

WELCOME



# 20 YEARS AND STILL GOING!

## SUCCESSFUL BEACH MANAGEMENT OF THE PANAMA CITY BEACHES, FLORIDA

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FSBPA 31<sup>st</sup> National Conference on Beach  
Preservation Technology

# Panama City Beaches, Bay County, Florida



Phillips Inlet

We are HERE

St. Andrews Inlet

# 18.5 Mile Project Area

Phillips Inlet

High Rise  
Condos

Residential



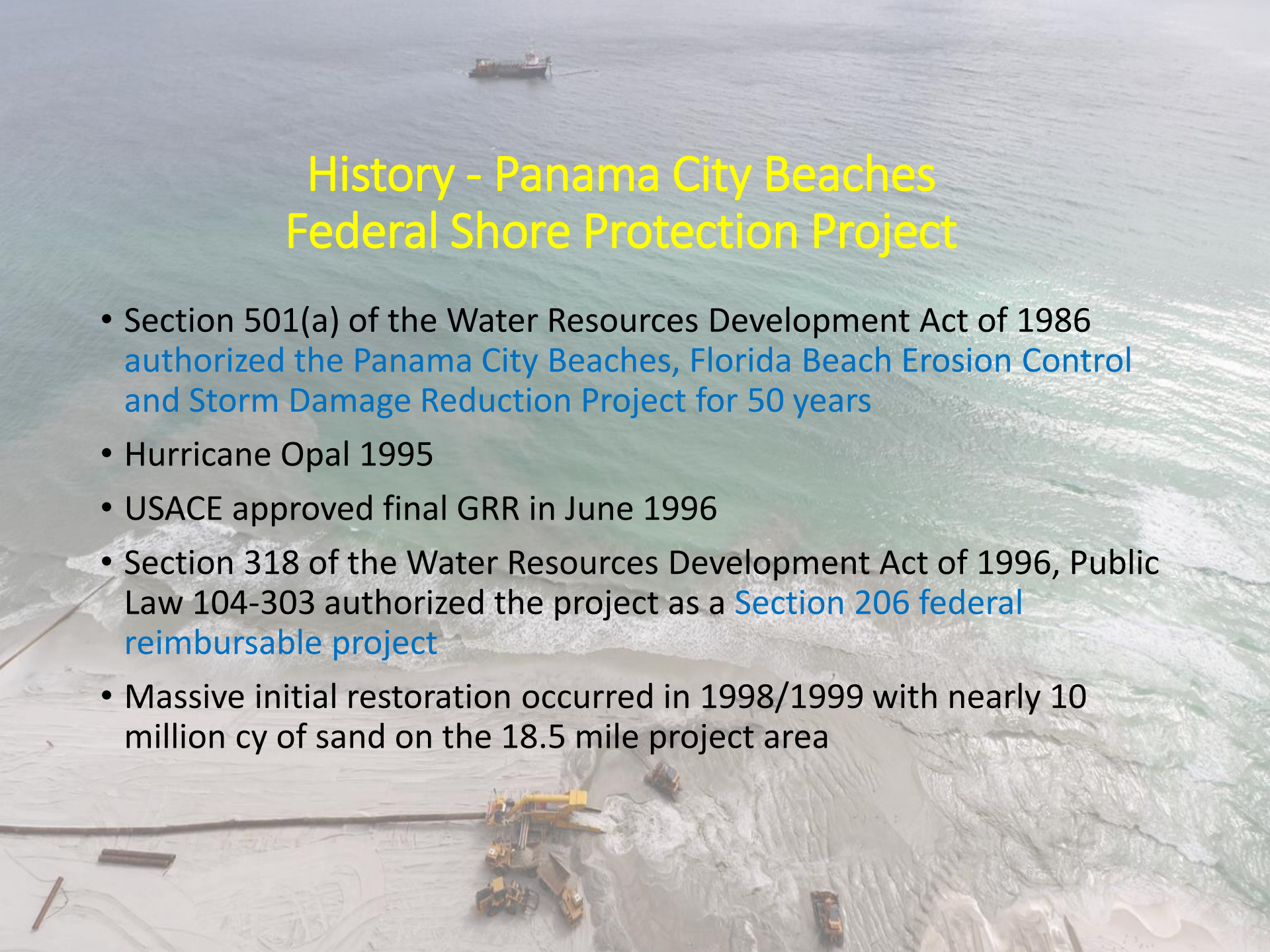
# Then.....and Now

Mid-90's



2017



An aerial photograph of a beach restoration project. In the foreground, several yellow and orange heavy machinery vehicles, including excavators and trucks, are working on a sandy beach. A long, dark pipe or conveyor system runs along the shore. In the middle ground, the ocean waves are breaking onto the beach. In the background, a large boat is visible in the open water. The sky is overcast.

## History - Panama City Beaches Federal Shore Protection Project

- Section 501(a) of the Water Resources Development Act of 1986 authorized the Panama City Beaches, Florida Beach Erosion Control and Storm Damage Reduction Project for 50 years
- Hurricane Opal 1995
- USACE approved final GRR in June 1996
- Section 318 of the Water Resources Development Act of 1996, Public Law 104-303 authorized the project as a Section 206 federal reimbursable project
- Massive initial restoration occurred in 1998/1999 with nearly 10 million cy of sand on the 18.5 mile project area

An aerial photograph showing a beach renourishment project. In the foreground, several yellow and orange pieces of heavy machinery, including excavators and trucks, are working on the sand. A long, dark pipe or conveyor system extends across the beach. In the background, a large boat is visible in the ocean. The water is a mix of light blue and green, with white foam from waves breaking on the shore.

# Management of the Program

- The program is managed by the Bay County TDC on behalf of Bay County
- 9-member Bay County TDC Board of Directors
- Two step process to approve/execute beach renourishment related contracts: Bay County TDC, Bay County Board of County Commissioners
- Coastal management consultant and two master services coastal engineering contracts – APTIM and Dewberry
- Local share is paid for with the “third cent” bed tax

# The Local Share: The “Third Cent”

## Changes on the beach and Growth of the Third Cent

- Panama City Beaches underwent major changes in early to mid-2000s
- Increased visitation
  - 2004: 6.1 million
  - 2017: 16.1 million

### Third cent VALUE per year

- 2004: \$1.7 MILLION
- 2017: \$4.2 MILLION

- Ordinance No. 97-01 established the “third cent” bed tax
- “proceeds.....shall be used exclusively for construction and maintenance of a beach nourishment program....
- Upon recommendation by the Bay County TDC, Board of County Commissioners passed and adopted in January 1997 with effective date of March 1997





