Beach Management Alternatives Analysis

Approach, Findings, and Recommendations

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Presentation to City of Isle of Palms City Council

September 22, 2026

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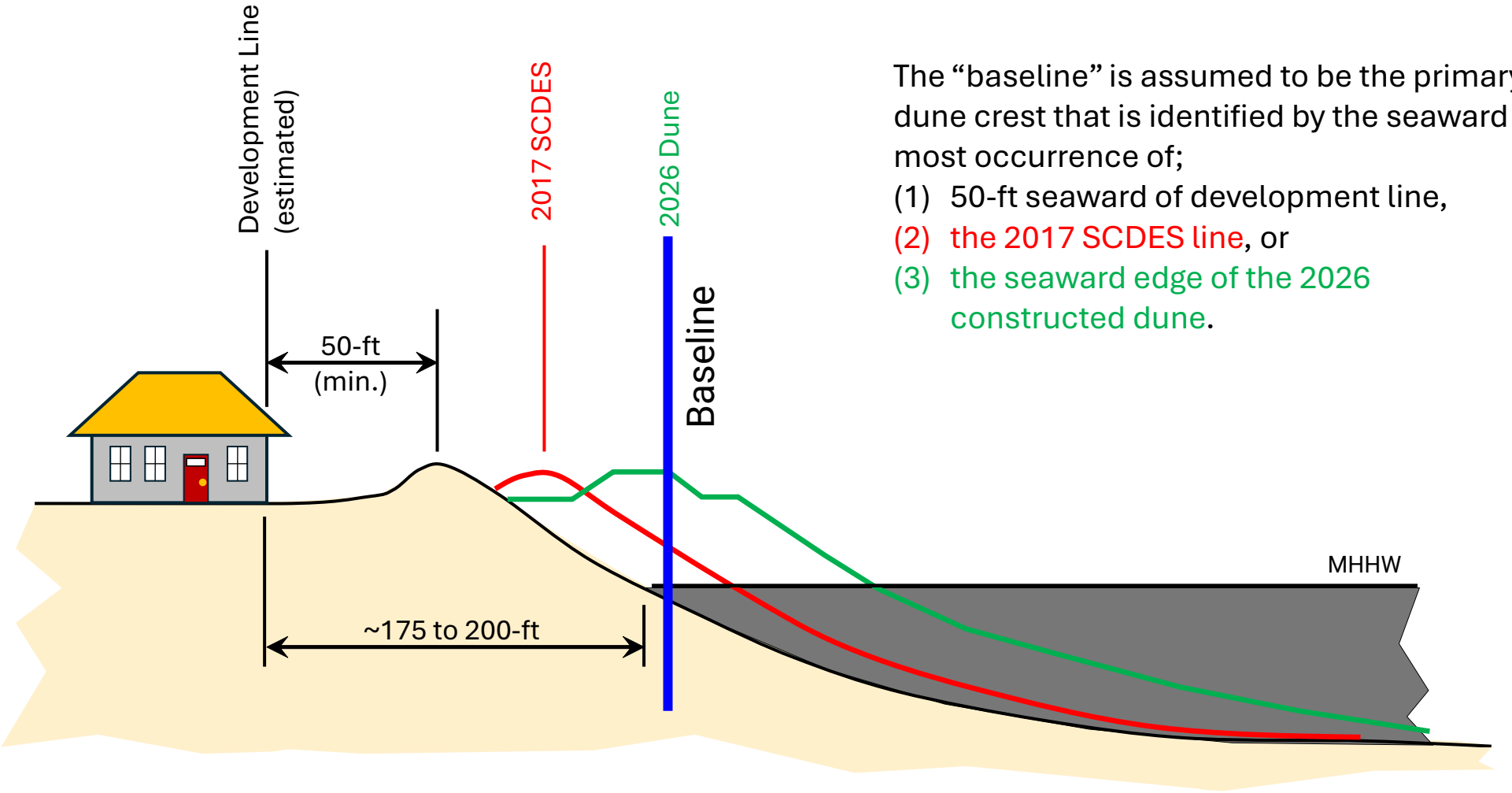
Outline

- Recap of Study Baseline Definition
- Summary of Assumed Initial Conditions
  - Volume Change Rates
  - 2026 Project
- Alternatives and Expected Performance
- 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

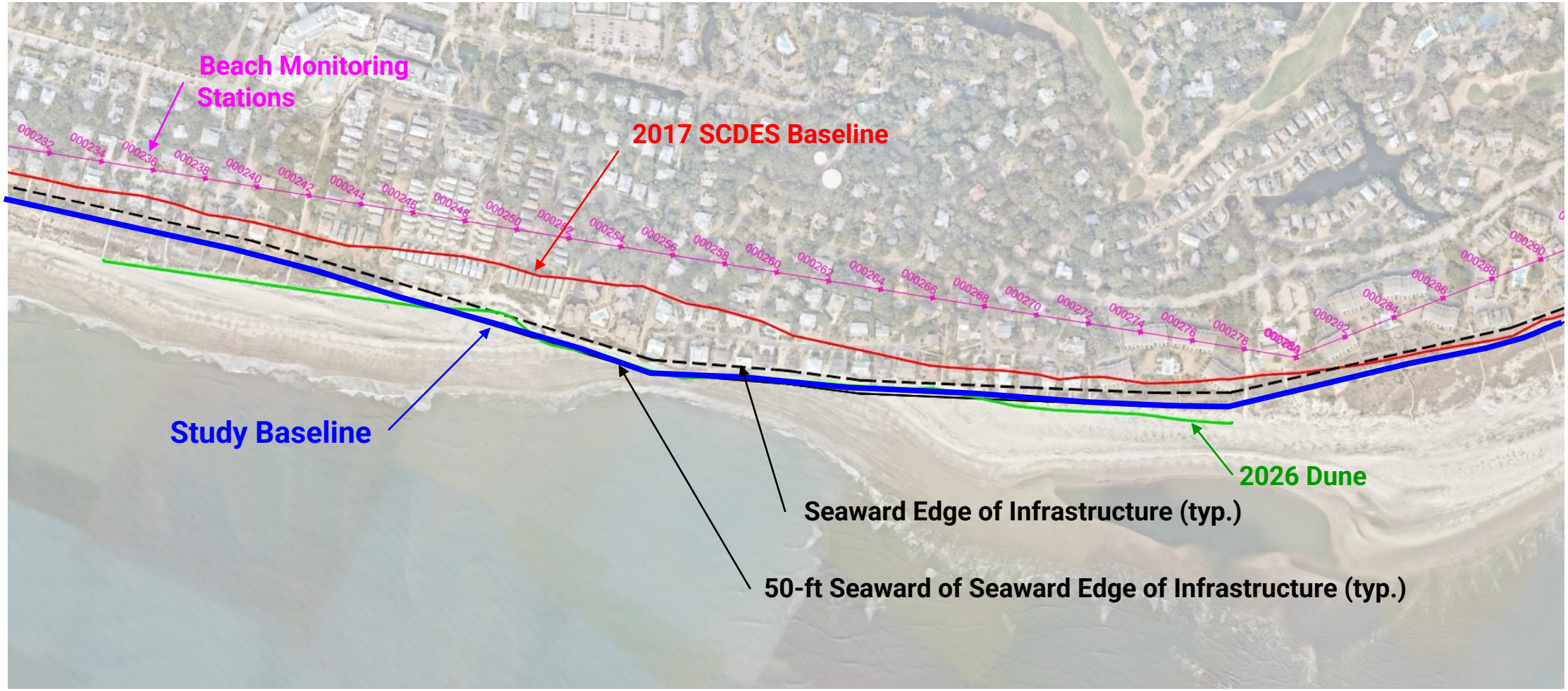


The "baseline" is assumed to be the primary dune crest that is identified by the seaward most occurrence of;

