

St. Lucie County - South County Beach Project

Project Status Review Meeting

May 1, 2008



Overall Schedule – “best scenario”

Environmental & Supplemental Investigations

Proposed - subject to authorization

expected : September 2008 - depends upon weather

Design & Permitting - authorized

Prelim Design & Permit Applic. expected : October 2008

Permit by : November 2009 – maybe 2010

depends upon weather & agency responses

Construction

winter of 2009/2010 or 2010/2011 or beyond

depends upon weather & agency responses





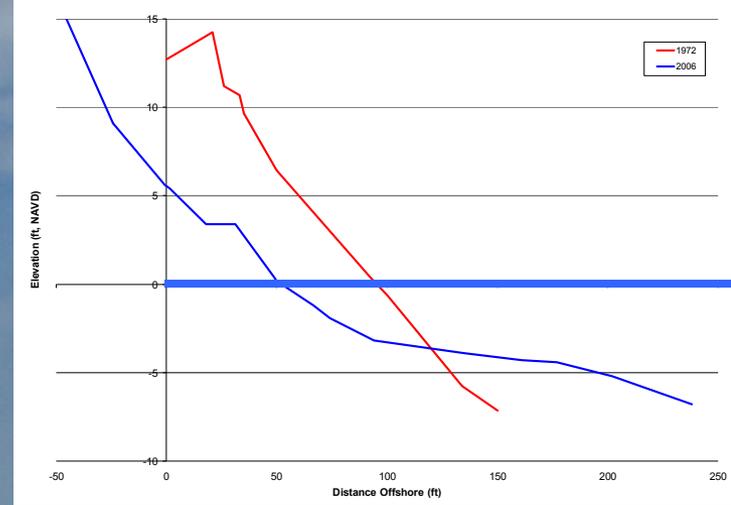
Project Need & Plan Formulation





R-82
April 4, 2007

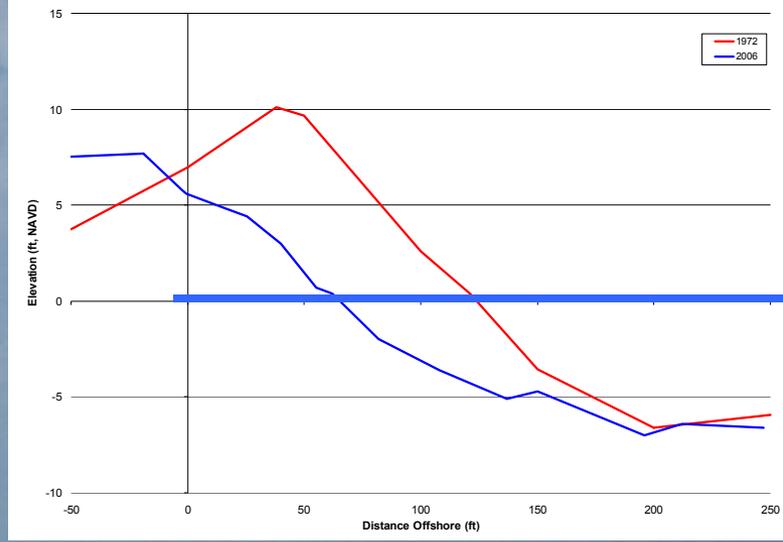
**FP&L
Nuclear Plant
Discharge Canal**





R-92
April 4, 2007

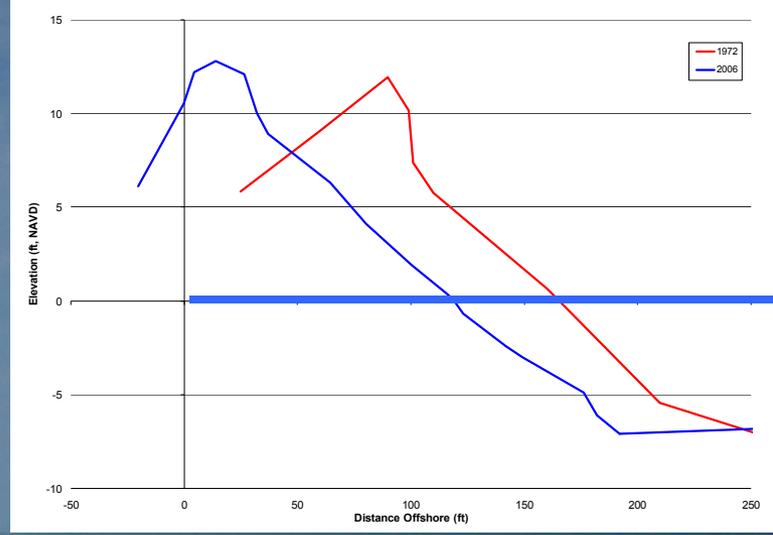
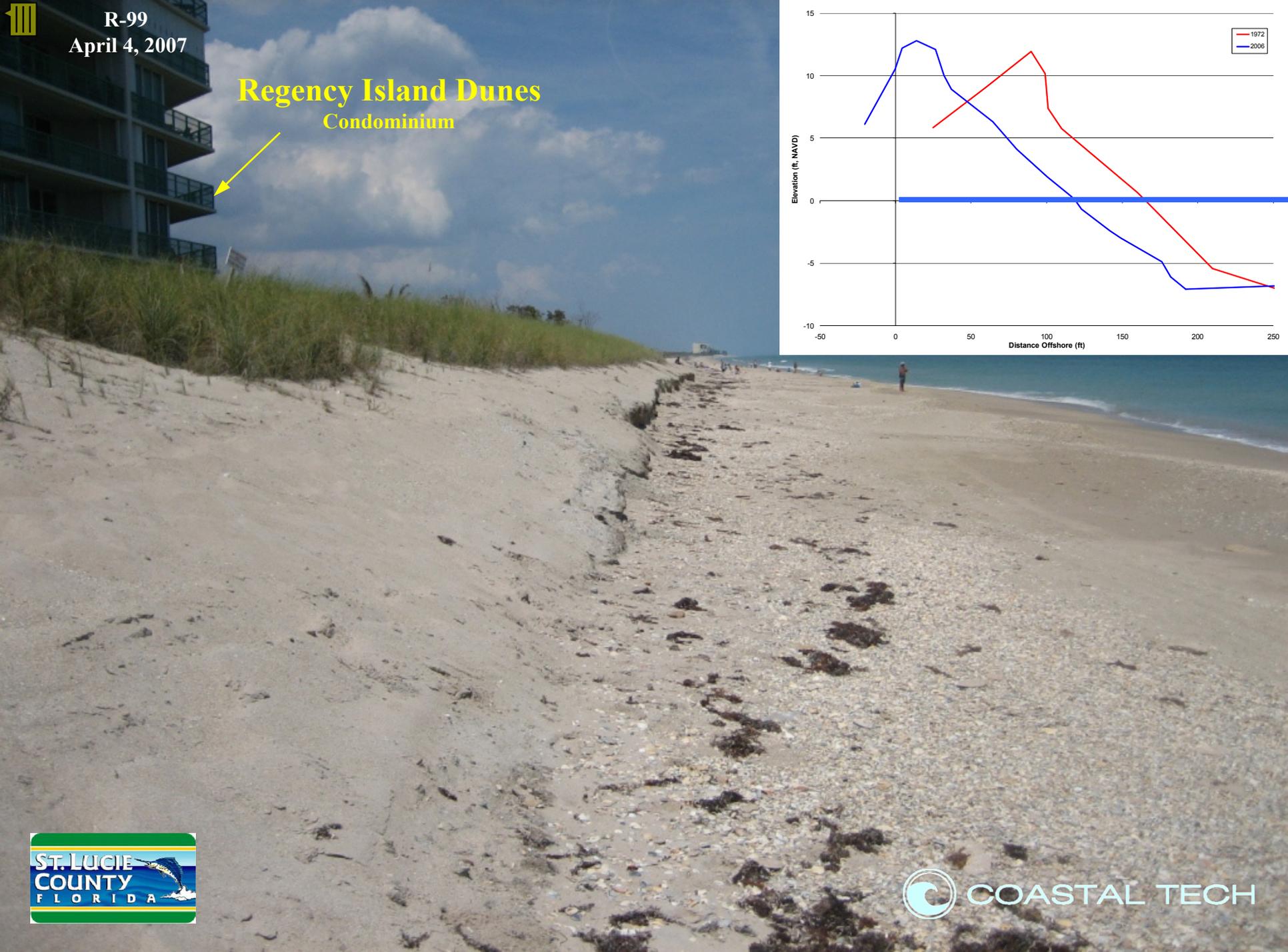
Sand Dollar
Shores
Condominiums





R-99
April 4, 2007

Regency Island Dunes Condominium



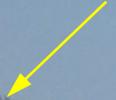


R-105
April 4, 2007

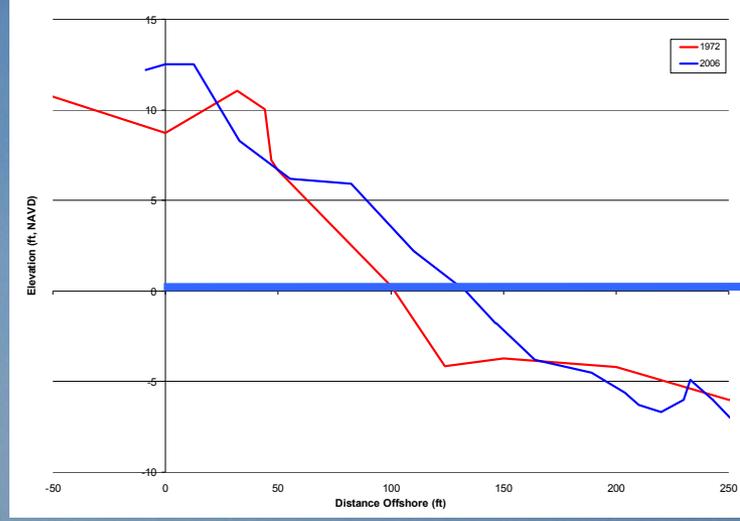
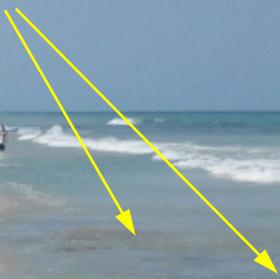
**Empress
Condominiums**



