

Regular Workshop – November 14, 2016
Agenda Item 6

Agenda Item: Beach Projects Update

Presenter: Juan Florensa, Public Works Director;
Albert E. Browder, PhD, P.E., Olsen Associates Inc.

Summary: In 2016 the Town completed several beach nourishment projects at a cost of approximately \$18 million. Olsen Associates Inc. (OAI) will attend the November 14, 2016 Town Commission Regular Workshop to present a summary of these projects. They will also discuss the next steps as the Town moves forward on future coastal projects.

Attachments: 11-7-16 Memo, Public Works Director to Manager;
PowerPoint Presentation, Olsen and Associates, Inc.

Recommended

Action: Pending discussion, provide direction to Manager.

MEMORANDUM

Date: November 7, 2016

TO: Dave Bullock, Town Manager
FROM: Juan J. Florensa, Public Works Director
SUBJECT: Beach Projects Update

In 2016 the Town completed several beach nourishment projects at a cost of approximately \$18 million.

In March, an \$11 million nourishment project that involved trucking sand from a mine near Immokalee, Florida began as more than 13,700 trucks rolled down Gulf of Mexico Drive over the ensuing four months. This project was completed two months ahead of schedule. Approximately 205,000 cubic yards of sand was transported and deposited on our beaches by Earth Tech Enterprises in the central portion of Longboat Key.

Additionally, the New Pass and Longboat Pass channels were dredged this Summer. This \$5.2 million project placed almost 450,000 cubic yards of sand along several severely eroded beaches at both ends of the island. Norfolk Dredging Company completed this work three weeks ahead of schedule.

Lastly, an emergency truck haul project, also constructed by Earth Tech Enterprises, placed about 33,000 cubic yards of sand on the beach fronting the Longboat Key Club Resort. This \$1.8 million effort was completed in only two weeks.

The Town timed all this work to occur during the Summer months to minimize traffic congestion and impacts to beach users. Performing this work during marine turtle season required the relocation of 201 sea turtle nests. This was accomplished with close coordination and support from Mote Marine.

Olsen Associates Inc. (OAI) will be attending the November 14, 2016 Town Commission Regular Workshop to present a summary of these projects and discuss next steps as the Town moves forward on future coastal projects.

Town of Longboat Key, FL Beach Project Update

14 November 2016



Dr. Albert E. Browder, P.E., D.CE.
olsen associates, inc.
2618 Herschel St.
Jacksonville, FL 32204
904.387.6114
www.olsen-associates.com



24 August 2016

Discussion Items

- Summary of 2016 Nourishment Projects
- Next Steps
 - Update to the Beach Management Plan
 - Future projects
 - Beach nourishment
 - Coastal structures
 - Sand sources
- Q&A

2016 Nourishment Projects

Longboat Pass, New Pass, and Truck Haul (Scenario C)



- Central Key Truck Haul Nourishment
- New Pass Dredging and Beach Fill
- Longboat Pass Dredging and Beach Fill
- Emergency Truck Haul at LBK Club



olsen
associates, inc.
Coastal Engineering

*From the
January 2014
Discussion!*

14 November 2016

2016 Nourishment Projects

- 687,700 cubic yards placed
- Two construction contracts
- Eight beach segments
- Construction Cost: \$18M



Central Key Truck Haul



- Earth Tech Enterprises
 - 307,503 tons
 - 13,768 trucks
 - ~200 trucks/day
 - Sand from Immokalee, FL
 - Atlas Street area
 - Pelican Harbour - Beachcomber
 - Islander Club - Seaplace
 - ~205,000 cubic yards
 - April 4 - July 13, 2016
 - Construction Cost: \$11M

New Pass Dredging & Beach Fill



- Norfolk Dredging Company
 - 234,000 cubic yards placed
 - L'Ambiance - Regent Place
- Post-Hermine repairs
 - Redredged portions of channel
 - Rebuilt L'Ambiance/Pierre profile
 - 18,962 cubic yards replaced
- August 18 - September 19, 2016
- Construction Cost: \$2.7M

