Reopening of East Pass, Bay County, FL

Pre-Application Meeting

January 24, 2023, 1:00 PM EST

BAY COUNTY FLORIDA

mrd associates, inc.
Coastal Engineering

Coastal Protection Engineering

AGENDA

- Welcome, Introductions
- Project Overview and History of East Pass
- Environmental Resources
- 2001 Experimental Reopening of East Pass
- Proposed Reopening of East Pass
  - Results of Feasibility Study and Modeling of Alternatives
  - Preliminary Design
- Discussion and Guidance from Agencies on Permitting and NEPA

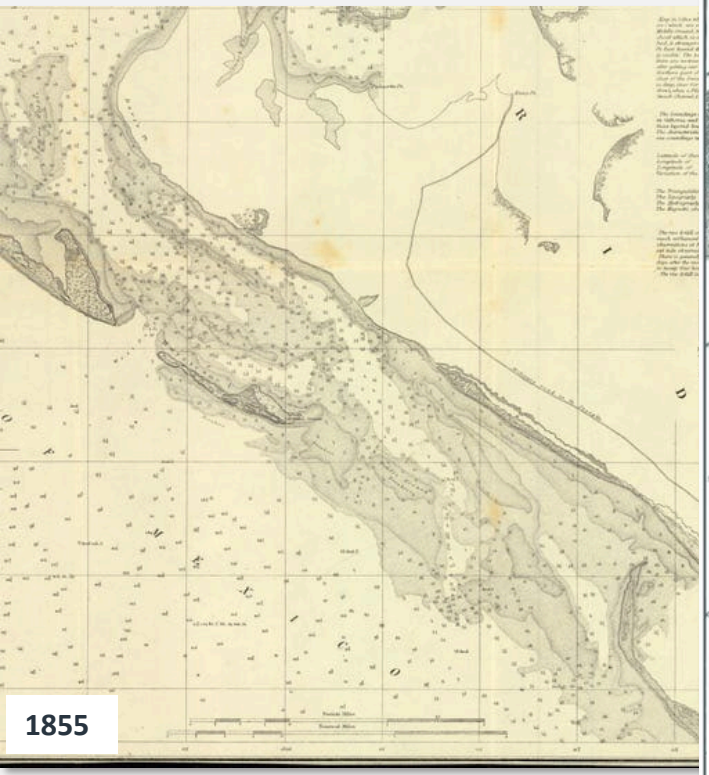
PROJECT OVERVIEW AND HISTORY OF EAST PASS

PROJECT OVERVIEW AND HISTORY OF EAST PASS

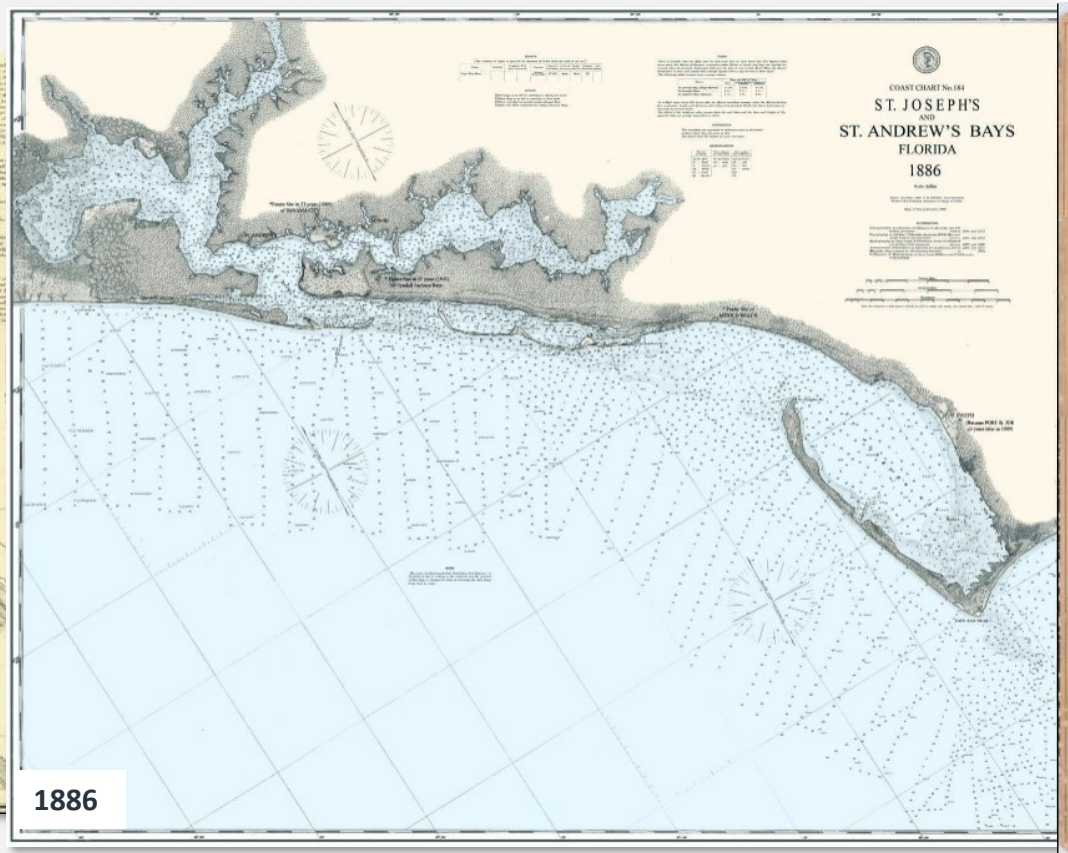
- Historic East Pass ("Old Pass") formed in Shell Island by hurricane in 1851
- Historic East Pass maintained until construction of SABE in 1934, gradually closed by 1998
- 2001 Experimental Reopening of East Pass, closed in 2003
- 2020 Bay County issued RFQ for feasibility study, preliminary design and permitting for reopening of the historic East Pass in St. Andrews Bay to a natural, non-armored channel
- Funding for the work is supported by RESTORE Act grant
- 2021 MRD awarded contract as team with CPE

PROJECT LOCATION
BAY COUNTY, FL

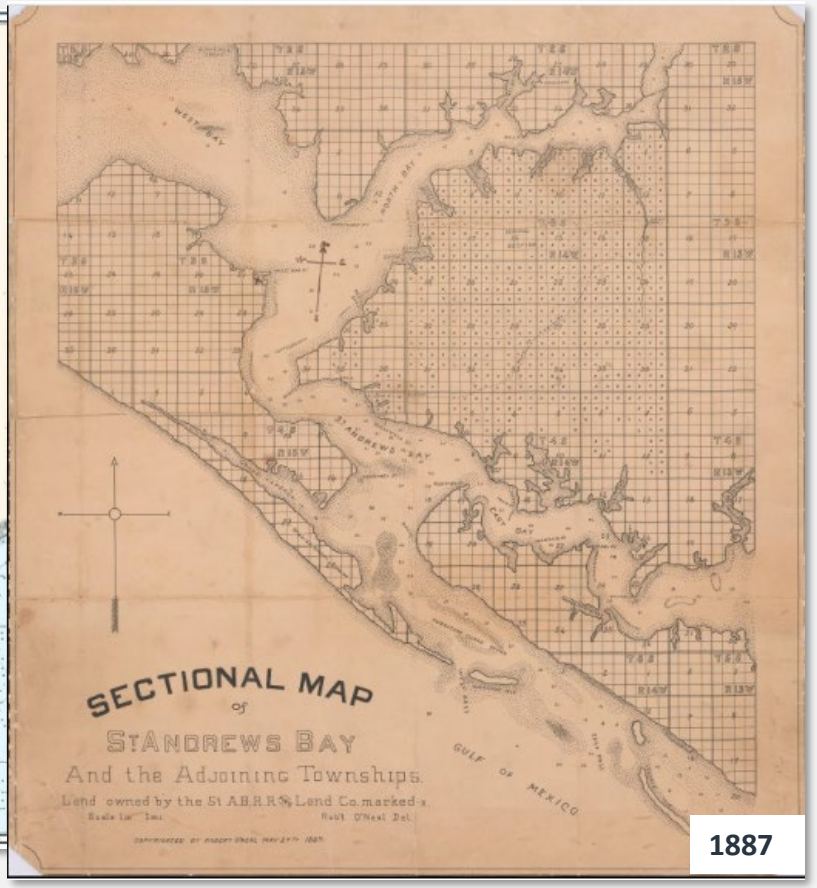
LOCATION OF HISTORIC EAST PASS (OLD PASS)