# Permits and Sand Sources

- Original state and federal permits issued prior to 1998-1999 project
- State permit issued in 1998, expired 2013
  - 33 modifications through the 2011 project
- Federal permit issued in 1998 expired 2008
- Began working on sand sourcing and permit applications WELL prior to expiration of existing permits,
  - Sand source investigation, followed by modeling, began in 2006
- State permit issued in 2013, expires 2028
  - Contains authorization for offshore and upland sand sources
  - Borrow areas O2, O3, 5C, 11, 10, 6, S1-A contain nearly 6 MCY OF SAND
- Federal permit issued in 2014, expires 2029

# Construction Projects

<b>Construction Period</b>	<b>Construction Lead</b>	<b>Volume</b>	<b>Miles Renourished</b>	<b>Project Cost</b>
1998-1999	Local – Federal Reimbursement	9.8 mcy	18.5 miles	\$26 million
2005-2006	USACE	3.3 mcy	17.5 miles	\$23.5 million
2011 “Repair” – east and west ends and PP/CB	USACE	1.3 mcy	7.5 miles	\$15.7 million
2017 “Interim” – 4 hot spots	Local	840,000 cy	4.0 miles	\$14.5 million

An aerial photograph of a coastal area. In the upper portion, a small boat is visible in the ocean. The middle portion shows the ocean's edge with waves breaking onto a sandy beach. In the lower portion, several pieces of yellow construction equipment, including what appears to be a bulldozer and a smaller vehicle, are parked on the sand. A long, dark pipe or structure extends from the left side of the frame towards the center. The overall scene suggests a coastal management or construction project.

## Why We're So Successful

- Secure, healthy local funding source – the “third cent”
- Coastal management team in place
- Borrow areas investigated early on
- State and federal permits “on the shelf”
- Historically maximized federal authorizations, participation, and funding, as well as state funding
- Can respond rapidly to storm-impacts
  - Preliminary 2017 interim hot spot project was approved by the Bay County TDC in July 2016 based on May survey results
  - Plans and specs developed, project advertised November 2016 with a construction deadline of May 1<sup>st</sup>, 2017
  - Project construction March 27<sup>th</sup> - May 18<sup>th</sup>, 2017; 3 dredges

# PANAMA CITY BEACHES, FLORIDA BEACH EROSION CONTROL PROJECT LOCATION MAP



**PANAMA CITY BEACH**

**18.5 miles**



# STORM PROTECTION DRIVEN DESIGN

- Federally authorized project area
- Hurricane Opal impacted the area in October 1995
- Beach project was built between August 1998 and April 1999
- Hurricanes Earl and Georges struck in September 1998

