ST. JOSEPH PENINSULA, GULF COUNTY, FLORIDA

Beach Re-Nourishment
and
Environmental Enhancement Project

RECOMMENDATIONS

January 23, 2018

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OUTLINE

- **Shoreline and Volume Changes**
- **Volume Changes and Proposed Beach Fill**
- **Existing Conditions**
- **Findings**
- **Dredging Market Conditions**
- **Recommendations**

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SHORELINE AND VOLUME CHANGES

The following two slides illustrate the measured shoreline and volume changes over the 5-year period since the completion of the project in 2009 to 2014. The changes are measured through monitoring surveys. The data shows that the Southern Limits of the project from Stumphole to the south end of Rish Park is eroding. The highest loss of sand is the southern-most 1 mile shoreline segment (R-100 to R-105.5) just north of Stumphole which lost approximately *-866,800 cubic yards* of sand over the 5-year period. The 2.1 mile segment (R-90 to R-100) to the north (Rish Park at the northern boundary) lost approximately *-689,700 cubic yards*.

The 2-mile Northern Limits (Rish Park north to the St. Joseph Peninsula State Park) gained approximately *+163,955 cubic yards* (R-75 to R-85). The primary source of the accreting sand is coming from the southern end of the beach fill project. The volume changes were over a 5-year period between 2009 and 2014. Since 2014 these trends have continued so that the changes would have increased by about 35% (*+221,340 cubic yards)* in 2018.

These volumes are used, in part, to estimate volumes of sand that will need to be placed during the beach re-nourishment project.

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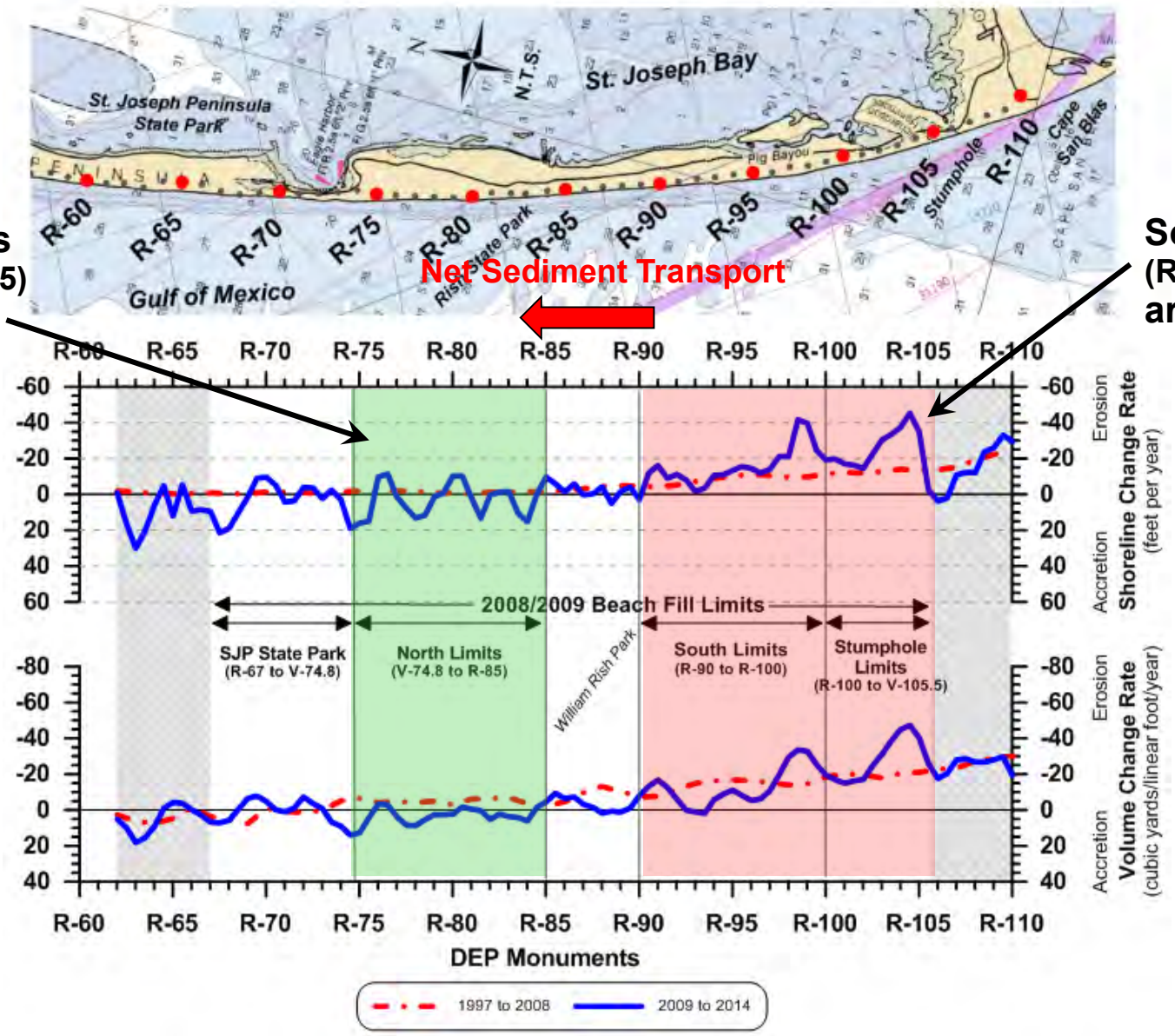
SHORELINE AND VOLUME CHANGES