1855

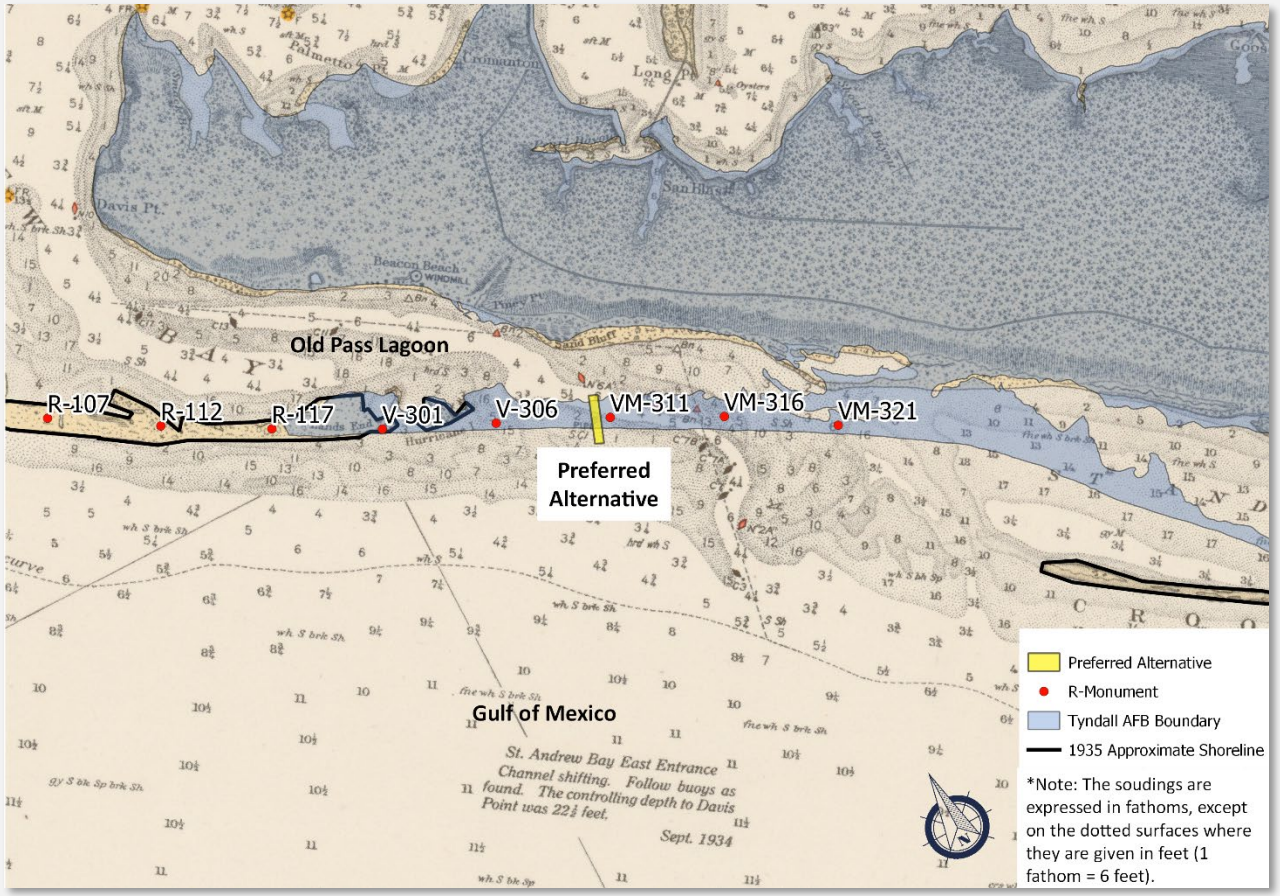


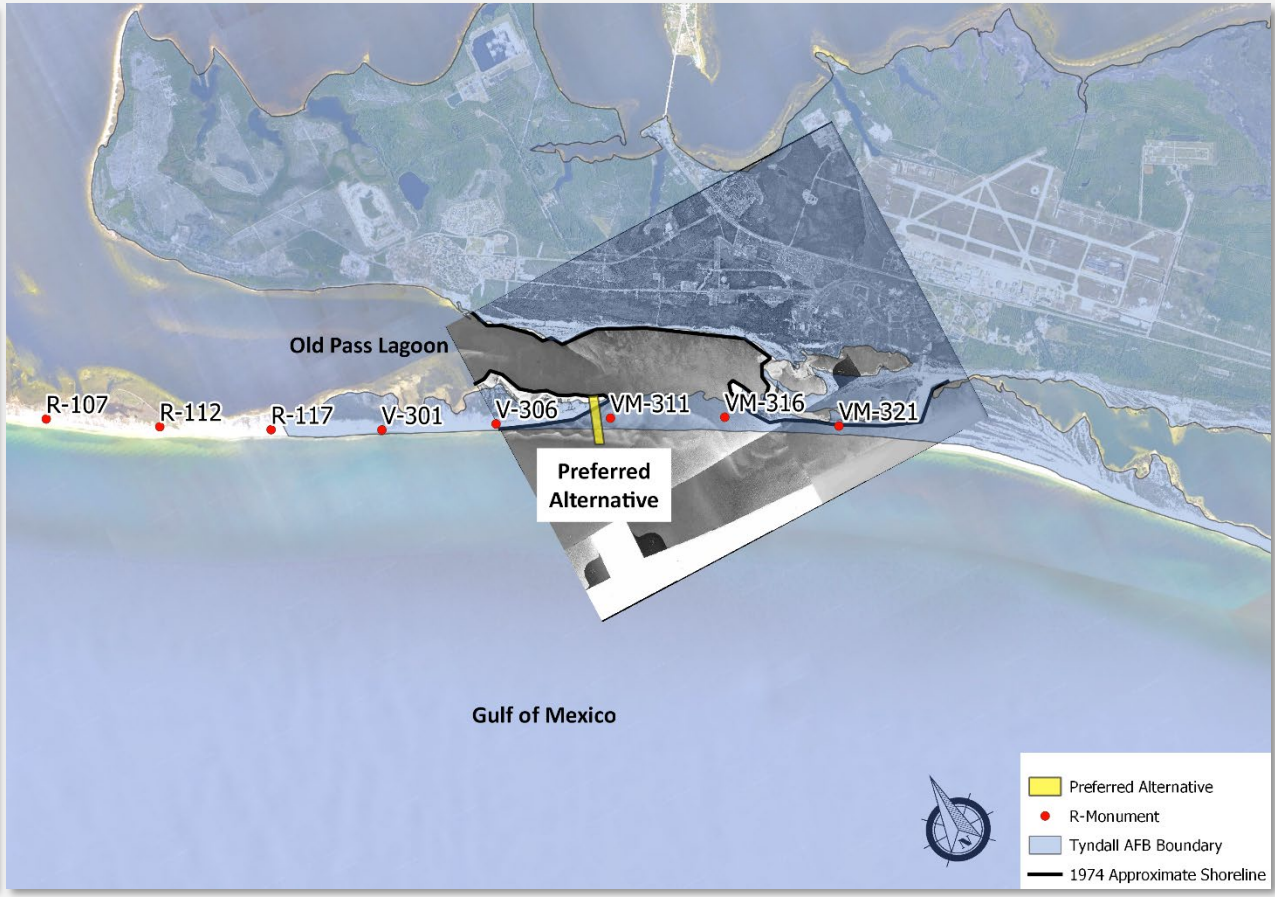
1886



1887

LOCATION OF HISTORIC EAST PASS (OLD PASS)





CLOSURE OF HISTORIC EAST PASS (OLD PASS)

1953

1964


1970

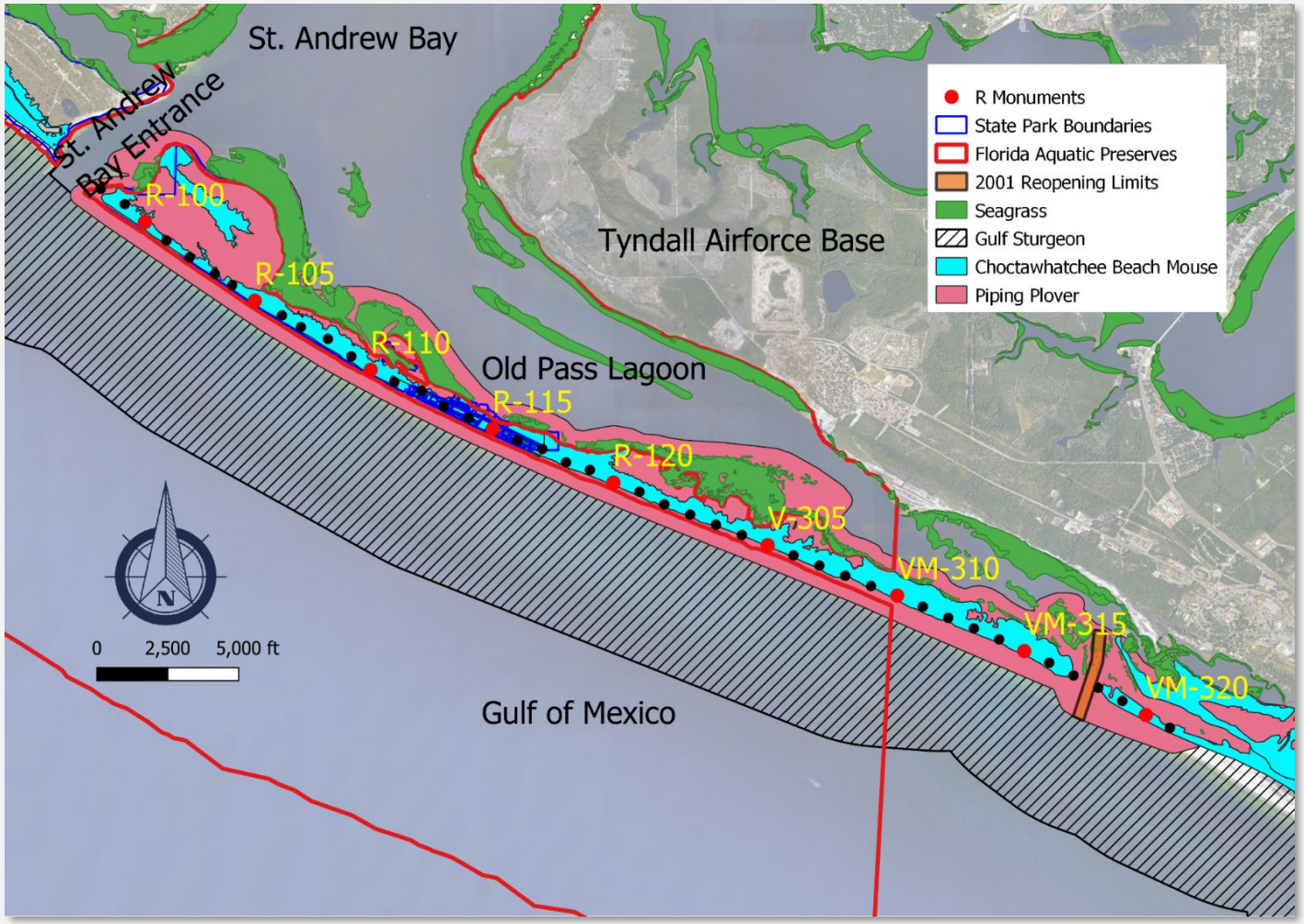

1974


1997

ENVIRONMENTAL RESOURCES

ENVIRONMENTAL RESOURCES IN PROJECT VICINITY

- Sea Turtles
- Piping Plover /CH FL-5
- Rufa Red Knot
- Choctawhatchee Beach Mouse / CH Unit CBM-5
- Gulf Sturgeon / CH Unit 11
- Florida Manatee
- Seagrass
- St. Andrews Aquatic Preserve



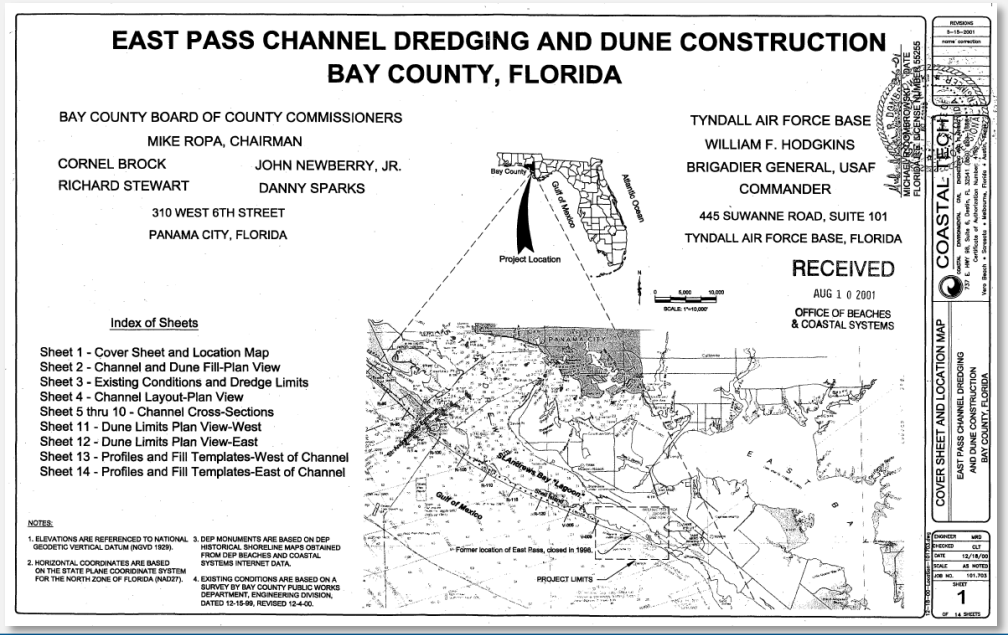
TYNDALL AFB - INTEGRATED NATURAL RESOURCE MANAGEMENT PLAN

