

St. Lucie County - South Beaches Regional Beach Restoration



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Indian River County



ST LUCIE COUNTY

Hurricane Frances and Jeanne
Damage Assessment
Location Map

0 0.5 1 2 3 4 Miles

0 1 2 4 6 8 Kilometers

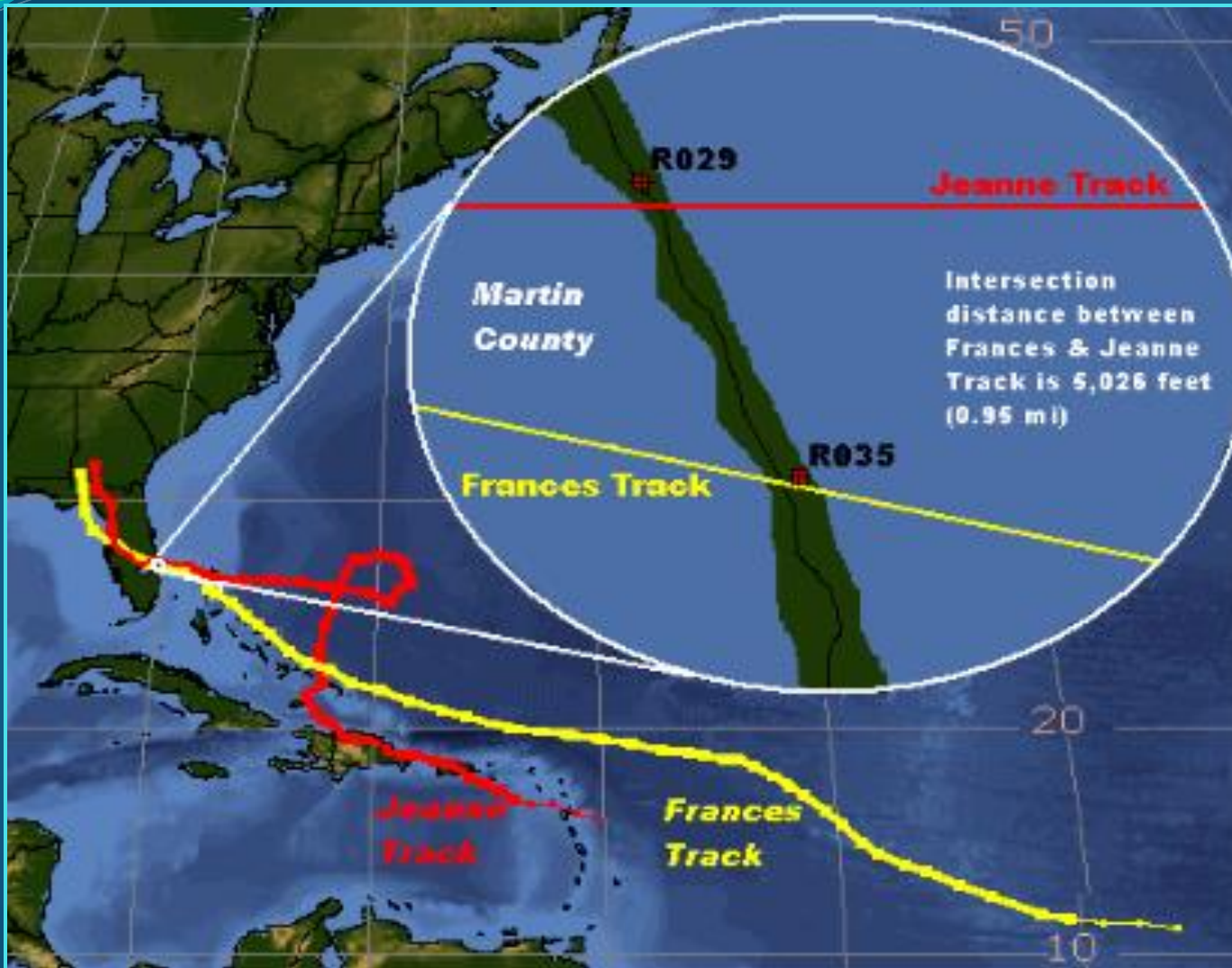
Atlantic Ocean

St. Lucie County Location Map



Waveland Park

2004 Hurricanes Frances & Jeanne



From: "Hurricane Frances & Hurricane Jeanne - Post-storm Beach Conditions and Coastal Impact Report with Recommendations for Recovery and Modifications of Beach Management Strategies"; FDEP; October 2004

Hurricane Impacts - September 2004



From: “*Hurricane Frances & Hurricane Jeanne - Post-storm Beach Conditions and Coastal Impact Report with Recommendations for Recovery and Modifications of Beach Management Strategies*”; FDEP; October 2004

September 2004

Hurricane Impacts



From: “*Hurricane Frances & Hurricane Jeanne - Post-storm Beach Conditions and Coastal Impact Report with Recommendations for Recovery and Modifications of Beach Management Strategies*”; FDEP; October 2004