North Limits (V-74.8 to R-85) are gaining sand.

South Limits (R-90 to R-105.5) are eroding.



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VOLUME CHANGES AND PROPOSED BEACH FILL

North Limits gained sand between 2009 and 2014. This is consistent with pre-beach project trends.

Historic volume changes

State Park to No. Rish Park
- R-75 to R-85
- 1997 to 2008 – -4.8 cy/lf/yr
- 2009 to 2014 – +5.5 cy/lf/yr

So. Rish Park to Scallop Cove
- R-90 and R-100
- 1997 to 2008 – -13.9 cy/lf/yr
- 2009 to 2014 – -7.4 cy/lf/yr

Scallop Cove to Stumphole
- R-100 and R-105
- 1997 to 2008 – -23.9 cy/lf/yr
- 2009 to 2014 – -25.6 cy/lf/yr

2009-14 Changes Beach Fill

Northern End

+163,955 cubic yards
(+212,320 cubic yards)

Southern End

-689,700 cubic yards
(+292,605 cubic yards)

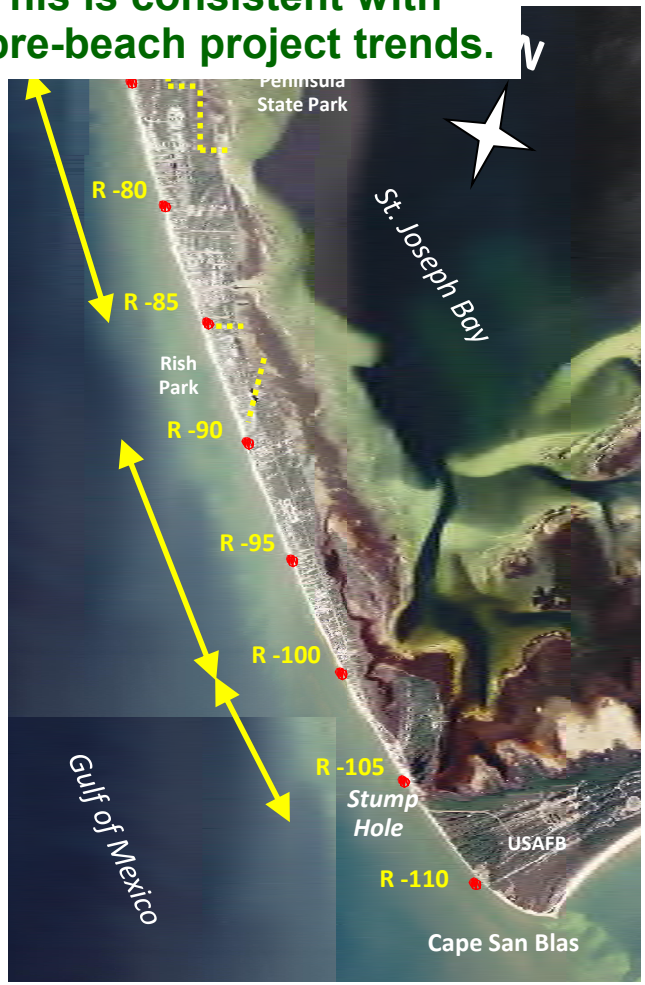
-866,800 cubic yards
(+652,680 cubic yards)

South Limits lost sand between 2009 and 2014. This is consistent with pre-beach project trends. →

Total for Southern End

-1,556,500 cubic yards
(+945,285 cubic yards)

(Proposed beach fill volume in 2017 Bid.)