- Installation-specific Environmental Management Plan (EMP)
- Identifies conservation goals to benefit the management of T&E species, habitat, and jurisdictional wetlands
- Reviewed annually with USFWS, FWC and other stakeholders
- Monitoring programs are in place for some T&E species, such as:
  - Bi-monthly shorebird surveys performed in partnership with FWC and Audubon
  - Tyndall Natural Resources conducts sea turtle monitoring under FWC MTP
  - USFWS completes monthly track tube surveys for beach mice

2001 EXPERIMENTAL REOPENING OF EAST PASS

2001 EXPERIMENTAL REOPENING OF EAST PASS

- FDEP and USACE Permits to Tyndall AFB and Bay County (2000/01)
- Channel cut in Dec 2001 in historic location of East (Old) Pass (~350,000 cy)
- Dredged material placed as dunes on Tyndall property on either side of cut
- “Test Plan” included physical and biological monitoring to determine project effects


EAST PASS CHANNEL DREDGING AND DUNE CONSTRUCTION
BAY COUNTY, FLORIDA

BAY COUNTY BOARD OF COUNTY COMMISSIONERS
MIKE ROPA, CHAIRMAN
CORNEL BROCK JOHN NEWBERRY, JR.
RICHARD STEWART DANNY SPARKS
310 WEST 6TH STREET
PANAMA CITY, FLORIDA

TYNDALL AIR FORCE BASE
WILLIAM F. HODGKINS
BRIGADIER GENERAL, USAF
COMMANDER
445 SUWANNE ROAD, SUITE 101
TYNDALL AIR FORCE BASE, FLORIDA

RECEIVED
AUG 10 2001
OFFICE OF BEACHES & COASTAL SYSTEMS

Index of Sheets

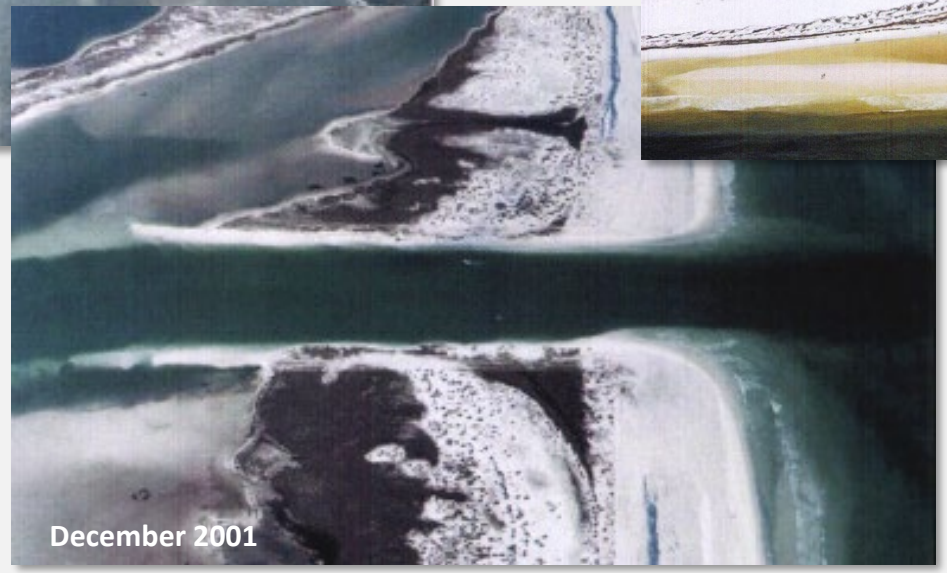
Sheet 1 - Cover Sheet and Location Map
Sheet 2 - Channel and Dune Fill-Plan View
Sheet 3 - Existing Conditions and Dredge Limits
Sheet 4 - Channel Layout-Plan View
Sheet 5 thru 10 - Channel Cross-Sections
Sheet 11 - Dune Limits Plan View-West
Sheet 12 - Dune Limits Plan View-East
Sheet 13 - Profiles and Fill Templates-West of Channel
Sheet 14 - Profiles and Fill Templates-East of Channel

Project Location
Bay County
Gulf of Mexico
Atlantic Ocean
Former location of East Pass, closed in 1998
PROJECT LIMITS

COVER SHEET AND LOCATION MAP
EAST PASS CHANNEL DREDGING AND DUNE CONSTRUCTION BAY COUNTY, FLORIDA

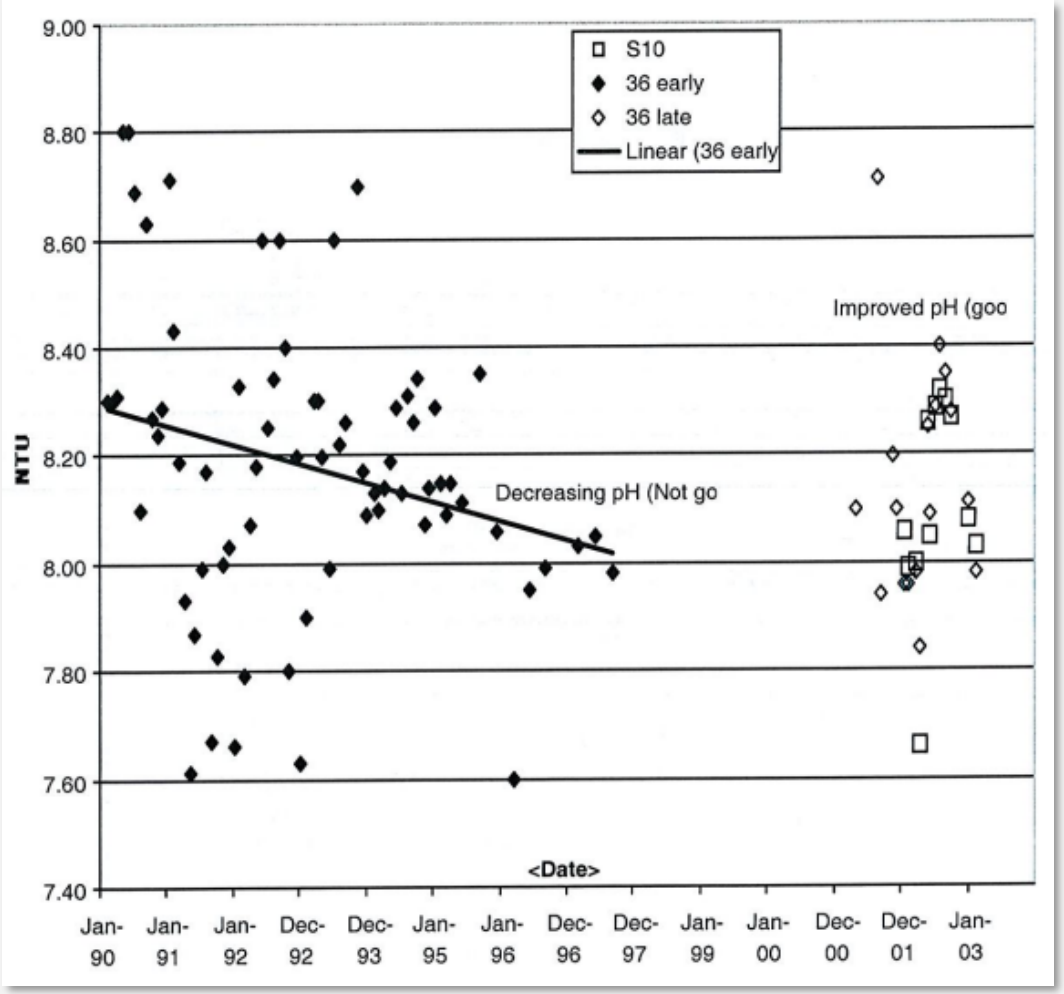
2001 EXPERIMENTAL REOPENING OF EAST PASS

2001 EXPERIMENTAL REOPENING OF EAST PASS



2001 EXPERIMENTAL REOPENING OF EAST PASS MONITORING PROGRAM

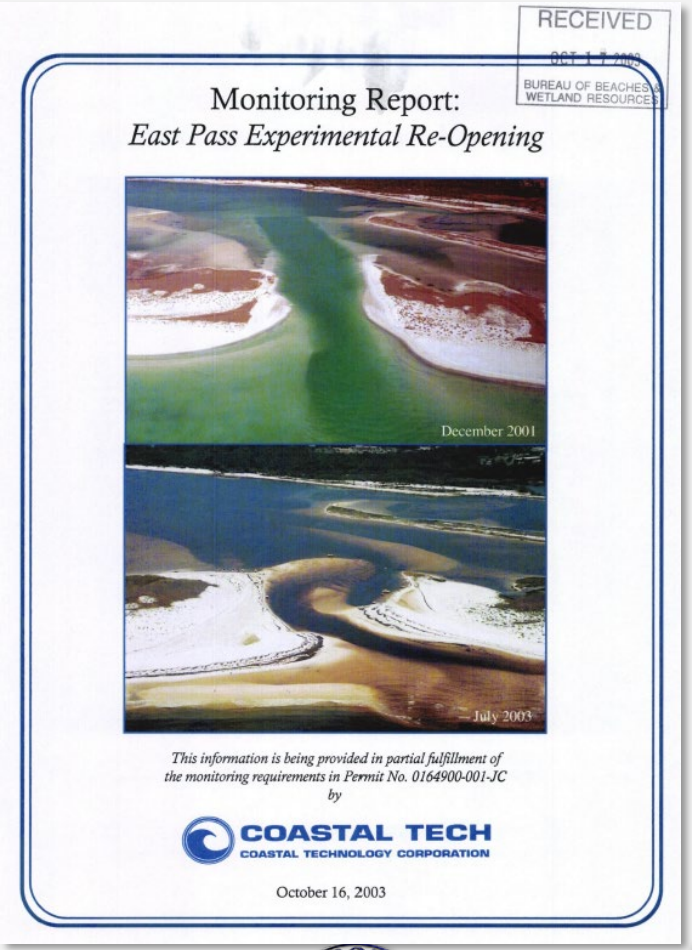
- Topographic and Bathymetric Surveys (pre through 1-year post-con)
- Aerial Photography (on same general schedule as topo/bathy surveys)
- Choctawhatchee Beach Mouse Surveys (quarterly monitoring by USFWS)
- Water Quality Monitoring (monthly by St. Andrew Bay RMA)
- Seagrass Monitoring (monthly by St. Andrew Bay RMA through 14 mos. post-con)



RMA Water Quality Study, 2003

2001 EXPERIMENTAL REOPENING OF EAST PASS MONITORING REPORTS AND STUDIES

- East Pass Seagrass Study, May 2003 – St. Andrew Bay Resource Management Association
- The Results of a Water Quality Study to Determine Impacts of the Re-opening of East Pass, St. Andrew Bay, July 2003 - St. Andrew Bay Resource Management Association
- Monitoring Report: East Pass Experimental Re-Opening, October 2003 – Coastal Tech



2001 EXPERIMENTAL REOPENING OF EAST PASS MONITORING REPORTS AND STUDIES

- Analysis confirmed design prediction that the experimental channel was too small and would close fairly quickly and confirmed that the historical decrease in stability of East Pass resulted from increase in size of SABE.
- Reopening of East Pass appeared to improve certain water quality parameters in eastern arm of St. Andrew Bay.
- No definitive changes to overall seagrass cover during pass reopening, seagrass appeared healthy
- East Pass dune and vegetation restoration offered significant protection to beach mouse habitats and the CBM population on West Crooked Island expanded eastward.

