FLAGLER COUNTY
BOARD OF COUNTY COMMISSIONERS

Beach Management Study
Workshop

February 7, 2022

BEACH MANAGEMENT PROGRAM

Historic Coastal Damage

- Storms and increasing background erosion threatening the County coastline.
- 18 miles of County beaches and dunes were severely impacted by storm surge and waves from:
  - Hurricane Matthew in October 2016; and
  - Hurricane Irma in September 2017
- The impacts included significant beach and dune erosion and localized flooding.

BEACH MANAGEMENT PROGRAM
Historic Erosion

- As a result of past storms, 11.4 miles of frontal dunes were restored with in-house staff in 2019. Expansion of Partnerships with the following:
  - US Army Corps of Engineers (USACE); $11,371,000
  - Federal Emergency Management Agency (FEMA); $2,036,868
  - Florida Division of Emergency Management (FDEM); $339,478
  - Florida Department of Environmental Protection (FDEP); $3,847,046
  - Florida Department of Transportation (FDOT); $16,642,000
  - The Coastal Cities

BEACH MANAGEMENT STUDY

Ongoing Efforts

- With the need for a comprehensive long-term strategy to address the expected continued challenges;
- In 2021, the County contracted with Olsen Associates to conduct the beach management study. Study goals are,
  - To identify beach and dune restoration and long-term maintenance needs; and
  - To identify the regulatory and funding requirements to implement a long-term management plan.

Flagler County, FL
Beach Management Study

Flagler County Board of County Commissioners Workshop

February 7, 2021

FLAGLER COUNTY FLORIDA

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Topics

- Review of Existing Conditions (pre-November 2021 Nor'easter)
- Review of Historical Conditions
- Project Approach
- Physical / Environmental / Regulatory Constraints
- Sand Source Options
- Implementation Considerations
- Probable Cost to Construct
- Funding Considerations

Benefits of Beach Management

- Beach/dune management is specifically intended to restore and maintain the beach and dune
  - Control erosion and loss of land
  - Provide storm protection
  - Project recreational space
  - Maintain environmental habitat

- Comprehensive approach
  - Consistent beach and dune conditions along all 18 miles
  - Maximize beach related cost-share / grant assistance opportunities

- Eligible for FEMA public assistance funding following disasters

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Beach Management vs. Flood Control

- Effective beach and dune restoration and maintenance can provide incidental flood control benefits (i.e., raising dune crest elevation and increasing dune volume).

- The Resilient Florida Program
  - requires county-wide or regional plan
  - focus on “critical PUBLIC infrastructure”

- USACE Flood Control Project
  - requires 3-3-3 feasibility study with 50% local match (~$1.5M)
  - evaluates ALL sources of flooding (beach, ICWW, inland, etc…)

- FEMA Flood Mitigation Assistance Program
  - beach/dune not considered flood reducing mitigation by FEMA

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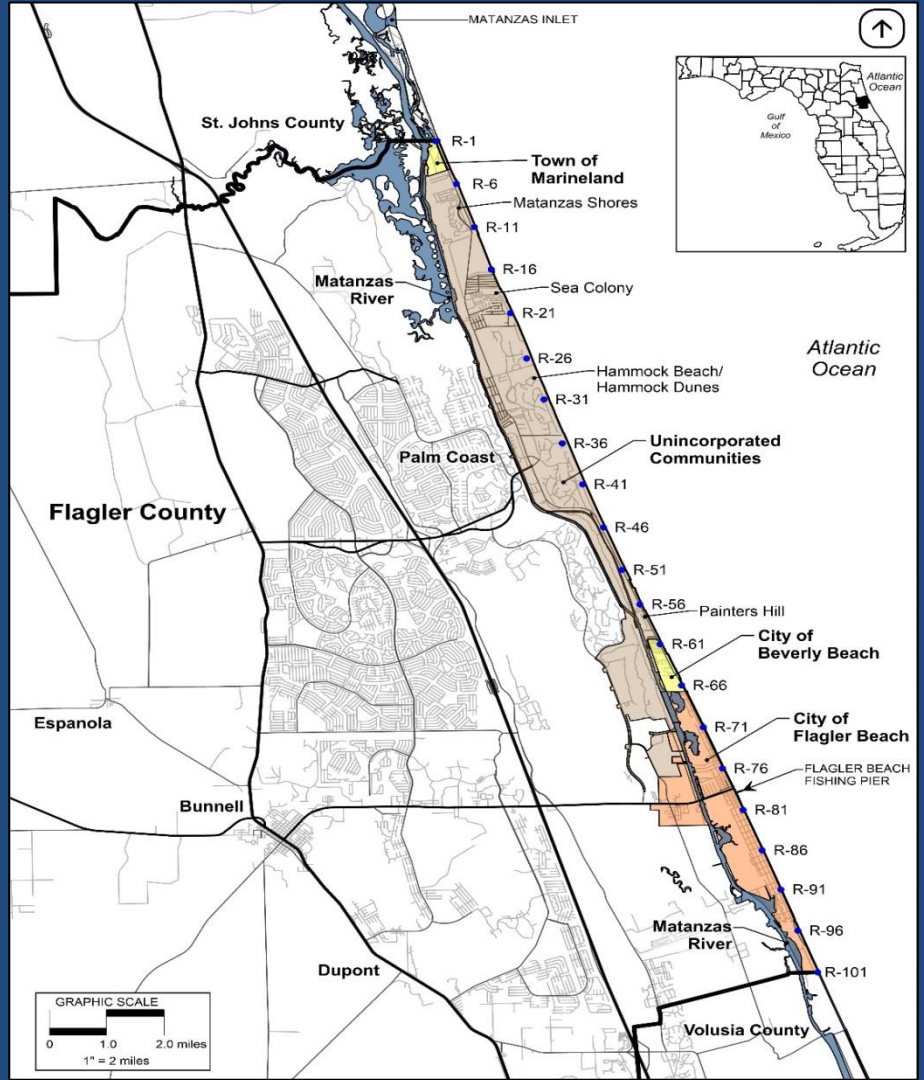
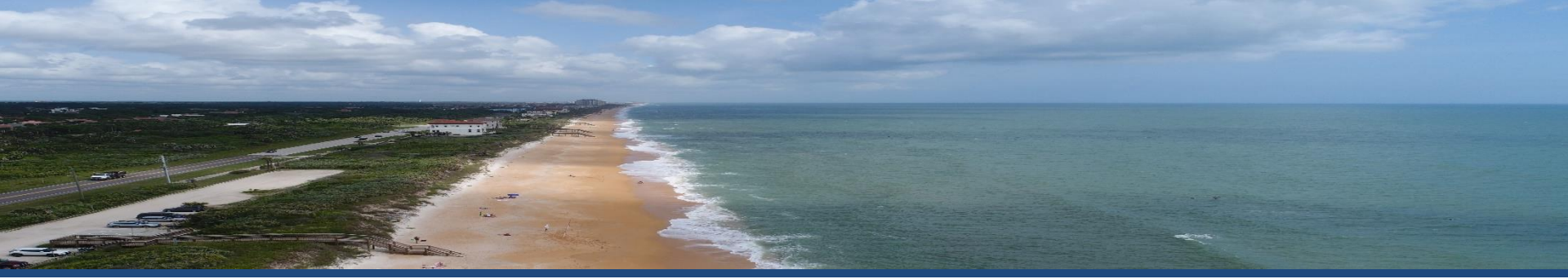
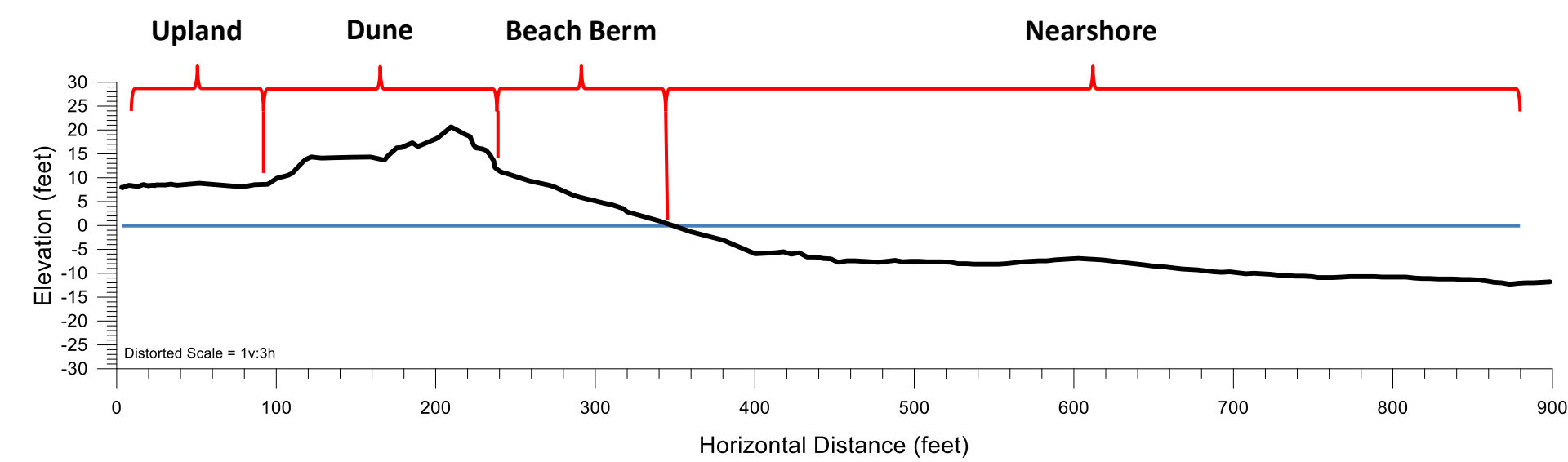
BMS Study Area

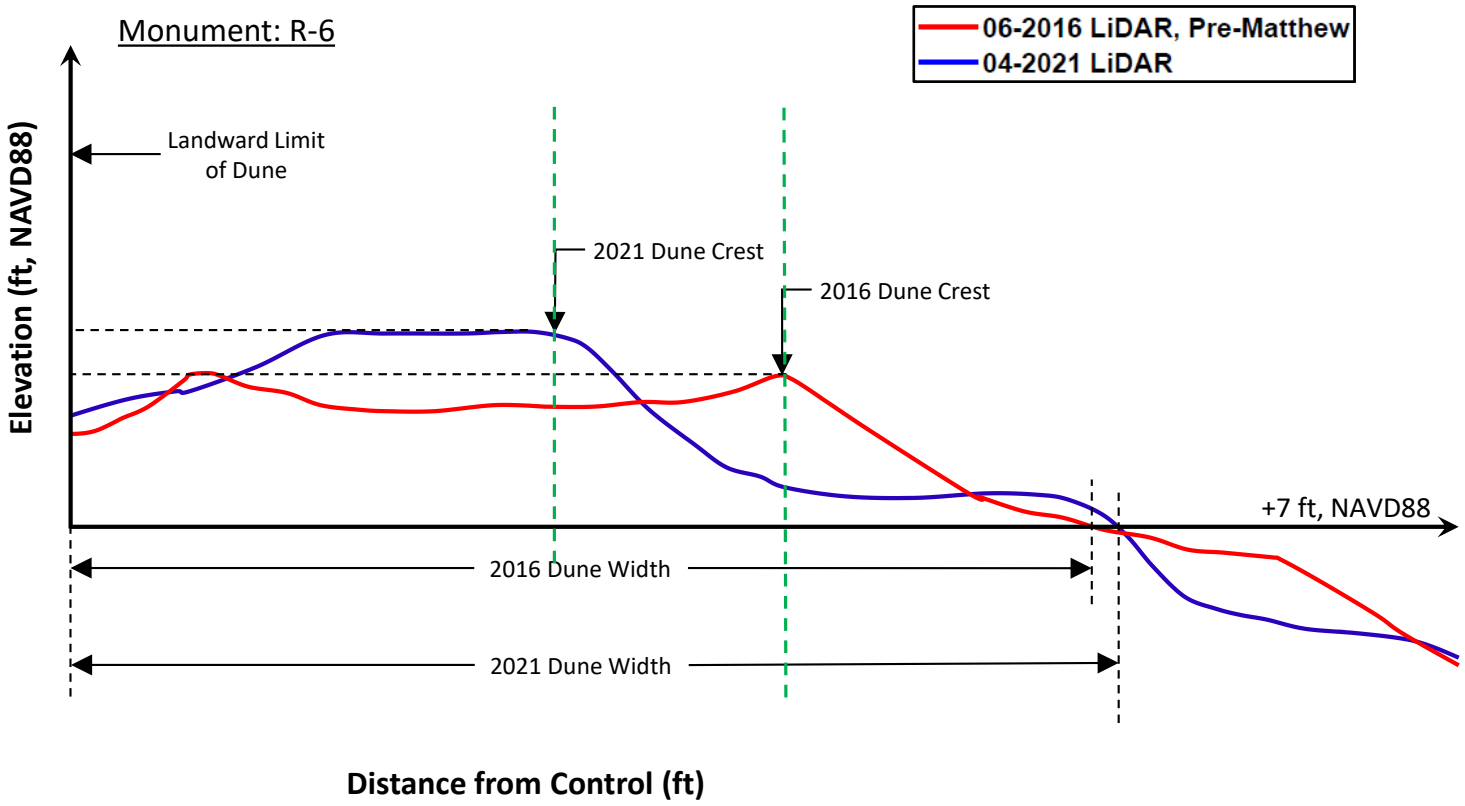


Typical Beach and Dune

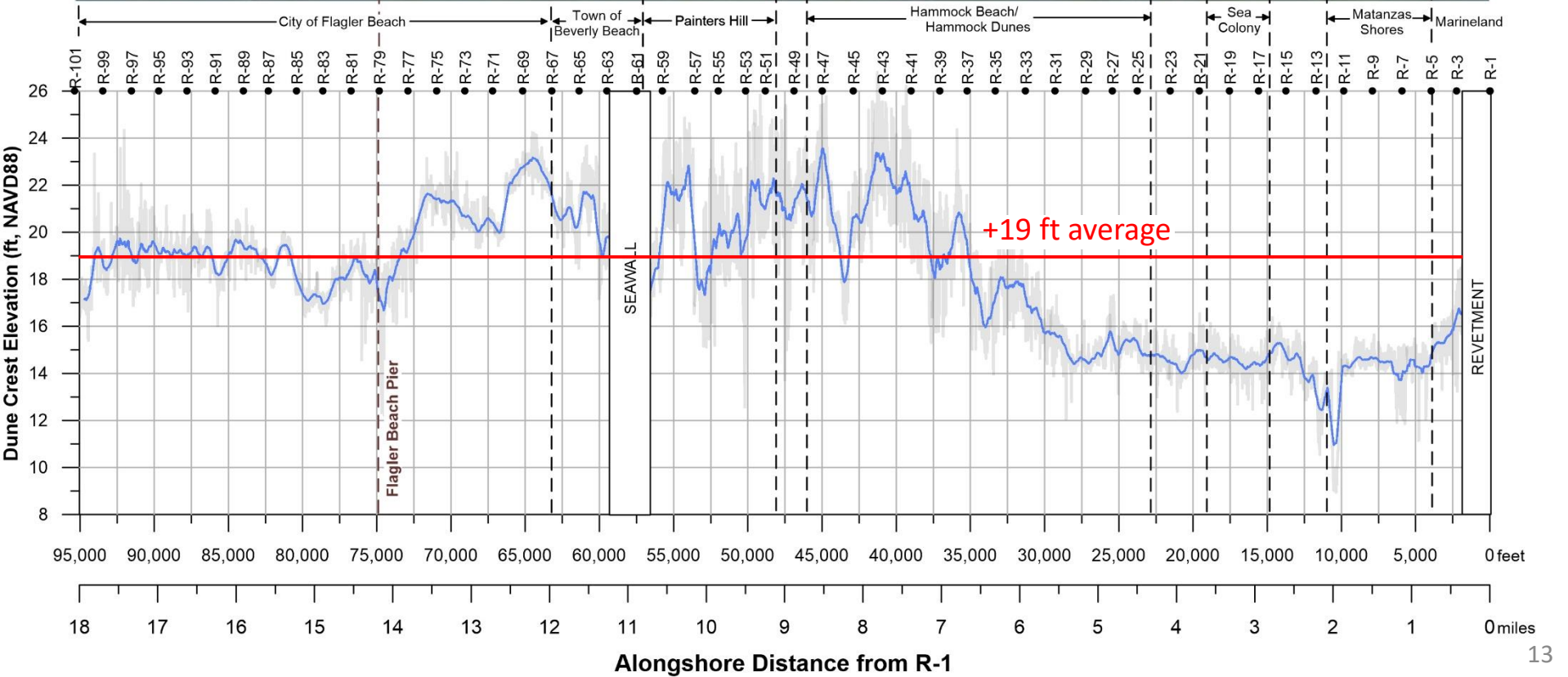



Upland
Dune
Beach Berm
Nearshore
Elevation (feet)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
Distorted Scale = 1v:3h
0
100
200
300
400
500
600
700
800
900
Horizontal Distance (feet)

