

Flagler Beach #Goals: Years of Planning and a Whole lot of Sand!

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Florida Shore & Beach Preservation Association
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Beach Preservation Technology

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BUILDING STRONG®





OUTLINE



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- Purpose
- Project Life Cycle
 - Feasibility Study Phase
 - Design Phase
 - Initial Construction
- Lessons Learned and Recommendations



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PURPOSE



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**Beach
Renourishment**

**Maintenance of
Levees and
Dams**

**Wetland
Restoration**



Marsh Creation



**Flood Risk Management (FRM) and Coastal
Storm Risk Management (CSRM)**

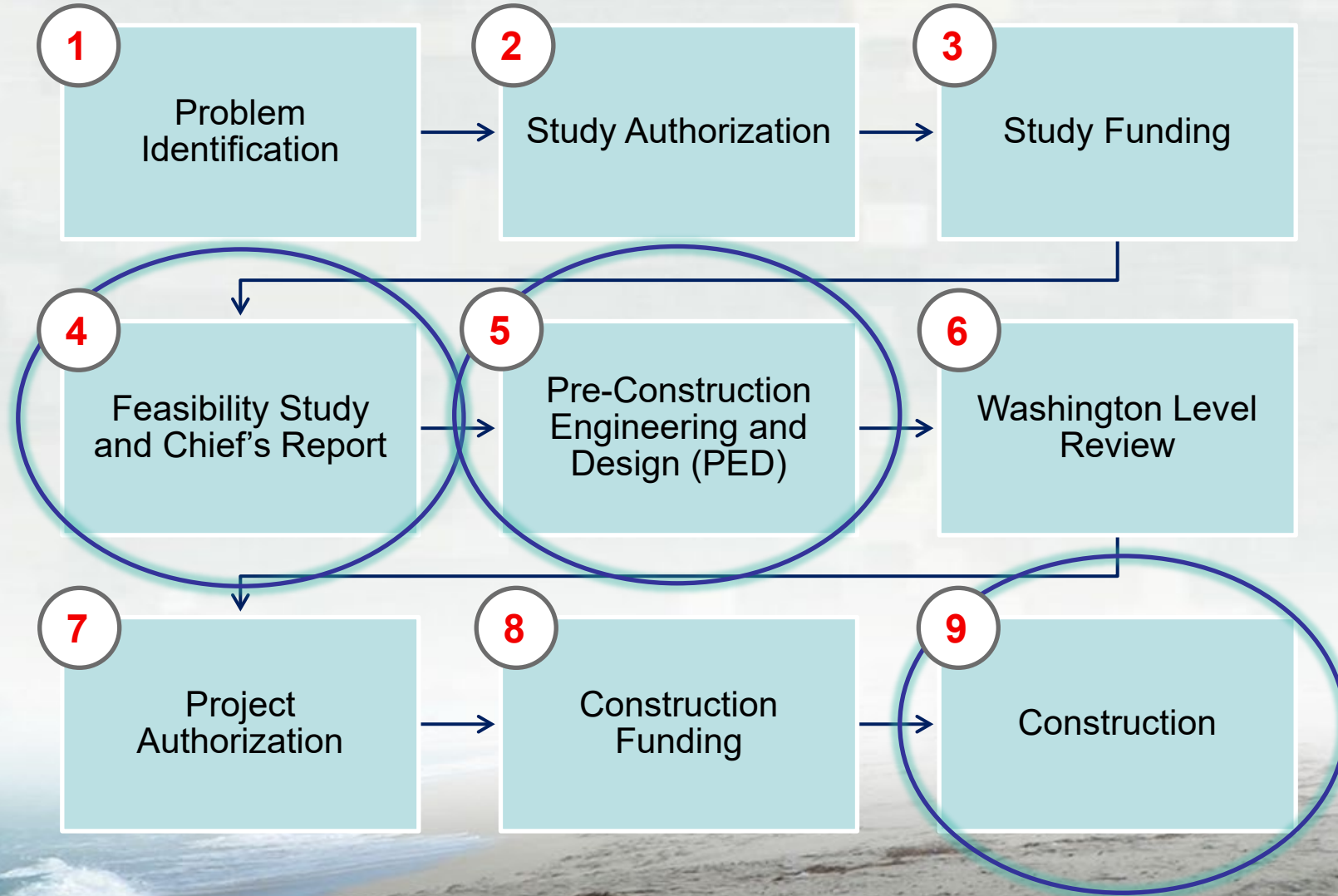


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HOW DOES THE ARMY CORPS OF ENGINEERS GET NEW PROJECTS?





