

City of Isle of Palms Beach Preservation Committee

Beach Management Alternatives Analysis – Findings Discussion



September 2, 2026

Outline

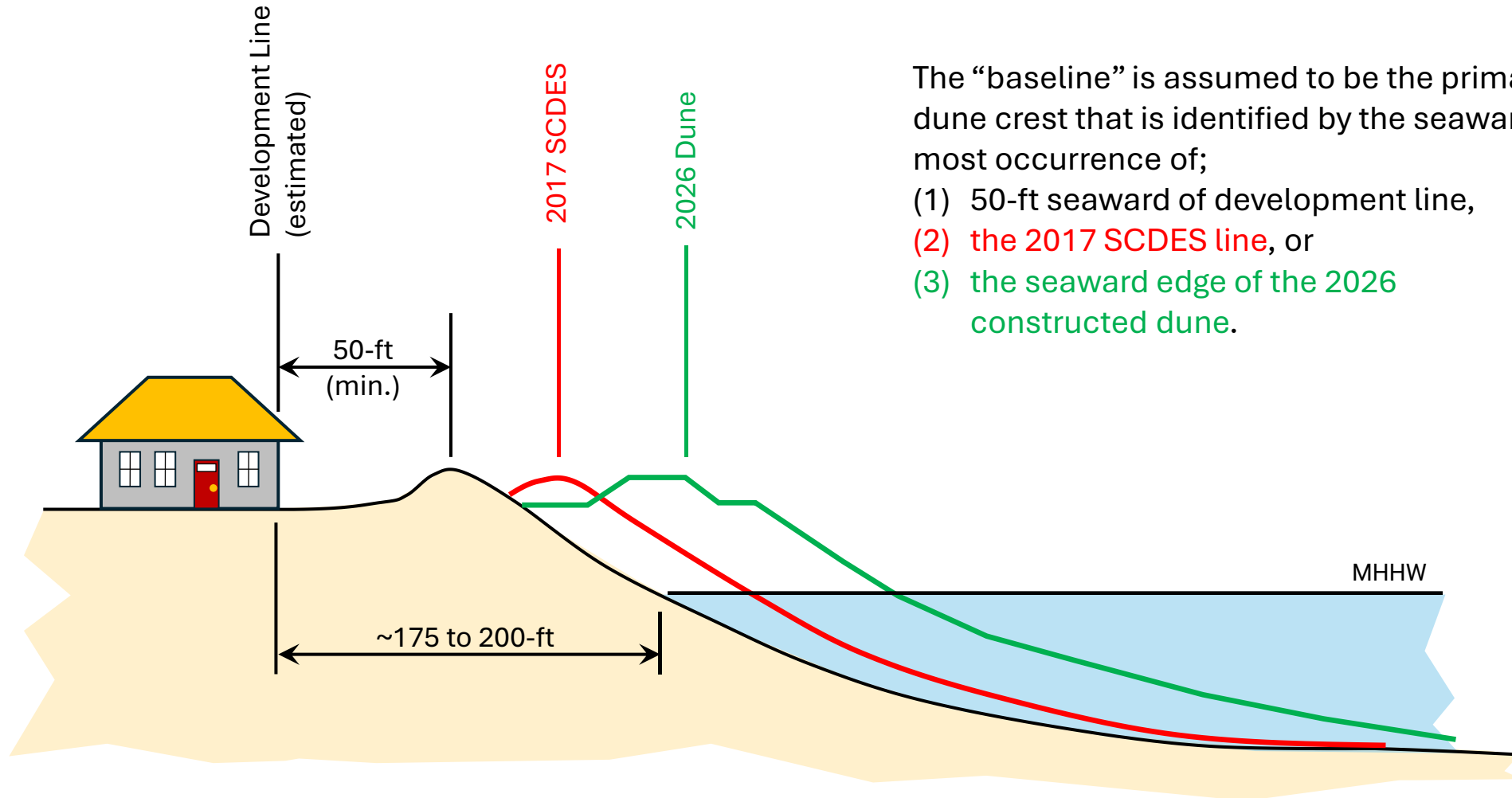
- ◆ Recap of Study Baseline Definition
- ◆ Summary of Assumed Initial Conditions
 - Volume Change Rates
 - 2026 Project
- ◆ Alternatives
- ◆ Cost Analysis - Assumptions and Results
- ◆ Future Management

Alternatives Study Baseline Definition

◆ **Baseline Development:**

- Assumed to represent the primary dune crest of minimum beach position
- Identified as the seaward-most occurrence of:
 - 50-ft offset from seaward edge of development,
 - 2017 SCDES Baseline, or
 - Seaward edge of 2026 dune, where constructed.

Alternatives Study Baseline Definition



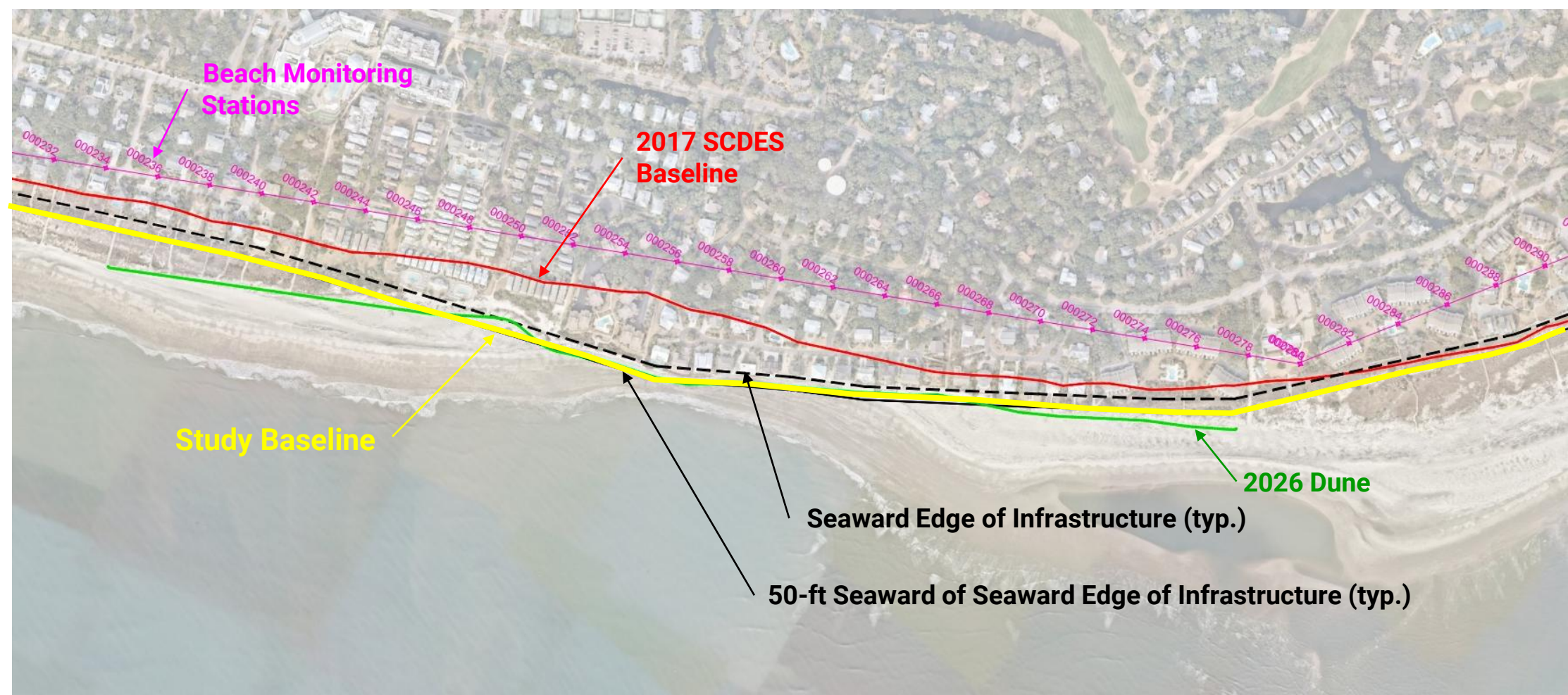
The “baseline” is assumed to be the primary dune crest that is identified by the seaward most occurrence of;

- (1) 50-ft seaward of development line,
- (2) the 2017 SCDES line, or
- (3) the seaward edge of the 2026 constructed dune.

Alternatives Study Baseline Definition

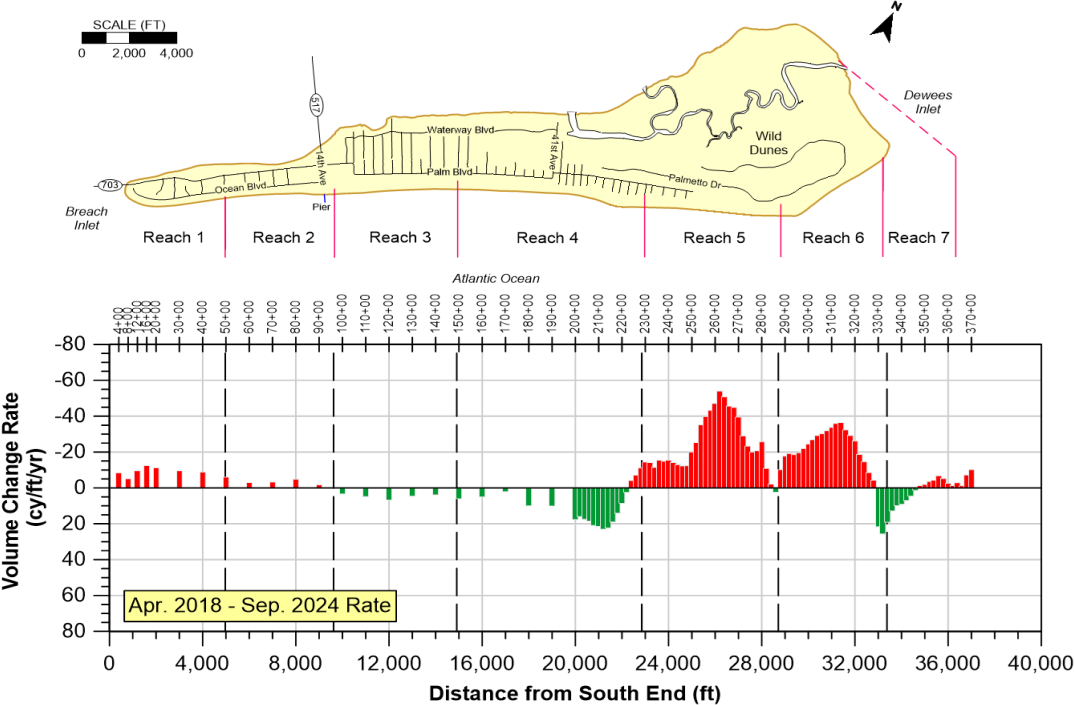


Alternatives Study Baseline Definition



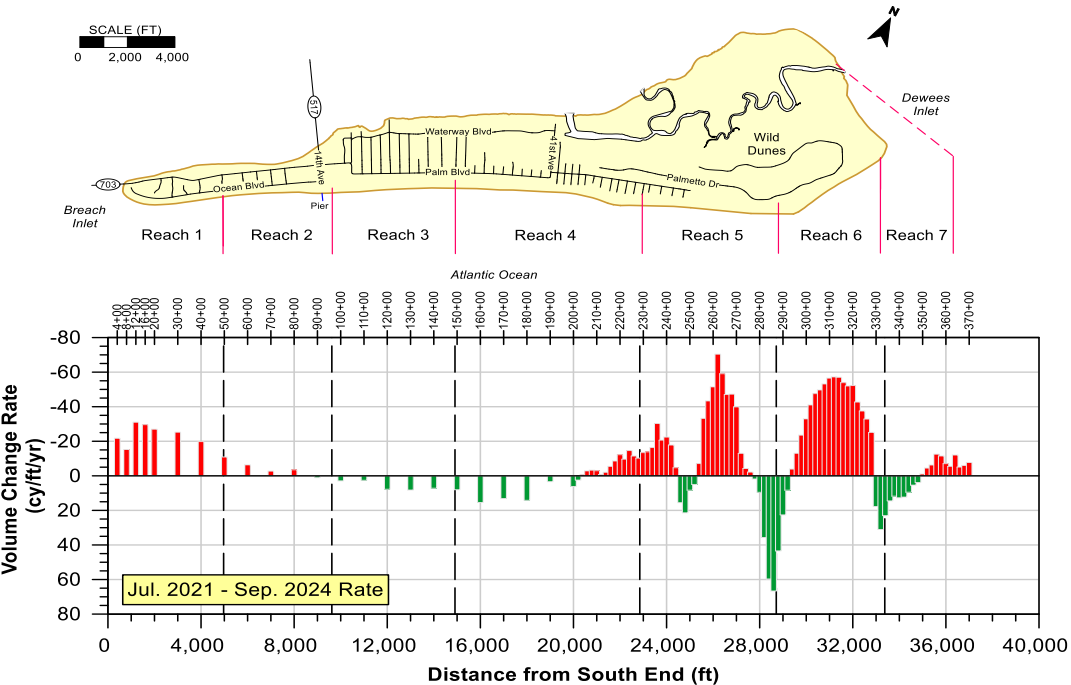
Initial Conditions

Volume Change Rates



“Low Rate”