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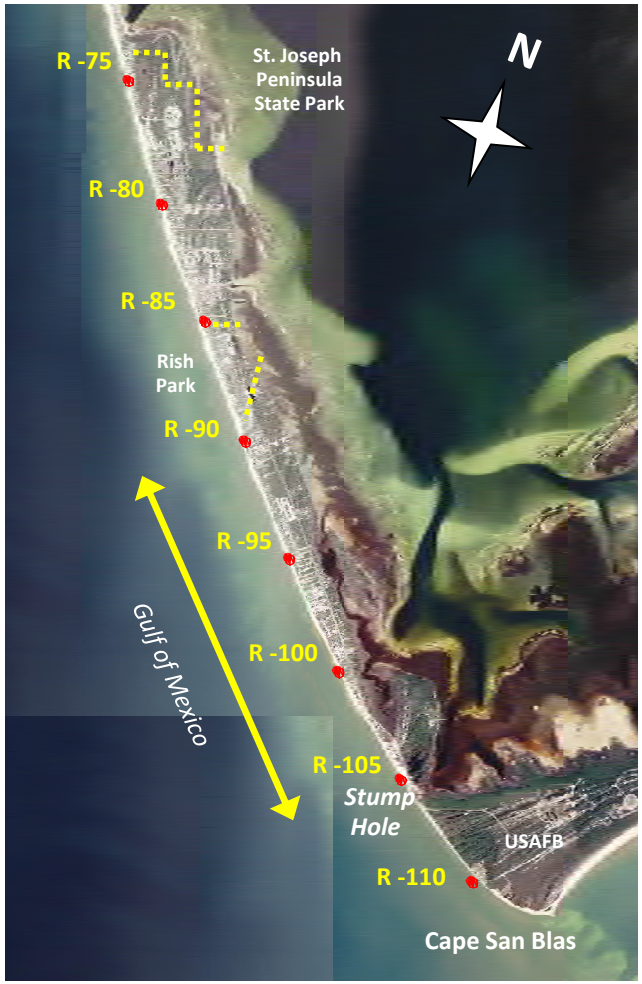
EXISTING CONDITIONS – SOUTH LIMITS

Photos along this shoreline segment.



The following photos further illustrate the erosion that has occurred between 2008 and 2018 for the Southern Limits of the beach project.

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CONSTRUCTION (10/08)

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NORTH OF STUMPHOLE (10/19/10)

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NORTH OF STUMPHOLE (12/5/17)

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NORTH TOWARD SUNRISE/SUNSET (10/19/10)

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NORTH TOWARD SUNRISE/SUNSET (1/4/18)