Flagler Beach Timeline



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PROBLEM IDENTIFICATION
FLAGLER COUNTY NEEDS SAND!



STUDY IS AUTHORIZED





Flagler Beach Timeline



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STUDY FUNDING IS PROVIDED
START OF FEASIBILITY STUDY





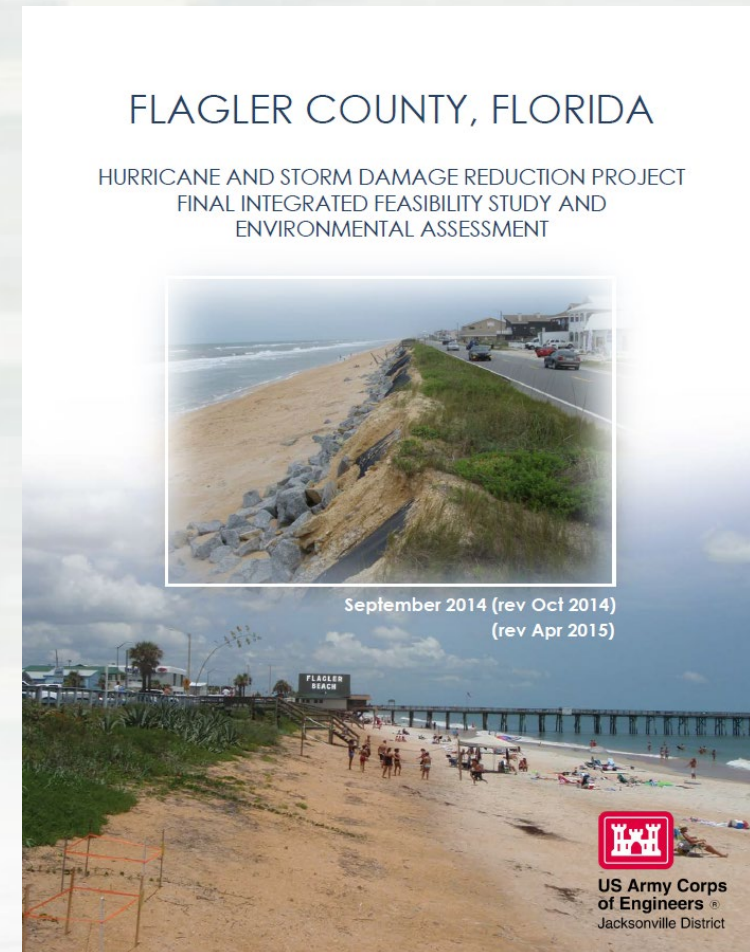
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FLAGLER COUNTY FEASIBILITY STUDY



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- Started in 2008
- Study area included:
 - Marineland
 - Painters Hill
 - Beverly Beach
 - Flagler Beach
- Recommended Plan included beach renourishment in the Flagler Beach Reach
- Benefit Cost Ratio = 1.9
- Average renourishment interval 11 years.