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

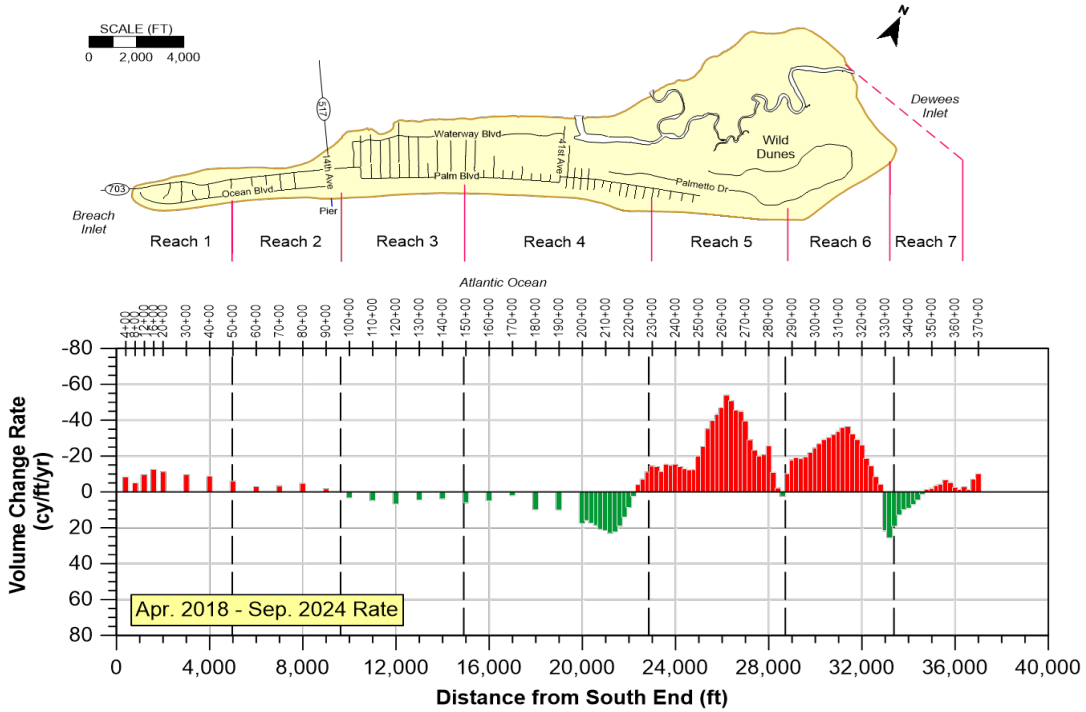
Alternatives Study Baseline Definition

Alternatives Study Baseline Definition



Initial Conditions

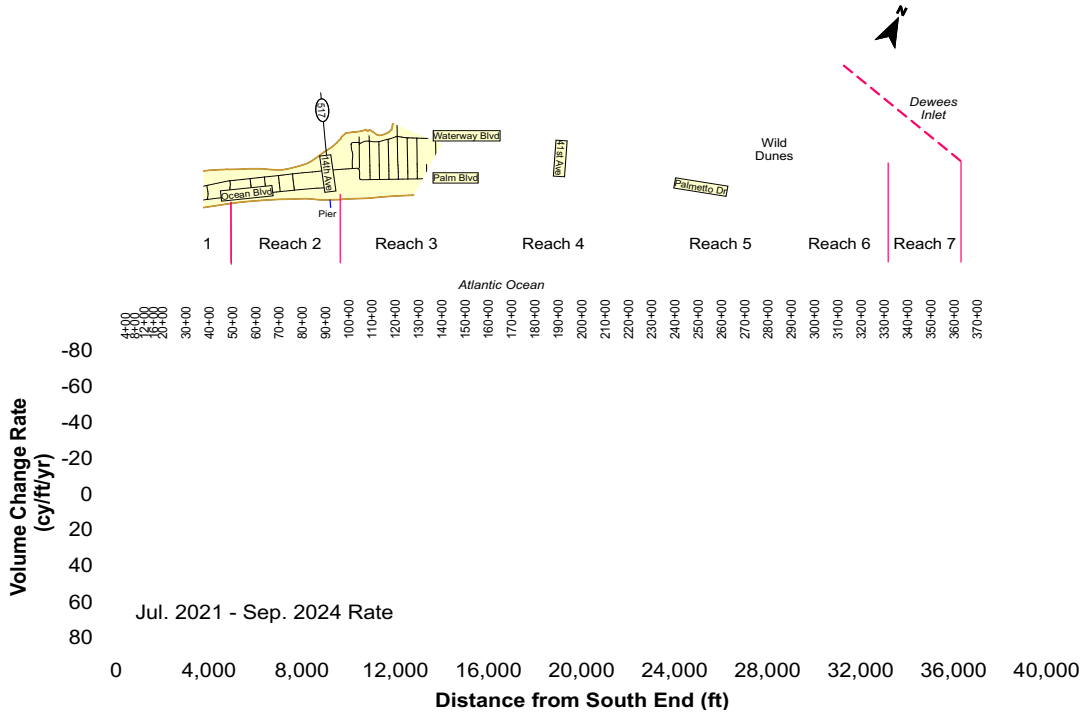
Volume Change Rates



"Low Rate"

Survey Period: April 2018 – September 2024

-303,000 cy/yr (gross)



"High Rate"

Survey Period: July 2021 – September 2024

-400,000 cy/yr (gross)

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

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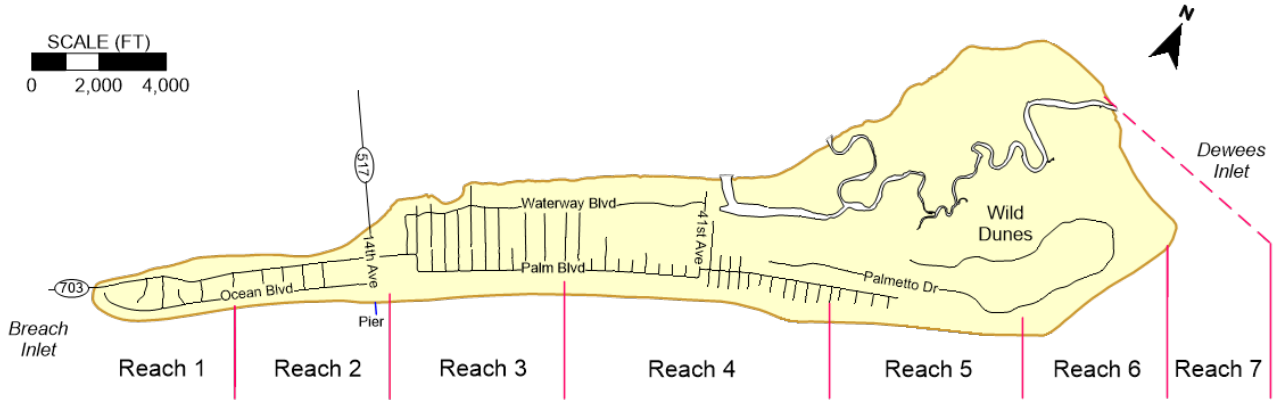
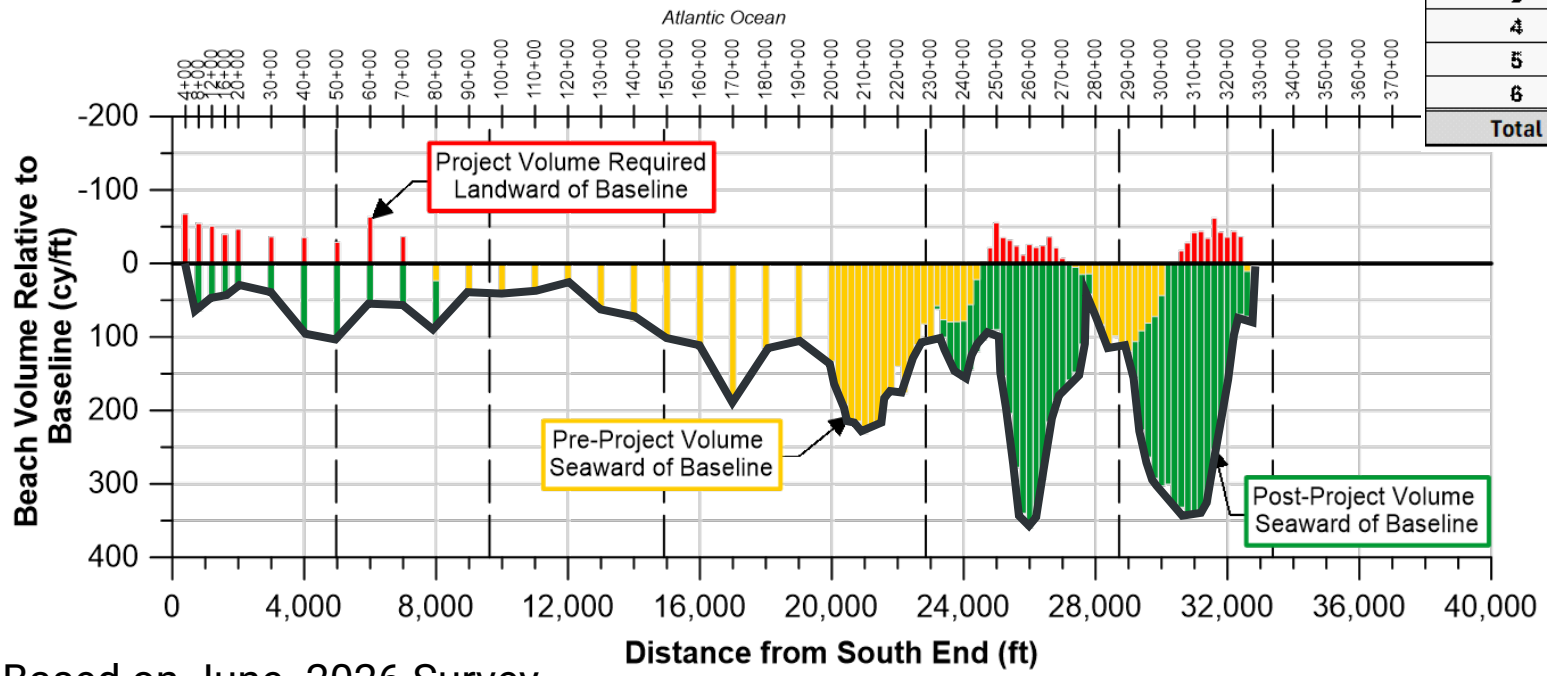
Post-2026 Beach Conditions (Projected)



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

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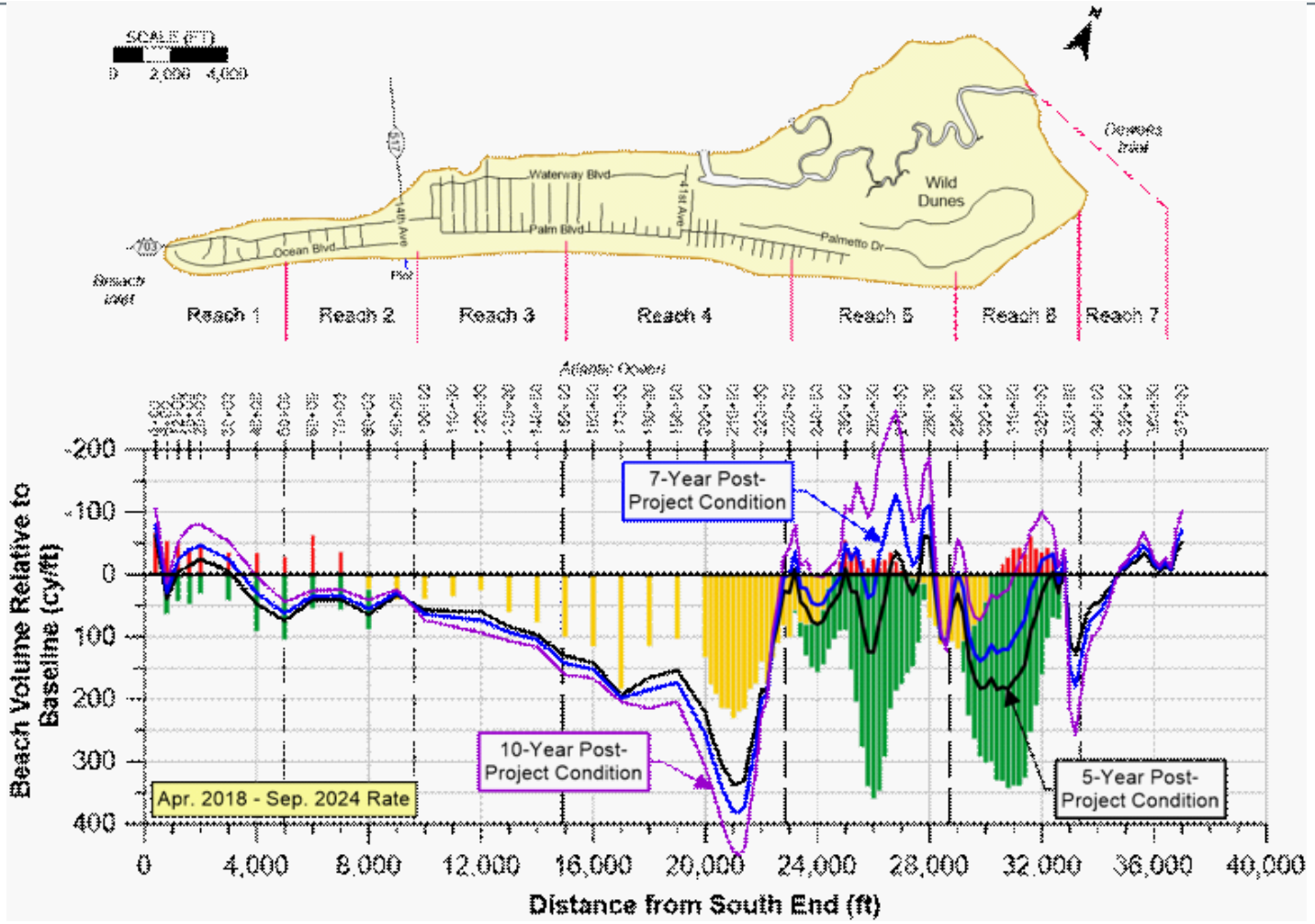
Alternatives