September 2004

Hurricane Impacts



**Island Beach Club
(R-106)**

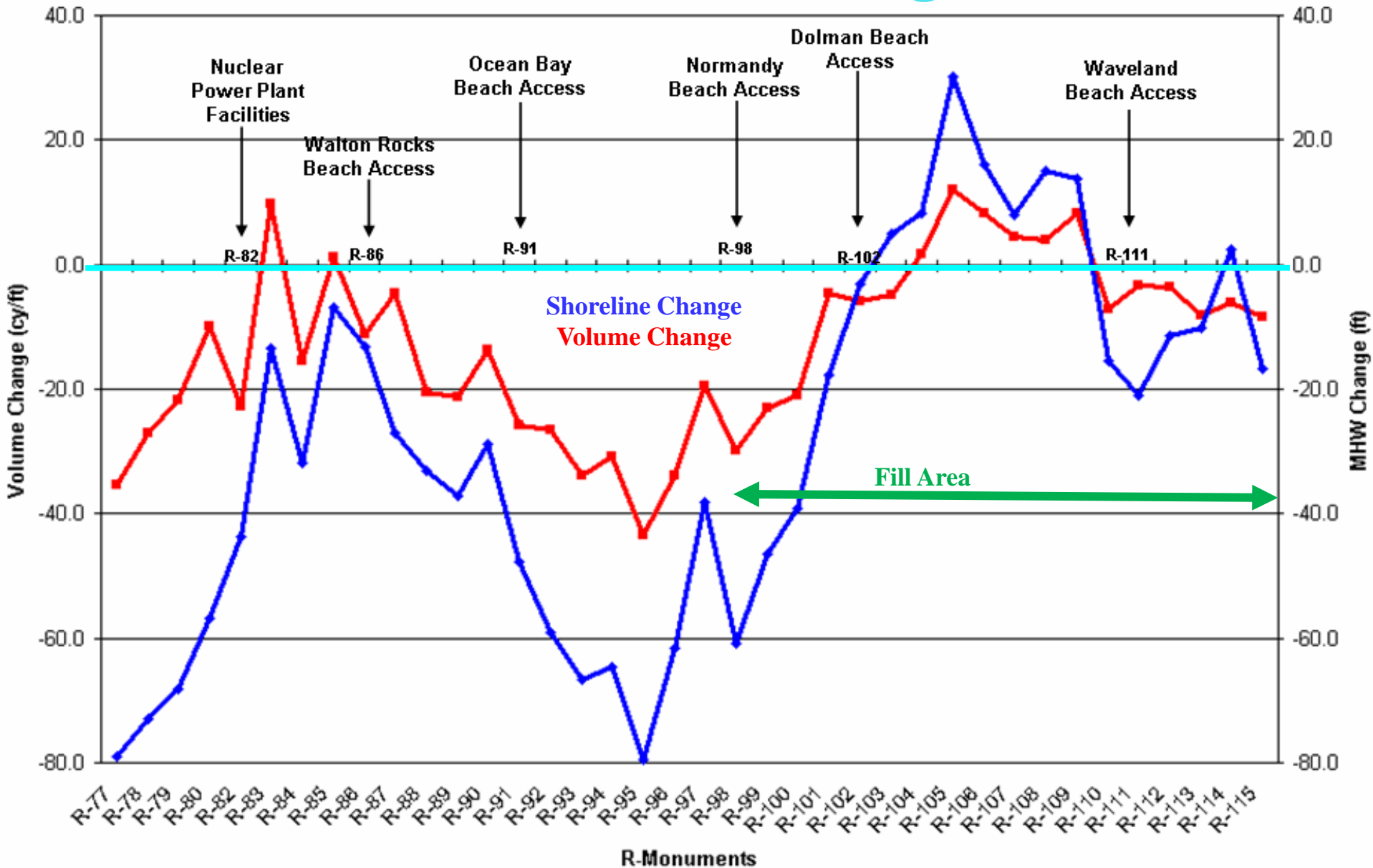


**Atlantis Condominium
(R-110)**



**Island Dunes Oceanside
Condominium
(R-110)**

Shoreline and Volumetric Change (1972-2006)



Public Involvement

April 30, 2007 Planning Charette

Purpose of Charette:

- explain the purpose of the *Project*, its schedule & expected outcome
- present a range of alternatives eliminated from detailed evaluation and the reasons for elimination
- present the results of Conditions Assessment & Alternatives Screening
- invite public input relative to:
 - *Project* purpose and need,
 - *Project* design criteria - issues or concerns, and
 - Goals, objectives & preferred alternatives,
- identify key stakeholders within the community.

Planning Charette

April 30, 2007

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.

Economics

Speaker	Comment
Charles Singer	A 2001-2002 study assessed ocean front property to be worth \$512 million with a annual tax base of \$11 million. Today property is worth over \$1 billion and a conservative tax estimation is \$25-30 million annually. A project is needed to avoid another storm destroying homes.
Tom Gilson	Islandia Condominium Buildings are the No. 1 & 2 property tax contributors. Ocean-front condos contribute \$16 million annually in tax revenue. Islandia spent \$4 million recovering from hurricanes. A project is vital to their situation. Project needs to be constructed ASAP.
Dewey Bookhold	Islandia east spent \$1.5 million replanting and maintaining dunes after the 2004 hurricanes; a regional project is needed.
John Dadak	Opposes any County-wide tax to pay for project. Look for funding at state and federal-level, or cut costs on other County projects
Mike Monin	Project <u>will</u> cost money. The County should identify a range of costs for the project.
Charles Lippincott	Supports county-wide taxing method to pay for project

Planning Charette

April 30, 2007

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 Davonzo	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 Davonzo	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.
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 Davonzo	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".

Project Purpose

The purpose of the proposed *Project* is to:

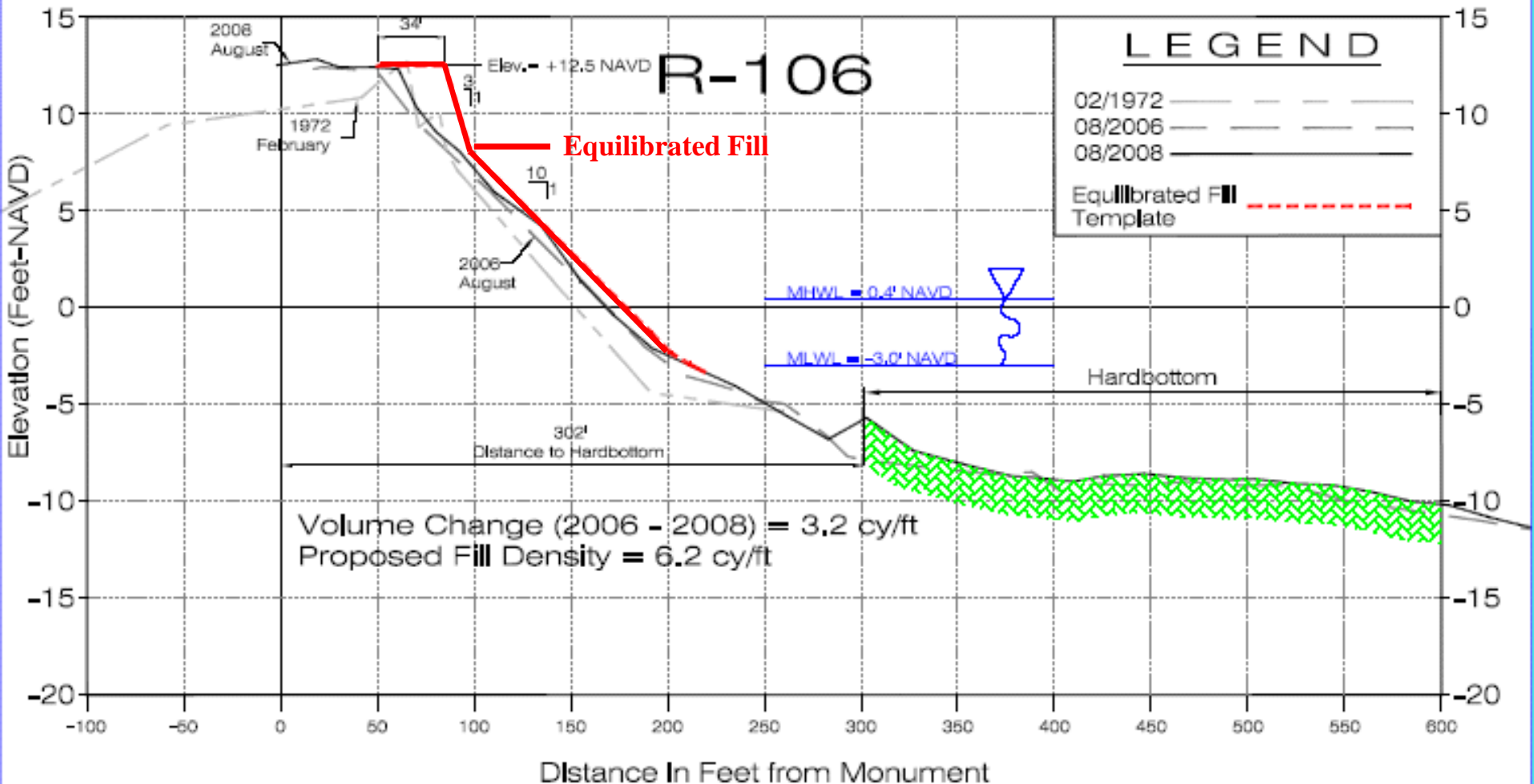
- offset sediment deficit attributable to Ft. Pierce Inlet
- restore and maintain the beach & dune
 - recreational beach
 - habitat for marine turtle nesting, beach mice, and shore birds
 - storm protection for upland property and infrastructure