2001

2002

2008

2014

2016

2017

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2019

2020

2022

2022

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2024

2024

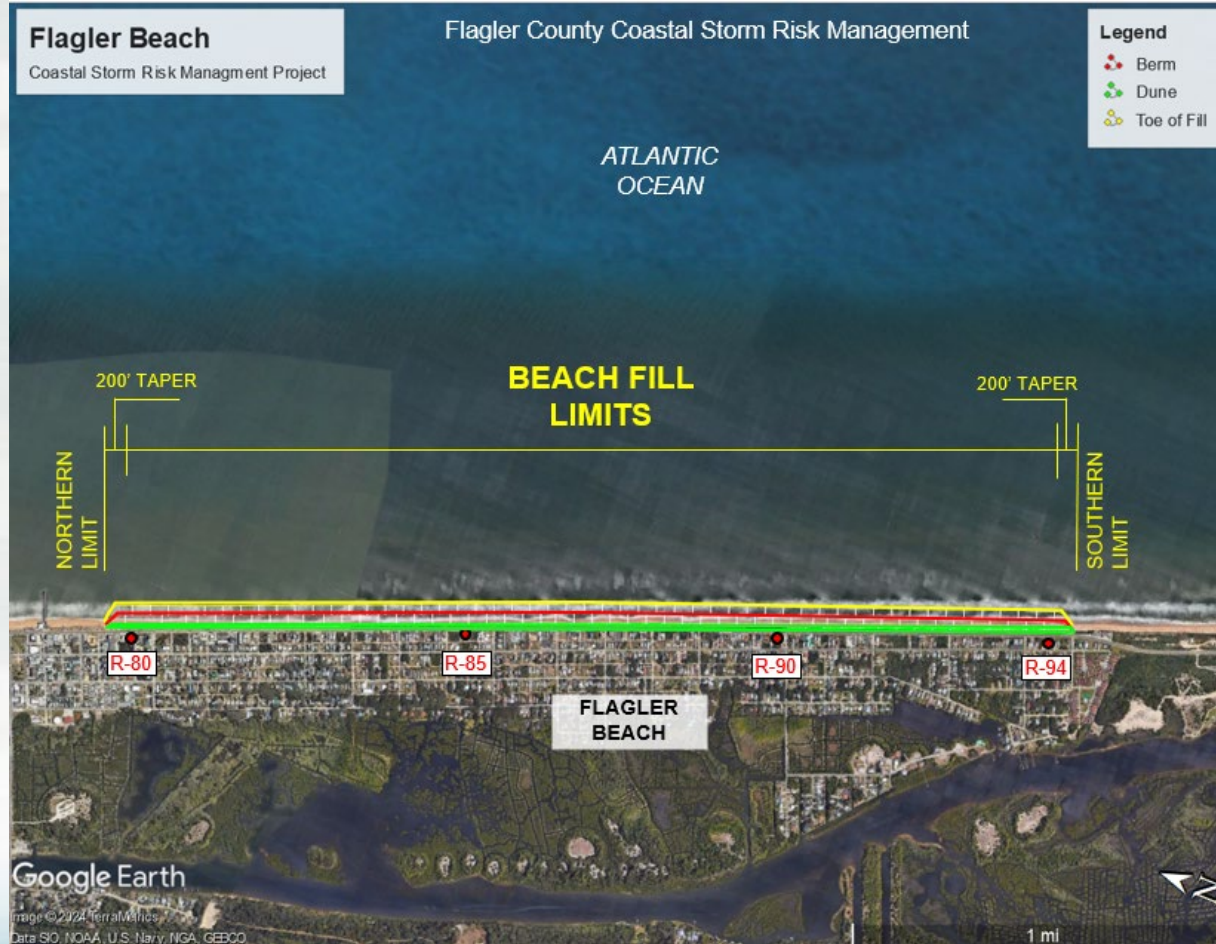


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RECOMMENDED PLAN



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- Beach renourishment of approximately 2.6 miles, between R-80 and R-94 plus 200' tapers.
- 10-foot seaward extension of the dune.
- Goal: Establish a protective dune to mitigate storm damage.

Construction Volume:
330,000 cubic yards

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RECOMMENDED PLAN



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- Offshore borrow 3A area located in federal waters approximately 10.25 nautical miles offshore.
- Also included authorization for dune vegetation and protection of dune signage.
- Protection of A1A – Only north/south hurricane evacuation route for this area.
- Completed in 2014

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Flagler Beach Timeline



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PROJECT AUTHORIZED FOR CONSTRUCTION + HURRICANE MATTHEW



Flagler Beach Timeline



10 HURRICANES AND 6 MAJOR HURRICANES IN 2017

2001

2002

2008

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Flagler Beach Timeline



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PRE-CONSTRUCTION
ENGINEERING AND DESIGN
(PED) FUNDING IS PROVIDED

+

PED IS INITIATED



PRELIMINARY DESIGN AND PERMITTING

- Project Partnership Agreement (PPA) signed in July 2019.
- Real Estate – 180 Perpetual Easements Needed
- Construction Template Development
- Borrow Area Design
- FDEP Joint Coastal Permit
- BOEM Lease Agreement