Alternatives

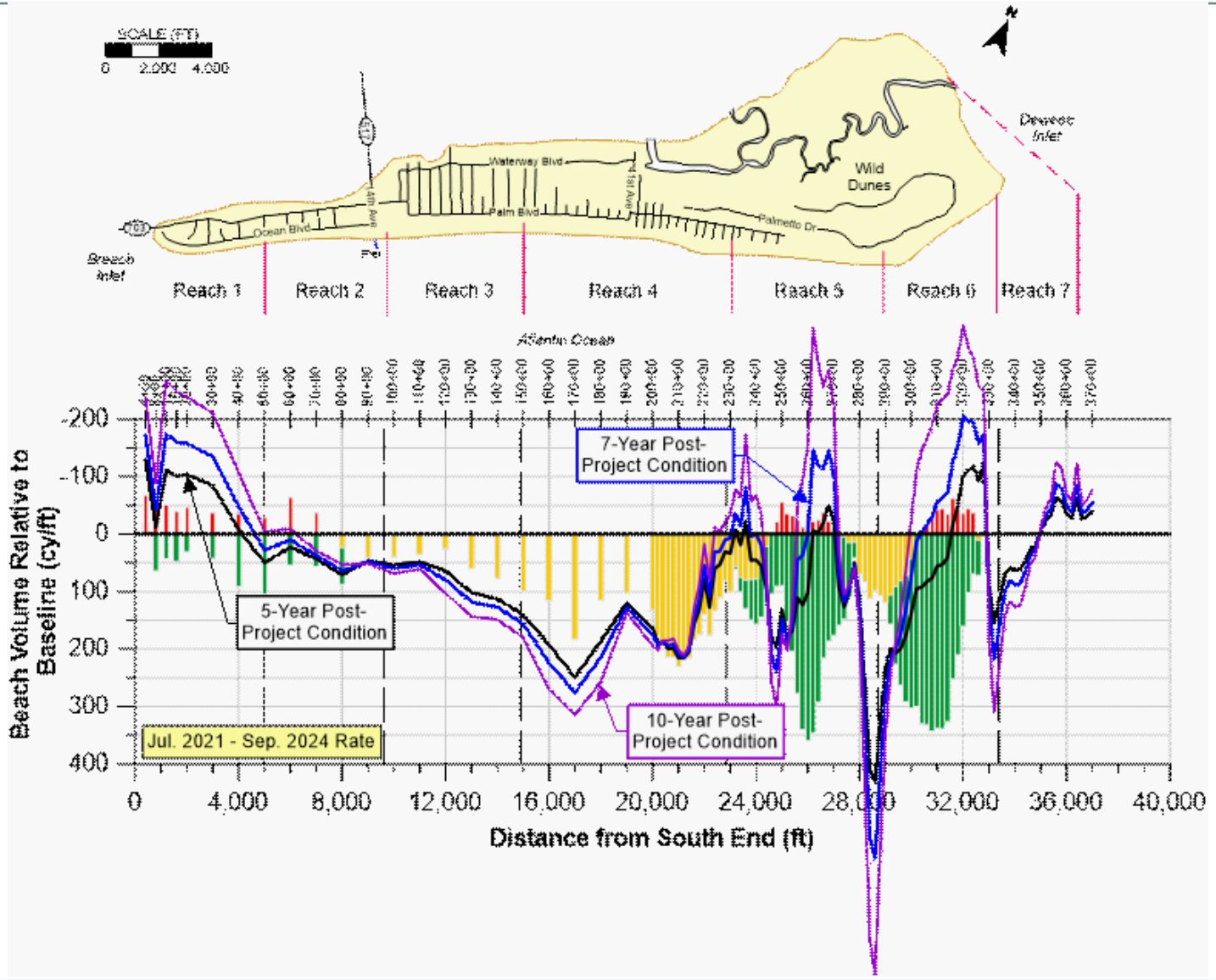
- No-Action ("Do Nothing")
- Beach Renourishment Only (Low and High Sand Loss Rates)
  - Scheduled (5-yr, 7-yr, and 10-yr intervals)
  - Triggered (Interval Required to Protect Baseline Condition)
- USACE Breach Inlet ICWW Maintenance – Reach 1 (150,000 cy every 3 yrs)
- Dewees Inlet Shoal Management – 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

Example…

7-Year Project Interval after Completion of 2026 Project				
	April 2018 - September 2024 ("Low" Erosion Rate)			
	Predicted Preformance of 2026 Project after 7 Years			
Reach	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (Required Renourishment Volume Following First Renourishment) (cy)	[D = C + B] Volume Required for First Renourishment Event (cy)
1	146,300	110,900	257,200	368,100
2	155,900	0	155,900	155,900
3	0	0	0	0
4	0	0	0	0
5	816,100	176,900	993,000	1,169,900
6	674,300	41,400	715,700	757,100
Total	**1,792,600**	**329,200**	**2,121,800**	**2,451,000**

7-Year Project Interval after Completion of 2026 Project				
	July 2021 - September 2024 ("High" Erosion Rate)			
	Predicted Preformance of 2026 Project after 7 Years			
Reach	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	[C = A + B] Total Volume Lost (Required Renourishment Volume Following First Renourishment) (cy)	[D = C + B] Volume Required for First Renourishment Event (cy)
1	158,300	515,300	673,600	1,188,900
2	218,900	11,000	229,900	240,900
3	0	0	0	0
4	60,800	0	60,800	60,800
5	675,900	154,700	830,600	985,300
6	715,100	289,600	1,004,700	1,294,300
Total	**1,829,000**	**970,600**	**2,799,600**	**3,770,200**

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]			
	April 2018 - September 2024 ("Low" Erosion Rate)			
	Predicted Preformance of 2026 Project after 3 Years			
	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	Total Volume Lost (Required Renourishment Volume Following First Renourishment) (cy)	[D = C + B] Volume Required for First Renourishment Event (cy)
1	97,300	13,000	110,300	123,300
2	66,800	0	66,800	66,800
3	0	0	0	0
4	0	0	0	0
5	418,500	7,100	425,600	432,700
6	306,700	0	306,700	306,700
Total	**889,300**	**20,100**	**909,400**	**929,500**

Reach	Trigger - 1 Year Until Erosion into Baseline [Between Stations 12+00 and 30+00]			
	July 2021 - September 2024 ("High" Erosion Rate)			
	Predicted Preformance of 2026 Project after 1 Year			
	[A] Volume Lost Seaward of Baseline (cy)	[B] Volume Lost Landward of Baseline (cy)	Total Volume Lost (Required Renourishment Volume Following First Renourishment) (cy)	[D = C + B] Volume Required for First Renourishment Event (cy)
1	88,100	8,100	96,200	104,300
2	32,900	0	32,900	32,900
3	0	0	0	0
4	8,700	0	8,700	8,700
5	118,700	0	118,700	118,700
6	141,700	1,900	143,600	145,500
Total	**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