PROPOSED REOPENING OF EAST PASS

REOPENING OF EAST PASS – PROJECT OVERVIEW

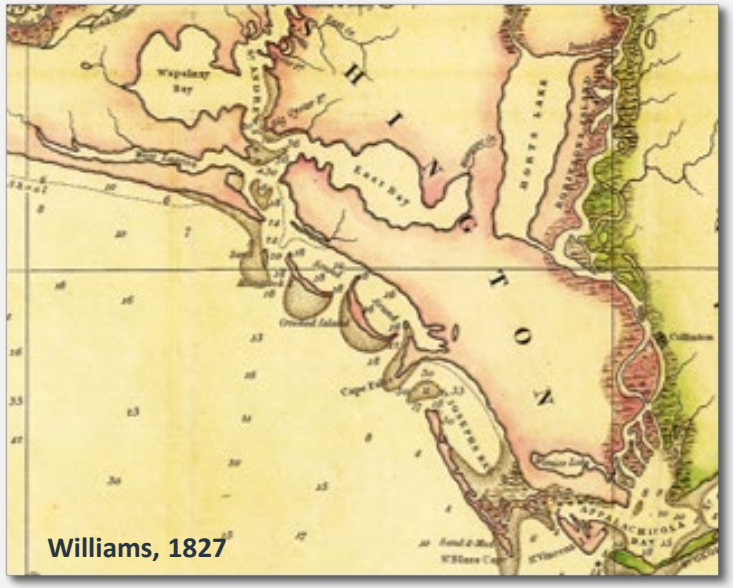
Bay County desires to reopen East Pass to restore the historic connection between St. Andrew Bay and the Gulf of Mexico. The project should be designed to achieve the following objectives:

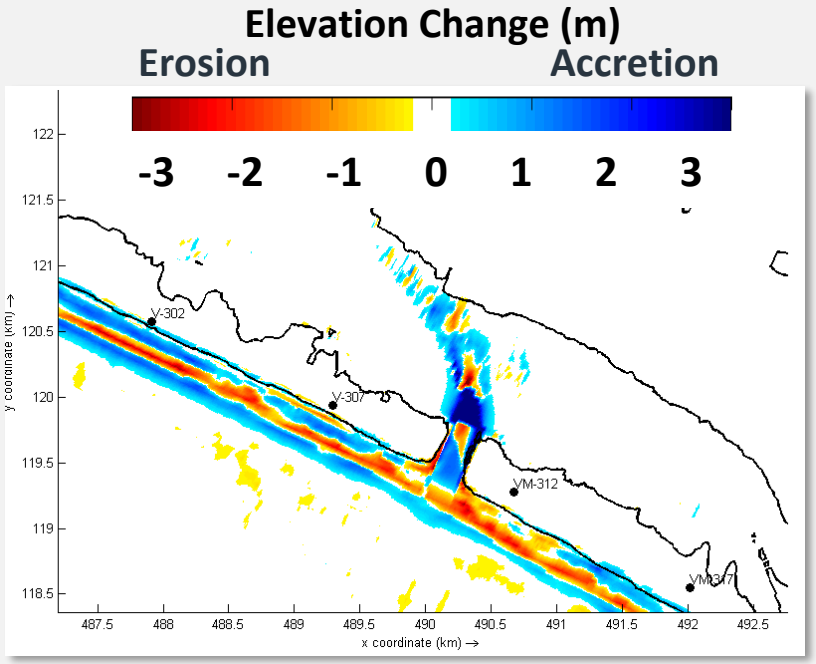
1. Design a hydraulically stable channel that will remain open for a manageable project life with periodic maintenance dredging.
2. Design shall not require shoreline stabilization to remain open.
3. Restore and enhance water quality within St. Andrew Bay.
4. Not result in significant adverse impacts to endangered species.
5. Provide a Public Benefit(s).
6. Not have an adverse impact on the existing St. Andrew Bay Entrance Channel (SABE).
7. Qualify for the necessary regulatory permits from FDEP and USACE.

REOPENING OF EAST PASS – PROJECT OVERVIEW

- Bay County awarded contract for project to MRD / CPE Team in 2021
- Funding for the work is supported by a RESTORE Act grant
- Bay County's goal is to develop a feasibility study, preliminary design and permitting for reopening of the historic East Pass in St. Andrew Bay to a natural, non-armored channel.
- The project approach is divided into three phases :
  - Phase I – Feasibility and Design Study - ***complete***
  - Phase II.A – State and Federal Permitting - ***underway***
  - Phase II.B – NEPA Documentation (EA/EIS) – ***pending guidance***

PHASE 1 - FEASIBILITY AND DESIGN OVERVIEW





Literature Review

- Analyzed historic morphology changes
- Compiled existing available data
- Documented water quality conditions

Data Collection

- Tide and salinity measurements
- Deployed Bottom Mounted ADCP
- Conducted Moving Vessel ADCP survey

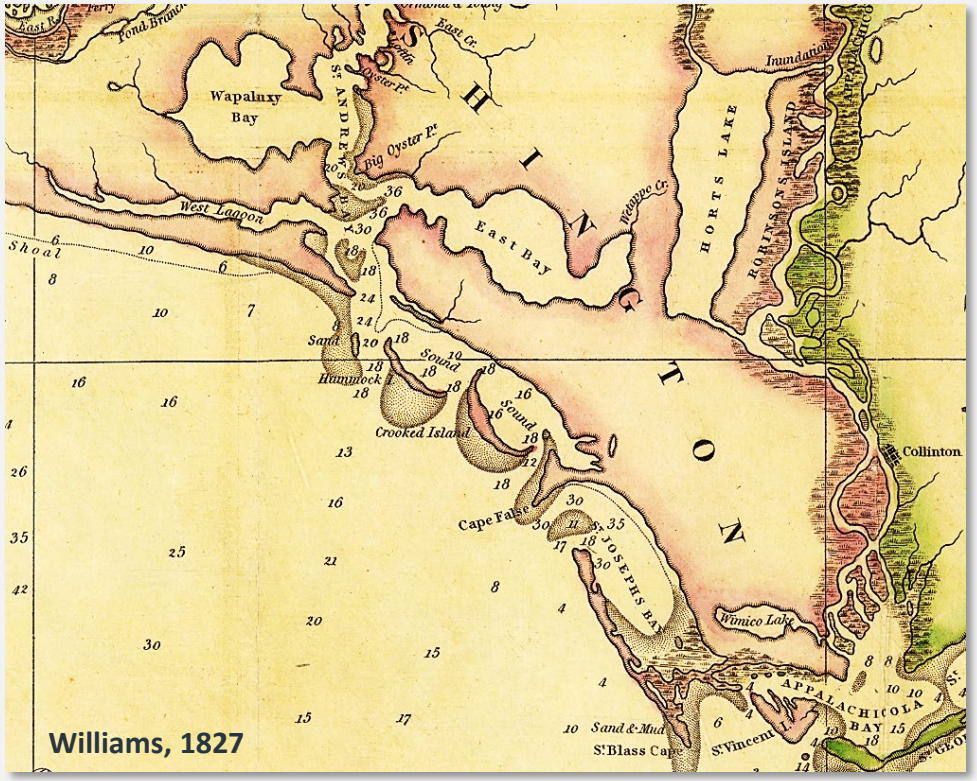
Numerical Modeling

- Calibrated and verified a Delft3D model of St. Andrew Bay
- Performed an Alternatives Analysis
- Performed a Water Quality Analysis

PHASE 1 – FEASIBILITY AND DESIGN

LITERATURE REVIEW

- Morphology (1700's to 1900's)
- 2001 Project
- Hydraulics and Stability
- Historic Seagrass Extents
- Historic Aerials
- Hurricane Events
- Survey Data
- Water Quality Data



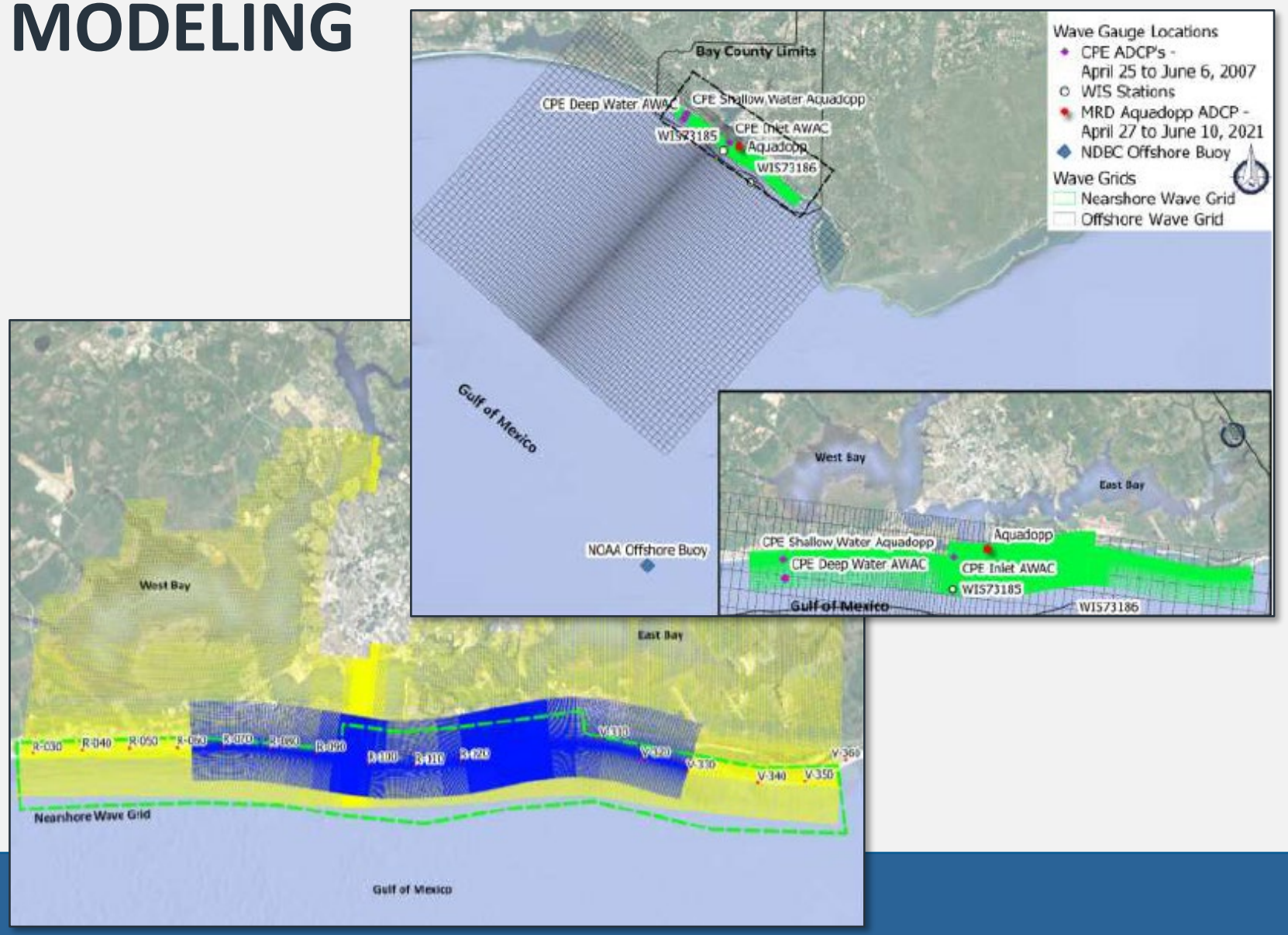
PHASE 1 – FEASIBILITY AND DESIGN
DATA COLLECTION AND ANALYSIS