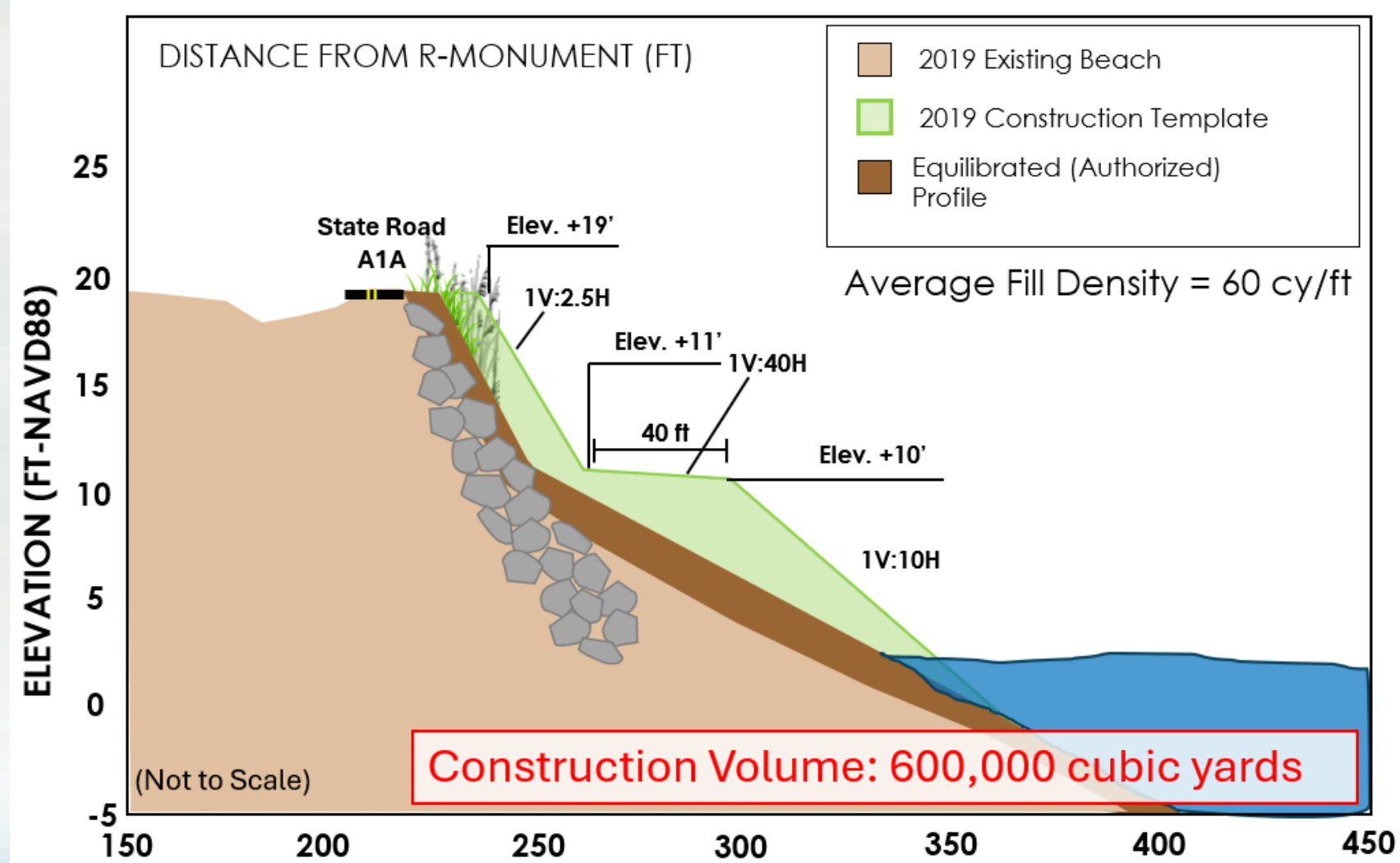


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2019 DESIGN



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2001

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HURRICANE DORIAN





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DESIGN #1 COMPLETED





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HURRICANE IAN





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HURRICANE NICOLE





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REAL ESTATE OBTAINED



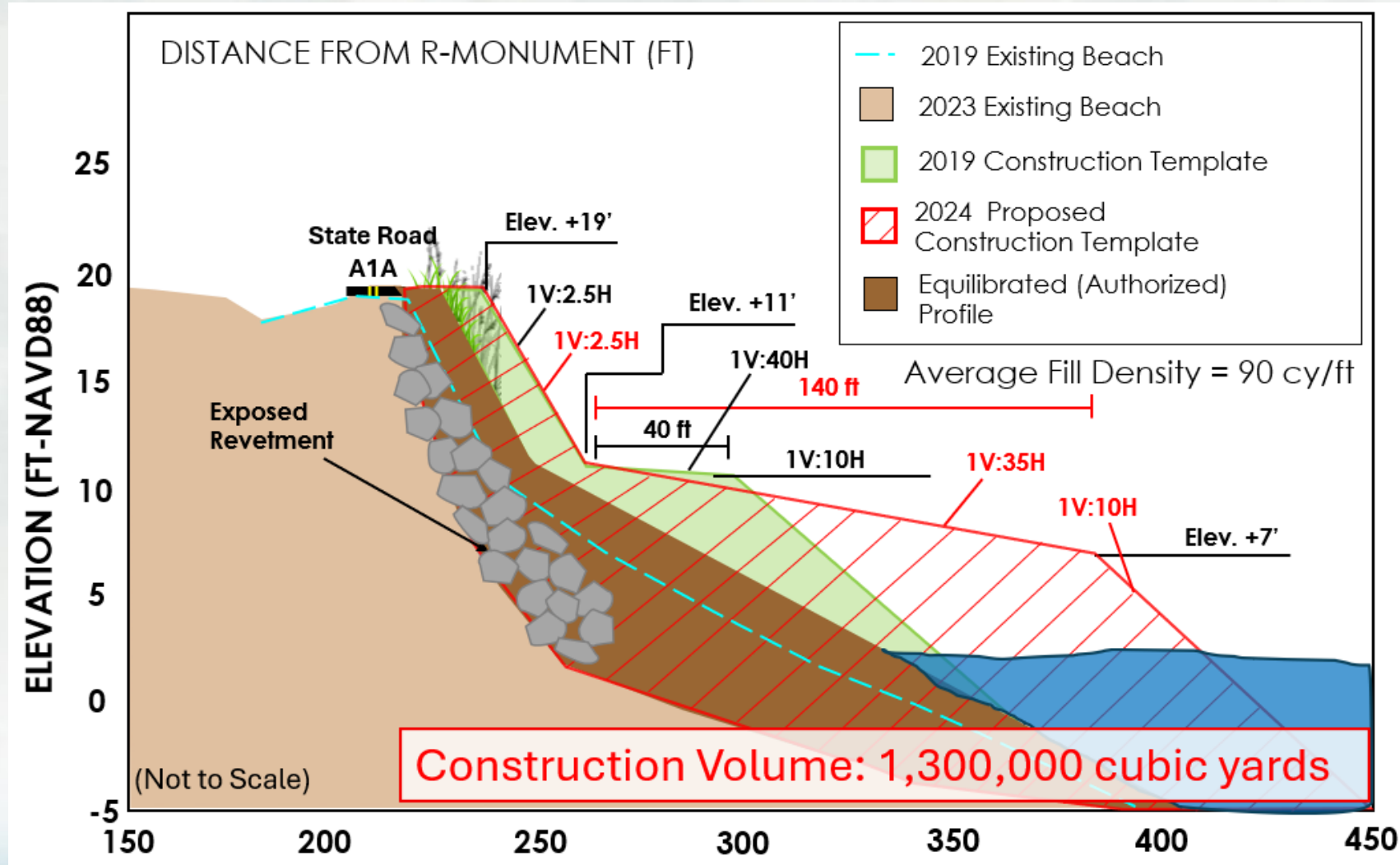


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2024 DESIGN



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How Things Changed



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Design Parameter	2019 Design	2024 Design
Dune Height	+19' NAVD88	+19' NAVD88
Dune Crest Width	VARIES, provides minimum 30' protection for SR A1A	VARIES, provides minimum 30' protection for SR A1A
Dune Slope	1V:2.5H	1V:2.5H
Elevation of Berm	+11'	+11'
Berm Width	40'	140'
Berm Slope	1V:40H	1V:35H



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DESIGN #2 COMPLETED



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CONSTRUCTION!