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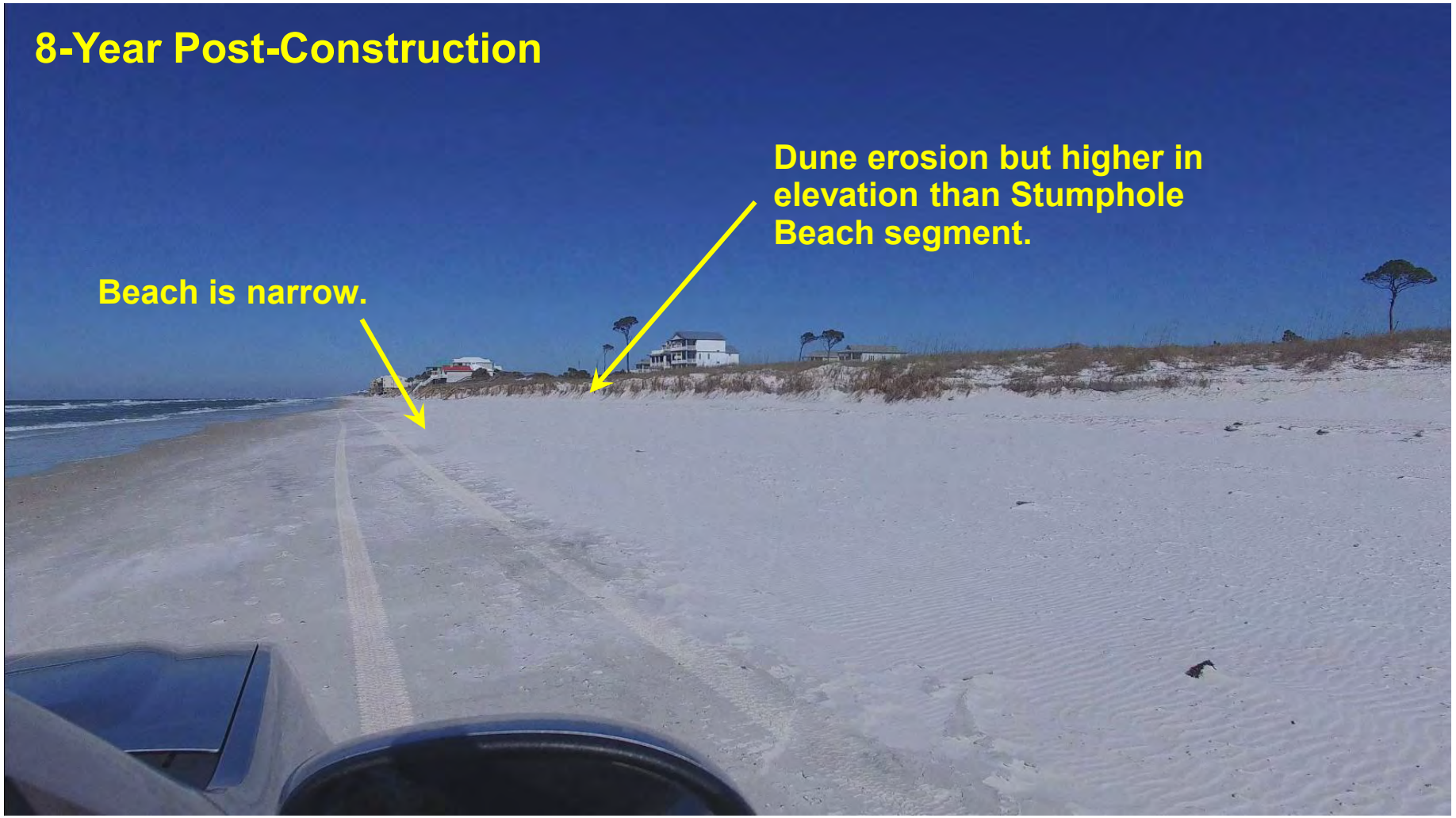
SEAGRASS (1/4/18)



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CAPE SHOALS (3/23/11)

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CAPE SHOALS (1/4/18)

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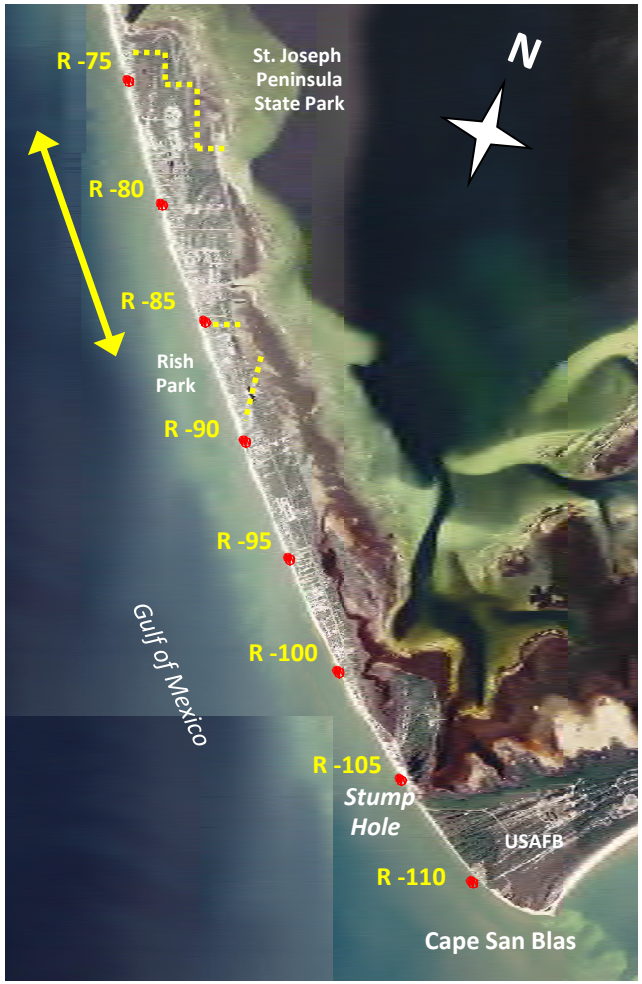
EXISTING CONDITIONS – NORTH LIMITS

