



Captiva

Erosion Prevention District

2021 Beach Nourishment

Project Description

- Captiva Erosion Prevention District (CEPD) is organizing a beach nourishment project scheduled to begin in 2021.
- The project area is located between Florida DEP reference monuments **R-84** and **R-109** (Captiva Island).
- The project consists of the placement of approximately 750,000 cubic yards of beach fill along 4.85 miles of shoreline and rehabilitation of existing dunes along the entire Gulf of Mexico shoreline of Captiva Island between Redfish Pass and Blind.
- The project, designed to last beyond 8-10 years, provides necessary maintenance to counteract long-term critical erosion of our beaches, properties, and shorelines.



Funding

- The project is expected to cost approximately \$18,025,485 in total.
- FDEP has an anticipated cost share of \$3,797,068 (up to 21.07%)
- Lee County has an anticipated cost share of \$3,464,839 (up to 24.35% of the remainder after FDEP share)
- This leaves an estimated \$10,763,578 to be funded through the assessment of local properties that benefit from the project.

All Properties on Captiva Benefit from Beach Nourishment

- The beach nourishment project will generate a stream of benefits for property owners on Captiva Island which, ultimately, will show up as an enhancement of property values beyond the levels they would have attained in the absence of the project.
- Gulf-facing Captiva properties are better protected from erosion and storm damage as a result of the nourishment project. Properties are grouped into similar categories based upon engineering data. These are known as the **Storm Protection Benefits Zones**.
- The Project will provide access to an enhanced recreational beach. Captiva properties experience enhancements in values due to increased recreational benefits. Captiva properties are grouped into three distinct categories: **Residential, Residential with Homestead Exemption, and Commercial**.



Captiva

Erosion Prevention District

Benefits Based Apportionment

Concept

- An estimated **\$10.8 million** must be funded through assessment of local properties that benefit from the project.
- All properties on Captiva benefit from the beach nourishment project.
- To **fairly and equitably** distribute the assessment, property owners will pay proportionately based upon the benefits that properties receive.
- Overall benefits are determined by **storm protection zones** and **property type** category.

Storm Protection Benefits

- Only properties that are considered **front line** to the Gulf of Mexico are considered to receive storm protection benefits.
- The storm protection benefit to a property represents the difference between the value of expected property losses if the project is constructed compared to the value of losses if the project is not constructed.