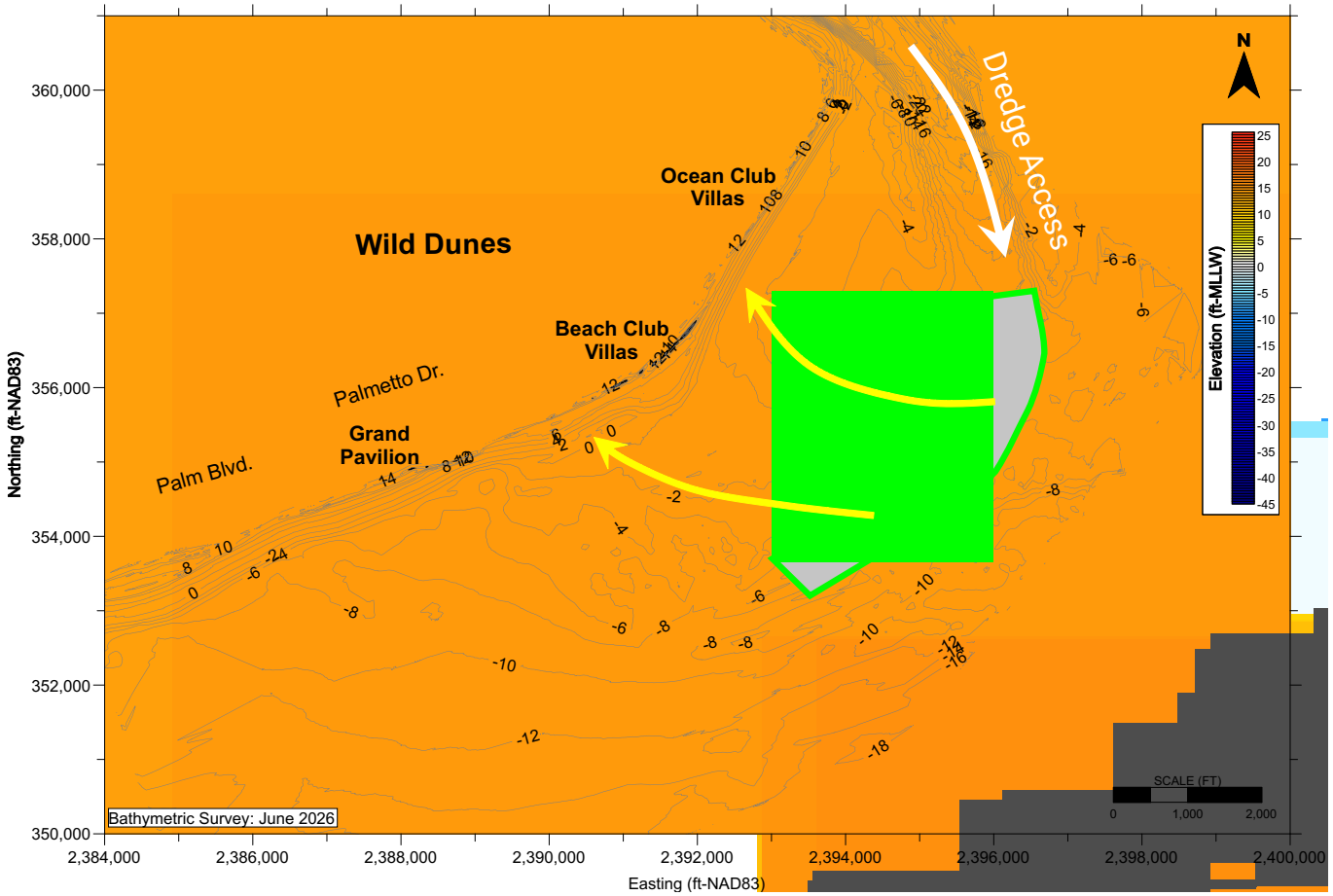
Dewees Inlet Shoal Management

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



Positive preliminary feedback from regulatory agencies

Note: Concept only.

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Renourishment – with AICWW and Shoal Mgt Sand

- 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.

EXAMPLE

7-Year Project Interval after Completion of 2026 Project						
	April 2018 - September 2024 ("Low" Erosion Rate)					
Reach	[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
2	155,900	0	155,900	155,900		0
3	0	0	0	0	0	0
4	0	0	0	0	0	0
5	816,100	176,900	993,000	1,169,900	700,000	819,900
6	674,300	41,400	715,700	757,100		407,100
Total	**1,792,600**	**329,200**	**2,121,800**	**2,451,000**	**1,050,000**	**1,401,000**

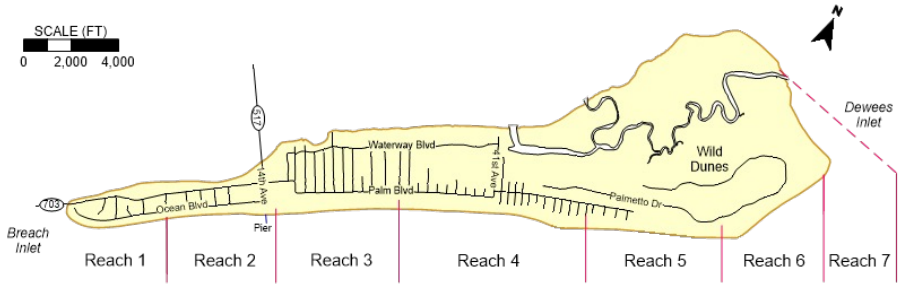
Renourishment with Structures

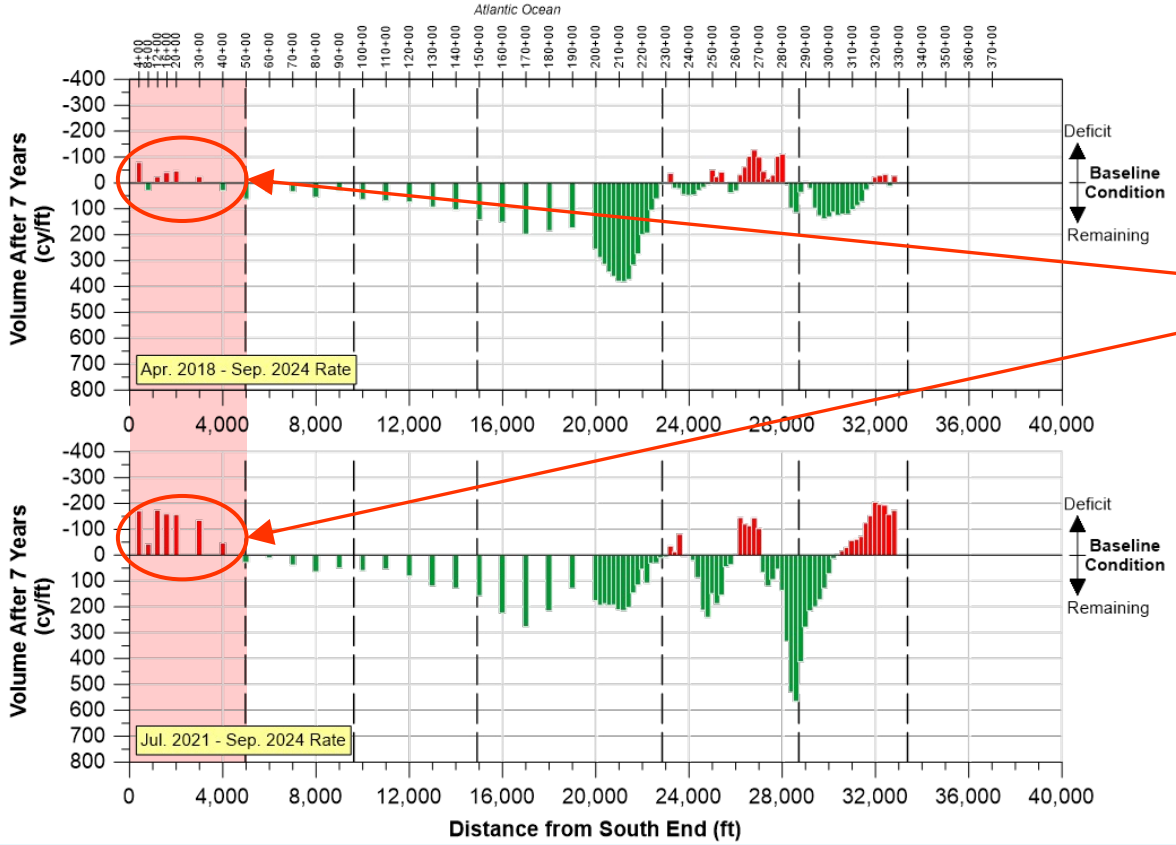
- Terminal Groin (Reach 1)

Anticipated Sand Loss Landward of Baseline (Reach 1)

Post-Project Beach Volume Performance **Relative to Baseline**

7-Year Condition



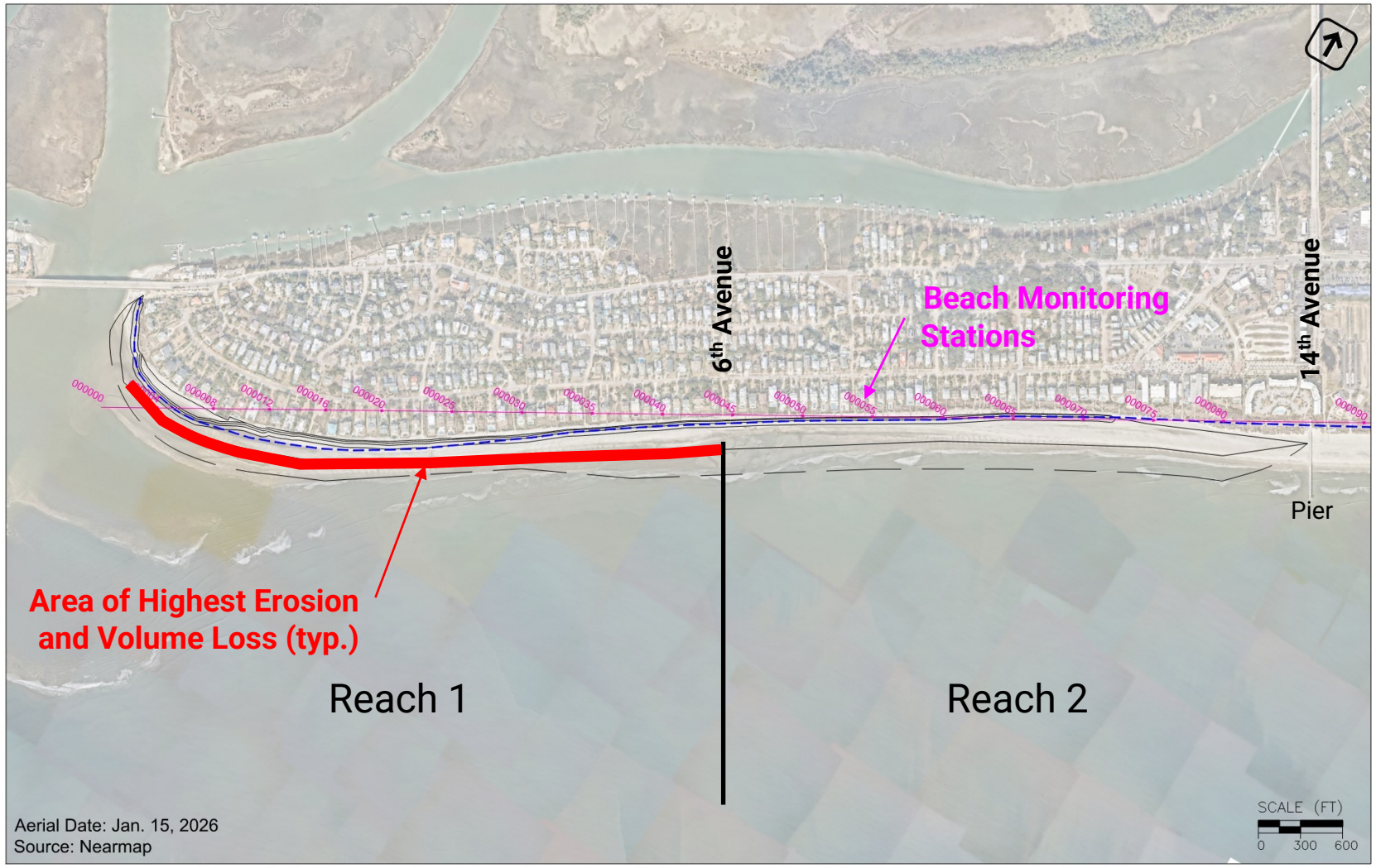


"**Low**" rate (2018-2024)