**Ocean Towers
Condominiums**



Hardbottom

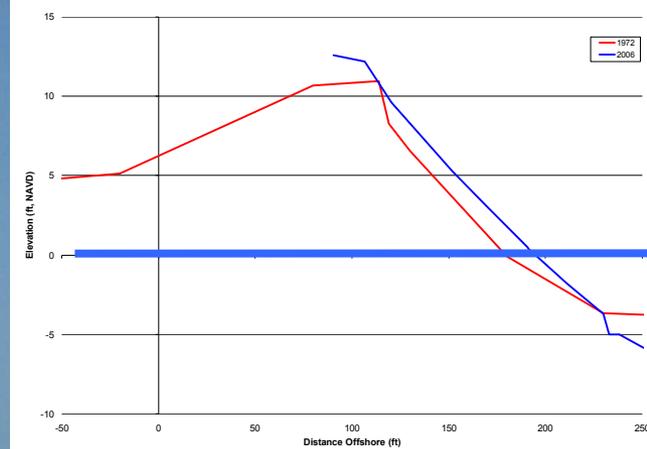


R-108

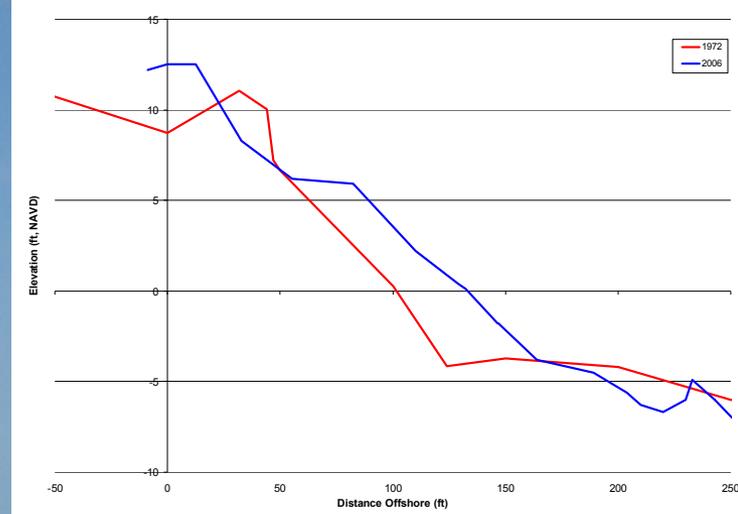
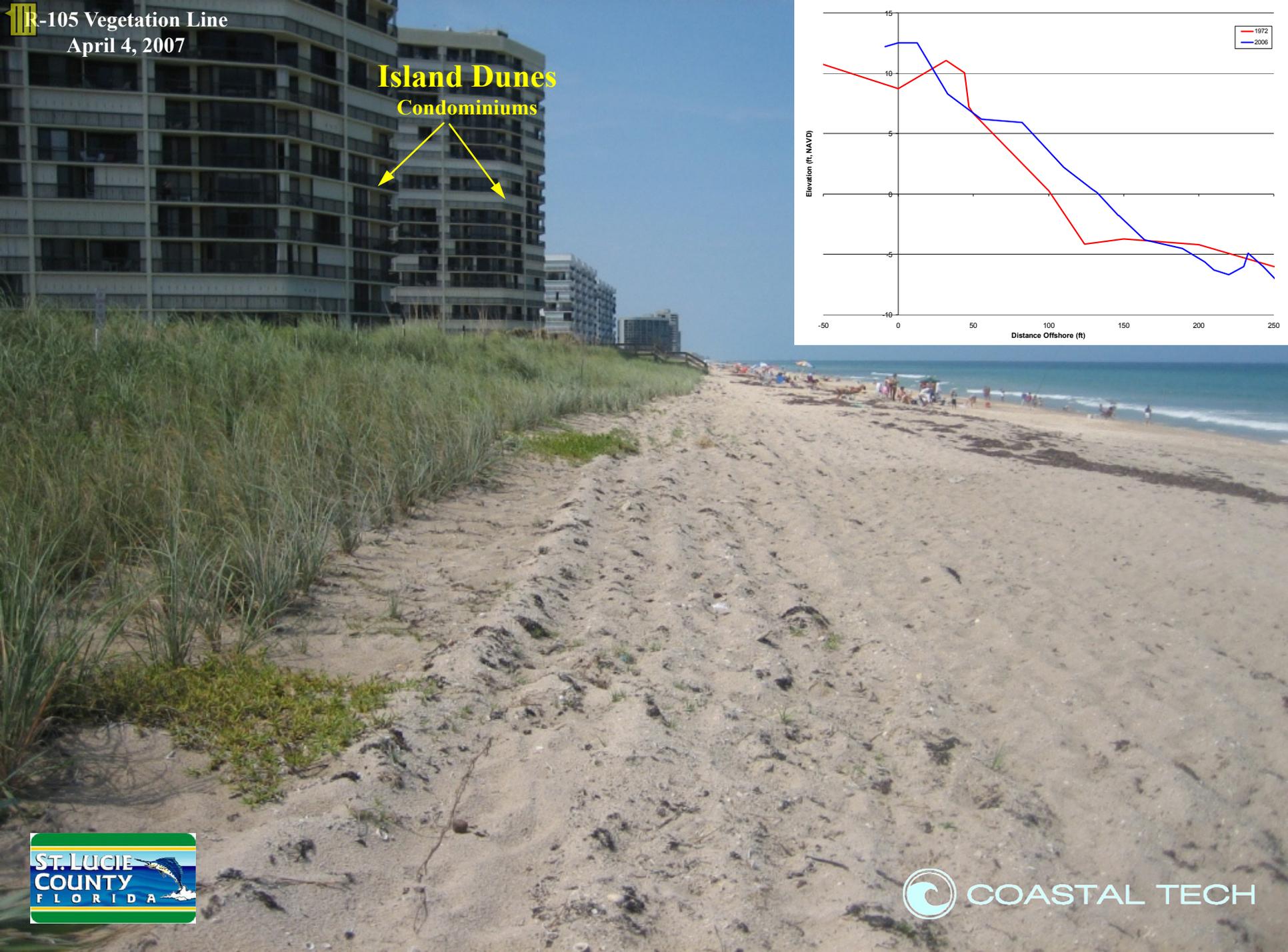
April 4, 2007

Miramar
Condominiums

~5 foot
escarpment



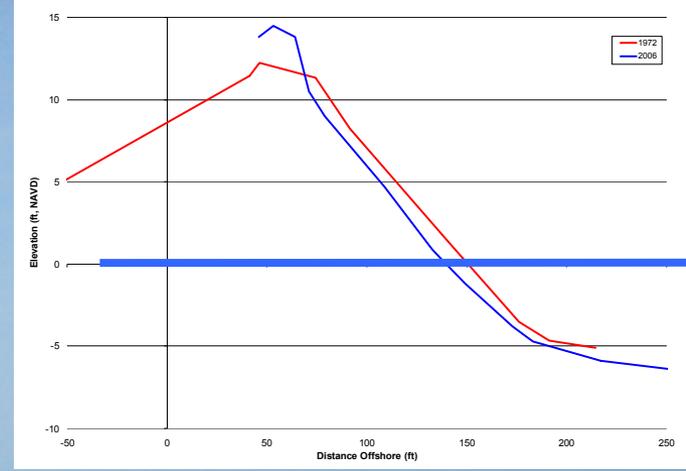
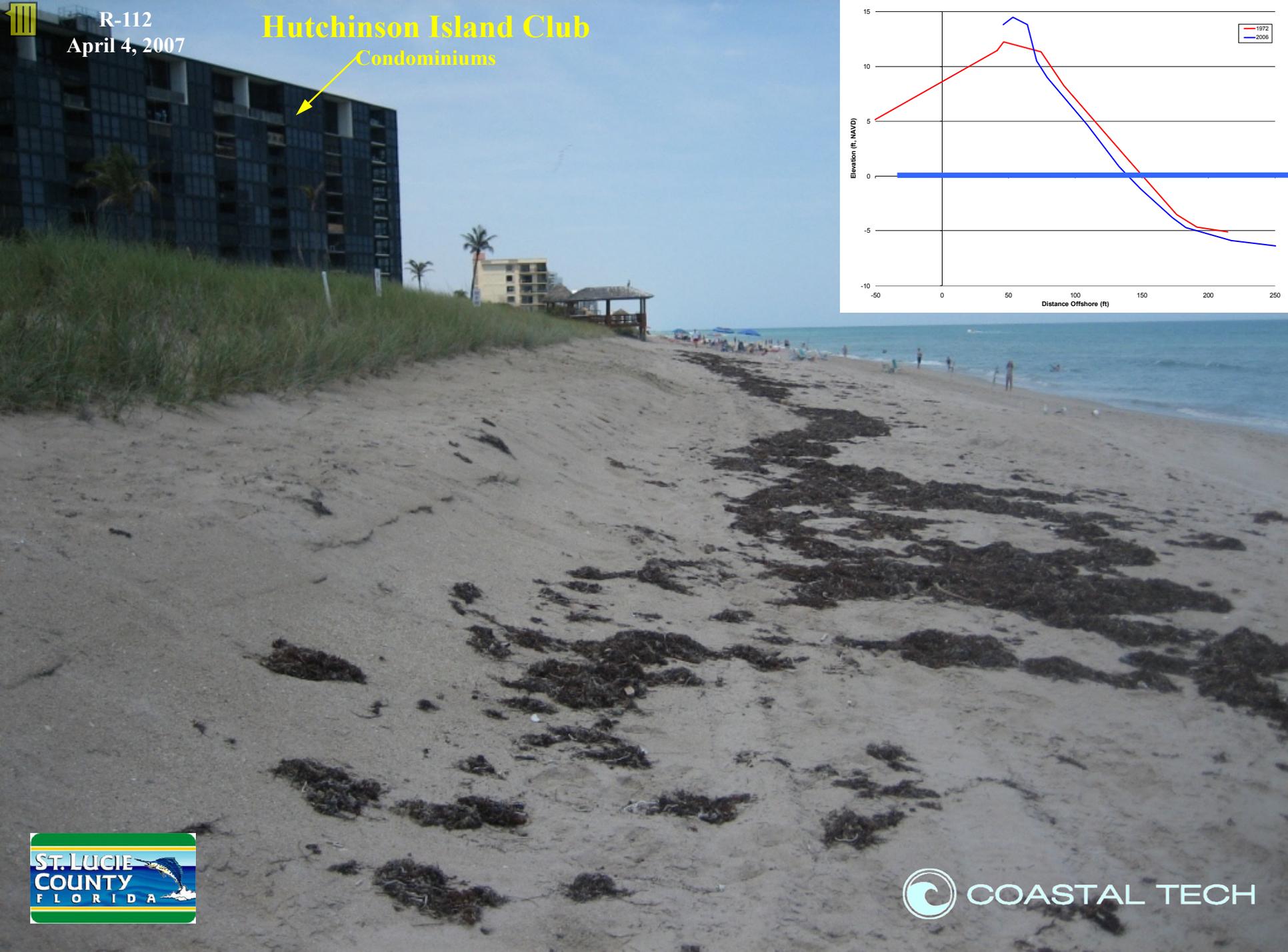
Island Dunes
Condominiums