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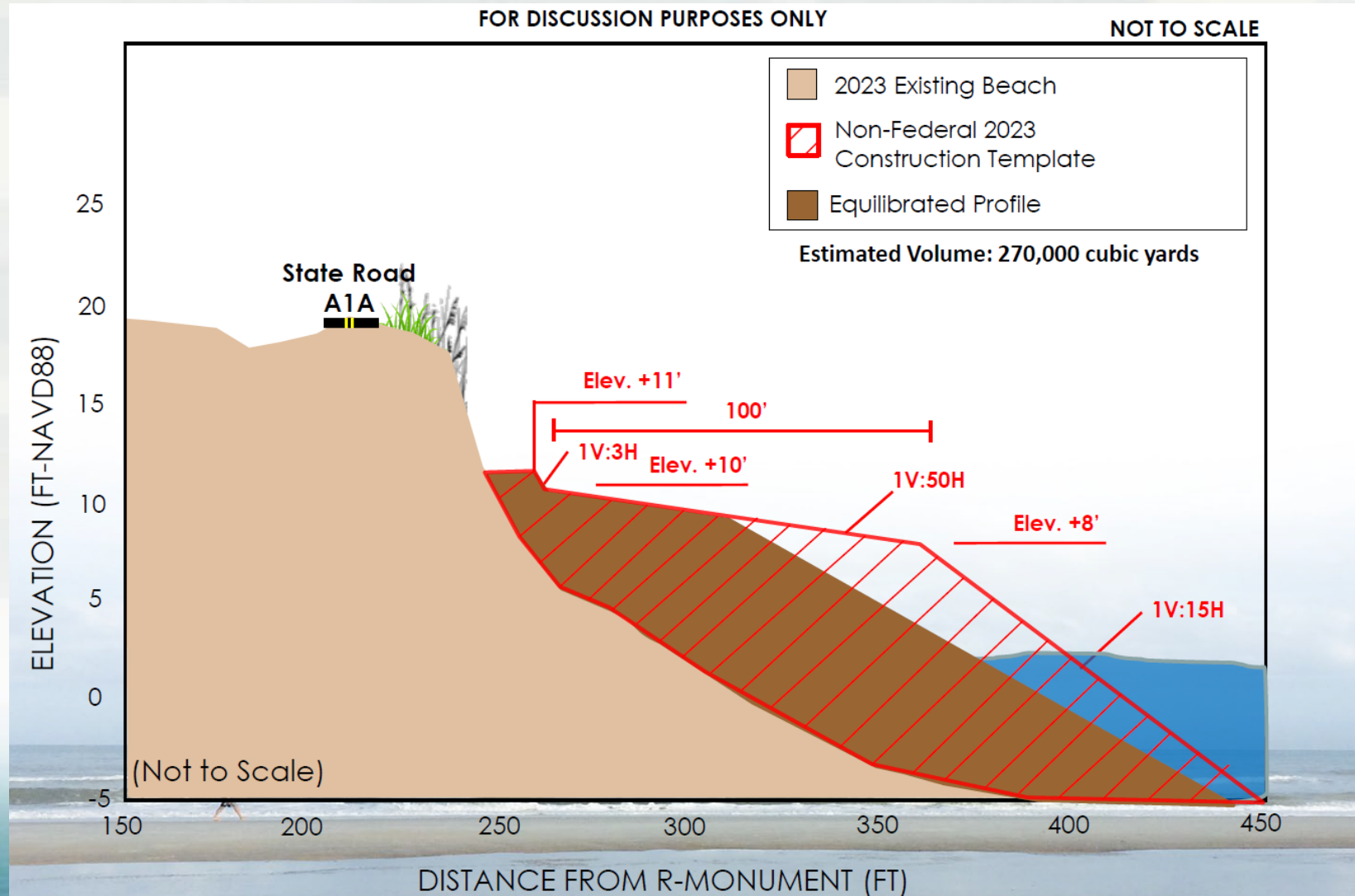
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LET'S ADD MORE SAND!!



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NON-FEDERAL ADDITIONS



- Placement between R-77 to R-80 and R-94 to R-96
- Average fill density = 60 cy/ft
- Included both dune and berm placement