Longboat Pass Dredging & Beach Fill



- Norfolk Dredging Company
 - 215,400 cubic yards placed
 - N. Shore Road - Broadway St.
 - Whitney Beach - Gulfside Rd.
 - September 27 - October 21, 2016
 - Hurricane Matthew delays
 - Construction Cost: \$2.5M

South End Truck Haul



- Earth Tech Enterprises
 - 49,993 tons
 - 2,250 trucks
 - Longboat Key Club
 - ~33,300 cubic yards
 - September 26 - October 7, 2016
 - Construction Cost: \$1.8M



2016 Nourishment Projects

- Currently:
 - Construction is complete
 - Post-fill surveys in progress
 - Post-project documentation
 - FEMA and FDEP cost-sharing



Next Steps

- Update to the Beach Management Plan
- Future projects
- Potential sources of sand

Next Steps - Beach Management Plan

- Last updated in 2008
 - Document the last eight years of beach activities
- Evaluate the programmatic 120-ft Design Condition
 - Does it provide adequate storm protection?
 - Does it provide adequate recreational beach space?
- Integrate improved inlet management at both inlets
 - What inlet actions are in the Town's best interest?
- Perform economic planning analysis of future beach projects
 - Objectives and parameters - set through workshop input with Town
 - Cost vs. sand color and quality
 - Long-term view - what is the most economically justified approach?



Beach Fill and Permit Status

- Town comprehensive beach nourishment permit
 - Expires October 26, 2021 (FDEP JCP #0296464)
- New Pass dredging and beach nourishment permit
 - Expires July 02, 2030 (FDEP JCP #0039755)
 - *Shared with City of Sarasota for Lido Key*
 - *Lido Key scheduled to receive the next dredged sand*
- Longboat Pass dredging and beach nourishment permit
 - Expires March 19, 2030 (FDEP JCP #0298107)
 - *Shared with Manatee County for Anna Maria Island*
 - *AMI scheduled to receive the next dredged sand*

Future Projects

- Upgrade the terminal groin at New Pass
 - Tighten the structure
 - Lengthen the structure
- North End
 - Structural modifications or additions
 - Terminal structure at or near Longboat Pass
 - Renourishment (? when ?)
- Next nourishment project?
 - Subject to monitoring results, storm climate, etc.
 - Sand source determination
 - Economics

Future Sand Sources

- Upland Sources
- Nearshore sources
- Local inlet sources
- Offshore sources
 - Sand quality
 - Feasibility
 - Cost
 - Permitting considerations



