



## 2017 Session



## Close of Week 4 – Where We Are

### Shoreline Change in Response to Sea Level Rise on Florida's Panhandle Coast

James Houston, Engineer Research and Development Center,  
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**60th Annual Conference**  
**September 27-29, 2017**  
**Westin Fort Lauderdale**  
**Beach Resort**



**2018 Tech Conference**  
**February 7-9**  
**Edgewater Beach & Golf**  
**Resort**  
**Panama City Beach, FL**

## 2017 Legislative Session

### Close of Week 4 – Where We Are

Our “Beaches 2017 and Beyond Initiative” was officially rolled out on March 3<sup>rd</sup> by Senate and House bill sponsors, Jack Latvala and Kathleen Peters, and the initiative is steadily making progress. The substantive provisions of SB 1590 and HB 1213 revises project ranking criteria for beach projects (subject of 2015 OPPAGA Study), adds transparency and accountability provisions for use of appropriated funds, refocuses attention and funding on effective sand management at our inlets, and introduces a three-year work plan as part of DEP’s comprehensive planning responsibilities.

HB 1213 is similar to SB 1590 with one major exception - it does not include the final section earmarking \$50M annually from the Amendment 1 trust fund (Land and Acquisition Trust Fund, LATF). The decision to separate the substantive bill from the funding was made to give the substantive provisions of the bill the best opportunity for consideration and making it through the process. Funding and its sources have been introduced in the House and will be discussed as part of the appropriations process.

Except for a few wording tweaks and removal of archaic statutory references, both technical in nature, the bills have avoided unfriendly or questionable amendments.

#### Committees

Senator Latvala’s SB 1590 was referred to the following Committees:

- Environmental Preservation and Conservation (EPC)
- Appropriations Subcommittee on the Environment and Natural Resources
- Appropriations

SB 1590 had its first Committee stop at the EPC on 3/22/17. The Committee’s comments were very supportive, with a recognized appreciation for the importance of the bill especially with regard to funding and new inlet management provisions.

The Committee references for Representative Peter’s bill include:

- Natural Resources & Public Lands Subcommittee
- Agriculture & Natural Resources Appropriations Subcommittee
- Government Accountability Committee

HB 1213 made it through its first two committees without a single negative vote or comment. Its last committee stop is the Government Accountability Committee, Chaired by Representative Caldwell. This committee meets on Thursday, April 6<sup>th</sup>, but its agenda has not yet been released.

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## Appropriations

House and Senate Appropriations Bills were released last week, and with a starting difference of \$2 billion, finding compromises will be challenging. Traditional beach and inlet management projects were funded at different levels and from different funding sources in each bill. Beach recovery funding for areas impacted by Hurricanes Matthew and Hermine was not included in the House's Appropriations bill. The starting differences are significant and will likely be the subject of much discussion during the budget appropriations conference. Until then, both recommendations will be heard at their respective full Appropriations meetings scheduled on Wednesday, April 5<sup>th</sup>.

Projects	Governor's Recommended Budget	House 17-01 GAA	Senate SB2500
Hurricane response	\$61,237,500 (General Revenue)	\$0	\$50,000,000 (General Revenue)
Traditional projects - amounts & sources	\$50,000,000	\$30,060,495	\$50,000,000
	\$39,939,505 GR; \$10,060,495 LATF	\$20,000,000 GR; \$10,060,495M LATF	All LATF

## BeachWatch Bill Tracking List

The list of beach-related bills being monitored by FSBPA through its BeachWatch service are summarized below.

### Coastal Management

[SB 1590](#) by Senator Latvala and [HB 1213](#) by Representative Peters revise the criteria for prioritizing beach projects, prioritize inlet funding, and provide greater transparency in the funding process. SB 1590 dedicates \$50M in funding annually for beach and inlet projects statewide from the Land Acquisition Trust Fund (LATF). HB 1213 is in its last committee and SB 1590 has two committees remaining.

### Hurricane Matthew Funding

[HB 3603](#) by Representative Renner is a House Appropriations Project Bill that provides \$10M in nonrecurring general revenue to the Flagler County Beach Restoration and Protection Project. This bill is in its last committee.