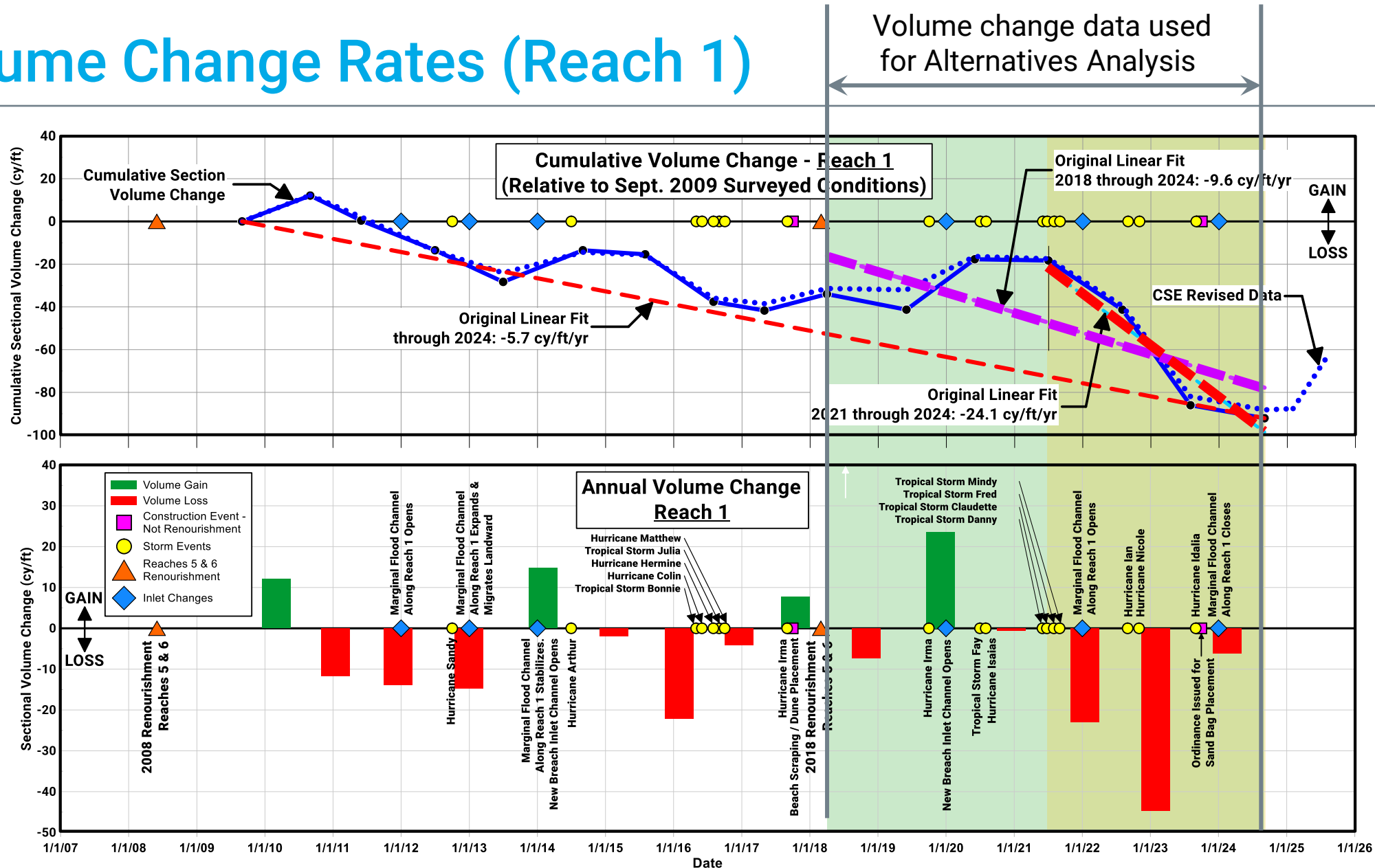
Survey Period: April 2018 – September 2024



“High Rate”

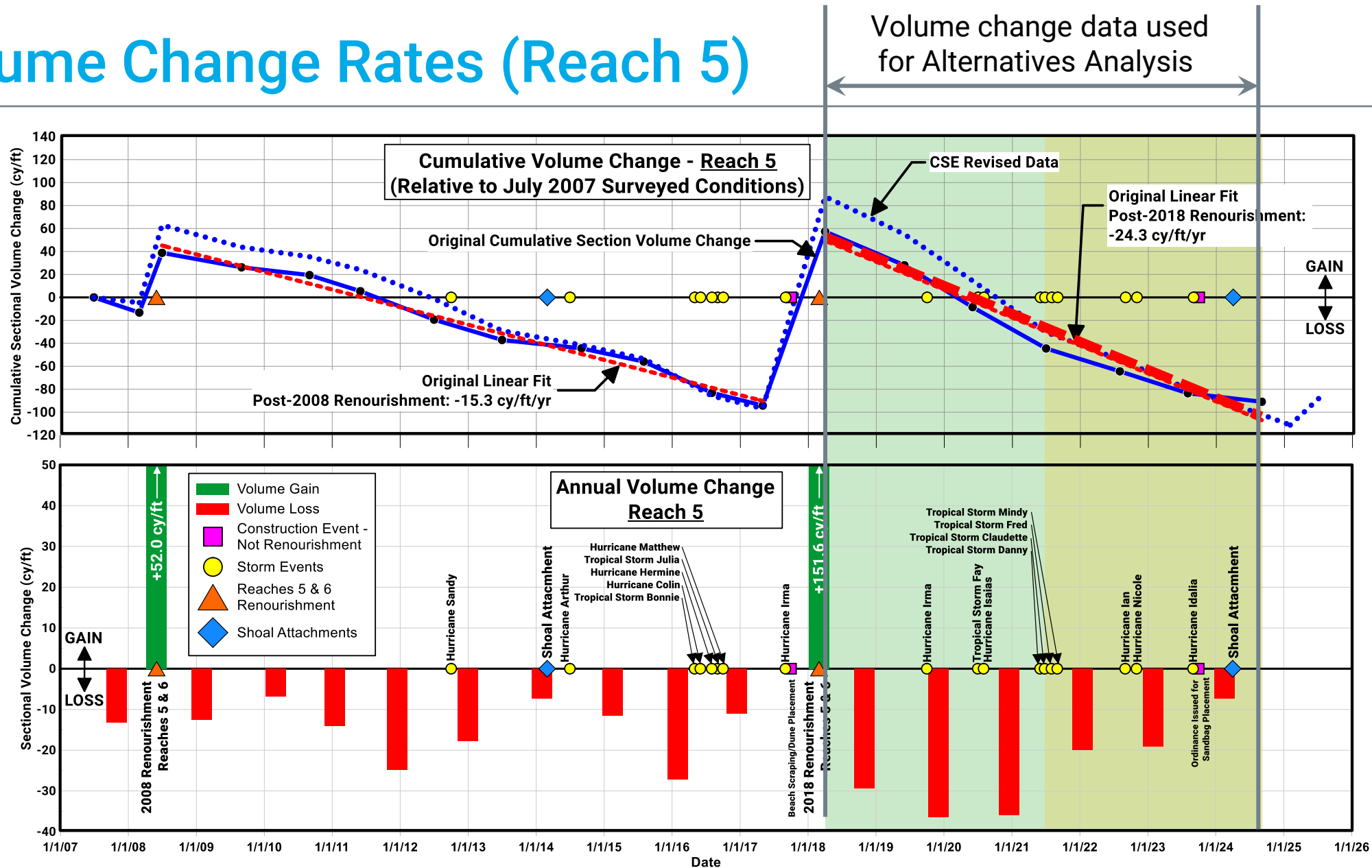
Survey Period: July 2021 – September 2024

Volume Change Rates (Reach 1)



Note: Volume change rates were derived from volume data reported by CSE.

Volume Change Rates (Reach 5)

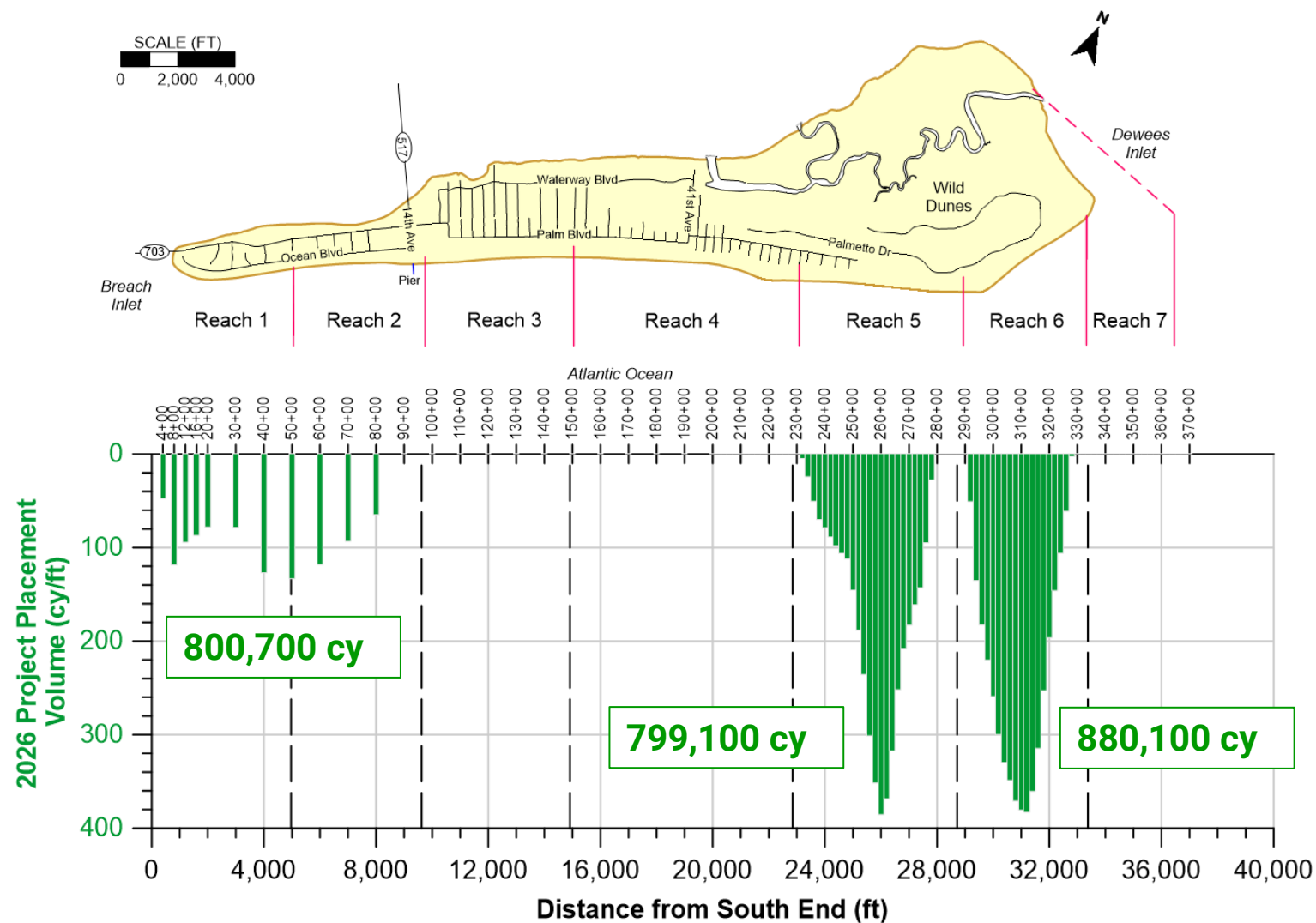


Note: Volume change rates were derived from volume data reported by CSE.