Photos along this shoreline segment.



The following photos further illustrate the gain of sand that has occurred Between 2010 and 2018 for the Northern Limits of the beach project.

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NORTH OF RISH PARK (10/19/10)

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NORTH OF RISH PARK (1/4/18)

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BARRIER DUNES (10/19/10)

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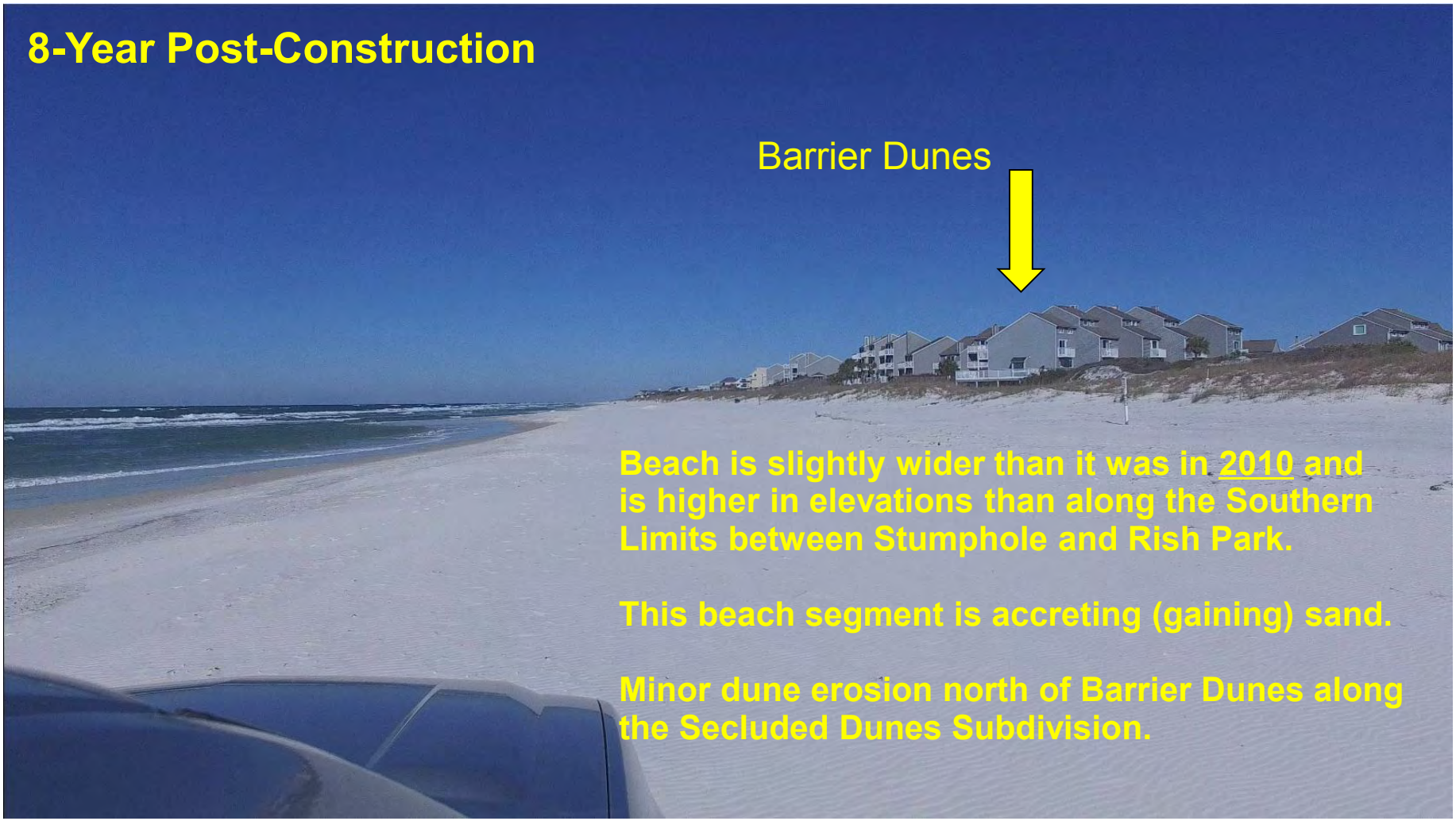
BARRIER DUNES (1/4/18)