R-112
April 4, 2007

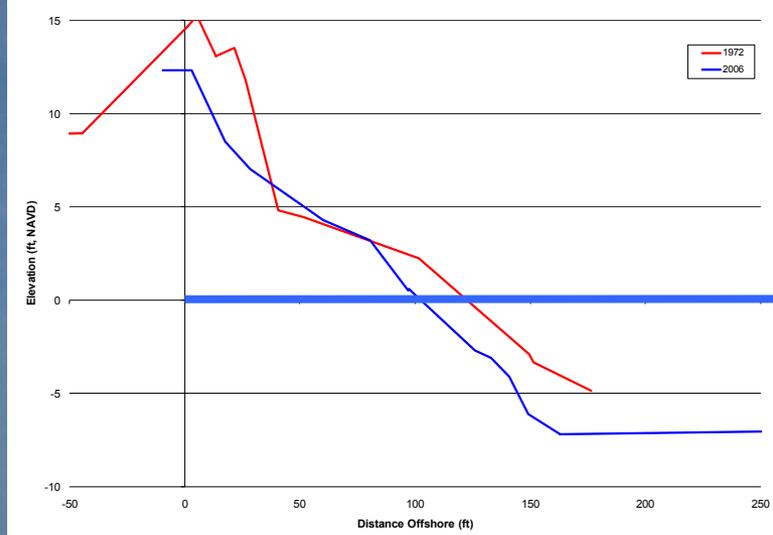
Hutchinson Island Club

Condominiums

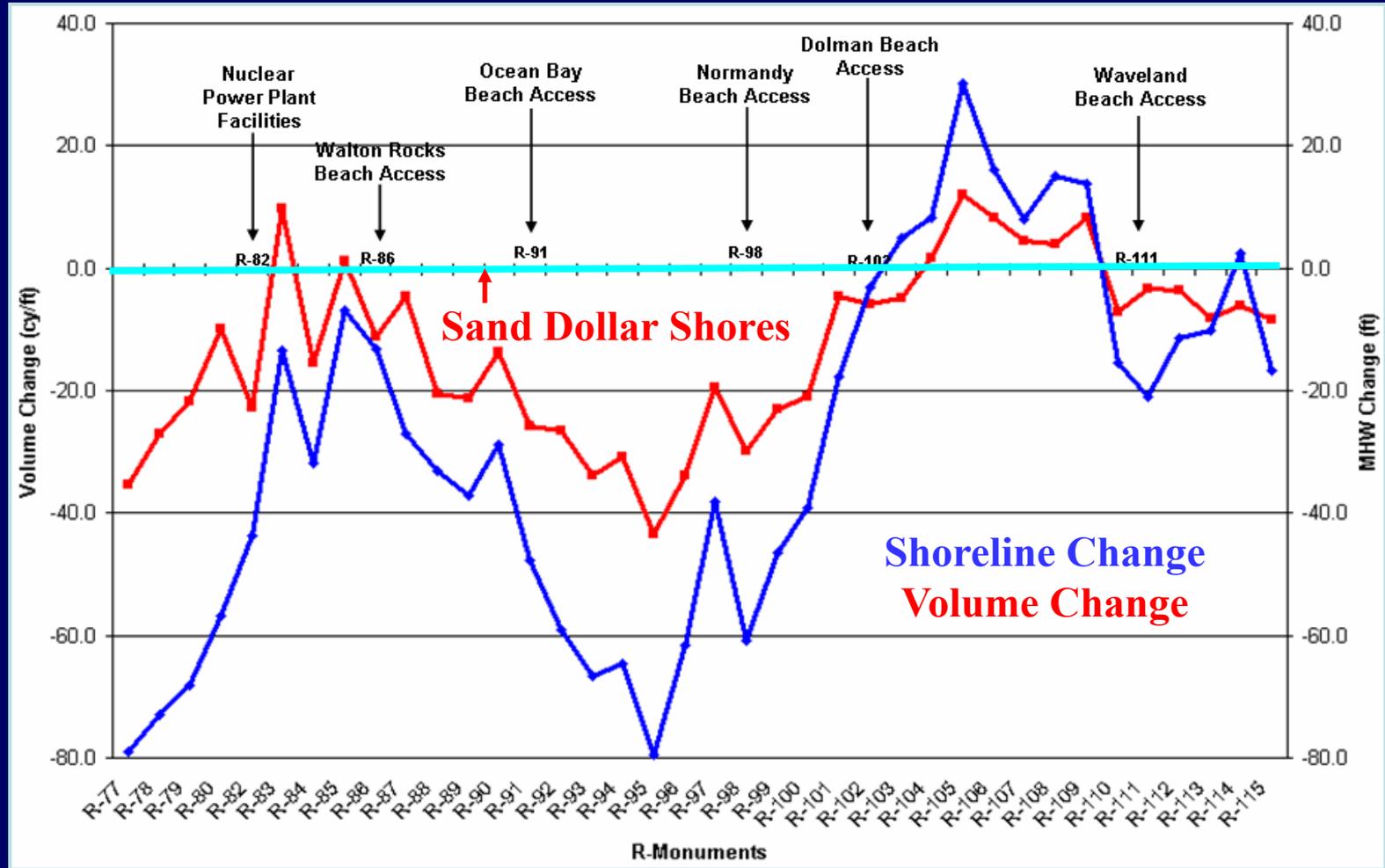




Turtle Reef Condominiums

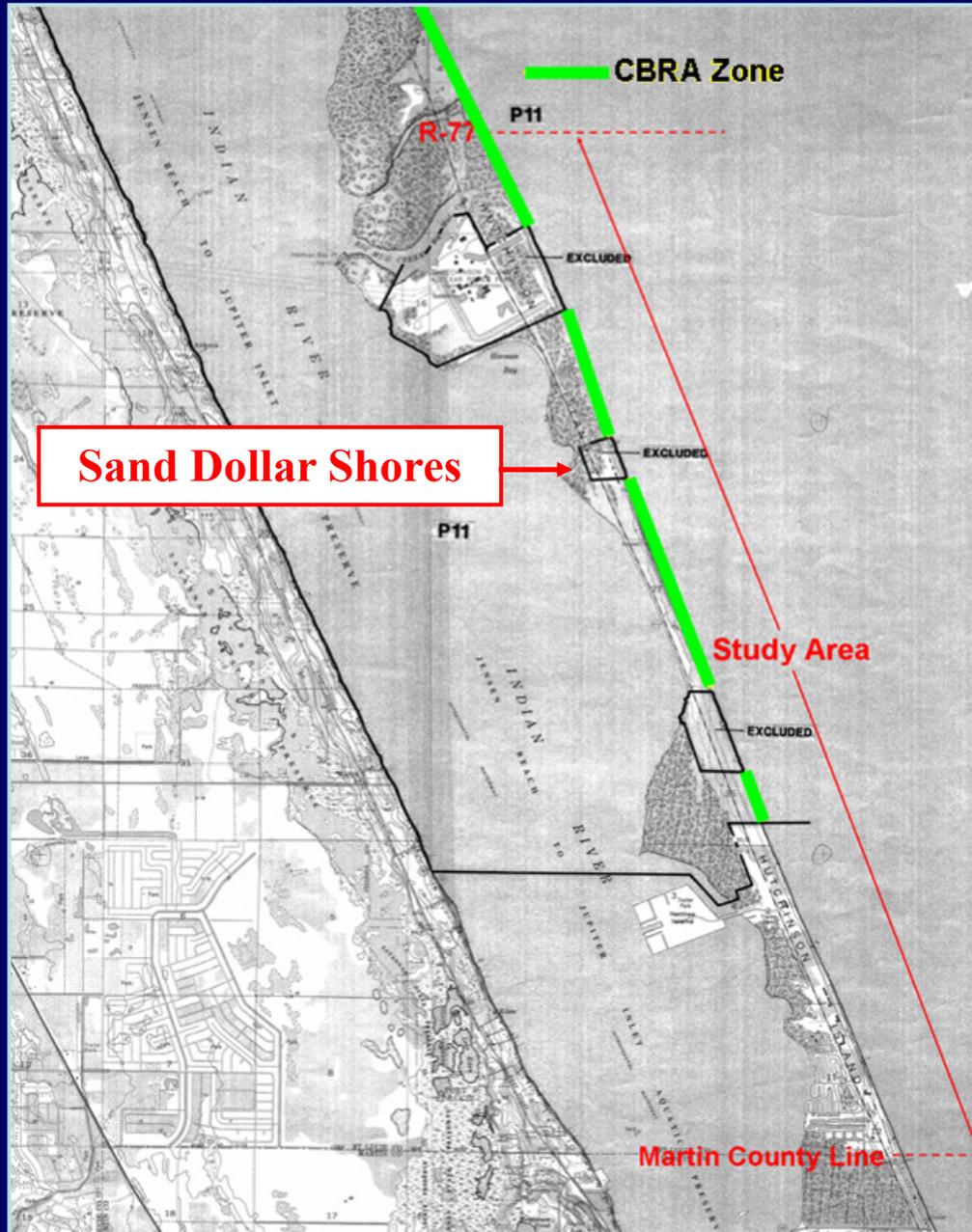


Shoreline and Volumetric Change (1972 – 2006)



Analysis of Historical Shoreline Change Results

- General erosional trend has occurred throughout *Study Area* and *Project Area*
- From R-77 to R-102 the beaches have generally eroded and the shoreline has generally retreated
- The greatest volumetric losses and shoreline retreat occurred between R-90 and R-100
- From R-103 to R-109, the beaches have accreted and the shoreline has slightly advanced seaward



COBRA Zone Map

From: USF&WS, 1990



Coastal Barrier Resources Act (COBRA) of 1982

- Prohibits federal spending **that encourages development**
- **Exceptions**
 - **Fish and wildlife study, management, and protection**
 - ***Nonstructural* shoreline stabilization designed to mimic a natural stabilization system**
- **May preclude federal dollars for portion of *Project* in COBRA Zone**



April 2007, Charette

Public Input relative to:

- *Project* purpose & need
- *Project* design criteria
- issues or concerns
- goals & objectives
- preferred alternatives

April 30, 2007 Charette – Public Comments

Alternatives

Speaker	Comment
David Kaplan	The County should by-pass sand at Ft. Pierce Inlet.
Terry Gibson	Ft. Pierce Jetty needs to be refurbished to prevent sand from flowing through and into the Inlet. County needs to look into sand by-passing at the inlet.
Ericka Davanzo	County needs to look at sand by-passing for a long-term solution.
Mary Chapman	The PEP Reef has shown positive results at the Ocean Grill in Vero Beach; the County should consider a PEP reef.
Arden Peck	The Project should include dune vegetation.
Ericka Davanzo	The beach should not be restored beyond the 1972 shoreline.
Larry Cali	The County should identify the basis for assuming the 1972 profile is sufficient for a beach restoration.
Peter Degen, Sand Dollar Shores	Sand Dollar Shores should be included in project area. Beaches attract visitors. Project is for the well-being of the County. Two Choices: (1) Abandon beaches (2) Preserve beaches. The County should construct a project to restore beaches.



April 30, 2007 Charette – Public Comments

Alternatives - continued

Speaker	Comment
Terry Gibson	A regional sediment management plan is needed to address the beach from Ft. Pierce Inlet to the County Line.
Kevin Stinnette	The County should identify the level of protection afforded by the proposed beach project, which will not provide protection from a Category 4 or 5 hurricane.
Charles Lippincott	The 2004 hurricanes were a lesson. Need to move future development further landward.
Albert Burdge	The County has tried to stop erosion on south side of inlet by beach nourishment, but the sand has just washed away. Development along the beach should be stopped.
Charles Cressi	Ocean is relentless and we need to be relentless. Agrees with alternatives eliminated and beach fill project is warranted. Jetties need to be maintained.
Ericka Davanzo	Sea-level rise be considered in economics (B/C) of Project. County should consider a combination of alternatives, such as fill only at "hot-spots".



April 30, 2007 Charette – Public Comments

Environmental Concerns

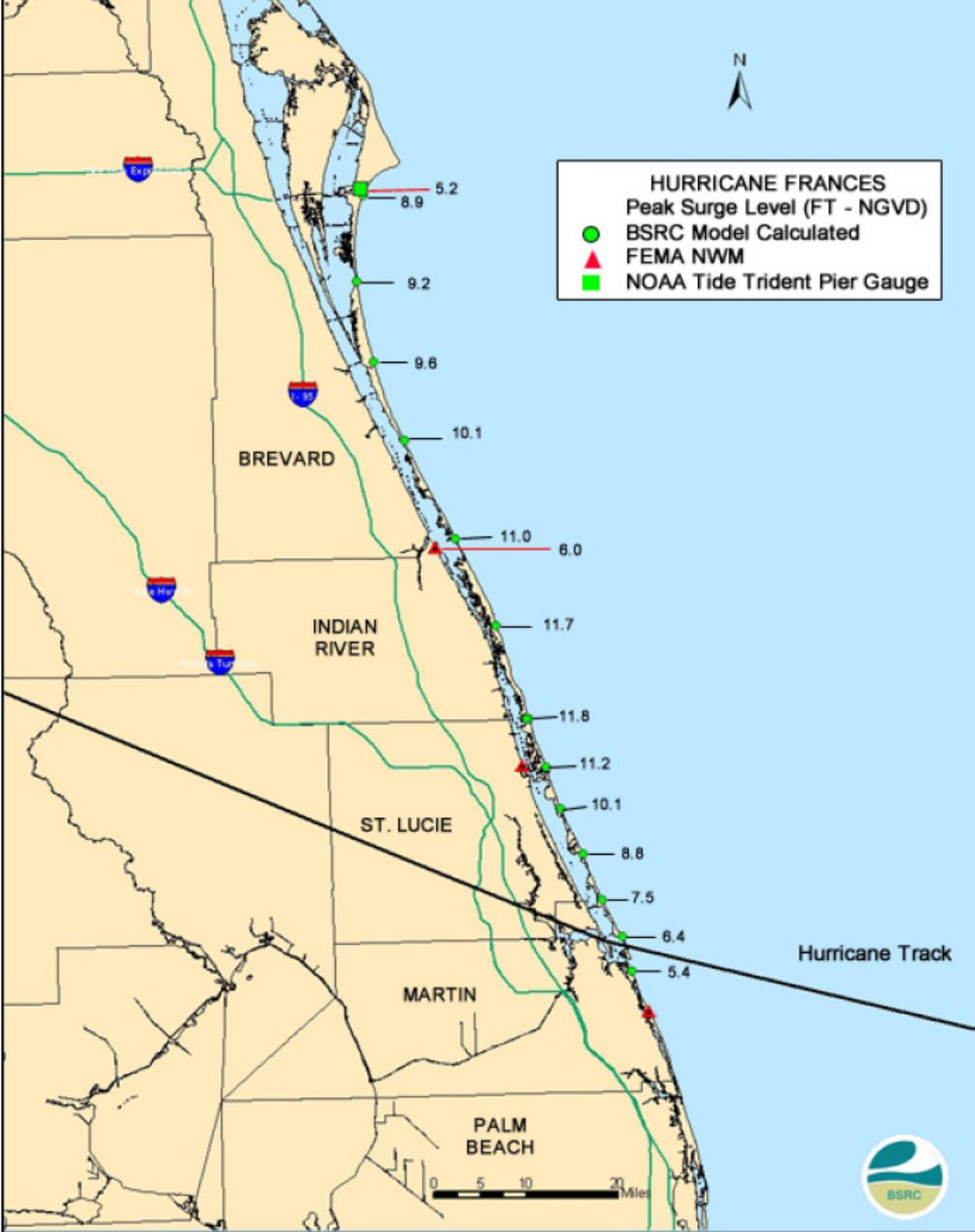
Speaker	Comment
David Kaplan	The COBRA Zones should be omitted from the project. . . . concerned about damage to hardbottom, quality of fill material, turbidity, lack of public beach access
Craig M.	Address the recovery of a borrow area after sand is removed.
Kevin Stinnette	The quality of fill should avoid impacts to the beach, fishing, and water quality and associated tourism.
Terry Gibson	Fisheries, diving, and surfing constitute a multi-billion dollar industry, which should be protected. Capron Shoal should not be dredged.
Pat Pacitti	Project should be environmentally friendly to protect the interests of coastal homeowners.
Dewey Bookhold	The County's dune restoration project (after 2004 hurricanes) has benefited property owners; birds and sea turtles are returning.