NET Volume Change Rates (Reaches 1-6)

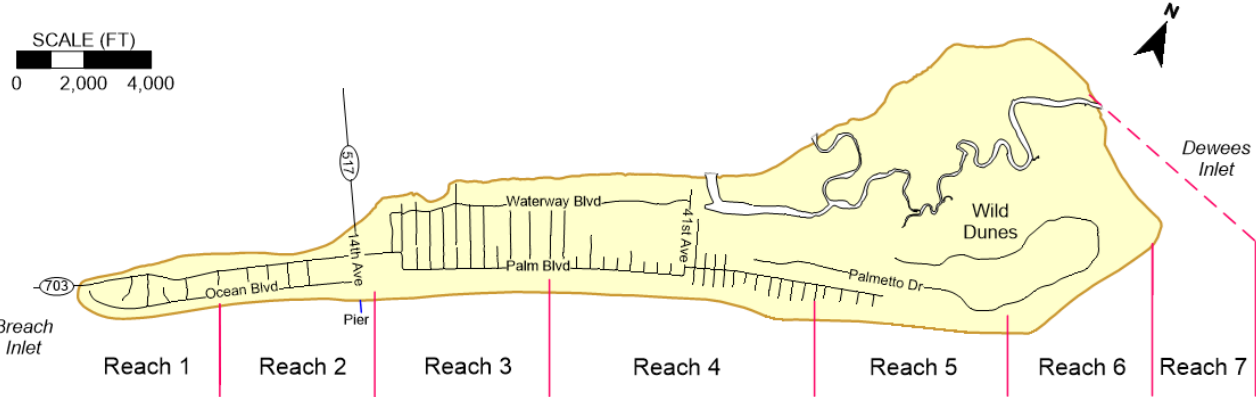
Reach	Reach Length (ft)	Annualized Volume Change Rate (cy/yr)	
		April 2018 - September 2024 ("low")	July 2021 - September 2024 ("high")
Reach 1	4,000	-36,800	-96,200
Reach 2	5,000	-22,300	-32,900
Reach 3	5,000	20,500	25,600
Reach 4	8,200	82,000	53,200
Reach 5	5,800	-141,900	-108,400
Reach 6	4,800	-102,200	-95,700
Total All Reaches	32,800	-200,700	-254,400
Total Reaches 1, 2, 5, & 6	19,600	-303,200	-333,200

2026 Project Volumes

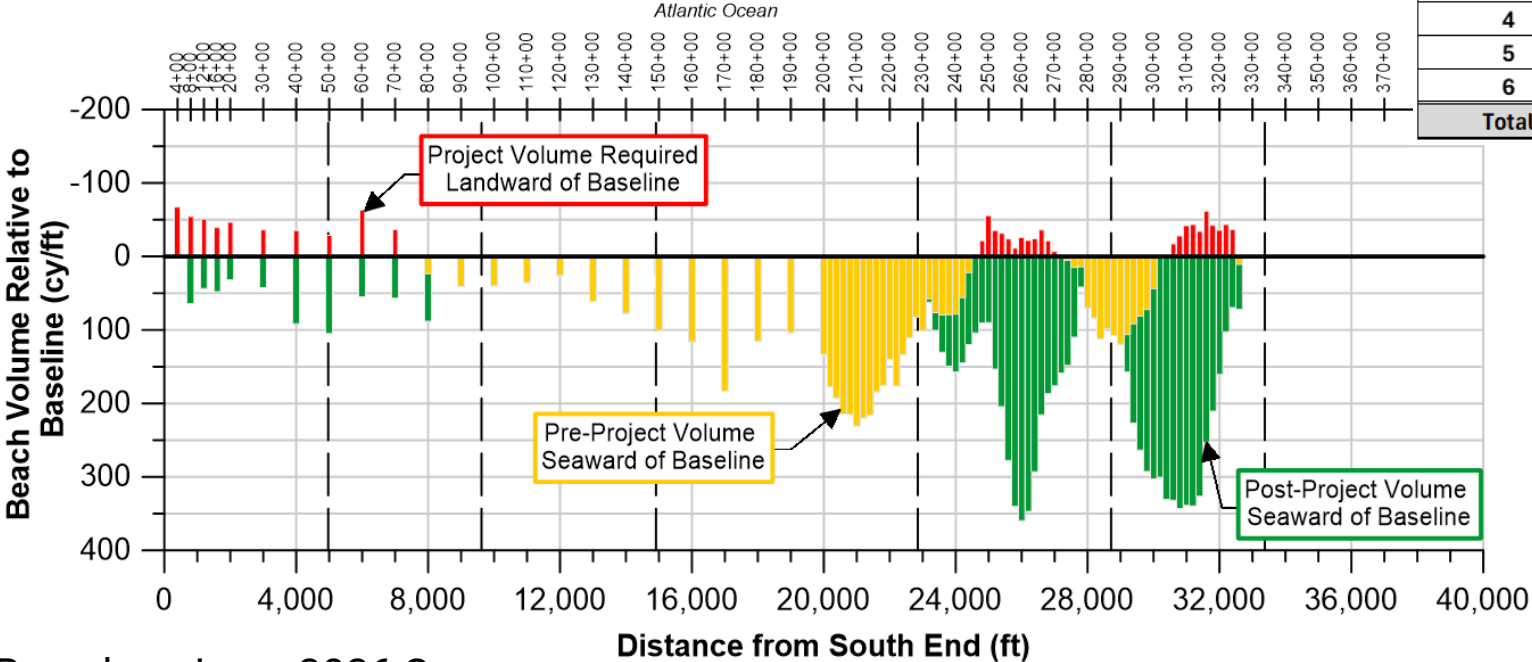


Based on June. 2026 Survey

Post-2026 Beach Conditions (Projected)



Reach	Project Volume Total (cy)	Project Volume Required Landward of Baseline (cy)	Project Volume Seaward of Baseline (cy)	Pre-Project Sand Volume Seaward of the Baseline (cy)	Total Post-Project Volume Seaward of Baseline (cy)
1	340,100	222,700	158,300	0	158,300
2	460,600	168,300	292,400	51,200	343,600
3	0	0	0	251,200	251,200
4	0	0	0	1,276,700	1,276,700
5	799,100	73,400	725,800	205,100	930,900
6	880,100	78,400	801,800	191,800	993,600
Total	2,479,900	542,800	1,978,300	1,976,000	3,954,300



This is the starting condition for the alternatives analysis

Based on June. 2026 Survey

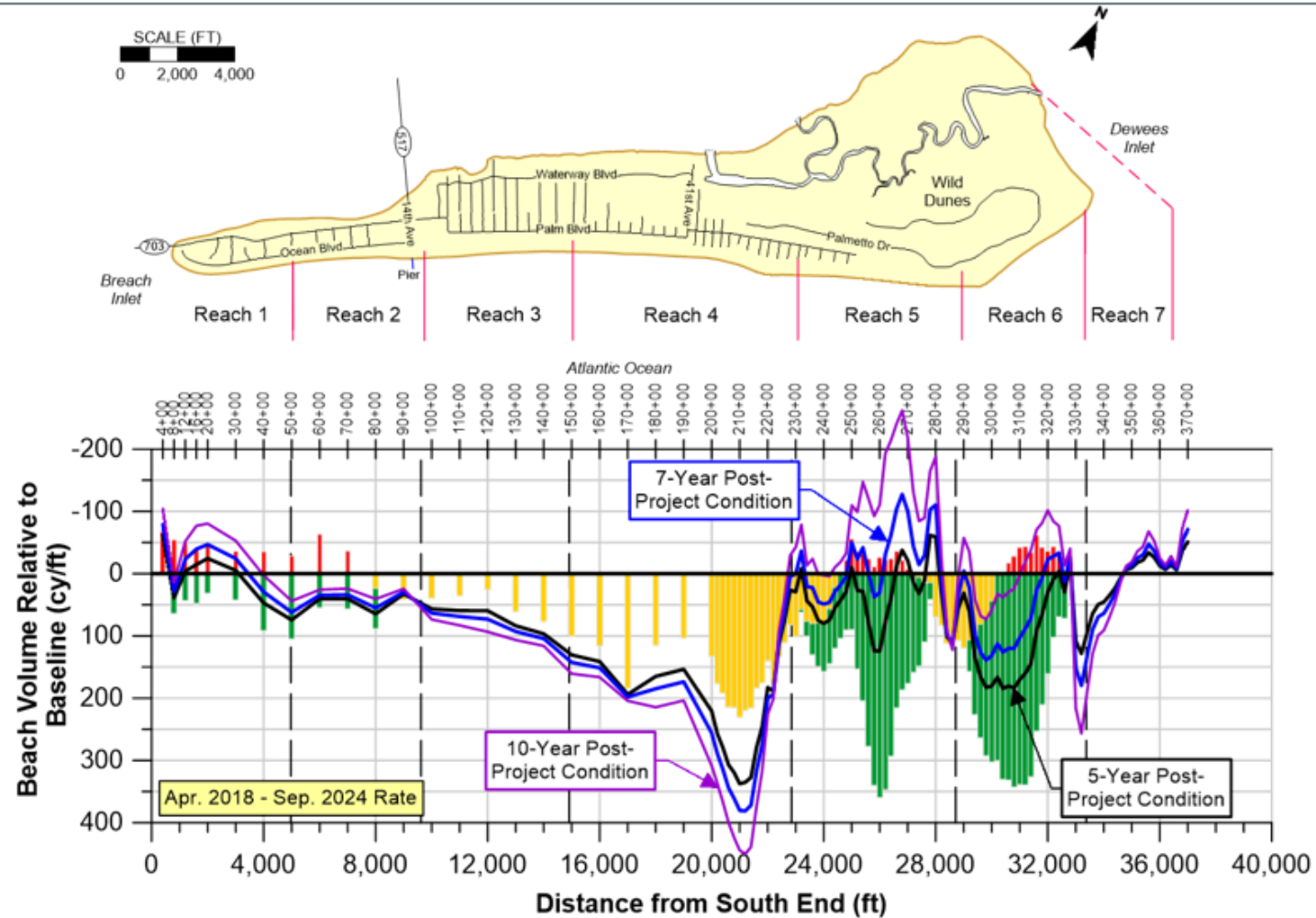
Alternatives



Alternatives

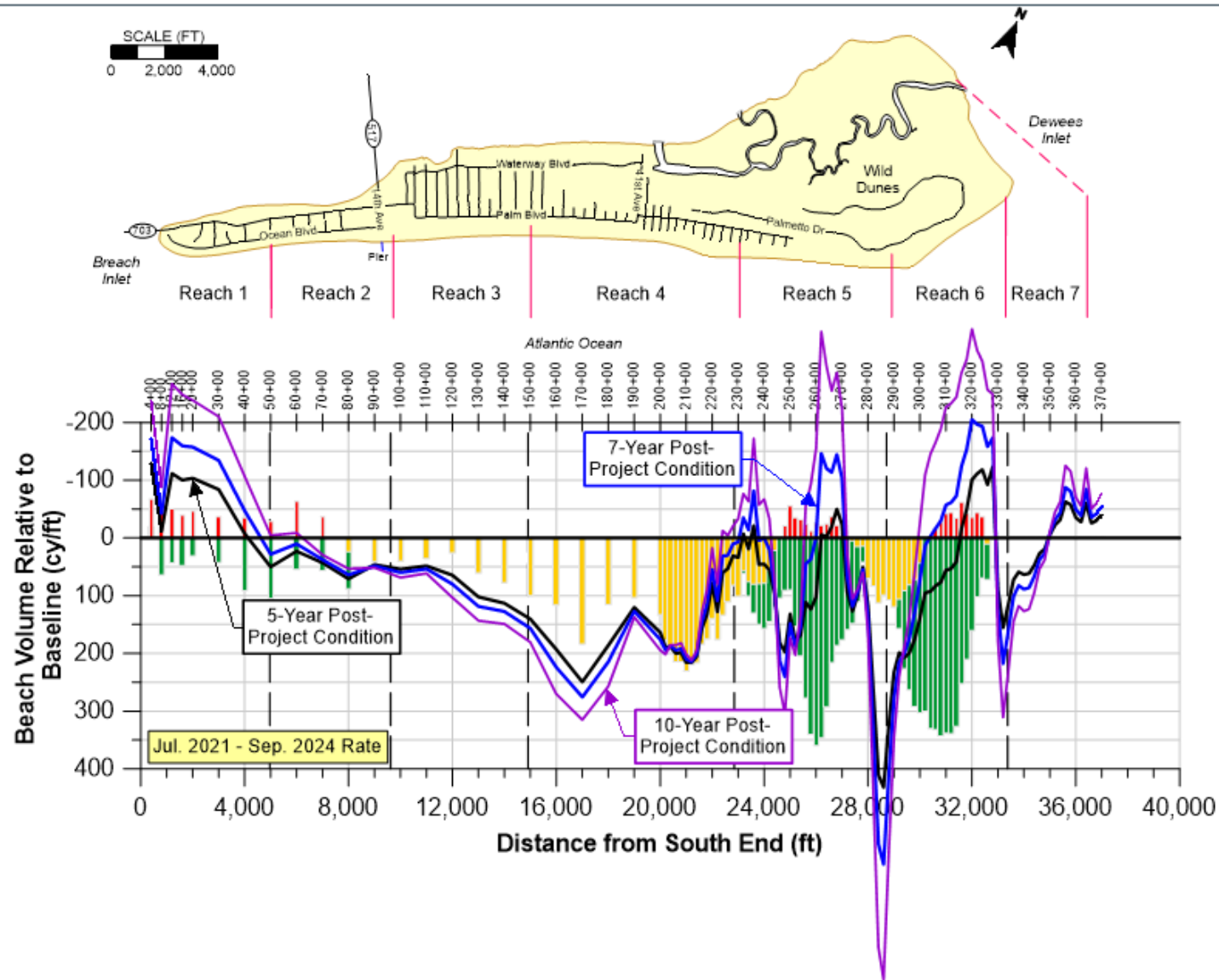
- ◆ No-Action (“Do Nothing”)
- ◆ Beach Renourishment Only (Low and High Sand Loss Rates)
 - Scheduled (5-yr, 7-yr, and 10-yr intervals)
 - Triggered (Interval Required to Protect Baseline Condition)
- ◆ USACE Breach Inlet ICWW Maintenance – Reach 1 (150,000 cy every 3 yrs)
- ◆ Dewees Inlet Shoal Management – Reaches 5 and 6 (700,000 cy every 7 yrs)
- ◆ Terminal Groin (R1)
- ◆ T-Groins/Breakwaters and/or Geotubes (R5/R6) – Reaches 5 and 6 (last line of defense)

No Action (**Low** Sand Loss Rate)



Note: Does not consider possible future AICWW beach disposal.

No Action (High Sand Loss Rate)



Note: Does not consider possible future AICWW beach disposal.

2026 Project Performance

Assuming recent beach change conditions continue, the 2026 Project is expected to maintain beach conditions seaward of the entire assumed beach management Baseline for no more than about 3 years.