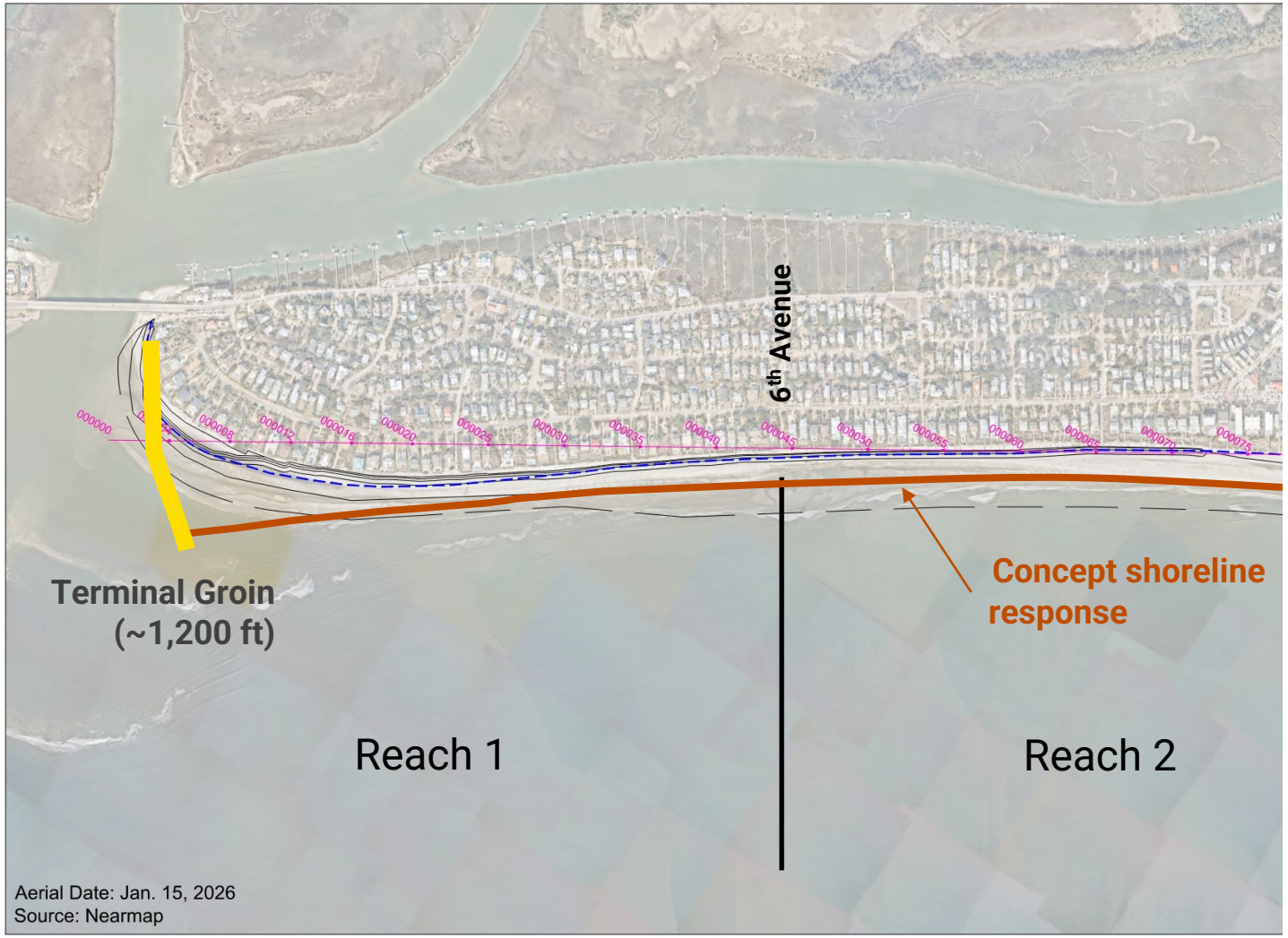
"**High**" rate (2021-2024)

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%

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

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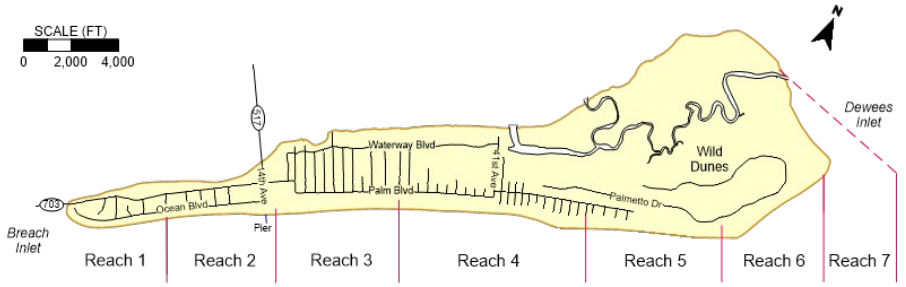
Renourishment with Structures

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

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

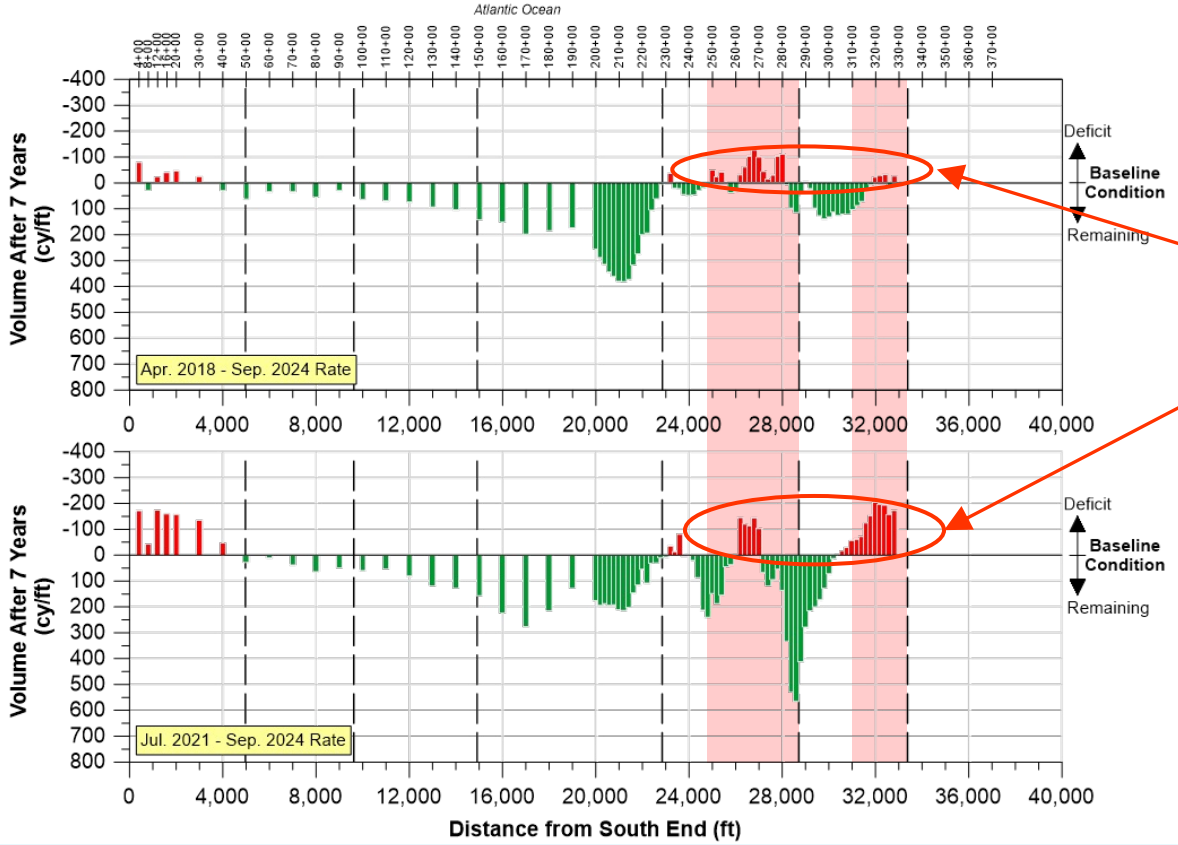
Post-Project Beach Volume Performance **Relative to Baseline**

7-Year Condition



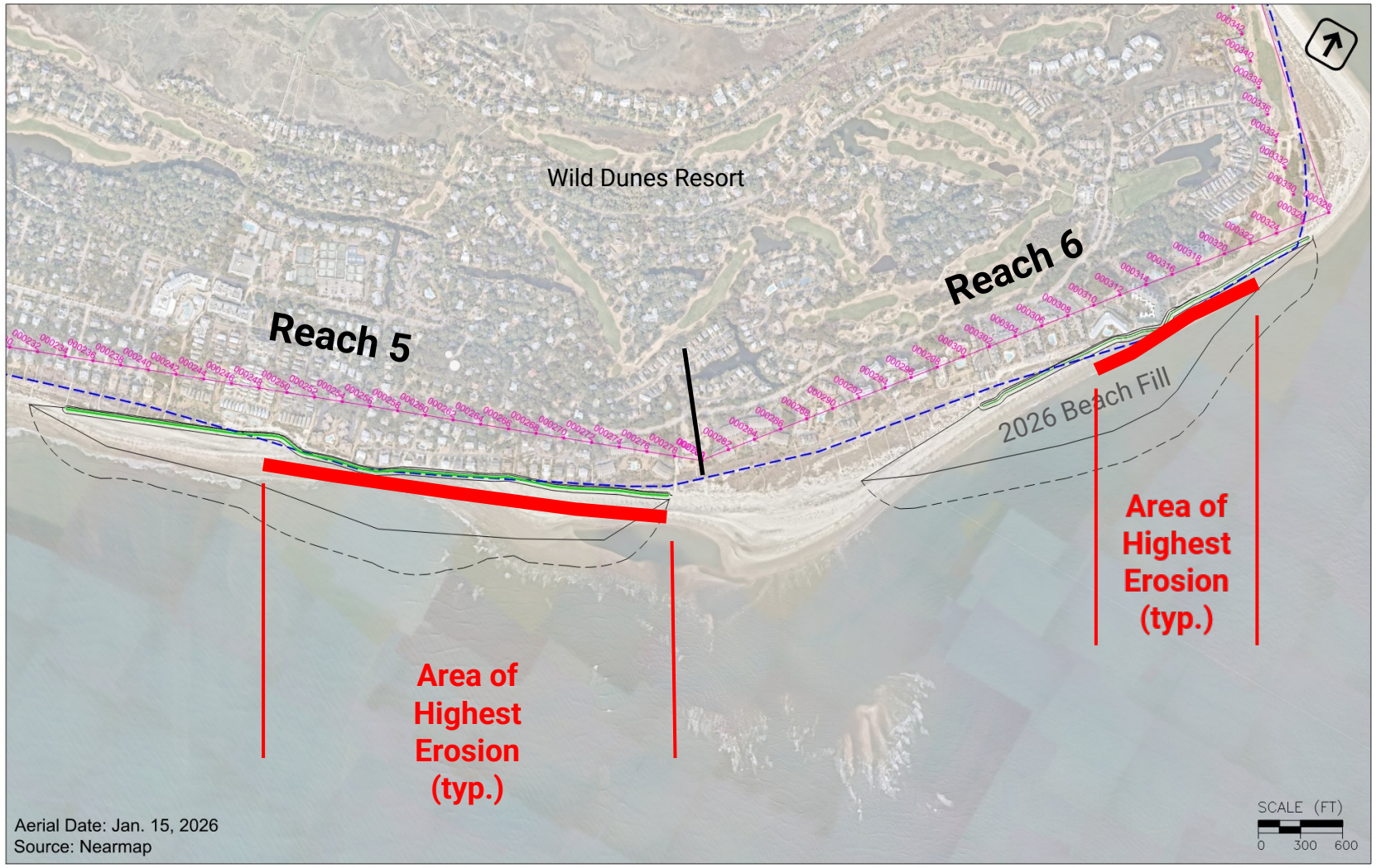
"**Low**" rate (2018-2024)