St. Lucie County
South County Beach Project

Hurricane Frances

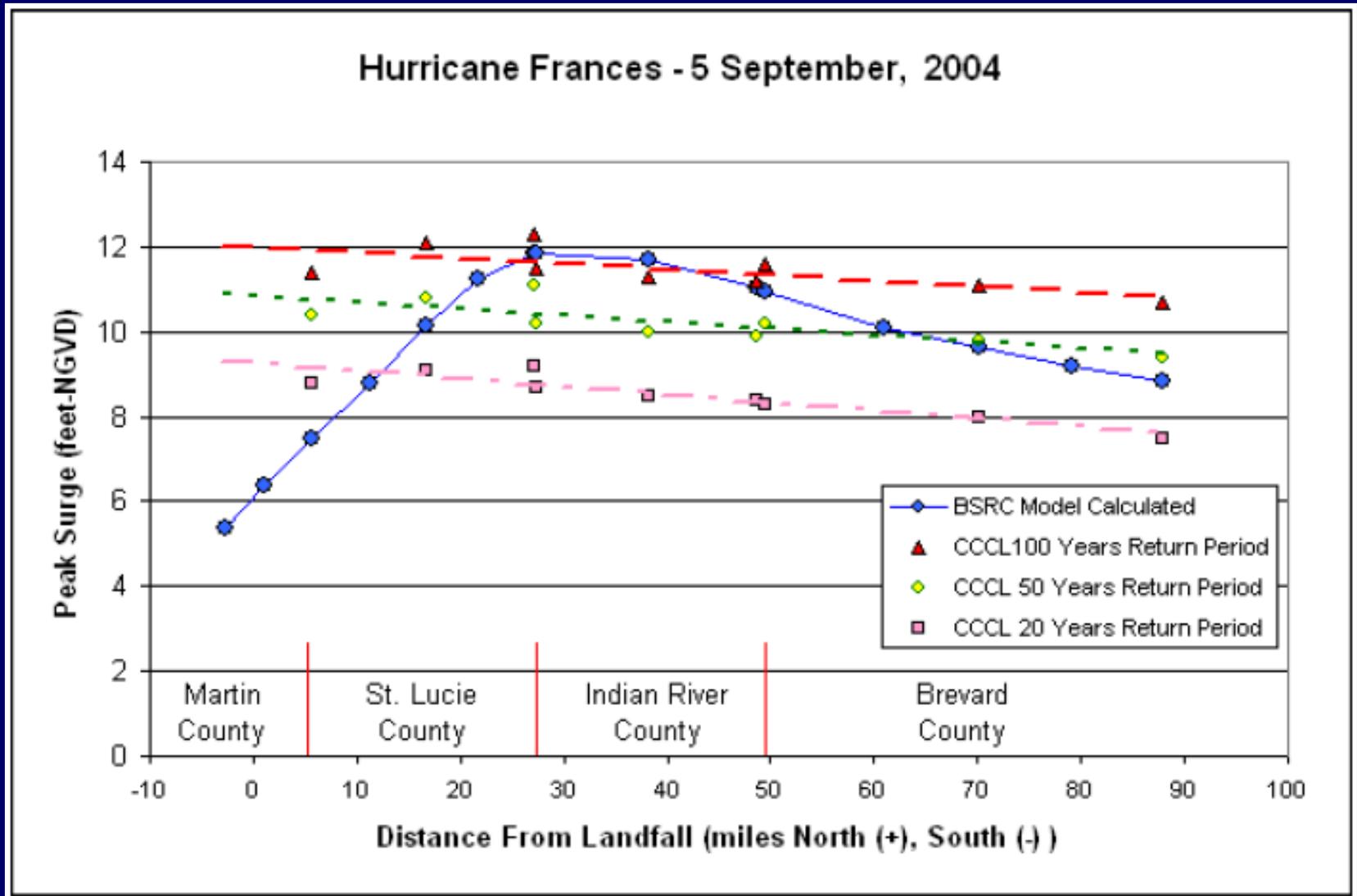
Storm Track

September 2004



From: **HURRICANE FRANCES CHARACTERISTICS and STORM TIDE EVALUATION**
Beaches and Shores Resource Center, FSU
May 2005





From: **HURRICANE FRANCES CHARACTERISTICS and STORM TIDE EVALUATION**
 Beaches and Shores Resource Center, FSU
 May 2005



St. Lucie County
South County Beach Project

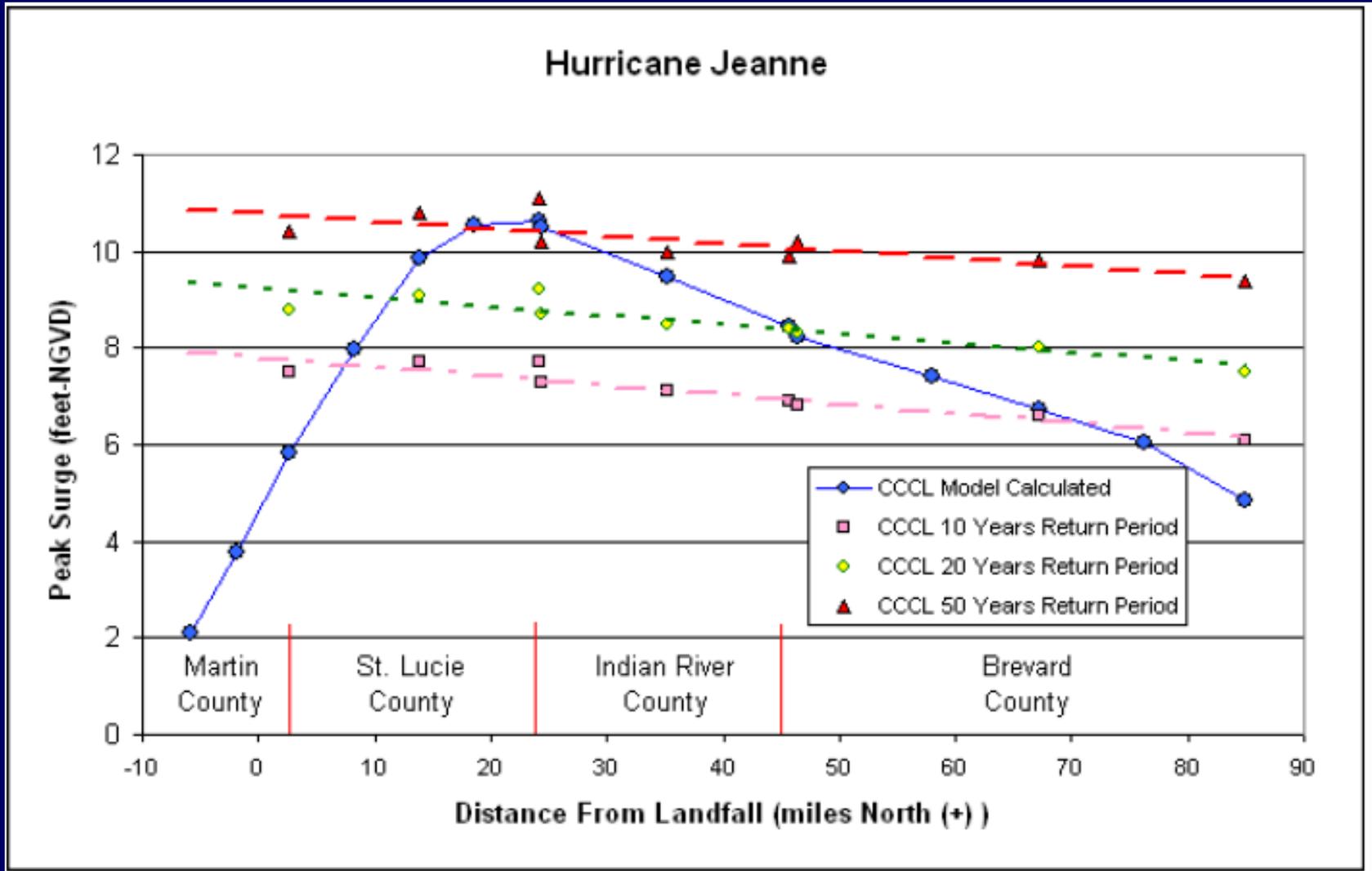
Hurricane Jeanne

Storm Track

September 2004

From: **HURRICANE JEANNE CHARACTERISTICS and STORM TIDE EVALUATION**
Beaches and Shores Resource Center, FSU
May 2005





From: **HURRICANE JEANNE CHARACTERISTICS and STORM TIDE EVALUATION**
 Beaches and Shores Resource Center, FSU
 May 2005



Hutchinson Island Inn
September 2004



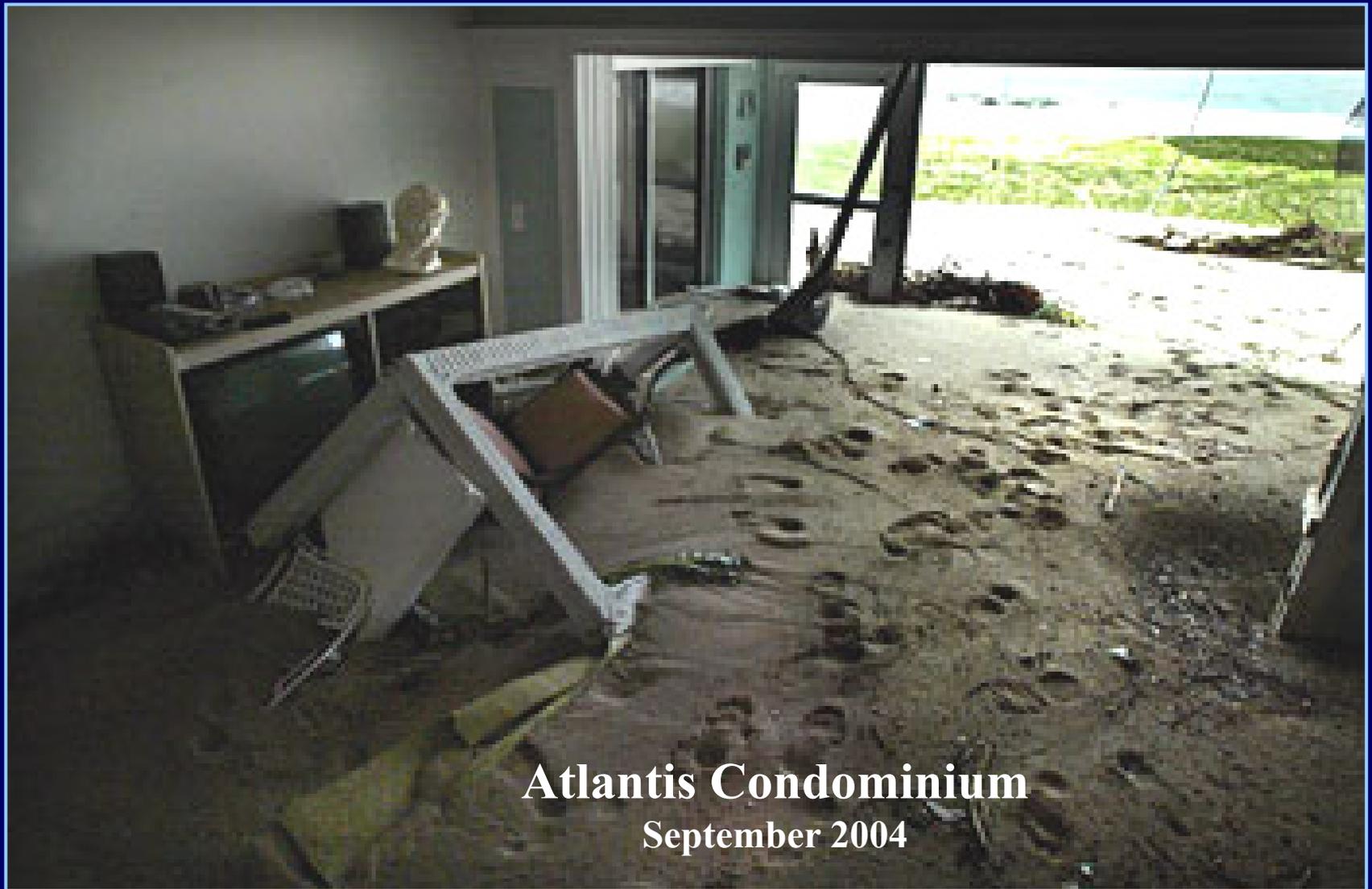




Island Beach Club
September 2004



Atlantis Condominium
September 2004



Atlantis Condominium
September 2004

2004 Hurricane Damage

Struct. #	Closest Ref. Mon.	Site Name	Description of Damage	Value	SDR Damage
29 - 31	R - 99	Regency	"ocean never came over the dunes"; damages not covered by insurance	\$932,387	no
32, 32.1	R - 99	Admiral	apparent wind damage & some overwash into parking area	unknown	no
33	R - 100	Island Dunes Oceanside	flooding & sand overwash into ground floor	unknown	YES
37	R - 104	Islandia East	n/a	\$725,757	unknown
38	R - 104	Islandia I	n/a	\$1,010,589	unknown
39	R - 105	Empress Condominium	lost 40 feet of dune during storms; damage to dune & dune overwalk; no building damage cited	\$232,387	no
41, 41.1	R - 106	Hutchinson Island Beach Club	Tiki Bar & landscape damage - not covered by insurance; building had to be replaced (photo)	\$1,527,472	YES
42	R - 106	Oceana II North	"Storm Surge Damage"	\$682,584	YES
45, 45.1, 45.2	R - 108	MiraMar2	landscape & boardwalk damage; apparent wind & water damage to building	\$118,200	no
49	R - 109	Atlantis A	flooding & sand overwash into ground floor	unknown	YES
55	R - 112	Island Crest	n/a	\$2,500,000	unknown
62	R - 113	Holiday Out	damage to "dune, crossovers, rec hall, shuffleboard and bocce ball courts, and sunshades"	\$200,000	no
Total:				\$7,929,376	



Regency Island Dunes

R-99

February 9, 2008



St. Lucie County South County Beach Project



Photo: 2006

Atlantis A



February 9, 2008



Existing Conditions

Profiles	# of Potentially Impacted Structures			
	Storm Event - Return Interval			
	15-year	25-year	50-year	100-year
R-77 to R-88.5 north of FPL plant to Sand Dollar	0	0	0	0
R-88.5 to R-98.5 Sand Dollar Regency Island	4	9	15	15
R-98.5 to R-103.3 Regency Island to Islandia II	16	19	19	19
R-103.3 to R-115 Islandia II to Martin County Line	15	32	39	55
Total:	35	60	73	89





Preliminary Design



Alternatives

expected to be evaluated in detail:

- “No Action”
 - beach fill with “no impact” to existing hardbottom
(“avoidance” alternative)
 - beach fill with minimum impact
(“minimization” alternative)
 - beach fill to restore the 1972 beach & dune
 - another alternative
- as may be identified by the County, USACE or regulatory agency