Renourishment - Scheduled

- ◆ Required Future Volume Following Completion of 2026 Project
 - Restore Minimum AND Maintain Baseline Beach Condition
 - Future Advance Fill required for 5-, 7-, and 10-year renourishment intervals

5-Year Project Interval after Completion of 2026 Project								
Reach	April 2018 - September 2024 ("Low" Erosion Rate)				July 2021 - September 2024 ("High" Erosion Rate)			
	Predicted Performance of 2026 Project after 5 Years			[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	Predicted Performance of 2026 Project after 5 Years			[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)
	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)		Volume Lost Seaward of Baseline (cy)	Volume Lost Landward of Baseline (cy)	Total Volume Lost (cy)	
1	122,300	61,500	183,800	245,300	158,300	322,800	481,100	803,900
2	111,400	0	111,400	111,400	164,300	0	164,300	164,300
3	0	0	0	0	0	0	0	0
4	0	0	0	0	43,400	0	43,400	43,400
5	664,200	45,000	709,200	754,200	564,800	28,500	593,300	621,800
6	503,700	7,500	511,200	518,700	591,100	126,500	717,600	844,100
Total	1,401,600	114,000	1,515,600	1,629,600	1,521,900	477,800	1,999,700	2,477,500

Renourishment - Scheduled

7-Year Project Interval after Completion of 2026 Project								
Reach	April 2018 - September 2024 ("Low" Erosion Rate)				July 2021 - September 2024 ("High" Erosion Rate)			
	Predicted Performance of 2026 Project after 7 Years			[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	Predicted Performance of 2026 Project after 7 Years			[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)
	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)		[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)	
1	146,300	110,900	257,200	368,100	158,300	515,300	673,600	1,188,900
2	155,900	0	155,900	155,900	218,900	11,000	229,900	240,900
3	0	0	0	0	0	0	0	0
4	0	0	0	0	60,800	0	60,800	60,800
5	816,100	176,900	993,000	1,169,900	675,900	154,700	830,600	985,300
6	674,300	41,400	715,700	757,100	715,100	289,600	1,004,700	1,294,300
Total	1,792,600	329,200	2,121,800	2,451,000	1,829,000	970,600	2,799,600	3,770,200

10-Year Project Interval after Completion of 2026 Project								
Reach	April 2018 - September 2024 ("Low" Erosion Rate)				July 2021 - September 2024 ("High" Erosion Rate)			
	Predicted Performance of 2026 Project after 10 Years			[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	Predicted Performance of 2026 Project after 10 Years			[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)
	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)		[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)	
1	158,300	209,200	367,500	576,700	158,300	804,000	962,300	1,766,300
2	222,800	0	222,800	222,800	262,600	66,000	328,600	394,600
3	0	0	0	0	0	0	0	0
4	0	0	0	0	86,800	0	86,800	86,800
5	885,300	533,300	1,418,600	1,951,900	741,500	445,000	1,186,500	1,631,500
6	865,800	156,600	1,022,400	1,179,000	761,700	673,600	1,435,300	2,108,900
Total	2,132,200	899,100	3,031,300	3,930,400	2,010,900	1,988,600	3,999,500	5,988,100

Renourishment - Triggered

- ◆ Implement renourishment on scheduled intervals regardless of beach condition between intervals

Reach	Trigger - 3 Years Until Erosion into Baseline [Between Stations 12+00 and 30+00]				Trigger - 1 Year Until Erosion into Baseline [Between Stations 12+00 and 30+00]			
	April 2018 - September 2024 ("Low" Erosion Rate)			[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	July 2021 - September 2024 ("High" Erosion Rate)			[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)
	Predicted Preformance of 2026 Project after 3 Years				Predicted Preformance of 2026 Project after 1 Year			
	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)		[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)	
1	97,300	13,000	110,300	123,300	88,100	8,100	96,200	104,300
2	66,800	0	66,800	66,800	32,900	0	32,900	32,900
3	0	0	0	0	0	0	0	0
4	0	0	0	0	8,700	0	8,700	8,700
5	418,500	7,100	425,600	432,700	118,700	0	118,700	118,700
6	306,700	0	306,700	306,700	141,700	1,900	143,600	145,500
Total	889,300	20,100	909,400	929,500	390,100	10,000	400,100	410,100

Breach Inlet AICWW Beach Disposal

Goals:

- Beneficial use of available dredge material
- Supplemental sand source for Reaches 1 and 2
- Extend time between required renourishments
- Reduce sand need from offshore borrow areas

Assumptions:

- 3 yr interval (more or less)
- ~150,000 cy/event (equivalent to ~50,000 cy/yr)
- All material placed in Reaches 1 and 2
- Available material is suitable for beach placement
- Material provided at no cost to the City



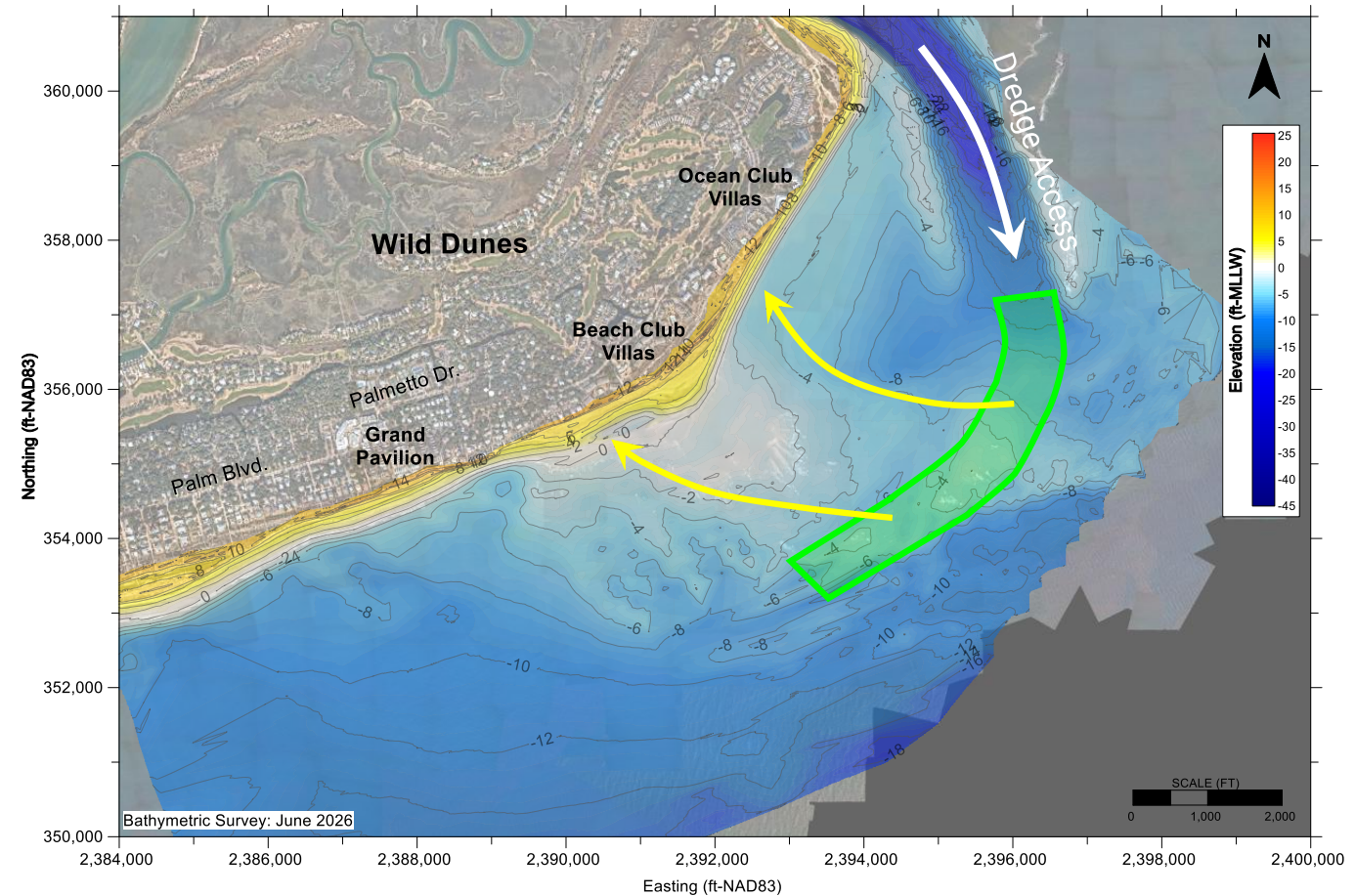
Dewees Inlet Shoal Management

Goals:

- Collect ebb shoal sand before migrating shoals approach IOP shoreline
- Place sand along Reaches 5 and 6
- Reduce impacts of future shoal attachments
- Extend time between required renourishments
- Reduce sand need from offshore borrow areas

Assumptions:

- 7 yr interval
- 700,000 cy/event (equivalent to 100,000 cy/yr)
- All material placed in Reaches 5 and 6



Renourishment – with AICWW and Shoal Mgt Sand

5-Year Project Interval after Completion of 2026 Project												
Reach	April 2018 - September 2024 ("Low" Erosion Rate)						July 2021 - September 2024 ("High" Erosion Rate)					
	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)	[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	Volume Available from AICWW (Reaches 1&2) and Dewees Shoal (Reaches 5&6) (cy)	Sand Volume Needed from Offshore for Full Restoration and Maintenance (cy)	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)	[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	Volume Available from AICWW (Reaches 1&2) and Dewees Shoal (Reaches 5&6) (cy)	Sand Volume Needed from Offshore for Full Restoration and Maintenance (cy)
1	122,300	61,500	183,800	245,300	250,000	106,700	158,300	322,800	481,100	803,900	250,000	718,200
2	111,400	0	111,400	111,400		0	164,300	0	164,300	164,300		0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	43,400	0	43,400	43,400	0	43,400
5	664,200	45,000	709,200	754,200	500,000	504,200	564,800	28,500	593,300	621,800	500,000	371,800
6	503,700	7,500	511,200	518,700		268,700	591,100	126,500	717,600	844,100		594,100
Total	1,401,600	114,000	1,515,600	1,629,600	750,000	879,600	1,521,900	477,800	1,999,700	2,477,500	750,000	1,727,500

7-Year Project Interval after Completion of 2026 Project												
Reach	April 2018 - September 2024 ("Low" Erosion Rate)						July 2021 - September 2024 ("High" Erosion Rate)					
	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)	[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	Volume Available from AICWW (Reaches 1&2) and Dewees Shoal (Reaches 5&6) (cy)	Sand Volume Needed from Offshore for Full Restoration and Maintenance (cy)	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)	[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	Volume Available from AICWW (Reaches 1&2) and Dewees Shoal (Reaches 5&6) (cy)	Sand Volume Needed from Offshore for Full Restoration and Maintenance (cy)
1	146,300	110,900	257,200	368,100	350,000	174,000	158,300	515,300	673,600	1,188,900	350,000	1,079,800
2	155,900	0	155,900	155,900		0	218,900	11,000	229,900	240,900		0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	60,800	0	60,800	60,800	0	60,800
5	816,100	176,900	993,000	1,169,900	700,000	819,900	675,900	154,700	830,600	985,300	700,000	635,300
6	674,300	41,400	715,700	757,100		407,100	715,100	289,600	1,004,700	1,294,300		944,300
Total	1,792,600	329,200	2,121,800	2,451,000	1,050,000	1,401,000	1,829,000	970,600	2,799,600	3,770,200	1,050,000	2,720,200

Renourishment – with AICWW and Shoal Mgt Sand

10-Year Project Interval after Completion of 2026 Project											
Reach	April 2018 - September 2024 ("Low" Erosion Rate)						July 2021 - September 2024 ("High" Erosion Rate)				
	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)	[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	Volume Available from AICWW (Reaches 1&2) and Dewees Shoal (Reaches 5&6) (cy)	Sand Volume Needed from Offshore for Full Restoration and Maintenance (cy)	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (cy)	[D = C + B] Future Volume Required to Restore and Maintain Beach Seaward of Baseline (cy)	Volume Available from AICWW (Reaches 1&2) and Dewees Shoal (Reaches 5&6) (cy)
1	158,300	209,200	367,500	576,700	500,000	299,500	158,300	804,000	962,300	1,766,300	500,000
2	222,800	0	222,800	222,800		0	262,600	66,000	328,600	394,600	
3	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	86,800	0	86,800	86,800	0
5	885,300	533,300	1,418,600	1,951,900	1,000,000	1,451,900	741,500	445,000	1,186,500	1,631,500	1,000,000
6	865,800	156,600	1,022,400	1,179,000		679,000	761,700	673,600	1,435,300	2,108,900	
Total	2,132,200	899,100	3,031,300	3,930,400	1,500,000	2,430,400	2,010,900	1,988,600	3,999,500	5,988,100	1,500,000

- ◆ Demand on offshore sand can be reduced with use of beach compatible sand from AICWW and Dewees Inlet Shoal Management.
- ◆ Proposed sand volume from AICWW beach disposal MAY NOT be sufficient to maintain Baseline conditions along Reach 1 without sand from offshore.
- ◆ Available volumes and schedule will need to be confirmed.