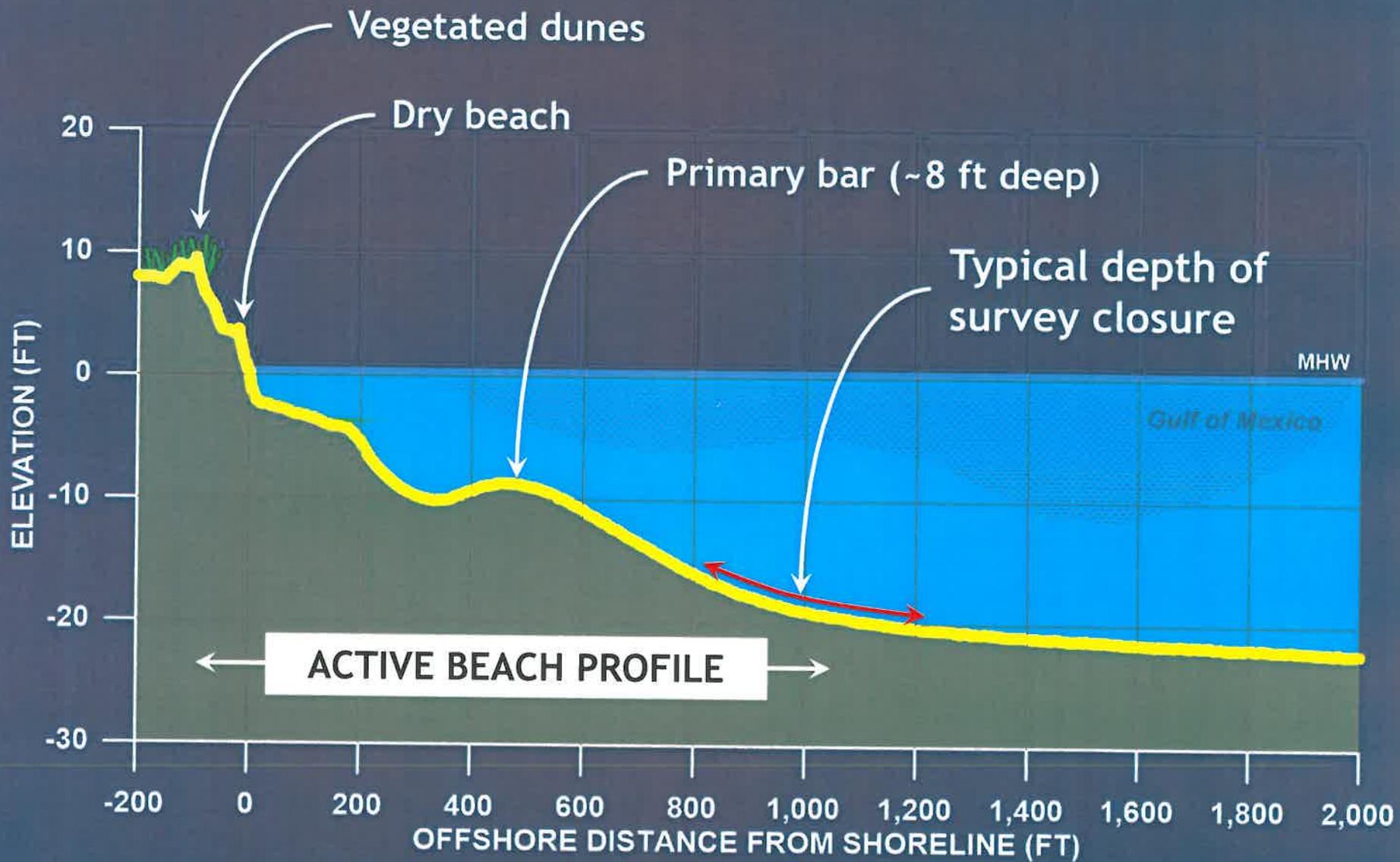
Feasibility of Nearshore Dredging

- How near is nearshore?
- What problems are generated?

Nearshore Dredging *(and inlet dredging too)*

- *“...it is in the public interest to preserve and protect [the beaches] from imprudent construction which can jeopardize the stability of the beach-dune system...”*
 - *Florida Statute 161.053(1)(a).*
- *“The Department [FDEP] shall deny any application for a coastal construction project if, after considering any proposed mitigation plan, the proposed project as a whole will result in a significant adverse impact.”*
 - *Florida Administrative Code Rule 62B-41.003(2)*

What’s a significant impact???