Alternatives

Evaluated in Detail

- **No Action** - County would do nothing to abate erosion
- **No Impact Alternative** – beach fill with no impact to existing hardbottom
- **1972 Alternative** - beach fill to restore 1972 beach & dune
- **35' berm Alternative** - beach fill to restore the 1972 dune with a 35' berm
- **70' berm Alternative** - beach fill to restore the 1972 dune with a 70' berm

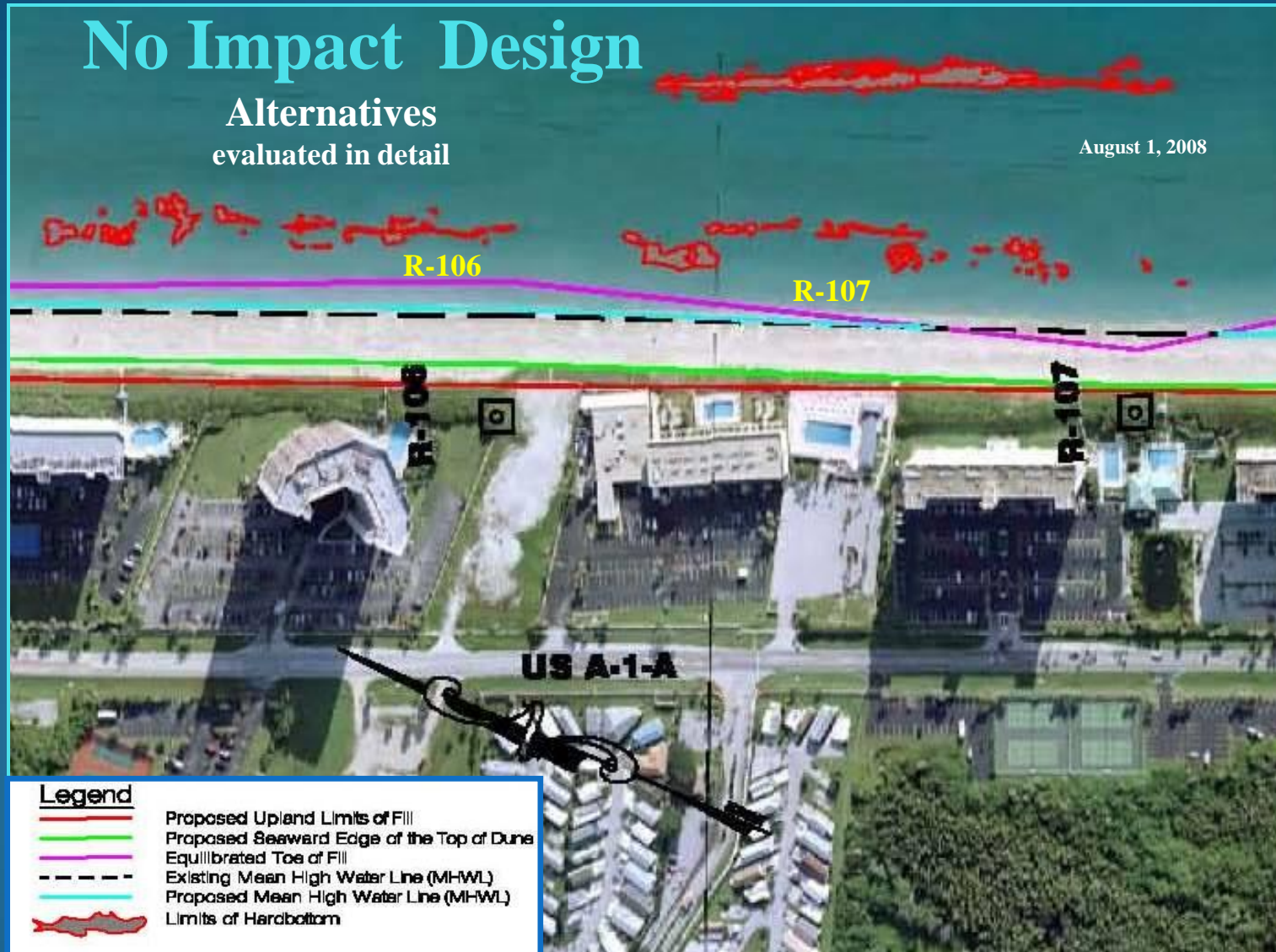