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FINDINGS

North of Rish Park

- Accreting with sand transported from the south fill limits
- Structures are 200+ feet from the water's edge
- Beach wide and high providing a high level of storm protection
- **Beach re-nourishment (2018) is not needed north of Rish Park**

South of Rish Park

- Significant beach and dune erosion along entire southern limits
- Structures as close as 75-feet from the water's edge
- Beach narrow and low in elevation provides reduced storm protection
- Sand placed along the south limits will benefit the north fill limits
- Need to protect hurricane evacuation route

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DREDGING MARKET CONDITIONS

Are the current market conditions favorable to receive low bids to construction the beach fill project? Federal projects have a major influence on the availability of dredges and bid prices. Too many unknowns on the Federal level to predict how these factors may affect the SJP beach fill project.

- Political climate in Washington, D.C.
- Budget Appropriations for the U.S. Army Corps of Engineers has not been passed.
- Supplemental Emergency Recovery Bill

  $12B - House (passed), Senate (pending)

Dredgers need flexibility in the design and timing of construction will help reduce costs.

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RECOMMENDATIONS

- **Remove the North Beach Fill from the 2018 project**
  - Repair dune erosion and “Hot-Spots” by Truck-haul, as needed
- **Construct the South Beach Fill in 2018**
  - “Feeder Beach” by dredging offshore sand
  - Re-bid the project for available budget ~$10.5M
  - Cape Shoals relocation
- Advertise for bids March-April
- Award by May
- Construction between June and November
- Reduce construction from 120+/- days to 75+/- days by reducing the project volume and length.

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RECOMMENDATIONS

These recommendations are based on the volume changes measured over the entire project shoreline extending from Stumphole north to the SJP State Park. The greatest sand loss is in the southern 1-mile of shoreline (R-100 to R-105.5) *866,800 cubic yards* and *689,700 cubic yards* for the 2.1-mile segment (R-90 to R-100). The 2-mile Northern Limits (Rish Park to SJP State Park) has gained approximately *163,955 cubic yards* (R-75 to R-85). The primary source of the accreting sand is coming from the southern end of the beach fill project. Since 2014 these erosional and accretional trends have continued thus the measured changes would increase by 35% in 2018. For example, the projected gain of sand for the North Limits is 163,955 cubic yards x 135% = +221,340 cubic yards (2009 to 2018).

The goal of this project is to place sand in areas of greatest need with the limited amount of available funds which is the southern end where over *1.5M cubic yards* of sand has eroded from the beaches. The northern end has gained sand (estimated at *221,340 cubic yards* as of 2018). Erosional "hot spots" along the northern end can be addressed through a truck-haul project, as needed.

To obtain the lowest bids, it is necessary to provide the dredgers flexibility in the design and the timing to construct the project. This will allow them to fit in this project between other projects to maximize the availability of equipment and labor.