"**High**" rate (2021-2024)

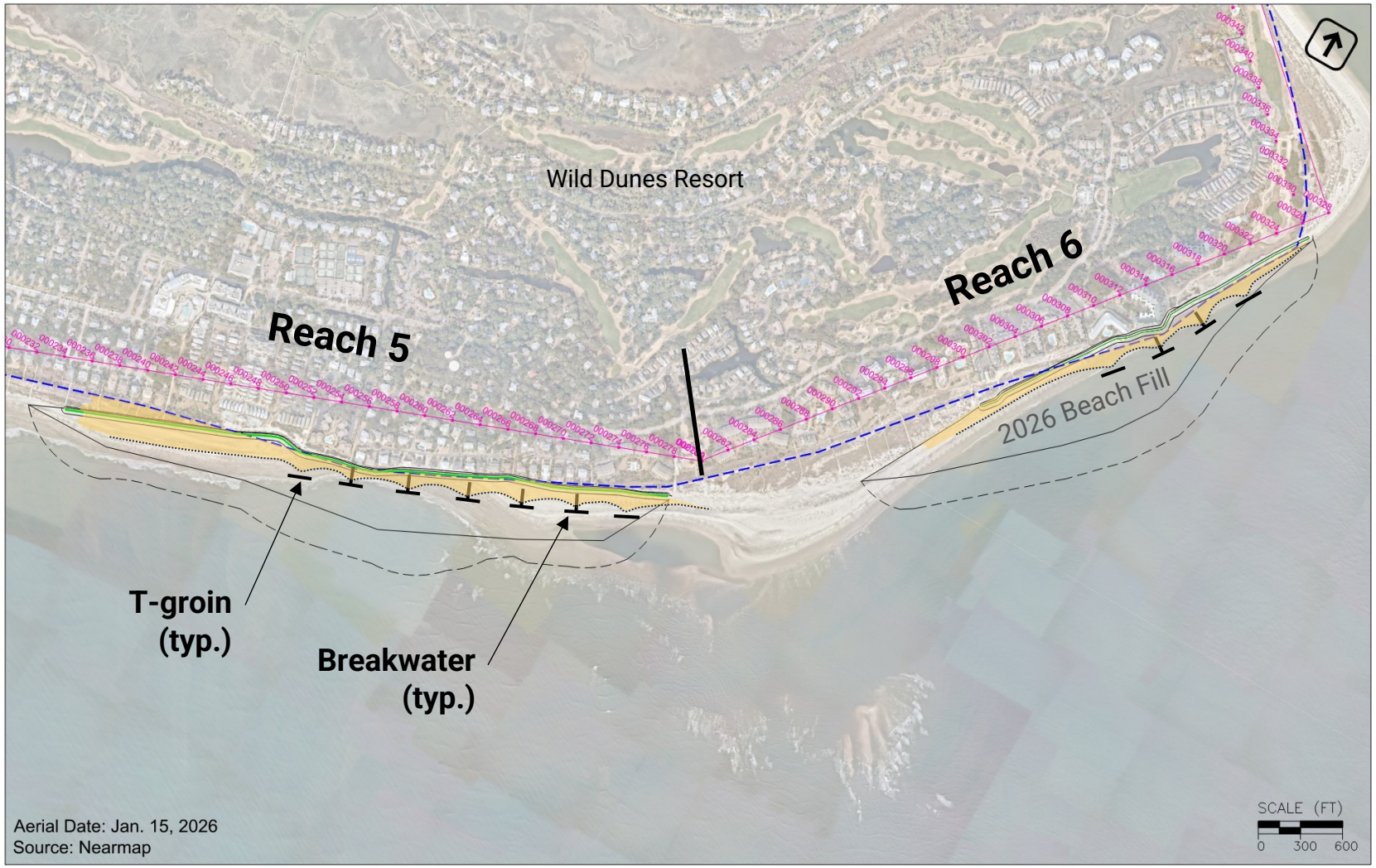


Volume Loss Beyond Baseline (typ.)

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.

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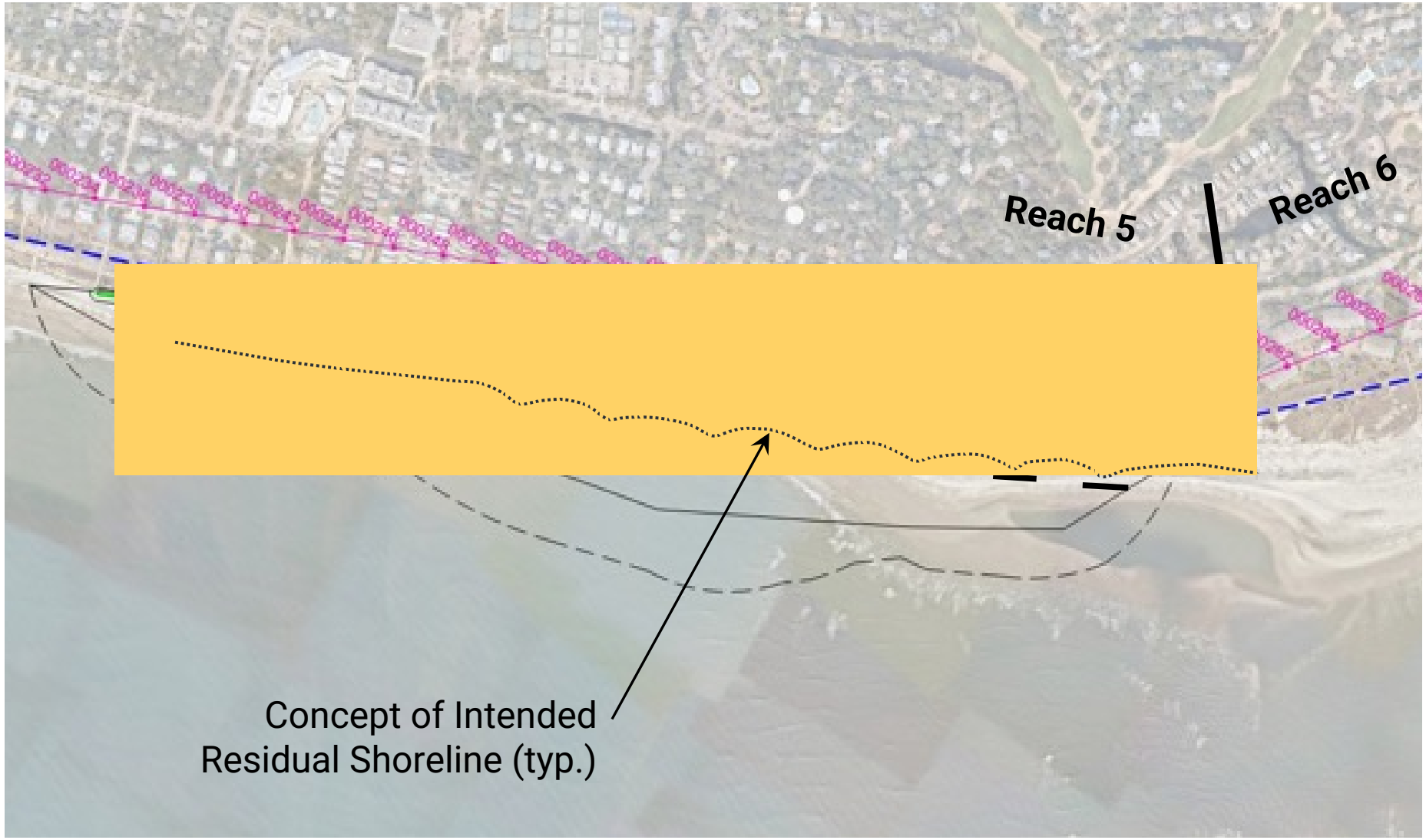
T-Groins and Breakwaters (Reach 5)