## POST EARL & GEORGES

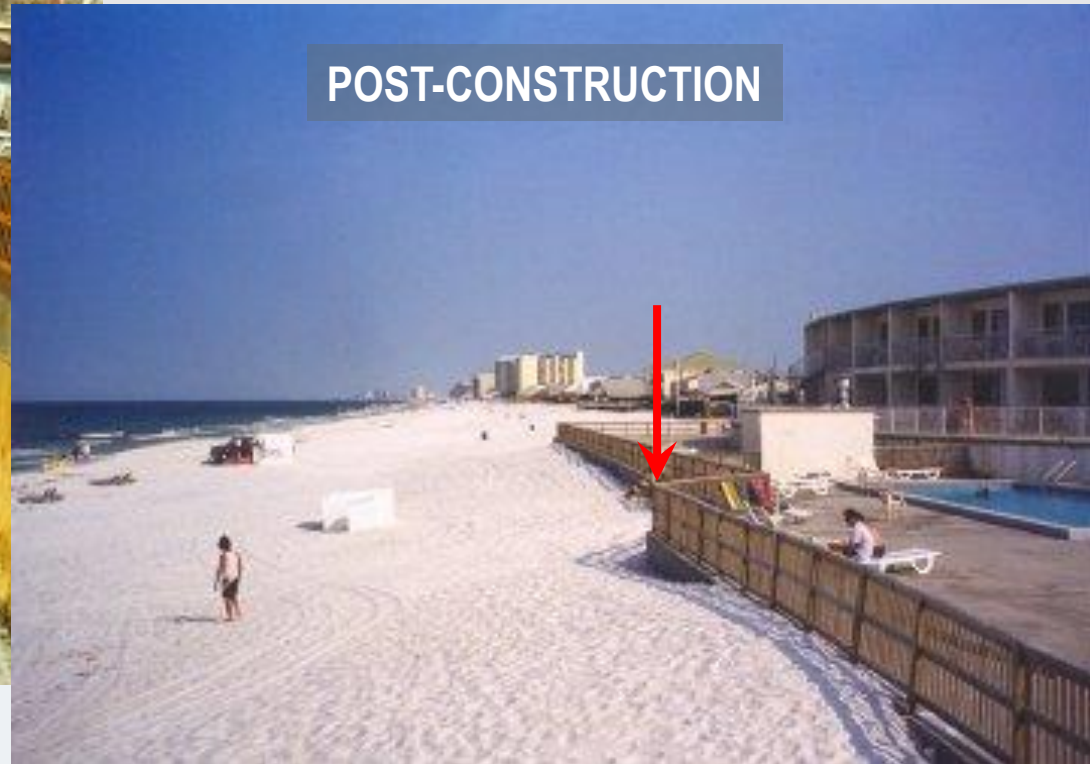


# BEFORE AND AFTER ...

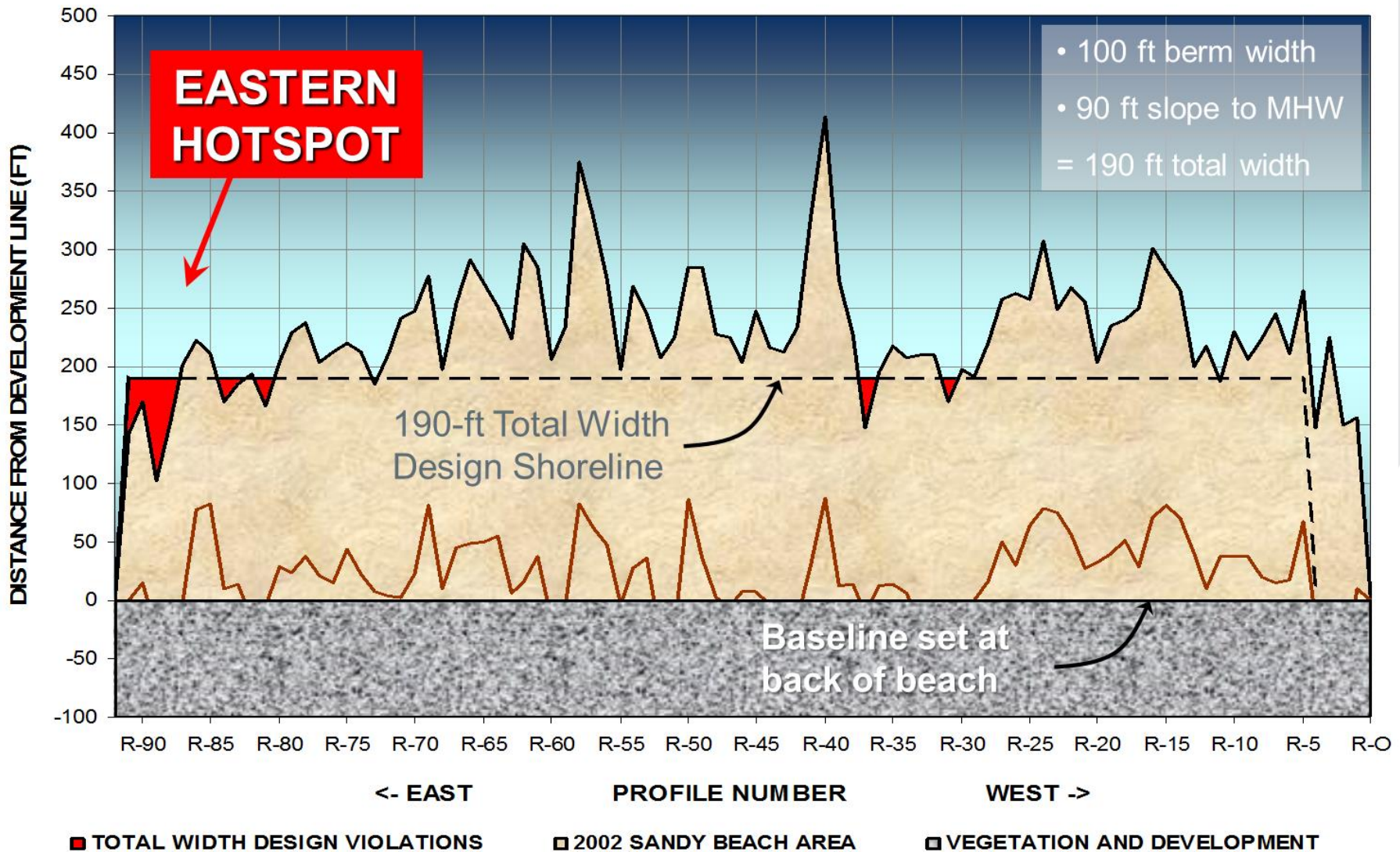
## BEACH RENOURISHMENT PROJECT 1998/99



Treasure Island Motel  
Panama City Beach, FL



# 2002 TOTAL BEACH WIDTH DESIGN



St. Andrews Inlet



PUMP DISTANCE ~ 1 MILE

## 2003 PANAMA CITY BEACH BETTERMENT PROJECT

“That 120,000 cy was a wonderful betterment to our project - great to be able to place the sand dredged from the inlet in the project area”

– Lisa (Heckman) Armbruster, Beach Management Coordinator, PCB



# HURRICANE IVAN

MORNING AFTER LANDFALL  
CITY PIER



Category-3 Hurricane Ivan came ashore near  
Gulf Shores, Alabama, on September 16, 2004.