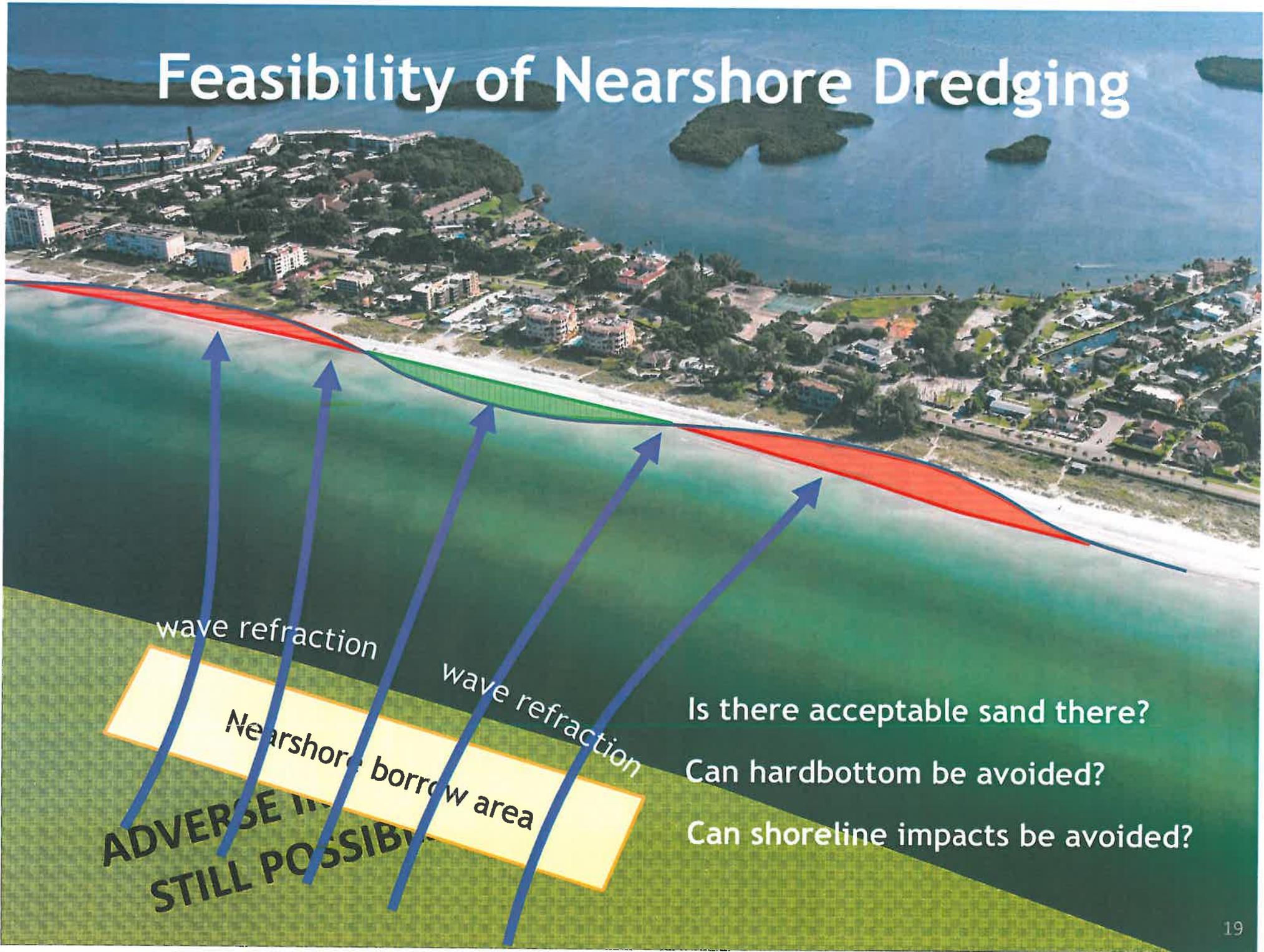


ACTIVE BEACH PROFILE

Feasibility of Nearshore Dredging



Feasibility of Nearshore Dredging



wave refraction

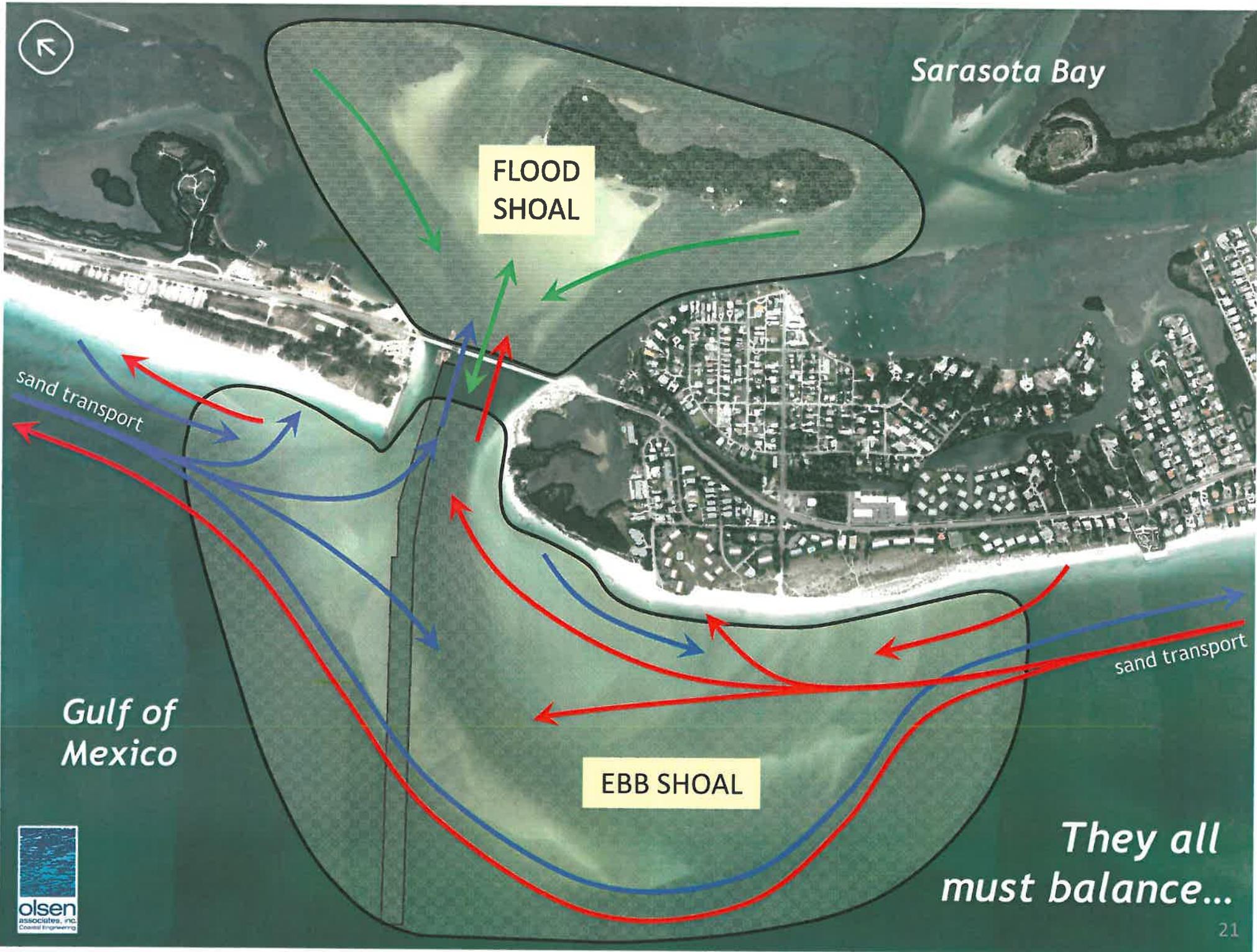
wave refraction

Nearshore borrow area

ADVERSE IMPACTS
STILL POSSIBLE

- Is there acceptable sand there?
- Can hardbottom be avoided?
- Can shoreline impacts be avoided?

Inlet Shoal Dredging



Sarasota Bay

FLOOD SHOAL

EBB SHOAL

sand transport

sand transport

Gulf of Mexico

They all must balance...



Inlet Shoal Dredging

- The inlet shoals exist in a dynamic balance of:
 - Sand coming in from all directions
 - Tidal currents coming in and out
 - Waves from all directions
- Any project in the inlet affects the balance
 - Must accept the need to manage the effects
- The larger the excavation, the more likely there is to be an adverse impact
- The effects of any proposed dredging are evaluated by the State in the same fashion as nearshore dredging

So what can be done for sand at the inlets?

- Continued maintenance dredging of the ebb shoal channels
- Potential limited dredging of the offshore edges of both Pass ebb shoals
- Limited flood shoal dredging at Longboat Pass
- Potential expansion, realignment and/or deepening of the channels