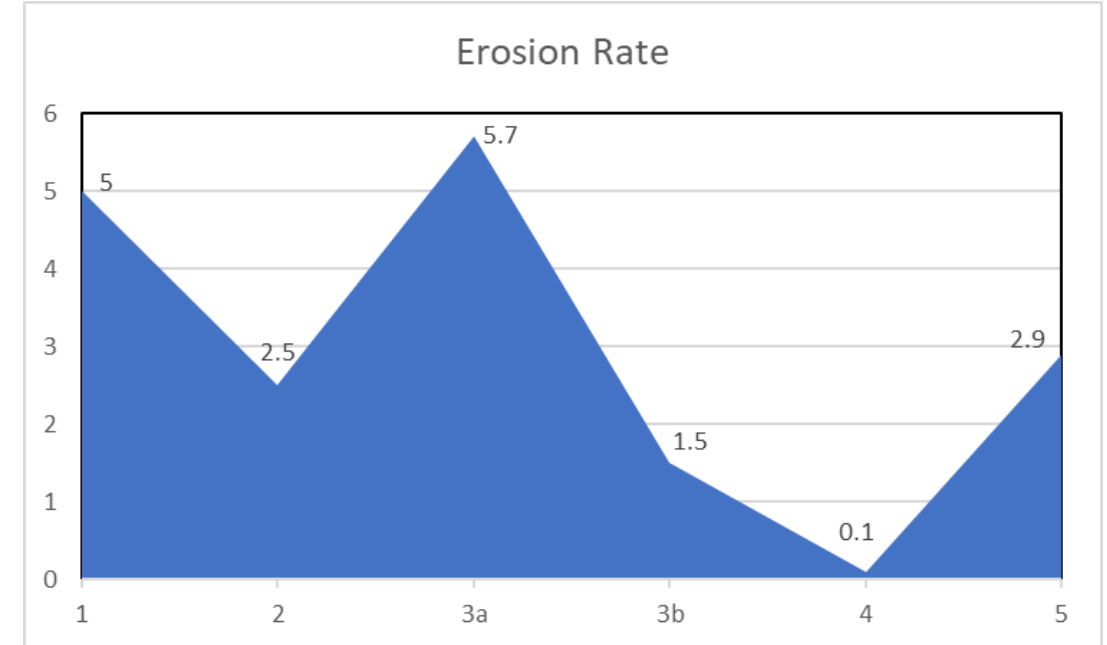
Storm Protection Benefits

- To determine the monetary storm protection value of the project to the property owners, A 22-year simulation was conducted by Aptim Engineering.
- Based on the analysis performed, the erosion-related annual damages over the 22-year simulation period **without the project** in place total approximately **\$6,994,000**.
- **With the project in place**, the annual damages are reduced to **\$4,088,200**.
- This equates to a project related annual benefit of \$2,905,800.
- The adjusted benefits, removing public land loss, resulted in a total annual storm protection **benefit to private property owners of \$2,417,881**

Storm Protection Benefits

Table B.2 Average Erosion Rates in Each Beach Zone				
Zone	Profile Lines	Erosion (+) & Accretion (-) (c.y./foot/year)	Shoreline Retreat (-) & Advance (+) (feet/year)	Average Residential Land Value per Square Foot
1. Upper South Seas	R-84 to R-89	-5.0	-8.3	\$60.88
2. Lower South Seas	R-90 to R-93	-2.5	-7.3	\$40.72
3A Village	R-94 to R-96	-5.7	-12.9	\$47.43
3B Tween Waters Road	R-97 to R-101	-1.5	-12.3	\$47.47
4 Upper Gold Coast	R-102 to R-105	-0.1	-4.5	\$41.47
5 Lower Gold Coast	R-106 to R-109	-2.9	-7.9	\$44.89

Note: Rates based on annualized changes between September 2009 and October 2017, excluding the construction period (September 2013 and January 2014) for the 2013-14 renourishment project.



Total Annual Storm Protection Benefits

Table 2 Annual Storm Protection Benefits of Private Properties on Captiva 2020-2021 Beach Nourishment by Benefit Category		
Benefit Category	Amount	Percent of Total Private Storm
Upper South Seas Beach Zone Properties	\$ 904,501	37.4
Lower South Seas Beach Zone Properties	\$ 290,306	12.0
Village Beach Zone Properties	\$ 344,186	14.2
Tween Waters Beach Zone Properties	\$ 338,826	14.0
Upper Gold Coast Beach Zone Properties	\$ 315,811	13.1
Lower Gold Coast Beach Zone Properties	\$ 224,251	9.3
Total Private Storm Protection Benefits	\$ 2,417,881	100.0

Note: items may not add to totals because of rounding.

Storm Protection Benefits

Total Cost	\$	18,025,485.00
Federal Cost	\$	-
FDEP Cost	\$	3,797,068.42
Local Cost	\$	14,228,416.58
County Rec	\$	3,350,887.44
County Storm	\$	113,951.17
County Total	\$	3,464,838.61
CEPD Project Cost	\$	10,763,577.98