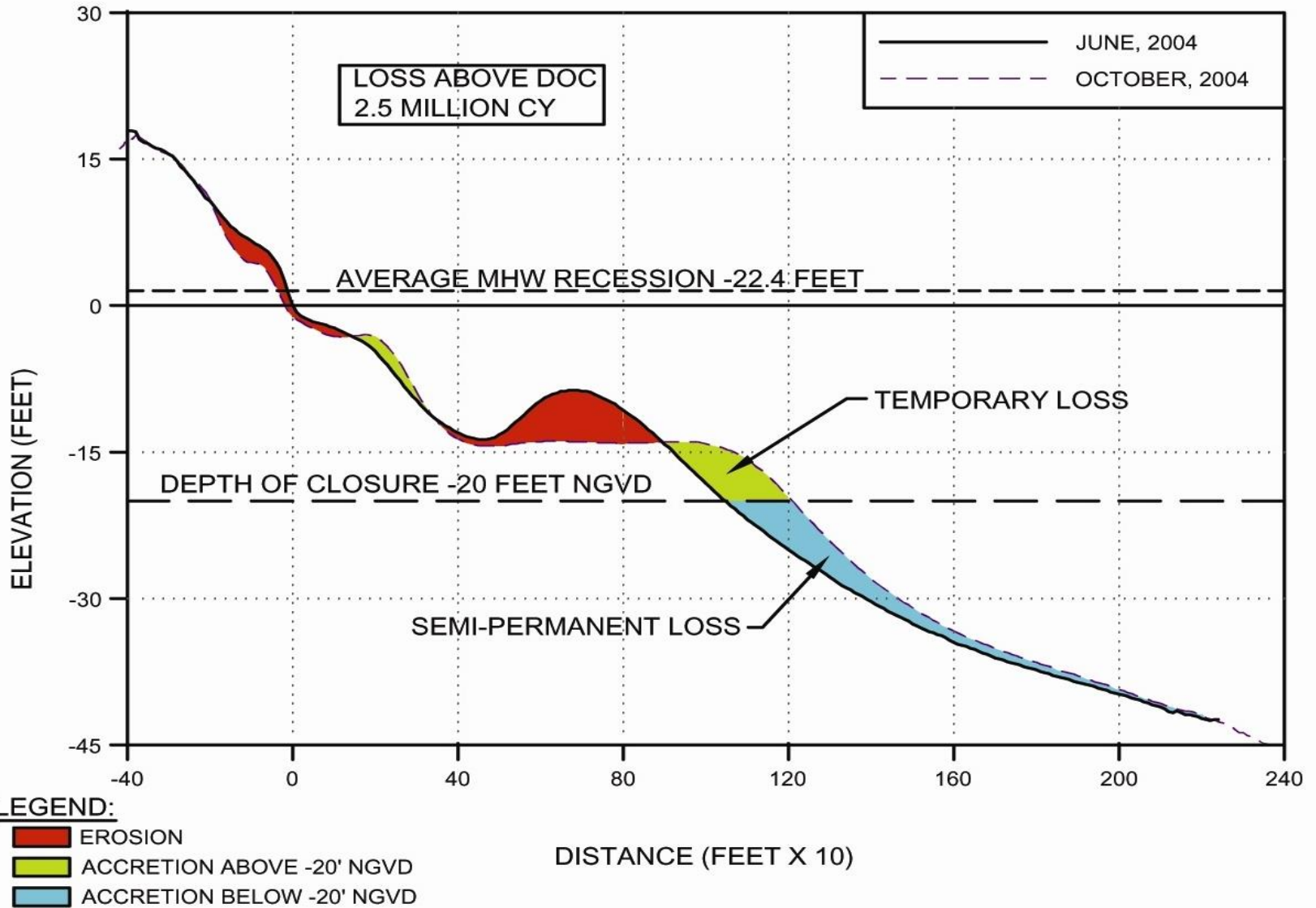
# POST STORM



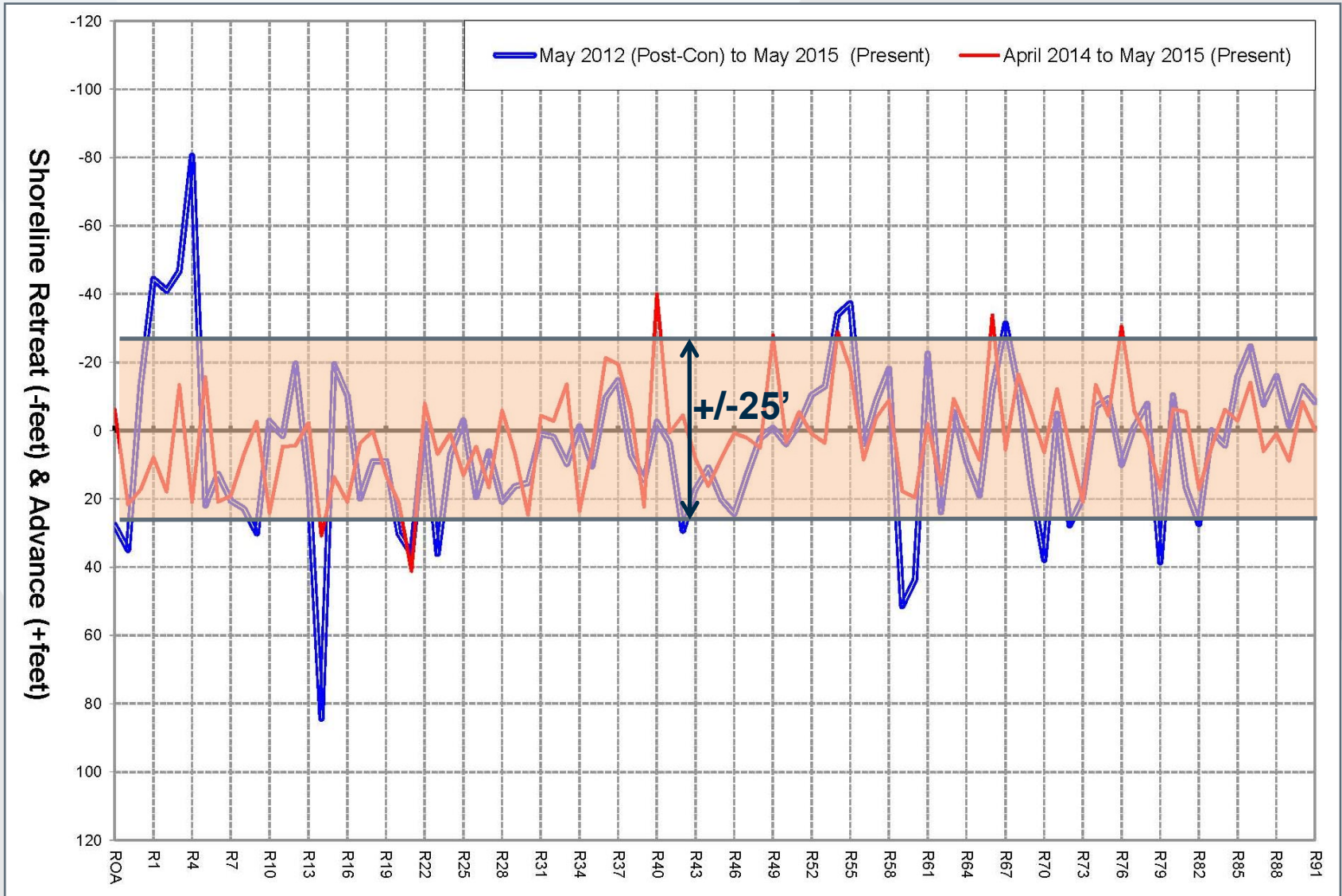
Lost end of  
City Pier



# HURRICANE IVAN LOSSES



# SHORELINE VARIABILITY



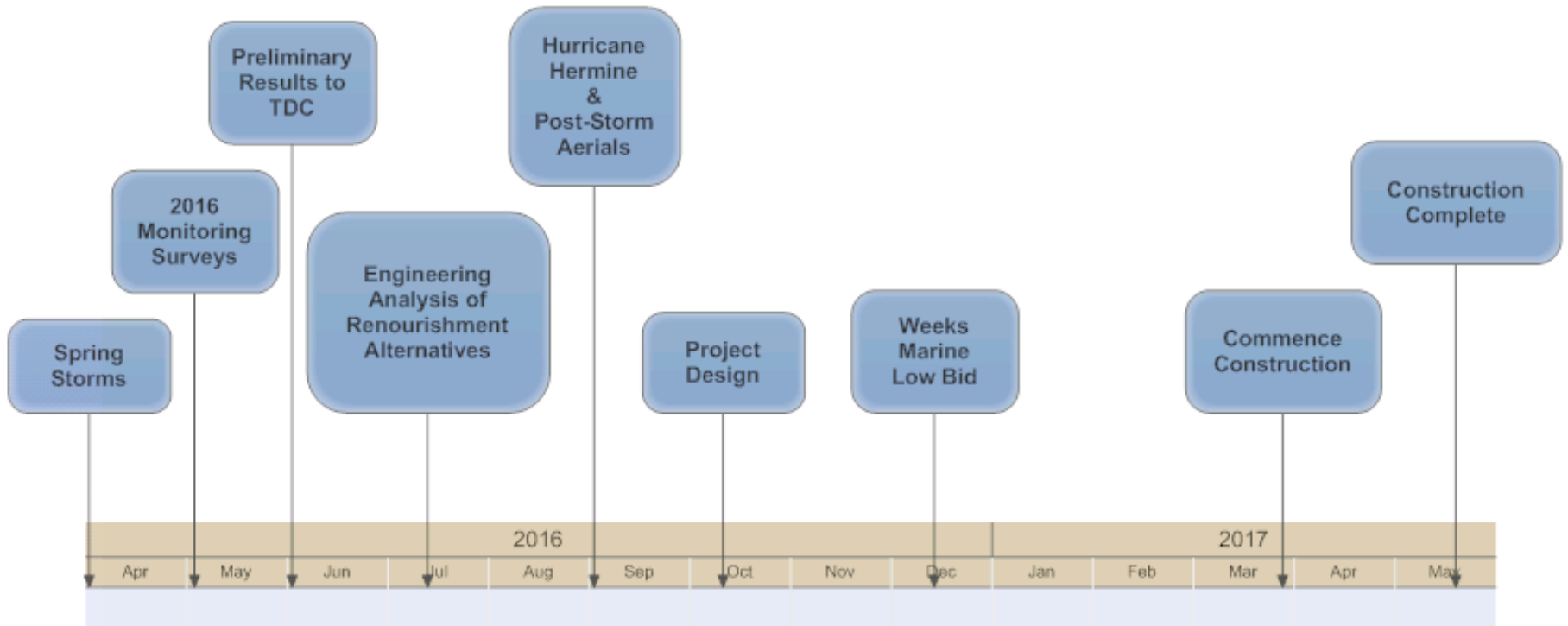
# LONG TERM PLANNING

Be ready to place sand in response to major storms:

- Monitor the beach regularly and after storms
- Plan for major renourishments after hurricanes
- Locate and permit more sand
- Build flexibility into permits
- Hotspot nourishment to maintain uniform protection