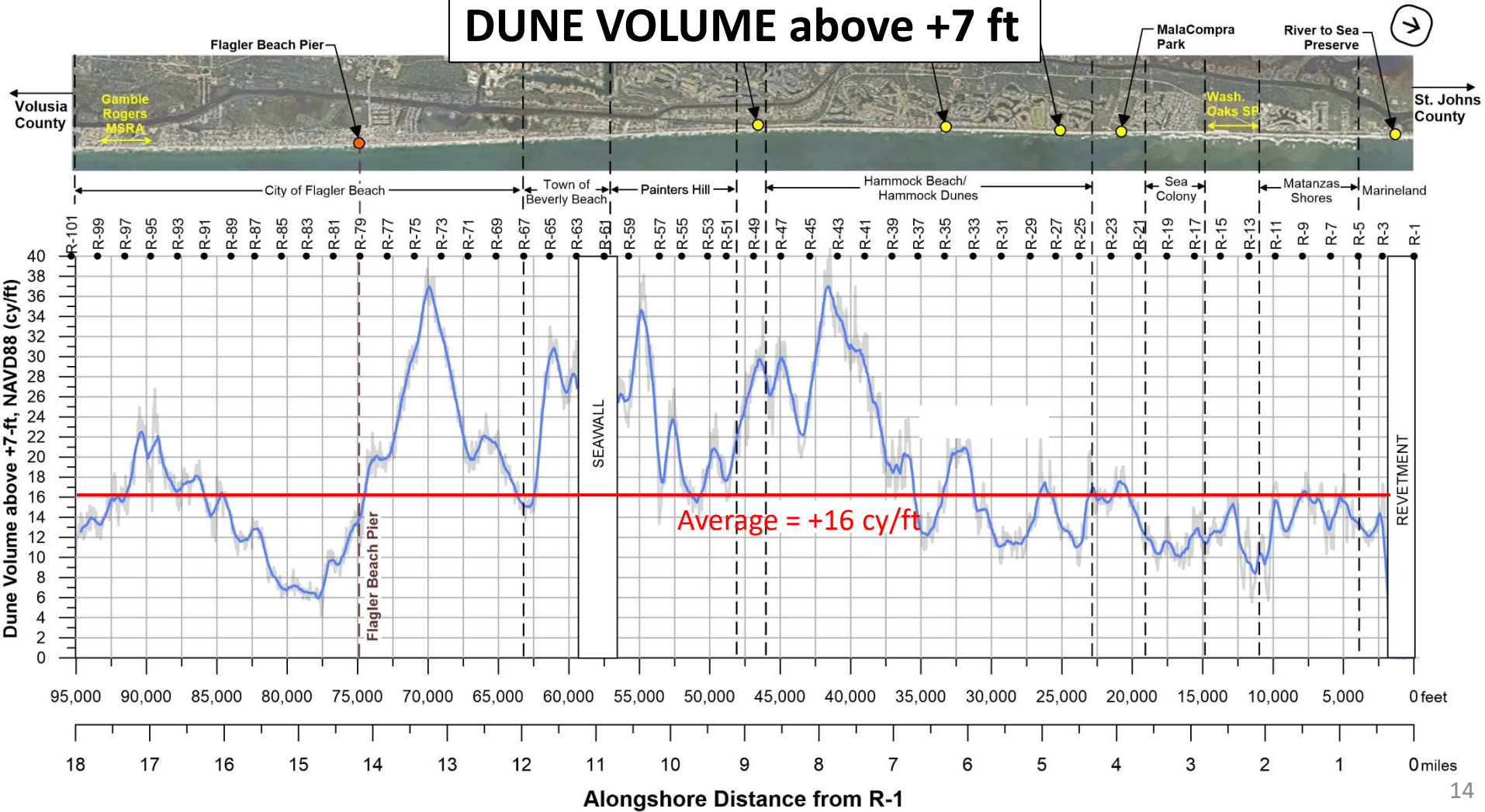
Definition of Dune Parameters



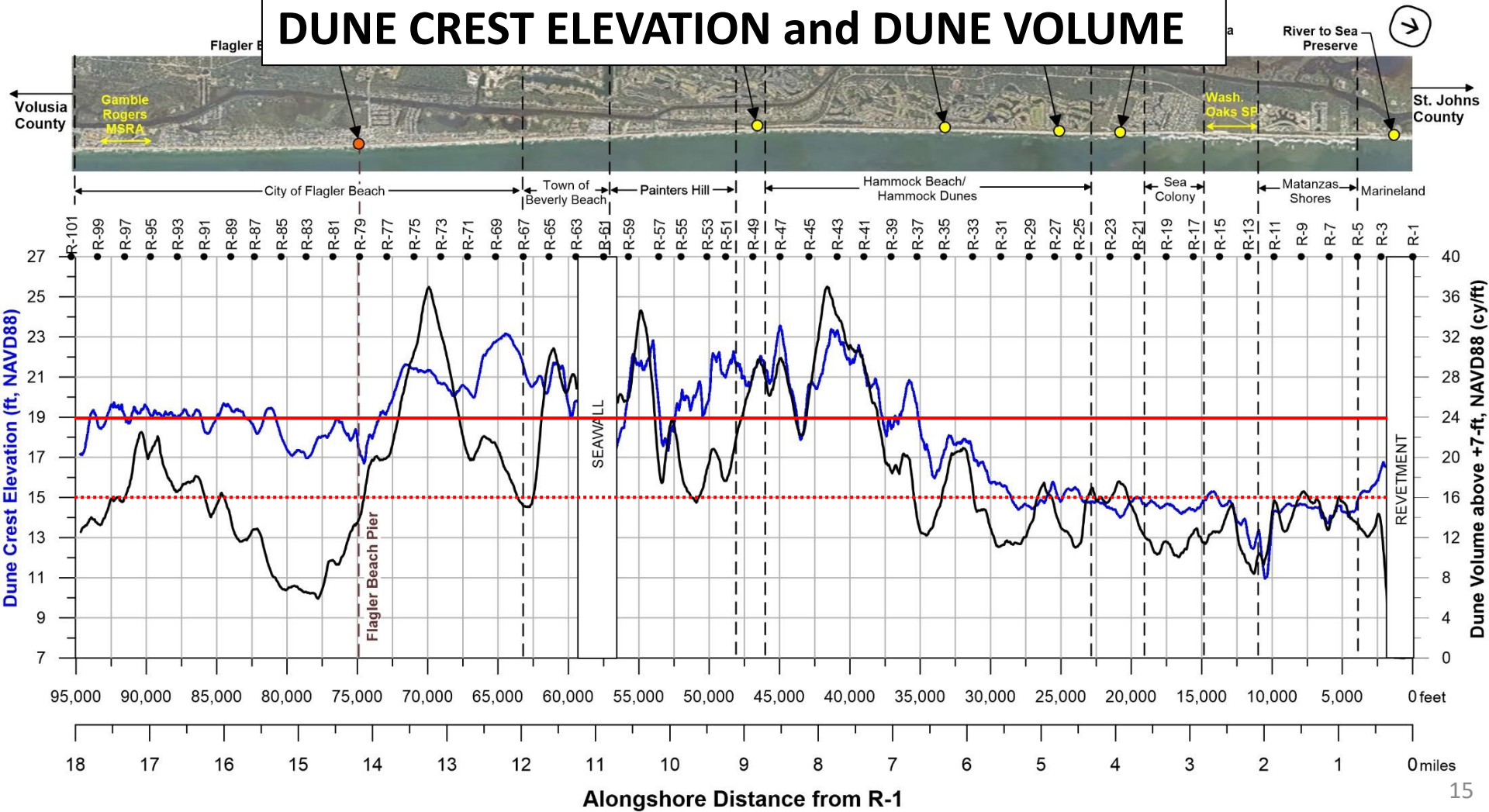
DUNE CREST ELEVATION



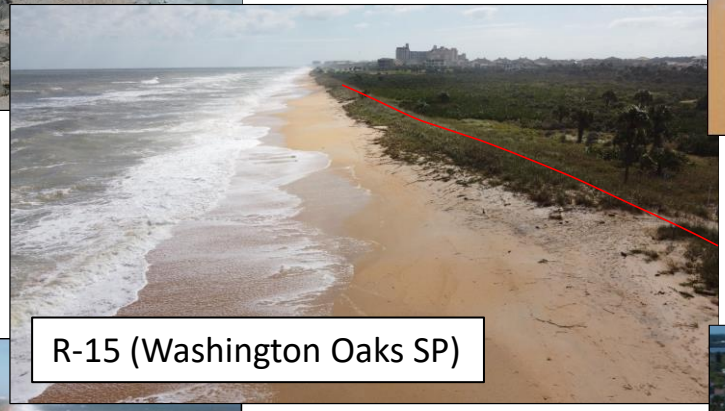
DUNE VOLUME above +7 ft



DUNE CREST ELEVATION and DUNE VOLUME




R-7 (Matanzas Shores)

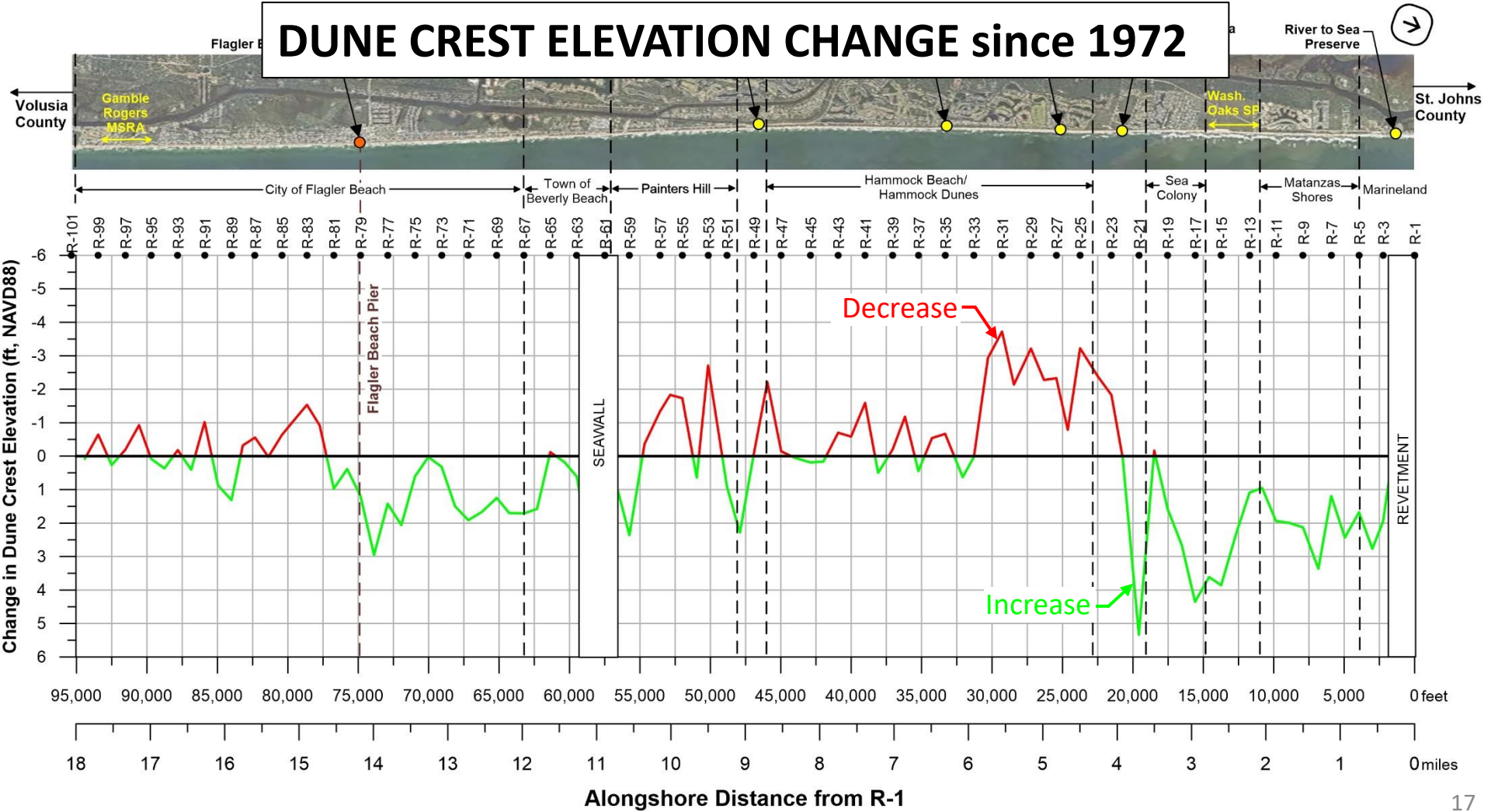

R-15 (Washington Oaks SP)


R-55 (Painters Hill)

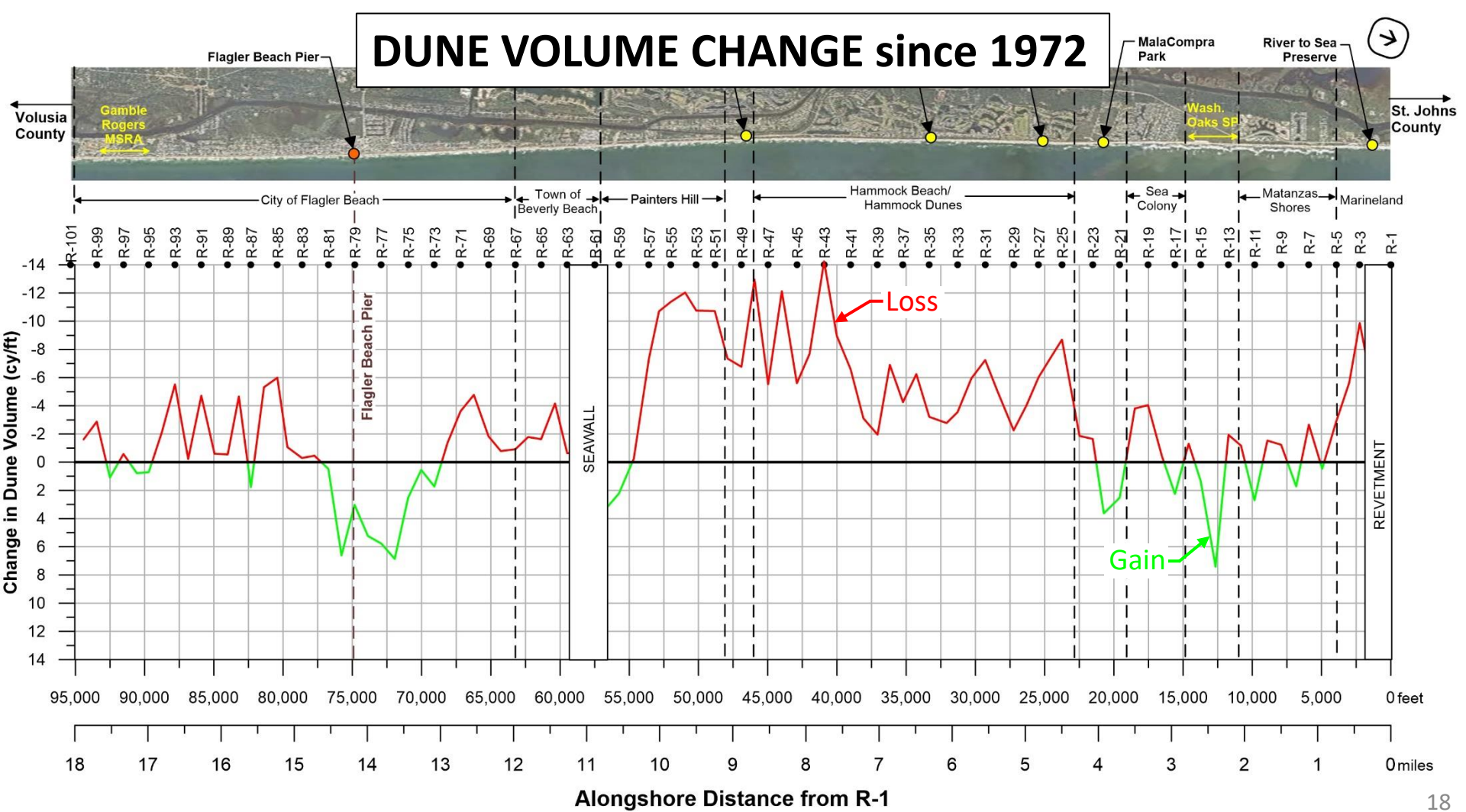

R-42 (Hammock Dunes)


R-87 (Flagler Beach)

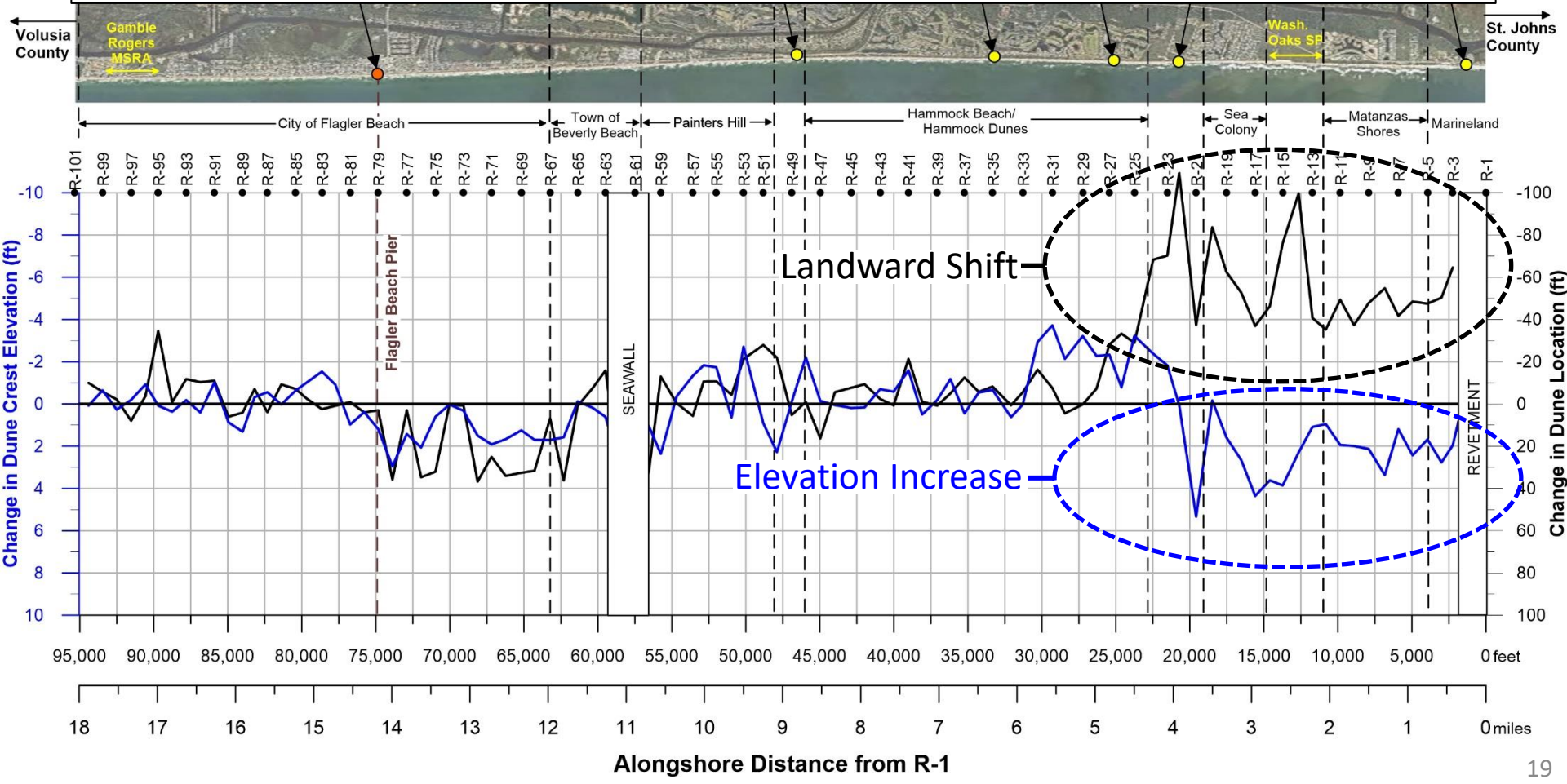
DUNE CREST ELEVATION CHANGE since 1972



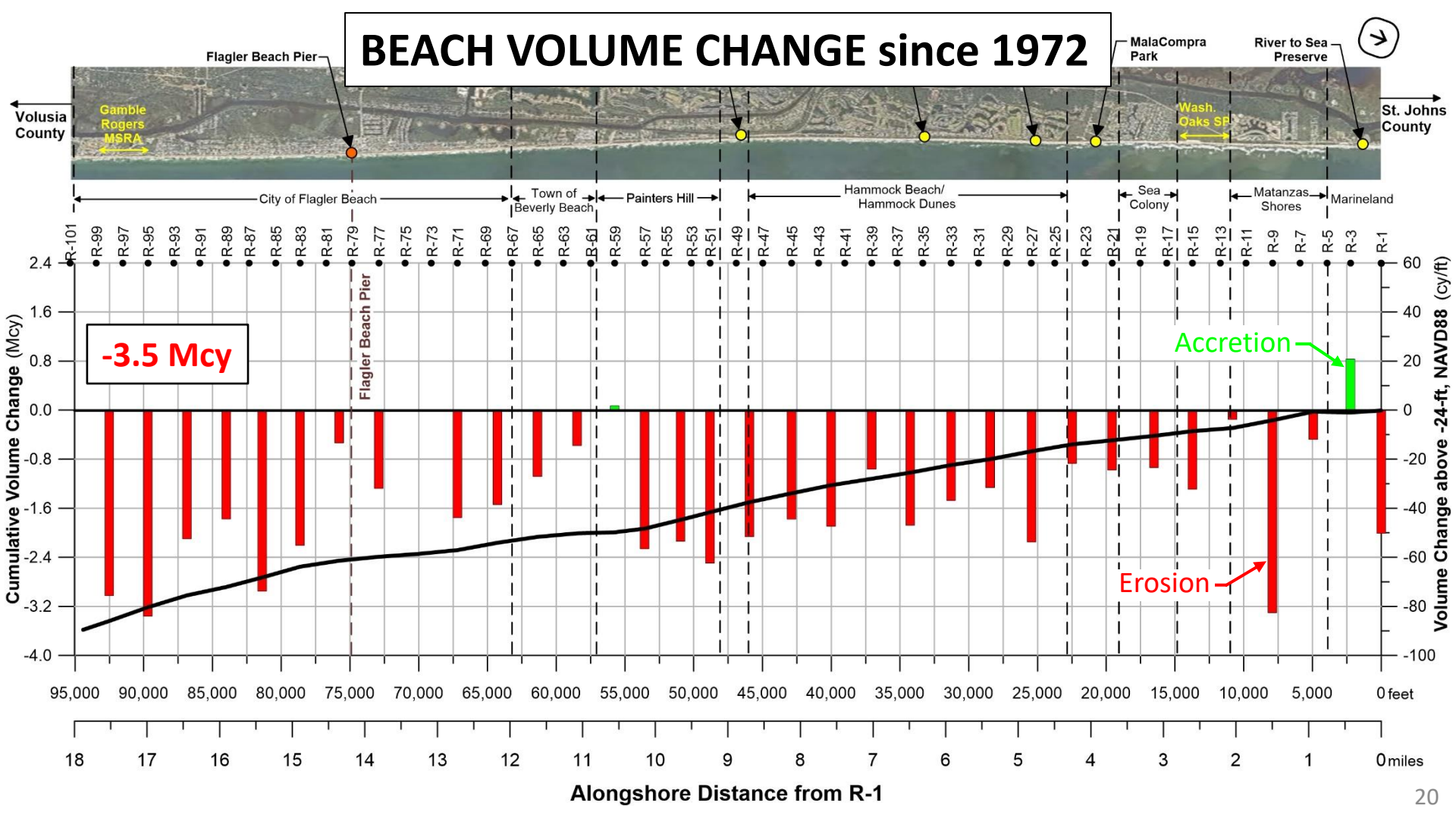
DUNE VOLUME CHANGE since 1972



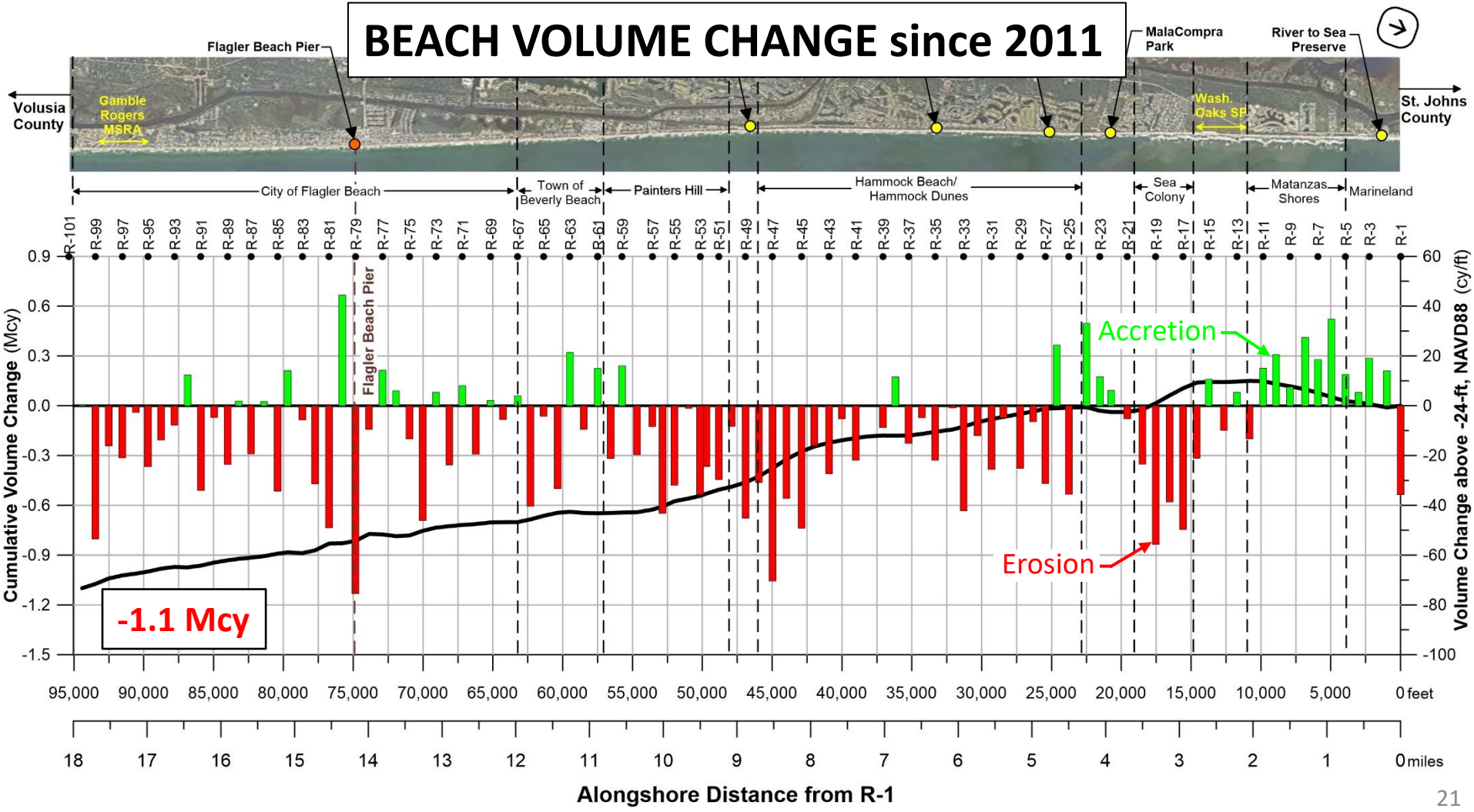
DUNE CREST ELEVATION CHANGE and DUNE LOCATION CHANGE