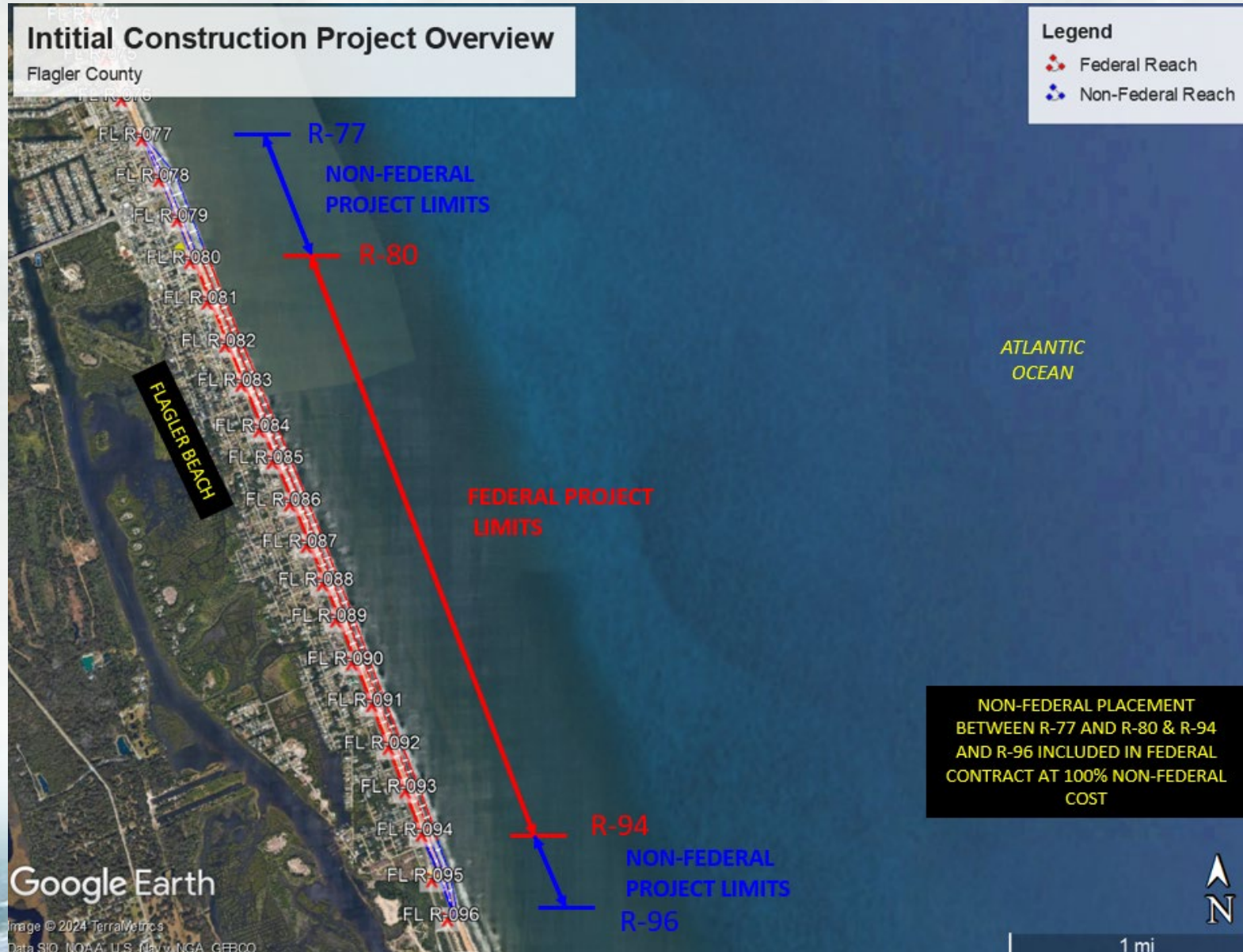


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INITIAL CONSTRUCTION FOOTPRINT



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CONSTRUCTION IN ACTION



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W WEEKS



HOPPER DREDGE: MAGDALEN



CONSTRUCTION IN ACTION



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FLUIDIZED ROCK SYSTEM (FRS)



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CONSTRUCTION IN ACTION



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BEFORE AND AFTER PHOTOS



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BEFORE AND AFTER



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BEFORE AND AFTER PHOTOS



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BEFORE AND AFTER PHOTOS



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BEFORE AND AFTER PHOTOS



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CONSTRUCTION BINGO



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TRUCK HAUL?	MAINTENANCE OF TRAFFIC	TWO DREDGES
FLAGLER PIER REHABILITATION	SR A1A PAVEMENT RESURFACING	FDOT SEAWALL CONSTRUCTION
MARGARITTAVILLE HOTEL CONSTRUCTION	TURTLE CRAWLING DUNE	12 GOPHER TORTOISE