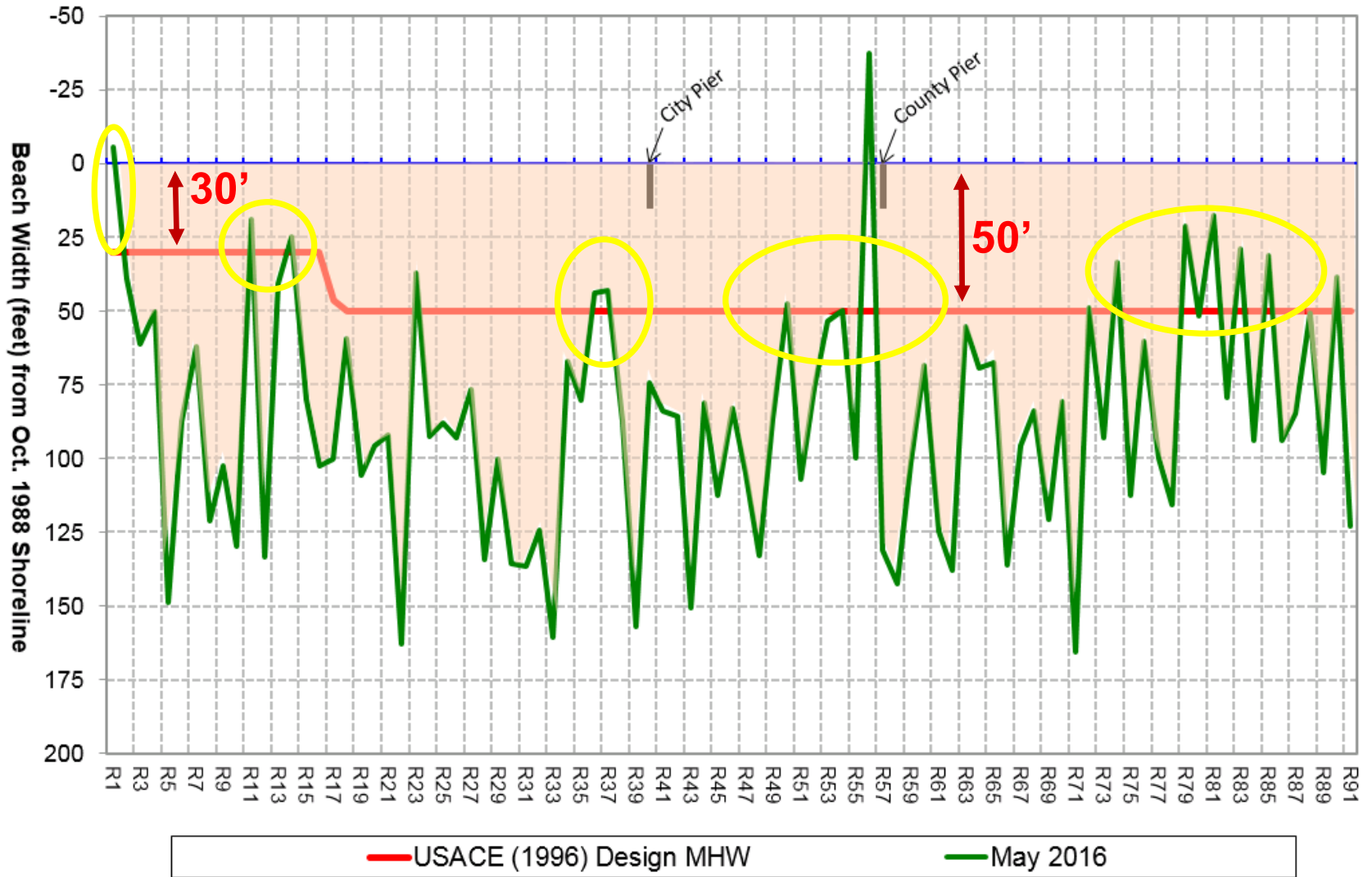
# 2017 INTERIM RENOURISHMENT PROJECT



**Resolution in 1 year!!**



# BEACH WIDTH 2016



# PRE-PROJECT EROSION

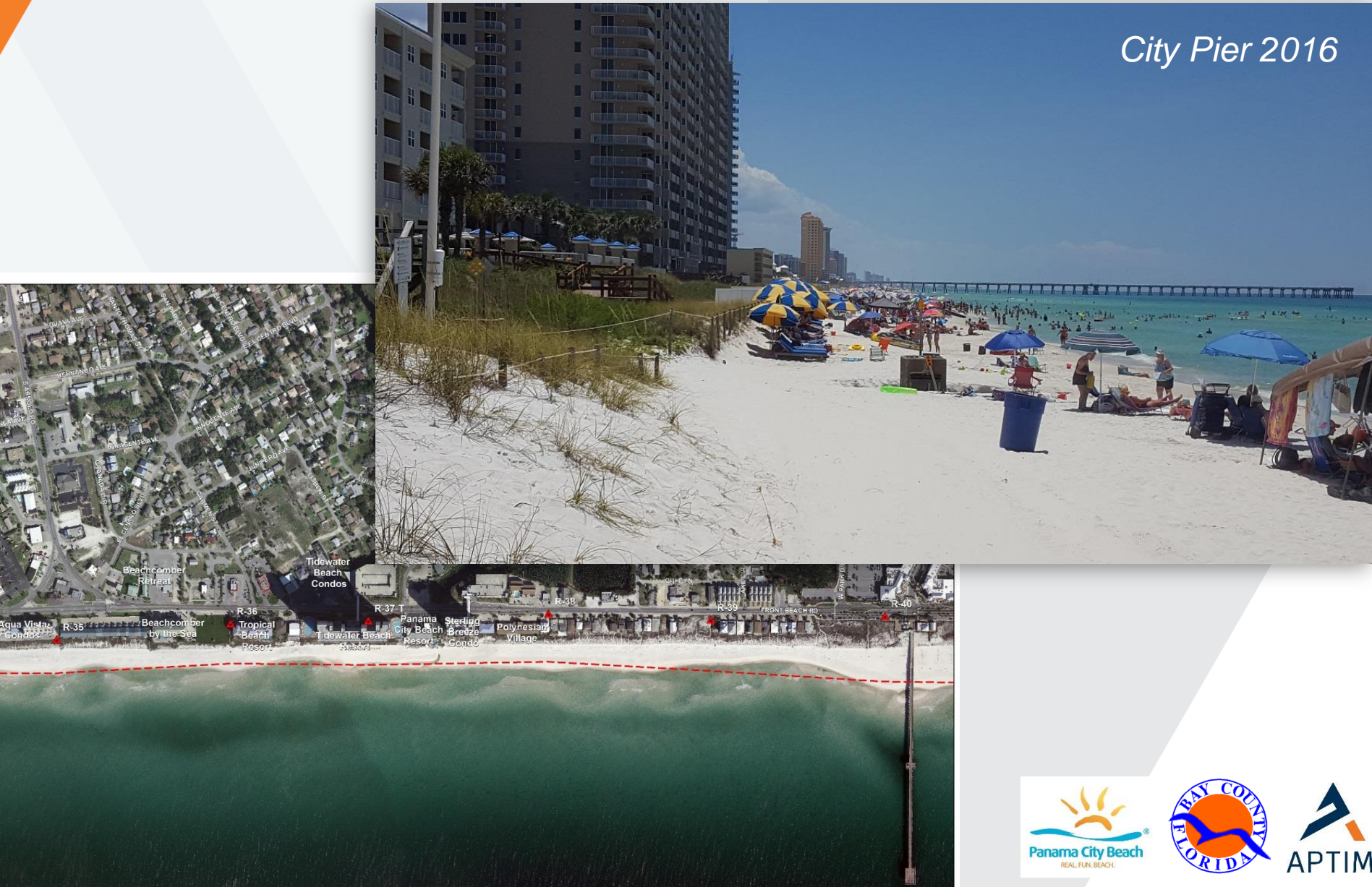
*Pinnacle Port 2016*





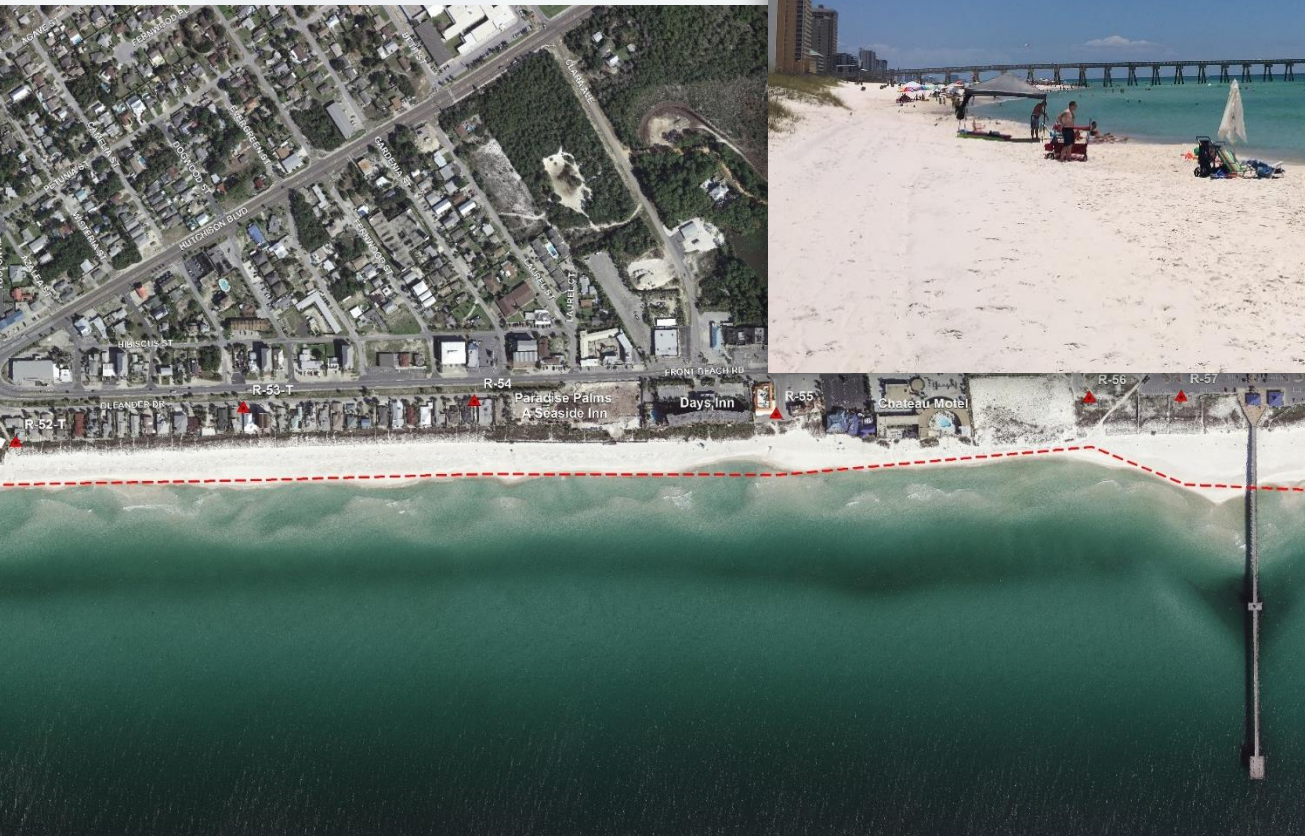
# PRE-PROJECT EROSION

City Pier 2016



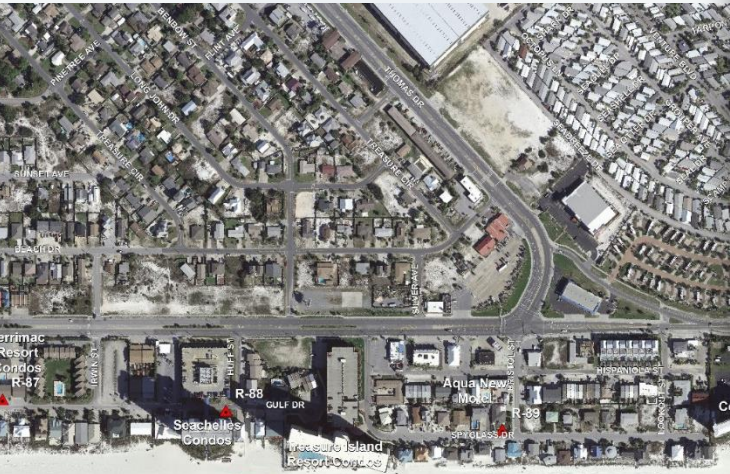