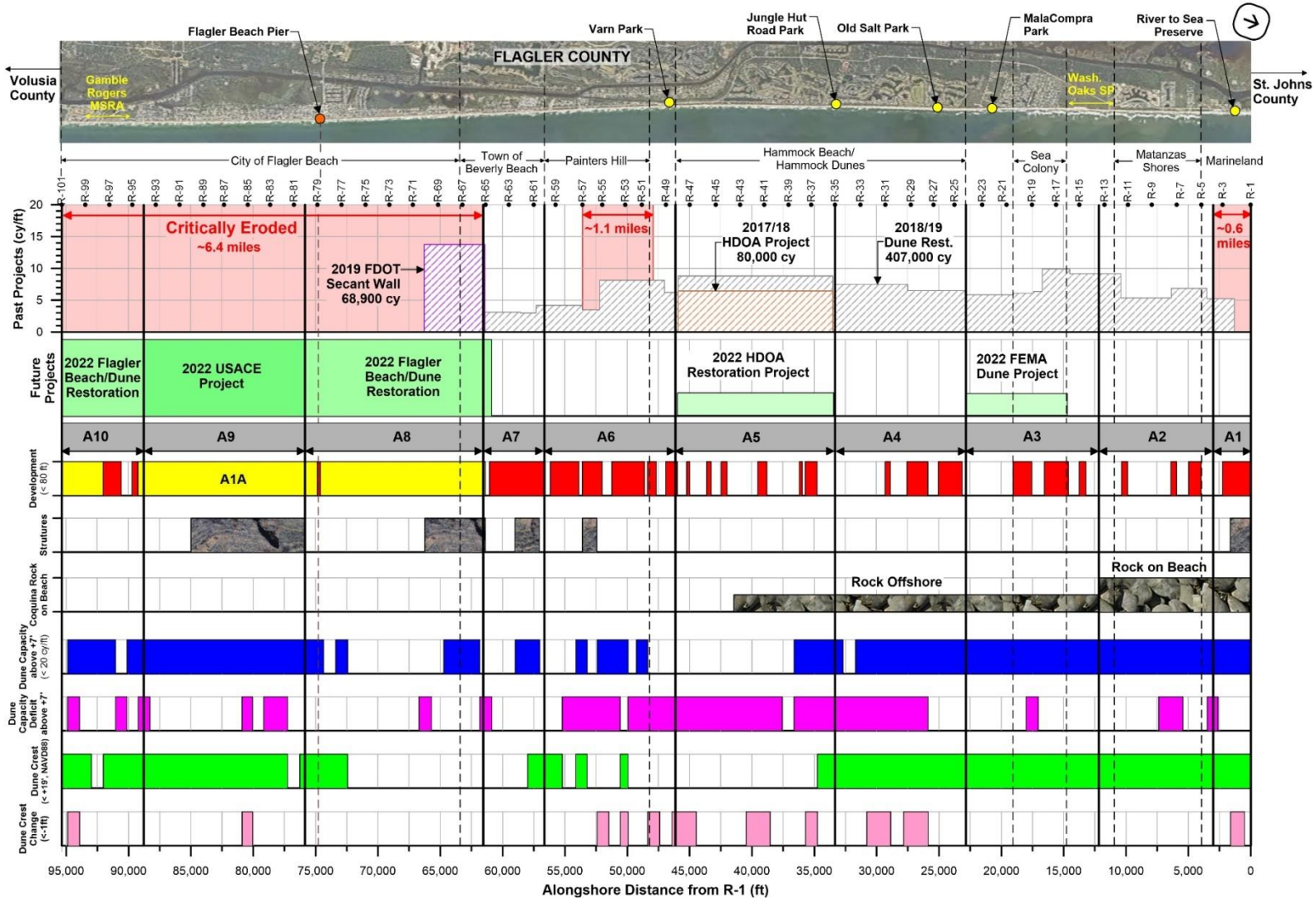


BEACH VOLUME CHANGE since 1972



BEACH VOLUME CHANGE since 2011




Flagler Beach Pier
Varn Park
Jungle Hut Road Park
Old Salt Park
MalaCompra Park
River to Sea Preserve
FLAGLER COUNTY
Volusia County
Gamble Rogers MSRA
Wash. Oaks SP
St. Johns County
City of Flagler Beach
Town of Beverly Beach
Painters Hill
Hammock Beach/ Hammock Dunes
Sea Colony
Matanzas Shores
Marineland
Past Projects (cy/ft)
Critically Eroded ~6.4 miles
2019 FDOT Secant Wall 68,900 cy
~1.1 miles
2017/18 HDOA Project 80,000 cy
2018/19 Dune Rest. 407,000 cy
~0.6 miles
Future Projects
2022 Flagler Beach/Dune Restoration
2022 USACE Project
2022 Flagler Beach/Dune Restoration
2022 HDOA Restoration Project
2022 FEMA Dune Project
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
Development (< 80 ft)
A1A
Strutures
Coquina Rock on Beach
Rock Offshore
Rock on Beach
Dune Capacity above +7' (< 20 cy/ft)
Dune Capacity Deficit above +7'
Dune Crest (< +19', NAVD88)
Dune Crest Change (<-1ft)
Alongshore Distance from R-1 (ft)

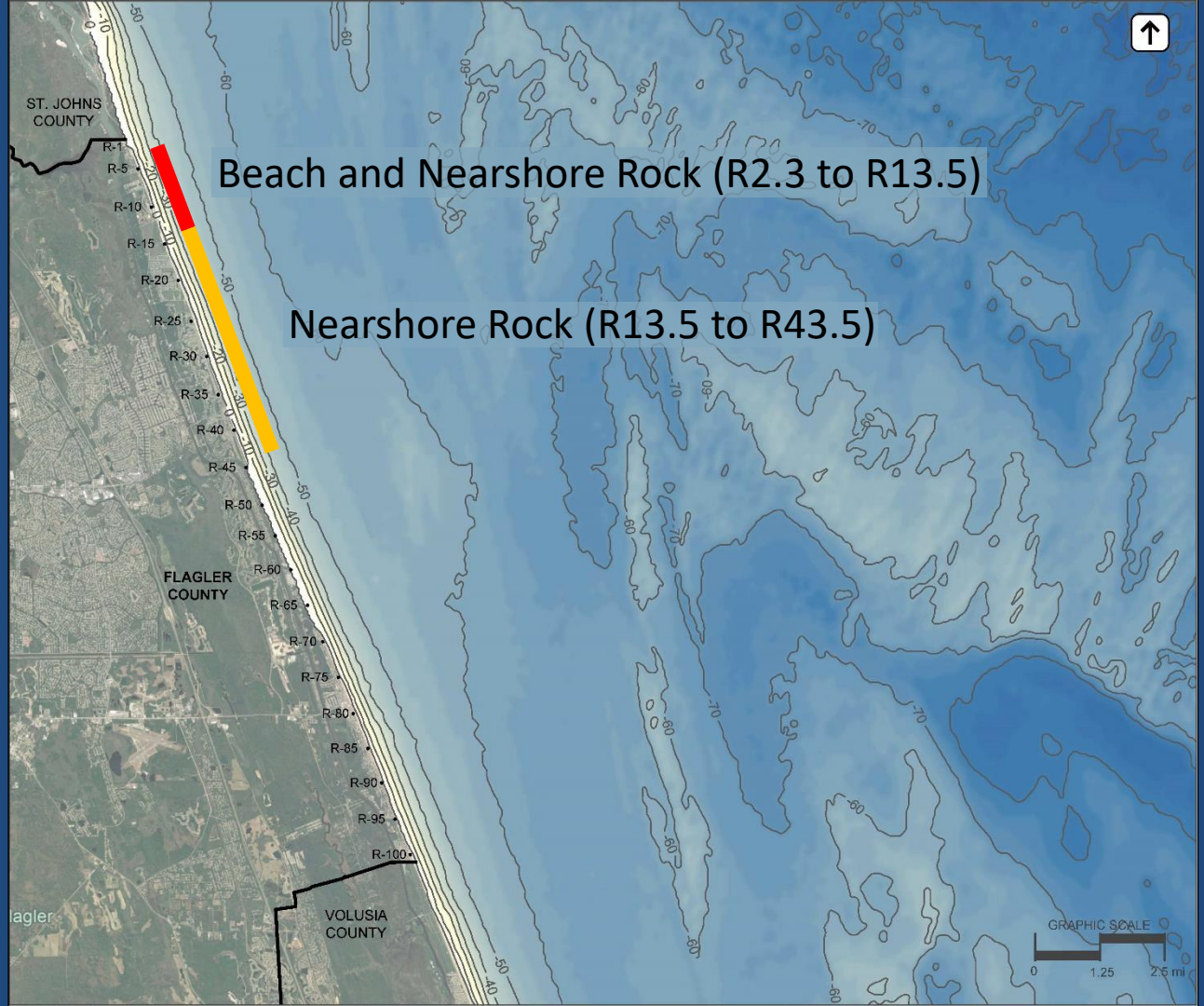
Project Approach

- Restore beach/dune
  - Reestablish historical condition
  - Provide for anticipated future sand loss
- Consider physical / environmental constraints
  - Development / access
  - Dune vegetation
  - Beach and nearshore rock/hardbottom
- Evaluate benefit/cost of enhancing dune
  - Northern 7 miles of shoreline (R3 to R37)

Nearshore Hardbottom / Coquina Rock

Nearshore Hardbottom / Coquina Rock

R-38


Beach and Nearshore Rock (R2.3 to R13.5)
Nearshore Rock (R13.5 to R43.5)
ST. JOHNS COUNTY
FLAGLER COUNTY
VOLUSIA COUNTY
R-1
R-5
R-10
R-15
R-20
R-25
R-30
R-35
R-40
R-45
R-50
R-55
R-60
R-65
R-70
R-75
R-80
R-85
R-90
R-95
R-100
GRAPHIC SCALE
0
1.25
2.5 mi

Nearshore Hardbottom / Coquina Rock

- Protected Habitat for Federally Listed Species [Endangered Species Act]
  - Foraging habitat for juvenile green sea turtles

- State of Florida: FDEP
  - Resources on submerged sovereign lands
- Federal: National Marine Fisheries Services (NMFS)
  - Essential Fish Habitat (EFH); Magnuson-Stevens Fishery Conservation and Management Act
- Hardbottom resources can only be impacted (i.e. sand burial and/or sedimentation impacts) if impacts are justified, avoided, and/or minimized to the greatest extent practicable and appropriately mitigated according to Florida Uniform Mitigation Assessment (UMAM), Rule 62-345 F.A.C.

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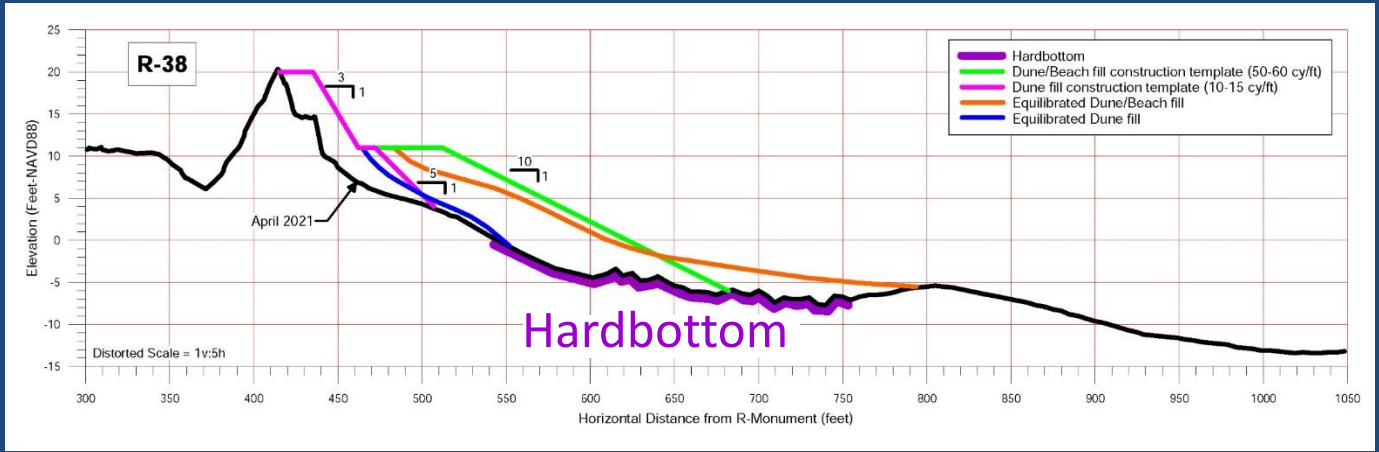
Types of Impacts

- Sand Placement (Direct sand burial)
- Turbidity (Dredge discharge)
- Pipeline impacts (Pipe placement)
- Beach Fill **Equilibration** (indirect sand burial)

All justified impacts will require mitigation



Nearshore Hardbottom / Coquina Rock

- R-3 (Marine Land) to R-43.5 (southern Hammock Dunes)
  - R-3 to R-14 (+3’ to -6’)
  - R-14 to R-43.5 (0’ to -6’)

- Extent (rough estimate from aerial photos)
  - ~ 200 acres (gross)
  - ~120 acres (net; assumes 60% rock, 40% sand)

- Typical Cost of Nearshore Hardbottom Mitigation - $1.5 to $4.0 M/acre
  (Recent cost for mitigation of similar rock in Brevard County, FL = **$2.75 M/acre**)

- Permitting of nearshore hardbottom impacts and development/approval of a Biological Monitoring and Mitigation Plan often takes more than two years

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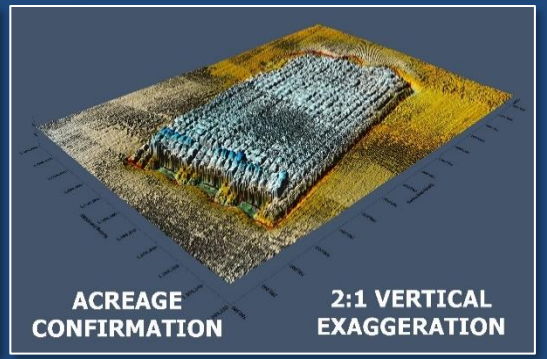
Hardbottom Mitigation

- Mitigation required for all justified impacts
- Mitigation must be similar to habitat impacted
- Typically an equivalent amount of mitigation, or more, is required for amount of impact
- Similar project in Brevard County, FL (~$2.75M/acre)



NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE & DOCUMENTATION

- New beach nourishment projects with potential significant environmental impacts require development of an Environmental Impact Statement (EIS) or a comprehensive Environmental Assessment (EA).
- Both require a detailed alternatives analysis and public scoping.
- EIS timeline is longer than EA timeline (typically more than 2 years for EIS and 1 to 1.5 years for an EA).
- If project involves hardbottom mitigation, it will increase the timeline for agency review during NEPA document approval.

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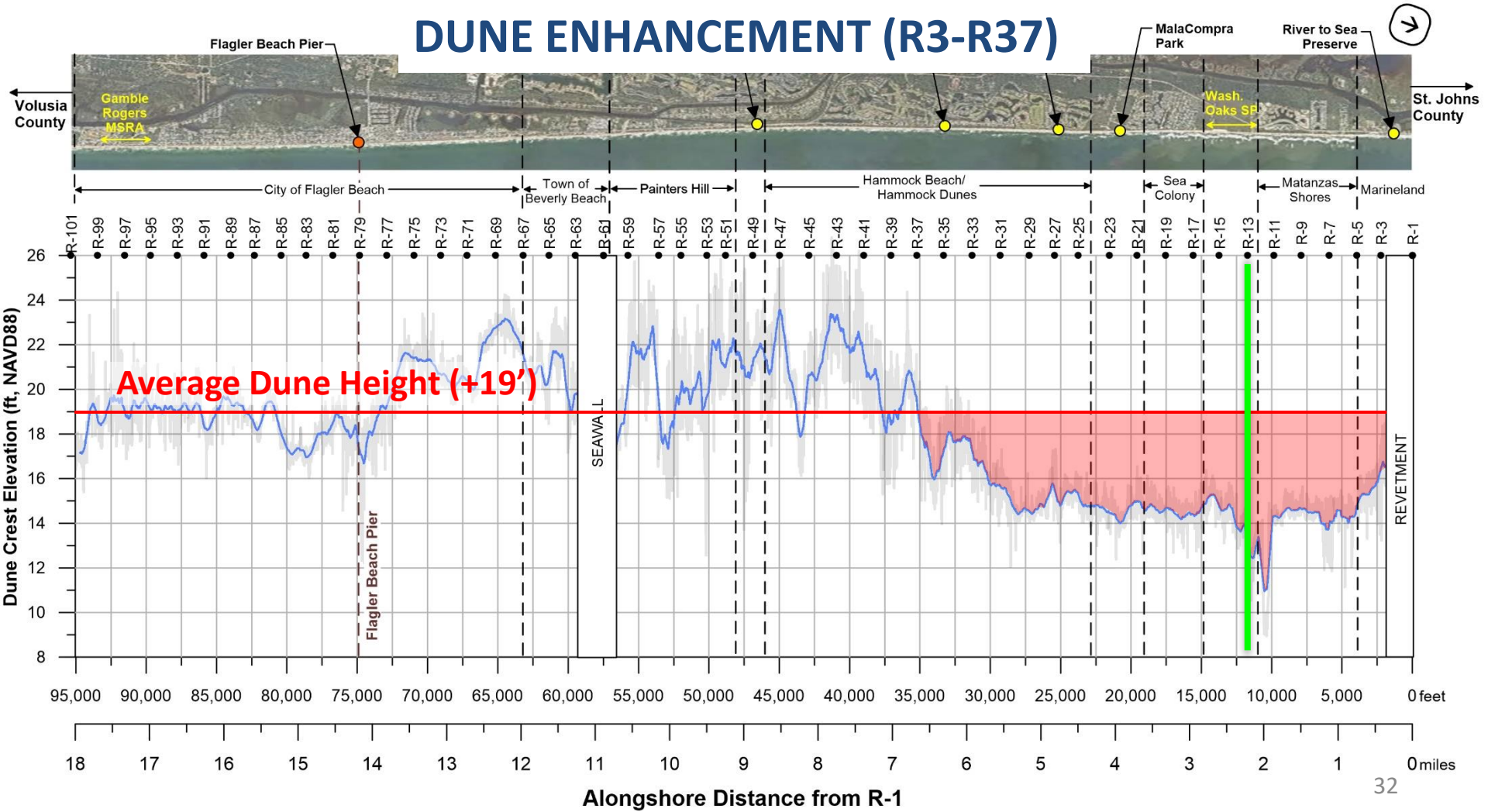
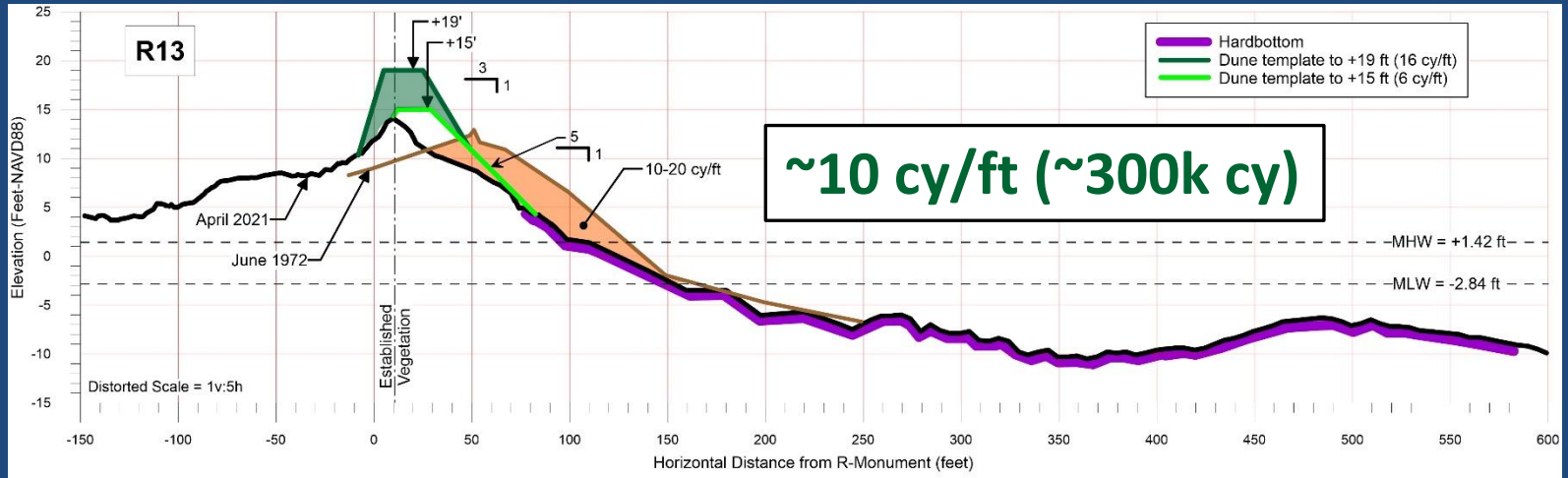
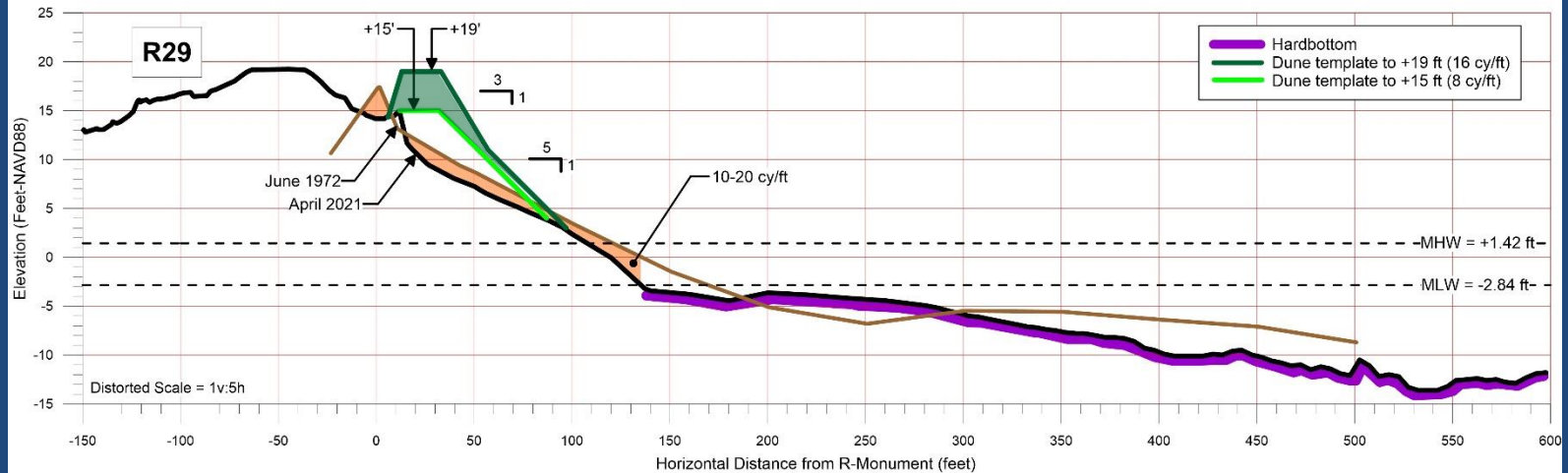
DUNE ENHANCEMENT (R3-R37)