← Estimated Total Project Cost

← Estimated Local Cost

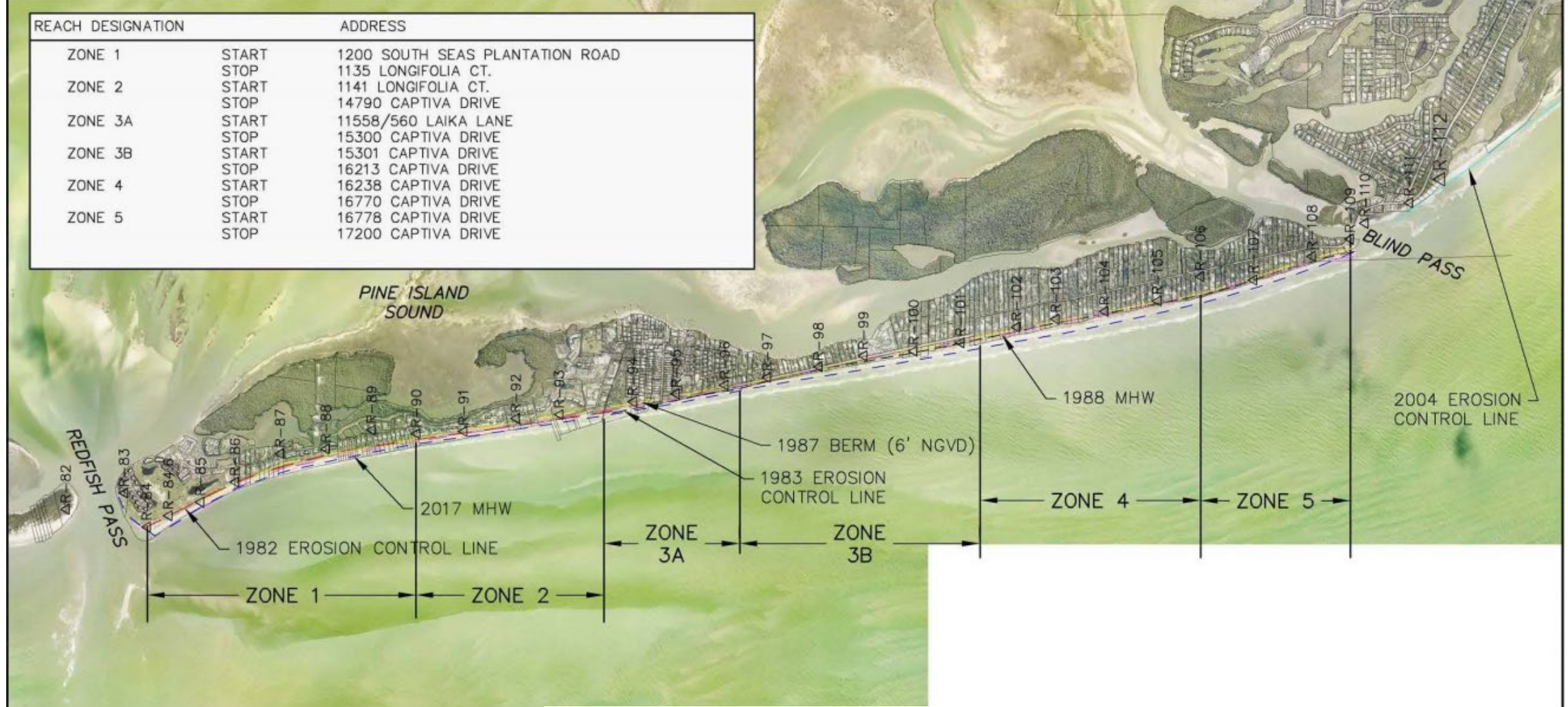
# Properties	Zone	Annual Benefit	Project Benefit %	Cost share	Total Just Value	Millage
36	1	\$ 904,501.00	17.25%	\$ 1,857,096.19	\$ 141,444,558.00	13.1295
221	2	\$ 290,306.00	5.54%	\$ 596,048.17	\$ 181,075,007.00	3.2917
23	3A	\$ 344,186.00	6.57%	\$ 706,673.08	\$ 58,811,964.00	12.0158
55	3B	\$ 338,826.00	6.46%	\$ 695,668.08	\$ 182,476,032.00	3.8124
41	4	\$ 315,811.00	6.02%	\$ 648,414.33	\$ 190,191,160.00	3.4093
25	5	\$ 224,251.00	4.28%	\$ 460,425.89	\$ 91,193,000.00	5.0489
401	Sub Total	\$ 2,417,881.00	46.12%	\$ 4,964,325.74	\$ 845,191,721.00	-

*2020 Property Appraiser Data

Zone	Example Calculations	
	Example Property Just Value	Storm Protection Assessment
1	\$ 2,000,000.00	\$ 26,259.00
2	\$ 2,000,000.00	\$ 6,583.44
3A	\$ 2,000,000.00	\$ 24,031.61
3B	\$ 2,000,000.00	\$ 7,624.76
4	\$ 2,000,000.00	\$ 6,818.55
5	\$ 2,000,000.00	\$ 10,097.83