1972 Design Template Volume



Sand Dollar Shores to Martin County Line

Mon.	Density (cy/ft)	Volume (cy)	Mon.	Density (cy/ft)	Volume (cy)
R88	20.1	19,934	R102	6.7	6,809
R89	13.8	13,503	R103	5.9	4,974
R90	26.4	24,958	R104	2.9	2,809
R91	33.2	32,327	R105	6.1	5,889
R92	26.9	26,180	R106	8.9	8,785
R93	33.2	33,448	R107	1.0	1,025
R94	32.0	30,702	R108	11.7	11,927
R95	44.3	40,869	R109	9.0	9,214
R96	19.0	18,600	R110	10.4	10,424
R97	19.0	18,360	R111	1.5	1,532
R98	29.8	29,373	R112	14.2	14,566
R99	24.4	25,597	R113	8.5	8,384
R100	21.5	22,324	R114	6.9	6,774
R101	4.0	4,769	R115	4.2	2,074

St. Lucie County - South County Beach Project

15.9	436,132
Average	Total

Study Area - Property Data

R-88 to R103

Notes: Columns A thru N

1. Blue Text is data from USACE.

2. Red Text produced by Coastal Tech.

3. Building & Pool Costs in red text are based upon assumed structure values

Assumed Structure Values

Pool Cost/ Sq Foot = \$ 35.00

Building Cost/ Sq Foot = \$ -

Reference-Monument	Structure	CONDO #	Address	Description	Floors	Sq Ft	Structure Value	Lot in SF	Land Value	Pile Foundation	Construct	Use
88	1		7370	Dune Walk By the Sea	8	54,216	\$ 10,689,226.56	100,765	\$2,720,655	Yes	ConcSteel	Condo
	1.1			Dune Walk By the Sea Pool		1,250	\$ 92,782,500.00			Pool		
	1.2			Dune Walk By the Sea Pool House	1	2,930	\$ -			Slab		
	2	3522607	7380	Dune Walk By the Sea	8	54,216	\$ 10,689,226.56	90,963	\$2,456,001	Yes	ConcSteel	Condo
89	3	3522606	7400	Sand Dollar E	8	33,603	\$ 6,393,642.81	74,226	\$2,004,102	Yes	ConcSteel	Condo
	3.1			Sand Dollar Pool		1,250	\$ 92,782,500.00			Pool		
	3.2			Sand Dollar Pool House	1	543	\$ -			Slab		
	4	3522605	7440	Sand Dollar D	8	50,451	\$ 10,535,177.82	90,865	\$2,453,355	Yes	ConcSteel	Condo
	4.1			Sand Dollar Utilities Shed	1	1,019	\$ -			Slab		
	5	3522604		Sand Dollar C	8	50,451	\$ 10,454,960.73	109,049	\$2,944,323	Yes	ConcSteel	Condo
90	6	3522603		Sand Dollar B	8	50,457	\$ 9,440,000.13	92,202	\$2,489,454	Yes	ConcSteel	Condo
91	6.1			Sand Dollar Pool		1,250	\$ 92,782,500.00			Pool		
	6.2			Sand Dollar Pool House	1	539	\$ -			Slab		
	7	3522602		Sand Dollar A	8	34,203	\$ 6,670,953.12	76,162	\$2,056,374	Yes	ConcSteel	Condo
	8-27	27	142-146	Ocean Bay Villa Condo- Buildings	3	7,077	\$ 945,204.12	14,837	\$400,599	Slab	CBSStucco	Condo
	28			Tesora Beach Club Office	1	2,641	\$ 209,959.50	14,837	\$400,599	Slab	CBSStucco	Condo
99	29	3534502	8600	Regency Island Dunes II	13	150,654	\$ 38,166,684.36	194,108	\$5,240,916	Yes	ConcSteel	Condo
	30			Regency Pool/ Club House- 3534-111	1	2,358	\$ -		\$0	Slab		
	30.1			Regency Pool		1,243	\$ 92,262,918.00			Pool		
	30.2			Regency Spa		77	\$ -			Pool		
	30.3			Regency Spa		78	\$ -			Pool		
	31	3534501	8650	Regency Island Dunes	13	146,800	\$ 37,034,704.00	151,453	\$4,089,231	Yes	ConcSteel	Condo
	32	3535601	8750	Island Dunes Admiral	19	166,680	\$ 36,484,585.20	203,455	\$5,493,285	Yes	ConcSteel	Condo
	32.1			Island Dunes Admiral Pool		1,250	\$ 92,782,500.00			Pool		
100	33	3535603	8800	Island Dune Oceanside Admiral	13	175,862	\$ 38,680,846.90	243,469	\$6,573,663	Yes	ConcSteel	Condo
	33.1			Island Dune Oceanside Pool		1,250	\$ 92,782,500.00			Pool		
	33.2			Island Dune Oceanside Pool		1,250	\$ 92,782,500.00			Pool		
	33.3			Island Dune Oceanside Pool House		951	\$ -			Slab		
101	34	3535602	8880	Island Dune Oceanside -602	13	531,598	\$114,952,751.52	321,638	\$8,684,226	Yes	ConcSteel	Condo
	34.1		8900	House- Von Aldenbruck Residence	1	3,406	\$ -		\$0	Slab	Frame	
103	35	3535702	9440	Ocean Towers B 3535-702	10	79,043	\$ 15,584,117.88	195,318	\$5,273,586	Yes	ConcSteel	Condo
	35.1			Ocean Towers Pool		1,250	\$ 92,782,500.00			Pool		
	35.2			Ocean Towers ClubHouse		559	\$ -			Slab		
	35.3			Ocean Towers ClubHouse		929	\$ -			Slab		
	36	3535701	9400	Ocean Towers A 3535-701	10	84,367	\$ 16,097,223.60	200,229	\$5,406,183	Yes	ConcSteel	Condo



Study Area - Property Data

R104 to R-108

Notes: Columns A thru N					Assumed Structure Values							
1. Blue Text is data from USACE.					Pool Cost/ Sq Foot = \$ 35.00							
2. Red Text produced by Coastal Tech.					Building Cost/ Sq Foot = \$ -							
3. Building & Pool Costs in red text are based upon assumed structure values												
Reference-Monument	Structure	CONDO #	Address	Description	Floors	Sq Ft	Structure Value	Lot in SF	Land Value	Pile Foundation	Construct	Use
104	37	4502602	9500	Islandia II	19	257,984	\$ 53,872,218.88	206,694	\$5,580,738	Yes	ConcSteel	Condo
	37.1			Islandia Pool		1,200	\$ 89,071,200.00			Pool		
	37.2			Islandia Pool House		722	\$ -			Slab		
	38	4502601	9550	Islandia I	19	257,984	\$ 42,796,965.76	249,297	\$6,731,019	Yes	ConcSteel	Condo
105	39	4502620	9600	Empress	14	159,933	\$ 37,550,669.07	253,373	\$6,841,071	Yes	ConcSteel	Condo
	39.1			Empress Pool		1,480	\$109,854,480.00			Pool		
	39.2			Empress Spa		46	\$ 3,414,396.00			Pool		
	40	4502610	9650	The Princess	20	275,082	\$ 55,255,721.34	230,985	\$6,236,595	Yes	ConcSteel	Condo
	40.1			The Princess Pool		1,740	\$129,153,240.00			Pool		
	40.2			Princess Spa		62	\$ 4,602,012.00			Pool		
106	41	4502504	9800	Island Bch Club w/ side Restaurant	4	48,014	\$ 8,092,279.56	238,861	\$6,449,247	Yes	ConcSteel	Condo
	41.1			Island Bch Club Pool		1,875	\$139,173,750.00			Pool		
	41.2			Nettles Island Community Pool		2,625	\$194,843,250.00			Pool		
	41.3			Nettles Island Community Clubhouse		2,824	\$ -			Slab		
	42	4502503	9900	Oceana North II	17	167,438	\$ 36,739,245.96	195,915	\$5,289,705	Yes	ConcSteel	Condo
	42.1			Oceana North Pool House/ Rec Center	1	4,598	\$ -			Slab		
	42.2			Oceana North Pool		1,150	\$ 85,359,900.00			Pool		
	42.3			Oceana North Pool		1,300	\$ 96,493,800.00			Pool		
107	43	4502502	9940	Oceana North I (OF)	13	129,315	\$ 26,935,021.35	221,826	\$5,989,302	Yes	ConcSteel	Condo
	43.1			Oceana North Storage Sheds	1	6,432	\$ -			Slab		
	44	4502702	9950	Miramar Royal	19	144,792	\$ 28,700,670.24	163,603	\$4,417,281	Yes	ConcSteel	Condo
	44.1			Miramar Pool		1,250	\$ 92,782,500.00			Pool		
	44.2			Miramar Pool		1,460	\$108,369,960.00			Pool		
108	45	4502702	9960	Miramar II	19	144,792	\$ 28,700,670.24	163,603	\$4,417,281	Yes	ConcSteel	Condo
	45.1			Miramar II Pool						Pool		Not visible in Aerial
	45.2	Pool House		Miramar II Pool House	1					Slab		Not visible in Aerial
	46	4502701	10000	The Miramar	11	75,012	\$ 16,021,813.08	162,171	\$4,378,617	Yes	ConcSteel	Condo
	46.1			The Miramar Pool		1,250	\$ 92,782,500.00			Pool		
	46.2			The Miramar Pool House/ Lean-to style		2,119	\$ -			Pool		
	47	4502804	10044	Seawinds	12	124,320	\$ 22,534,243.20	228,170	\$6,160,590	Yes	ConcSteel	Condo
	47.1			Seawinds Pool		1,250	\$ 92,782,500.00			Pool		
	47.2			Seawinds Pool/ Rec Center		985	\$ -			Slab		
	47.3			Seawinds Pool/ Rec Center		532	\$ -			Slab		



Study Area - Property Data

R109 to R-112

Notes: Columns A thru N					Assumed Structure Values							
1. Blue Text is data from USACE.					Pool Cost/ Sq Foot = \$ 35.00							
2. Red Text produced by Coastal Tech.					Building Cost/ Sq Foot = \$ -							
3. Building & Pool Costs in red text are based upon assumed structure values												
Reference-Monument	Structure	CONDO #	Address	Description	Floors	Sq Ft	Structure Value	Lot in SF	Land Value	Pile Foundation	Construct	Use
109	48			Claridge By The Sea	11	89,331	\$ -			Yes		
	48.1			Attached Storage Garage	1	15,126	\$ -			Slab		
	48.2			Claridge Manager's Residence	1		\$ -			Slab	Not visible in Aerial	
	48.3			Claridge By The Sea Pool		882	\$ 65,467,332.00			Pool		
	49		10102	Atlantis A	7	71,331	\$ 11,681,878.87	168,294	\$4,543,912	Yes	ConcSteel	Condo
	49.1			Atlantis A Pool		1,250	\$ 92,782,500.00			Pool		
	50	4502803	10152	Atlantis B	7	71,331	\$ 14,744,117.70	143,333	\$3,869,991	Yes	ConcSteel	Condo
	50.1			Atlantis B Pool		1,250	\$ 92,782,500.00			Pool		
110	51	4511518	10200	Atlantis III By the Sea	7	79,928	\$ 13,428,703.28	175,935	\$4,750,245	Yes	ConcSteel	Condo
	52	4511510	10310	Oceanrise	7	69,317	\$ 9,662,096.63	156,966	\$4,238,082	Yes	ConcSteel	Condo
	52.1			Oceanrise Pool		1,250	\$ 92,782,500.00			Pool		
	52.2			House under Construction	2	3,000	\$ -			Slab	Visually Estimated	
	52.3			Beach Access Public Restrooms	1	666	\$ -			Slab		
	52.4			Beach Access Public Restrooms	1	551	\$ -			Slab		
	52.5			Island Beach Club Storage Sheds	1	6,197	\$ -			Slab		
111	53	4511514	10410	Hutchinson Island Beach Club	12	69,317	\$ 12,564,399.42	198,779	\$5,367,033	Yes	ConcSteel	Condo
	53.1			Hutchinson Island Beach Club Pool		1,180	\$ 87,586,680.00			Pool		
	53.2			Hutchinson Island Beach Club Spa		167	\$ -			Pool		
	53.3			Hutchinson Island Pool House		875	\$ -			Slab		
	53.4			Hutchinson Island Beach Club Storage		3,954	\$ -			Slab		
	54	4511517	10600	Oceana South II	13	130,827	\$ 28,082,015.55	252,685	\$6,822,495	Yes	ConcSteel	Condo
	54.1			Oceana South II Pool		1,250	\$ 92,782,500.00			Pool		
	54.2			Oceana South Rec Center/ Pool House	1	3,899	\$ -			Slab		
112	55	4511516	10680	Island Crest	13	130,828	\$ 26,487,436.88	234,864	\$6,341,328	Yes	ConcSteel	Condo
	55.1			Island Crest Pool		1,250	\$ 92,782,500.00			Pool		
	56	4511521		Vistana Beach Condo	8	31,360	\$ 5,484,864.00	61,612	\$1,663,524	Yes	ConcSteel	Condo
	57	4511520		Vistana Beach Condo	8	51,840	\$ 9,066,816.00	61,612	\$1,663,524	Yes	ConcSteel	Condo