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

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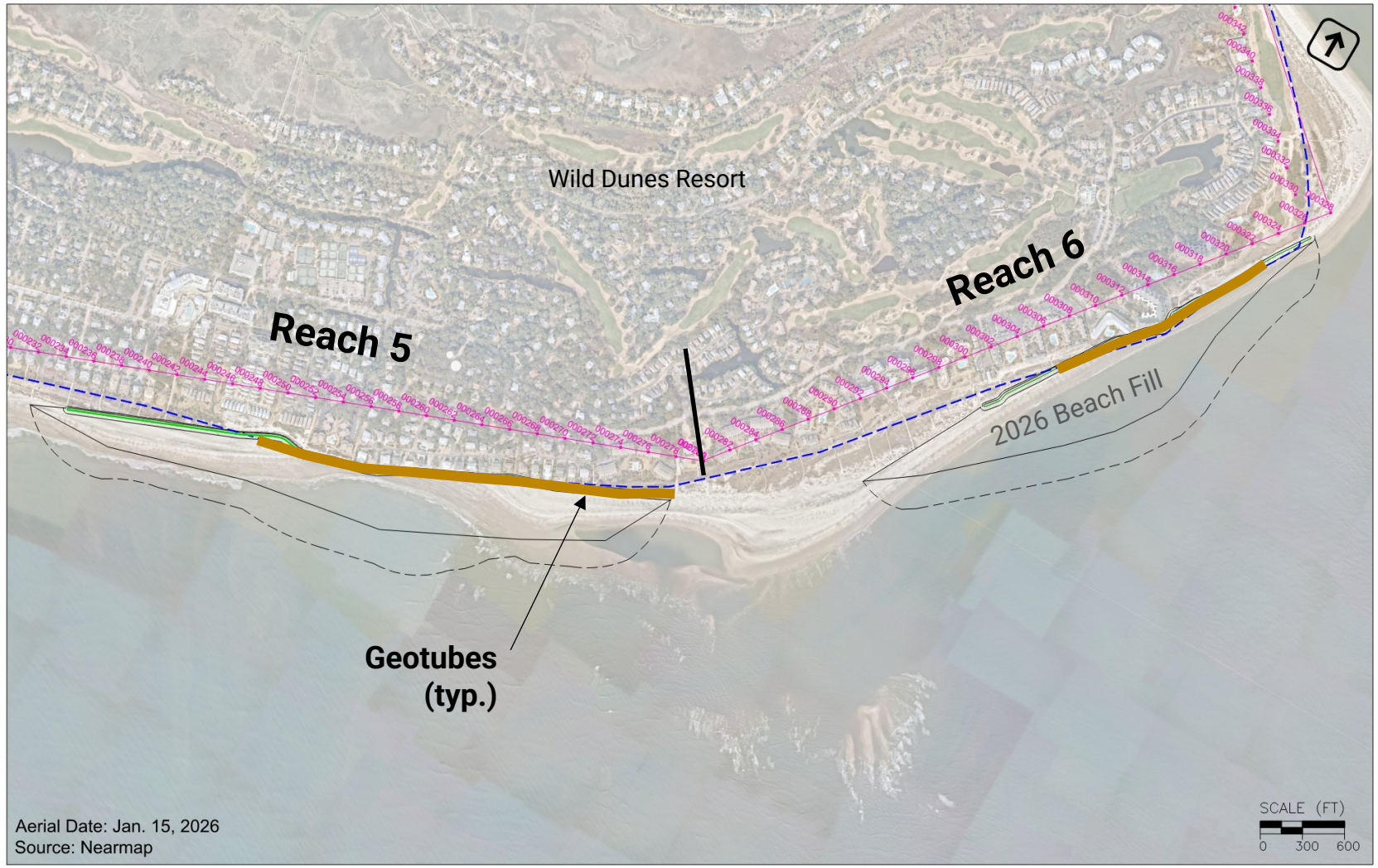
Renourishment with Structures

- 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

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

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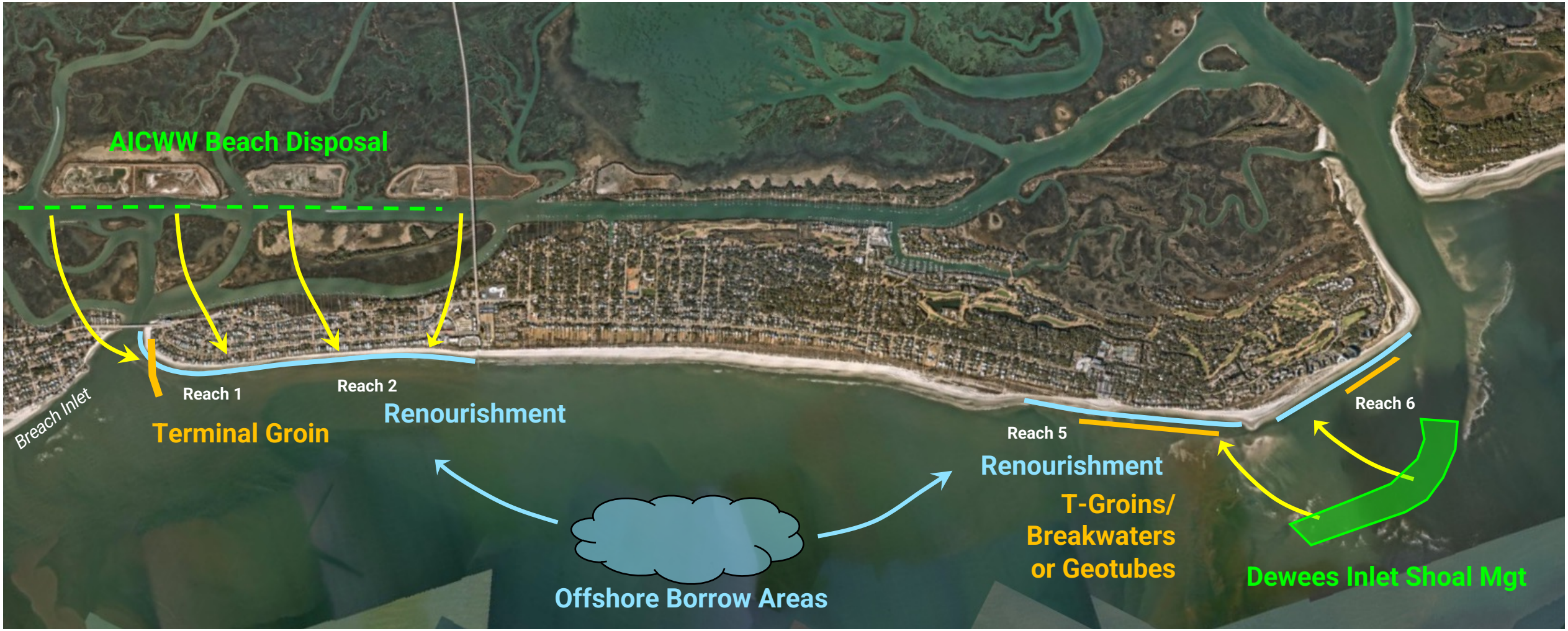
Beach Management Elements Summary



Note: Concept. Does not represent a final design.

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Known Offshore Sand Sources

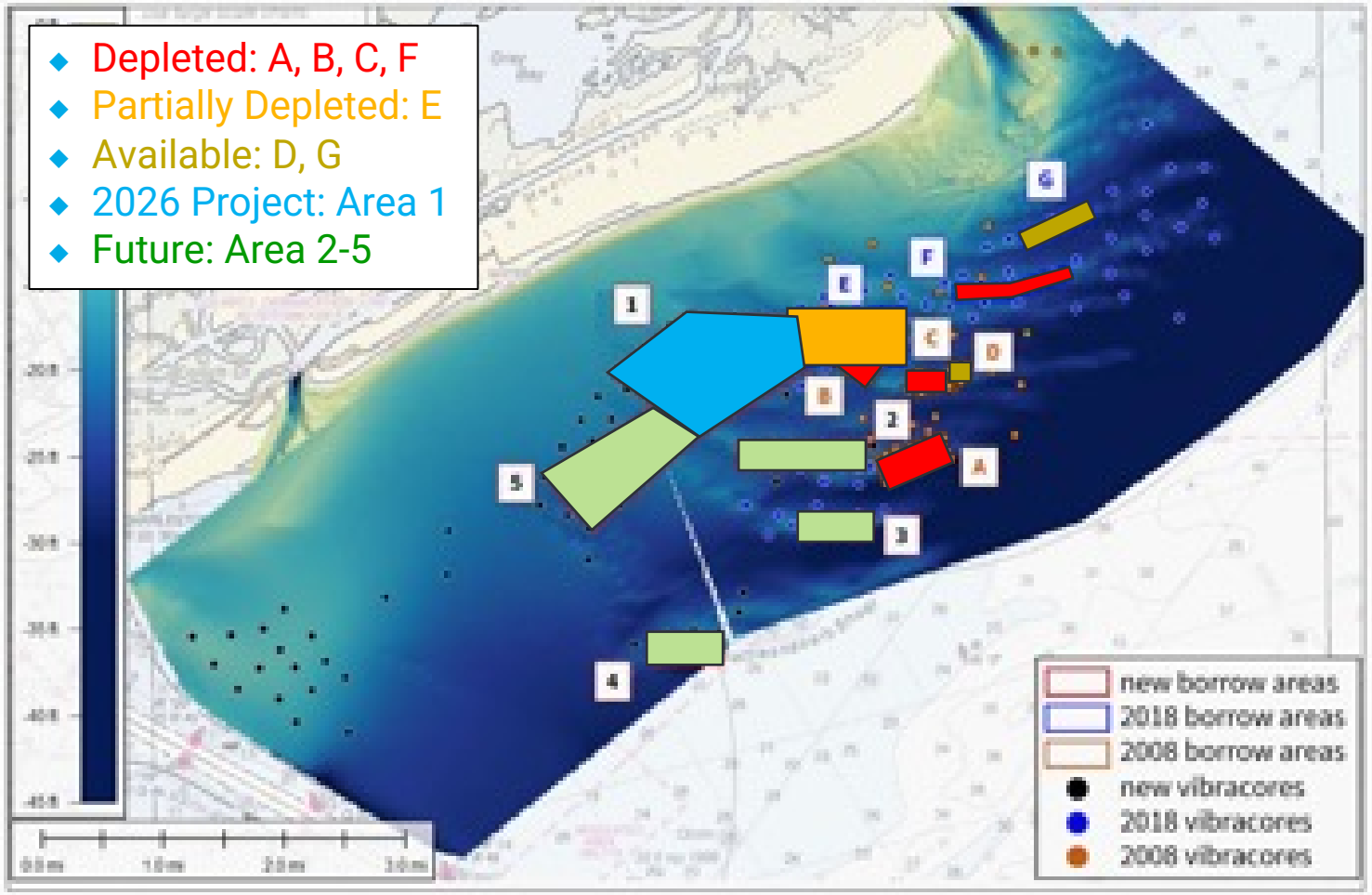

FIGURE 4.1. Location of primary offshore borrow area along with locations of borings.