REACH DESIGNATION		ADDRESS
ZONE 1	START	1200 SOUTH SEAS PLANTATION ROAD
	STOP	1135 LONGIFOLIA CT.
ZONE 2	START	1141 LONGIFOLIA CT.
	STOP	14790 CAPTIVA DRIVE
ZONE 3A	START	11558/560 LAIKA LANE
	STOP	15300 CAPTIVA DRIVE
ZONE 3B	START	15301 CAPTIVA DRIVE
	STOP	16213 CAPTIVA DRIVE
ZONE 4	START	16238 CAPTIVA DRIVE
	STOP	16770 CAPTIVA DRIVE
ZONE 5	START	16778 CAPTIVA DRIVE
	STOP	17200 CAPTIVA DRIVE



NOTES:

1. PARCEL DATA OBTAINED FROM LEE COUNTY PROPERTY APPRAISER OFFICE, LAST UPDATED 4/30/2018.
2. AERIAL DATED JANUARY 2018..

LEGEND:


- 1982 EROSION CONTROL LINE
- 1983 EROSION CONTROL LINE
- 1987 BERM (6' NGVD)
- 1988 MEAN HIGH WATER
- 2004 EROSION CONTROL LINE
- 2017 MEAN HIGH WATER

Table B.1
Beach Zones Used in the Economic Analysis

Zone	Profiles	Lee Co. Parcel Numbers	Street Addresses
1	R-84 to R-89	2245210000005002B to 27452101000000010	1057-1900 South Seas Plantation Road to 1135 Longifolia Ct.
2	R-90 to R-93	274521010000A00CE to 26452104000010010	1141 Longifolia Ct. to 14790 Captiva Drive
3A	R-94 to R-96	26452102000010060 to 35452101000000140	11558/560 Laika Lane to 15300 Captiva Drive
3B	R-97 to R-101	35452101000000150 to 034621010000B0030	15301-16213 Captiva Drive
4	R-102 to R-105	034621020000B0010 to 03462100000200010	16238-16770 Captiva Drive
5	R-106 to R-109	03462100000210010 to 11462100000010010	16778-17200 Captiva Drive



**BENEFIT ANALYSIS ZONES
CAPTIVA ISLAND, FLORIDA**



Aptim Environmental & Infrastructure Inc.
2481 N.W. BOCA RATON BOULEVARD
BOCA RATON, FLORIDA 33431
www.apim.com

PH. (561) 391-8102
FAX (561) 391-9116

Total Annual Recreation Benefits

- All properties on Captiva.
- Consist of the recreational value of the beach that is created.
- Recreational value was obtained from a willingness to pay survey of beach users.

Table 3 Annual Recreation Benefits of Private Properties on Captiva by Benefit Category 2020-2021 Nourishment Project		
Benefit Category	Amount	Percent of Total Private Recreation
Residential Properties	\$ 2,177,674	77.1
Commercial Properties	\$ 646,859	22.9
Total Private Recreational Benefits	\$ 2,824,533	100.0

Recreation Benefit

# Properties	Zone	Annual Benefit	Project Benefit %	Cost share	Total Just Value	Millage
893	Residential	\$ 2,177,673.98	41.54%	\$ 3,907,019.18	\$ 1,106,373,587.00	3.5314
125	Residential Homesteaded (42.1% discount)	-	-	\$ 564,120.22	\$ 308,261,528.00	1.8300
62	Commercial	\$ 646,859.00	12.34%	\$ 1,328,112.83	\$ 178,106,635.00	7.4568
1080	Sub Total	\$ 2,824,532.98	53.88%	\$ 5,799,252.23	\$ 1,592,741,750.00	

*2020 Property Appraiser Data

		Example Property Just Value	Recreation Assessment
893	Residential	\$ 2,000,000.00	\$ 7,062.75
125	Residential Homesteaded (42.1% discount)	\$ 2,000,000.00	\$ 3,660.01
62	Commercial	\$ 2,000,000.00	\$ 14,913.68

Total Annual Benefit and Cost Share by Category

Table 4 Annual Benefits Received by Captiva Private Properties by Benefit Category 2020-2021 Nourishment Project		
Benefit Category	Amount	Percent Share of Total Private
Upper South Seas Beach Zone Properties	\$ 904,501	17.3
Lower South Seas Beach Zone Properties	\$ 290,306	5.5
Village Beach Zone Properties	\$ 344,186	6.6
Tween Waters Beach Zone Properties	\$ 338,826	6.5
Upper Gold Coast Beach Zone Properties	\$ 315,811	6.0
Lower Gold Coast Beach Zone Properties	\$ 224,251	4.3
Residential Properties	\$ 2,177,674	41.5
Commercial Properties	\$ 646,859	12.3
Total Private Benefits	\$ 5,242,414	100.0