Alternatives -evaluated in detail



No Impact Design

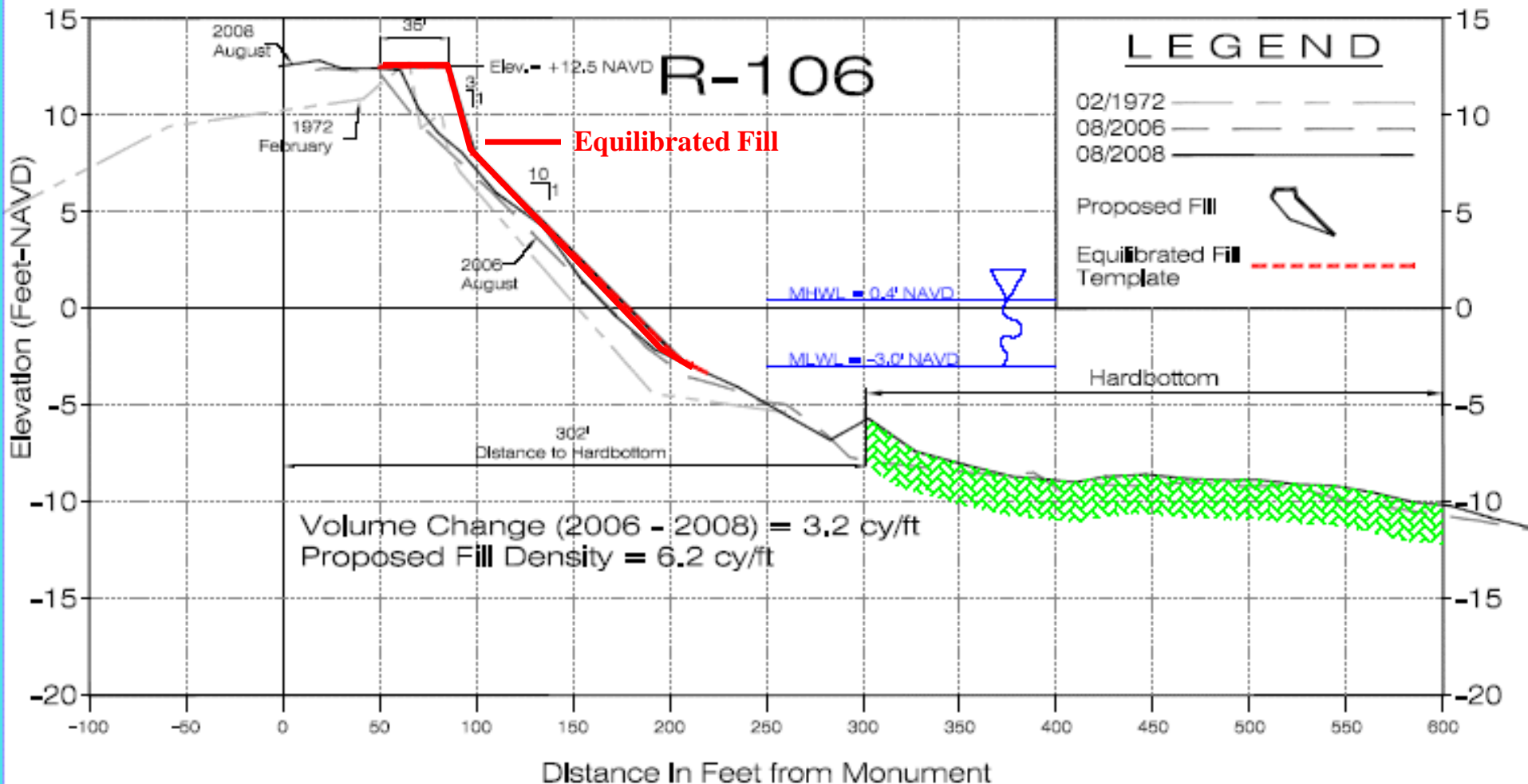
Alternatives
evaluated in detail

August 1, 2008



1972 Design

Alternatives -evaluated in detail



1972 Design

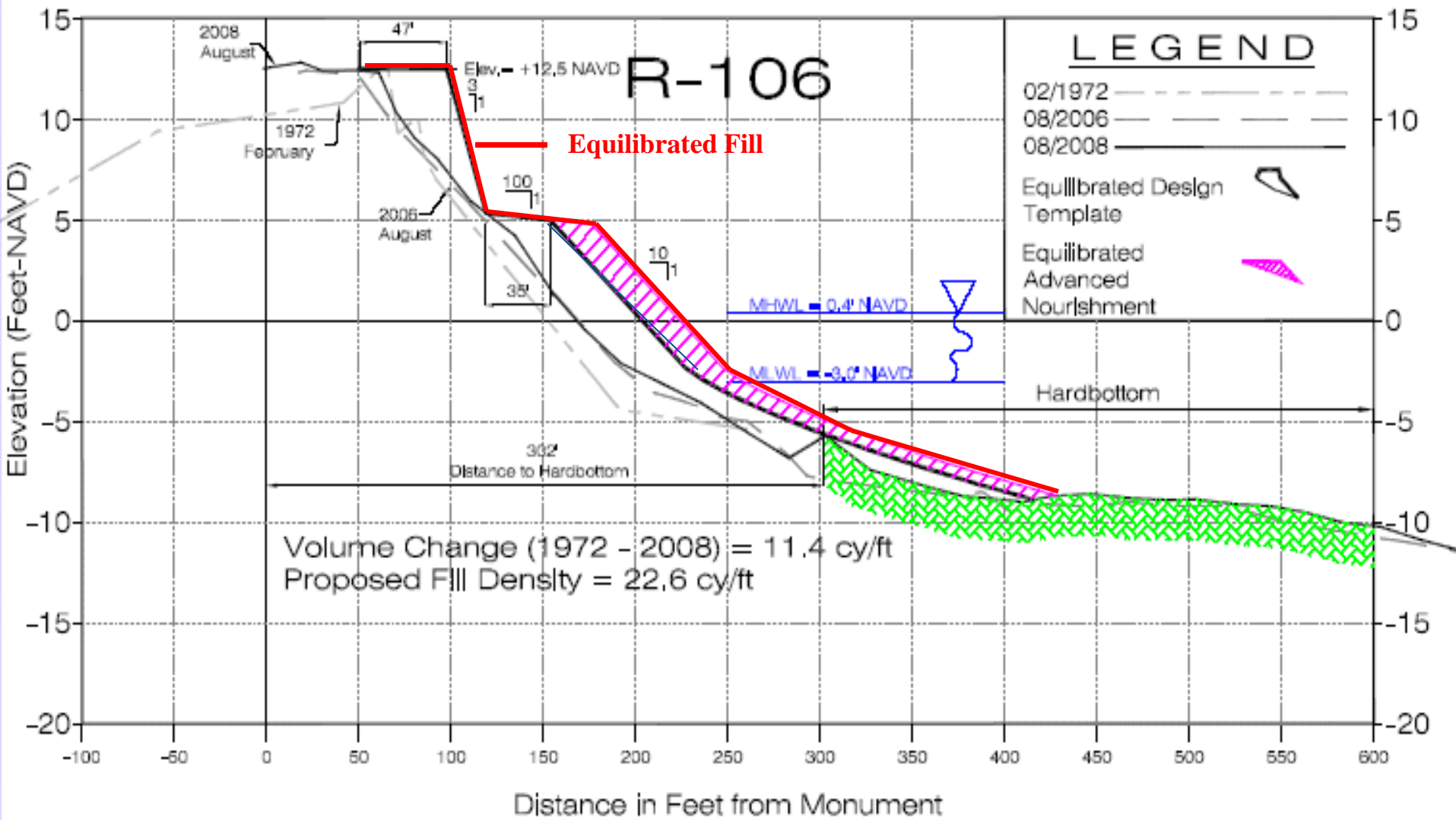
Alternatives
evaluated in detail

August 1, 2008



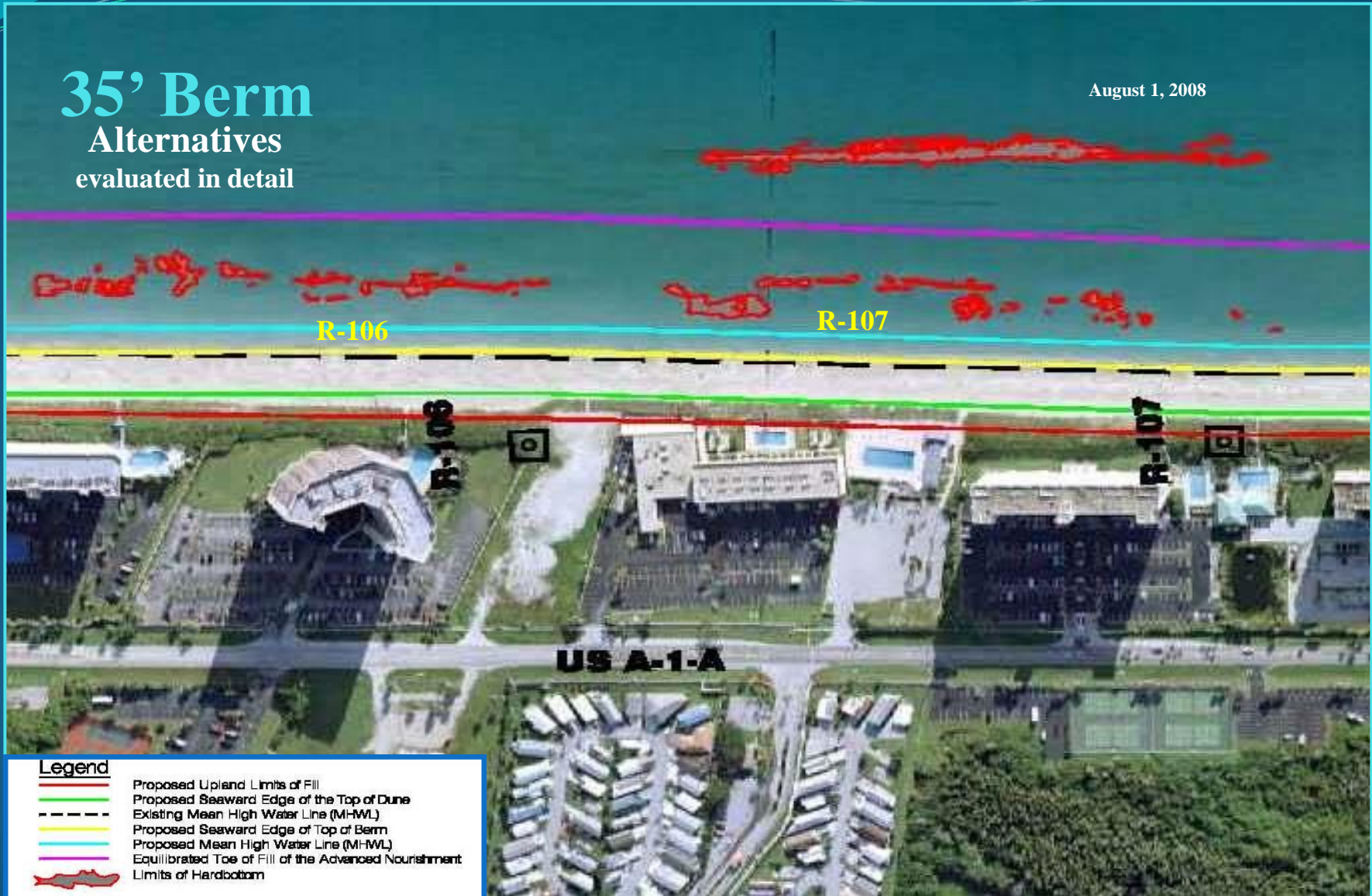
35' Berm

Alternatives -evaluated in detail



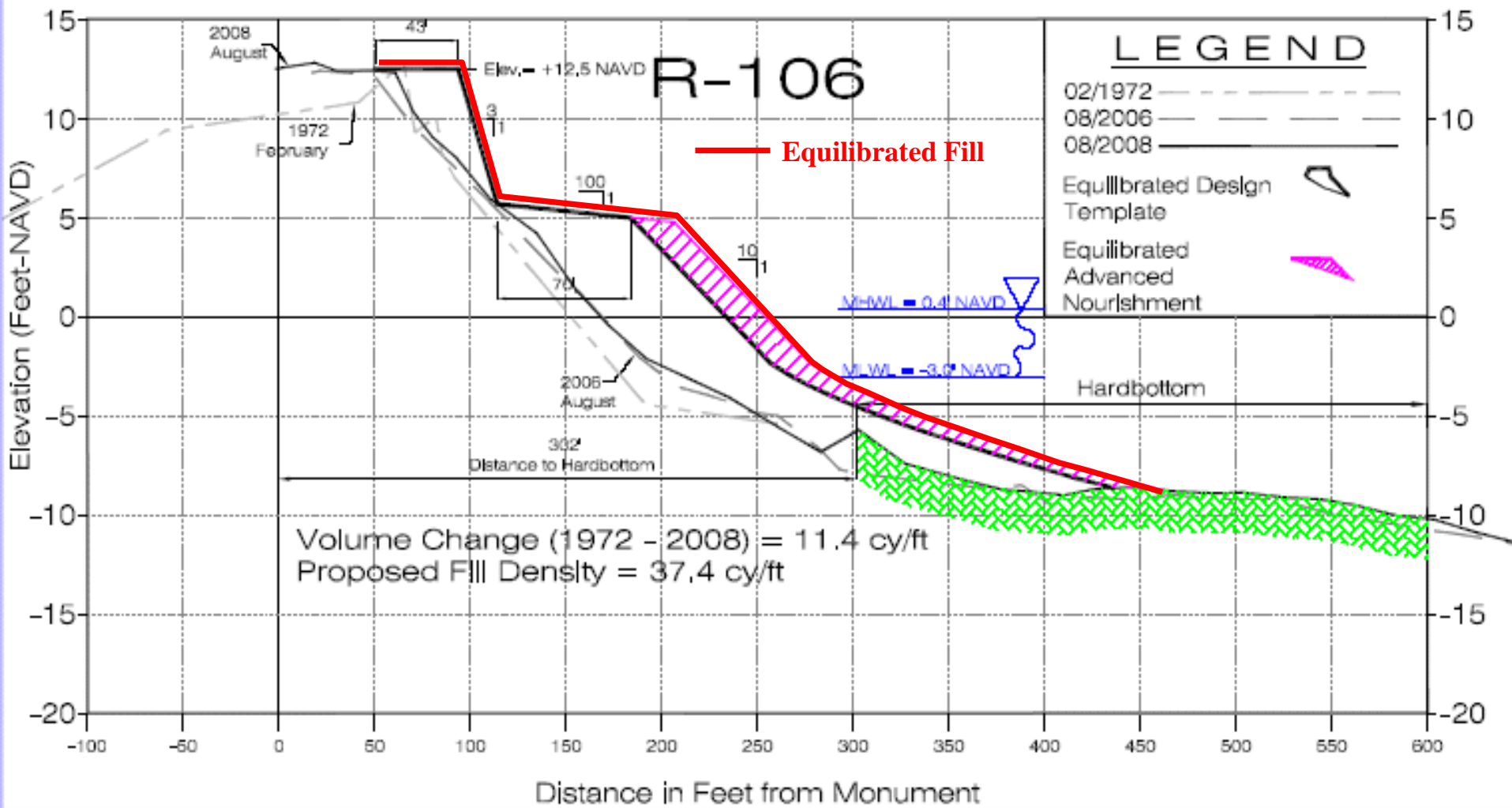
35' Berm Alternatives evaluated in detail

August 1, 2008



70' Berm

Alternatives -evaluated in detail



70' Berm

Alternatives

evaluated in detail

R-106

August 1, 2008

R-107

R-106

R-107

US A-1-A

Legend

- Proposed Upland Limits of Fill
- Proposed Seaward Edge of the Top of Dune
- Existing Mean High Water Line (MHWL)
- Proposed Seaward Edge of Top of Berm
- Proposed Mean High Water Line (MHWL)
- Equilibrated Toe of Fill of the Advanced Nourishment
- Limits of Hardbottom