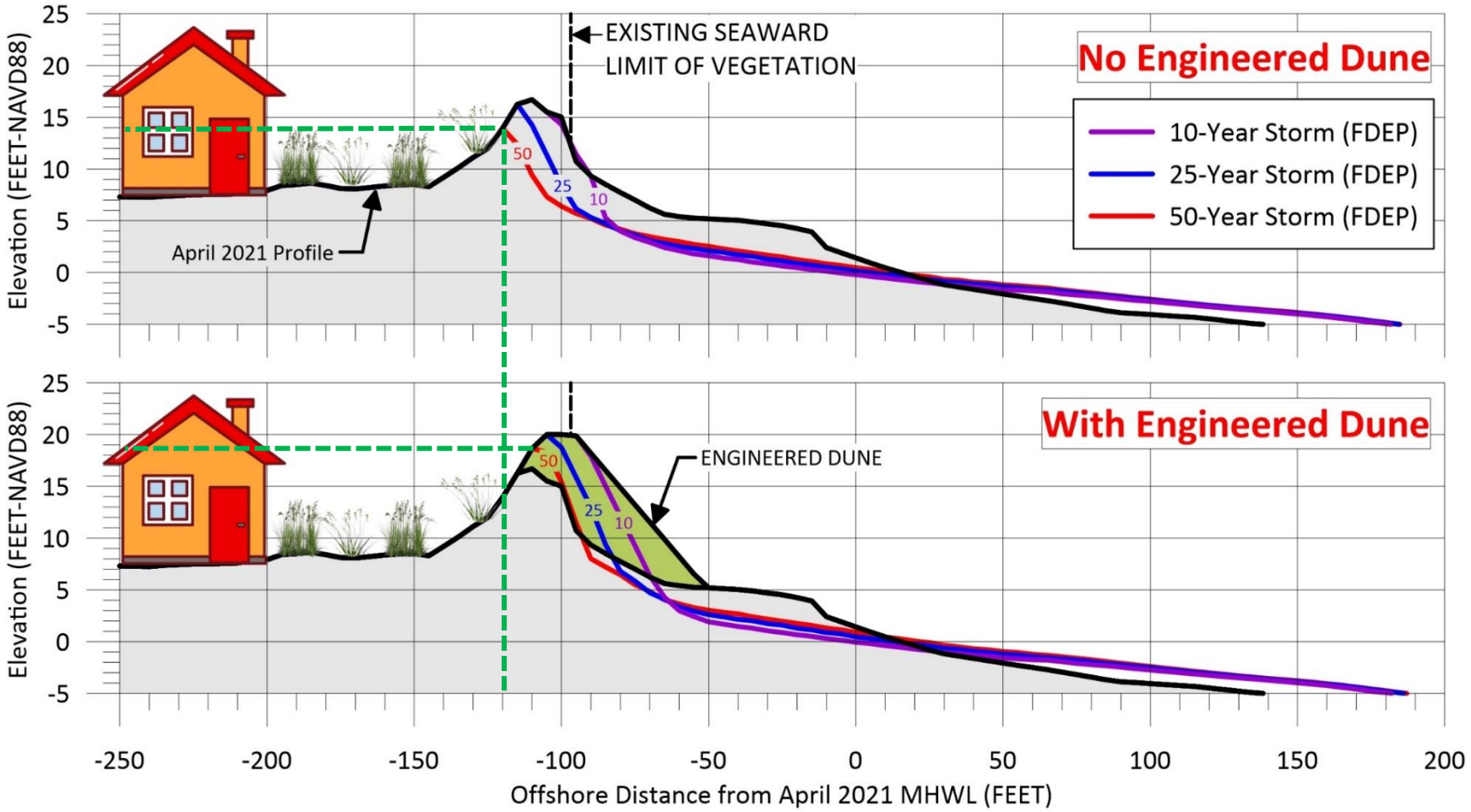


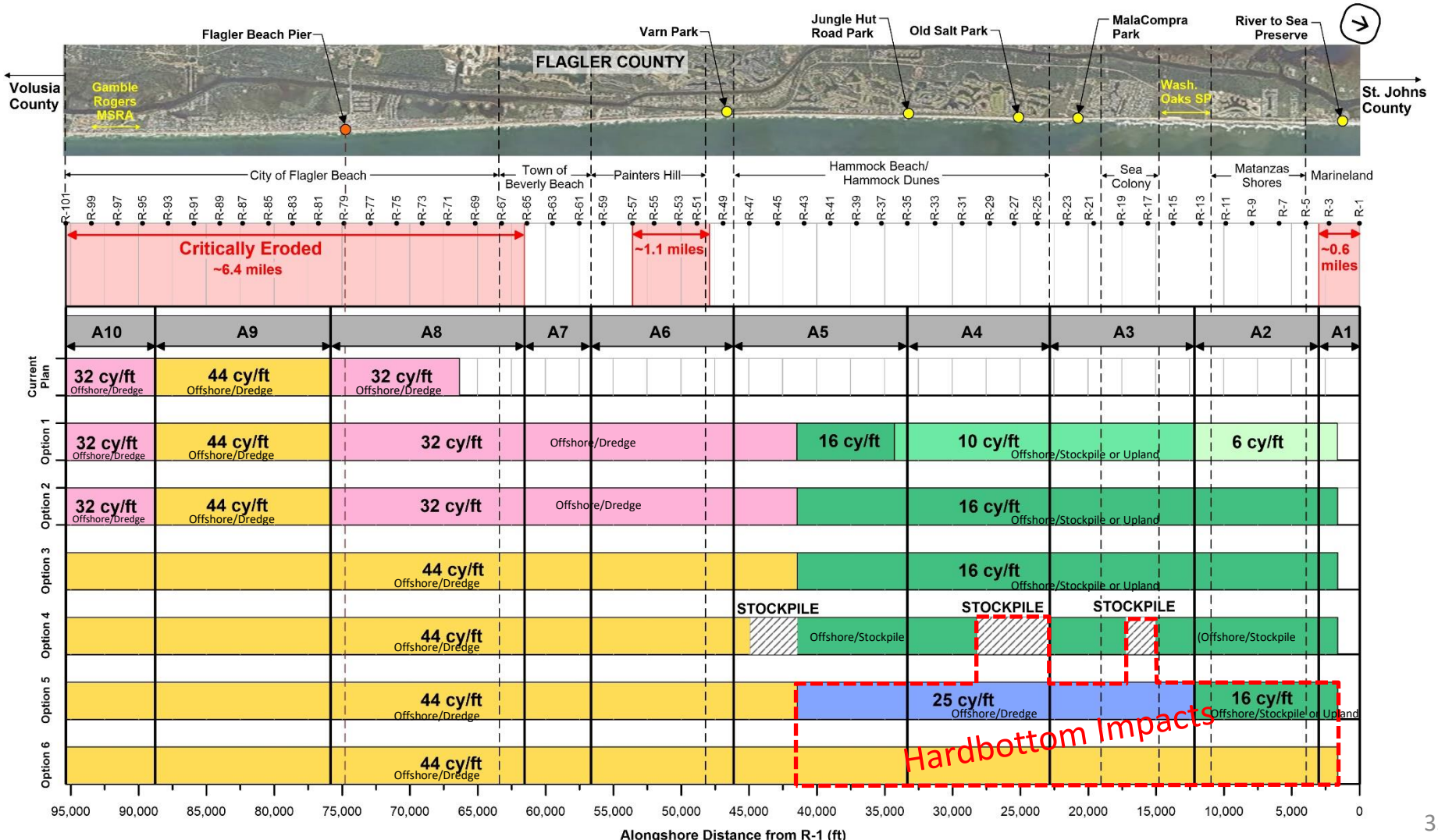
DUNE ENHANCEMENT





PHYSICAL BENEFIT OF IMPROVED DUNE

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Varn Park
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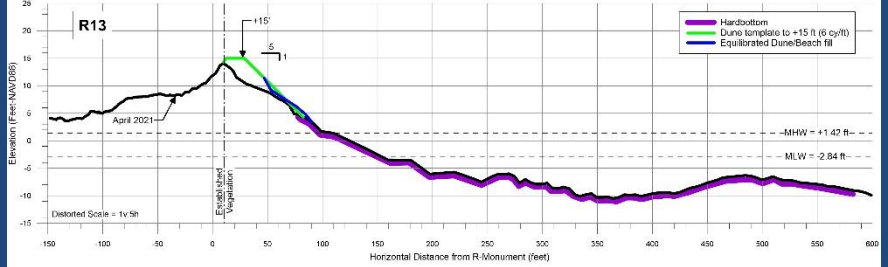
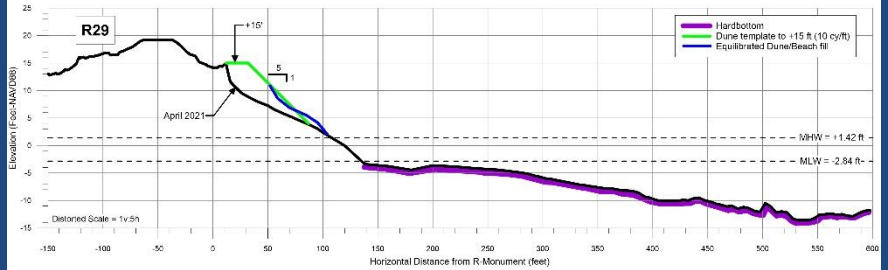
Marineland
R-101 R-99 R-97 R-95 R-93 R-91 R-89 R-87 R-85 R-83 R-81 R-79 R-77 R-75 R-73 R-71 R-69 R-67 R-65 R-63 R-61 R-59 R-57 R-55 R-53 R-51 R-49 R-47 R-45 R-43 R-41 R-39 R-37 R-35 R-33 R-31 R-29 R-27 R-25 R-23 R-21 R-19 R-17 R-15 R-13 R-11 R-9 R-7 R-5 R-3 R-1
Critically Eroded ~6.4 miles
~1.1 miles
~0.6 miles
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
Current Plan
32 cy/ft Offshore/Dredge
44 cy/ft Offshore/Dredge
32 cy/ft Offshore/Dredge
Option 1
32 cy/ft Offshore/Dredge
44 cy/ft Offshore/Dredge
32 cy/ft
Offshore/Dredge
16 cy/ft
10 cy/ft Offshore/Stockpile or Upland
6 cy/ft
Option 2
32 cy/ft Offshore/Dredge
44 cy/ft Offshore/Dredge
32 cy/ft
Offshore/Dredge
16 cy/ft Offshore/Stockpile or Upland
Option 3
44 cy/ft Offshore/Dredge
16 cy/ft Offshore/Stockpile or Upland
Option 4
STOCKPILE
STOCKPILE
STOCKPILE
44 cy/ft Offshore/Dredge
Offshore/Stockpile
(Offshore/Stockpile
Option 5
44 cy/ft Offshore/Dredge
25 cy/ft Offshore/Dredge
16 cy/ft Offshore/Stockpile or Upland
Option 6
44 cy/ft Offshore/Dredge
Hardbottom Impacts
95,000 90,000 85,000 80,000 75,000 70,000 65,000 60,000 55,000 50,000 45,000 40,000 35,000 30,000 25,000 20,000 15,000 10,000 5,000 0
Alongshore Distance from R-1 (ft)