[HB 4127](#) by Representative Stevenson is a House Appropriations Project Bill that provides \$47M in nonrecurring general revenue to the St. Johns County Hurricane Recovery. This bill has not been heard.

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### **Land Acquisition Trust Fund**

**Everglades** - [SB 10](#) by Senator Bradley and [HB 761](#) by Representative Altman establish options for additional water storage south of Lake Okeechobee to reduce the damaging discharges to the St. Lucie and Caloosahatchee Estuaries. These options would be funded within the existing LATF allocation for Everglades Restoration. SB 10 will be heard in the Senate Appropriations Committee this week. HB 761 has not been heard.

**St. Johns River** - [SB 234](#) by Senator Bradley and [HB 847](#) by Representative Payne set aside \$35M in the Land Acquisition Trust Funds (LATF) annually for restoration of the St. Johns River and its tributaries or the Keystone Heights Lake Region. SB 234 will be heard in the Senate Appropriations Committee this week.

**Septic Tanks** - [HB 551](#) by Representative Stone and [SB 874](#) by Senator Young set aside \$20M in LATF dollars annually to retrofit septic tanks or connect homes to central sewer in the Indian River Lagoon and St. Lucie and Caloosahatchee Estuaries. Neither bill has received a hearing.

**Water Infrastructure** - [HB 663](#) by Representative Peters and [SB 1082](#) by Senator Brandes set aside \$100M in LATF dollars annually for water infrastructure spending for certain projects that are part of an approved recovery and prevention strategy, regional water supply plan, basin management action plan, or provide an environmental benefit based on criteria in the bills. Neither bill has received a hearing.

**Indian River Lagoon** - [SB 982](#) by Senator Mayfield and [HB 1033](#) by Representative Altman set aside \$30M in LATF dollars annually for restoration of the Indian River Lagoon. SB 982 has two committees remaining. HB 1033 has not been heard.

### **Deepwater Horizon**

[SB 364](#) by Senator Gainer appropriates 75% of Florida's economic damages settlement funds to Triumph Gulf Coast (Triumph), which is responsible for creating and administering a program to assist with economic recovery in the eight counties disproportionately affected by the Deepwater Horizon oil spill. The bill requires Triumph to invest the settlement funds with the State Board of Administration. The bill adds two members to the Triumph Board of Directors, with the House Speaker and Senate President each appointing an individual from one of the lesser populated of the eight counties. The bill appropriates \$300M in GR to fund Triumph for FY 17-18. This bill will be heard in the Senate Appropriations Committee this week.

[HB 7077](#) by the House Select Committee on Triumph Gulf Coast and Representative Trumbull has passed the House and is in Senate messages. It originated as a committee bill, PCB-SOT-17-01, which would have housed Triumph in the Department of Economic Opportunity (DEO), and allowed the Legislature to approve or reject each project recommended by Triumph. These provisions have been removed, but the two bills still have some differences.

### **Economic Development**

The House has passed [HB 7005](#), which eliminates Enterprise Florida. The House has also passed [HB 9](#), which preserves Visit Florida but moves it under the DEO and, among other provisions, tightens Visit Florida's current matching requirements. Neither bill has a companion in the Senate.

### **Marine Turtle Protection**

[SB 1228](#) by Senator Gainer and [HB 1031](#) by Representative Altman add the existing crime of possession of any marine turtle species or hatchling, or parts thereof, or nests to the statutory list of third degree felonies for the purpose of increasing sentencing points for a conviction of this offense. SB 1228 will be heard in its first committee this week. HB 1031 is in its last committee.

### **Coral Reefs**

[HB 1143](#) by Representative Jacobs and [SB 1624](#) by Senator Farmer establish the Southeast Florida Coral Reef Ecosystem Protection Area. HB 1143 was heard in its second committee on Monday, April 3. SB 1624 has two committees remaining.

### **Sea Level Rise and Flooding**

[SB 112](#) by Senator Brandes and [HB 613](#) by Representative Ahern authorize the Division of Emergency Management to administer a matching grant program for local governments to implement flood hazard risk reduction policies and projects. Neither bill has received a hearing.