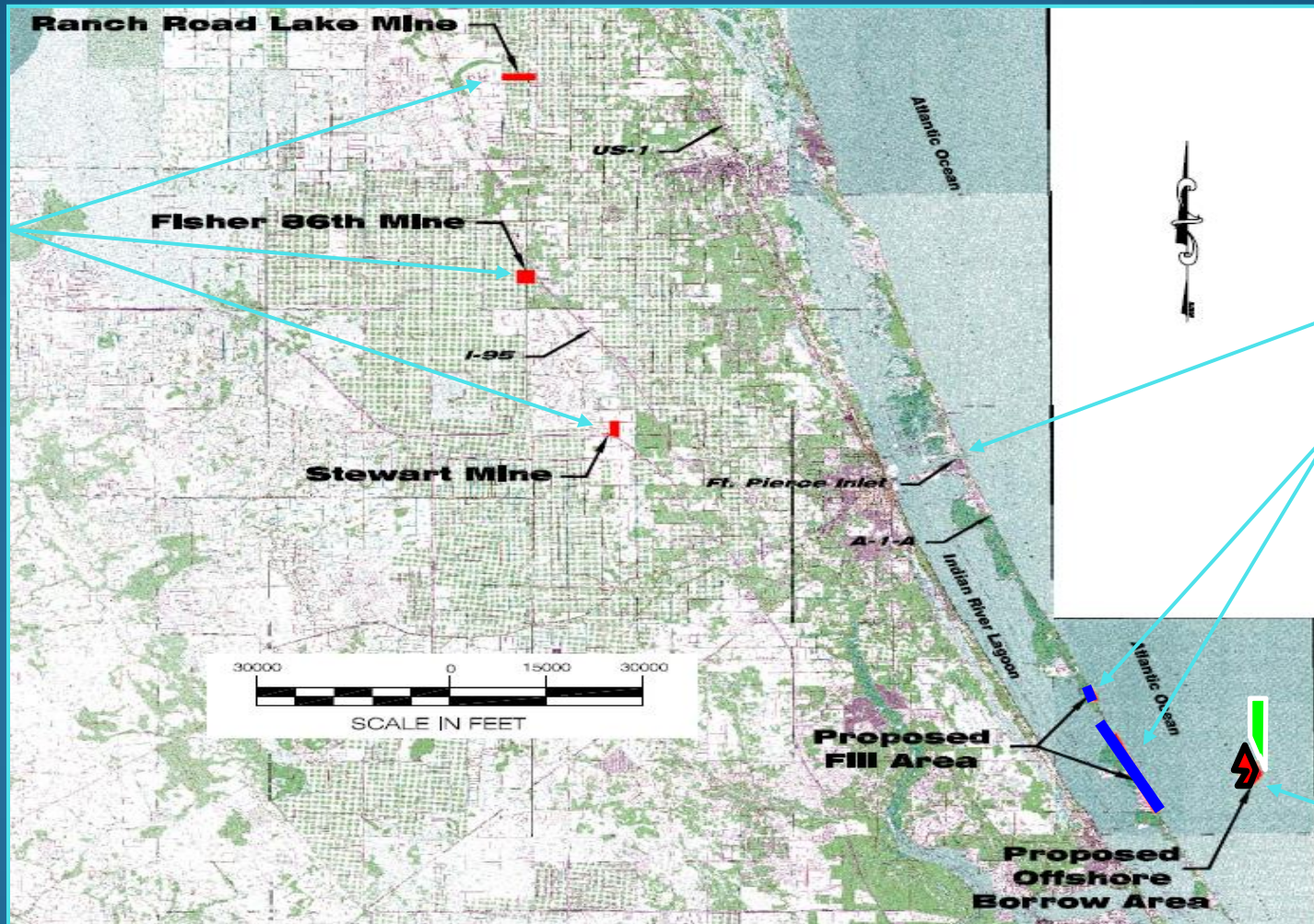


COASTAL TECH
COASTAL TECHNOLOGY CORPORATION

Enhancing Coastal Life.

Potential Upland & Offshore Sand Source

Proposed
Upland
Borrow Areas



Ft. Pierce Inlet

Initially
Proposed
Fill Area

Proposed
Offshore
Borrow Area

Fill Area - Reductions



**Northern
Segment**

Avoid hardbottom
impacts

“Narrows”
not “critically
eroded”
&
COBRA Zone

Borrow Area

Ft. Pierce Inlet
Capron Shoal

Pierce Shoal
~1.3 million cyds

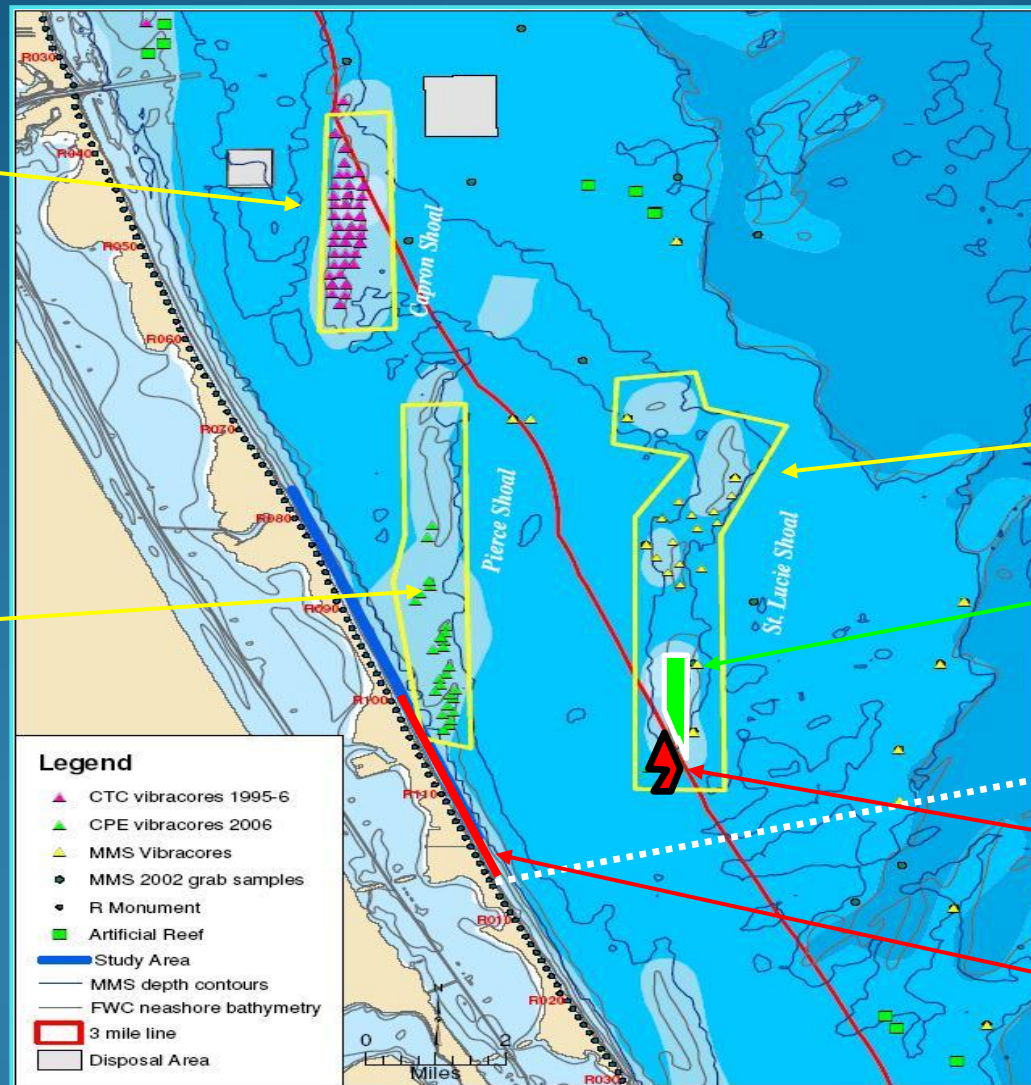
St. Lucie Shoal
~21.1 million cyds

Proposed 50-year
Borrow Area

Martin County Line

Borrow Area

Fill Area



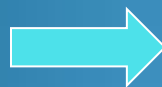
USACE - Planning Guidance Notebook

The Corps participates in single purpose projects formulated **exclusively for hurricane and storm damage reduction**, with economic benefits equal to or exceeding the costs, based solely on damage reduction benefits, or a combination of damage reduction benefits and recreation benefits. Under current policy, **recreation must be incidental in the formulation process** and may not be more than fifty percent of the total benefits required for justification. If the criterion for participation is met, then all recreation benefits are included in the benefit to cost analysis. Costs incurred for other than the damage reduction purpose, i.e. to satisfy recreation demand, are a 100 percent non-Federal responsibility.