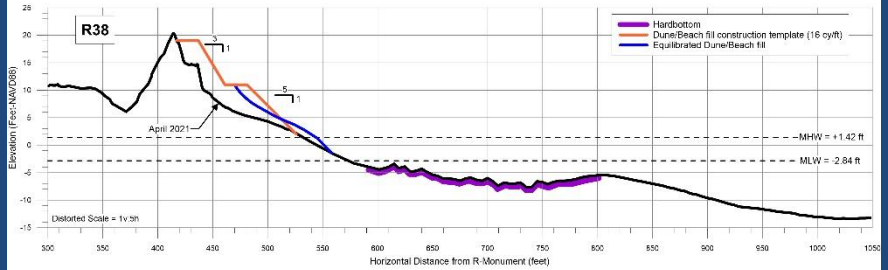
Option 1



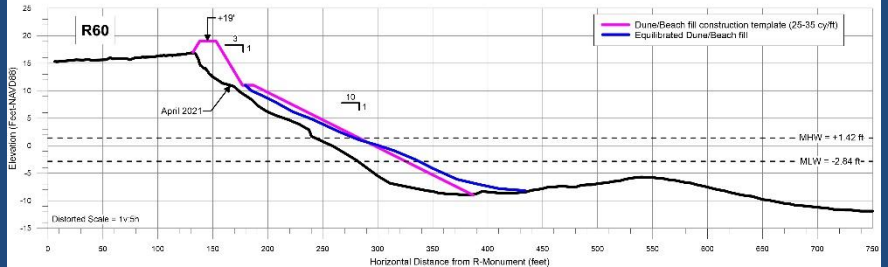
6 cy/ft



10 cy/ft

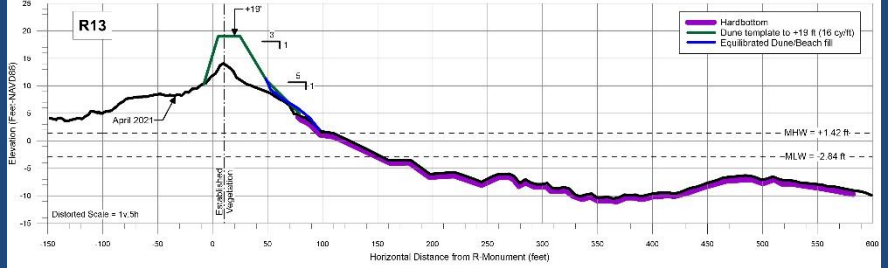


16 cy/ft

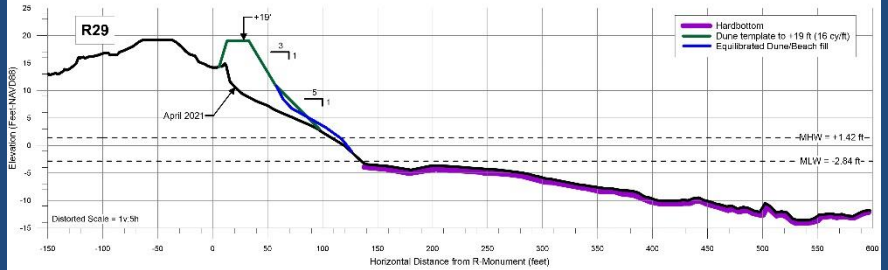


32 cy/ft

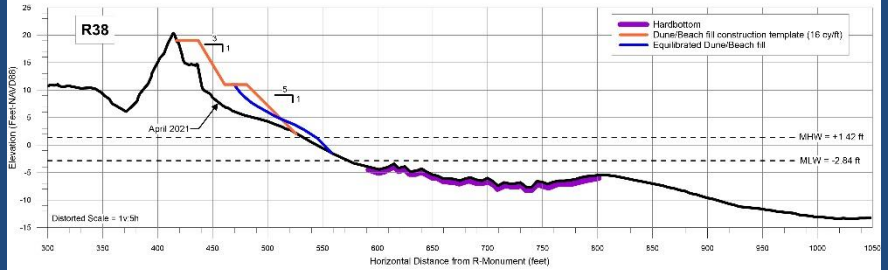
Option 2



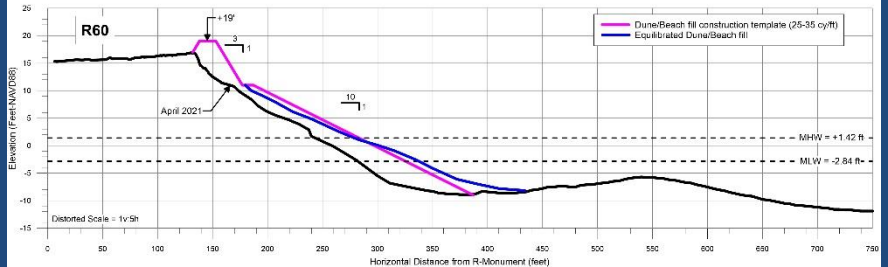
16 cy/ft



16 cy/ft

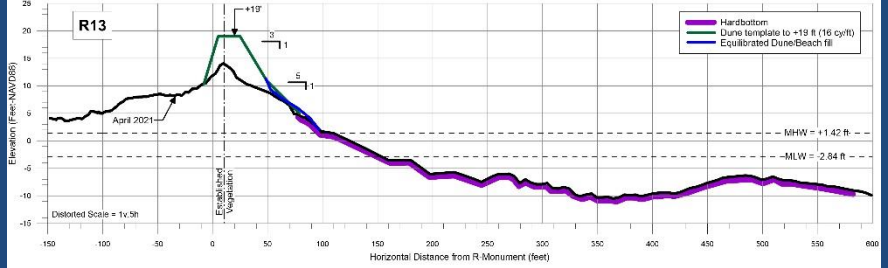


16 cy/ft

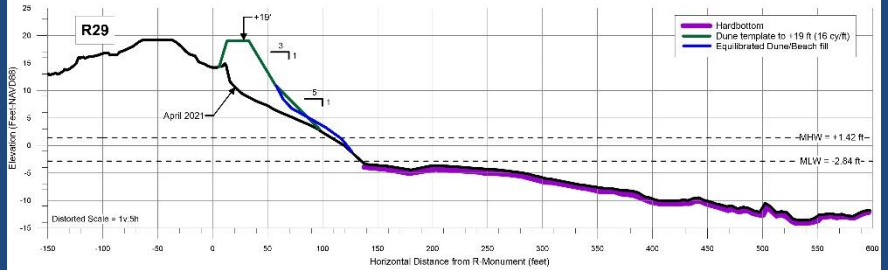


32 cy/ft

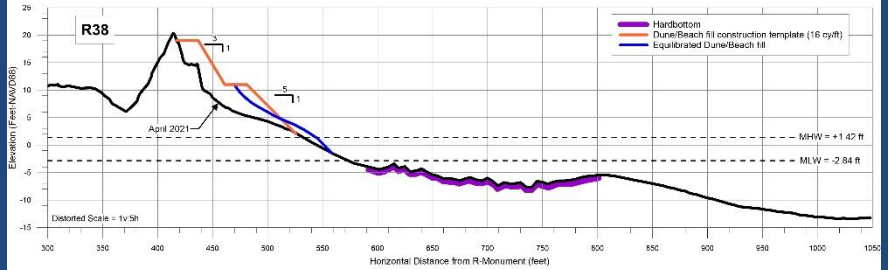
Options 3 & 4



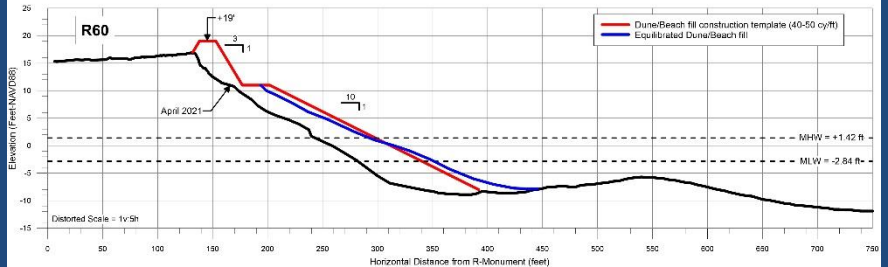
16 cy/ft



16 cy/ft

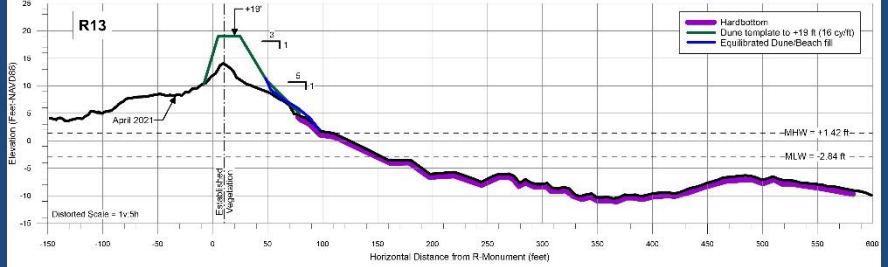


16 cy/ft

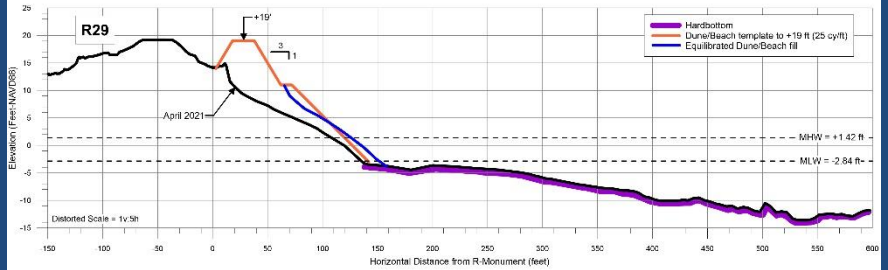


44 cy/ft

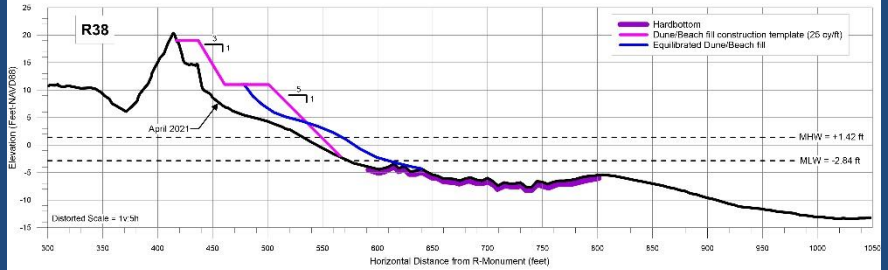
Option 5



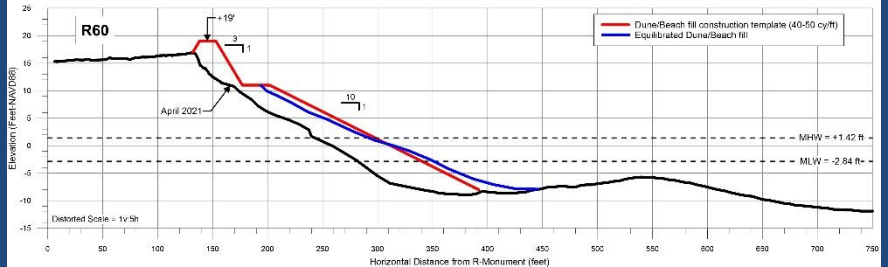
16 cy/ft



25 cy/ft

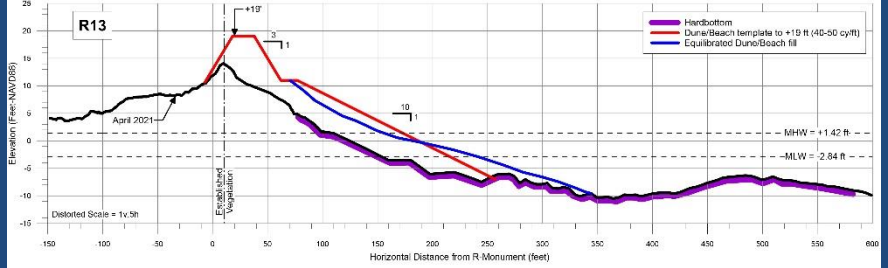


25 cy/ft

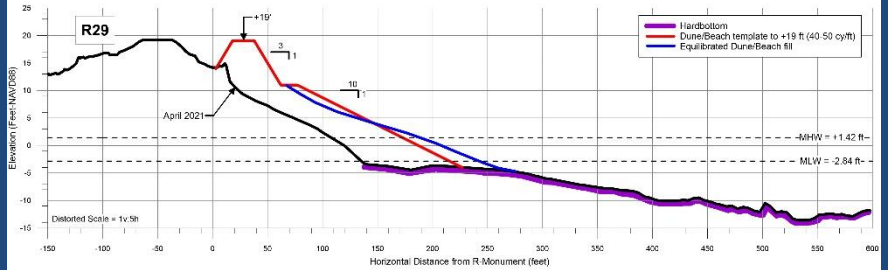


44 cy/ft

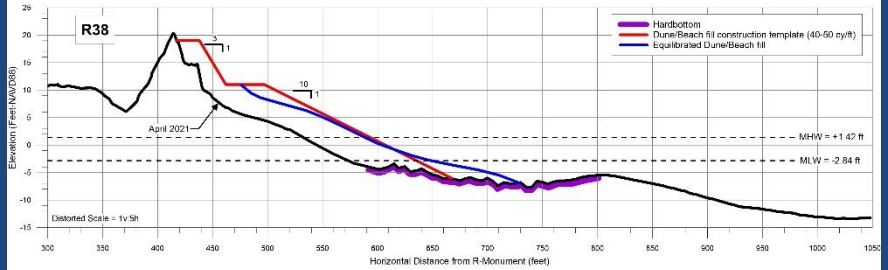
Option 6



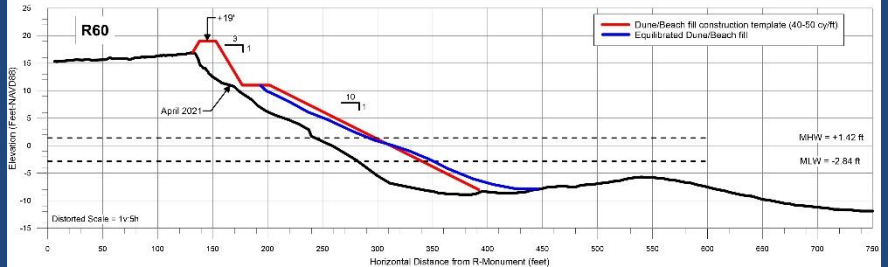
44 cy/ft



44 cy/ft



44 cy/ft



44 cy/ft

Sand Requirement (50-year)

Option	Volume Required (cy)					
	Initial			Future		
	Total	Dredge	Mechanical	Dredge	Mechanical	Total
1	2,330,860	1,937,500	393,360	945,000	150,000	7,310,860
2	2,550,660	1,937,500	613,160	945,000	150,000	7,530,660
3	3,010,660	2,397,500	613,160	945,000	150,000	7,990,660
4	3,083,560	2,553,800	529,760	945,000	550,000	9,063,560
5	3,272,460	3,272,460	0	945,000	550,000	9,252,460
6	4,083,540	4,083,540	0	945,000	550,000	10,063,540

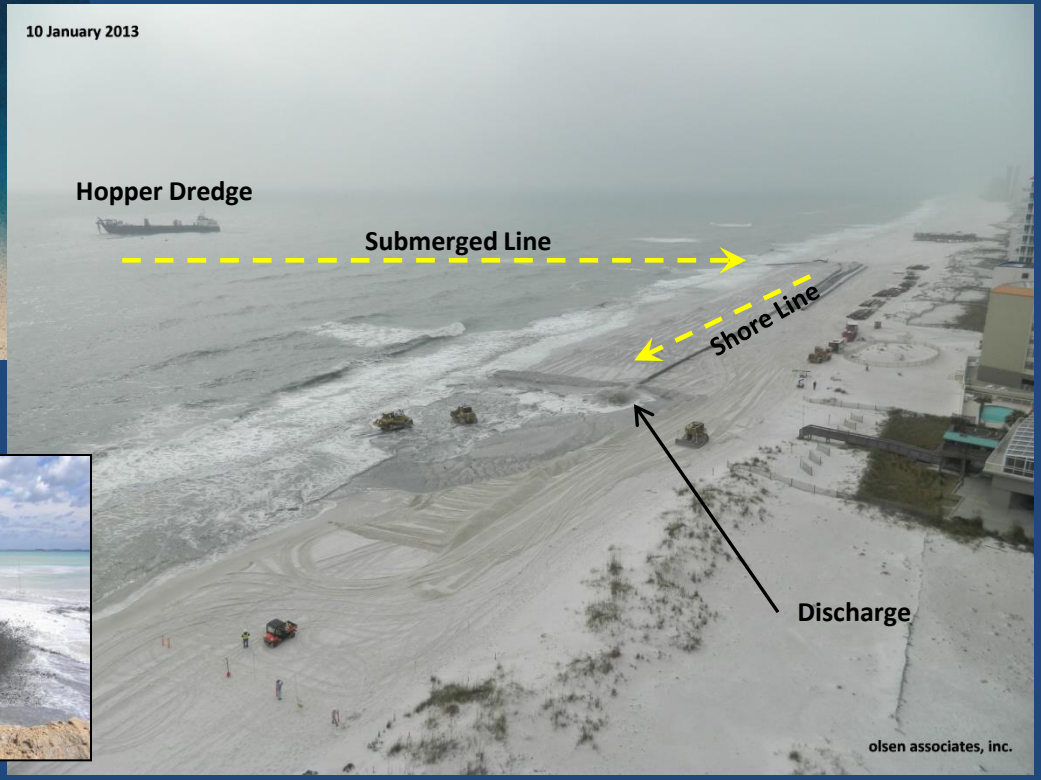
Sand Source Options

- Offshore (Dredge and Hydraulic Placement)
- Offshore / Stockpile (Mechanical Transfer and Placement)
- Upland (Mechanical Placement)

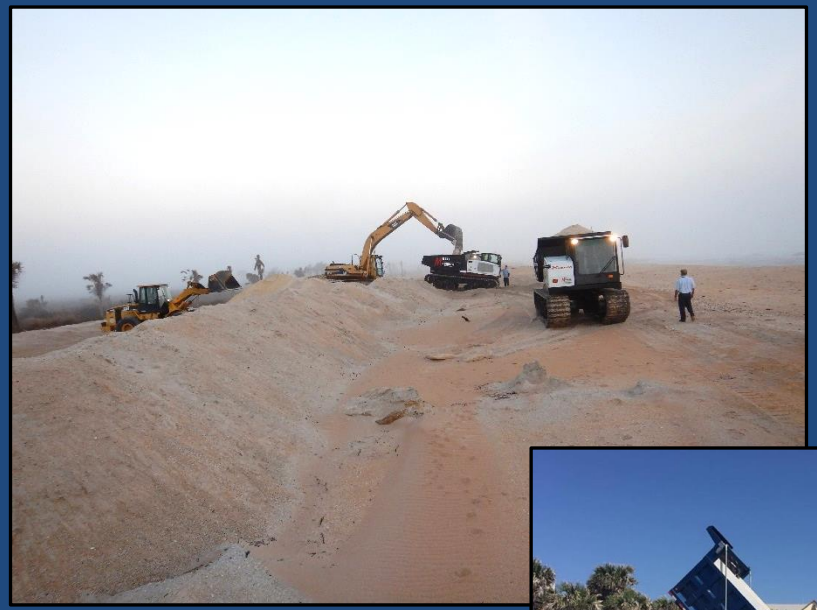
OFFSHORE SAND

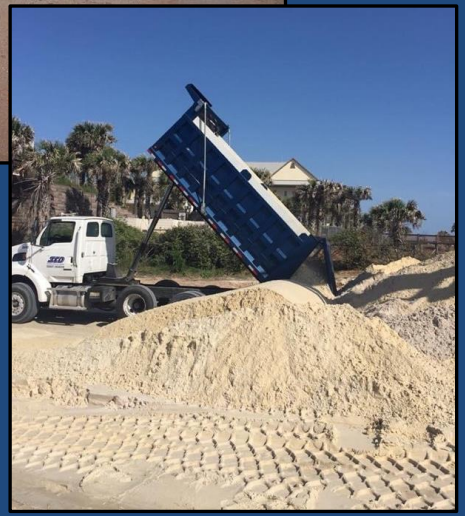
Hopper dredge loading sand from seafloor

Hopper dredge unloading sand to beach



UPLAND SAND

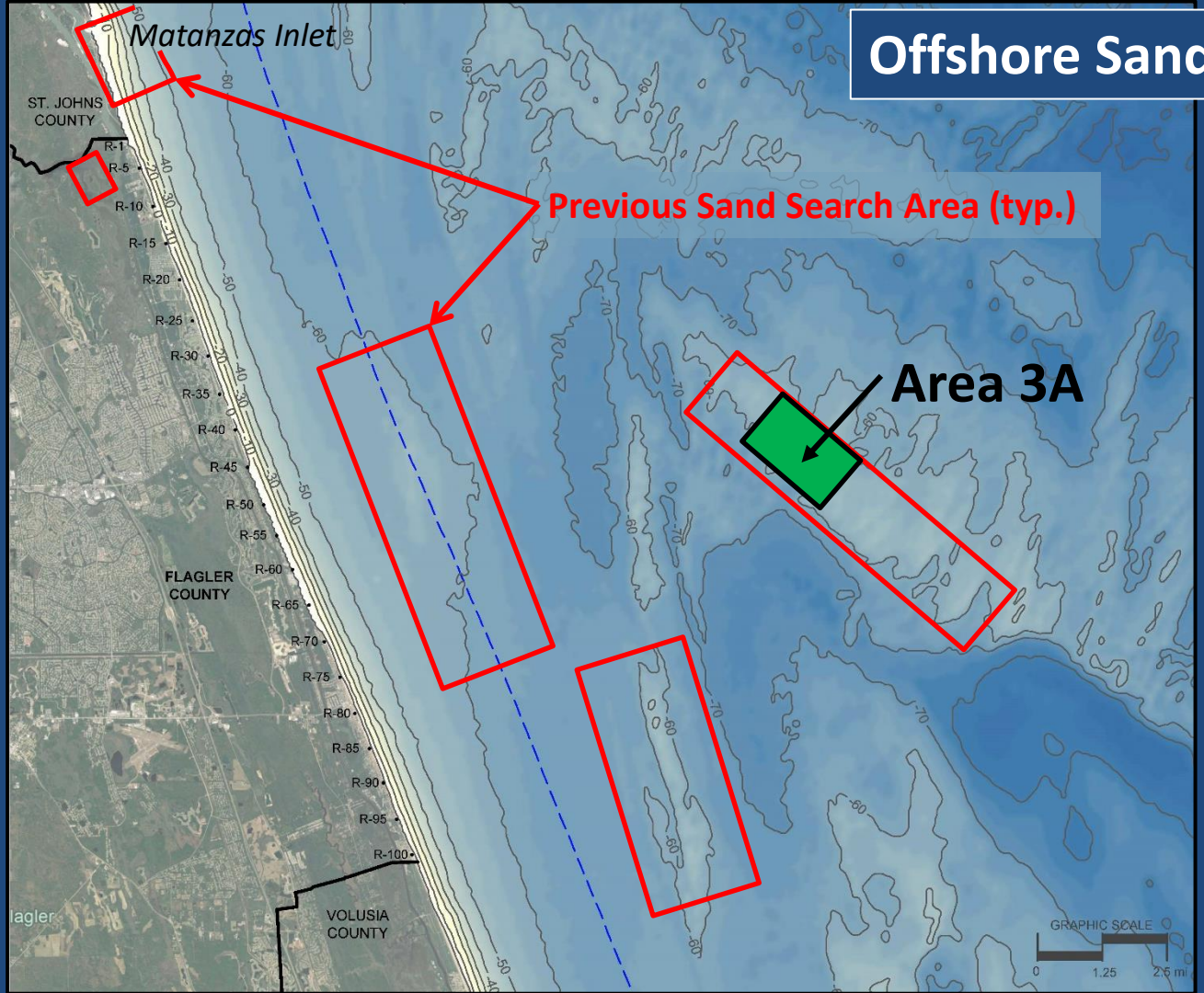


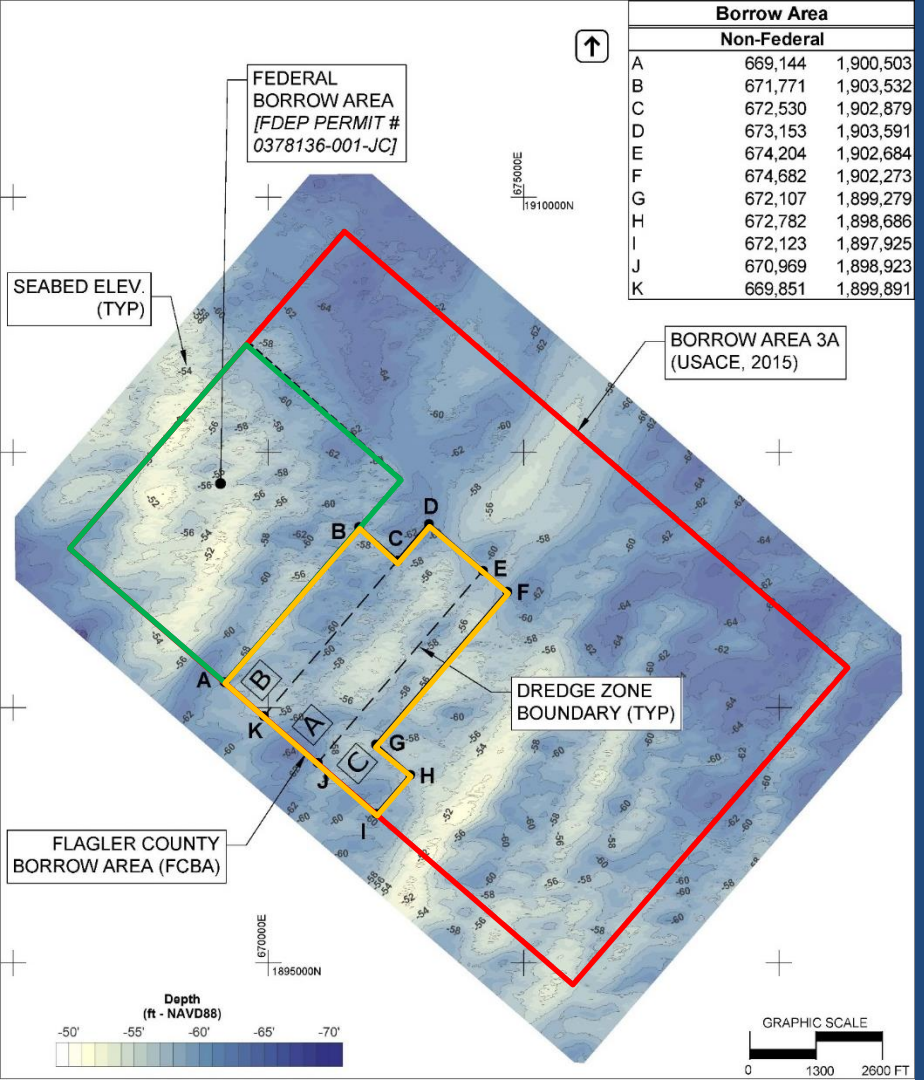


Offshore – Stockpile, Rehandling and Mechanical Placement

- Brevard County, FL “Mid-Reach” (2021)
- Avoid Nearshore Rock (~7 miles of beach)
- 500,000 cy (+/-)
- Stockpile rebuilt 7 times (~70k cy per)
- ~$60/cy in-place

Offshore Sand Sources





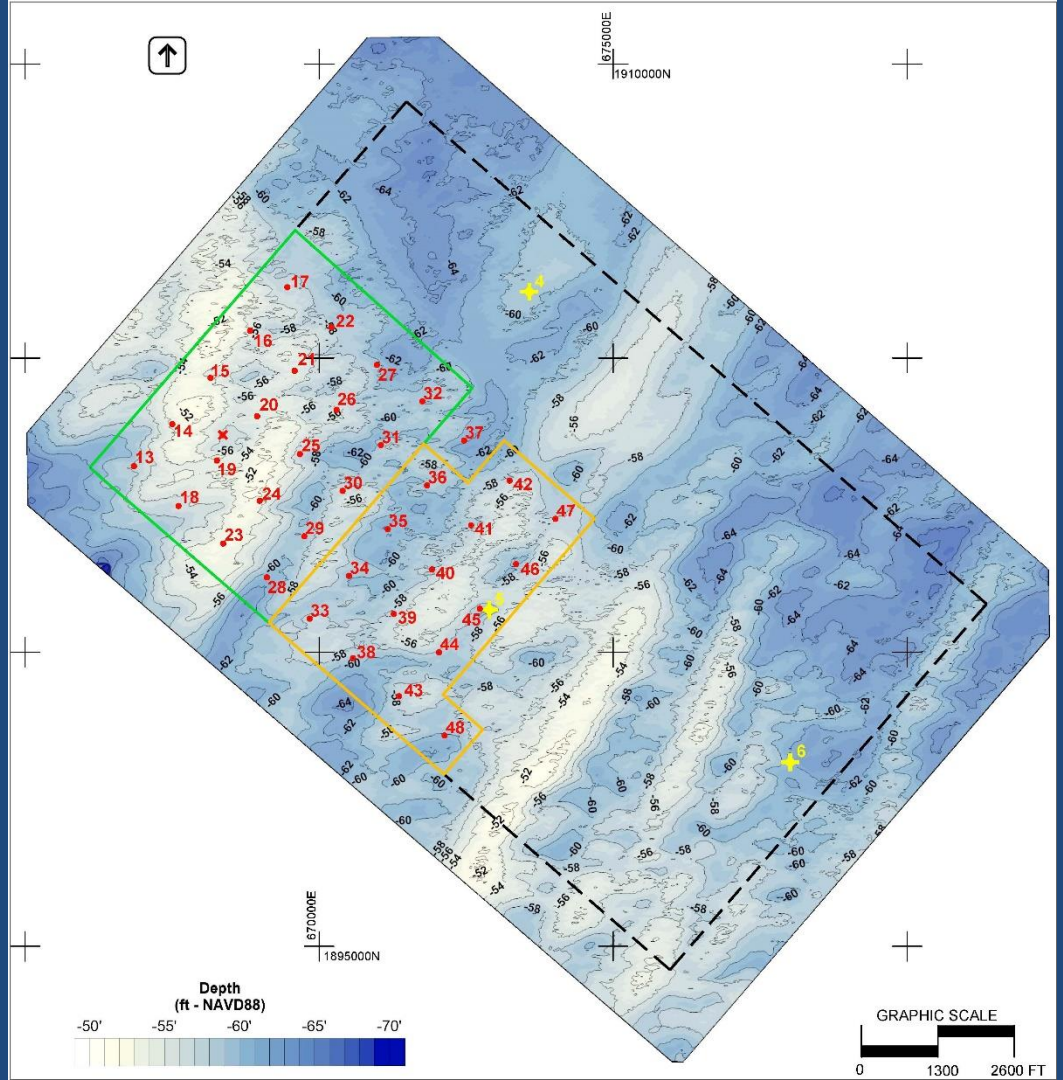
Borrow Area		
Non-Federal		
A	669,144	1,900,503
B	671,771	1,903,532
C	672,530	1,902,879
D	673,153	1,903,591
E	674,204	1,902,684
F	674,682	1,902,273
G	672,107	1,899,279
H	672,782	1,898,686
I	672,123	1,897,925
J	670,969	1,898,923
K	669,851	1,899,891