Study Area - Property Data

R111 to R-115

Notes: Columns A thru N					Assumed Structure Values							
1. Blue Text is data from USACE.					Pool Cost/ Sq Foot = \$ 35.00							
2. Red Text produced by Coastal Tech.					Building Cost/ Sq Foot = \$ -							
3. Building & Pool Costs in red text are based upon assumed structure values												
Reference-Monument	Structure	CONDO #	Address	Description	Floors	Sq Ft	Structure Value	Lot in SF	Land Value	Pile Foundation	Construct	Use
113	58	4511802	10800	Turtle Reef	1	8,064	\$ 1,410,393.60	82,274	\$2,221,398	Slab	ConcSteel	Condo
	59	4511802	Rec Center	Turtle Reef Recreation Center	1	8,064	\$ 1,410,393.60	82,275	\$2,221,399	Slab	ConcSteel	
	60	4511801	north wing	Turtle Reef Club	6	26,000	\$ 4,547,400.00	82,274	\$2,221,398	Yes	ConcSteel	Condo
	61	4511801	south wing	Turtle Reef Club	6	26,000	\$ 4,547,400.50	82,275	\$2,221,399	Yes	ConcSteel	Condo
					Vacant 451114000040000					\$0		
				Vacant ? 451141100020007					\$0			
114	62	HO Rec	10820	Holiday Out Community Rec Center	2		\$ 100,000.00	257,638	\$6,956,226	Slab	CBStucco	PrivBeach
	62.1	Pool		Holiday Out Community Pool		2,827	\$209,836,902.00			Pool		
	62.2	Spa		Holiday Out Community Spa		344	\$ 25,533,744.00			Pool		
	63	Private Bch	10850	11-809-0002-000-8 Windmill Village Rec Cen	2	9,072	\$ 257,529.00	108,334	\$2,925,018	Slab	CBStucco	PrivBeach
	63.1	Pool		Windmiss Village Community Pool		1,728	\$128,262,528.00			Pool		
	64	Restaurant	10900	4512-331-0002-0005 Restaurant	2	7,401	\$ 416,470.00	73,663	\$1,988,901	Slab	CB/Frame	Restaurant
	65	Hotel	10978	451233100020201 Marriott Courtyard	8	65,090	\$ 11,384,241.00	114,255	\$3,084,885	Yes	ConcSteel	Hotel
	65.1	Pool		Marriott Pool		660	\$ 48,989,160.00			Pool		
	65.2	Spa		Marriott Spa		100	\$ 7,422,600.00			Pool		
	65.3	Storage		Storage/ Utility Sheds	1	646	\$ -			Slab		
65.4	Storage		Storage/ Utility Sheds	1	573	\$ -			Slab			
115	66	4512702	10980	Ocean Dunes	8	37,912	\$ 6,630,808.80	84,604	\$2,284,308	Yes	ConcSteel	Condo
	66.1	Pool		Ocean Dunes Pool		800	\$ 59,380,800.00			Pool		
	66.2	Pool House		Ocean Dunes Pool House	1	535	\$ -			Slab		
	67			Villa del Sol - Bldg 6	3	16,278	\$ 2,847,022.20	32,785	\$885,195	Slab		Condo
	68			Villa del Sol - Bldg 5	3	16,278	\$ 2,847,022.20	32,785	\$885,195	Slab		Condo
	69			Villa del Sol - Bldg 4	3	16,278	\$ 2,847,022.20	32,785	\$885,195	Slab		Condo
	70			Villa del Sol - Bldg 3	3	16,278	\$ 2,847,022.20	32,785	\$885,195	Slab		Condo
	71			Villa del Sol - Bldg 2	2	8,640	\$ 1,511,136.00	32,785	\$885,195	Slab		Condo
	72	4512701	11,000	Villa del Sol - Bldg 1	2	7,176	\$ 1,255,082.40	32,785	\$885,195	Slab	CBStucco	Condo
						Totals:	4,630,168	\$ 3,973,106,208	7,106,561	\$191,874,234		



Criteria & Assumptions - Storm Damages

SBEACH Results:

If the maximum elevation of the post-storm profile is *less* than the peak storm surge elevation, then the flood/erosion limit is identified at the CCCL indicating overwash of the profile and flooding of the upland.

If the maximum elevation of the post-storm profile is *greater* than the peak storm surge elevation, then the flood/erosion limit is identified at the landward-most point of where:

- the pre-storm profile is below the post-storm profile – indicating the landward limits of erosion, or**
- the peak surge elevation first (“coming” from the sea) intersects the post-storm profile – indicating the landward limits of flooding.**



Criteria & Assumptions - Storm Damages

structures with slab on grade foundation:

A damage factor of 1.5 was applied to account for debris removal costs.

If the structure is less than 50% undermined, then the total cost of repairs equals the % undermined times the structure value multiplied by the damage factor (1.5).

If the structure is more than 50% undermined, then the entire structure must be replaced and the total cost of repairs equals the structure value multiplied by the damage factor (1.5).

Criteria & Assumptions - Storm Damages **structures with a a pile foundation:**

A damage factor of 1.5 was applied to account for debris removal costs.

If the erosion limits reach the structure, only the bottom floor of the structure is damaged in proportion to the % undermined.

For example, if erosion limits reach the landward extent of a 15 story building, the total cost of repairs is 1/15 or 6.7% of the building value times the damage factor of 1.5.



Criteria & Assumptions - Storm Damages

pools:

**If the erosion limits are landward of the seaward most point of the pool,
the pool is 100% damaged.**

**The cost of replacement is \$50/sf – based upon quotes from local pool contractors
at ~\$60,000 for a 1700 sf pool
(the average size pool in the project area).**



Loss of Land Benefits

based upon:

- **land value of \$27/sf per USACE data**
- **background erosion rates 1972 to 2006**



Draft OPC: Alternative 4: Fill Area =R88.5 to R103.3

Item No.	Description	Probable Construction Costs			
		Quantity		Unit Price	Cost
1	Mob/Demob	1	LS	\$1,240,000	\$1,240,000
2	Furnish & Install Sand	340,000	cy	\$15	\$5,100,000
3	Permit Compliance	1	LS	\$120,000	\$120,000
4	Beach Tilling	1	LS	\$23,000	\$23,000
5	Native Plants	270,000	Each	\$0.71	\$191,700
6	Mitigation Reef	4.86	acres	\$500,000	\$2,427,562
				Total Cost	\$9,102,262



Draft NED Analysis

1972 Template – Alternative Fill Areas

evaluated to date – May 1, 2008

Alternative - Fill Area		Annual Cost	Annual Benefits			B/C	Net Benefits
			SDR	Land Loss	Total		
1	R77 to Martin County	\$2,236,928	\$3,417,968	\$567,054	\$3,985,022	1.78	\$1,748,094
2	R88.5 to Martin County	\$1,727,771	\$3,417,968	\$567,054	\$3,985,022	2.31	\$2,257,251
3	R98.5 to Martin County	\$907,789	\$3,020,079	\$147,959	\$3,168,037	3.49	\$2,260,248
4	R88.5 to R103.3	\$1,820,783	\$2,745,100	\$523,159	\$3,268,258	1.79	\$1,447,475
5	R109.5 to Martin County **	\$367,621	\$306,754	\$43,895	\$350,649	0.95	-\$16,972
**Note: Alternative 5 is assumed to occur concurrent with Alternative 4 - without additional Mob/Demob costs; Alternative 5 costs are for additional costs only.							





Borrow Areas



Shoals - Potential Borrow Areas

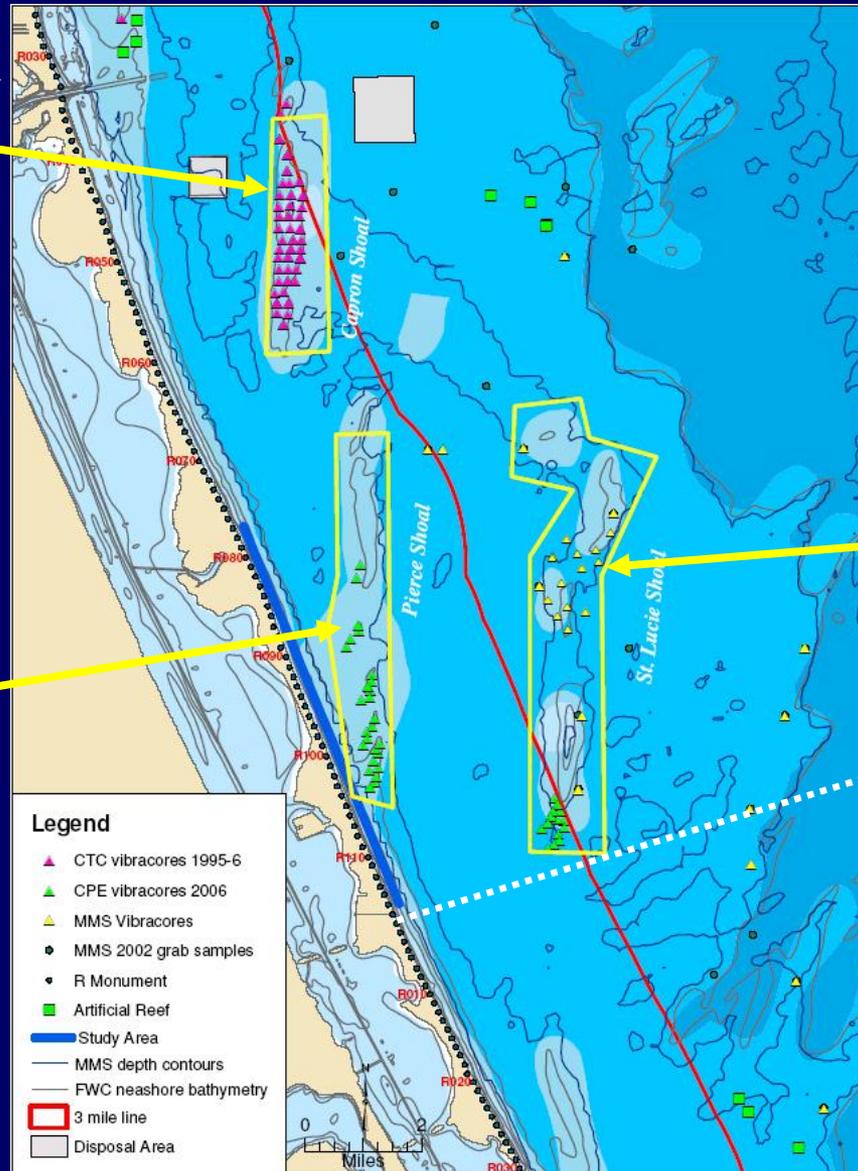
Ft. Pierce Inlet

Capron Shoal

Pierce Shoal
&
other shoals

St. Lucie Shoal

Martin County



Borrow Areas - Previous Investigations

- Capron Shoal

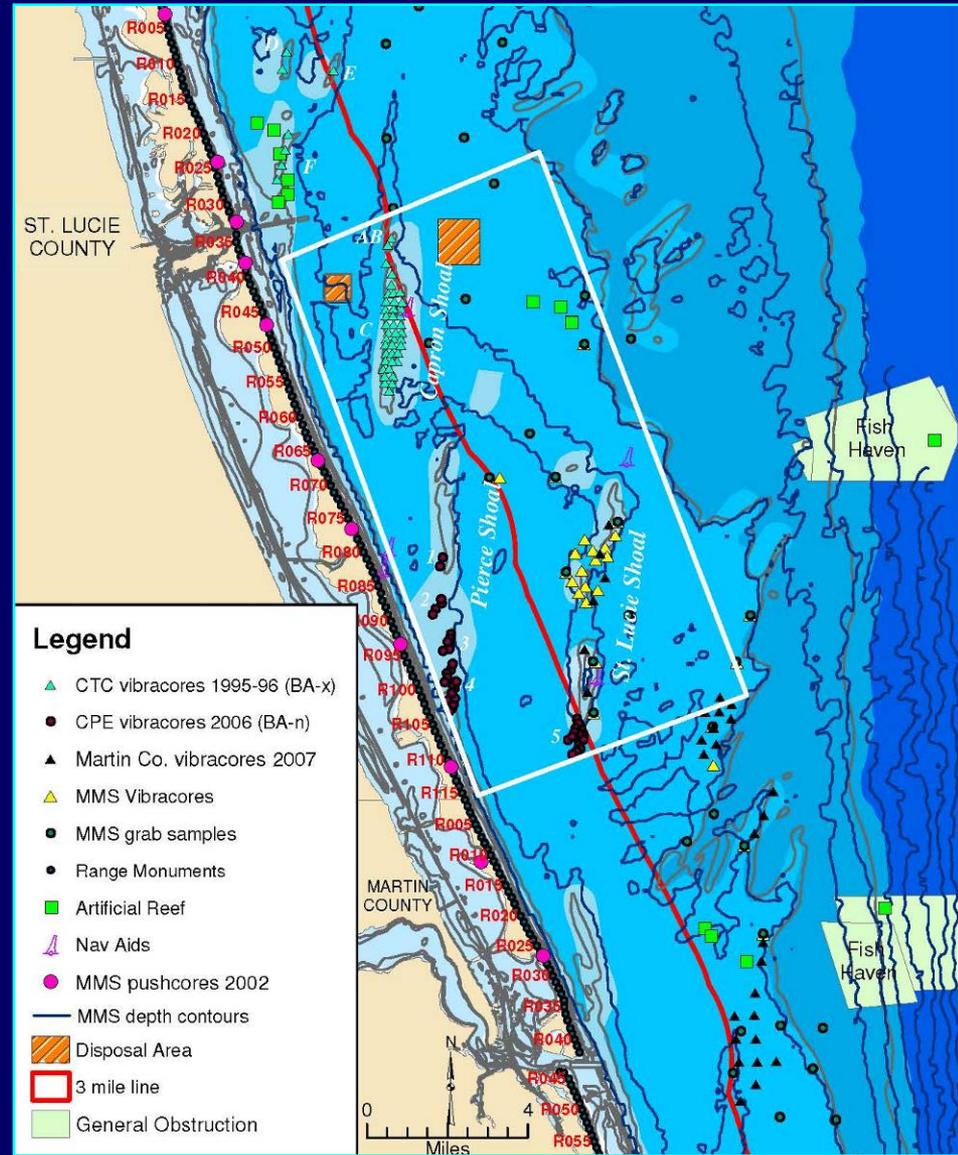
State water: CTC 1996
not addressed here