Side by Side Comparison

CURRENT MODEL

Zone	Annual Benefit	Project Benefit %	Cost share
1	\$ 904,501.00	17.25%	\$ 1,857,096.19
2	\$ 290,306.00	5.54%	\$ 596,048.17
3A	\$ 344,186.00	6.57%	\$ 706,673.08
3B	\$ 338,826.00	6.46%	\$ 695,668.08
4	\$ 315,811.00	6.02%	\$ 648,414.33
5	\$ 224,251.00	4.28%	\$ 460,425.89
Sub Total	\$ 2,417,881.00	46.12%	\$ 4,964,325.74
Zone	Annual Benefit	Project Benefit %	Cost share
Residential	\$ 2,177,673.98	41.54%	\$ 3,907,019.18
Residential Homesteaded (42.1% discount)	-	-	\$ 564,120.22
Commercial	\$ 646,859.00	12.34%	\$ 1,328,112.83
Sub Total	\$ 2,824,532.98	53.88%	\$ 5,799,252.23
Total	\$ 5,242,413.98	100.00%	\$ 10,763,577.98

The only major change is assessing all residential properties at the **same factor**.



MAY 2014 FINAL MODEL

TABLE 8
Basic Millage Rates for the 2013-14 Beach Renourishment Project

Benefit	Cost Shares	Just Values	Millage Rates 2014	Millage Rates 2010
<u>Storm Protection</u>				
Other Upper South Seas	\$285,000	\$44,546,424	6.3978	20.5421
Lower South Seas	\$535,800	\$212,528,287	2.5211	6.36377
Village Properties	\$381,900	\$35,810,267	10.6645	22.2713
Tween Waters	\$319,200	\$174,502,185	1.8292	5.1995
Upper Gold Coast	\$193,800	\$157,773,652	1.2283	3.1744
High Erosion Gold Coast	\$324,900	\$72,953,682	4.4535	11.4032
Sub-Total	\$2,040,600	\$698,114,497	NA	NA
<u>Recreation</u>				
Single-Family	\$980,400	\$688,550,519	1.4239	2.8615
Multi-Family	\$1,584,600	\$471,016,364	3.3642	13.9812
Interval Units	\$302,100	\$64,800,260	4.6620	15.3569
Commercial	\$792,300	\$65,757,100	12.0489	31.4134
Sub-Total	\$3,659,400	\$1,290,124,243	NA	NA
Total	\$5,700,000	NA	NA	NA

NA = not applicable

Project Highlights

- Enhanced beaches
- Captiva Island beach protection from storms and sea level rise
- Improved property values

Costs/Benefits Highlighted

- Current estimated cost to islanders roughly \$10.8 million
- Payments can be made within 60 days interest free, or installments over a 10-year basis with an additional 2% per annum interest
- Total **annual** benefits of \$5,242,414
- This equals roughly a 50% return on investment for the island on an annual basis.

Comparison Return on Investment

- Price return on SPY, the SPDR S&P 500 ETF Trust, has averaged 6.36% over the past 20 years.
- Fidelity Intermediate Government Income funds had a return of 3.40% during the same period.

Non-Profit Entities

- The Captiva Civic Association (2 properties, receives recreational benefits)
- Chapel By the Sea (2 Properties, receives storm protection benefits and recreational benefits)

Non-Profit Entities

Proposed millage rate adjustment for the Non-Profits

Non-Profit Millage Adjustments	CCA Millage Adjustment Examples			
	As Is	25% Reduction	50% Reduction	Excluded
Commercial Properties	7.4567	7.5063	7.5559	7.6551
Non-Profit Entities	7.4567	5.5925	3.7284	-

Proposed assessment adjustments by reduction

	As Is	25% Reduction	50% Reduction	Excluded
Extra Cost Incurred Across 60 Commercial Properties	\$ -	\$ 11,738.75	\$ 23,477.50	\$ 46,955.00
Average Additional Cost per Commercial Property		\$ 202.39	\$ 404.78	\$ 809.57
Non-Profit Entities	\$ 46,955.00	\$ 35,216.25	\$ 23,477.50	\$ -