3A = 14.8 Mcy (above -62.5 ft)

Fed Prj. = 4.4 Mcy (50 yrs)

Flagler/FDOT = 1.5 Mcy (Initial Only)

Potentially Available = 8.9 Mcy

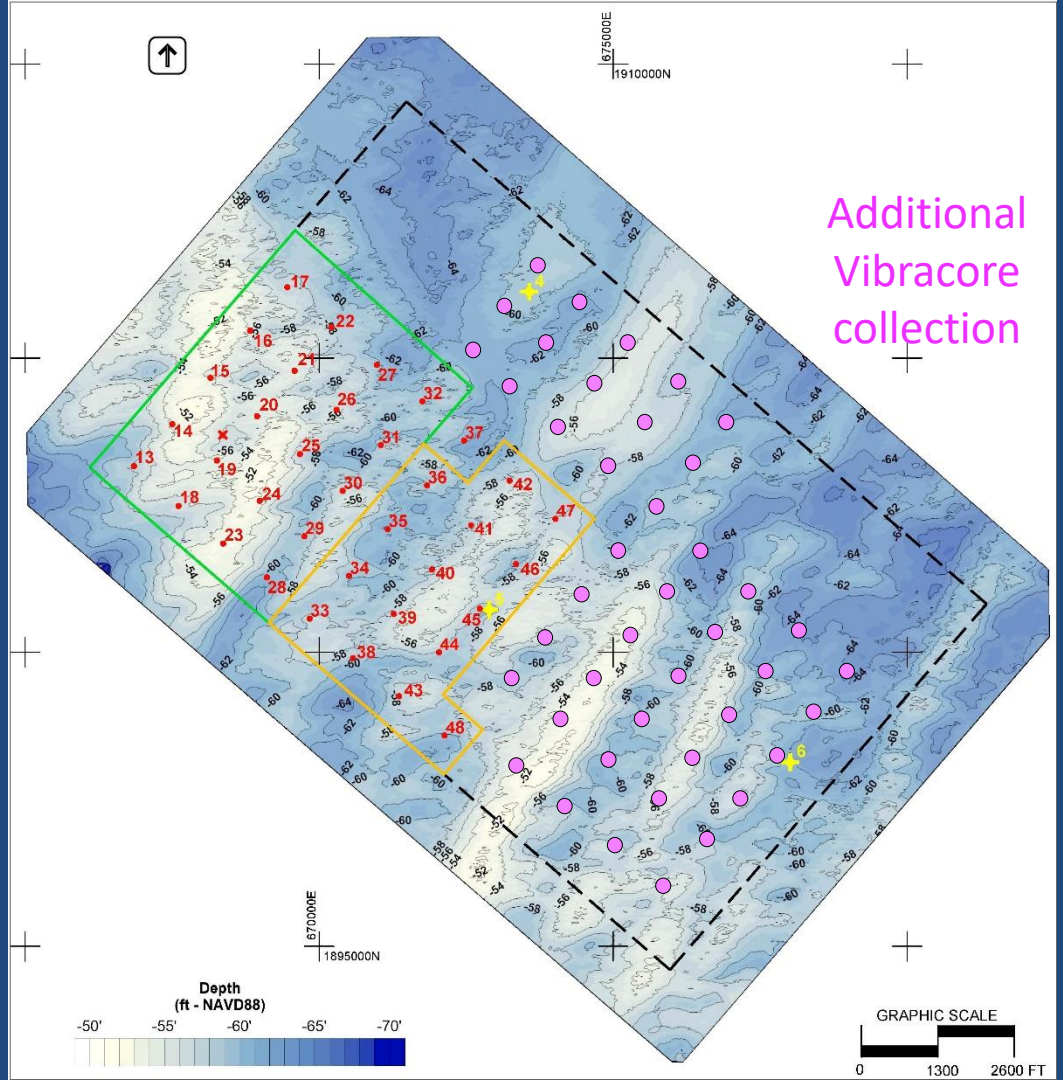


3A = 14.8 Mcy (above -62.5 ft)

Fed Prj. = 4.4 Mcy (50 yrs)

Flagler/FDOT = 1.5 Mcy
(Initial Only)

Potentially Available = 8.9 Mcy



3A = 14.8 Mcy (above -62.5 ft)

Fed Prj. = 4.4 Mcy (50 yrs)

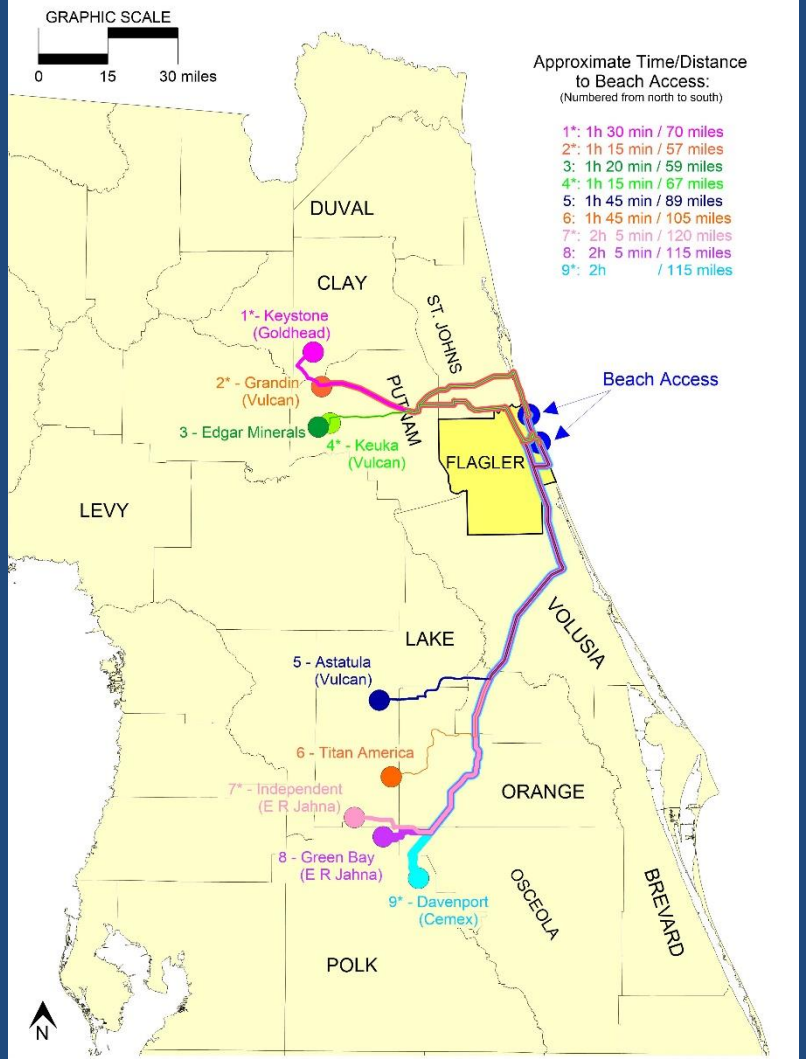
Flagler/FDOT = 1.5 Mcy (Initial Only)

Potentially Available = 8.9 Mcy

Tasks to Access Offshore Sand Source

- Collect additional physical, environmental, and cultural resource data in 3A and possible surrounding area
- Design expanded offshore borrow area
- Modify FDEP and USACE Permits
- Complete NEPA (USACE and BOEM) for expanded area (Joint EA required)
- Request, negotiate, and secure new BOEM lease agreement for new borrow area. BOEM lease agreement is valid for 2 years. Must be renewed for every dredge event.
- 24+ months (~2 years) to design and permit from NTP

UPLAND SAND SOURCES



These sources are available to use immediately.

Implementation Assumptions

- All sand placement from offshore will occur on USACE project schedule
- Fill density less than 20 cy/ft will be constructed by mechanical methods
- All sand placement along hardbottom areas will be by mechanical methods
- Dredge (Offshore) Mob/Demob = $3.5M per dredge event
- Cost of offshore sand (in-place) = $15.00 per cubic yard (mob/demob is separate)
- Cost of mechanical project Mob/Demob = $250,000 per event
- Cost of mechanically placed sand (in-place) = $55.00 per cubic yard
- PED/CEI = 10%
- Contingency = 15%

Same in-place price for upland sand and stockpiled/re-handled offshore sand

olsen associates, inc. Coastal Engineering

Sand Requirement (50-year)

Option	Volume Required (cy)						Volume Delineated Offshore (cy)	Volume Requirement Not Delineated (cy)
	Initial			Future				
	Total	Dredge	Mechanical	Dredge	Mechanical	Total		
1	2,330,860	1,937,500	393,360	945,000	150,000	7,310,860	5,900,000	1,410,860
2	2,550,660	1,937,500	613,160	945,000	150,000	7,530,660	5,900,000	1,630,660
3	3,010,660	2,397,500	613,160	945,000	150,000	7,990,660	5,900,000	2,090,660
4	3,083,560	2,553,800	529,760	945,000	550,000	9,063,560	5,900,000	3,163,560
5	3,272,460	3,272,460	0	945,000	550,000	9,252,460	5,900,000	3,352,460
6	4,083,540	4,083,540	0	945,000	550,000	10,063,540	5,900,000	4,163,540

Option 3 – Initial Project Cost by Shoreline Reach

Option 3
Beach & Dune Restoration (R4 to R101) / No Rock Impact (R4-R43.5)
Current Conditions for Available and Eligible Funding

													10.0%	15.0%					
									Sand										
	Shorefront Entity	Start	End	Critically Eroded FDEP	Shorefront Type	Shoreline Length (ft)	Percent of Total Shorefront	Volume Distribution (cy/ft)	Volume (cy)	Sand Source	Unit Cost	Subtotal Construction Cost	PED/CEI (8%)	Contingency (15%)	Total Cost ($)	Federal	State	Local	Notes
Dune Only (Nearshore Rock)	Town of Marineland	R-1	R-4		Local Government	3,000	3.25%	0.0	-	na	$ 55.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	Beach/Nearshore Rock
	Town of Marineland	R-4	R-4.6		Local Government	510	0.55%	16.0	8,160	Mechanical	$ 55.00	$ 448,800.00	$ 44,880.00	$ 74,052.00	$ 567,732.00	$ -	$ -	$ 567,732.00	Beach/Nearshore Rock
	Private / Matanzas Shores	R-4	R-11.9		Private	7,110	7.71%	16.0	113,800	Mechanical	$ 55.00	$ 6,259,000.00	$ 625,900.00	$ 1,032,735.00	$ 7,917,635.00	$ -	$ -	$ 7,917,635.00	Beach/Nearshore Rock
	Washington Oaks State Park	R-11.9	R-13.8		State of Florida	1,640	1.78%	16.0	26,200	Mechanical	$ 55.00	$ 1,441,000.00	$ 144,100.00	$ 237,765.00	$ 1,822,865.00	$ -	$ 1,822,865.00	$ -	Beach/Nearshore Rock
	Washington Oaks State Park	R-13.8	R-15.9		State of Florida	2,150	2.33%	16.0	34,400	Mechanical	$ 55.00	$ 1,892,000.00	$ 189,200.00	$ 312,180.00	$ 2,393,380.00	$ -	$ 2,393,380.00	$ -	Nearshore Rock
	Private (33 parcels)	R-15.9	R-18.3		Private	2,330	2.53%	16.0	37,300	Mechanical	$ 55.00	$ 2,051,500.00	$ 205,150.00	$ 338,498.00	$ 2,595,148.00	$ -	$ -	$ 2,595,148.00	Nearshore Rock
	Bay Drive Park	R-18.3	R.18.8		Flagler County	500	0.54%	16.0	8,000	Mechanical	$ 55.00	$ 440,000.00	$ 44,000.00	$ 72,600.00	$ 556,600.00	$ -	$ -	$ 556,600.00	Nearshore Rock
	Private / Sea Colony	R.18.8	R-20.6		Private	1,740	1.89%	16.0	27,800	Mechanical	$ 55.00	$ 1,529,000.00	$ 152,900.00	$ 252,285.00	$ 1,934,185.00	$ -	$ -	$ 1,934,185.00	Nearshore Rock
	MalaCompra	R-20.6	R-24.2		Flagler County	3,810	4.13%	16.0	61,000	Mechanical	$ 55.00	$ 3,355,000.00	$ 335,500.00	$ 553,575.00	$ 4,244,075.00	$ -	$ -	$ 4,244,075.00	Nearshore Rock
	Hammock Beach	R-24.2	R-29.3		Private	4,710	5.10%	16.0	75,400	Mechanical	$ 55.00	$ 4,147,000.00	$ 414,700.00	$ 684,255.00	$ 5,245,955.00	$ -	$ -	$ 5,245,955.00	Nearshore Rock
	Ocean Hammock	R-29.3	R-34.8		Private	5,680	6.16%	16.0	90,900	Mechanical	$ 55.00	$ 4,999,500.00	$ 499,950.00	$ 824,918.00	$ 6,324,368.00	$ -	$ -	$ 6,324,368.00	Nearshore Rock
	Jungle Hut	R-34.8	R-35		Flagler County	270	0.29%	16.0	4,300	Mechanical	$ 55.00	$ 236,500.00	$ 23,650.00	$ 39,023.00	$ 299,173.00	$ -	$ -	$ 299,173.00	Nearshore Rock
	Hammock Dunes	R-35	R-43.5		Private	7,870	8.53%	16.0	125,900	Mechanical	$ 55.00	$ 6,924,500.00	$ 692,450.00	$ 1,142,543.00	$ 8,759,493.00	$ -	$ -	$ 8,759,493.00	Nearshore Rock
Beach and Dune	Hammock Dunes	R-43.5	R-47.9		Private	4,450	4.82%	44.0	195,800	Offshore	$ 16.00	$ 3,132,800.00	$ 313,280.00	$ 516,912.00	$ 3,962,992.00	$ -	$ -	$ 3,962,992.00	
	Varn Park	R-47.9	R-49.4		Flagler County	1,400	1.52%	44.0	61,600	Offshore	$ 16.00	$ 985,600.00	$ 98,560.00	$ 162,624.00	$ 1,246,784.00	$ -	$ -	$ 1,246,784.00	
	Painters Hill	R-49.4	R-50		Private	660	0.72%	44.0	29,000	Offshore	$ 16.00	$ 464,000.00	$ 46,400.00	$ 76,560.00	$ 586,960.00	$ -	$ -	$ 586,960.00	
	Painters Hill	R-50	R-57		Private	5,720	6.20%	44.0	251,700	Offshore	$ 16.00	$ 4,027,200.00	$ 402,720.00	$ 664,488.00	$ 5,094,408.00	$ -	$ 2,547,204.00	$ 2,547,204.00	
	Painters Hill	R-57	R-60.5		Private	3,440	3.73%	44.0	151,400	Offshore	$ 16.00	$ 2,422,400.00	$ 242,240.00	$ 399,696.00	$ 3,064,336.00	$ -	$ -	$ 3,064,336.00	
	City of Beverly Beach	R-60.5	R-65.2		Local Government	4,520	4.90%	44.0	198,900	Offshore	$ 16.00	$ 3,182,400.00	$ 318,240.00	$ 525,096.00	$ 4,025,736.00	$ -	$ -	$ 4,025,736.00	
	City of Beverly Beach	R-65.2	R-66.8		Local Government	1,450	1.57%	44.0	63,800	Offshore	$ 16.00	$ 1,020,800.00	$ 102,080.00	$ 168,432.00	$ 1,291,312.00	$ -	$ 645,656.00	$ 645,656.00	
	City of Flagler Beach - North	R-66.8	R-70		Local Government	3,150	3.41%	44.0	138,600	Offshore	$ 16.00	$ 2,217,600.00	$ 221,760.00	$ 365,904.00	$ 2,805,264.00	$ -	$ 1,402,632.00	$ 1,402,632.00	
	City of Flagler Beach - North	R-70	R-79.8		Local Government	9,310	10.09%	44.0	409,600	Offshore	$ 16.00	$ 6,553,600.00	$ 655,360.00	$ 1,081,344.00	$ 8,290,304.00	$ -	$ -	$ 8,290,304.00	Existing Local Project
	City of Flagler Beach - Central North	R-79.8	R-94.2		Local Government	13,440	14.57%	44.0	580,000	Offshore	$ 24.00	$ 13,920,000.00	$ 1,392,000.00	$ 2,296,800.00	$ 17,608,800.00	$ 9,100,000.00	$ -	$ 8,508,800.00	Existing Federal Project
	City of Flagler Beach - Central South	R-94.2	R-95		Local Government	750	0.81%	44.0	33,000	Offshore	$ 16.00	$ 528,000.00	$ 52,800.00	$ 87,120.00	$ 667,920.00	$ -	$ -	$ 667,920.00	Existing Local Project
	Gamble Rogers Memorial SRA	R-95	R-97.5		State of Florida	2,190	2.37%	60.0	131,400	Offshore	$ 16.00	$ 2,102,400.00	$ 210,240.00	$ 346,896.00	$ 2,659,536.00	$ -	$ 2,659,536.00	$ -	Existing FDEP Project
	City of Flagler Beach - South	R-97.5	R-101		Local Government	3,470	3.76%	44.0	152,700	Offshore	$ 16.00	$ 2,443,200.00	$ 244,320.00	$ 403,128.00	$ 3,090,648.00	$ -	$ -	$ 3,090,648.00	Existing Local Project
						92,270	feet		3,010,660		Total	$ 76,723,800.00	$ 7,672,380.00	$ 12,659,429.00	$ 97,055,609.00	$ 9,100,000.00	$ 11,471,273.00	$ 76,484,336.00	

Option 3
Beach & Dune Restoration (R4 to R101)
No Rock Impact (R4-R43.5)

	Item	Quantity	Units	Unit Cost	Cost	Total Cost	Shoreline Length (ft)	FDEP Designation	Federal	State/FDEP	Local	FDOT
Sand Placement - Dredge from Offshore Sand Source (OCS)												
								Distribution of "Construction" Cost -->	0.00%	16.60%	83.40%	0.00%
1	Mobilization/Demobilization	1	job	$3,500,000	$ 3,500,000							
2	Federal (R80-R94)	580,000	cy	$16	$ 9,280,000	$ 12,780,000	13,440	Critically Eroded	$ 8,307,000.00	$ -	$ -	$ 4,473,000.00
3	County/FDOT (R70-R80 / R94-R101)	726,700	cy	$16	$ 11,627,200	$ 11,627,200	15,720	Critically Eroded	$ -	$ 2,365,200.00	$ 2,598,400.00	$ 6,663,600.00
4	County (R43.5-R70)	1,090,800	cy	$16	$ 17,452,800	$ 17,452,800	24,790	10,320' Critically Eroded	$ -	$ 3,632,773.22	$ 13,820,026.78	$ -
				subtotal - dredging	$ 41,860,000	$ 41,860,000	53,950		$ 8,307,000.00	$ 5,997,973.22	$ 16,418,426.78	$ 11,136,600.00
Sand Placement - Truck Haul from Upland Sand Source												
5	Mobilization/Demobilization	1	job	$250,000	$ 250,000							
6	County (R3-R43.5)	613,160	cy	$55	$ 33,723,800							
				subtotal - truck haul	$ 33,973,800	$ 33,973,800	38,320		$ -	$ 3,360,143.58	$ 30,613,656.42	$ -
				subtotal - construction	**$ 75,833,800**	**$ 75,833,800**			**$ 8,307,000.00**	**$ 9,358,116.80**	**$ 47,032,083.20**	**$ 11,136,600.00**
				PED/CEI/Monitoring	10% $ 7,583,380	$ 7,583,380			$ -	$ 1,258,483.85	$ 6,324,896.15	$ -
				subtotal	$ 83,417,180							
				Contingency	15% $ 11,375,070	$ 11,375,070			$ -	$ 1,887,725.77	$ 9,487,344.23	$ -
				Total	**$ 94,792,250**	**$ 94,792,250**	**92,270**		**$ 8,307,000.00**	**$ 12,504,326.41**	**$ 62,844,323.59**	**$ 11,136,600.00**

Future Dredging
Beach & Dune Renourishment (R43.5 to R101)

	Item	Quantity	Units	Unit Cost	Cost	Total Cost	Shoreline Length (ft)	FDEP Designation	Federal	State/FDEP	Local	FDOT
Sand Placement - Dredge from Offshore Sand Source (OCS)												
								Distribution of "Construction" Cost -->	23.15%	31.00%	45.86%	0.00%
7	Mobilization/Demobilization	1	job	$3,500,000	$ 3,500,000							
8	Federal (R80-R94)	320,000	cy	$16	$ 5,120,000	$ 8,620,000	13,440	Critically Eroded	$ 4,310,000.00	$ 2,155,000.00	$ 2,155,000.00	$ -
9	County/FDEP (R70-R80 / R94-R101)	325,000	cy	$16	$ 5,200,000	$ 5,200,000	15,720	Critically Eroded	$ -	$ 2,617,520.00	$ 2,582,480.00	$ -
10	County/FDEP (R43.5-R70)	300,000	cy	$16	$ 4,800,000	$ 4,800,000	24,790	10,320' Critically Eroded	$ -	$ 999,112.55	$ 3,800,887.45	$ -
				subtotal - construction	**$ 18,620,000**	**$ 18,620,000**			**$ 4,310,000.00**	**$ 5,771,632.55**	**$ 8,538,367.45**	**$ -**
				PED/CEI	10% $ 1,862,000	$ 1,862,000			$ 431,000.00	$ 577,163.25	$ 853,836.75	$ -
				subtotal	$ 20,482,000	$ 20,482,000						
				Contingency	15% $ 3,072,300	$ 3,072,300			$ 711,150.00	$ 952,319.37	$ 1,408,830.63	$ -
				Total	**$ 23,554,300**	$ 23,554,300	**53,950**		**$ 5,452,150.00**	**$ 7,301,115.17**	**$ 10,801,034.83**	**$ -**

Future Truck Haul
Beach & Dune Renourishment (R4 to R43.5)
(3 yrs at 50,000 cy/yr)