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)

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Cost Assumptions - Structures

- Rock - Effective “all-in” 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**

  ~$7.5 to $9M

- Geotubes – Effective “all-in” unit cost = $570/ft (recent market conditions in NC)
  - Reaches 5 & 6 (~5,000 feet) **~$2.9M**

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Cost Assumptions - Other

- Planning, Engineering, and Design (PED) = 5% of construction cost
- Const. Eng. and Inspection (CEI) = 7% of construction cost
- Contingency = 10% (Note: The assumed costs are based upon proposals from industry and recent market examples, so only 10% contingency is applied to accommodate uncertainties with future required quantities.)

- Planning period (n) = 50 years
- Discount rate (i) = 3.25% (2026 USACE planning guidance)

Cost Summary *(Escalated Future Costs; 2.5%)*

Alternative	Future Renourish-ment Event Volume (cy)	Future Renourish-ment Event Cost ($)	Supplemental Volume from Dewees Inlet and AICWW (cy)	Dewees Inlet Shoal Mgt ($)	Breach Inlet AICWW Beach Disposal ($)	Terminal Groin (Rch 1) ($)	T-Groins/ Breakwater (Rch 5/6) ($)	**Average Annual Equivalent Cost (AAEC) ($/yr)**

Details provided on following 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.

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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 10%	$ 1,404,816.00
			Total	$ 15,452,976.00

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 10%	$ 1,184,064.00
			Total	$ 13,024,704.00

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 10%	$ 700,000.00
			Total	$ 7,700,000.00

Terminal Groin (Reach 1)				
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 10%	$ 462,000.00
			Total	$ 5,082,000.00

T-Groins/Breakwaters (Reaches 5 and 6)				
Item	Quantity	Unit Cost	Units	Total
Breakwaters	6,400	$ 275.00	tons	$ 1,760,000.00
T-groins	19,600	$ 275.00	tons	$ 5,390,000.00
			subtotal Construction	$ 7,150,000.00
			PED/Permitting 5%	$ 357,500.00
			CEI/Monitoring 7%	$ 500,500.00
			subtotal Project	$ 8,008,000.00
			Contingency 10%	$ 800,800.00
			Total	$ 8,808,800.00

COST STREAM

		Base Costs					Escalated Costs					Present Worth				
	Year	Total Cost	Renourisment (Offshore Sand)	Terminal Groin (Reach 1)	T-Groins/ Breakwaters (Reaches 5 & 6)	Dewees Shoal Mgt	Cost Escolation Factor	Renourisment (Offshore Sand)	Terminal Groin (Reach 1)	T-Groins/ Breakwaters (Reaches 5 & 6)	Dewees Shoal Mgt	Renourisment (Offshore Sand)	Terminal Groin (Reach 1)	T-Groins/ Breakwaters (Reaches 5 & 6)	Dewees Shoal Mgt	Present Worth Cost
0	2026	$ -	$ -	$ -	$ -	$ -	1260.04	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
1	2027	$ -	$ -				1292.80	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
2	2028	$ 5,082,000	$ -	$ 5,082,000			1326.42	$ -	$ 5,349,724	$ -	$ -	$ -	$ 5,018,200	$ -	$ -	$ 5,018,200
3	2029	$ 8,808,800	$ -		$ 8,808,800		1360.90	$ -	$ -	$ 9,513,901	$ -	$ -	$ -	$ 8,643,500	$ -	$ 8,643,500
4	2030	$ -	$ -				1396.29	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
5	2031	$ -	$ -				1432.59	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
6	2032	$ -	$ -				1469.84	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	2033	$ 23,152,976	$ 15,452,976			$ 7,700,000	1508.05	$ 18,494,540	$ -	$ -	$ 9,215,569	$ 14,784,700	$ -	$ -	$ 7,367,000	$ 22,151,700
8	2034	$ -	$ -				1547.26	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
9	2035	$ -	$ -				1587.49	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
10	2036	$ -	$ -				1628.77	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
11	2037	$ -	$ -				1671.12	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
12	2038	$ -	$ -				1714.56	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
13	2039	$ -	$ -				1759.14	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
14	2040	$ 20,724,704	$ 13,024,704			$ 7,700,000	1804.88	$ 18,656,573	$ -	$ -	$ 11,029,472	$ 11,922,600	$ -	$ -	$ 7,048,500	$ 18,971,100
15	2041	$ -	$ -				1851.81	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
16	2042	$ -	$ -				1899.96	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
17	2043	$ -	$ -				1949.35	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
18	2044	$ -	$ -				2000.04	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
19	2045	$ -	$ -				2052.04	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
20	2046	$ -	$ -				2105.38	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
21	2047	$ 20,724,704	$ 13,024,704			$ 7,700,000	2160.13	$ 22,328,699	$ -	$ -	$ 13,200,375	$ 11,407,000	$ -	$ -	$ 6,743,600	$ 18,150,600
22	2048	$ -	$ -				2216.29	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
23	2049	$ -	$ -				2273.92	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
24	2050	$ -	$ -				2333.04	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
25	2051	$ -	$ -				2393.70	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
26	2052	$ -	$ -				2455.94	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
27	2053	$ -	$ -				2519.79	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
28	2054	$ 20,724,704	$ 13,024,704			$ 7,700,000	2585.30	$ 26,723,570	$ -	$ -	$ 15,798,554	$ 10,913,700	$ -	$ -	$ 6,452,000	$ 17,365,700
29	2055	$ -	$ -				2652.52	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
30	2056	$ -	$ -				2719.73	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
31	2057	$ -	$ -				2788.65	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
32	2058	$ -	$ -				2859.31	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
33	2059	$ -	$ -				2931.77	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
34	2060	$ -	$ -				3006.09	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
35	2061	$ 20,724,704	$ 13,024,704			$ 7,700,000	3082.23	$ 31,860,172	$ -	$ -	$ 18,835,232	$ 10,401,500	$ -	$ -	$ 6,149,200	$ 16,550,700
36	2062	$ -	$ -				3160.33	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
37	2063	$ -	$ -				3240.41	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
38	2064	$ -	$ -				3322.52	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
39	2065	$ -	$ -				3406.71	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
40	2066	$ -	$ -				3493.03	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
41	2067	$ -	$ -				3581.55	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
42	2068	$ 20,724,704	$ 13,024,704			$ 7,700,000	3672.30	$ 37,959,606	$ -	$ -	$ 22,441,122	$ 9,906,900	$ -	$ -	$ 5,856,800	$ 15,763,700
43	2069	$ -	$ -				3765.35	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
44	2070	$ -	$ -				3860.77	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
45	2071	$ -	$ -				3958.60	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
46	2072	$ -	$ -				4058.90	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
47	2073	$ -	$ -				4161.75	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
48	2074	$ -	$ -				4267.21	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
49	2075	$ 20,724,704	$ 13,024,704			$ 7,700,000	4375.34	$ 45,226,739	$ -	$ -	$ 26,737,337	$ 9,435,900	$ -	$ -	$ 5,578,300	$ 15,014,200
50	2076	$ -	$ -				4486.21	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
	Total Present Worth											$ 78,772,300	$ 5,018,200	$ 8,643,500	$ 45,195,400	$ 137,629,400
	Discount Rate											3.25%	3.25%	3.25%	3.25%	3.25%
	Amortization Period (years											50	50	50	50	50
	Capital Recovery Facto											0.04073	0.04073	0.04073	0.04073	0.04073
	Avg Annual Equivalent Cos											**$ 3,208,400**	**$ 204,400**	**$ 352,100**	**$ 1,840,800**	**$ 5,605,700**

AAEC

Example is for 7-Year periodic renourishment, supplemental sand, Terminal Groin (Reach 1), and Groins/Breakwater (Reaches 5 & 6)

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Cost Summary *(No Escalation of Future Costs)*

Alternative	Future Renourish-ment Event Volume (cy)	Future Renourish-ment Event Cost ($)	Supplemental Volume from Dewees Inlet and AICWW (cy)	Dewees Inlet Shoal Mgt ($)	Breach Inlet AICWW Beach Disposal ($)	Terminal Groin (Rch 1) ($)	T-Groins/ Breakwater (Rch 5/6) ($)	**Average Annual Equivalent Cost (AAEC) ($/yr)**
Renourishment Only - Scheduled Interval - Offshore Sand								
5-Yr Interval (Low)	1,515,600	$ 18,652,973	-	$ -	$ -	$ -	$ -	**$ 3,539,700**
5-Yr Interval (High)	1,999,700	$ 24,020,674	-	$ -	$ -	$ -	$ -	**$ 4,685,700**
7-Yr interval (Low)	2,121,800	$ 25,374,518	-	$ -	$ -	$ -	$ -	**$ 3,378,400**
7-Yr Interval (High)	2,799,600	$ 32,889,965	-	$ -	$ -	$ -	$ -	**$ 4,575,300**
10-Yr Interval (Low)	3,031,300	$ 35,459,054	-	$ -	$ -	$ -	$ -	**$ 3,352,600**
10-Yr Interval (High)	3,999,500	$ 46,194,456	-	$ -	$ -	$ -	$ -	**$ 4,635,700**
Renourishment Only - Triggered Interval - Offshore Sand								
3-Yr Interval (Low)	909,400	$ 11,931,427	-	$ -	$ -	$ -	$ -	**$ 3,794,500**
1-Yr Interval (High)	400,100	$ 6,284,309	-	$ -	$ -	$ -	$ -	**$ 6,288,700**
Renourishment - Scheduled Interval - Offshore Sand Supplemented with Breach Inlet AICWW and Dewees Inlet Shoal Management								
7-Yr Internval (Low)	1,071,800	$ 13,732,118	1,050,000	$ 7,700,000	$ -	$ -	$ -	**$ 2,871,900**
7-Yr Interval (High)	1,749,600	$ 21,247,565	1,050,000	$ 7,700,000	$ -	$ -	$ -	**$ 4,068,900**
Renourishment - Scheduled Interval - Offshore Sand / Supplemental Sand / Terminal Groin (Reach 1) & T-Groins/Breakwaters (Reaches 5 & 6)								
7-Yr Interval (Low)	1,008,000	$ 13,024,704	1,050,000	$ 7,700,000	$ -	$ 5,082,000	$ 8,808,800	**$ 3,261,400** AAEC
7-Yr Interval (High)	1,295,000	$ 16,206,960	1,050,000	$ 7,700,000	$ -	$ 5,082,000	$ 8,808,800	**$ 4,898,100**

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.

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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
  - Potential increase in time between required renourishment along Reaches 5 & 6 with structural protection

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

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Beach Management Alternatives Analysis

Approach, Findings, and Recommendations

Chris Creed, P.E.
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Presentation to City of Isle of Palms City Council

September 22, 2026

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