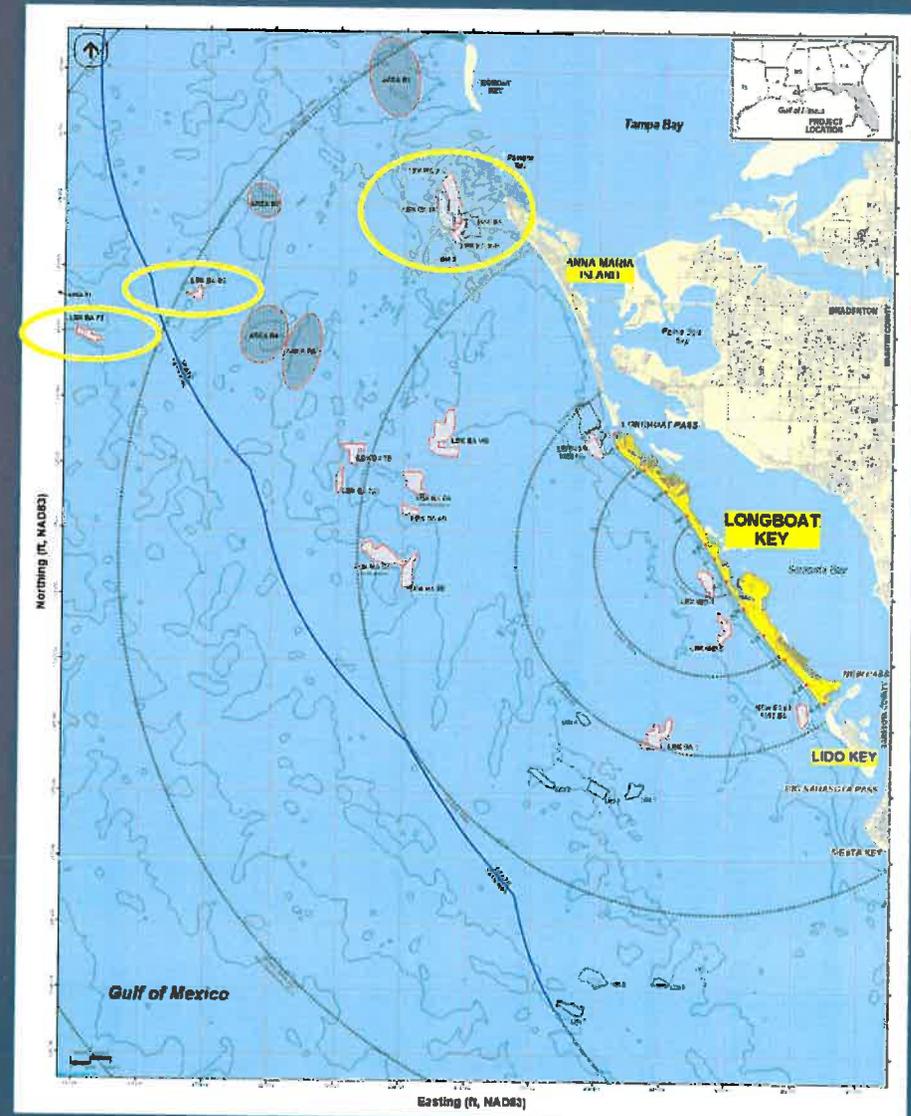
They all must balance...

Inlet Management

- Only so much sand collects in the inlets each year
 - Longboat Pass sediment budget analysis
 - 96,000 cy/yr coming in (CBI-CPE, 2011)
- Any action beyond routine maintenance dredging will likely trigger the need for a detailed inlet management study *(and a lengthy permitting process)*
- Sand quality can be variable
- Sand is shared with the adjacent islands

Offshore Sand Sources

- 4 permitted areas
 - BA's IX, X, F-2, B-3
- Fine white sand
 - Varying shell content
- Coarser gray sands
- 10-15+ naut. miles



Borrow Area IX



FINE WHITE CAP

**LONGBOAT KEY
CURRENT BEACH**

Borrow Area VI



COARSE FILL

**COLLIER
CURRENT BEACH**



TOM'S HILLS

**75+ miles
from LBK**

**LONGBOAT KEY
OFFSHORE SAND RESOURCES**

**off
Egmont Key**



LBVC-08-26



LBVC-08-34



LBVC-08-54



LBVC-08-48



LBVC-08-53



LBVC-08-46

Next Steps

- Tighten the New Pass terminal groin
 - Initiate studies to lengthen the groin
 - Sediment budget update of New Pass is already a requirement from New Pass dredging
- Initiate work for a terminal structure at/near Longboat Pass
- Perform a detailed project planning analysis
 - Part of beach management plan update
 - Economic analysis: large offshore project vs. smaller, more-frequent upland truck haul projects vs. ???
 - Is more geotech required?





14 November 2016



Dr. Albert E. Browder, P.E., D.CE.
olsen associates, inc.
2618 Herschel St.
Jacksonville, FL 32204
904.387.6114
www.olsen-associates.com

THANK YOU



End of Agenda Item