	Item	Quantity	Units	Unit Cost	Cost	Total Cost	Shoreline Length (ft)	FDEP Designation	Federal	State/FDEP	Local	FDOT
Sand Placement - Truck Haul from Upland Sand Source												
10	Mobilization/Demobilization	1	job	$250,000	$ 250,000							
11	County (R3-R43.5)	150,000	cy	$55	$ 8,250,000			Distribution of "Construction" Cost -->	0.00%	9.89%	90.11%	0.00%
				subtotal - construction	**$ 8,500,000**	**$ 8,500,000**	**38,320**			**$ 840,683.72**	**$ 7,659,316.28**	
				PED/CEI	10% $ 850,000	$ 850,000			$ -	$ 84,068.37	$ 765,931.63	$ -
				subtotal	$ 9,350,000							
				Contingency	15% $ 1,402,500	$ 1,402,500			$ -	$ 138,712.81	$ 1,263,787.19	$ -
				Total	**$ 10,752,500**	**$ 10,752,500**	**38,320**		**$ -**	**$ 1,063,464.90**	**$ 9,689,035.10**	**$ -**

Option 3 – Equivalent Annual Cost Analysis

Year		Dredge (Offshore)	Truck Haul (Upland)	Total Cost	Present Worth Cost	Distributed Total Cost				Distributed Present Worth Cost			
						Federal	State	Local	FDOT	Federal	State/FDEP	Local	FDOT
0	2022	$94,792,250.00		$94,792,250.00	$94,792,300.00	$ 8,307,000.00	$ 12,504,326.41	$ 62,844,323.59	$ 11,136,600.00	$ 8,307,000.00	$ 12,504,300.00	$ 62,844,300.00	$ 11,136,600.00
1	2023			$0.00	$0.00								
2	2024			$0.00	$0.00								
3	2025		$10,752,500.00	$10,752,500.00	$9,840,100.00	$ -	$ 1,063,464.90	$ 9,689,035.10	$ -	$ -	$ 973,200.00	$ 8,866,800.00	$ -
4	2026			$0.00	$0.00								
5	2027			$0.00	$0.00								
6	2028		$10,752,500.00	$10,752,500.00	$9,005,000.00	$ -	$ 1,063,464.90	$ 9,689,035.10	$ -	$ -	$ 890,600.00	$ 8,114,400.00	$ -
7	2029			$0.00	$0.00								
8	2030			$0.00	$0.00								
9	2031		$10,752,500.00	$10,752,500.00	$8,240,900.00	$ -	$ 1,063,464.90	$ 9,689,035.10	$ -	$ -	$ 815,100.00	$ 7,425,800.00	$ -
10	2032			$0.00	$0.00								
11	2033	$23,554,300.00		$23,554,300.00	$17,016,100.00	$ -	15.17	$ 10,801,034.83	$ -	$ -			
12													
					$0.00								
48	2070		$10,752,500.00	$10,752,500.00	$2,602,100.00	$ -	$ 1,063,464.90	$ 9,689,035.10	$ -	$ -	$ 257,400.00	$ 2,344,700.00	$ -
49	2071			$0.00	$0.00								
50	2072			$0.00	$0.00								
				Total Present Worth	$227,294,200.00	$ 30,115,600.00	$ 58,724,225.50	$ 261,073,024.50	$ 11,136,600.00	$ 18,631,700.00	$ 35,024,000.00	$ 162,501,700.00	$ 11,136,600.00
				Discount Rate	3.00%								
				Amortization Period (years)	50								
				Capital Recovery Factor	0.038865494					Federal	State	Local	FDOT
				Average Annual Equivalent Cost	**$8,833,900.00**					**$ 724,100.00**	**$ 1,361,200.00**	**$ 6,315,700.00**	**$ 432,800.00**

Comparison of Alternatives

Option	Volume (cy)					Assumed Hardbottom Mitigation		Construction Cost					Average Annual Equivalent Cost (Planning Period: 50 years - Discount Rate: 3%)				
	Initial			Future					Future Dredge		Future Mechanical						
	Total	Dredge	Mechanical	Dredge	Mechanical	Area (acres)	Cost (Million $)	Initial Cost		Freq. (yrs)		Freq. (yrs)	Total	USACE	FDEP	Local	FDOT
1	2,330,860	1,937,500	393,360	945,000	150,000	0.0	$ -	$ 70,481,000	$ 23,554,300	11	$ 10,752,500	3	**$ 7,889,000**	$ 724,100.00	$ 1,260,300.00	**$ 5,471,800.00**	$ 432,800.00
2	2,550,660	1,937,500	613,160	945,000	150,000	0.0	$ -	$ 85,592,250	$ 23,554,300	11	$ 10,752,500	3	**$ 8,476,300**	$ 724,100.00	$ 1,314,000.00	**$ 6,005,400.00**	$ 432,800.00
3	3,010,660	2,397,500	613,160	945,000	150,000	0.0	$ -	$ 94,792,250	$ 23,554,300	11	$ 10,752,500	3	**$ 8,833,900**	$ 724,100.00	$ 1,361,200.00	**$ 6,315,700.00**	$ 432,800.00
4*	3,083,560	3,083,560	0	945,000	550,000	11.5	$ 27.0	$ 100,157,514	$ 23,554,300	11	$ 38,582,500	11	**$ 8,465,900**	$ 724,100.00	$ 1,327,000.00	**$ 5,981,900.00**	$ 432,800.00
5**	3,272,460	3,272,460	0	945,000	550,000	19.9	$ 54.7	$ 128,712,991	$ 23,554,300	11	$ 38,582,500	11	**$ 9,575,800**	$ 724,100.00	$ 1,433,300.00	**$ 6,985,500.00**	$ 432,800.00
6***	4,083,540	4,083,540	0	945,000	550,000	97.1	$ 228.2	$ 375,732,375	$ 23,554,300	11	$ 38,582,500	11	**$ 19,176,300**	$ 724,100.00	$ 2,376,400.00	**$ 15,642,900.00**	$ 432,800.00

Potential Range of Local Share (AA) = ~$5.5M to $7.0M / yr

Ex: Option 3 - Alongshore Distribution of Local Share

	Option 3 Beach & Dune Restoration (R4 to R101) / No Rock Impact (R4-R43.5) Current Conditions for Available and Eligible Funding						$6,315,700.00		$6,315,700.00			
	Shorefront Entity	Start	End	Type	Shoreline Length (ft)	Sand Volume (cy)	Total Initial Cost	Percent of Total Initial Cost	Distribution of Average Annual Local Requirement	Percent of Shoreline Length	Distribution of Average Annual Local Requirement	Percent of Sand Volume	Distribution of Average Annual Local Requirement
Dune Only (Nearshore Rock)	Town of Marineland	R-1	R-4	Local Government	3,000	-	$ -	0.00%	$ -	3.15%	$ 198,877.93	0.00%	$ -
	Town of Marineland	R-4	R-4.6	Local Government	510	8,160	$ 448,800.00	0.58%	$ 36,944.03	0.54%	$ 33,809.25	0.27%	$ 17,117.88
	Private / Matanzas Shores	R-4.6	R-11.9	Private	7,110	113,800	$ 6,259,000.00	8.16%	$ 515,224.30	7.46%	$ 471,340.68	3.78%	$ 238,727.28
	Washington Oaks State Park	R-11.9	R-13.8	State of Florida	1,640	26,200	$ 1,441,000.00	1.88%	$ 118,619.30	1.72%	$ 108,719.93	0.87%	$ 54,961.82
	Washington Oaks State Park	R-13.8	R-15.9	State of Florida	2,150	34,400	$ 1,892,000.00	2.47%	$ 155,744.43	2.26%	$ 142,529.18	1.14%	$ 72,163.61
	Private (33 parcels)	R-15.9	R-18.3	Private	2,330	37,300	$ 2,051,500.00	2.67%	$ 168,874.05	2.45%	$ 154,461.86	1.24%	$ 78,247.17
	Bay Drive Park	R-18.3	R.18.8	Flagler County	500	8,000	$ 440,000.00	0.57%	$ 36,219.63	0.52%	$ 33,146.32	0.27%	$ 16,782.23
	Private / Sea Colony	R.18.8	R-20.6	Private	1,740	27,800	$ 1,529,000.00	1.99%	$ 125,863.23	1.83%	$ 115,349.20	0.92%	$ 58,318.26
	MalaCompra	R-20.6	R-24.2	Flagler County	3,810	61,000	$ 3,355,000.00	4.37%	$ 276,174.71	4.00%	$ 252,574.97	2.03%	$ 127,964.53
	Hammock Beach	R-24.2	R-29.3	Private (DCDD)	4,710	75,400	$ 4,147,000.00	5.41%	$ 341,370.06	4.94%	$ 312,238.34	2.50%	$ 158,172.55
	Ocean Hammock	R-29.3	R-34.8	Private (DCDD)	5,680	90,900	$ 4,999,500.00	6.52%	$ 411,545.60	5.96%	$ 376,542.21	3.02%	$ 190,688.13
	Jungle Hut	R-34.8	R-35	Flagler County	270	4,300	$ 236,500.00	0.31%	$ 19,468.05	0.28%	$ 17,899.01	0.14%	$ 9,020.45
	Hammock Dunes	R-35	R-43.5	Private (DCDD)	7,870	125,900	$ 6,924,500.00	9.03%	$ 570,006.50	8.26%	$ 521,723.09	4.18%	$ 264,110.40
Beach and Dune	Hammock Dunes	R-43.5	R-47.9	Private (DCDD)	4,450	195,800	$ 3,132,800.00	4.08%	$ 257,883.80	4.67%	$ 295,002.26	6.50%	$ 410,745.17
	Varn Park	R-47.9	R-49.4	Flagler County	1,400	61,600	$ 985,600.00	1.28%	$ 81,131.98	1.47%	$ 92,809.70	2.05%	$ 129,223.20
	Painters Hill	R-49.4	R-50	Private	660	29,000	$ 464,000.00	0.60%	$ 38,195.25	0.69%	$ 43,753.14	0.96%	$ 60,835.60
	Painters Hill	R-50	R-57	Private	5,720	251,700	$ 4,027,200.00	5.25%	$ 331,508.44	6.00%	$ 379,193.91	8.36%	$ 528,011.03
	Painters Hill	R-57	R-60.5	Private	3,440	151,400	$ 2,422,400.00	3.16%	$ 199,405.55	3.61%	$ 228,046.69	5.03%	$ 317,603.77
	City of Beverly Beach	R-60.5	R-65.2	Local Government	4,520	198,900	$ 3,182,400.00	4.15%	$ 261,966.74	4.74%	$ 299,642.74	6.61%	$ 417,248.29
	City of Beverly Beach	R-65.2	R-66.8	Local Government	1,450	63,800	$ 1,020,800.00	1.33%	$ 84,029.55	1.52%	$ 96,124.33	2.12%	$ 133,838.31
	City of Flagler Beach - North	R-66.8	R-70	Local Government	3,150	138,600	$ 2,217,600.00	2.89%	$ 182,546.96	3.31%	$ 208,821.82	4.60%	$ 290,752.20
	City of Flagler Beach - North	R-70	R-79.8	Local Government	9,310	409,600	$ 6,553,600.00	8.54%	$ 539,474.99	9.77%	$ 617,184.50	13.60%	$ 859,250.37
	City of Flagler Beach - Central North	R-79.8	R-94.2	Local Government	13,440	580,000	$ 13,920,000.00	18.14%	$ 1,145,857.53	14.11%	$ 890,973.11	19.26%	$ 1,216,711.95
	City of Flagler Beach - Central South	R-94.2	R-95	Local Government	750	33,000	$ 528,000.00	0.69%	$ 43,463.56	0.79%	$ 49,719.48	1.10%	$ 69,226.71
	Gamble Rogers Memorial SRA	R-95	R-97.5	State of Florida	2,190	131,400	$ 2,102,400.00	2.74%	$ 173,064.00	2.30%	$ 145,180.89	4.36%	$ 275,648.19
	City of Flagler Beach - South	R-97.5	R-101	Local Government	3,470	152,700	$ 2,443,200.00	3.18%	$ 201,117.75	3.64%	$ 230,035.47	5.07%	$ 320,330.89
				Total	95,270	3,010,660	$ 76,723,800.00	100.00%	$ 6,315,700.00	100.00%	$ 6,315,700.00	100.00%	$ 6,315,700.00

Ex: Option 3 - Alongshore Distribution of Local Share

Type	Shoreline Length (ft)	Sand Volume (cy)	Total Initial Cost	Percent of Total Initial Cost	Distribution of Average Annual Local Requirement
State of Florida (1)	5,980	192,000	$ 5,304,000.00	7.08%	$ 447,205.01
Flagler County (2)	5,980	134,900	$ 4,955,500.00	6.62%	$ 417,821.35
Local Government (3)	39,600	1,584,760	$ 29,317,800.00	39.14%	$ 2,471,920.65
Private	43,710	1,099,000	$ 35,329,000.00	47.16%	$ 2,978,752.99
Total	95,270	3,010,660	$ 74,906,300.00	100.00%	$ 6,315,700.00

(1) Washington Oaks SP and GRMSRA
(2) Flagler County control shorefront (County parks)
(3) Town of Marineland, Town of Beverly Beach, and City of Flagler Beach
(4) Distribution of local share can be based upon “Total Cost”, “Shoreline Length”, “Volume of Sand Placed”, etc…

Key Implementation Tasks

- Conduct physical and environmental surveys of offshore borrow area and beach and nearshore area (R-3 to R-65; ~11.6 miles)
- Develop dune and beach design
- Expand offshore borrow area design to accommodate immediate and long-term need
- Seek FDEP and USACE permits / Long-term easements
- Identify funding opportunities / availability
- Consider Review of FDEP and USACE Cost-Sharing Rates

Plan Implementation (County Lead)

- Flagler County assumes governance over all 18 miles of project shoreline
  - Local sponsor and administrative head for all activities
  - Ensures comprehensive and consistent approach
  - Maximizes grant and public assistance funding (FDEP, FEMA, etc…)

- Secure Interlocal Agreements (ILA), Memorandums of Agreements (MOA), etc. with local stakeholders to establish administrative and funding responsibilities
  - Funding contributions from local stakeholders can vary according to mutually agreed upon criteria (e.g., public vs. private shorefront, public access, etc.)

- Sand placement along State Park shorelines eligible for 100% State funding

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Funding

- USACE – Shore Protection Project (65-35 where eligible)
- FDEP – Beaches Funding Assistance (50-50 where eligible)
- Local Share (USACE/FDEP funding requires local match)
  - Local stakeholders
    - Flagler County
    - Beachfront municipalities
    - Private Interests (unincorporated areas)
  - TDC, Special Assessment, MSBU, MSTU, DCDD, etc…

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Next Steps

- Wrap up Beach Management Study
- Select a Preferred Plan / Approach
- Decide on Administrative Strategy for Project Implementation and Management
- Funding Strategy for Local Share
- Evaluate pros/cons of potential expansion of USACE and FDEP Funding Assistance (any increase will reduce local contribution)

FDEP Critically Eroded Designation

- Revisit Critically Erosion Designation (CED) with FDEP
- Potential opportunity to extend CED to the southern end of Varn Park, adding S. Painters Hill and N. Beverly Beach
- Recent erosion (post-2014) and Continuity of Management for comprehensive County plan
- Success would expand CED to more than half of Flagler County, increasing eligibility for FDEP funding assistance

Potential Expansion of Federal Beach Project

- Requires new Feasibility Study (3-3-3) ($1.5M local cost)
- Existing project based upon 2014 (pre-Matthew/Irma) conditions
- There may be increased opportunities for Federal participation due to change in conditions from Hurricanes Matthew and Irma
- Extent of any increase will be difficult to identify before study is complete
- Three (3) year study and risk of no added benefit to County

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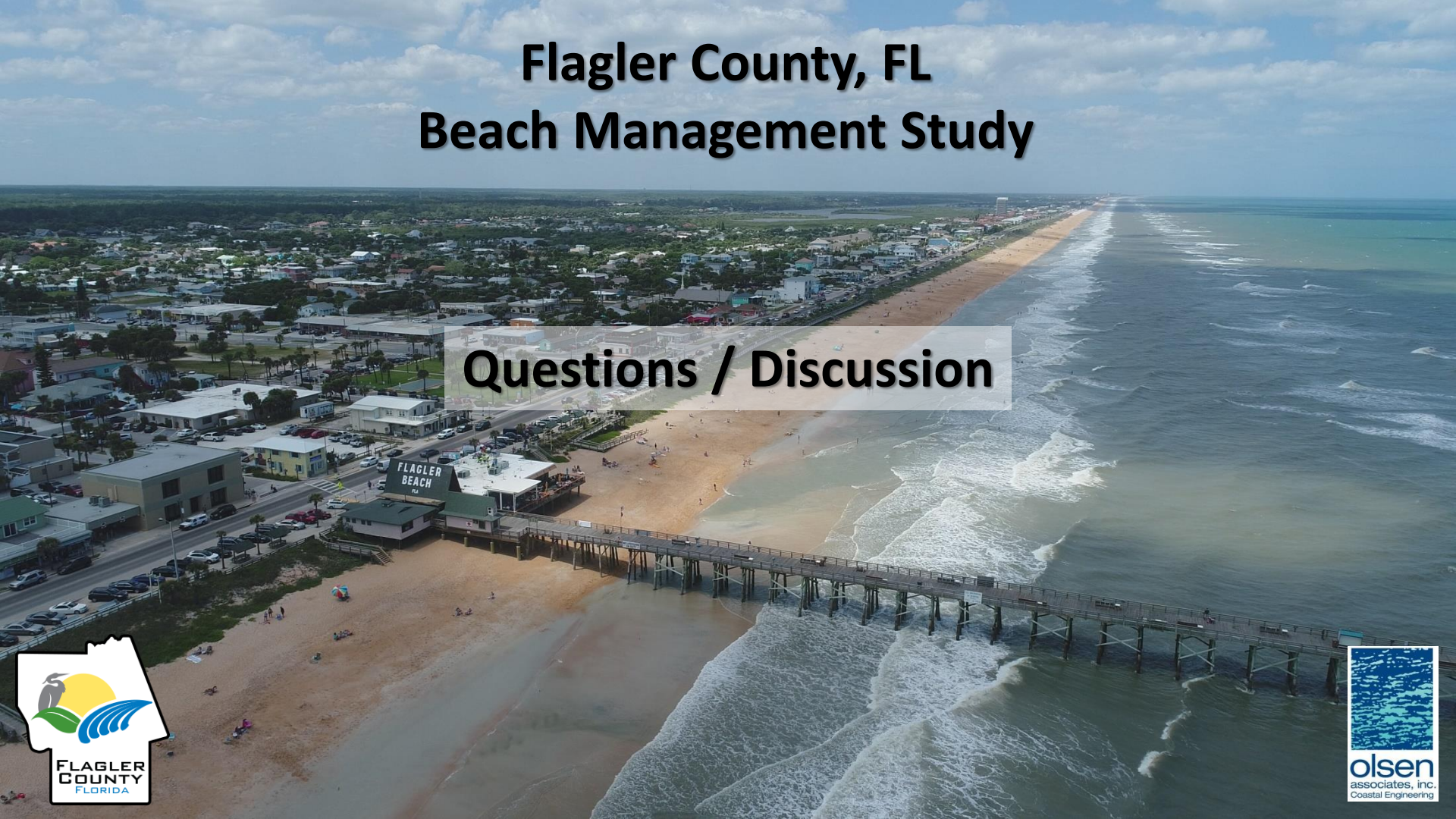
Flagler County, FL
Beach Management Study



Questions / Discussion

FLAGLER COUNTY FLORIDA

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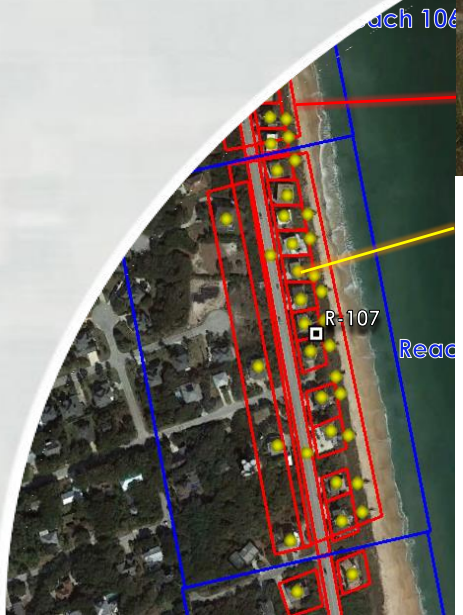
U.S. ARMY CORPS OF ENGINEERS
FEASIBILITY STUDY PROCESS - (CONCEPT TO CONSTRUCTION)

Flagler County Board of County Commissioners Workshop

Presented by:
Jason Harrah, Senior Project Manager
U.S. Army Corps of Engineers
Jacksonville District

February 7, 2022



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US Army Corps of Engineers
BUILDING STRONG®

PRESENTATION OUTLINE

BUILDING STRONG

- Civil Works Process Overview
- Feasibility Phase
- Project Life Cycle
- Discussion of Previous Flagler Study
- Conclusion (Q&A)

FEASIBILITY STUDIES

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- The Corps Feasibility Study is a formal ***three-year process*** used to ***identify water resource problems***, ***formulate and evaluate solutions***, ***determine federal interest*** and ***prepare recommendations***.

- Initiated when a local sponsor asks USACE to conduct a study ***through a formal letter to the district commander***.

- Studies are ***cost shared*** with a Sponsor (i.e., State, Tribe county, city, town, etc.) that has the ***legal and financial authority*** and capability to ***provide funding and real property requirements*** needed for a study and future project.

FEASIBILITY STUDIES (CONT.)

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- Before USACE becomes involved in a study, two types of Congressional authority are required:
  - ***Study Authority*** (typically in Water Resource Development Act (WRDA))
  - ***Budget Appropriations*** (allows expenditure of federal funds, PBUD or Work Plans)

- If there is no study authority currently available, ***community reps may contact their Congressional delegation to request a new study authority*** and may also submit a proposal for Congressional consideration via the Assistant Secretary of the Army's Annual Report to Congress on Future Water Resources Development.

- Once a study authority is available, the ***Corps will request federal funding annual to initiate the study***. Once budget appropriations are available, ***the study may begin***.

FEASIBILITY STUDIES (CONT.)