[HB 181](#) by Representative Jacobs and [SB 464](#) by Senator Clemens create an interagency workgroup to share information, coordinate efforts, and collaborate on initiatives relating to natural hazards. HB 181 passed the House last week. SB 464 is in its last committee.

[SB 420](#) by Senator Brandes and [HB 813](#) by Representative Lee revise the intervals at which specified standards and guidelines for projecting certain rate filings must be revised by the Florida Commission on Hurricane Loss Projection Methodology. Additionally, they authorize an insurer to issue flood insurance policies on a flexible basis. They also specify conditions for an eligible surplus lines insurer before an agent may be excepted from the diligent-effort requirement when exporting flood insurance contracts or endorsements to the insurer. SB 420 will be heard in its second committee this week. HB 813 is in its last committee.

[HB 639](#) by Representative Shaw and [SB 728](#) by Senator Rouson revise limitations on emergency assessments for coastal and other property insurance accounts. Neither bill has been heard.

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## Shoreline Change in Response to Sea Level Rise on Florida's Panhandle Coast

James Houston, Engineer Research and Development Center, Corps of Engineers

Dean and Houston (2016) and Houston (2016a) showed that beach nourishment at past rates can on average offset future sea level rise on Florida's southwest and east coasts respectively. Both coasts had accreting shorelines from the 1800s to 2015 due to beach nourishment and longshore and onshore sediment transport. This accretion occurred despite substantial sediment losses to inlets managed for navigation and recession caused by sea level rise. However, the Florida Panhandle coast receded over 25 meters on average from 1867-2015 despite beach nourishment. As the rate of sea level rise increases, causing additional shoreline recession, what will be the future of the Panhandle's shoreline?

The Florida shoreline has a remarkable set of historical measurements of shoreline position at fixed physical survey monuments (Florida Department of Environmental Protection, 2016). The monuments are about 300 meters apart with measurements made from about 1867-2015 (depending on the monument). Houston (2017) analyzed historical shoreline change at 710 monuments along about 200 miles of coast in the seven Panhandle counties with sandy beaches (Figure 1). Escambia and Santa Rosa Counties are considered together in the historical shoreline change data base, and the convention is maintained in this analysis.



Figure 1. Seven Panhandle counties

Florida universities and consulting firms have studied Florida shorelines extensively, and information is available on the five main factors that have caused past shoreline change on the Panhandle coast - sea level rise, beach nourishment, loss of sediment to inlets, longshore sediment transport, and long-term onshore sediment transport. To project shoreline change into the future, one must understand what caused it to change in the past. Houston (2017) used the data from these studies to estimate the effect each factor had on shoreline change since 1867.

To account for different county shoreline lengths, Houston (2017) determined shoreline area change that is equal to shoreline length multiplied by the linear change (recession or accretion). Figure 2 shows quite good agreement between measured shoreline area change and calculated change based on contributions from the five factors. The good agreement indicates that causes of shoreline change during 1867-2015 are reasonable well understood.

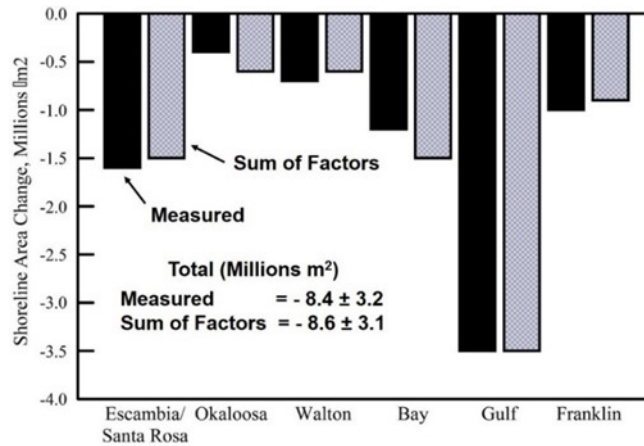


Figure 2. Comparisons by county and for the total shoreline of measured shoreline area change versus calculated change.

Figure 3 shows calculated contributions that each factor made to shoreline change since 1867 and the summed total contribution from all factors. Sea level rise accounted for only about 20% of the magnitude of contributions by all factors to shoreline change. The contribution from beach nourishment is about the same as that of sea level rise, but of opposite sign, although the first substantial Panhandle nourishment was not until 1985. The sum of the factors produces a total shoreline recession of about 8.6 million m<sup>2</sup> that is equal to a linear change of about - 25 meters, in good agreement with measurements.

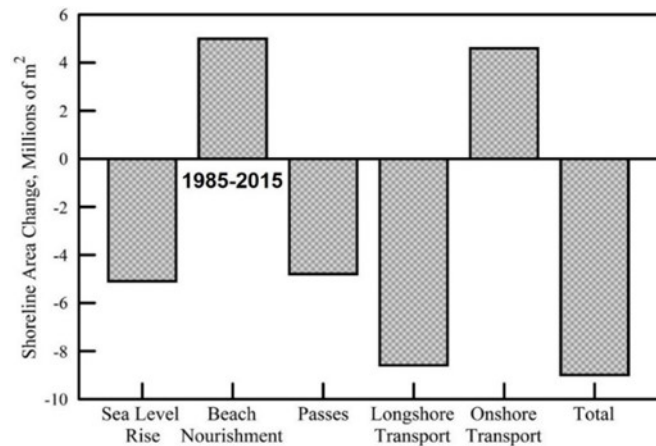


Figure 3. Contributions that factors made to shoreline change from about 1867-2015. Beach nourishment was placed only for 30 years from 1985-2015.

Shoreline area changes in Figure 3 occurred during about a 150-year period, except for shoreline accretion caused by beach nourishment that was placed only from 1985-2015. It is instructive to consider the rate of shoreline area change by dividing area change by the length of time over which it occurred. Because beach nourishment occurred only during a 30-year period, it causes a much greater rate of shoreline area change than any other factor (Figure 4). The shoreline receded from 1867-2015 as seen in Figure 3, but Figure 4 shows that had beach nourishment been placed over the same period as the other factors, the Panhandle shoreline would have accreted. Beach nourishment has dominated shoreline change on the Panhandle coast from 1985-2015, but sea level rise is expected to increase in the future, and it will contend with beach nourishment in determining future shoreline change.

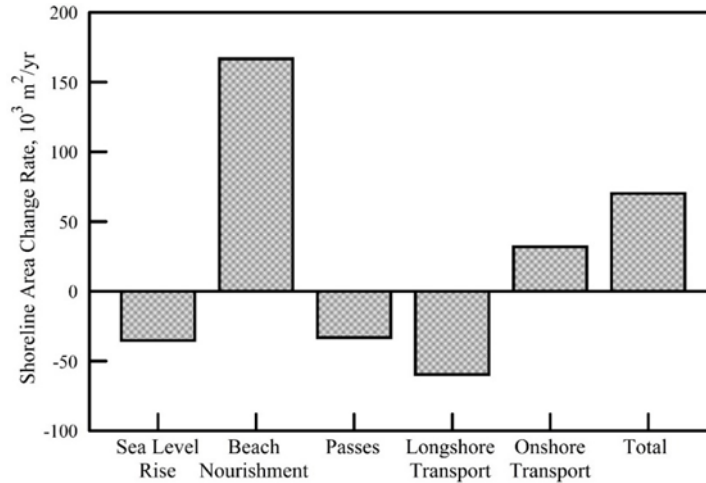


Figure 4. Rate of shoreline area change produced by the factors causing the change.

Shoreline change projections will be made for 2016-2065 and 2016-2100 using sea level rise projections of the Intergovernmental Panel on Climate Change (IPCC, 2013). IPCC (2013) was prepared by 71 of the world's experts on sea level rise, and Houston (2016b) presented the reasons IPCC projections should be used. IPCC has four climate change scenarios (RCP 2.6, 4.5, 6.0, and 8.5) with RCP 2.6 being the most benign and RCP 8.5 the most severe.

It is assumed initially that beach nourishment will continue at the 1985-2015 rate. Houston (2017) shows that longshore and onshore transport rates will remain about constant into the future. However, losses to inlets will decrease if no new inlets are cut (cutting inlets such as the St Andrews Bay Entrance, Bay County, in 1934 leads to shoal growth that takes sand out of the littoral system) and dredged sand is continued to be placed on beaches rather than the older practice of ocean disposal outside the littoral system.

Projections show that the factors will cause the Panhandle shoreline to be stable on average from 2016-2065 and stable from 2016-2100, except for the most severe scenario, RCP 8.5. However, even for RCP 8.5, beach nourishment would only need to be increased by 20% to offset the effects of sea level rise on average until 2100. Without beach nourishment, the Panhandle shoreline would recede as much as 50 m by 2100, effectively eliminating most beaches.

Beach nourishment that must be placed in the future to maintain shoreline stability varies among the counties. Gulf, Franklin, and Walton Counties would have to increase beach nourishment over rates from 1985-2015 (Figure 5) to have stable shorelines on average. The Okaloosa County shoreline would be about stable at the 1985-2015 rate. Escambia/Santa Rosa and Bay Counties could maintain average shoreline stability with nourishment rates lower than the 1985-2015 rates, because recession caused in the past by Pensacola Pass and the St Andrews Bay Entrance will be less in the future. The shoals of both have stabilized and dredged sand is now placed on beaches rather than disposed in the ocean.



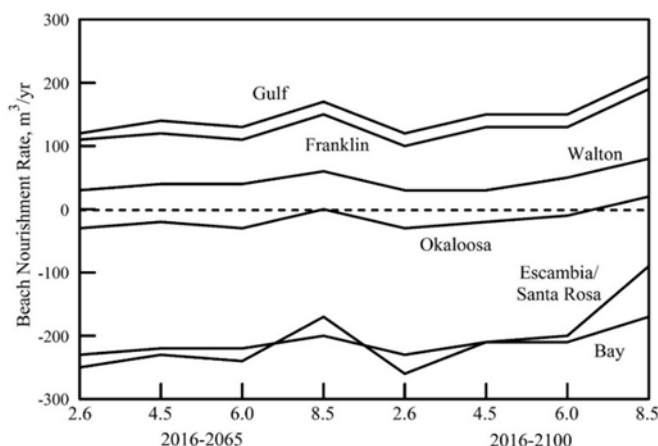


Figure 5. Changes in beach nourishment rates that would produce average shoreline stability for the climate change scenarios during 2016-2065 and 2016-2100.

Dean and Houston (2016), Houston (2016a), and Houston (2017) have shown that beach nourishment placed at past rates can offset on average sea level rise on all Florida coasts for the next 50 years and to the year 2100, except for the Panhandle coast, which would require about a 20% increase in beach nourishment for the most severe scenario from 2065-2100. The rate of sea level rise could be monitored to 2065 and beach nourishment increased if the most severe scenario begins to unfold.

Beach nourishment is a remarkably effective mitigation strategy to offset future sea level rise along Florida shorelines.

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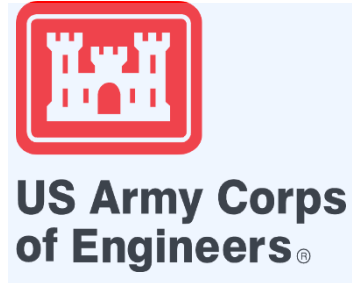
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# USACE Jacksonville District

## South Atlantic Coastal Study Authority Issued



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In January of 2015, the U.S. Army Corps of Engineers released a report detailing the results of a two-year study to address coastal storm and flood risk to vulnerably populations, property, ecosystems, and infrastructure in the North Atlantic region of the United States affected by Hurricane Sandy. The report, known as the North Atlantic Coast Comprehensive Study (NACCS), brought together experts from Federal, state, and local government agencies, as well as non-governmental organizations and academia, to assess the flood risks facing coastal communities and ecosystems. The study developed a coastal storm risk management framework to address increasing risks, which are driven in part by increased frequency and intensity of storm events and rising sea levels due to a changing climate.

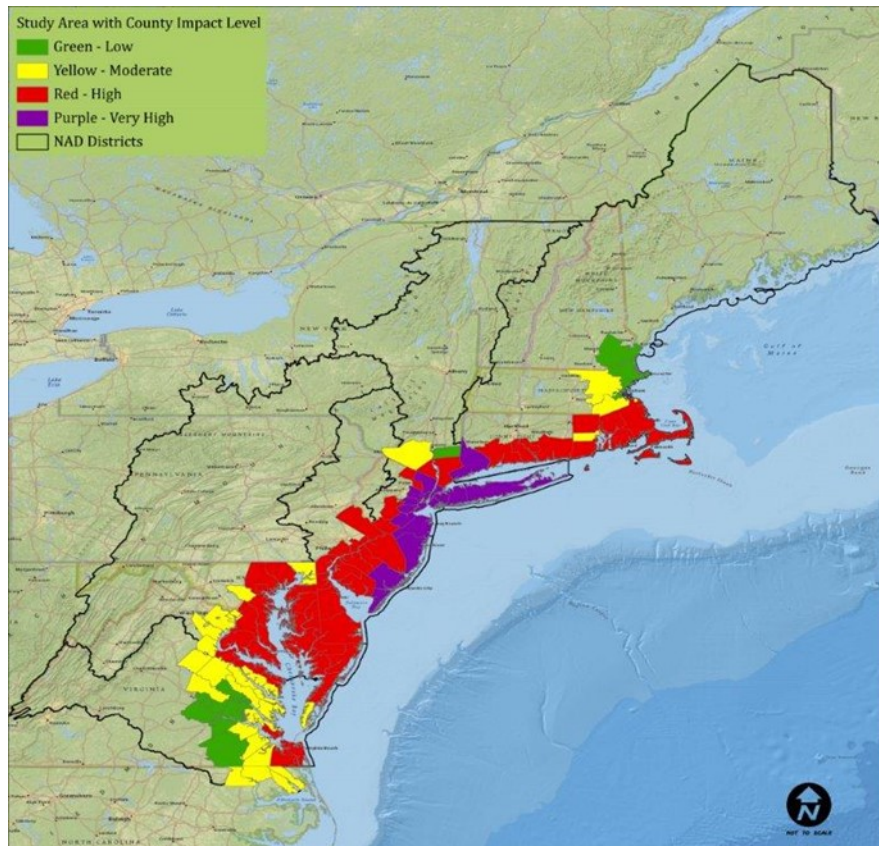


Figure 1: Study Area impact levels during the North Atlantic Coast Comprehensive Study

The study developed a collaborated plan to manage coastal resources, looked at potential effects of anticipated sea level change to coastal communities, identified areas of high risk, and examined possible strategies to mitigate risk. Geospatial products from NACCS include ArcGIS metadata for sea level change, a risk index, housing density, and an exposure index. Other products from NACCS include Barrier Island Sea Level Rise Inundation Assessment, a coastal storm hazard data storage and mining system, and a sea level affection marches model update algorithm in the form of a FORTRAN code.

Following the completion of the NACCS, there is interest in proceeding with a similar study for the South Atlantic Region. The proposed South Atlantic Coastal Study (SACS) would enhance both Federal and non-Federal coastal risk management and identify measures to improve coastal resilience and sustainability due to the effects of sea level rise. The goal of the study is to identify the risks to and vulnerabilities of South Atlantic coastal areas (over 10,000 miles of vulnerable shoreline) and opportunities to enhance resiliency and lower risks to population centers, economic development, and environmental resources.

The authority to begin the SACS was issued in the Water Infrastructure Improvements Act, Public Law 114-322. The study is expected to take 3 years to complete and the study area will include North Carolina to the Florida Keys.

Ultimately, the SACS should complement the NACCS and the tools that are currently in place for the NACCS, including the Coastal Hazards System (CHS), will eventually include the information generated from the SACS in order to create a single large database pertaining to the Atlantic Coast. The database will be useful to scientists and engineers working in the coastal zone.

For more information about NACCS and its products, please use the following link:

<http://www.nad.usace.army.mil/CompStudy/>

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# CALENDAR OF EVENTS

## FSBPA Conferences

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**60th Annual Conference**

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## OTHER DATES OF INTEREST

**March 7-May 5, 2017**

**2017 Legislative Session**

**October 24-27, 2017**

**ASBPA 2017 National Coastal Conference  
 Fort Lauderdale, Florida**

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