From: USACE Engineer Regulation 1105-2-100
Section 3.4 Hurricane and Storm Damage Reduction
Specific Policies (4) (a)

NED Analysis of Alternatives

							Annual Benefits					
							Primary		Incidental			
Alternative	Total Fill Volume (cy)	Average Fill Density (cy/ft)	Estimated Hardbottom Impacts (acres)	Probable Initial Cost	Renourish Interval (years)	Annual Cost	Storm Damage Reduction Benefits	Land Loss Benefits	Recreational Benefits	Total	B/C Ratio	Net Primary Benefits
No Impact	162,174	8.1	0	\$3,695,600	10	\$2,713,621	\$269,799	\$451,895	---	\$721,694	0.27	(\$1,991,926)
72' Template	209,249	10.6	0.14	\$4,608,815	12	\$3,865,156	\$348,115	\$451,895	---	\$800,010	0.21	(\$3,065,146)
35' Berm	610,034	30.5	1.08	\$9,395,200	10	\$1,449,378	\$1,964,066	\$446,245	\$549,690	\$2,960,002	2.04	\$960,934
70' Berm	899,572	44.9	1.34	\$12,635,200	8	\$2,066,210	\$2,557,388	\$446,245	\$1,756,869	\$4,760,502	2.3	\$937,424



35-foot berm yields:

- maximum net benefits at \$960K per year
- B/C ratio of 2.04

Local Funding Plan

How to apportion the local share of costs?

Apportion the Project's Local Share of costs in a fair and reasonable manner, based on Project benefits.

What are the Project's benefits?

- **Storm Damage Reduction** – storm protection to uplands.
- **Loss of Land** – background erosion to property.
- **Recreational** – added value above existing con (based on a beach-user survey).

Local Funding Plan

Benefits Analysis

per NED Plan Formulation

Benefit Description	Benefit		Beneficiaries
	Value	% of Total	
Storm Damage Reduction	\$1,964,066	66%	oceanfront properties
Loss of land	\$446,245	15%	oceanfront properties
Recreational	\$549,690	19%	mixed
Total:	\$2,960,001	100%	

- **Storm Damage Reduction & Loss of Land Benefits** accrue to Oceanfront Properties (81.43% of all benefits)
 - new Special Assessment District for Oceanfront Properties
- **Recreational Benefits** accrue to County-wide interests (18.57% of all benefits) - funding from the existing County-wide “Zone E”

Local Funding Plan

Construction, Monitoring & Administration Costs

(assuming St. Lucie County Project only - with State Funding)

Estimated Costs for:

Construction	\$9,829,510 (includes 15% Contingency)
Monitoring	\$1,870,449
Legal Fees	\$30,000
<i>Total</i>	<i>\$11,729,959</i>

State Share	(\$5,088,312) (43.49% of Const. & Mon.)
<u>Local Share</u>	<u>\$6,641,647</u>

Proposed Funding Plan

Points System for S.A.D.

- **Acreage** - 1 point per 0.1 acres of land
- **Frontage** - 1 point per 10 linear feet of frontage
- **Units** - 1 point per dwelling unit or equivalent dwelling unit

Note:

Apportioned costs are in proportion to total points for a parcel.

Proposed Funding Plan

Summary of Assessments

...with State Funding and
per County Staff recommendations

	Summary of Proposed Assessments South Only with State Funding					
	Up-Front (Total Payment)			Financed (Yearly Payment)		
Beneficiary	Maximum	Minimum	Average	Maximum	Minimum	Average
Condominium (per unit)	\$2,366	\$994	\$1,368	\$402	\$169	\$215
Commercial Property	\$88,635	\$1,499	\$39,694	\$15,052	\$255	\$6,741
County	\$2,775,230			N/A		

Average Yearly Payment:

Condo Unit: **\$215 / year**

Commercial Property: **\$6,741 / year**

<i>Project Name</i>	<i>Sponsor</i>	<i>Amount Per LBR (State Share)</i>	<i>Amount Appropriated (State Share)</i>	<i>Contract Status</i>
Anna Maria Island Beach Nourishment	Manatee County	\$218,000	\$218,000	To be contracted
Venice Beach Nourishment	City of Venice	\$115,472	\$115,472	To be contracted
Nassau County Shore Protection Project	City of Fernandina Beach	\$1,382,751	\$1,382,751	To be contracted
South St. Lucie County Beach Restoration	St. Lucie County	\$9,218,990	\$4,609,495	Executed 10/22/12
St. Joseph Peninsula Beach Nourishment	Gulf County	\$179,668	\$179,668	To be contracted
Honeymoon Island Beach Restoration	Pinellas County/ FDEP- Parks	\$5,780,000	\$5,780,000	Executed 10/22/12
Captiva/Sanibel Island Beach Nourishment	Captiva Erosion Prevention District	\$4,508,888	\$4,508,888	Executed 1/11/13
Jupiter/Carlin Shore Protection Project	Palm Beach County	\$1,943,394	\$0	
Ocean Ridge Beach Nourishment*	Palm Beach County	\$115,500	\$0	
Ft. Pierce Shore Protection Project	St. Lucie County	\$725,000	\$0	
Pensacola Beach Nourishment	Santa Rosa Island Authority	\$745,540	\$0	
Lido Key Beach Nourishment	City of Sarasota	\$62,500	\$0	
Gasparilla Island Beach Restoration	Lee County	\$152,286	\$0	
Navarre Beach Nourishment	Santa Rosa County	\$161,297	\$0	
Jupiter Island Beach Nourishment	Town of Jupiter Island	\$1,533,852	\$0	
South Amelia Island Beach Nourishment	SAISSA & FDEP-Parks	\$4,166,174	\$0	
Brevard County Beach Restoration, Mid Reach	Brevard County	\$6,958,649	\$0	
Collier County Beach Nourishment	Collier County	\$51,068	\$0	
Wabasso Beach Restoration	Indian River County	\$6,250,000	\$0	
Rest Beach Nourishment	City of Key West	\$450,000	\$0	

Florida
Department of Environmental Protection
**Beach Management
Funding Assistance Program**

**FY 2012/2013 Financial Summary and
Accountability Report**

Bid Summary

Received: August 1, 2012

Bid Summary – Base Bid	
Bidder	Bid
Great Lakes Dredge & Dock Company, LLC	\$6,535,330.00
Weeks Marine, Inc.	\$6,774,785.00
United Infrastructure Group, Inc.	\$9,538,668.84
Guettler Brothers Construction, LLC	\$10,552,075.00
Ranger Construction Industries, Inc	\$11,479,511.00
Metro Equipment Services, Inc.	\$11,997,681.00
Dickerson Florida, Inc.	\$13,305,160.00

