacts**
- **Permit Feasibility**
- **Initial and Maintenance Cost Estimates**
- **Stakeholders & Agency Meetings**



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NO ACTION



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DUNE RESTORATION



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BEACH RESTORATION



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COASTAL STRUCTURES



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PLANNING AREAS



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MANASOTA KEY

- **Identified Local Community Goals and Objectives for Beach Management and Erosion Control**
 - Severe Erosion Problem - Motivated to Find Solution
 - Beach Restoration/Fill Acceptable
- **Initiated Discussions Relative to Potential Project Funding**
 - Support Shown for “Willingness to Pay” Provided Funding Distributed Fairly Among Project Beneficiaries
- **Alternative Number 1: No Action**
- **Alternative Numbers 2 & 3: Basic Restoration Project (R-173, Sarasota, to R-3, Charlotte)**
- **Alternative Number 4: Extended Project Lengths - Both North (Sarasota) and South (Charlotte)**



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COASTAL TECH



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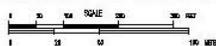
MANASOTA KEY ALTERNATIVE NO. 2

- **Basic Restoration Project**
- **Volume: 660,000 Cubic Yards**
- **Buffer Effects of 10 to 15 Year Storm**
 - **Fill Placement of Over 52 cy/lf**
 - **Average Movement of Waterline 130 Feet**
- **Beach Fill - Manasota Key**
 - **Length = 12,580 Ft Along Shoreline**
 - **DEP Monuments R-173 (Sarasota) to R-3 (Charlotte)**



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 ANY MEASUREMENTS ARE APPROXIMATE.

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 DEPARTMENT OF ENVIRONMENTAL PROTECTION
CHARLOTTE COUNTY
 MANASOTA KEY PLANNING AREA



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MANASOTA KEY ALTERNATIVE NO. 4

- **Extension of Alternative 2 to Address Increasing Losses North and South**
 - 2,200,000 cy
- **Buffer Effects of 10 to 15 Year Storm**
 - Placement of 52 cy/lf North to Manasota Public Beach, R-156 (Sarasota)
 - Move Waterline 130 Feet on Average
 - Potential Environmental Constraints
 - Placement of 30 cy/lf South to State Park Beach, R-16 (Charlotte)
 - Reduced Erosion Stress and Stump Pass Issues
- **Beach Fill - Manasota Key**
 - Length = 42,640 Ft Along Shoreline
 - DEP Monuments R-156 (S) to R-16 (C)