- Existing Data Collection Efforts
  - NOAA Tides and Weather
  - METARS
  - Rainfall
  - Wave Data
- Tide and Salinity Measurements
- Bottom Mounted ADCP Deployment
- Moving Vessel ADCP Measurements

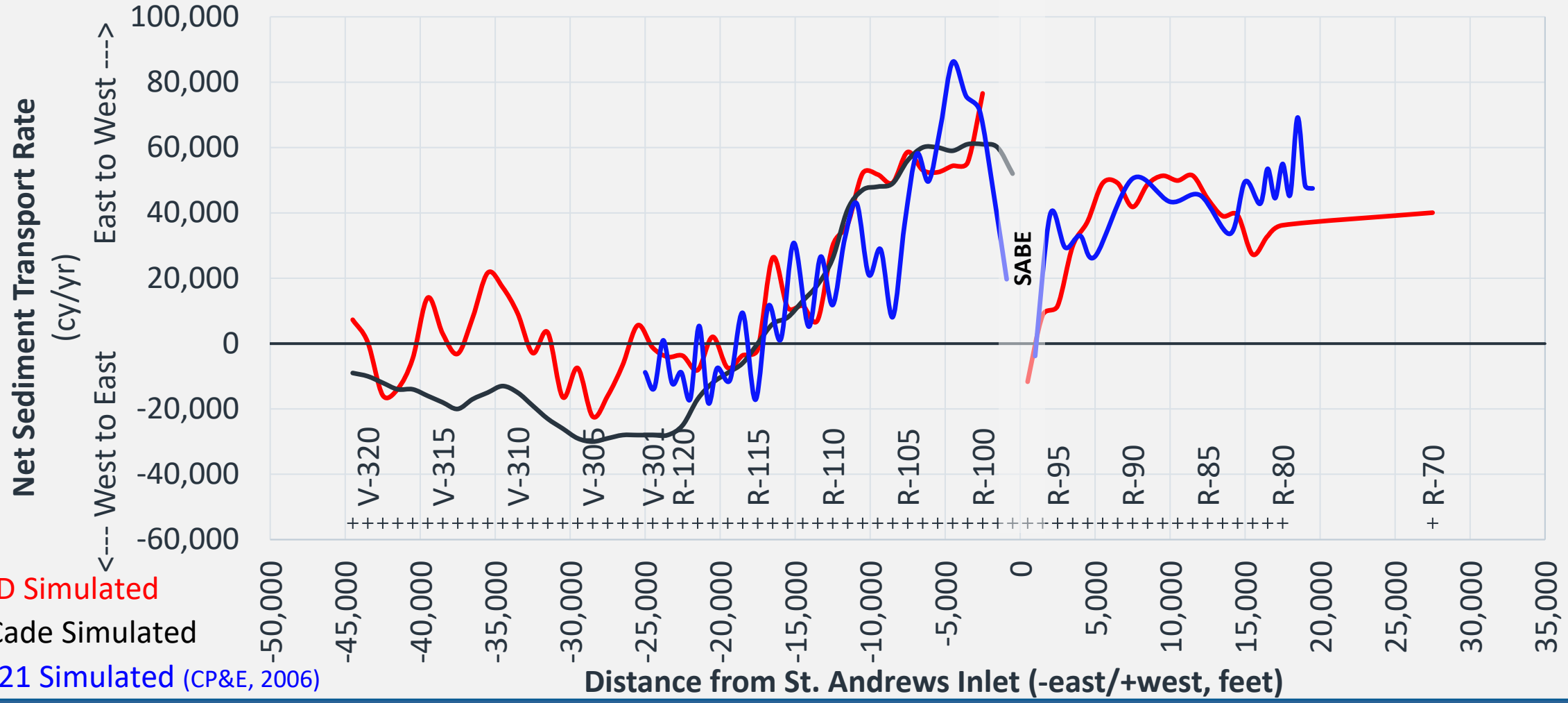
Data Collection Stations

PHASE 1 – FEASIBILITY AND DESIGN
NUMERICAL MODELING

- Calibration
  - Standalone Wave Model
  - Coupled Flow-Wave
  - Net Longshore Sediment Transport
  - Morphology
- Verification
  - Coupled Flow-Wave Model using data collected from Data Collection Effort
  - Morphology verified using Hurricane Ivan (2004)



PHASE 1 – FEASIBILITY AND DESIGN
NUMERICAL MODELING



LEGEND

Red: Delft3D Simulated

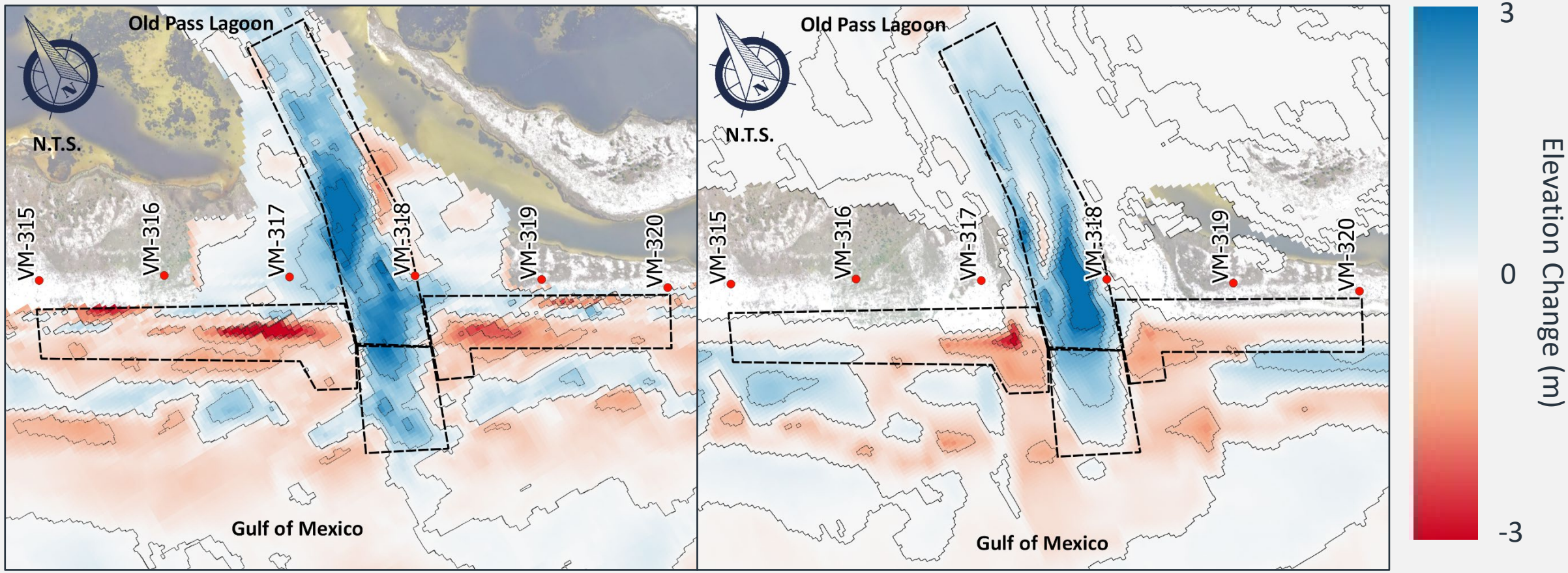
Black: GenCade Simulated

Blue: MIKE 21 Simulated (CP&E, 2006)