- St. Lucie Shoal

State water: CPE 2006
Federal water: MMS 2002,
ACOE 2007

- Pierce Shoal, St. Lucie & other shoals

State water: CPE 2006



Borrow Areas - Previous Investigations

St. Lucie Shoal

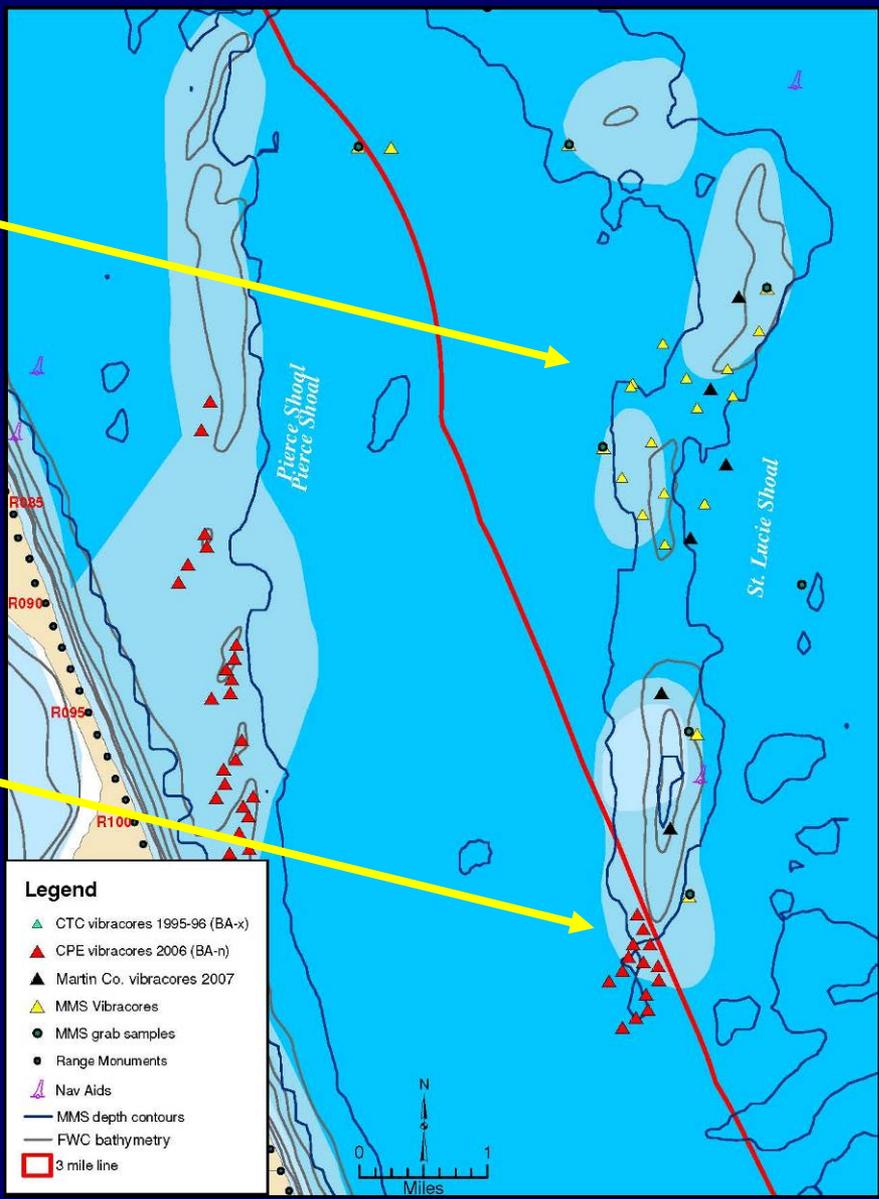
Federal Waters: MMS 2002

USACE Martin Co 2006 – data not yet available

MMS	Native
19 cores	-
23-247mcy	-
0.40mm	0.43 mm
<2% fines	<1% fines

State Waters: CPE 2006

CPE	Native
14 cores	-
2.1mcy	-
0.44mm	0.43 mm
<1% fines	<1% fines

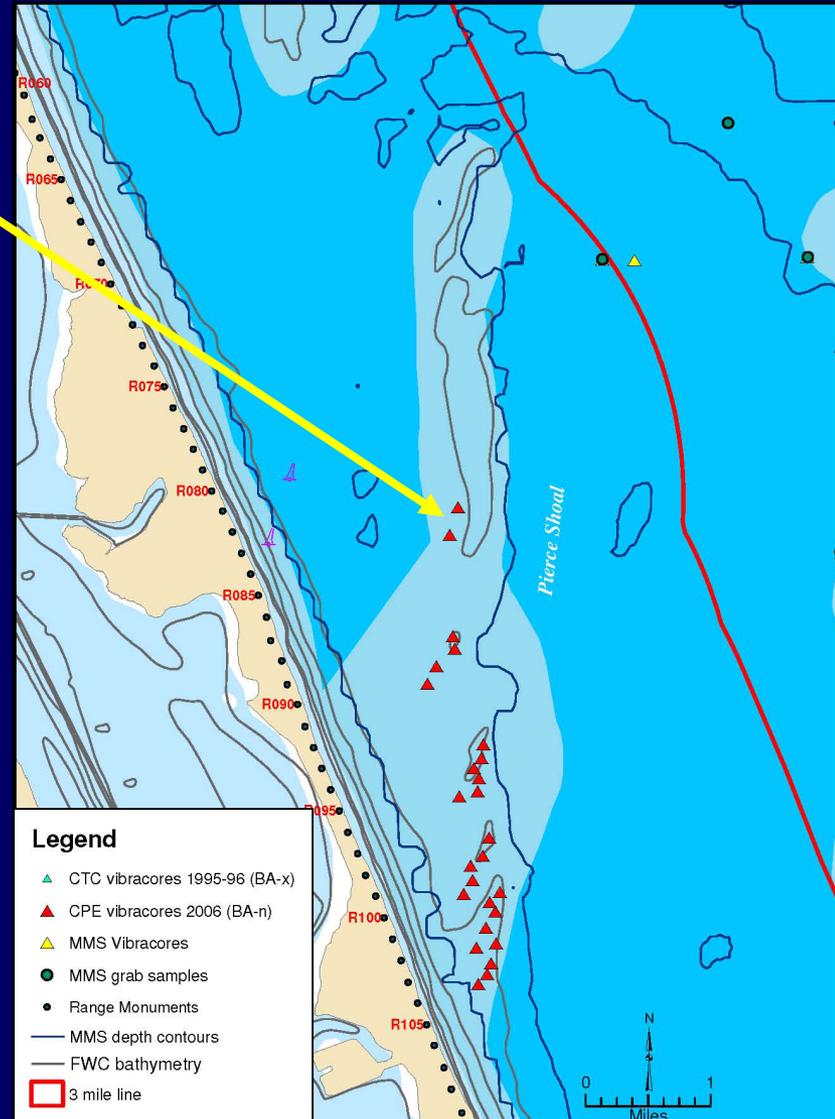


Borrow Areas - Previous Investigations

Pierce Shoal

(CPE, 2006)

- Proximal to project area
- Potential large volume
- CPE - two vibracores
 - on flanks
 - 0.42mm with <3% fines,
 - 4' to 10' of sand



Borrow Areas - Previous Investigations

Other Shoals

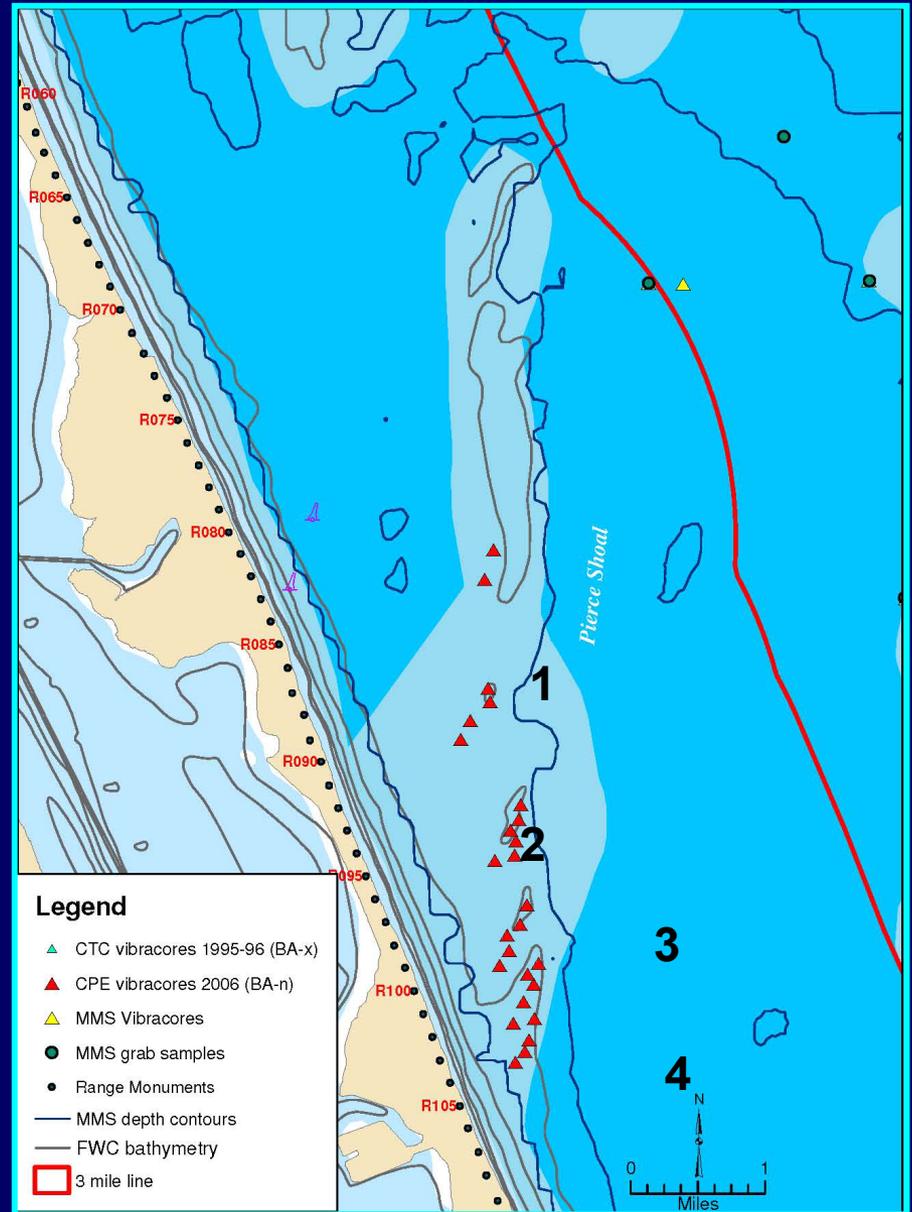
(CPE, 2006)