RECOMMENDATIONS

2017 Low Bid - $17.8M

North Beach Fill - $3.2M

+212,320 cubic yards

South Beach Fill - **$14.6M**

+945,285 cubic yards

November 2017 Available Funding

$10.5M – State ($3.73M) and Local ($6.77M)

Reduction in cost to fit within available budget

$14.6M - $10.5M = $4.1M

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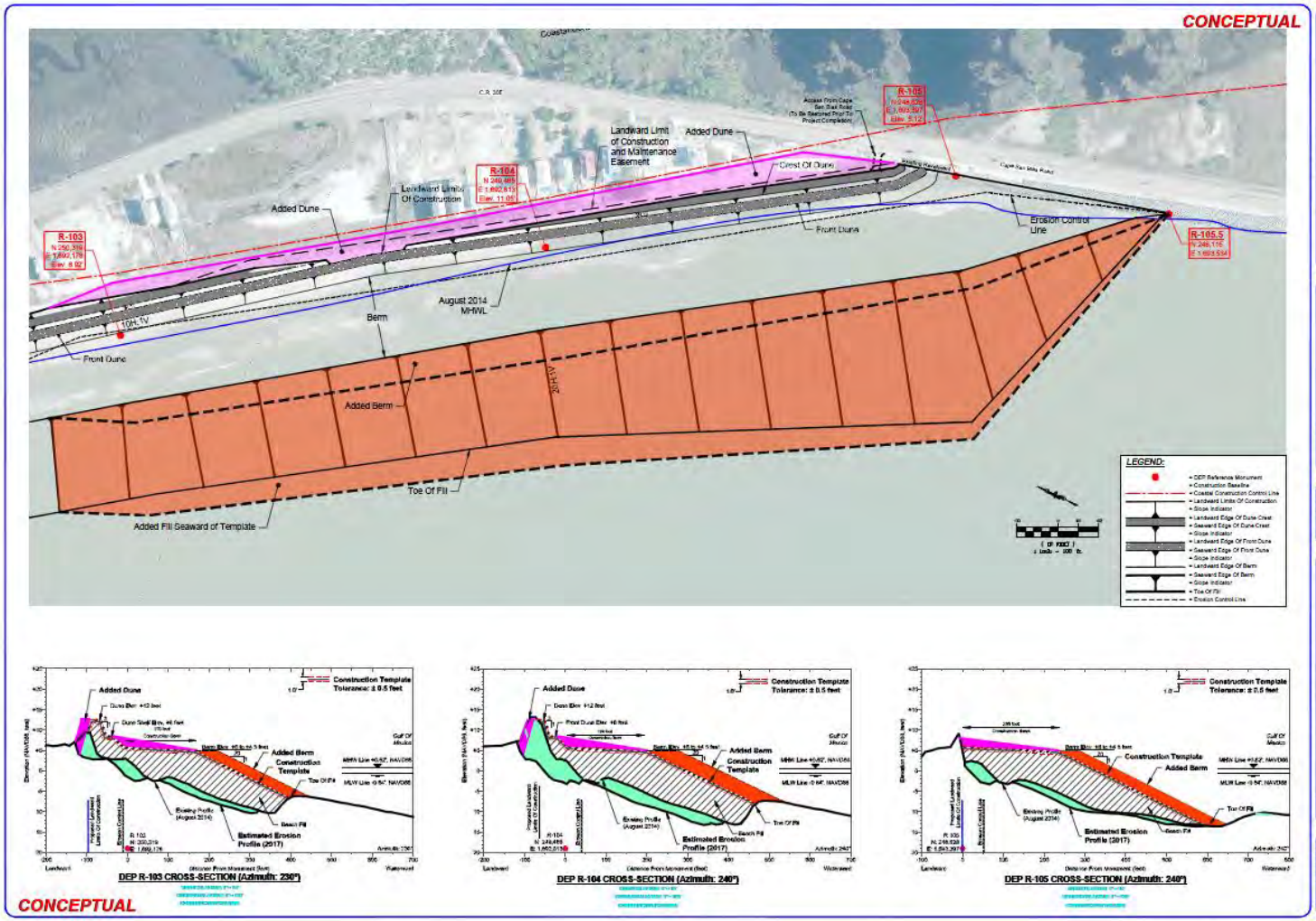
RECOMMENDATIONS



Fill limits and beach width will be required for bidders to estimate costs.
More than one plan will be needed to estimate costs for varying volumes.

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THANK YOU!

Thank you.

Questions?