PHASE 1 – FEASIBILITY AND DESIGN
NUMERICAL MODELING

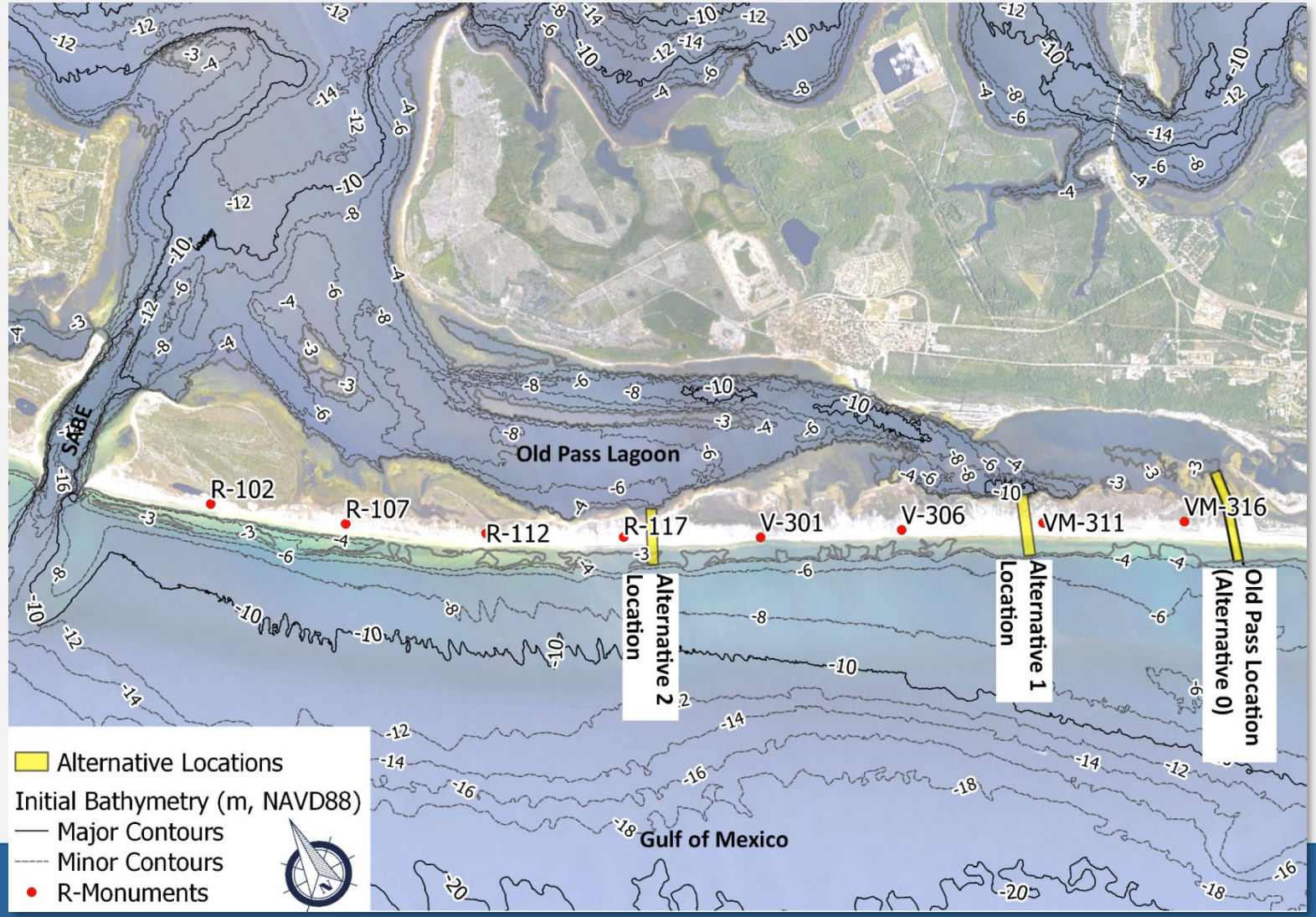
Measured Changes

Simulated Changes



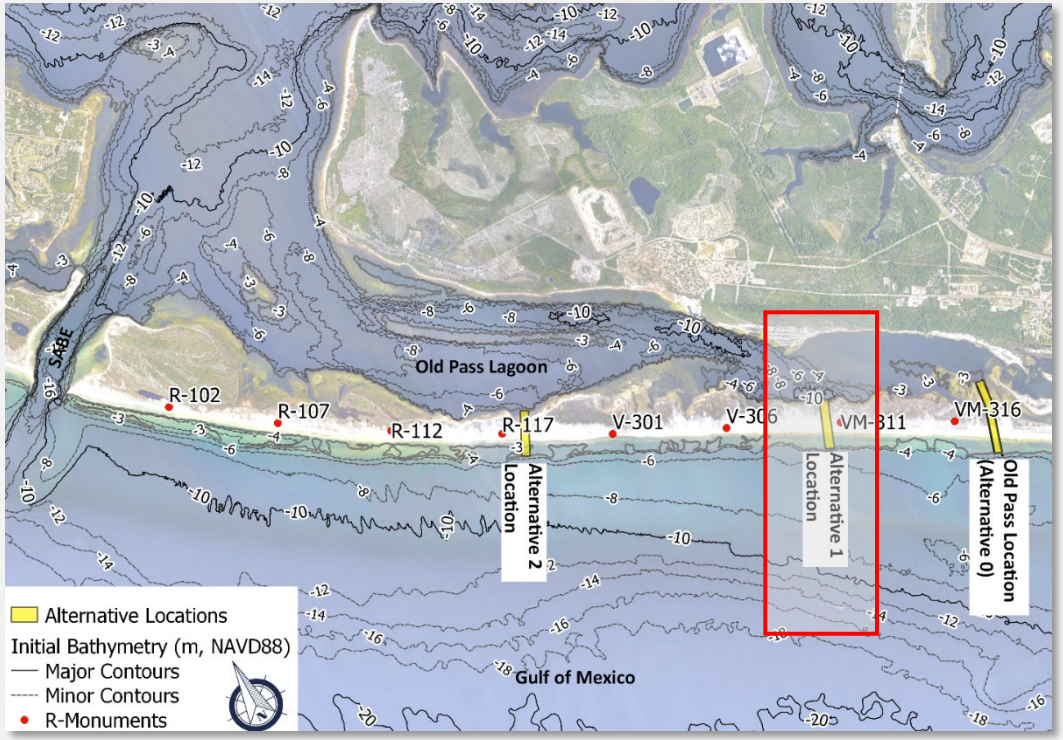
PHASE 1 – FEASIBILITY AND DESIGN
PRELIMINARY ALTERNATIVES ANALYSIS

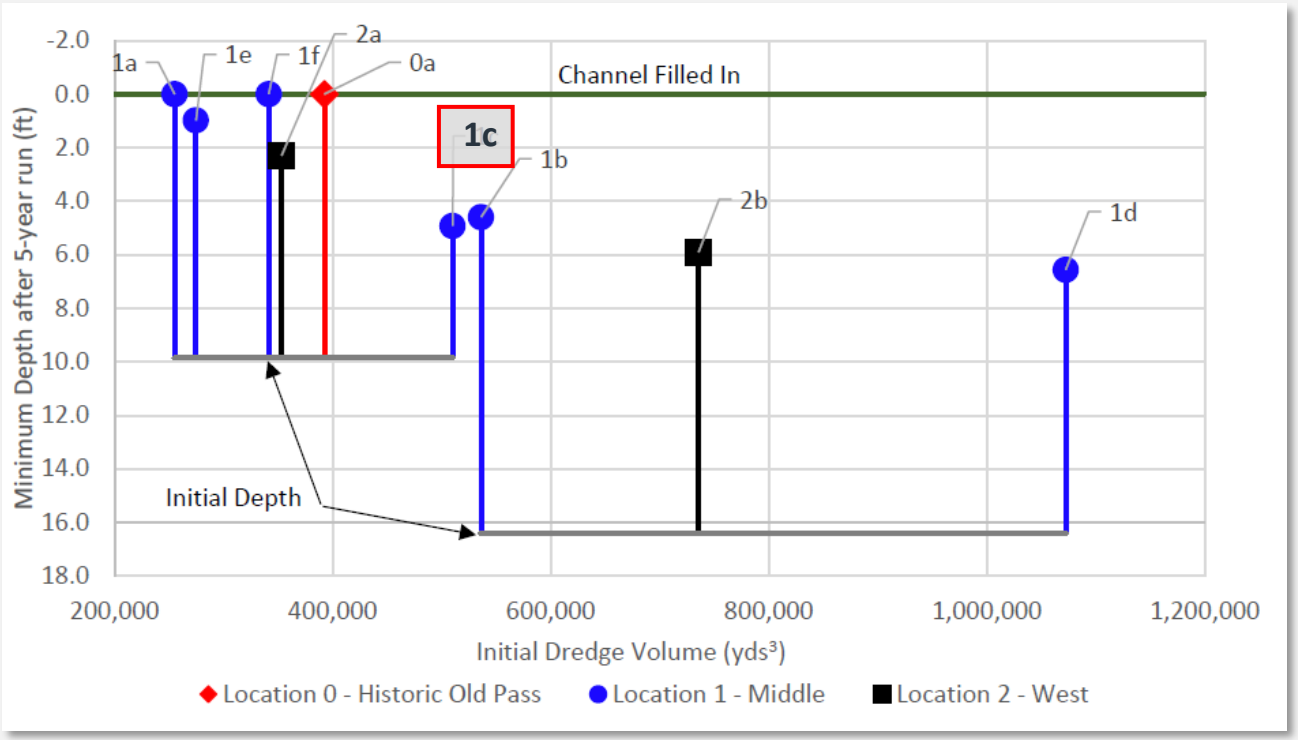
- 3 Potential Locations
- 9 Alternatives
  - Varied Widths
  - Varied Lengths
  - Channel Orientation
  - Depths



PHASE 1 – FEASIBILITY AND DESIGN
PRELIMINARY ALTERNATIVES ANALYSIS

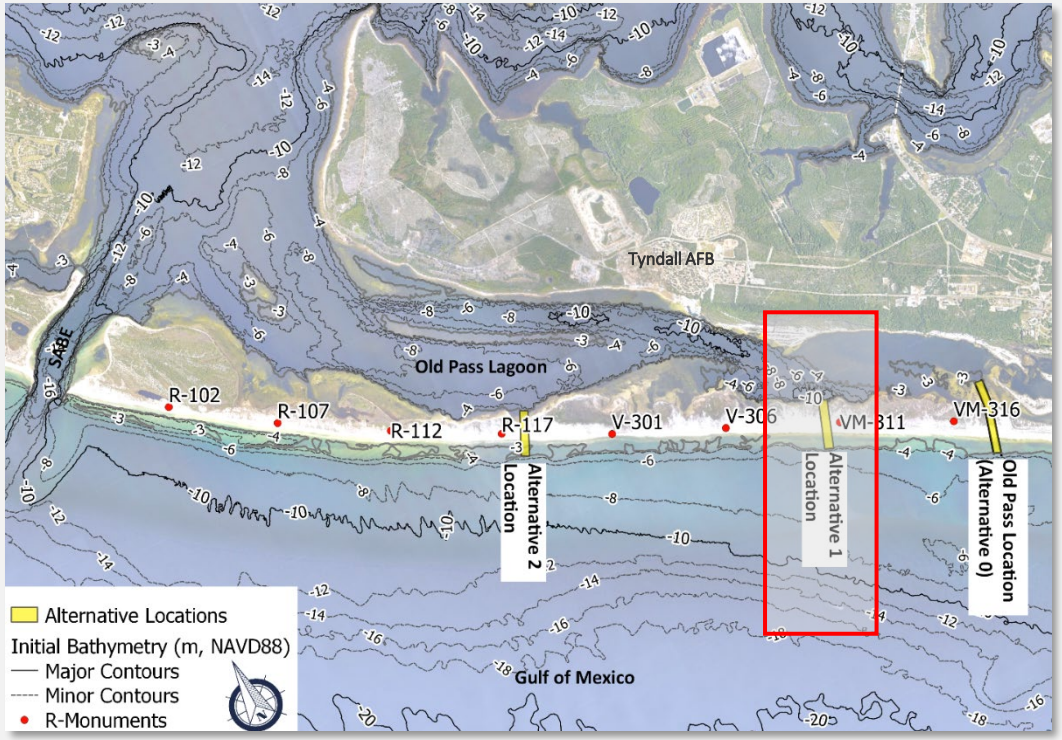
- Channel depth remaining after 5 years
- Alternative 1c performs the best





PHASE 1 – FEASIBILITY AND DESIGN
PRELIMINARY ALTERNATIVES ANALYSIS

- Each alternative simulated for a 5-yr period
- Metrics: 1) infilled volume, 2) change in cross sectional area, 3) depth



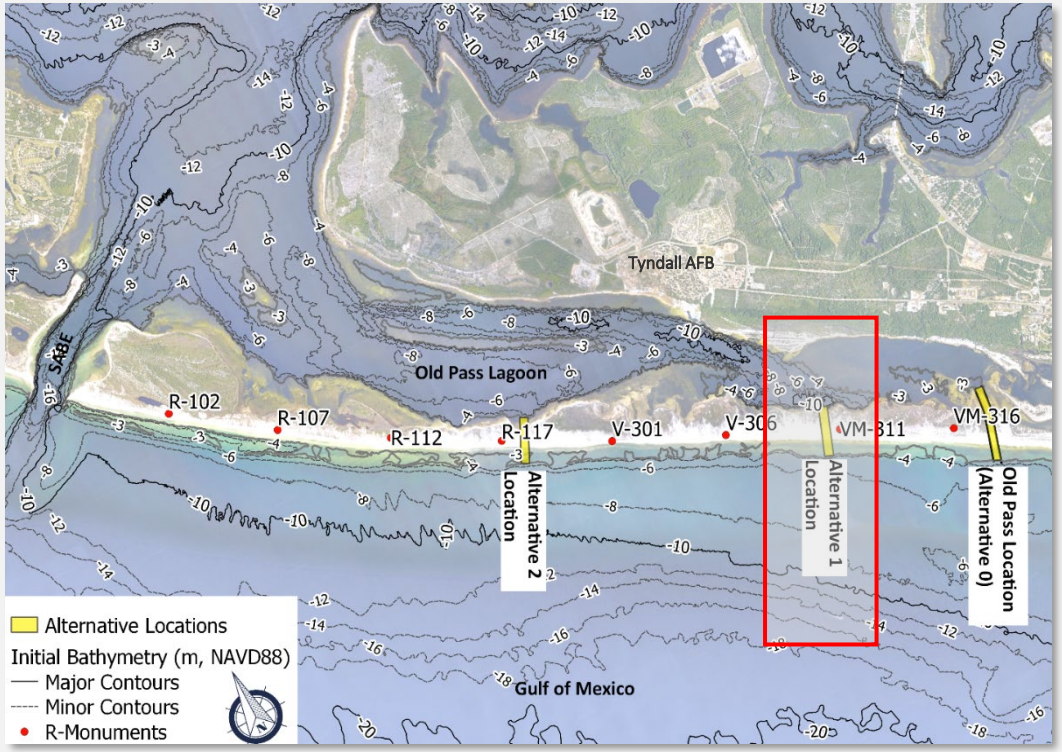
Alternatives	Percent of Initial Dredge Volume Infilled within the limits of the Channel over the 5-year Simulation (%)	Percent Change in Minimum Cross-Sectional Area over the 5-year Simulation (%)	Change in Minimum Channel Depth over 5-year Simulation (*ft)
0a	46%	-100%	-9.8
1a	73%	-100%	-9.8
1b	58%	-70%	-11.8
1c	29%	-37%	-4.9
1d	34%	-53%	-9.8
2a	41%	-43%	-7.5
2b	41%	-65%	-10.5

*Note: 1 ft is equal to 0.3048 m.

Alt 1c: lowest volume of infilling, smallest max % change in cross section, least amount of change in min. depth

PHASE 1 – FEASIBILITY AND DESIGN
PRELIMINARY ALTERNATIVES ANALYSIS

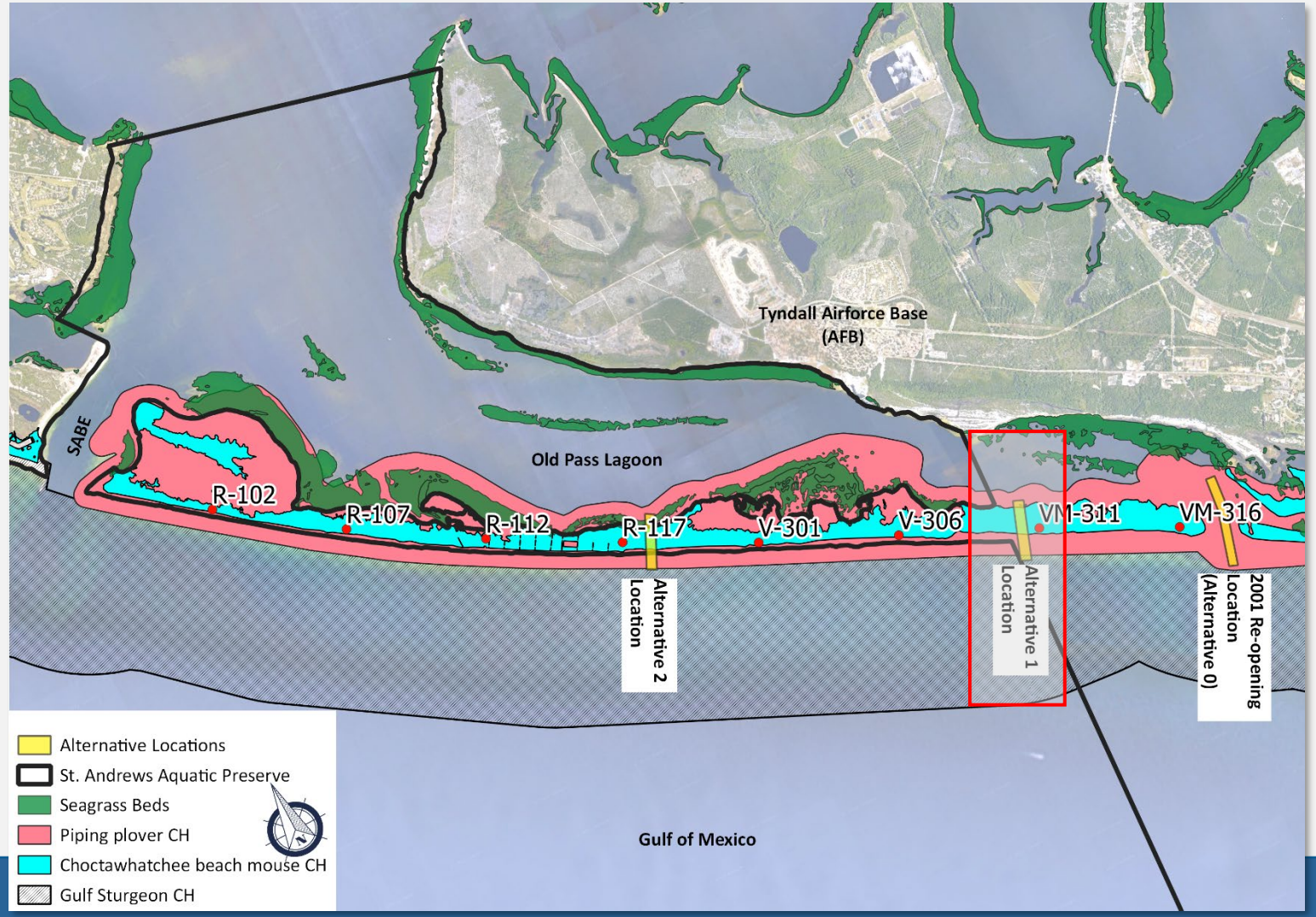
- Cost analysis for preliminary alternatives
- Initial, maintenance and annualized costs over 50-yr design life



Alternative	Dredging Frequency (yrs)	Initial Cost	Maintenance Cost	Annualized Cost
0a	3	$5,971,064	$1,800,900	$977,161
1a	3	$4,273,542	$1,833,768	$908,529
1b	5	$7,749,421	$4,242,162	$1,246,168
1c	6	$7,426,083	$2,641,280	$868,569
1d	6	$14,377,842	$5,734,679	$1,652,310
2a	4	$6,577,322	$2,220,344	$952,058
2b	6	$10,214,870	$4,843,868	$1,326,017

Alt 1c: low dredging frequency, lowest annualized cost for 50 yr design life

PHASE 1 – FEASIBILITY AND DESIGN
PRELIMINARY ALTERNATIVES ANALYSIS

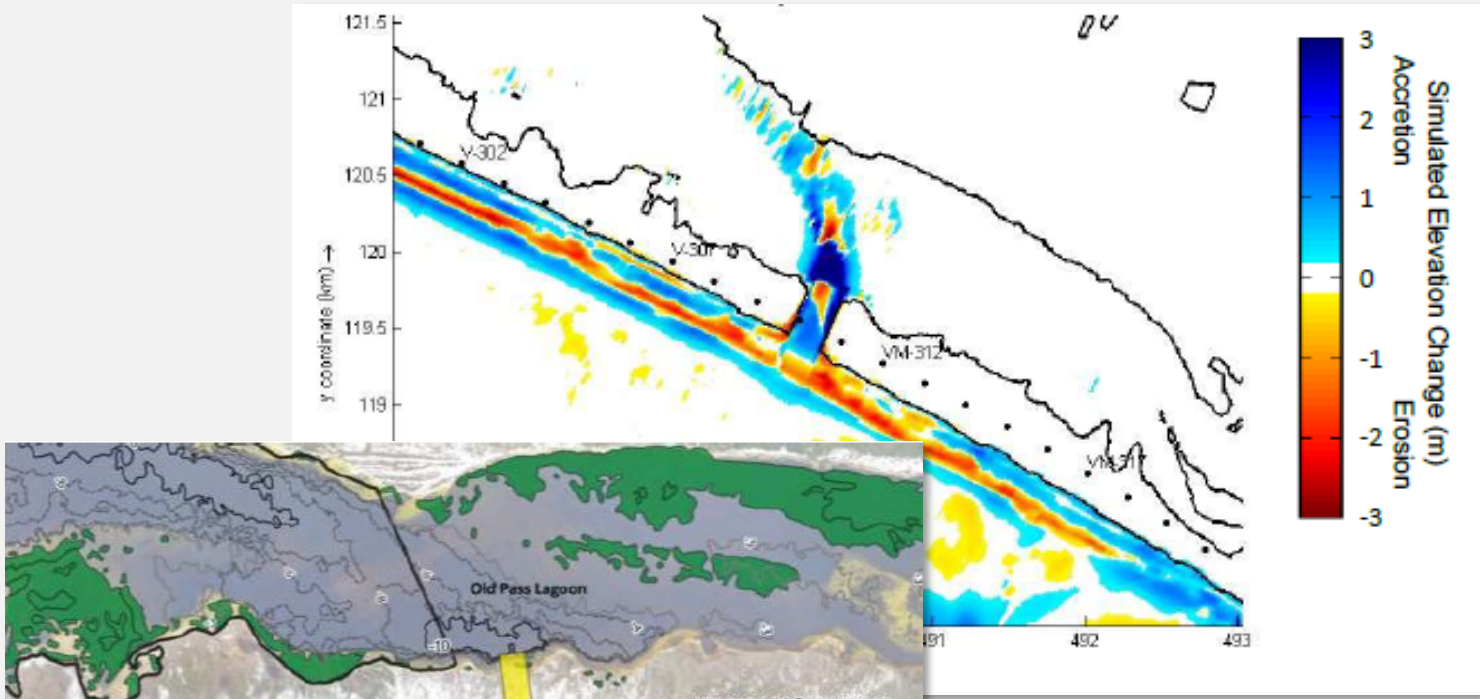


Benefits of Location 1:

- Bay depths > 10 m
- Narrow portion of island (reduced initial dredge volume)
- Outside of Aquatic Preserve (between 0 and 200m)
- Limited seagrass within proposed channel based on available FWC data