# PRE-PROJECT EROSION

County Pier 2016

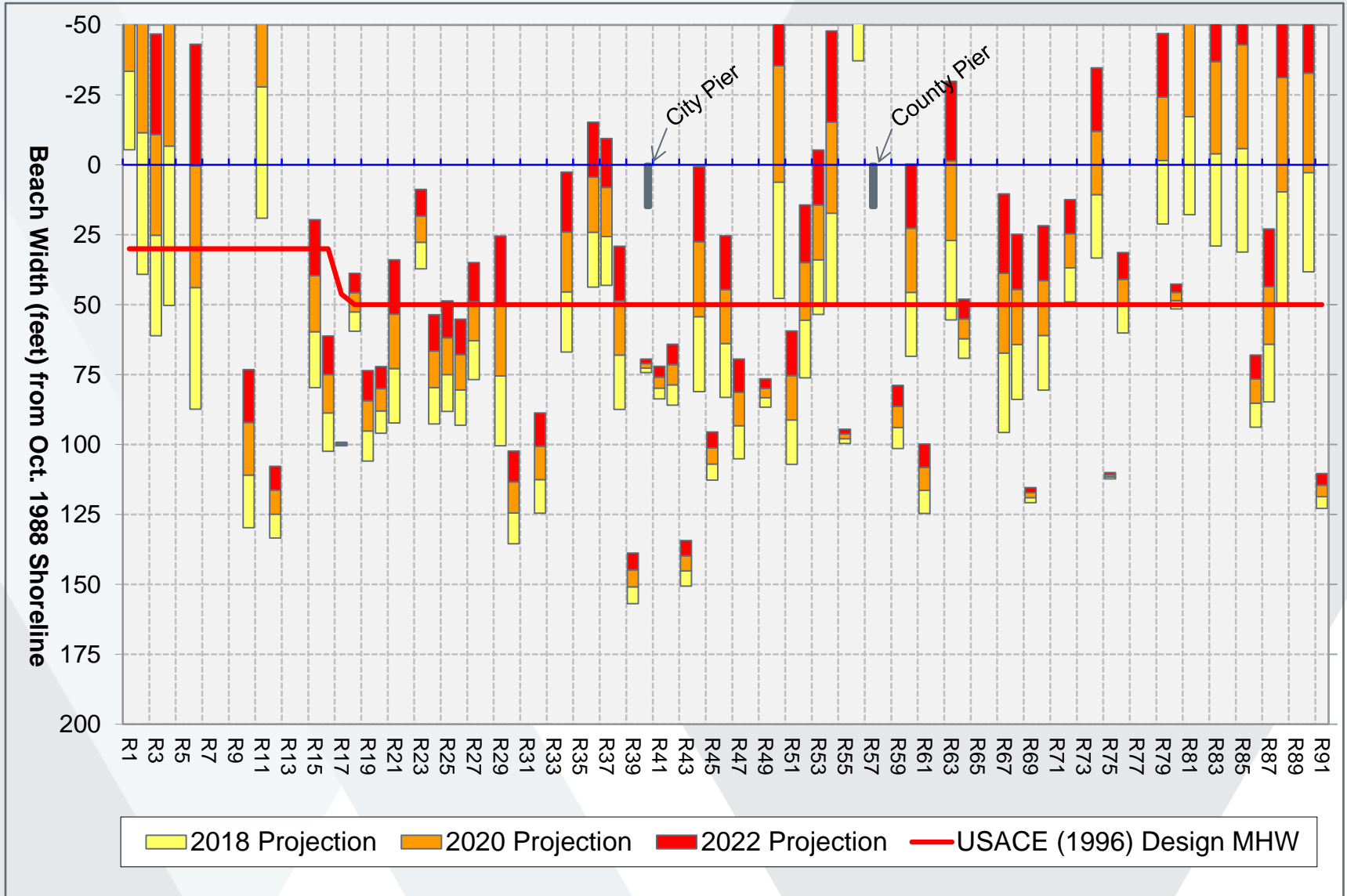


# PRE-PROJECT EROSION

Treasure Island 2016



# 2016 PRE PROJECT EROSION PROJECTION



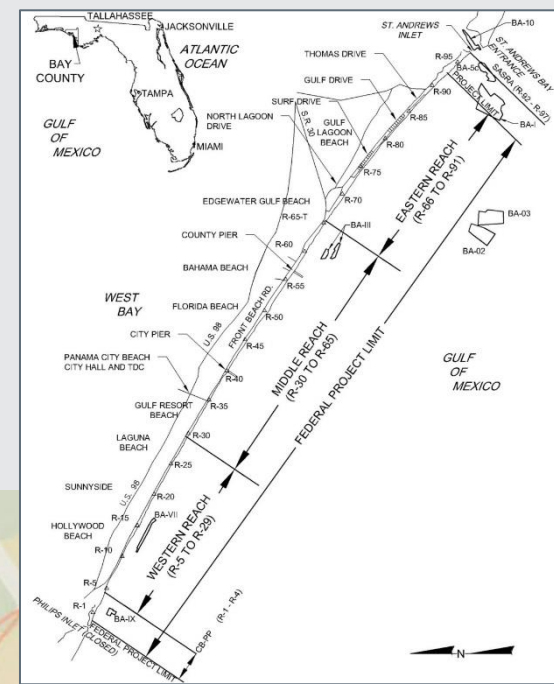
# TDC POSITIONED FOR ACTION



# PROJECT AREAS

Federal Project Area 18.5 miles

2017 Project Total ~4 miles



# BORROW AREAS

Multiple permitted borrow areas available

Selected: Offshore BA O3 & Inlet BA 11

3 Hopper Dredges



# SHELL SCREENING

- In response to previous project
- Objective: highest quality beach sand
- Inline screening option
- Visual observations of each load
- Owner exercised optional screening throughout majority of the project