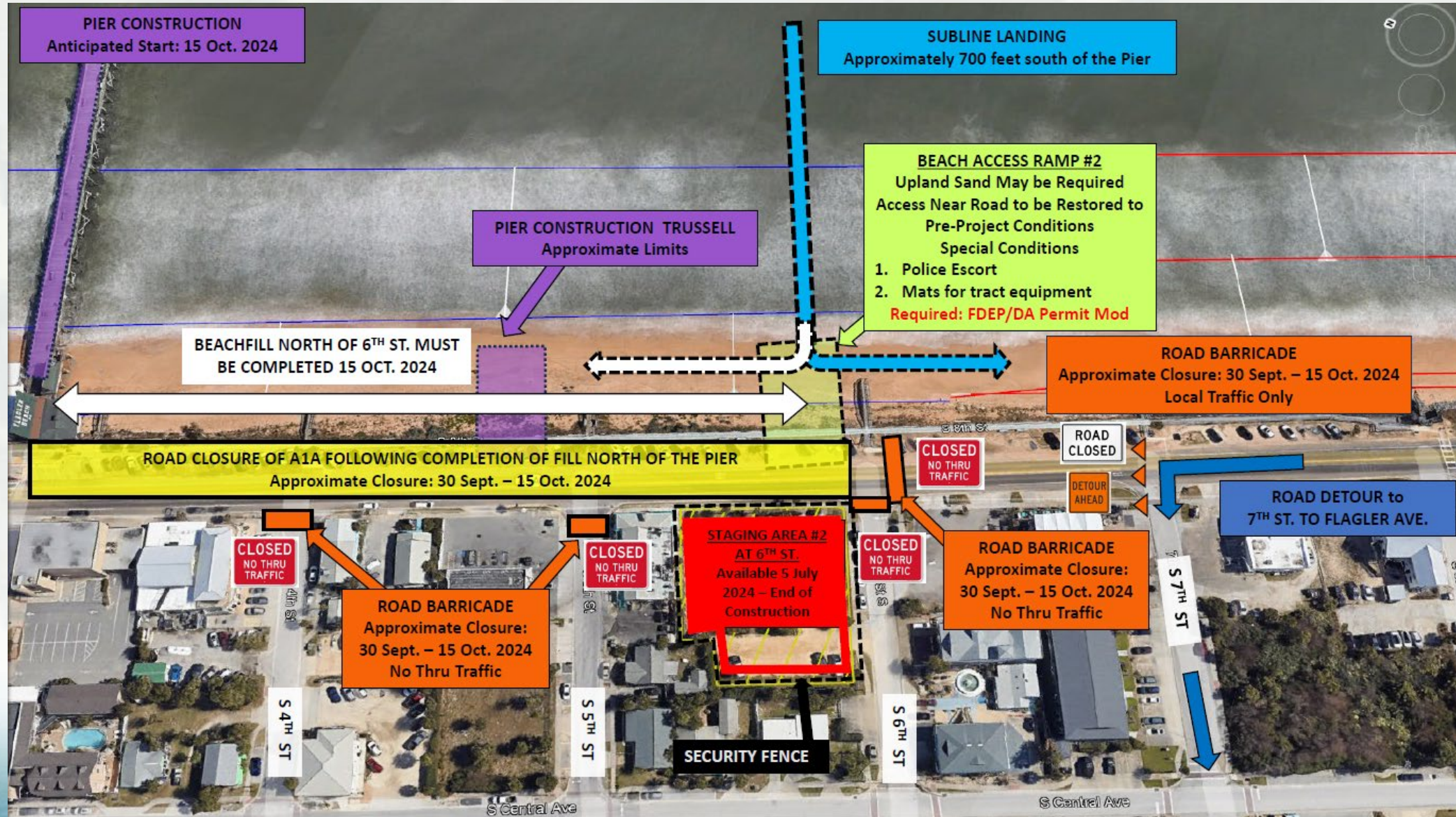


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MAINTENANCE OF TRAFFIC



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THE STATS!



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- Non-Federal North Segment = 240,000 cubic yards
- Non-Federal South Segment = 110,000 cubic yards
- Federal Flagler Beach CSRM = 1,425,000 cubic yards

GRAND TOTAL OF = 1,775,000 cubic yards!

- Coastal Vegetation = 332,000 plants
- Sand Fence
- Post and Rope Dune Protection





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LESSONS LEARNED AND RECOMMENDATIONS



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- Future projects should reassess sand volume projections if significant delays occur.
 - Adapting design in response to natural events
- Projects should account for increasing storm frequency and intensity.
- Early communication with state and local agencies is critical for project planning and implementation.



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Thank you!

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SHOUTOUT:

