

# St. Andrews State Park Emergency Restoration Project: “Working Together for a Common Goal”

Michael Dombrowski, P.E., MRD Associates, Inc., Destin, FL  
Lauren Floyd, Coastal Protection Engineering, Boca Raton, FL  
Katie Hutschenreuter, E.I., MRD Associates, Inc., Destin, FL  
Lisa Armbruster, Sustainable Beaches, LLC, Ponte Vedra, FL

**FSBPA Beach Preservation  
Technology Conference  
February 2021**



# Presentation Outline

- Introduction
- Timeline
- Coastal Processes
- Action!
- Coordination Meeting
- Project Design
- Permit Modification
- Funding
- Anticipated Schedule



# Project Location



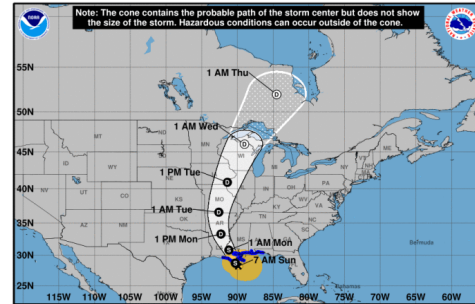
*Travelers Choice 2021 Best of the Best Awards* Panama City Beach No. 2 emerging destination in the world, according to TripAdvisor



# Timeline

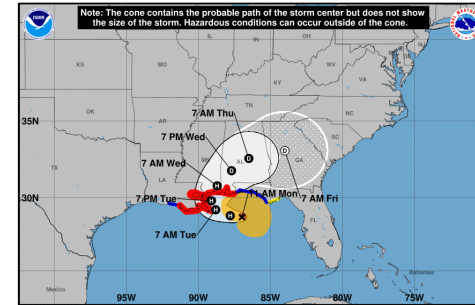


Hurricane Michael (10/10)



H. Barry (7/11)  
T.S. Nestor (10/18)  
T.S. Olga (10/26)

T.S. Cristobal (6/7)  
T.S. Fay (7/9)  
H. Hanna (7/23)  
H. Laura (8/27)  
H. Marco (8/24)  
H. Sally (9/16)  
H. Delta (10/9)  
H. Zeta (10/27)



Panama City Beaches  
Federal Project  
1998/1999, 2005, 2001, 2017

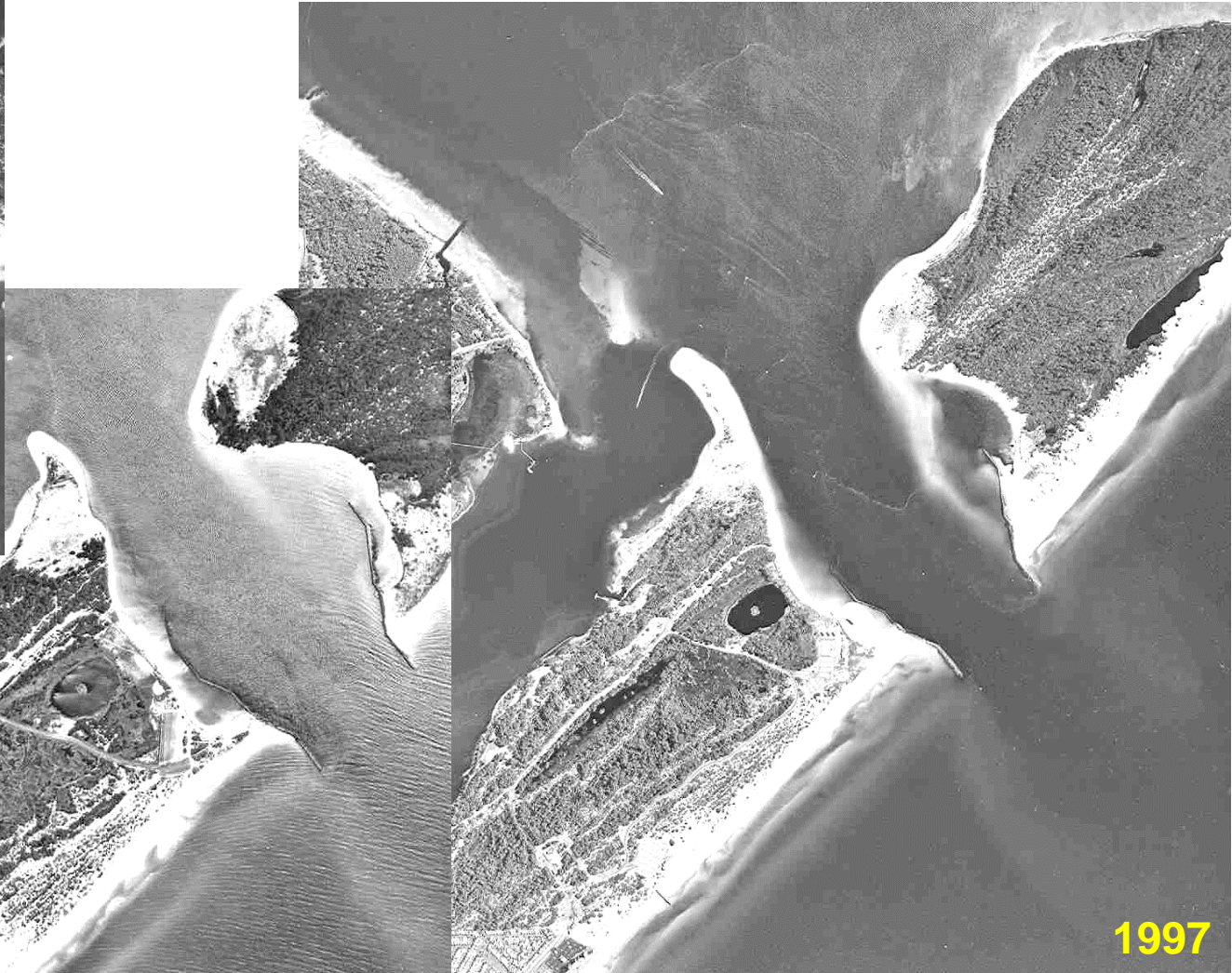
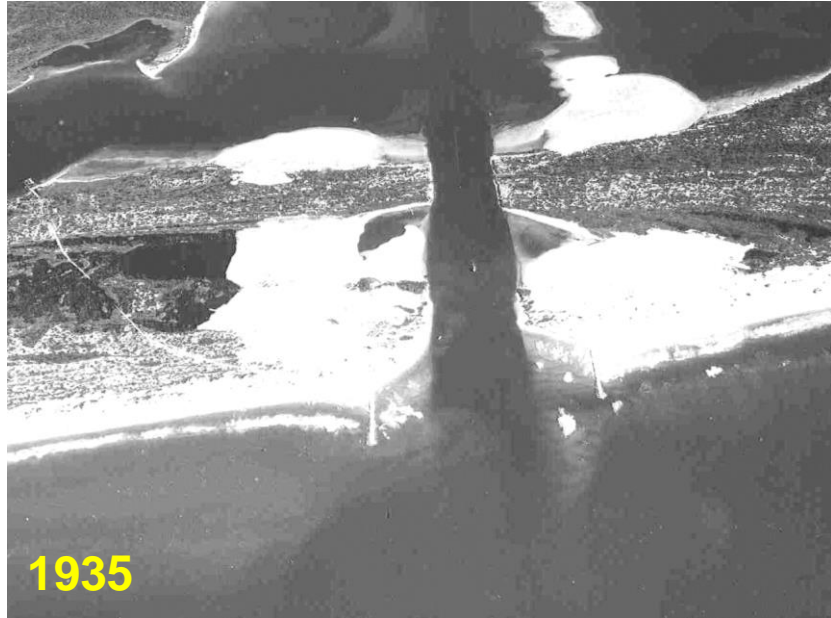
Design Team NTP (12/7)  
Surveys  
Geotechnical Investigation  
Design Document  
Design and Permitting

Mexico Beach  
Beach Restoration Project





# Historic Conditions





# Post-Hurricane Sally – 9/19/20

R-97 View East



R-96 View West



R-94 View East



R-92 View East





# Hurricane Sally – 9/16/20

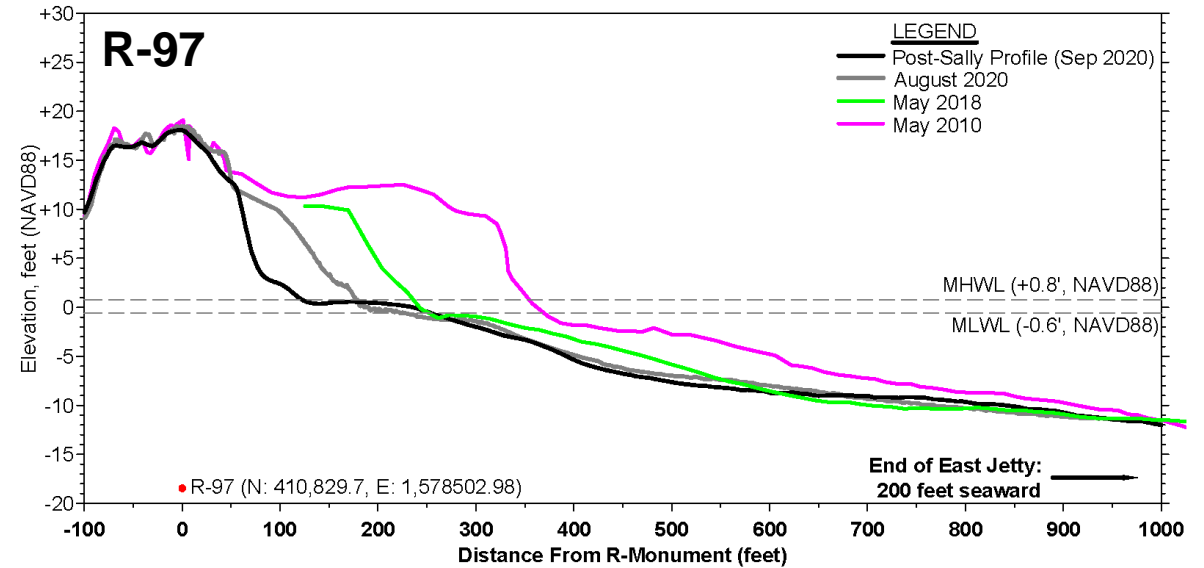
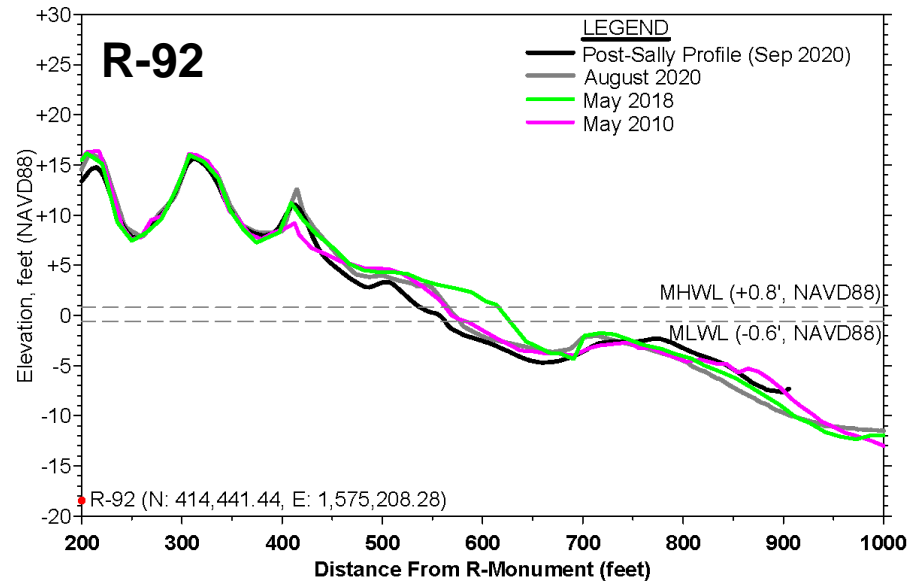
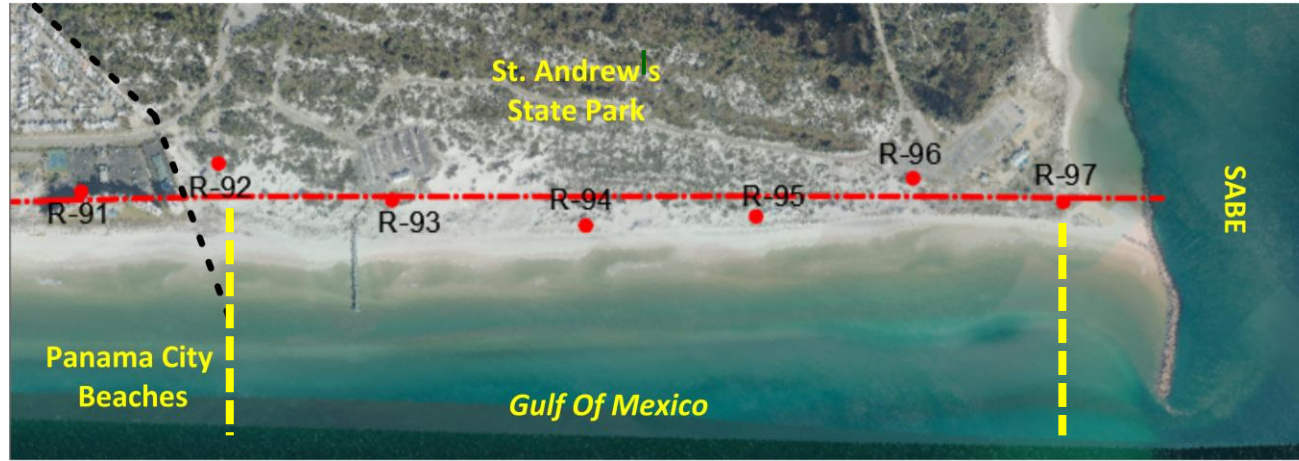


**FLORIDA**  
State Parks  
*...the Real Florida*



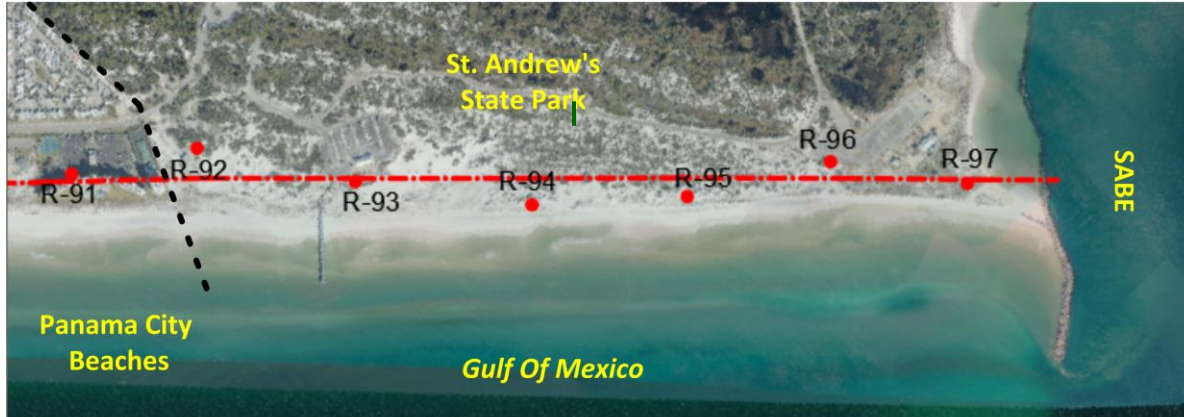
**mrd**  
mrd associates, inc.  
Coastal Engineering

# Historic Profiles – 2010 to 2020



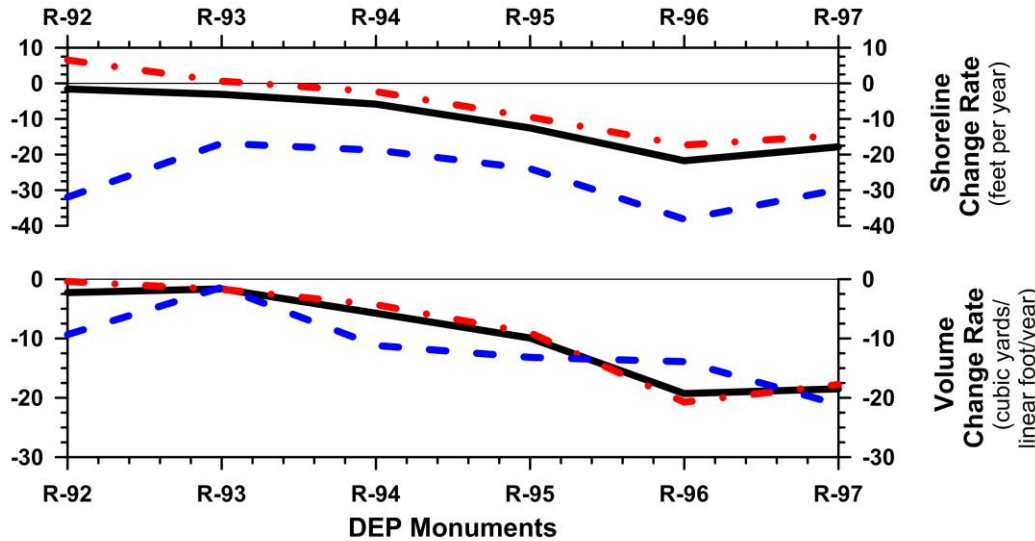


# Shoreline and Volume Change Rates



## Shoreline (MHWL) change rates (ft/yr)

Monument	May 2010 to June 2018	June 2018 to August 2020	May 2010 to August 2020
R-92	6.5	-32.0	--1.6
R-93	0.6	-16.9	-3.1
R-94	-2.4	-18.8	-5.8
R-95	-9.5	-24.0	-12.5
R-96	-17.3	-38.2	-21.7
R-97	-14.6	-29.8	-17.8
<b>Average</b>	<b>-6.1</b>	<b>-26.6</b>	<b>-10.3</b>



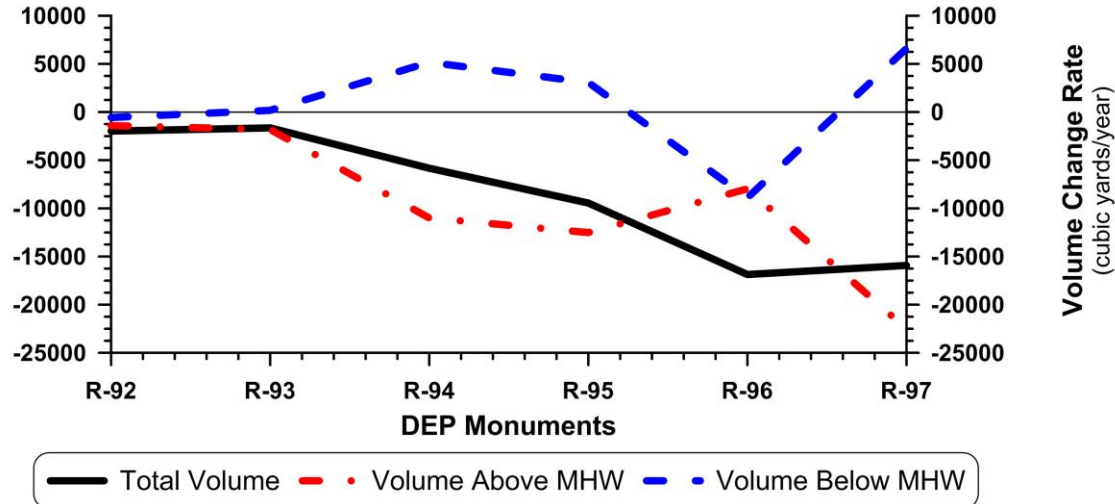
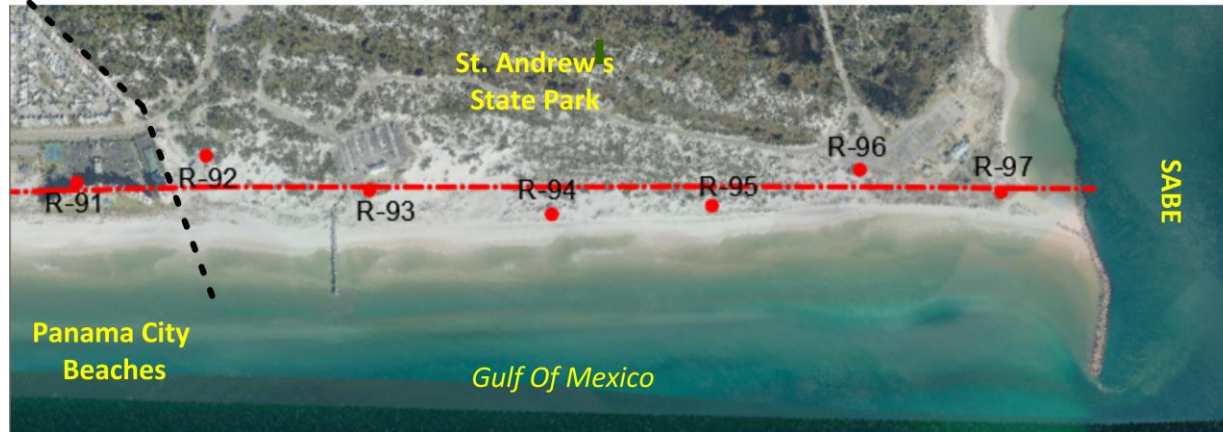
## Volume change rates (cy/lf/yr)

Monument	May 2010 to June 2018			June 2018 to August 2020			May 2010 to August 2020		
	Above MHWL	Below MHWL	Total	Above MHWL	Below MHWL	Total	Above MHWL	Below MHWL	Total
R-92	-1.4	1.0	<b>-0.4</b>	-2.6	-6.8	<b>-9.4</b>	-1.6	-0.7	<b>-2.3</b>
R-93	-1.7	0.0	<b>-1.7</b>	-2.3	0.9	<b>-1.4</b>	-1.8	0.2	<b>-1.6</b>
R-94	-11.8	7.5	<b>-4.3</b>	-7.2	-4.0	<b>-11.2</b>	-10.8	5.1	<b>-5.4</b>
R-95	-14.4	5.4	<b>-9.0</b>	-8.3	-4.9	<b>-13.2</b>	-13.1	3.2	<b>-9.9</b>
R-96	-10.1	-10.6	<b>-20.7</b>	-5.3	-8.6	<b>-13.9</b>	-9.1	-10.2	<b>-19.3</b>
R-97	-30.2	12.4	<b>-17.8</b>	-10.9	-10.2	<b>-21.1</b>	-26.1	7.7	<b>-18.4</b>
<b>Average</b>	<b>-11.4</b>	<b>2.7</b>	<b>-8.7</b>	<b>-6.1</b>	<b>-5.4</b>	<b>-11.5</b>	<b>-10.3</b>	<b>1.0</b>	<b>-9.3</b>

— May 2010 to Aug. 2020   
 - · - May 2010 to June 2018   
 - - - June 2018 to Aug. 2020



# Annual Volume Changes



## Annual volume changes (cy/yr) May 2010 to August 2020 (post-TS Cristobal)

Monument	Annual Volume Change Rate Between 2010 and 2020 (cy/yr)
R-92	-1,974
R-93	-1,640
R-94	-5,830
R-95	-9,445
R-96	-16,872
R-97	-15,922
<b>Total</b>	<b>-51,683</b>

**Additional 73,000 cubic yards (-13.1cy/lf) eroded above MHW between August 2020 (post- Cristobal) and September 2020 (post-Sally).**

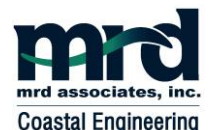




# Action!

## St. Andrews State Park

- Pre-Hurricane Michael attendance of 924,861 (5<sup>th</sup> highest of all Florida state parks).
- Estimated local direct economic impact of \$86,129,398 in FY2016-2017 (Florida Park Service, 2017).
- Significant shoreline erosion since Hurricane Opal in 1995.
- After the impacts of Hurricane Michael – Dan Rowe, Lisa Armbruster, TDC Board, Bay County BOCC spearheaded a plan to restore the St. Andrews State Park gulf front.
- Enhance a valuable State and County resource and increase project performance of the Federal Project.



# Coordination Meetings



- Greg Garis
- Lanie Edwards
- Ralph Clark
- Robert Brantly
- Karina Kronsis
- Hanna Tillotson
- Andrew Briscoe
- William Guy Weeks
- Wes Howell
- Gregg Walker

**FLORIDA State Parks**  
...the Real Florida



- Parks Small
- Michael Foster
- Philip Stone
- Marshall Flake
- Benjamin Faure
- Scott Robinson
- Theresa Carron

- Waylon Register
- Jennifer Jacobson
- Matthew Lang
- Justin Lashley
- Lekesha Reynolds
- Tracey Wheeler

- Patti Kelly
- Kristi Yanchi



- Michelle Pasawicz
- Rachael Stevenson
- Nick Vitale



- Wayne Stubbs



**NOAA FISHERIES**

- Kay Davy

- Lisa Armbruster
- Lauren Floyd
- Tara Brenner
- Michael Dombrowski
- Katie Hutschenreuter

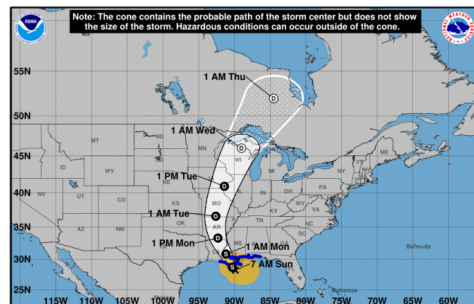




# Timeline

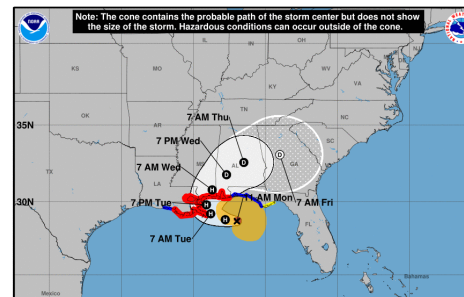


Hurricane Michael (10/10)



H. Barry (7/11)  
T.S. Nestor (10/18)  
T.S. Olga (10/26)

T.S. Cristobal (6/7)  
T.S. Fay (7/9)  
H. Hanna (7/23)  
H. Laura (8/27)  
H. Marco (8/24)  
H. Sally (9/16)  
H. Delta (10/9)  
H. Zeta (10/27)



Agency Coordination Meetings (7/10&24, 8/28->)



Panama City Beaches  
Federal Project  
1998/1999, 2005, 2001, 2017

Design Team NTP (12/7)

Surveys  
Geotechnical Investigation  
Design Document  
Design and Permitting

Mexico Beach  
Beach Restoration Project

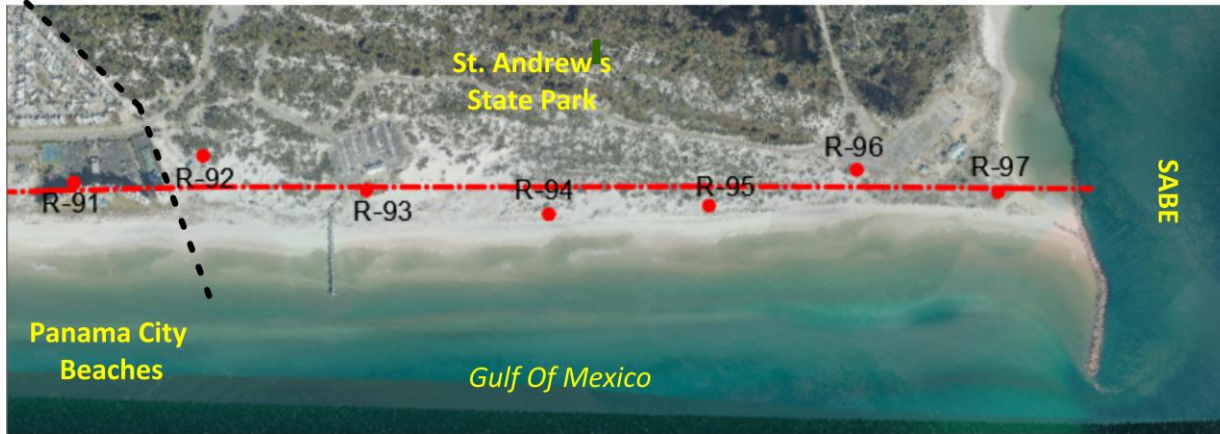


Design Team NTP (8/3)

Post-Cristobal Survey (8/11-8/15)  
Pre-Application Meeting (9/10)  
Post-Sally LiDAR (9/22-9/25)  
Design Document (12/9)

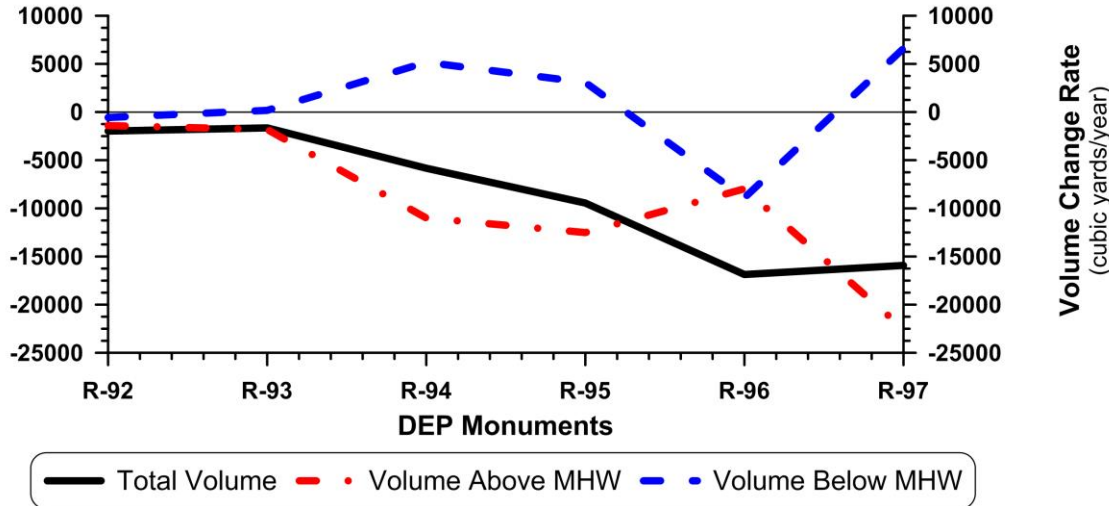


# Annual Volume Changes and Advanced Volume



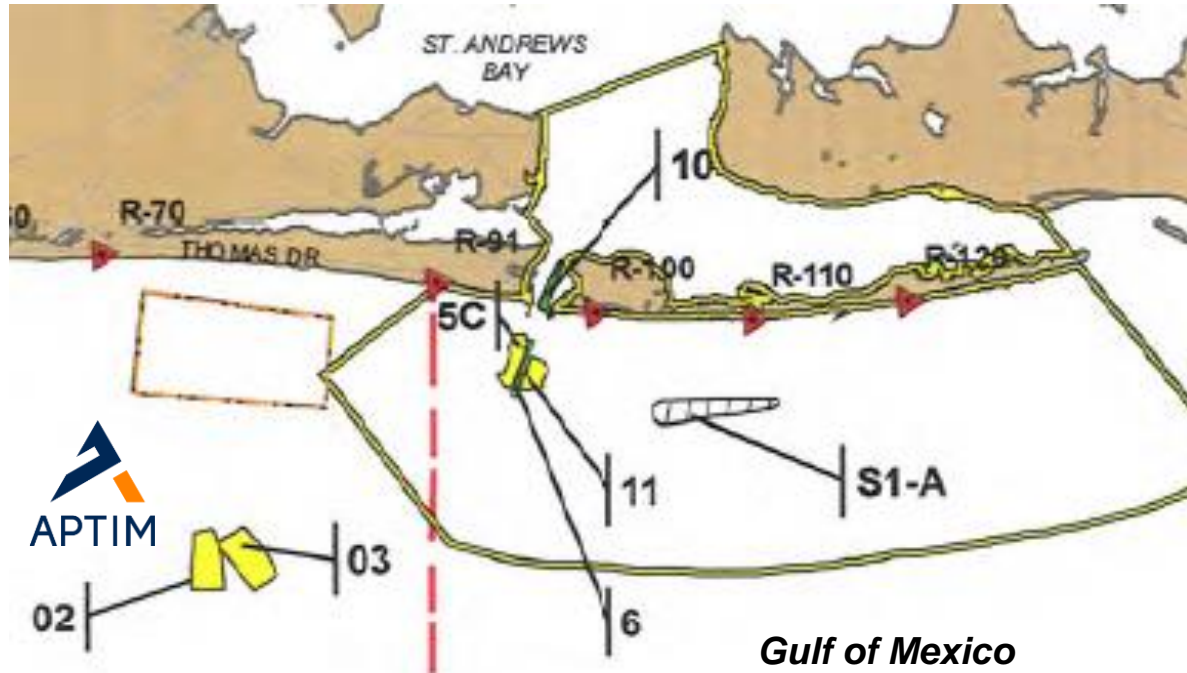
Annual volume changes (cy/yr) and advanced volume for 5- and 10-year nourishment (cy) based on May 2010 to August 2020 (post-TS Cristobal)

Monument	Annual Volume Change Rate Between 2010 and 2020 (cy/yr)	5-yr Advanced Nourishment Volume (cy)	10-yr Advanced Nourishment Volume (cy)
R-92	-1,974	9,871	19,743
R-93	-1,640	8,200	16,401
R-94	-5,830	29,152	58,304
R-95	-9,445	47,226	94,453
R-96	-16,872	84,359	168,718
R-97	-15,922	79,608	159,216
<b>Total</b>	<b>-51,683</b>	<b>258,417</b>	<b>516,834</b>





# Overfill Ratio - Compatibility Analysis

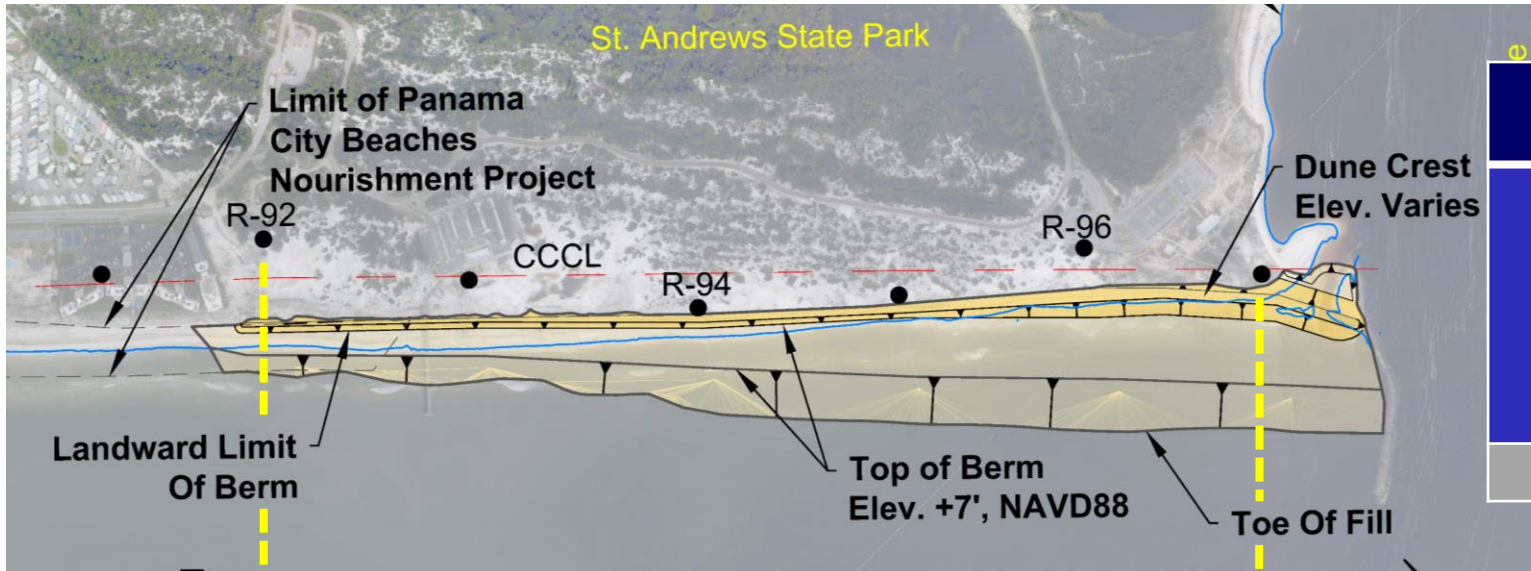


## Sediment compatibility analysis

Location Native Beach	Mean Grain Size (mm)	Sorting (phi)	Percent Silt (%)	Dry Munsell Value	ACES Overfill Ratio
2020 Beach	0.23	0.45	0.83	8	
2009 Beach	0.28	0.69	0.89	8	
1997 Native	0.24	0.53	0.94	8	
Potential Borrow Area					ACES Overfill Ratio
S1A	0.32	1.02	1.40	8	1.14
5C	0.22	0.52	1.27	8	1.12
11	0.28	0.52	1.27	8	1.04
03	0.35	0.92	1.50	7	1.08
10	0.40	0.83	1.20	7	1.02

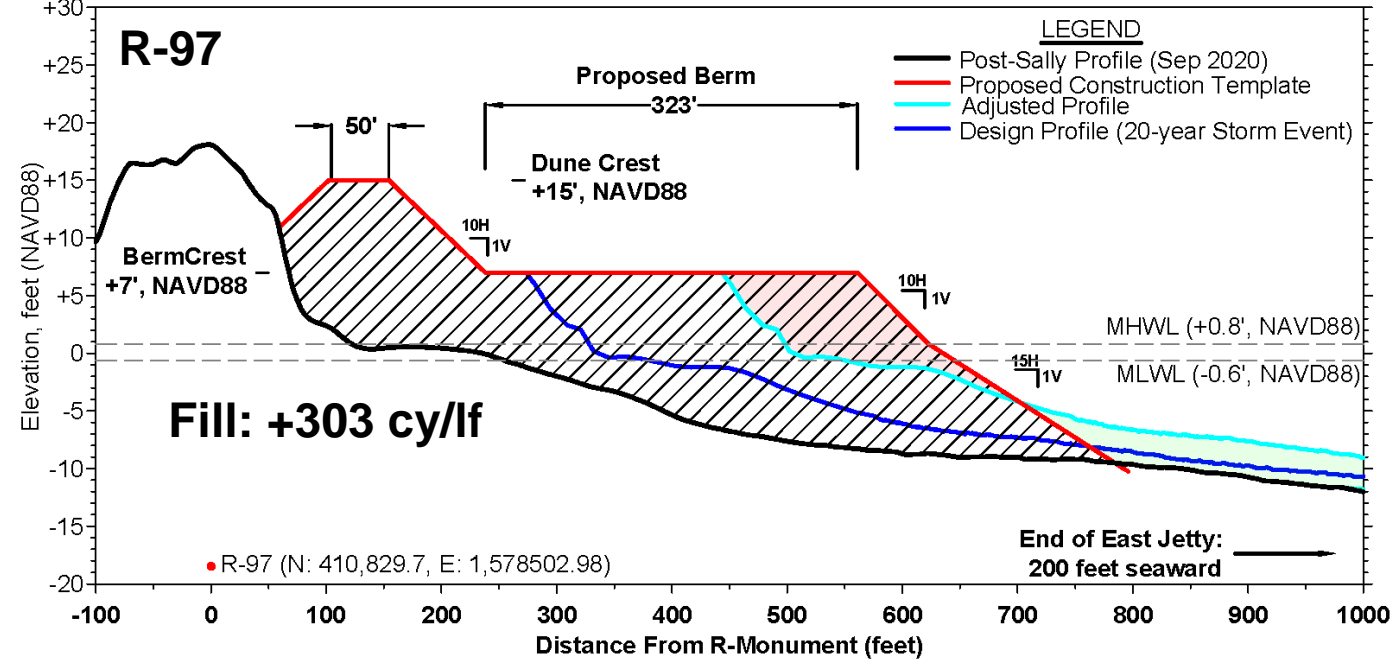
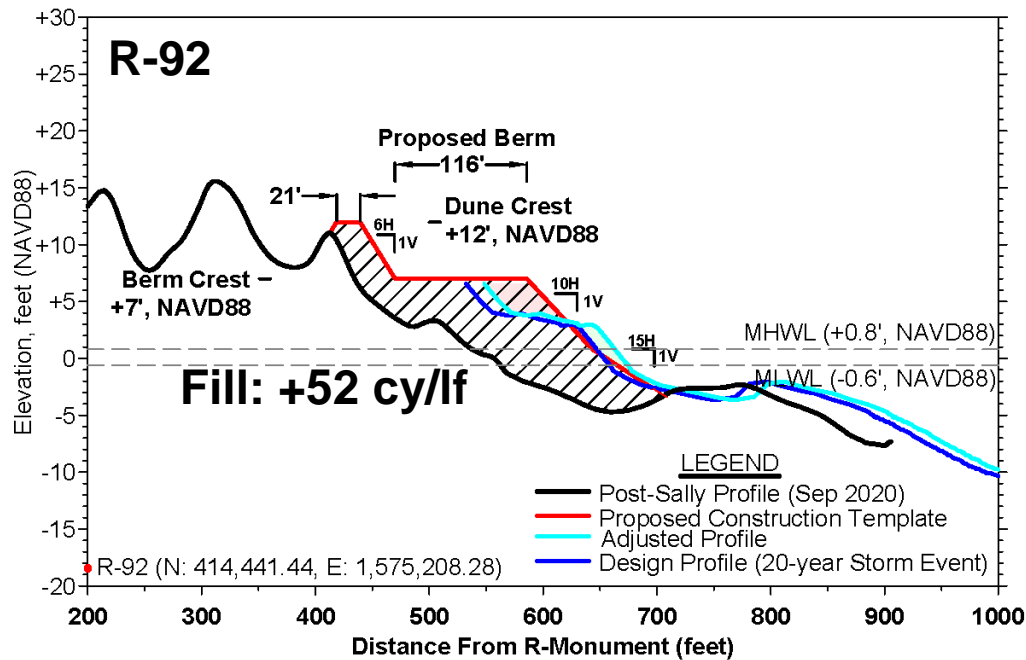


# Project Design



## Design volumes (cy)

Template	Volume (cy)
Design	170,417
Hurricane Sally	73,000
10-Yr Advancement	516,834
Overfill (1.08)	60,820
<b>Total</b>	<b>821,071</b>



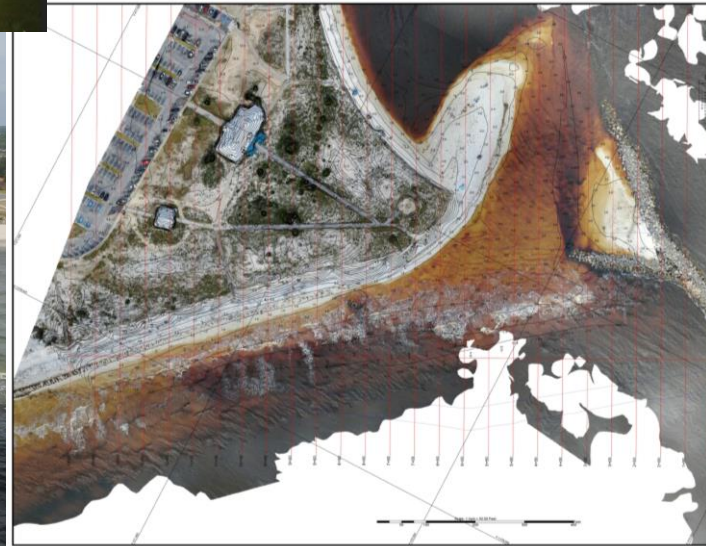


# “Head Start”



## Dredge volumes (cy)

Year	Disposal Area	
	St. Andrews State Park (R-92 to R-97)	Gator Lake
2011	35,672	179,882
2013	-	112,128
2016	23,000	73,000
2020	195,000	-
<b>Total</b>	<b>253,672</b>	<b>365,010</b>



**821,071 Project Volume**  
**-195,000 USACE**  
**+77,525 Background Erosion**  
**+/- 703,625 Required (2022)**



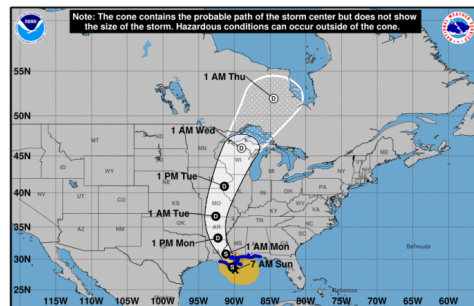
Waylon Register, P.E.  
 Site Manager, Panama City Site Office (CESAM-OP-GE)



# Timeline

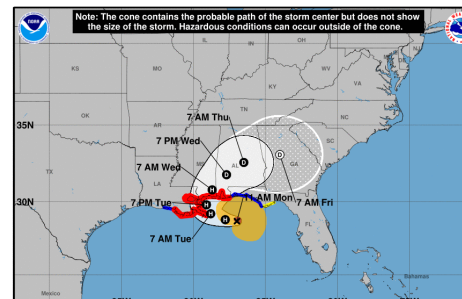


Hurricane Michael (10/10)



H. Barry (7/11)  
T.S. Nestor (10/18)  
T.S. Olga (10/26)

T.S. Cristobal (6/7)  
T.S. Fay (7/9)  
H. Hanna (7/23)  
H. Laura (8/27)  
H. Marco (8/24)  
H. Sally (9/16)  
H. Delta (10/9)  
H. Zeta (10/27)



Agency Coordination Meetings (7/10&24, 8/28->)

Channel Dredging (9/27-10/26)



Panama City Beaches  
Federal Project  
1998/1999, 2005, 2001, 2017

Design Team NTP (12/17)

Surveys  
Geotechnical Investigation  
Design Document  
Design and Permitting

Mexico Beach  
Beach Restoration Project



Design Team NTP (8/3)

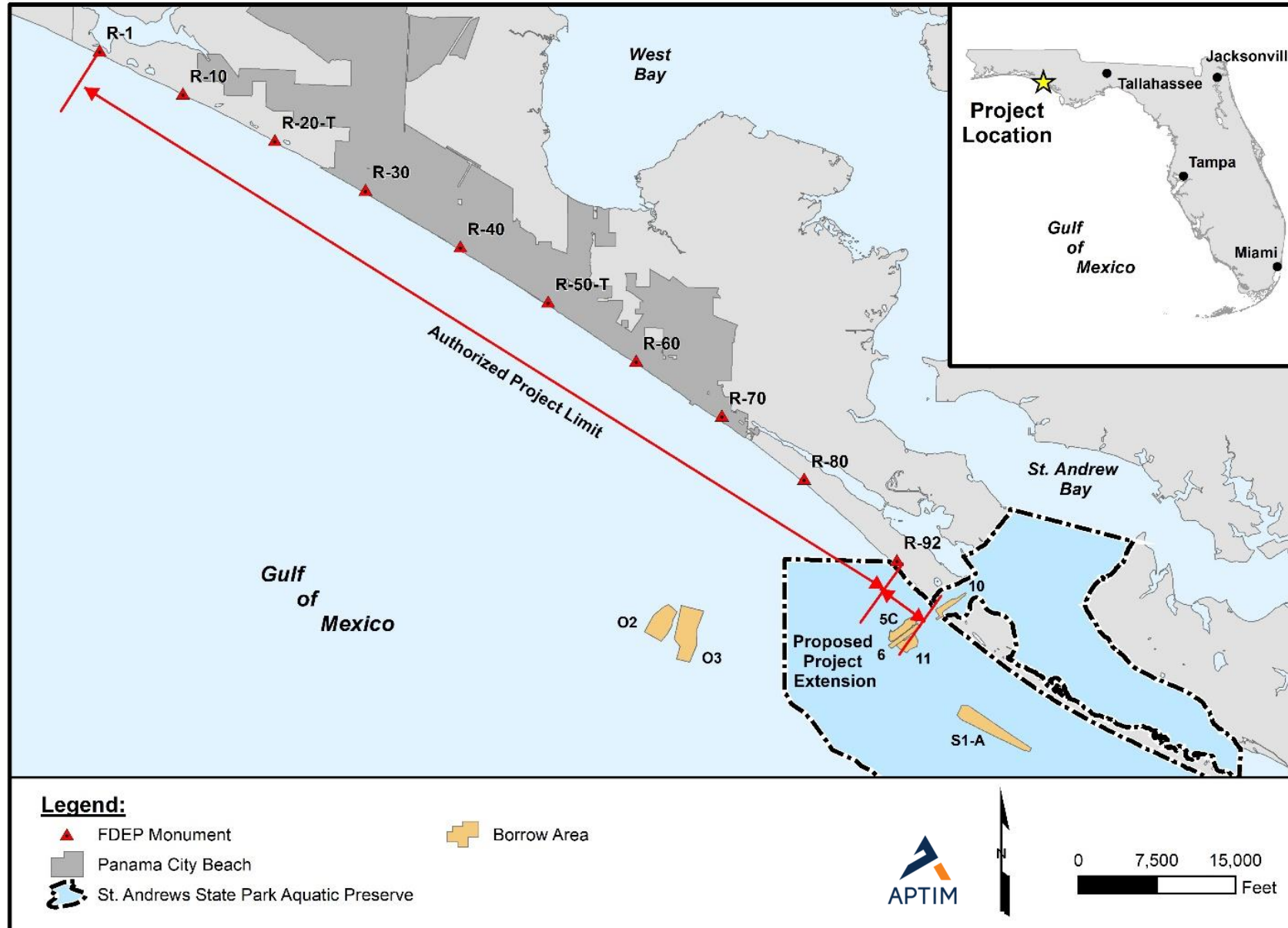
Post-Cristobal Survey (8/11-8/15)  
Pre-Application Meeting (9/10)  
Post-Sally LiDAR (9/22-9/25)  
Design Document (12/9)  
Permit Sketches (12/9)

Submit Permit Applications (1/8)





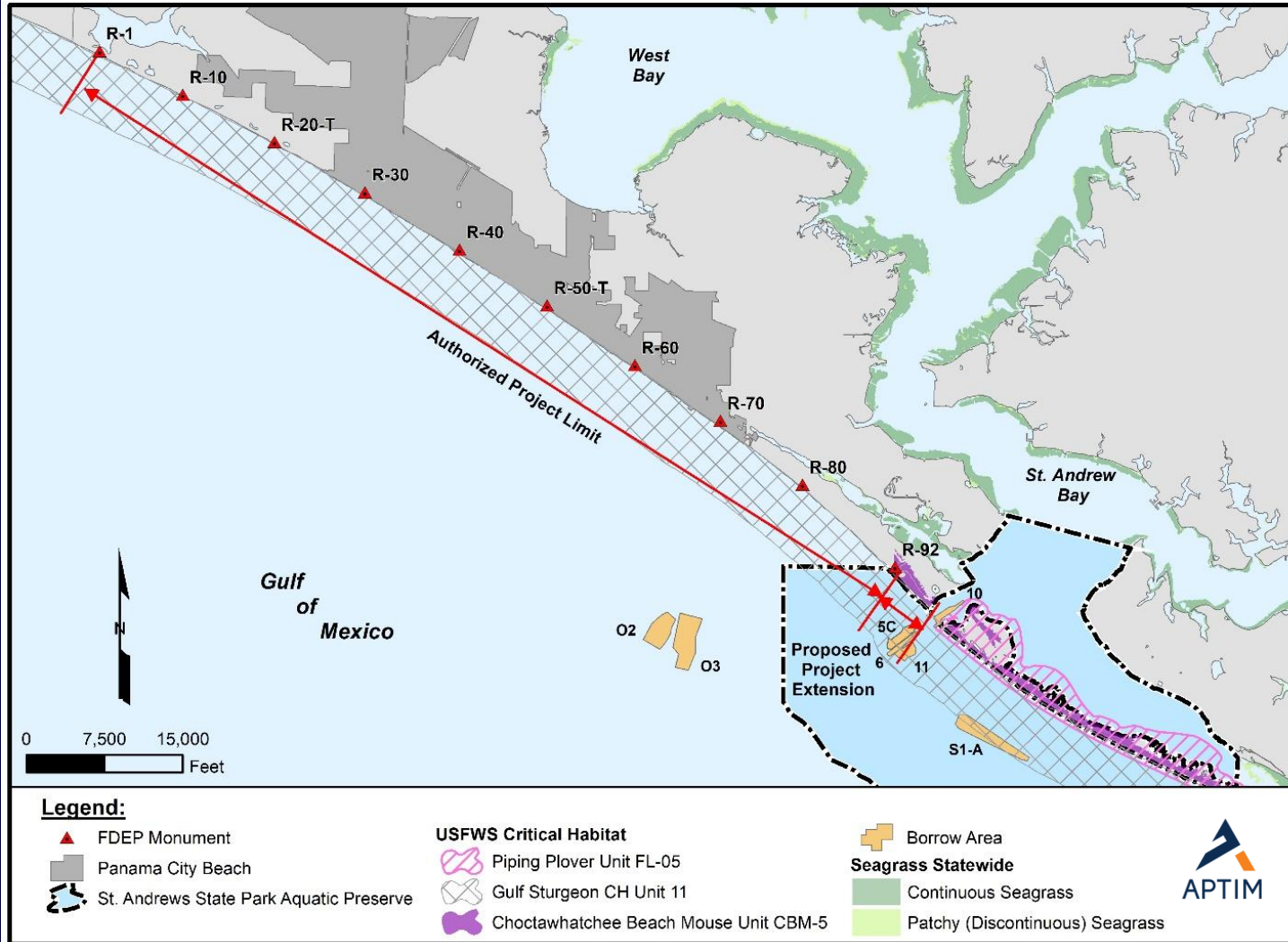
# Permit Modification



- **Additional Segment:** add St. Andrews State Park in authorized PCB fill placement area.
- **Add Co-Permittee:** add FDEP Division of Recreation and Parks
- **Sand Sources Remain Unchanged:** options for 7 offshore BAs or upland sand.



# Permit Modification



**Pre-Application Meeting : Sept. 10, 2020** with State and Federal agencies.

- ESA Section 7 Consultation
- Section 408 Coordination with USACE Mobile District
- SHPO Coordination for Cultural Resources





# Permit Modification

## SHPO Coordination for Cultural Resources



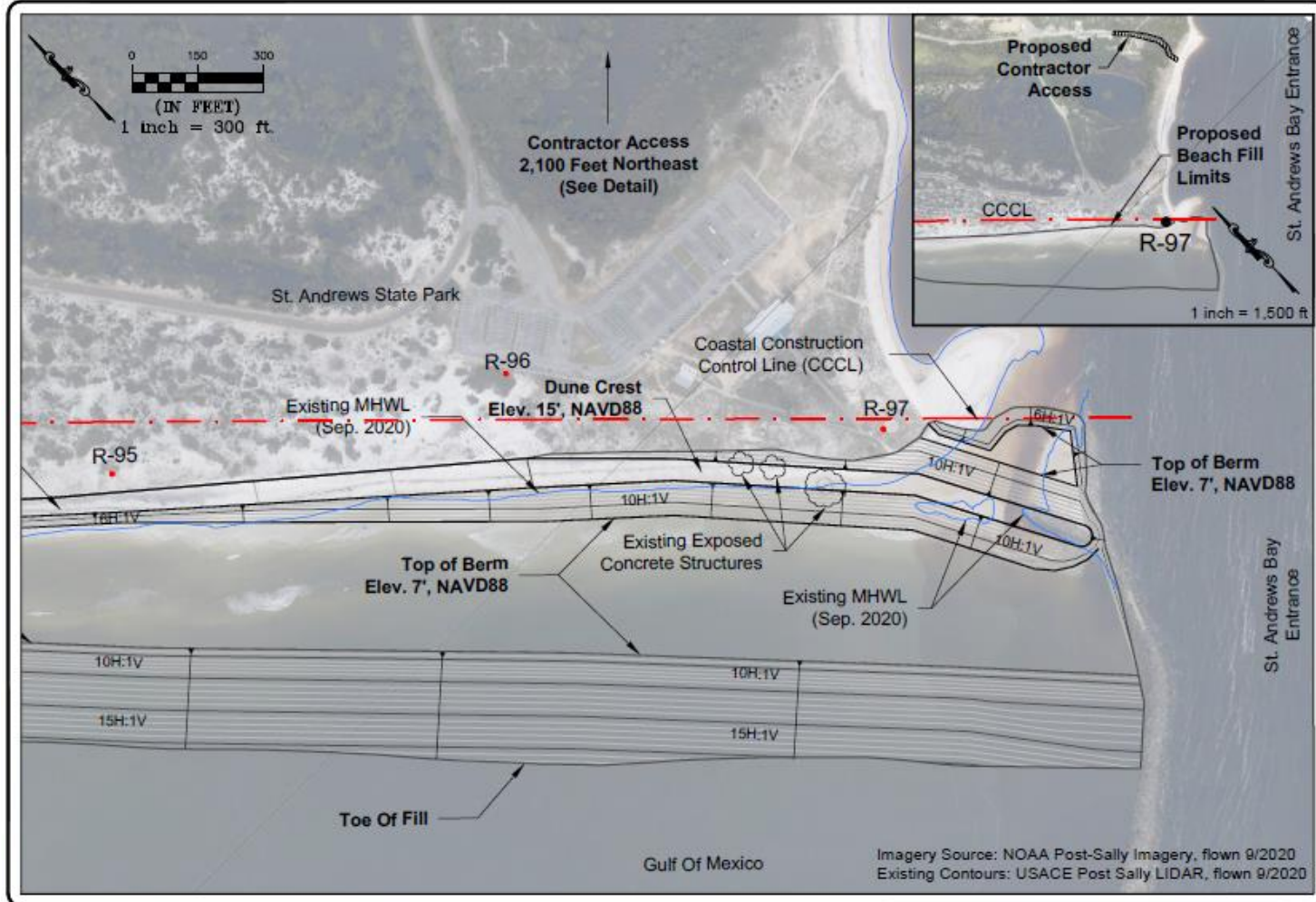
WWII gun turret exposed after Hurricane Michael (left, photo by P. Blake, The News Harold, February 5, 2016) and after Hurricane Sally (right, September 23, 2020).

Post-dredge disposal on St. Andrews State Park from October 2020 federal navigation project (October 28, 2020).



# Permit Modification

## SHPO Coordination for Cultural Resources



Imagery Source: NOAA Post-Sally Imagery, flown 9/2020  
Existing Contours: USACE Post Sally LIDAR, flown 9/2020



FLORIDA DEPARTMENT OF STATE

RON DESANTIS  
Governor

LAUREL M. LEE  
Secretary of State

Gregory W. Garis  
FDEP - Beaches, Inlets, and Ports Program  
3900 Commonwealth Blvd  
Tallahassee, FL 32399

November 16, 2020

RE: DHR Project File No.: 2020-6782  
Project: Beach Re-nourishment  
St Andrews State Park, Bay County

Dear Mr. Garis:

Our office reviewed the referenced project in accordance with Chapter 267, Florida Statutes, and implementing state regulations, for possible effects on historic properties listed, or eligible for listing, in the National Register of Historic Places (NRHP), or otherwise of historical, architectural or archaeological value.

We note that the beach has previously been re-nourished. There are two recorded remnant gun turrets, 8BY1341 (1942 WWII Gunmount 01), and 8BY1342 (1942 Gunmount WWII 02) in the area. Neither of these have been evaluated to determine if they are eligible for the NRHP. It is our understanding that 8BY1342 (Turret #2) is located in the proposed project area and will be rebured under several feet of sand. This turret is currently exposed, as periodically happens after storms events.

It is the opinion of this agency that project activities in the area of Turret #2, 8BY1342 be monitored by someone who has completed our Archaeological Resource Management (ARM) training program. We also recommend that the beach project area is walked prior to beach re-nourishment to be sure that no other cultural resources have been exposed or washed up. Once the project is complete, the monitor should submit the appropriate monitoring forms to this agency. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with Section 872.05, Florida Statutes.

In addition, we request that an updated Florida Master Site File (FMSF) Archaeological Form be completed for 8BY1342, including maps, location coordinates, and current photographs. The FMSF can be reached at 850-245-6440 for assistance. Information about the form can be found on line at <https://www.dos.myflorida.com/historical/preservation/master-site-file/documents-forms/>.

For any questions concerning our comments, please contact Robin Jackson, Historic Preservationist, Compliance and Review, by electronic mail at [robin.jackson@dos.myflorida.com](mailto:robin.jackson@dos.myflorida.com), or at 850.245.6496, or 800.847.7278.

Sincerely,

Timothy A. Parsons, Ph.D.  
Director, Division of Historical Resources and State Historic Preservation Officer

Division of Historical Resources  
R. A. Gray Building • 500 South Bronough Street • Tallahassee, Florida 32399  
850.245.6300 • 850.245.6436 (Fax) • FLHeritage.com



**mrd**  
mrd associates, inc.  
Coastal, Marine & Water Resources Engineering

543 Harbor Boulevard, Suite 204  
Destin, Florida 32541  
Certification of Authorization Number 9482  
850.654.1555 (voice) • 850.654.0550 (fax)  
[www.mrd-associates.com](http://www.mrd-associates.com)

FILL AREA (2 OF 2)  
St. Andrews State Park Renourishment Project

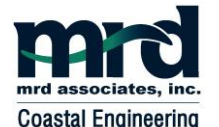
Bay County Tourist Development Council  
17001 Panama City Beach Pkwy, Panama City Beach, Florida 32413

Michael R. Dombrowski, P.E.  
Florida P.E. Number 65266

Date: November 10, 2020  
Sheet Rev Date:

PROJECT NUMBER  
20-478

SHEET NUMBER  
17B





# Funding

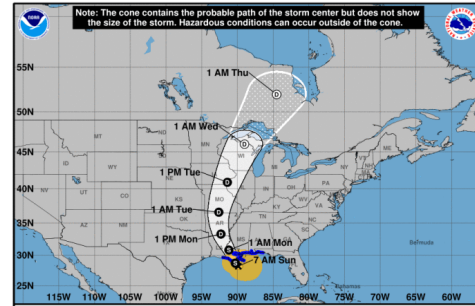
- **Panama City Beaches Storm Repair Project:**
  - 100% federally funded FCCE for Hurricanes Michael and Sally
  - Approx. \$30 M construction cost
- **St. Andrews State Park Nourishment**
  - Locally constructed
  - State cost share (~ \$3M), no federal funding



# Anticipated Schedule

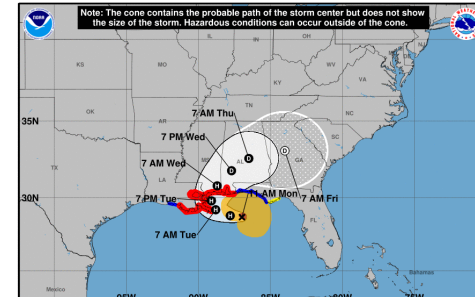


Hurricane Michael (10/10)



H. Barry (7/11)  
T.S. Nestor (10/18)  
T.S. Olga (10/26)

T.S. Cristobal (6/7)  
T.S. Fay (7/9)  
H. Hanna (7/23)  
H. Laura (8/27)  
H. Marco (8/24)  
H. Sally (9/16)  
H. Delta (10/9)  
H. Zeta (10/27)



Agency Coordination Meetings (7/10&24, 8/28->)

Channel Dredging (9/27-10/26)



Panama City Beaches  
Federal Project  
1998/1999, 2005, 2001, 2017

Design Team NTP (12/7)  
Surveys  
Geotechnical Investigation  
Design Document  
Design and Permitting

Mexico Beach  
Beach Restoration Project



Design Team NTP (8/3)  
Post-Cristobal Survey (8/11-8/15)  
Pre-Application Meeting (9/10)  
Post-Sally LiDAR (9/22-9/25)  
Design Document (12/9)  
Permit Sketches (12/9)  
Submit Permit Applications (1/8)

Federal Project  
Construction  
Window  
(9/21-4/22)

Park Project  
Construction  
Window  
(4/22-7/22)



# Thank you!

## **Lisa Armbruster**

larmbruster@sustainablebeaches.com

### **Sustainable Beaches, LLC**

254 Stately Shoals Trail  
Ponte Vedra, Florida 32081  
850.510.8004

## **Lauren Floyd**

lfloyd@coastalprotectioneng.com

### **Coastal Protection Engineering**

5301 N. Federal Hwy, Suite 335  
Boca Raton, Florida 33487  
561.565.5100

## **Michael Dombrowski, P.E.**

md@mrd-associates.com

## **Katie Hutschenreuter, E.I.**

kh@mrd-associates.com

### **MRD Associates, Inc.**

543 Harbor Boulevard, Suite 204  
Destin, Florida 32541  
850.654.1555