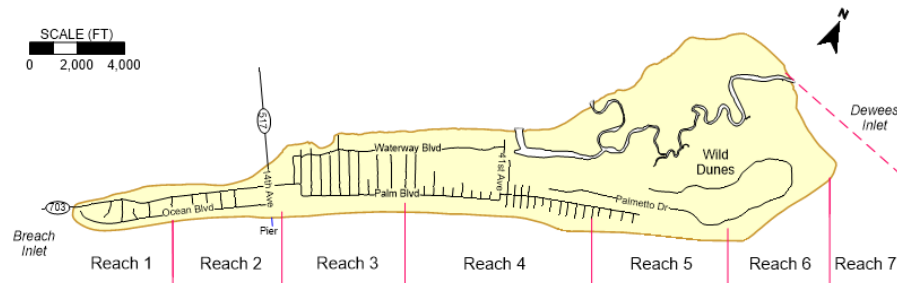
Renourishment with Structures

- ◆ Terminal Groin (Reach 1)

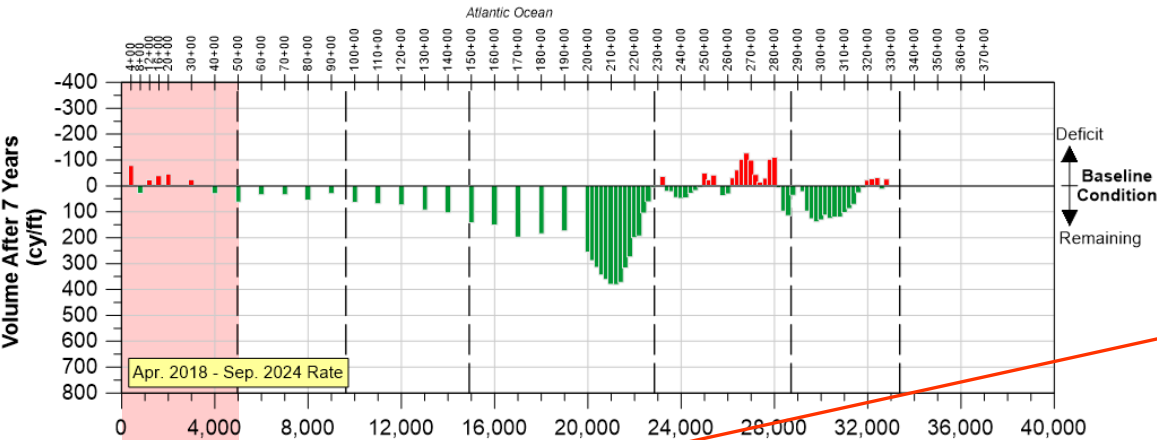
Anticipated Sand Loss Landward of Baseline (Reach 1)

Post-Project Beach
Volume Performance
Relative to Baseline

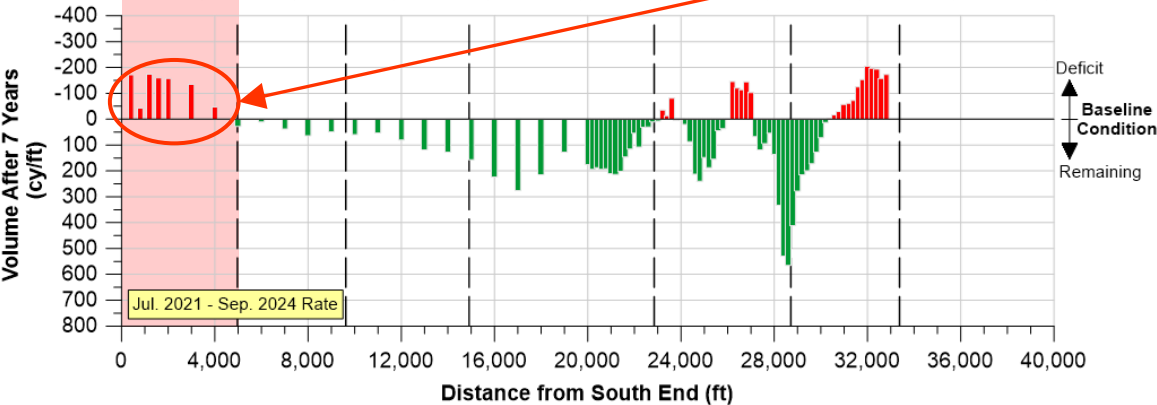
7-Year Condition



“Low” rate (2018-2024)

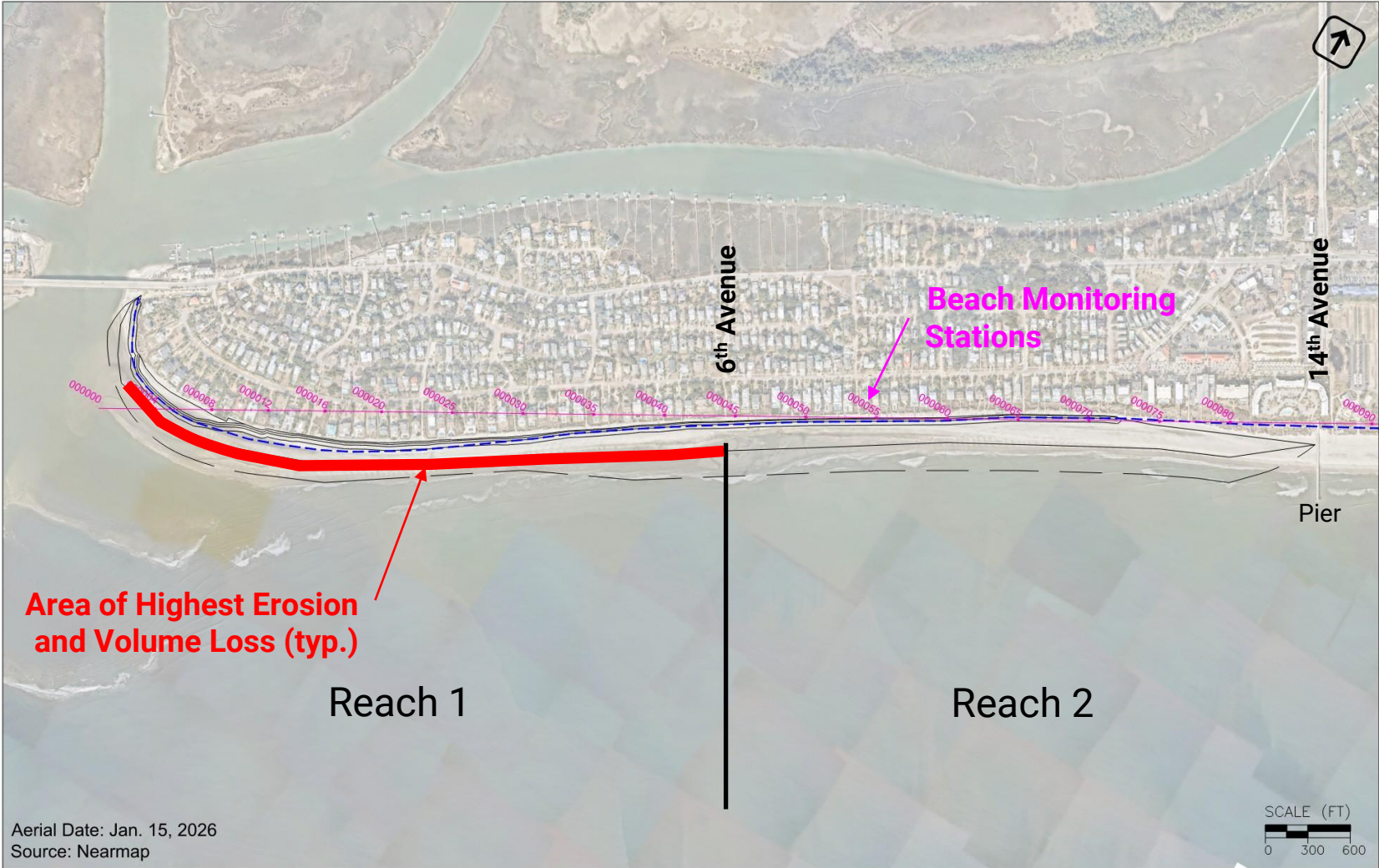


“High” rate (2021-2024)

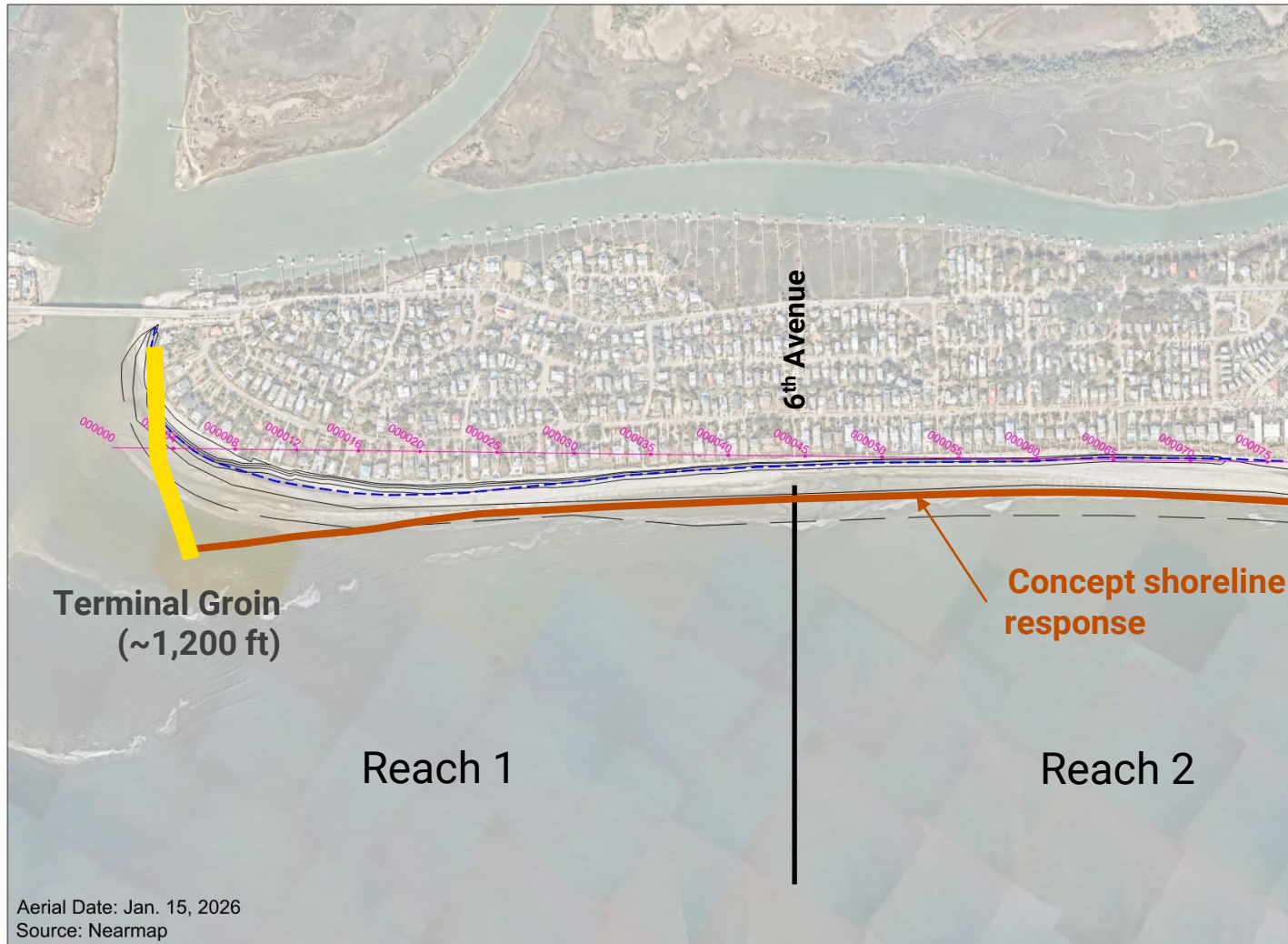


Volume
Loss
Beyond
Baseline
(typ.)