# SHELL SCREENING

- Screen boxes
- FRS Extractor 3300
- <1% of material screened out
- 6,980 CY disposed of upland



# PROJECT ADJUSTMENTS

- Combination of screen sizes to optimize goals
- Elevated equipment to fit ORT under conveyor instead of dumpsters
- Extractor dimensions to handle dredge flow
- Trucking corridors and logistics



# SEA TURTLE RELOCATIONS

0 lethal turtle takes

31 non-lethal turtle relocations

- ▶ 19 Kemp's Ridley
- ▶ 9 Loggerhead
- ▶ 2 Green
- ▶ 1 Leatherback



*Turtle Trawling*



*Kemp's ridley (nmfs.noaa.gov)*



*Turtle Exclusion Device*

# COUNTY PIER CONSTRUCTION



- March 27 to April 14
- Borrow Area O3
- 269,095 CY



# PINNACLE PORT CONSTRUCTION

- April 10-17
- Borrow Area O3
- 138,800 CY



# CITY PIER CONSTRUCTION

- April 16 to May 3
- Borrow Area O3
- 225,500 CY



# TIDEWATER BEFORE



# TIDEWATER AFTER





# TREASURE ISLAND CONSTRUCTION

- May 7 to May 18
- Borrow Area 11
- 201,293 CY

Before

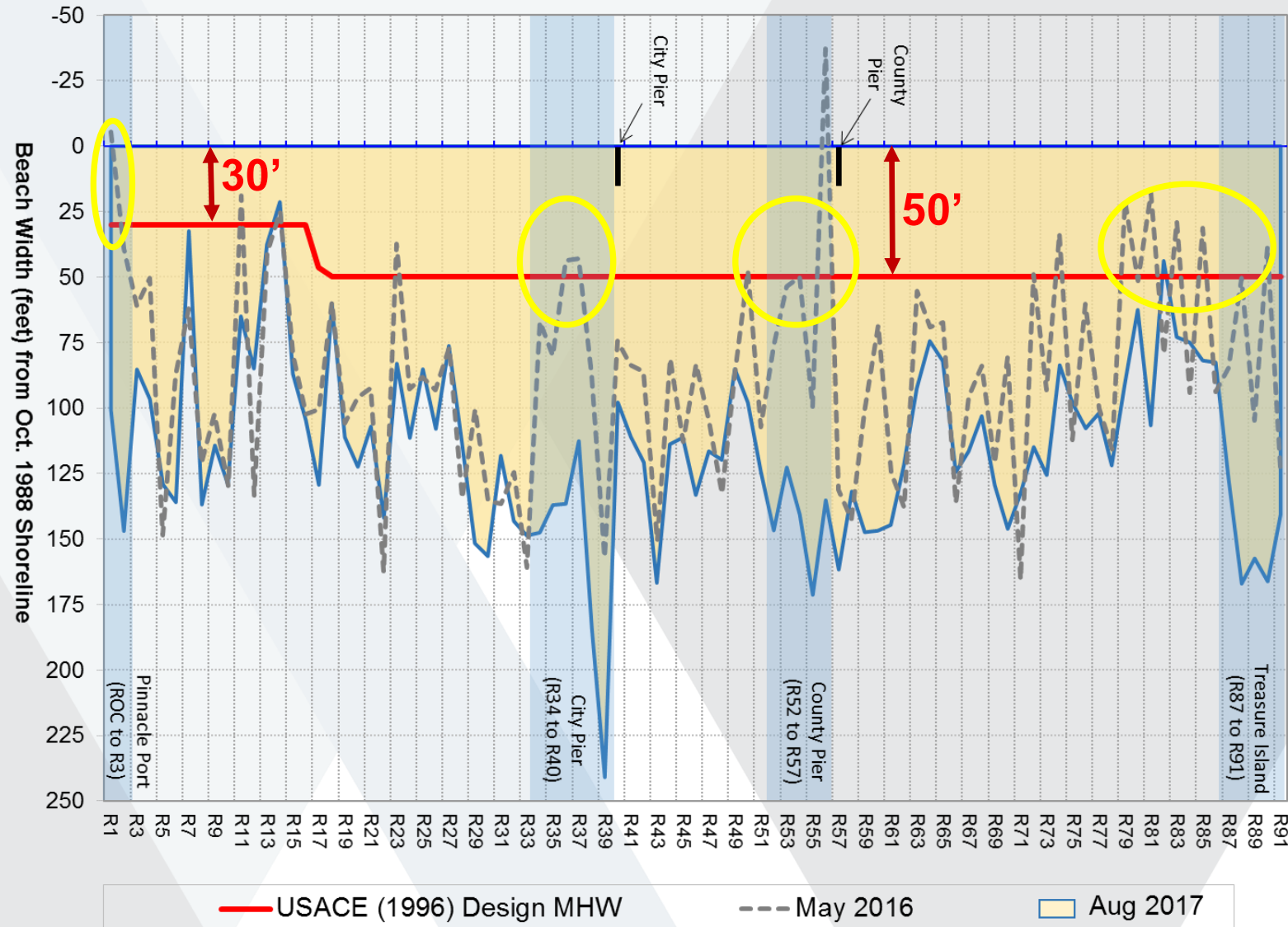


After



# BEACH WIDTH 2017

Beach Width  
 May 2016  
 Aug 2017



— USACE (1996) Design MHW     
 --- May 2016     
  Aug 2017

# LOOKING FORWARD

- Hot spot renourishment benefitted entire project area
- Continue physical monitoring
- Permits, funding and sand sources remain in place
- Likely to continue with hot spot renourishments
- Full restoration would likely be in response to a major storm event

# TEAMWORK



**US Army Corps  
of Engineers®**



**NOAA  
FISHERIES**

**COASTWISE CONSULTING**



# THANK YOU!



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# PANAMA CITY BEACH, NMFS BO (JULY 2013)

Total:	No. Relocated	Limit	No. Lethal Take (Observed)	Limit
Kemp's ridley (LK)*	19	21	0	3
Loggerhead (CC)	9	19	0	3
Green (CM)	2	2	0	1
Gulf sturgeon (GS)	0	2	0	0
Leatherback (DC)**	1	0	0	0
Total Turtles	31	42	0	7
Total Gulf Sturgeon	0	2	0	0





2004 Post-Ivan



2017 Post-Construction



2011 Pre-Construction



Pinnacle Port

# Pre-Initial Restoration (mid 90s)



2017