BA-1

BA-2

BA-3

BA-4



Other Shoals continued

BA-1: on Pierce Shoal – **to be further investigated**

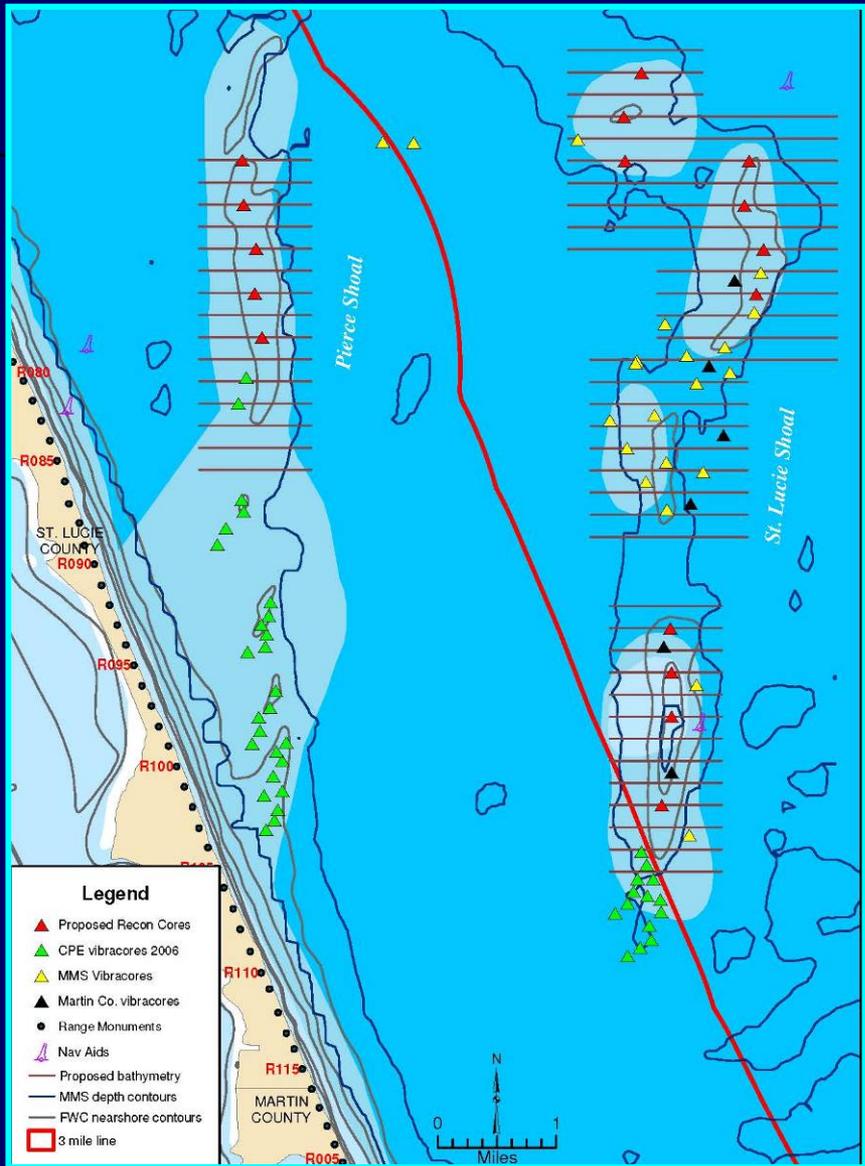
BA-2 & 3 : appears to be beach-compatible

Cores to be sampled/tested for CaCO₃ & organic content

BA-4: **rejected** due to apparent connection to shore-face

Reconnaissance Plan

- Native Beach: 47 samples
- Bathymetric survey:
 - o Identify shoal crests via ~53 line miles at 1000' centers
- Vibracores: sixteen 20' cores:
 - Pierce Shoal
 - o 5 cores in state water
 - St. Lucie Shoal
 - o 11 cores in federal water
- CaCO₃ & Organics
 - o CPE cores



Borrow Area Investigations - Status:

FDEP permit obtained for recon level vibracores from Pierce Shoal in state water

Coastal Tech has obtained & assessed CPE vibracores :

- **Now formulating appropriate tests to assess effects of carbonate content**

MMS Permit applications submitted July 2007 for St. Lucie Shoal.

MMS has required that a cultural resources survey be conducted prior to consideration of the permit application for vibracoring; survey is being conducted by the USACE





Additional Investigations



FDEP Pre-Application Conference

February 7, 2008

FDEP identified that: new and recent aerial photography and ground-truthing are needed to verify whether the 2006 data is still representative of hardbottom resources.

USACE Pre-Application Conference

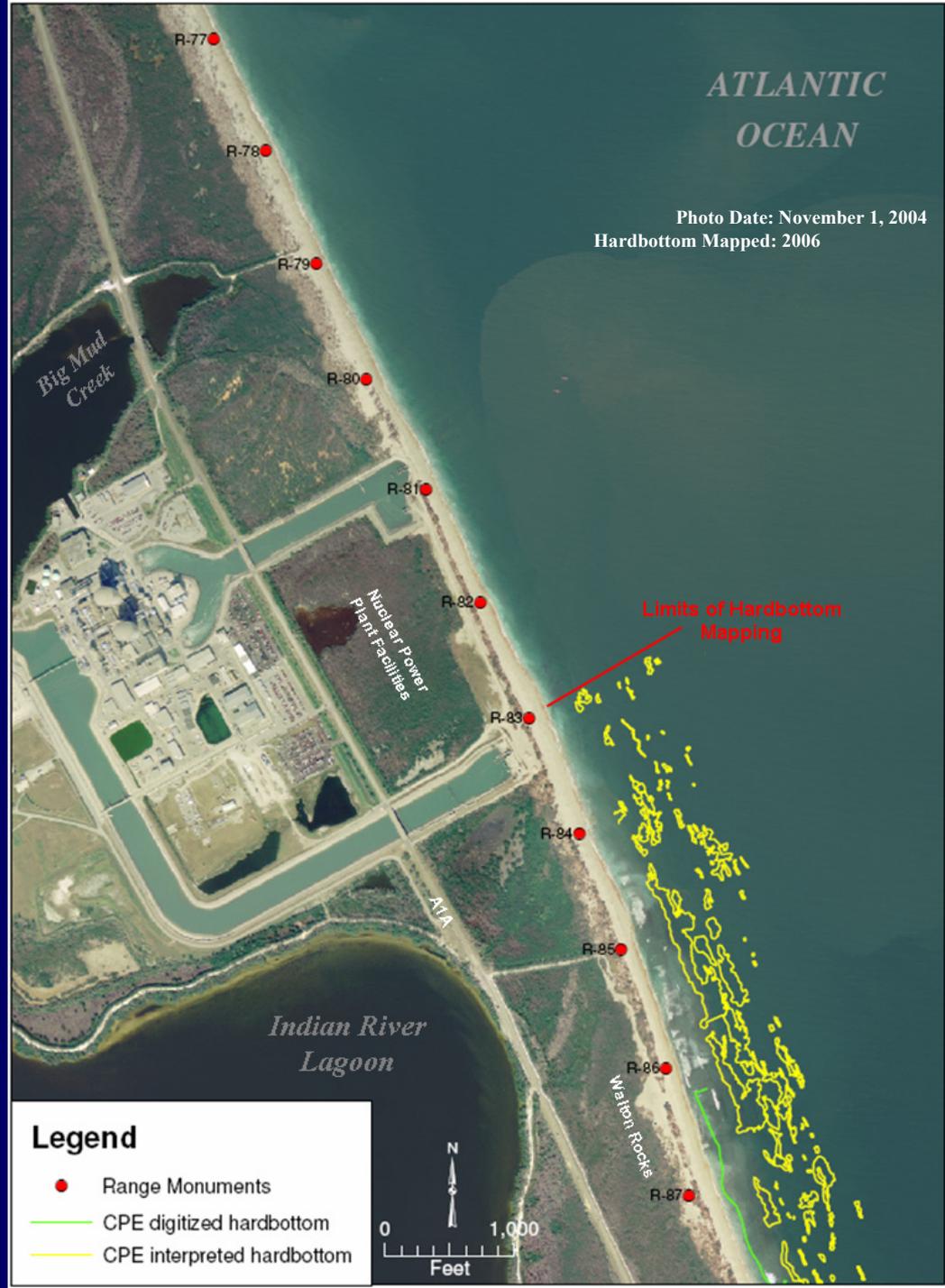
May 29, 2007

NMFS requested assessment of the “life-cycle” of fisheries using the shoals. It remains unclear whether the request by NMFS can be adequately addressed via a desk-top study or if additional field investigations will be required; this may not be determined until a “Scoping Meeting” occurs after submission of the JCP application.



Nearshore Hardbottom

Big Mud Creek To Walton Rocks



Nearshore Hardbottom

Walton Rocks

To

Herman's Bay



Nearshore Hardbottom

Herman's Bay To Shuckers



Nearshore Hardbottom

Shuckers

To

Martin County Line



Schedule

Environmental & Supplemental Investigations				
Proposed - subject to authorization		13-May-08 Expected Notice To Proceed		
Task Description	Start	Finish	Comments	Days
1 - CONTROLLED AERIAL PHOTOGRAPHY				
1a - Aerial Targets	13-May-08	23-May-08	required to complete Design	10
1b - Bathymetric Survey	13-May-08	27-Jul-08	required to complete Design	75
1c - Aerial Photography	23-May-08	22-Jul-08	required to complete Design	60
2 - UPDATED ENGINEERING ANALYSIS				
2a - Shoreline & Volume Change Analysis	27-Jul-08	17-Aug-08	required to complete Design	21
2b - Updated Hardbottom Impacts	05-Sep-08	26-Sep-08	required to complete Design	21
3 - HARDBOTTOM MAPPING & CHARACTERIZATION				
3a - Interpretation of Hardbottom From Aerials	22-Jul-08	05-Sep-08	required to complete Design	45
3b - Transects & Quadrat Sampling	23-May-08	22-Jul-08	required to complete FDEP & USACE JCP - permit application	60
3c - Nearshore Hardbottom Edge Mapping	23-May-08	22-Jul-08	required to complete FDEP & USACE JCP - permit application	60
3d - Transect Analysis	22-Jul-08	31-Aug-08	required to complete FDEP & USACE JCP - permit application	40
3e - Summary Report	31-Aug-08	10-Oct-08	required to complete FDEP & USACE JCP - permit application	40
4 - FISH CENSUS & SAMPLING				
4a - Census & Sampling Frequency	23-May-08	22-Jul-08	required to complete FDEP & USACE JCP - permit application	60
4b - Summary Report	22-Jul-08	10-Oct-08	required to complete FDEP & USACE JCP - permit application	80
5 - BASELINE IN-WATER SEA TURTLE MONITORING				
5 - Baseline In-Water Sea Turtle Monitoring	13-May-08	10-Sep-08	required to complete FDEP & USACE JCP - permit application	120
6 - EFH ASSESSMENT OF POTENTIAL BORROW AREAS				
6a - Published Literature	13-May-08	10-Jun-08	required to meet NMFS request to complete USACE permit application	28
6b - Unpublished Literature Survey	13-May-08	10-Jun-08	required to meet NMFS request to complete USACE permit application	28
6c - Survey Commercial Fisherman	13-May-08	12-Jul-08	required to meet NMFS request to complete USACE permit application	60
6d - Survey Recreational Fisherman	13-May-08	12-Jul-08	required to meet NMFS request to complete USACE permit application	60
6e - Summary of Literature/Final Report	13-May-08	10-Sep-08	required to meet NMFS request to complete USACE permit application	120
Shaded & blue text indicates task is weather dependent.				



Schedule

Design & Permitting				
<i>Authorized</i>				
27-Feb-07 Notice To Proceed				
Task Description	Start	Finish	Comments	Days
1 - PLAN FORMULATION	Completed	22-Feb-08	FDEP Pre-Application Conference Held in February 2008	
2 - DESIGN				
2a - Preliminary Design	67% Complete	05-Oct-08	depends upon hardbottom maps from Env. & Sup. Investigations	30
2b - Preliminary Environmental Assessment	75% Complete	10-Oct-08	depends upon results from Env. & Sup. Investigations	30
2c - Economic Analysis & NED Plan	47% Complete	05-Oct-08	Positive B/C ratio has been estimated; finalization depends upon (a) USACE determinations re COBRA Zones and (b) hardbottom maps from Env. & Sup. Investigations	30
2d - Final Design Plans & Specs	21-Oct-09	11-Nov-09	not prepared until permits pending or issued	21
3 - PERMIT APPLICATION				
3a - Supporting Documents	05-Oct-08	20-Oct-08	dependent upon design & results from Env. & Sup. Investigations	15
3b - Permit Application	05-Oct-08	26-Oct-08	dependent upon design & results from Env. & Sup. Investigations	21
4 - FDEP PERMIT PROCESSING				
4a - FDEP Permit Processing	26-Oct-08	06-Sep-09	expected to occur nearly concurrent with USACE permitting	315
4b - RAI & Meetings	26-Oct-08	06-Sep-09	expected to occur nearly concurrent with USACE permitting	
4c - Erosion Control Line & Easements	07-Aug-09	06-Oct-09	expected to occur when USACE & FDEP permits are pending or issued	60
5 - USACE PERMIT PROCESSING & NEPA COMPLIANCE				
5a - USACE Permit Processing	26-Oct-08	25-Dec-08	depends upon agency responses	60
5b - EIS Scoping	25-Dec-08	09-Jan-09	depends upon agency schedule	15
5c - Preliminary Draft EIS	25-Dec-08	24-Apr-09	depends upon agency requirements as posed at Scoping Meeting	120
5d - Draft EIS	24-Apr-09	23-Jun-09	depends upon agency responses to DRAFT EIS	60
5e - Public Hearing & Comments	23-Jun-09	23-Jul-09	depends upon agency requirements as posed at Scoping Meeting	30
5f - Final EIS	23-Jul-09	21-Oct-09	depends upon Public comments & agency responses	90
6 - Administration and Coordination				
coordination tasks	27-Feb-07	11-Nov-09		988

Shaded & red text indicates Task is dependent upon agency & public responses.



Thank You!

Michael Walther

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This is the end