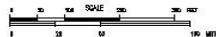
COASTAL TECH



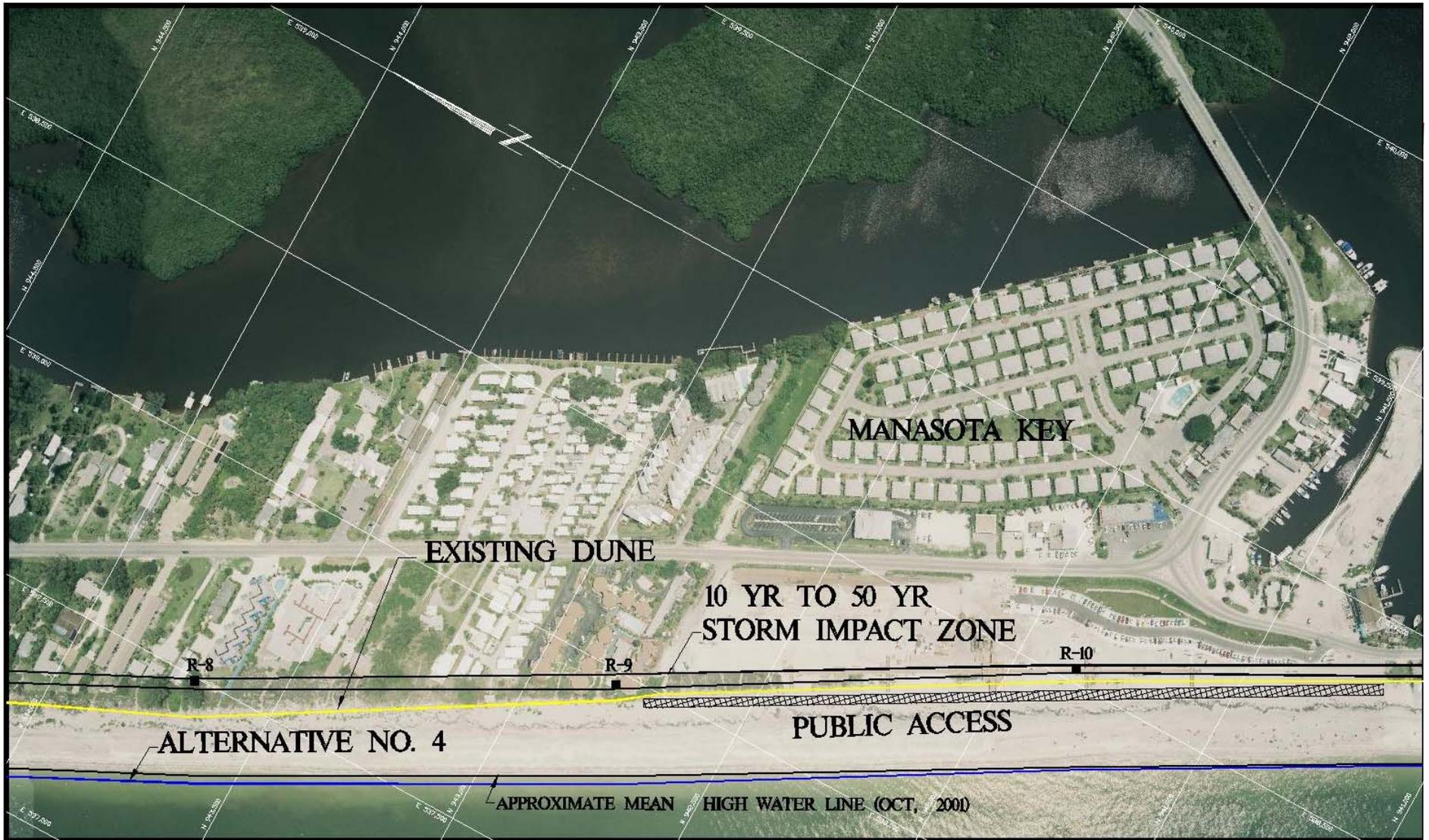


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CHARLOTTE COUNTY
 MANASOTA KEY PLANNING AREA

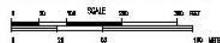


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 CHARLOTTE COUNTY
 MANASOTA KEY PLANNING AREA



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SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



LONG-TERM FUNDING PROGRAM

- **Public Access Inventory**
- **Goals**
 - **Multiple Sources**
 - **Benefits-based**
 - **‘Tailored’ to each Planning Area**
 - **Long-term commitment**
 - **Adequate Funds to Support the County’s Beach Management Objectives**
- **Potential Funding Sources**
 - **Local**
 - **TDC, MSBU, General Revenue/CIP**
 - **WCIND, Property Owners**
 - **State: Beach Erosion Control Program**
 - **Federal: WRDA, FEMA**



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PUBLIC ACCESS INVENTORY

■ State Requirements

- Easements Must Be Granted to County for Public Beach Access
- Easements Must Remain Open to Public for Life of Project (defined as nourishment cycle)
- Beach Access Must have “Public Signage”
- Beach Access Must be 5 Foot Wide Minimum and Accessible From Public Roadway
- Beach Access Must be Available to Public on Equal Basis
- Parking Must be Located Within 1/4 Mile of Beach Access

■ Existing Accesses

- Manasota Key = 25% State Cost Sharing
- Knight Island/Don Pedro Island = 12% State Cost Sharing
- Little Gasparilla Island = 0% State Cost Sharing

SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



PUBLIC ACCESS STRATEGIES

- **Existing Access: Palm Island Resort**
 - **Qualifies Project for 12% State Cost Sharing**
- **Potential Accesses**
 - **WCIND Lots: Increase to 35% State Cost Sharing**
 - **Additional Easements Along Gulf Front: Increase to 50% State Cost Sharing**
- **Parking**
 - **Clear and Stabilize (Mulch or Shell) Existing County R.O.W. Within 1/4 Mile of Public Access**



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SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



LOCAL FUNDING PLAN COMPONENTS

- **Municipal Services Benefit Unit (MSBU)**
- **Goal: Provide Stakeholders with Preliminary Estimate of Reasonable Range of Costs**
- **Project Benefits**
 - **Primary Benefit: Storm Protection (reduced risk of storm damage)**
 - **Secondary Benefits: Enhanced Property Values, Recreation, Environmental Habitats**
- **Benefit Allocation**
 - **Storm Protection: 60% - 75% of Project Benefits**
 - **Secondary: 25% - 40% of Project Benefits**
- **MSBU Zones**
 - **Zone A - all beachfront properties - 100% Storm Protection**
 - **Zone B - all off-beach properties - 0% Storm Protection**



SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



CONCEPTUAL PROJECT FUNDING PLANS

- **Manasota Key: Alternatives 2 and 4**
 - **Zone A**
 - 100% Storm Protection Benefits
 - 41% (Alt 2) to 62% (Alt 4) of Secondary Benefits
 - **Zone B**
 - 0% of Storm Protection Benefits
 - 38% (Alt 4) to 59% (Alt 2) of Secondary Benefits
- **Knight Island/Don Pedro Island: Alternatives 1 and 2**
 - **Zone A**
 - 100% of Storm Protection Benefits
 - 21% (Alt 1) to 23% (Alt 2) of Secondary Benefits
 - **Zone B**
 - 0% of Storm Protection Benefits
 - 77% (Alt 2) to 79% (Alt 1) of Secondary Benefits
- **Little Gasparilla Island: Alternative 3**
 - **Zone A**
 - 100% of Storm Protection and Secondary Benefits

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MANASOTA KEY - ALTERNATIVE 2

Basic Restoration Project

Total Project Cost = \$7,343,000

County Share of Costs = - ? -

State Share of Costs = \$1,982,600

Community Share of Costs = \$5,360,400

Zone	Description	Number of Properties	Estimated Low Assessment		Estimated High Assessment
Zone A	Beach Front	110	\$3,720 per year for 10 years	to	\$4,155 per year for 10 years
Zone B	Off Beach	156	\$505 per year for 10 years	to	\$810 per year for 10 years

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MANASOTA KEY - ALTERNATIVE 2

Basic Restoration Project

Community Share of Costs = \$5,360,400

60% / 40% Split

Storm Benefits

\$3,216,240

100% / 0% Split

Zone A

Zone B

\$3,216,240

\$0

110 Prop

156 Prop

\$2,920/Yr

\$0/Yr

Secondary Benefits

\$2,144,160

41% / 59% Split

Zone A

Zone B

\$879,106

\$1,265,054

110 Prop

156 Prop

\$800/Yr

\$810/Yr

SARASOTA/CHARLOTTE COUNTY BEACH EROSION STUDY



MANASOTA KEY - ALTERNATIVE 4

Enhanced Restoration Project

Total Project Cost = \$22,000,000

County Share of Costs = - ? -

State Share of Costs = \$5,500,000

Community Share of Costs = \$16,500,000.....

Zone	Description	Number of Properties	Estimated Low Assessment		Estimated High Assessment
Zone A	Beach Front	650	\$2,125 per year for 10 years	to	\$2,265 per year for 10 years
Zone B	Off Beach	400	\$390 per year for 10 years	to	\$625 per year for 10 years