Anticipated Sand Loss Landward of Baseline (Reach 1)



Terminal Groin (Reach 1)



Goals:

- Reduce sand loss from the southern end of the island
- Anchor shoreline position away from Baseline
- Extend time between required renourishment events
- Reduce demand on sand from offshore borrow areas

Assumptions:

- **~1,200 feet** long
(most of structure to be buried)
- **~15,000 tons** of rock
(with stone-filled mattress foundation)
- Reduces sand loss:
 - Reach 1 by 50%
 - Reach 2 by 25%

Renourishment with Structures

- ◆ Terminal Groin (Reach 1)
- ◆ T-Groins/Breakwaters (Reaches 5 and 6)

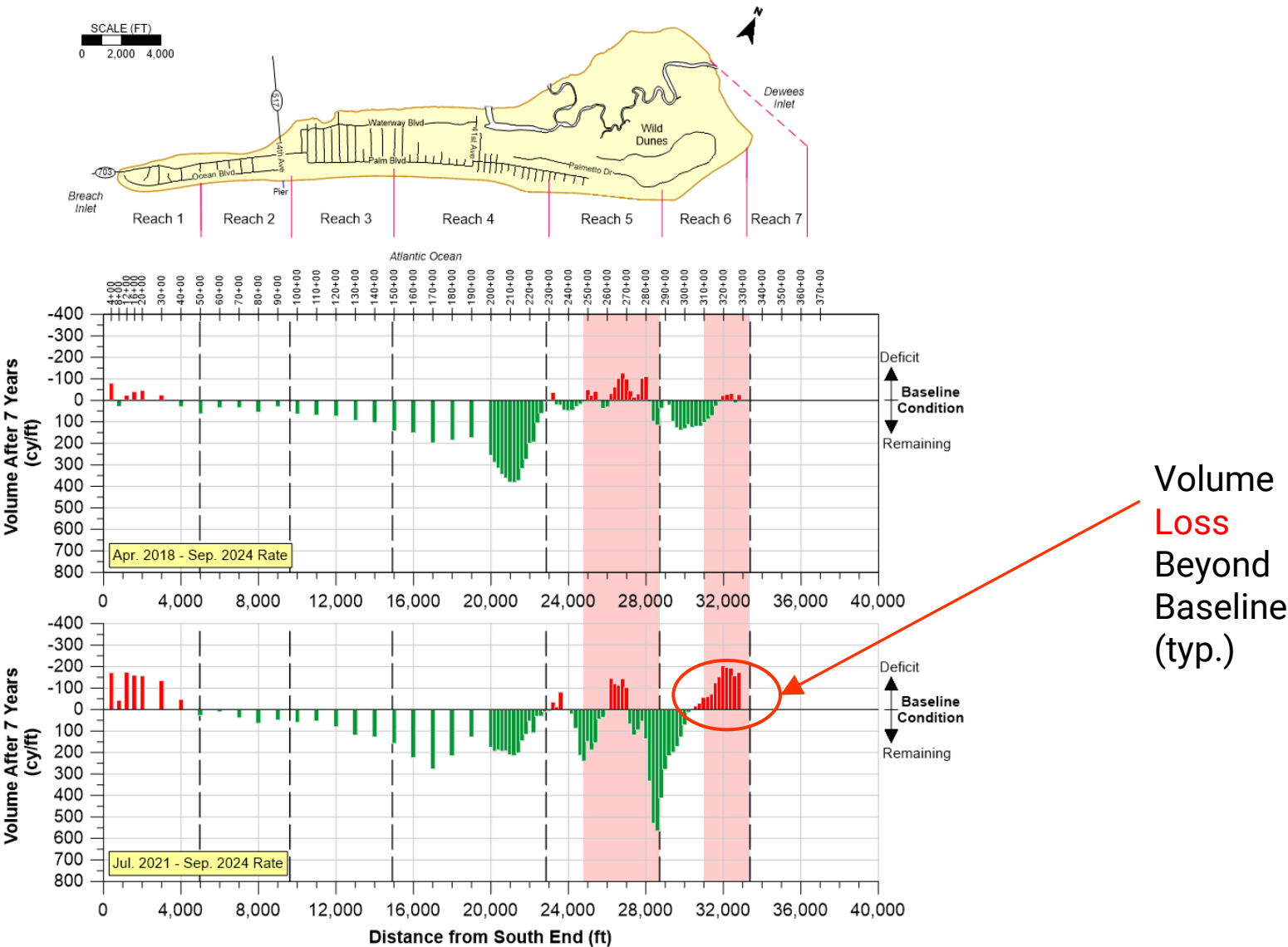
Anticipated Sand Loss Landward of Baseline (Reaches 5 &6)

Post-Project Beach
Volume Performance
Relative to Baseline

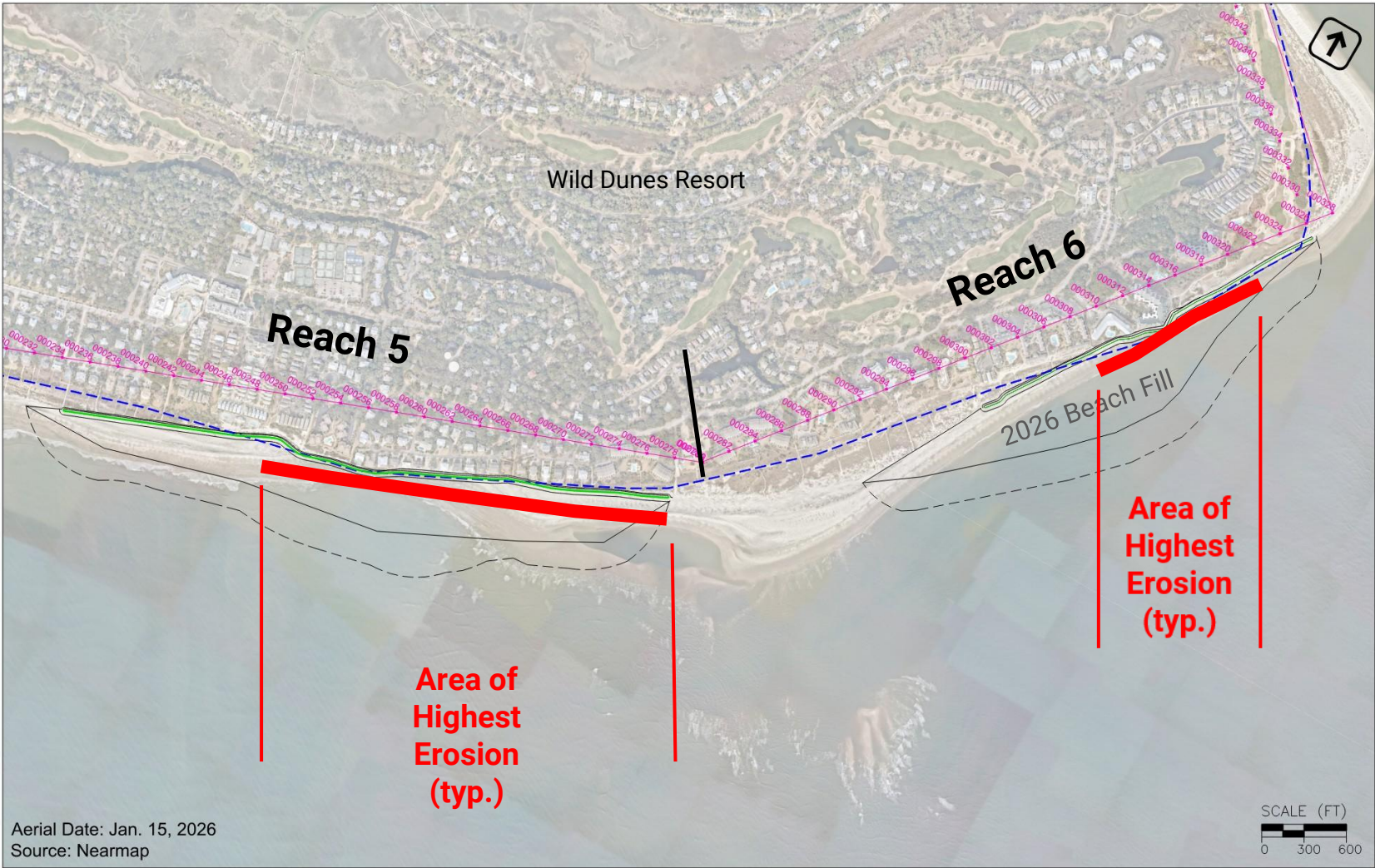
7-Year Condition

“Low” rate (2018-2024)

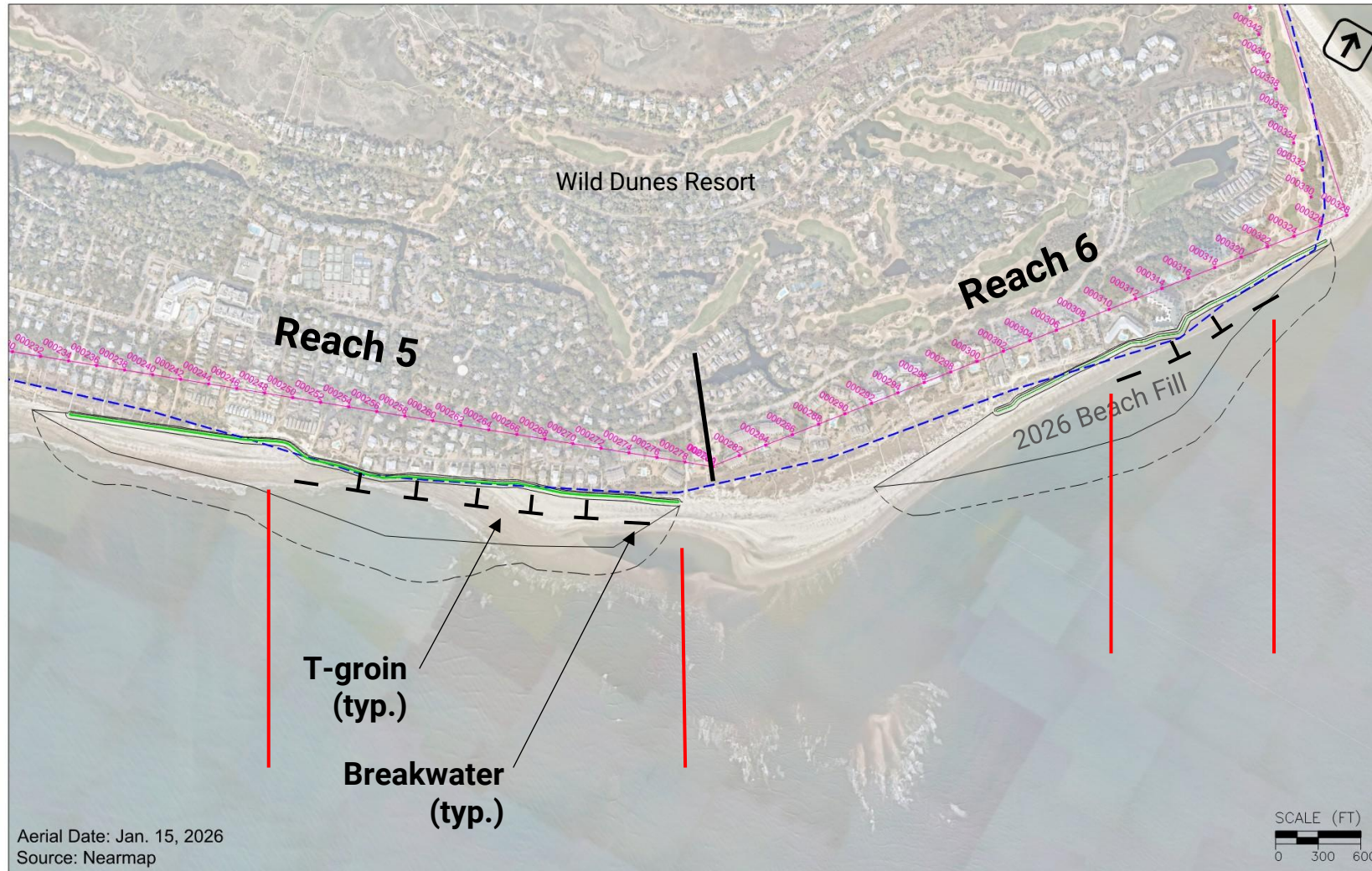
“High” rate (2021-2024)



Anticipated Sand Loss Landward of Baseline (Reaches 5 &6)



T-Groins and Breakwaters (Reaches 5 and 6)



Goals:

- Provide last line of defense to upland
- Anchor shoreline position at Baseline under most eroded conditions
- Maintain recreational beach seaward of Baseline

Note: Not intended to reduce sand loss rate from renourishment but may allow for smaller fill volumes and longer periods between renourishments

Assumptions:

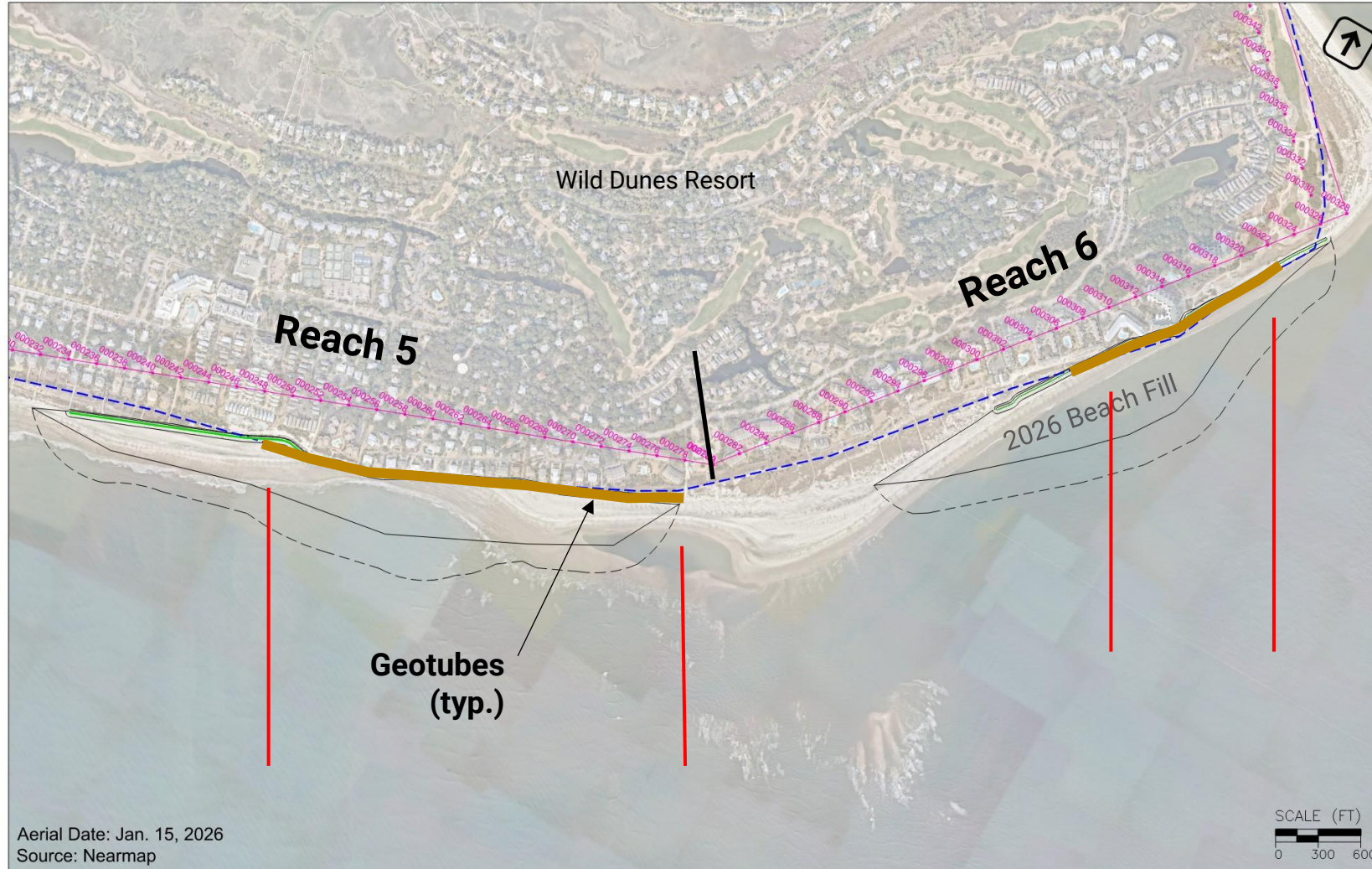
- Reach 5 (5, T-groins and 2, breakwaters)
- Reach 6 (2, T-groins and 2, breakwaters)
- T-Groin = 2,800 tons with foundation
- Breakwater = 1,600 tons with foundation

Note: Structures shown are conceptual and do not represent a final design. Quantities are assumed.

Renourishment with Structures

- ◆ Terminal Groin (Reach 1)
- ◆ T-Groins/Breakwaters (Reaches 5 and 6)
- ◆ Sand filled Geotubes (Reaches 5 and 6)

Geotubes (Reaches 5 and 6)



Goals:

- Provide last line of defense to upland
- Anchor shoreline position at Baseline under most eroded conditions

Note: Not intended to maintain recreational beach seaward of Baseline

Assumptions:

- Reach 5 = 3,300 feet
- Reach 6 = 1,700 feet

Beach Management Elements Summary



Known Offshore Sand Sources

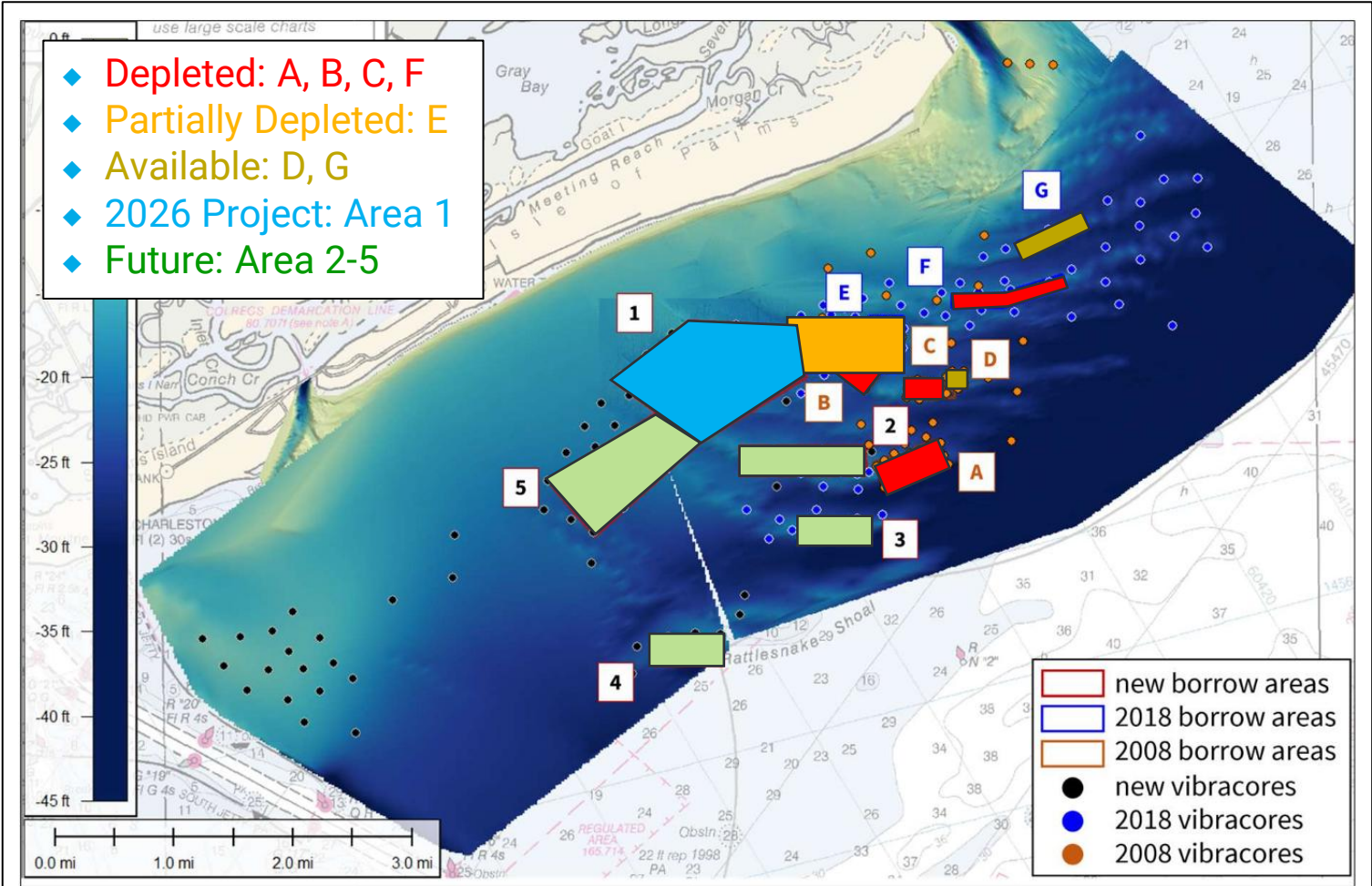


FIGURE 4.1. Location of primary offshore borrow area along with locations of borings.

Sand Availability: no more than
~25 Mcy (pre-2026) (ref: CSE)

Sand Demand:

Annual Sand Loss (cy/yr)		Planning Period (yrs)	Total Sand Demand (cy)	Total Sand Demand with 20% Contingency (cy)
Low	303,000	50	15,150,000	18,200,000
High	400,000	50	20,000,000	24,000,000

Cost Assumptions - Sand

- ◆ Offshore sand for continued renourishment
 - Mob/Demob = \$1.5M
 - Sand = \$9/cy (ref: recent Marinex proposal to City of IOP)
 - As needed

- ◆ Dewees Inlet Shoal Management
 - Mob/Demob = \$1.0M (assumed)
 - Sand = \$7.5/cy (assumed)
 - 700,000 cy every 7 years (equivalent to 100,000 cy/yr – Reaches 5 and 6 only)

- ◆ Breach Inlet AICWW Beach Disposal
 - No cost to the City of IOP (ref: communications between USACE and City of IOP)
 - 150,000 cy every 3 years (equivalent to 50,000 cy/yr – Reaches 1 and 2 only)

Cost Assumptions - Structures

- ◆ Rock - Effective unit cost = \$275/ton (recent market conditions in SC & NC)

- Terminal Groin (Reach 1) **~\$4.5 to \$5.5M**

- T-Groins/Breakwaters (Reach 5) **~\$4 to \$5M**

- T-Groins/Breakwaters (Reach 6) **~\$3.5 to \$4M**

- ◆ Geotubes – Effective unit cost = \$570/ft (recent market conditions in NC)

Cost Assumptions - Other

- ◆ Planning, Engineering, and Design (PED) = 5% of construction cost
- ◆ Const. Engr and Inspection (CEI) = 7% of construction cost
- ◆ Contingency = 0% (Note: The assumed costs are based upon proposals from industry and recent market examples, so no contingency is applied to costs.)
- ◆ Planning period (n) = 50 years
- ◆ Discount rate (i) = 3.25% (2026 USACE planning guidance)

Cost Summary *(preliminary)*

Scheduled Renourishment *(offshore sand sources only; baseline condition rebuilt at time of each event)*

Alternative		Future Renourishment Event Volume (cy)	Future Renourishment Event Cost (\$)	Supplemental Volume from Dewees Inlet and AICWW (cy)	Dewees Inlet Shoal Mgt (\$)	Breach Inlet AICWW Beach Disposal (\$)	Terminal Groin (Rch 1) (\$)	Average Annual Equivalent Cost (AAEC) (\$/yr)
Scheduled Renourishment	5-Yr Interval (Low)	1,629,600	\$ 18,106,368	-	\$ -	\$ -	\$ -	\$ 6,344,300
	5-Yr Interval (High)	2,477,500	\$ 26,653,200	-	\$ -	\$ -	\$ -	\$ 9,273,300
	7-Yr interval (Low)	2,451,000	\$ 26,386,080	-	\$ -	\$ -	\$ -	\$ 6,457,800
	7-Yr Interval (High)	3,770,200	\$ 39,683,616	-	\$ -	\$ -	\$ -	\$ 9,636,800
	10-Yr Interval (Low)	3,930,400	\$ 41,298,432	-	\$ -	\$ -	\$ -	\$ 7,116,900
	10-Yr Interval (High)	5,988,100	\$ 62,040,048	-	\$ -	\$ -	\$ -	\$ 10,612,500

Triggered Renourishment *(offshore sand sources only)*

Alternative		Future Renourishment Event Volume (cy)	Future Renourishment Event Cost (\$)	Supplemental Volume from Dewees Inlet and AICWW (cy)	Dewees Inlet Shoal Mgt (\$)	Breach Inlet AICWW Beach Disposal (\$)	Terminal Groin (Rch 1) (\$)	Average Annual Equivalent Cost (AAEC) (\$/yr)
Triggered Renourishment	Trigger (Low) 3-Yr Interval	909,400	\$ 10,846,752	-	\$ -	\$ -	\$ -	\$ 6,151,300
	Trigger (High) 1-Yr Interval	400,100	\$ 5,713,008	-	\$ -	\$ -	\$ -	\$ 9,923,100

Note: "Future nourishment event volume and "cost" applies to all renourishments after first event. The volume of the first renourishment event is increased to offset initial losses landward of Baseline.

Cost Summary *(preliminary)*

Renourishment supplemented with AICWW Beach Disposal and Dewees Shoal Mgt

Alternative		Future Renourishment Event Volume (cy)	Future Renourishment Event Cost (\$)	Supplemental Volume from Dewees Inlet and AICWW (cy)	Dewees Inlet Shoal Mgt (\$)	Breach Inlet AICWW Beach Disposal (\$)	Terminal Groin (Rch 1) (\$)	Average Annual Equivalent Cost (AAEC) (\$/yr)
AICWW and Dewees Inlet Mgt	5-Yr (Low)	765,600	\$ 9,397,248	750,000	\$ 5,320,000	\$ -	\$ -	\$ 5,228,200
	5-Yr (High)	1,249,700	\$ 14,276,976	750,000	\$ 5,320,000	\$ -	\$ -	\$ 7,045,200
	7-Yr (Low)	1,071,800	\$ 12,483,744	1,050,000	\$ 7,000,000	\$ -	\$ -	\$ 4,937,000
	7-Yr (High)	1,749,600	\$ 19,315,968	1,050,000	\$ 7,000,000	\$ -	\$ -	\$ 6,822,300

Renourishment supplemented with AICWW Beach Disposal and Dewees Shoal Mgt and Terminal Groin

Alternative		Future Renourishment Event Volume (cy)	Future Renourishment Event Cost (\$)	Supplemental Volume from Dewees Inlet and AICWW (cy)	Dewees Inlet Shoal Mgt (\$)	Breach Inlet AICWW Beach Disposal (\$)	Terminal Groin (Rch 1) (\$)	Average Annual Equivalent Cost (AAEC) (\$/yr)
ALL Elements (Reaches 1, 5, and 6)	ALL 5-yr (Low)	720,000	\$ 8,937,600	750,000	\$ 5,320,000	\$ -	\$ 4,620,000	\$ 5,232,200
	ALL 5-yr (High)	925,000	\$ 11,004,000	750,000	\$ 5,320,000	\$ -	\$ 4,620,000	\$ 6,062,300
	ALL 7-yr (Low)	1,008,000	\$ 11,840,640	1,050,000	\$ 7,000,000	\$ -	\$ 4,620,000	\$ 4,925,800
	ALL 7-yr (High)	1,295,000	\$ 14,733,600	1,050,000	\$ 7,000,000	\$ -	\$ 4,620,000	\$ 6,818,600

Details provided on next slide

Note: "Future nourishment event volume and "cost" applies to all renourishments after first event. The volume of the first renourishment event is increased to offset initial losses landward of Baseline.