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- Since 2012, USACE has implemented a new study process – ***SMART*** (Specific, Measurable, Attainable, Risk Informed, Timely) Planning – for conducting civil works feasibility studies.

- The goal of this new process is to:
  - complete each study within ***three years***
  - complete at a cost of no more than ***$3 million***
  - complete with ***three levels of the Corps engagement***

WHAT IS SMART PLANNING?

SMART Planning is:

- **S:** Specific
- **M:** Measurable
- **A:** Attainable
- **R:** Risk Informed
- **T:** Timely

- Study begins when Corps and non-Fed sponsor sign a feasibility cost share agreement (FCSA). Funding is spread out over the 3-years.

- Study ends when the Chief of Engineers signs a "***Chiefs Report***" and transmits it to the Assistant Secretary of the Army for Civil Works (ASA-CW), then to the Office of Management and Budget (OMB), then to Congress for authorization to construct.

SMART PLANNING STUDY PROCESS AND MAJOR MILESTONES

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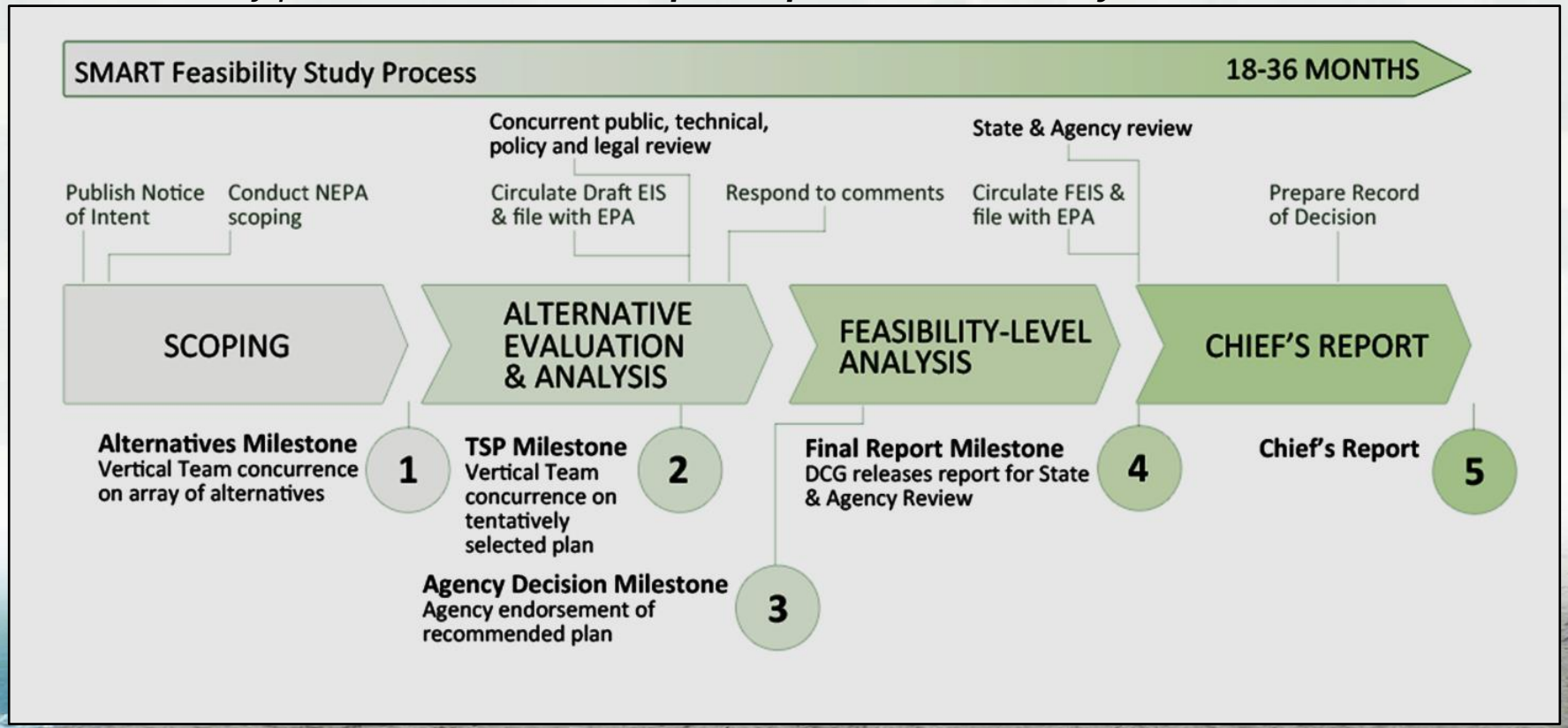
*The study process includes **four separate phases** and **five key decision milestones***



SMART PLANNING STUDY PROCESS AND MAJOR MILESTONES

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SCOPING

3-6 months

- Identify Study Objectives
- Define Problems & Opportunities
- NEPA Scoping
- Inventory & Forecast
- Formulate Alternative Plans
- Evaluate Alternatives & Identify Reasonable Array

1 ALTERNATIVE MILESTONE

Vertical concurrence on array of Alternatives

ALTERNATIVE EVALUTION & ANALYSIS

6-13 months

- Analyze, Evaluate and Compare Alternatives to Identify the Tentatively Selected Plan
- Develop the "Future without Project Condition"
- Prepare the Draft Integrated Feasibility Report and Environmental Documentation
- Secure a Waiver from the ASA(CW) if a Locally Preferred Plan is being Pursued

2 TSP MILESTONE

Vertical Team Concurrence on Tentatively Selected Plan

- Release Draft Integrated Feasibility/NEPA Report for Concurrent Review

3 AGENCY DECISION MILESTONE

Agency Endorsement of Recommended Plan

FEASIBILITY LEVEL ANALYSIS

6-13 months

- Consider and Respond to Public Comment and Corps Technical, Legal and Policy Review Comments
- Consultation Activities (including ESA and MSA)
- Develop Sufficient Detail on Cost and Benefits of Proposed Project and Social, Environmental and Economic Impacts to Provide a Policy-Compliant Recommendation
- Incorporate Environmental Documentation in Integrated Feasibility Study Report
- Final Integrated Report Package Transmitted to Corps HQ

4 CIVIL WORKS REVIEW BOARD

Release Report for State & Agency Review

CHIEF'S REPORT

3-4 months

- Corps HQ Develops the Chief's Report with the recommendation of a Specific Water Resources Development Project for Congressional Authorization

5 CHIEF'S REPORT

Chief's Report Signed

SMART PLANNING STUDY PROCESS AND MAJOR MILESTONES

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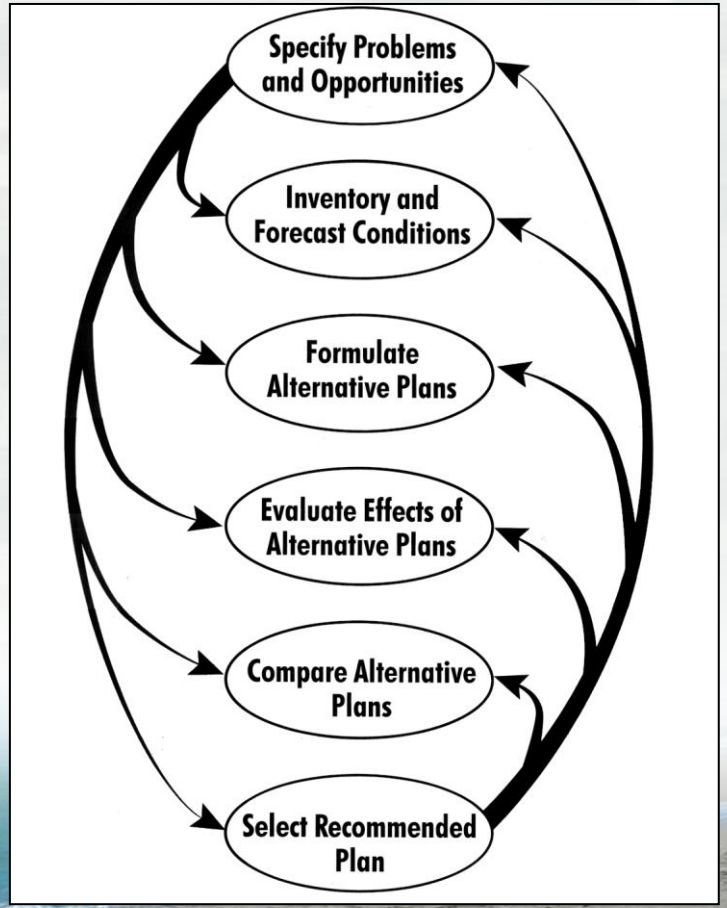
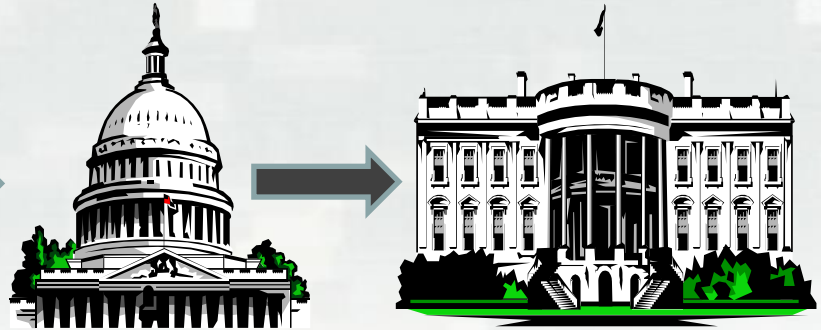
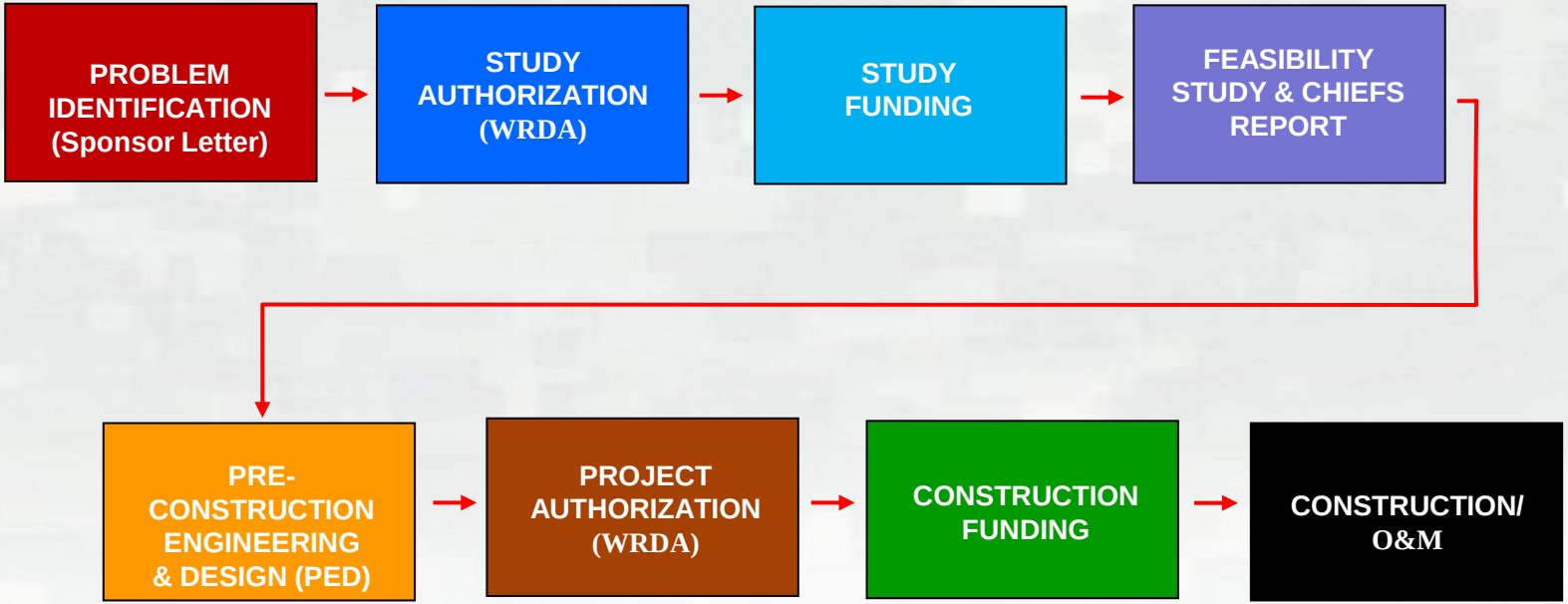




USACE LIFE CYCLE PROJECT DELIVERY PROCESS

BUILDING STRONG

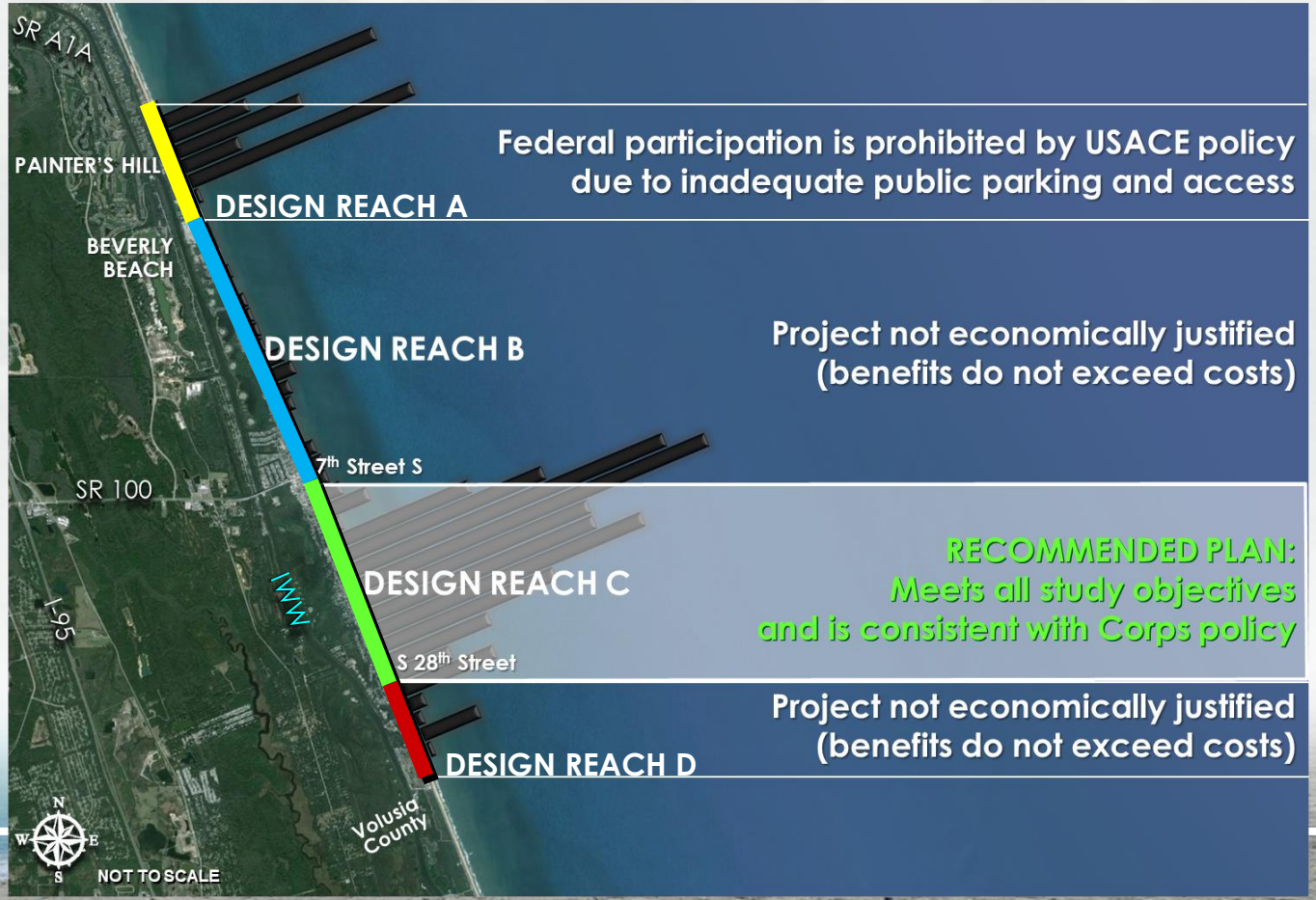


KEY FACTORS FOR A SUCCESSFUL COASTAL STUDY

- Sponsor, Agency and Public Involvement during ALL phases of the project!
- Develop an Environmentally Sound Project meeting policy regulations!
- Positive ***Benefit*** (reduction of future damages) to ***Cost*** (50-year project cost) Ratio (BCR) must be greater than 1.
- Study full array of alternatives to include:
  - ***Soft Structural*** (i.e., beach nourishment, dune construction, living shorelines, etc.)
  - ***Hard Structural*** (i.e., coastal armoring, groins, breakwaters, etc.)
  - ***Non-Structural*** (i.e., acquisition, relocation, elevating, floodproofing, etc.)
- ***Public Access is Required*** for Cost Sharing of Many Coastal Alternatives
  - Access Points must be no more than ½ mile apart
  - Beach is open and accessible to all
  - Parking is available at access points (free or reasonable fees)

KEY FINDINGS FROM PREVIOUS FLAGLER STUDY

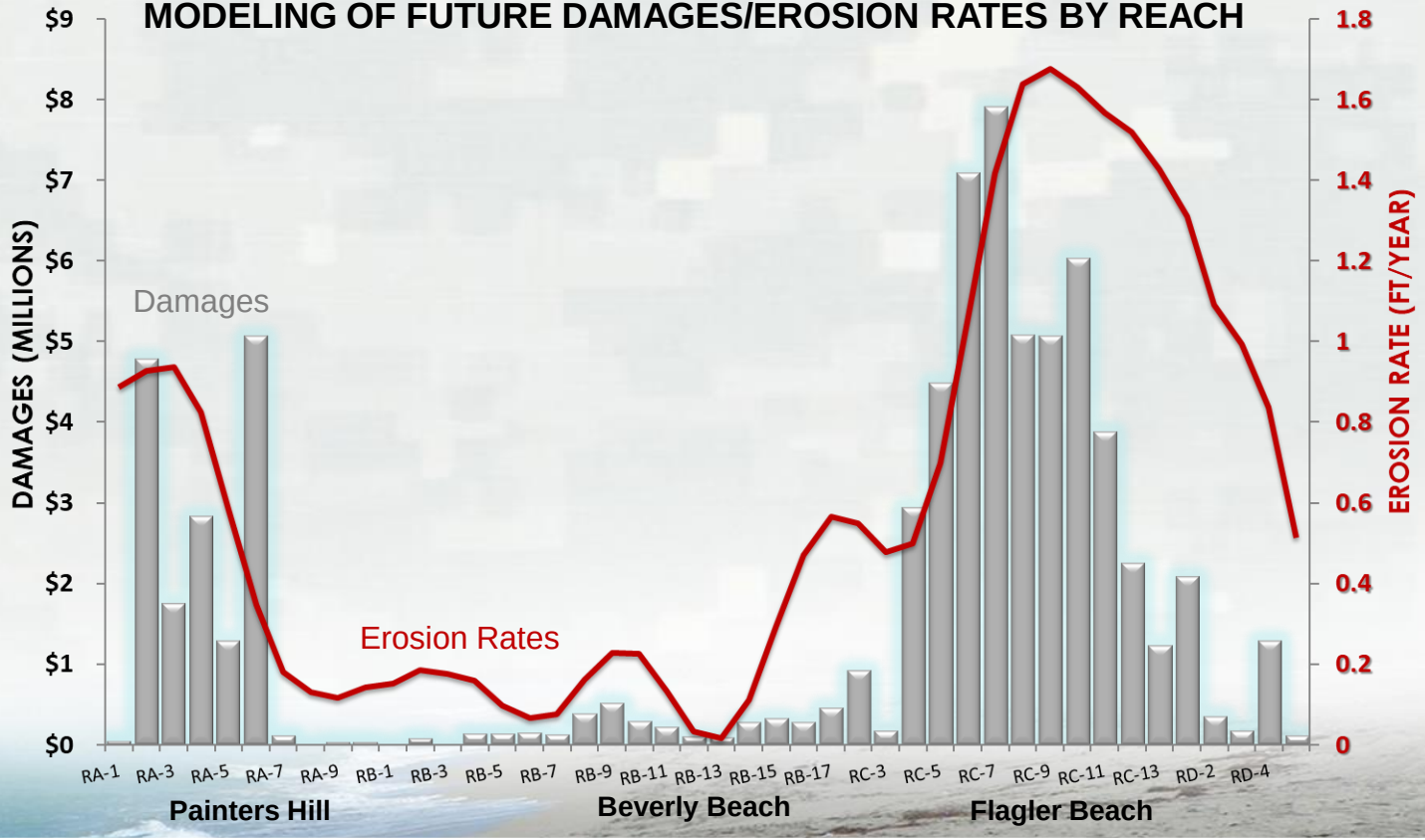
BUILDING STRONG



KEY FINDINGS FROM PREVIOUS FLAGLER STUDY

BUILDING STRONG

MODELING OF FUTURE DAMAGES/EROSION RATES BY REACH



KEY FINDINGS FROM PREVIOUS FLAGLER STUDY

Final Array of 8 Alternatives	Benefits	Cost	Net Benefits
10' dune & profile extension in reach A	$220,000	$170,000	$52,000
10' dune & 20' berm extension in reach A	$690,000	$700,000	-$16,000
10' dune & profile extension in reach B	$200,000	$250,000	-$57,000
10' dune & 20' berm extension in reach B	$210,000	$1,030,000	-$809,000
10' dune & profile extension in reach C (NED Plan)	**$2,190,000**	**$810,000**	**$1,387,000**
10' dune & 20' berm extension in reach C	$2,250,000	$1,180,000	$1,065,000
10' dune & profile extension in reaches A&C	**$2,940,000**	**$1,130,000**	**$1,814,000**
10' dune & 20' berm extension in reaches A&C	$2,960,000	$1,750,000	$1,206,000

* FY11 Price Levels & Discount Rate

RECOMMENDED PLAN:
Meets all study objectives and is consistent with Corps policy

Project not economically justified (benefits do not exceed costs)

THANK YOU!

BUILDING STRONG

Jason.S.Harrah@usace.army.mil

Office: 904-232-1381