Low Bid:

Great Lakes Dredge & Dock Co. LLC - **\$6,535,330**

with **\$85,000** reduction with “Regional Project”

Construction

March 11th to May 20th - 2013



Construction

March 11th to May 20th - 2013



Construction

March 11th to May 20th - 2013

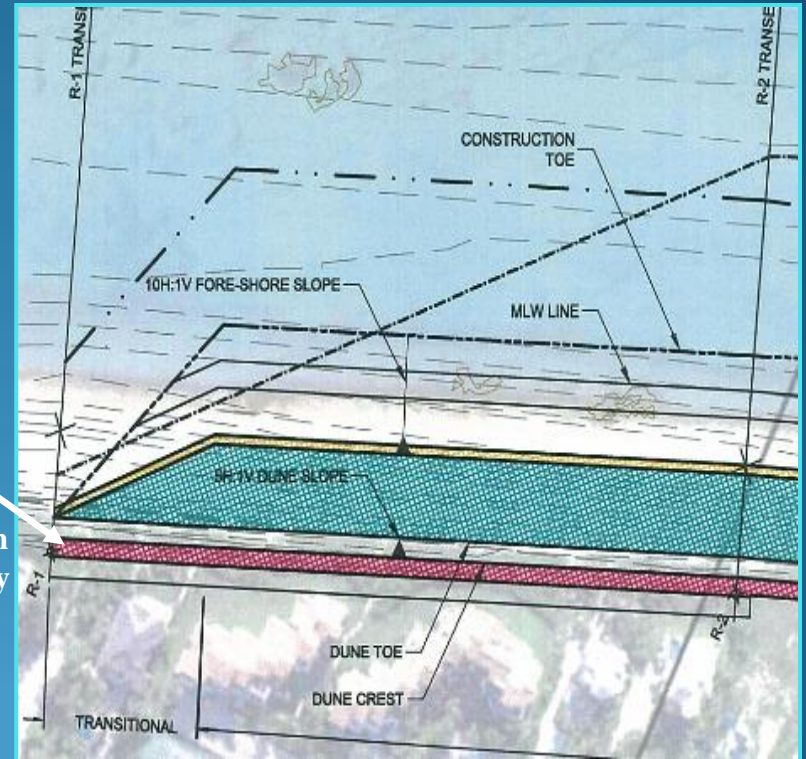
County Line – Field Adjustments



St. Lucie County Design at County Line

From: Coastal Tech Construction Plans (N.T.S.)

R-1
Martin
County



Martin County Design at County Line

From: Taylor Engineering Permit Sketches (N.T.S.)

Construction

March 11th to May 20th - 2013

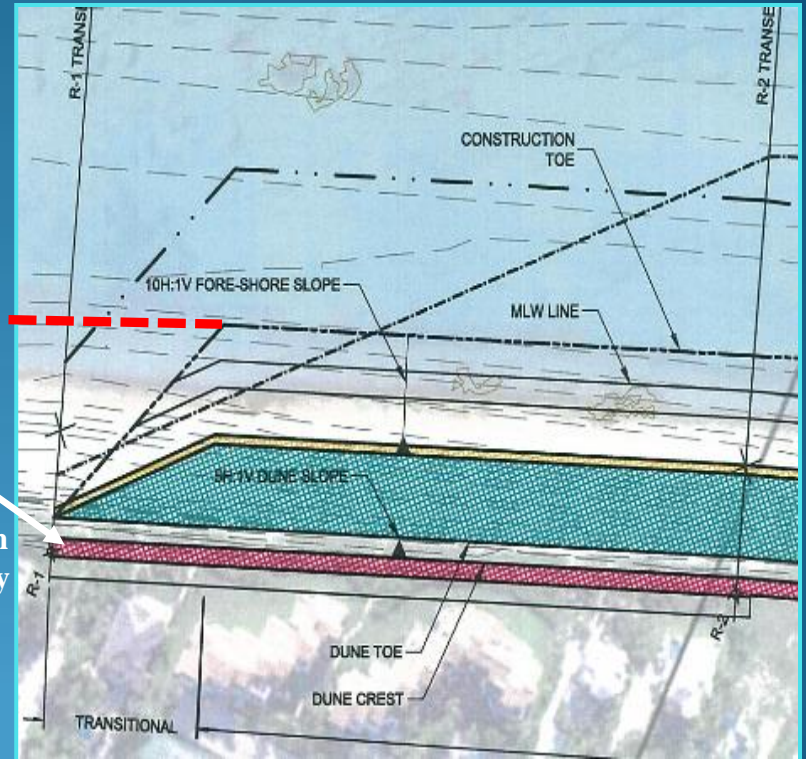
County Line – Field Adjustments



St. Lucie County Design at County Line

From: Coastal Tech Construction Plans (N.T.S.)

R-1
Martin
County



Martin County Design at County Line

From: Taylor Engineering Permit Sketches (N.T.S.)

Lessons Learned

- **Use existing community organizations** to disseminate information
...the Presidents' Council
- **Inform the public**
...basic questions were still being asked at the final public hearing
- **Cost allocation must balance fairness & simplicity**
...objective property factors for cost-sharing must make sense
- **To optimize Regionalization – Bid as one Project**
...“All or nothing” will produce the best savings
- **Continue Public Outreach** during construction
...to coordinate construction and address ongoing public use of beach

Thank You!



End

Construction

March 11th to May 20th - 2013

County Line – Field Adjustments

County	Profile	Station	Fill Density	Distance (feet)	Volume (cy)	
					Total	Additional
St. Lucie	R-115	10+46	19.9 cy/ft			
				1,046	18,671	9,336
Martin	R-1	0+00	15.8 cy/ft			
				200	3,440	1,720
Martin	transition point	-2+00	18.6 cy/ft			
Total:				1,246	22,111	11,056

2004 Hurricane Damage

Closest R-Mon.	Site Name	Description of Damage	Value	SDR Damage
R-99	Regency	damages not covered by insurance	\$932,387	YES
R-99	Admiral	apparent wind damage & some overwash into parking area	unknown	no
R-100	Island Dunes Oceanside	flooding & sand overwash into ground floor	unknown	YES
R-104	Islandia East	n/a	\$725,757	unknown
R-104	Islandia I	n/a	\$1,010,589	unknown
R-105	Empress Condominium	lost 40 feet of dune during storms; damage to dune & dune overwalk; no building damage cited	\$232,387	no
R-106	Hutchinson Island Beach Club	Tiki Bar & landscape damage - not covered by insurance; building had to be replaced (photo)	\$1,527,472	YES
R-106	Oceana II North	"Storm Surge Damage"	\$682,584	YES
R-108	MiraMar2	landscape & boardwalk damage; apparent wind & water damage to building	\$118,200	no
R-109	Atlantis A	flooding & sand overwash into ground floor	unknown	YES
R-112	Island Crest	n/a	\$2,500,000	unknown
R-113	Holiday Out	damage to "dune, crossovers, rec hall, shuffleboard and bocce ball courts, and sunshades"	\$200,000	no
		Total:	\$7.9M	

Hutchinson Island Inn
(R-106)

September 2004

Hurricane Impacts



Construction

March 11th to May 15th - 2013