Example of Event Cost and 50-yr Cost Stream for Computation of AAEC (preliminary)

EVENT COST

Restore Baseline and Replace Advance Fill with First Renourishment				
Item	Quantity	Unit Cost	Units	Total
Dredge Mob/Demob	1	\$ 1,500,000.00	LS	\$ 1,500,000.00
Sand	1,227,000	\$ 9.00	cy	\$ 11,043,000.00
subtotal Construction				\$ 12,543,000.00
PED/Permitting				5% \$ 627,150.00
CEI/Monitoring				7% \$ 878,010.00
subtotal Project				\$ 14,048,160.00
Contingency				0% \$ -
Total				\$ 14,048,160.00
Future Maintenance (Normal Advance Fill after First Renourishment)				
Item	Quantity	Unit Cost	Units	Total
Dredge Mob/Demob	1	\$ 1,500,000.00	LS	\$ 1,500,000.00
Sand	1,008,000	\$ 9.00	cy	\$ 9,072,000.00
subtotal Construction				\$ 10,572,000.00
PED/Permitting				5% \$ 528,600.00
CEI/Monitoring				7% \$ 740,040.00
subtotal Project				\$ 11,840,640.00
Contingency				0% \$ -
Total				\$ 11,840,640.00
Terminal Groin				
Item	Quantity	Unit Cost	Units	Total
Terminal Groin	15,000	\$ 275.00	tons	\$ 4,125,000.00
subtotal Construction				\$ 4,125,000.00
PED/Permitting				5% \$ 206,250.00
CEI/Monitoring				7% \$ 288,750.00
subtotal Project				\$ 4,620,000.00
Contingency				0% \$ -
Total				\$ 4,620,000.00
Dewees Shoal Dredging				
Item	Quantity	Unit Cost	Units	Total
Dredge Mob/Demob	1	\$ 1,000,000.00	LS	\$ 1,000,000.00
Sand	700,000	\$ 7.50	cy	\$ 5,250,000.00
subtotal Construction				\$ 6,250,000.00
PED/Permitting				5% \$ 312,500.00
CEI/Monitoring				7% \$ 437,500.00
subtotal Project				\$ 7,000,000.00
Contingency				0% \$ -
Total				\$ 7,000,000.00

COST STREAM

Year	Base Costs				Escalated Costs				Present Worth			
	Total Cost	Renourishment Offshore Sand and Monitoring	Terminal Groin	Dewees Shoal Mgt	Cost Escalation Factor	Renourishment Offshore Sand and Monitoring	Terminal Groin	Dewees Shoal Mgt	Renourishment Offshore Sand and Monitoring	Terminal Groin	Dewees Shoal Mgt	Present Worth Cost
0	2026	\$ -	\$ -	\$ -	\$ -	1260.04	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
1	2027	\$ 100,000	\$ 100,000			1292.80	\$ 102,600	\$ -	\$ 99,400	\$ -	\$ -	\$ 99,400
2	2028	\$ 4,720,000	\$ 100,000	\$ 4,620,000		1326.42	\$ 105,268	\$ 4,863,386	\$ 98,700	\$ 4,562,000	\$ -	\$ 4,660,700
3	2029	\$ 100,000	\$ 100,000			1360.90	\$ 108,005	\$ -	\$ 98,100	\$ -	\$ -	\$ 98,100
4	2030	\$ 100,000	\$ 100,000			1396.29	\$ 110,813	\$ -	\$ 97,500	\$ -	\$ -	\$ 97,500
5	2031	\$ 100,000	\$ 100,000			1432.59	\$ 113,694	\$ -	\$ 96,900	\$ -	\$ -	\$ 96,900
6	2032	\$ 100,000	\$ 100,000			1469.84	\$ 116,650	\$ -	\$ 96,300	\$ -	\$ -	\$ 96,300
7	2033	\$ 21,048,160	\$ 14,048,160	\$ 7,000,000		1508.09	\$ 16,813,218	\$ 8,377,790	\$ 13,440,700	\$ -	\$ 6,697,300	\$ 20,138,000
8	2034	\$ 100,000	\$ 100,000			1547.26	\$ 122,795	\$ -	\$ 95,100	\$ -	\$ -	\$ 95,100
9	2035	\$ 100,000	\$ 100,000			1587.48	\$ 125,987	\$ -	\$ 94,500	\$ -	\$ -	\$ 94,500
10	2036	\$ 100,000	\$ 100,000			1628.77	\$ 129,263	\$ -	\$ 93,900	\$ -	\$ -	\$ 93,900
11	2037	\$ 100,000	\$ 100,000			1671.12	\$ 132,624	\$ -	\$ 93,300	\$ -	\$ -	\$ 93,300
12	2038	\$ 100,000	\$ 100,000			1714.56	\$ 136,072	\$ -	\$ 92,700	\$ -	\$ -	\$ 92,700
13	2039	\$ 100,000	\$ 100,000			1759.14	\$ 139,610	\$ -	\$ 92,100	\$ -	\$ -	\$ 92,100
14	2040	\$ 18,840,640	\$ 11,840,640	\$ 7,000,000		1804.88	\$ 16,960,521	\$ 10,026,793	\$ 10,838,700	\$ -	\$ 6,407,700	\$ 17,246,400
15	2041	\$ 100,000	\$ 100,000			1851.81	\$ 146,964	\$ -	\$ 91,000	\$ -	\$ -	\$ 91,000
16	2042	\$ 100,000	\$ 100,000			1899.96	\$ 150,786	\$ -	\$ 90,400	\$ -	\$ -	\$ 90,400
17	2043	\$ 100,000	\$ 100,000			1949.35	\$ 154,705	\$ -	\$ 89,800	\$ -	\$ -	\$ 89,800
18	2044	\$ 100,000	\$ 100,000			2000.04	\$ 158,728	\$ -	\$ 89,300	\$ -	\$ -	\$ 89,300
19	2045	\$ 100,000	\$ 100,000			2052.04	\$ 162,855	\$ -	\$ 88,700	\$ -	\$ -	\$ 88,700
20	2046	\$ 100,000	\$ 100,000			2105.39	\$ 167,089	\$ -	\$ 88,100	\$ -	\$ -	\$ 88,100
21	2047	\$ 18,840,640	\$ 11,840,640	\$ 7,000,000		2160.13	\$ 20,298,817	\$ 12,000,341	\$ 10,370,000	\$ -	\$ 6,130,600	\$ 16,500,600
22	2048	\$ 100,000	\$ 100,000			2216.28	\$ 175,890	\$ -	\$ 87,000	\$ -	\$ -	\$ 87,000
23	2049	\$ 100,000	\$ 100,000			2273.92	\$ 180,464	\$ -	\$ 86,500	\$ -	\$ -	\$ 86,500
24	2050	\$ 100,000	\$ 100,000			2333.04	\$ 185,156	\$ -	\$ 85,900	\$ -	\$ -	\$ 85,900
25	2051	\$ 100,000	\$ 100,000			2393.70	\$ 189,970	\$ -	\$ 85,400	\$ -	\$ -	\$ 85,400
26	2052	\$ 100,000	\$ 100,000			2455.94	\$ 194,910	\$ -	\$ 84,900	\$ -	\$ -	\$ 84,900
27	2053	\$ 100,000	\$ 100,000			2519.78	\$ 199,977	\$ -	\$ 84,300	\$ -	\$ -	\$ 84,300
28	2054	\$ 18,840,640	\$ 11,840,640	\$ 7,000,000		2585.30	\$ 24,294,155	\$ 14,362,322	\$ 9,921,600	\$ -	\$ 5,865,500	\$ 15,787,100
29	2055	\$ 100,000	\$ 100,000			2652.52	\$ 210,511	\$ -	\$ 83,300	\$ -	\$ -	\$ 83,300
30	2056	\$ 100,000	\$ 100,000			2719.73	\$ 215,845	\$ -	\$ 82,700	\$ -	\$ -	\$ 82,700
31	2057	\$ 100,000	\$ 100,000			2788.65	\$ 221,314	\$ -	\$ 82,100	\$ -	\$ -	\$ 82,100
32	2058	\$ 100,000	\$ 100,000			2859.31	\$ 226,922	\$ -	\$ 81,500	\$ -	\$ -	\$ 81,500
33	2059	\$ 100,000	\$ 100,000			2931.77	\$ 232,672	\$ -	\$ 81,000	\$ -	\$ -	\$ 81,000
34	2060	\$ 100,000	\$ 100,000			3006.06	\$ 238,568	\$ -	\$ 80,400	\$ -	\$ -	\$ 80,400
35	2061	\$ 18,840,640	\$ 11,840,640	\$ 7,000,000		3082.23	\$ 28,963,793	\$ 17,122,939	\$ 9,455,900	\$ -	\$ 5,590,200	\$ 15,046,100
36	2062	\$ 100,000	\$ 100,000			3160.33	\$ 250,812	\$ -	\$ 79,300	\$ -	\$ -	\$ 79,300
37	2063	\$ 100,000	\$ 100,000			3240.41	\$ 257,167	\$ -	\$ 78,800	\$ -	\$ -	\$ 78,800
38	2064	\$ 100,000	\$ 100,000			3322.52	\$ 263,684	\$ -	\$ 78,200	\$ -	\$ -	\$ 78,200
39	2065	\$ 100,000	\$ 100,000			3406.71	\$ 270,365	\$ -	\$ 77,700	\$ -	\$ -	\$ 77,700
40	2066	\$ 100,000	\$ 100,000			3493.03	\$ 277,216	\$ -	\$ 77,100	\$ -	\$ -	\$ 77,100
41	2067	\$ 100,000	\$ 100,000			3581.55	\$ 284,241	\$ -	\$ 76,600	\$ -	\$ -	\$ 76,600
42	2068	\$ 18,840,640	\$ 11,840,640	\$ 7,000,000		3672.30	\$ 34,508,733	\$ 20,401,020	\$ 9,006,300	\$ -	\$ 5,324,400	\$ 14,330,700
43	2069	\$ 100,000	\$ 100,000			3765.35	\$ 298,828	\$ -	\$ 75,500	\$ -	\$ -	\$ 75,500
44	2070	\$ 100,000	\$ 100,000			3860.77	\$ 306,400	\$ -	\$ 75,000	\$ -	\$ -	\$ 75,000
45	2071	\$ 100,000	\$ 100,000			3958.60	\$ 314,164	\$ -	\$ 74,500	\$ -	\$ -	\$ 74,500
46	2072	\$ 100,000	\$ 100,000			4058.90	\$ 322,125	\$ -	\$ 74,000	\$ -	\$ -	\$ 74,000
47	2073	\$ 100,000	\$ 100,000			4161.75	\$ 330,287	\$ -	\$ 73,500	\$ -	\$ -	\$ 73,500
48	2074	\$ 100,000	\$ 100,000			4267.21	\$ 338,657	\$ -	\$ 73,000	\$ -	\$ -	\$ 73,000
49	2075	\$ 18,840,640	\$ 11,840,640	\$ 7,000,000		4375.34	\$ 41,115,218	\$ 24,306,670	\$ 8,578,100	\$ -	\$ 5,071,200	\$ 13,649,300
50	2076	\$ 100,000	\$ 100,000			4486.21	\$ 356,037	\$ -	\$ 71,900	\$ -	\$ -	\$ 71,900
Total Present Worth									\$ 75,287,200	\$ 4,562,000	\$ 41,086,900	\$ 120,936,100
Discount Rate									3.25%	3.25%	3.25%	3.25%
Amortization Period (years)									50	50	50	50
Capital Recovery Factor									0.04073	0.04073	0.04073	0.04073
Avg Annual Equivalent Cost									\$ 3,066,500	\$ 185,800	\$ 1,673,500	\$ 4,925,800

AAEC

Cost Summary - Comments

- ◆ Cost-effectiveness benefits derived from...
 - Frequent, no cost sand from USACE AICWW Maintenance dredging
 - Potentially lower cost sand from Dewees Inlet shoal management compared to cost of sand from offshore
 - Reduced sand loss from terminal groin at southern end of the island

Future Management

- ◆ Establish/Confirm Beach Management Baseline
- ◆ Prioritize beach management practices that provide best opportunities to maintain baseline conditions at all times
- ◆ Prioritize management practices that minimize cost

Recommendations for Consideration

- ◆ Establish appropriate beach management baseline
- ◆ Pursue agreement with Marinex for proposed renourishment pricing
- ◆ Pursue agreement with USACE to provide beach compatible sand to Reaches 1 and 2 from Breach Inlet AICWW Maintenance Dredging
- ◆ Investigate in more detail the feasibility, scope and cost of Dewees Inlet Shoal Management (Consider a test project)
- ◆ Investigate in more detail the feasibility, scope, and cost of a Terminal Groin at the southern end of Reach 1
- ◆ Consider last line of defense structural solutions in Reaches 5 and 6 to compliment Dewees Inlet Shoal Management

City of Isle of Palms Beach Preservation Committee

Beach Management Alternatives Analysis – Findings Discussion



September 2, 2026