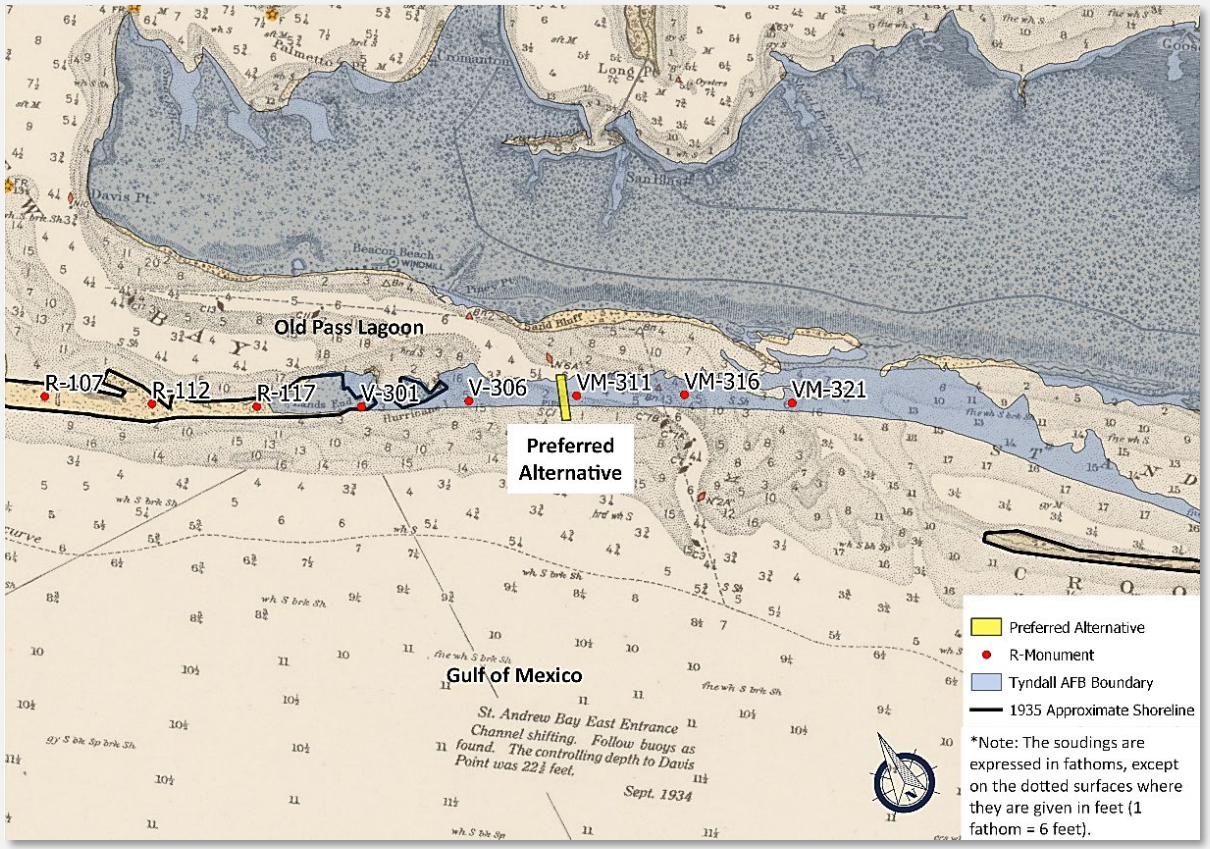
PHASE 1 – FEASIBILITY AND DESIGN
PRELIMINARY ALTERNATIVES ANALYSIS

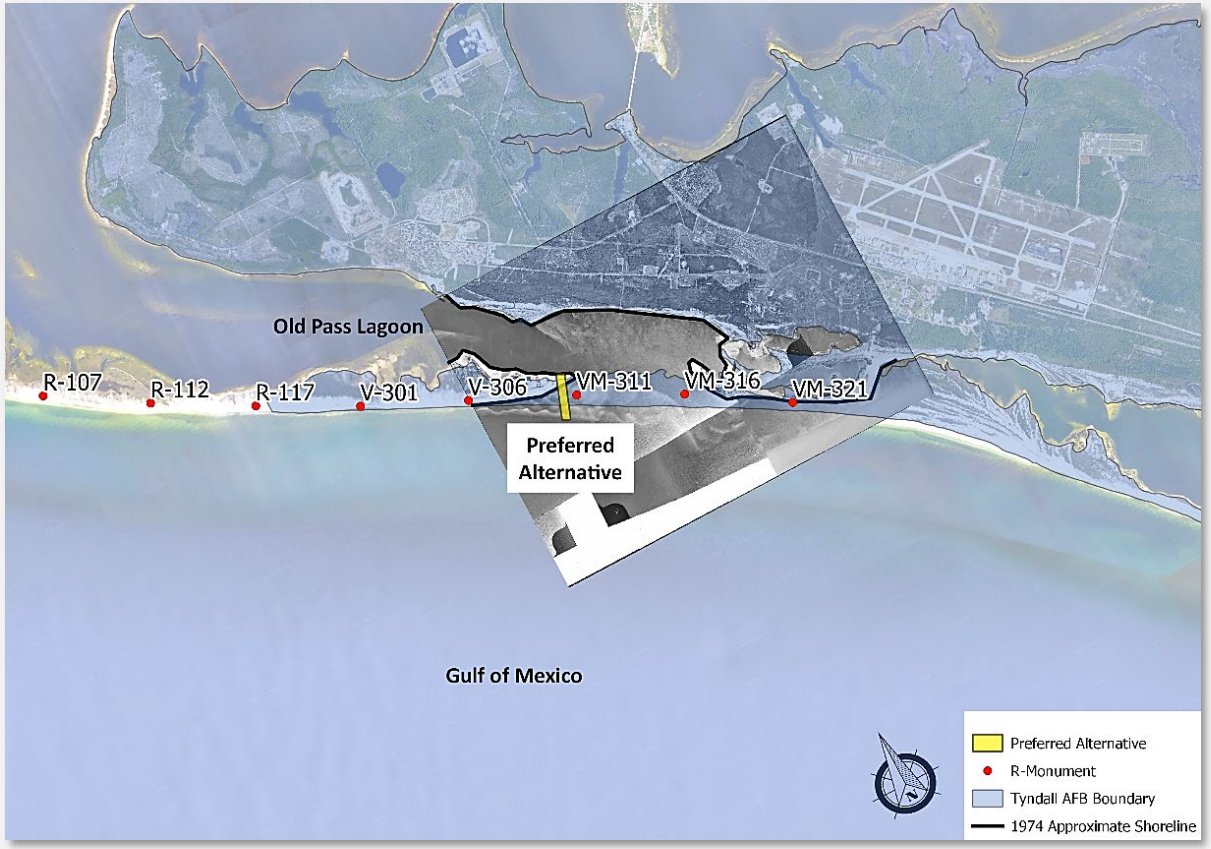
- Alternative 1c Selected as Preferred Alternative
  - Least costly over a 50-yr period
  - Remains open for a manageable amount of time (6-year dredge frequency)
  - Located between VM-310 and VM-311, within the limits of the historic location of East Pass
  - 2,130 ft shore-perpendicular channel, 650 ft wide channel excavated to -10 ft, NAVD88
  - Initial area of impact is ~32 acres
  - Initial dredge volume is ~500,000 CY



PHASE 1 – FEASIBILITY AND DESIGN
PREFERRED ALTERNATIVE ANALYSIS

- Located within historic location of East (Old) Pass
- All proposed work (channel dredging and dune construction) located on Tyndall AFB property





PHASE 1 – FEASIBILITY AND DESIGN
PREFERRED ALTERNATIVE ANALYSIS

Preferred (Recommended) Alternative (1c) Performance:

- Storm Modeling
  - Conducted simulations of an extreme storm event (Hurricane Ivan, 2004)
  - Simulated for two scenarios:
    1. Immediate Post-Con: Results show significant scour of the inlet attempting to match the 30 ft contours present in Old Pass Lagoon (bayside) when there has been no adjustment to the inlet or growth of the ebb shoal. This is due to no ebb shoal to reduce wave energy from the storm entering Old Pass Lagoon immediately following the construction.
    2. 5-Years Post-Con: Results showed increased sedimentation within the inlet compared to the Immediate Post-Con scenario. The developed ebb shoal acts as a source of sediment that is transported into the inlet during major storm events.
  - Although the results of analysis show that the proposed inlet would be stable over a 5-year period under average wave conditions, major storm events have the potential to change the performance of the inlet. The inlet's morphological response from a major storm event varies significantly depending on the timing of the storm relative to the inlet construction.

PHASE 1 – FEASIBILITY AND DESIGN
PREFERRED ALTERNATIVE ANALYSIS

Preferred (Recommended) Alternative (1c) Performance:

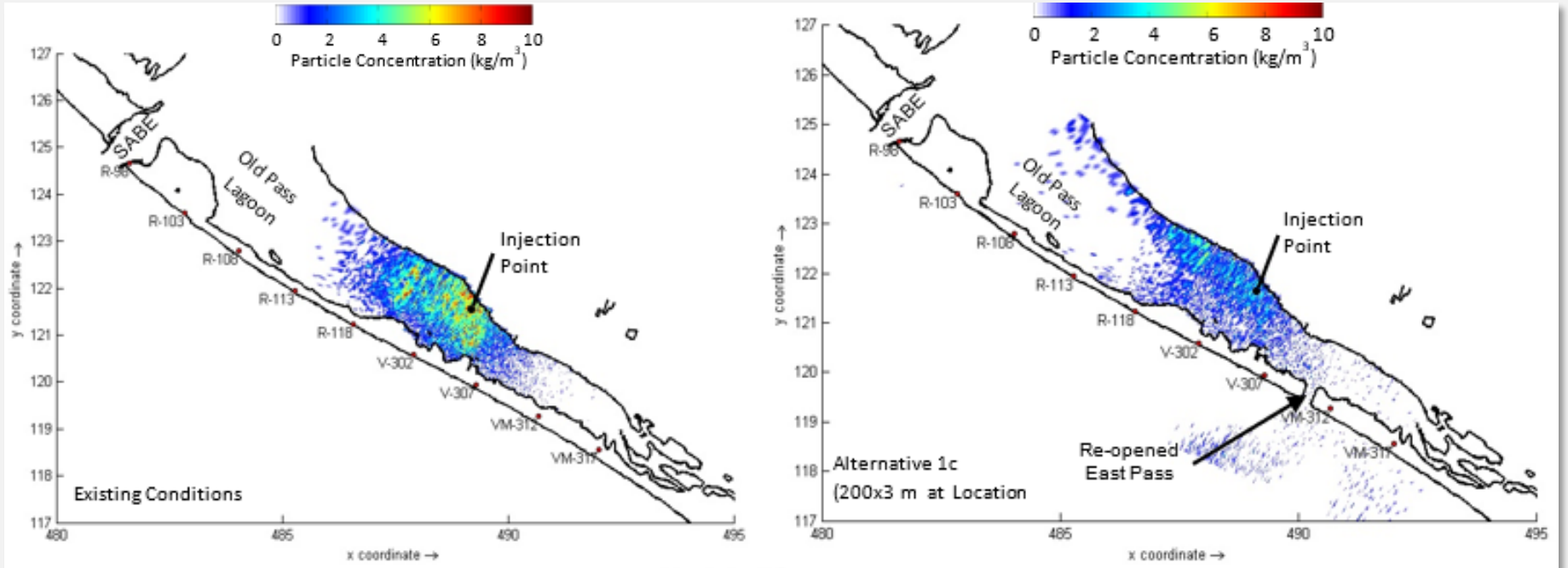
- Water Quality Modeling
  - A conservative tracer was simulated in Delft3D using the D-Water Quality Module. The water quality module uses the results from the Delft3D-FLOW simulation to generate the input for the water quality simulation.
  - Goal of this WQ modeling was to understand how the new proposed inlet affects the circulation and flushing within Old Pass Lagoon.
  - Two simulations were run and compared to the existing conditions (no dual inlets):
    1. Circulation (flushing) of a conservative tracer within Old Pass Lagoon
    2. Salinity changes within Old Pass Lagoon

PHASE 1 – FEASIBILITY AND DESIGN
PREFERRED ALTERNATIVE ANALYSIS

Preferred (Recommended) Alternative Performance:

- Water Quality Modeling - Circulation (flushing)

✓ Results showed an increase in flushing capacity in Old Pass Lagoon compared to the existing conditions (~3.5 X faster).



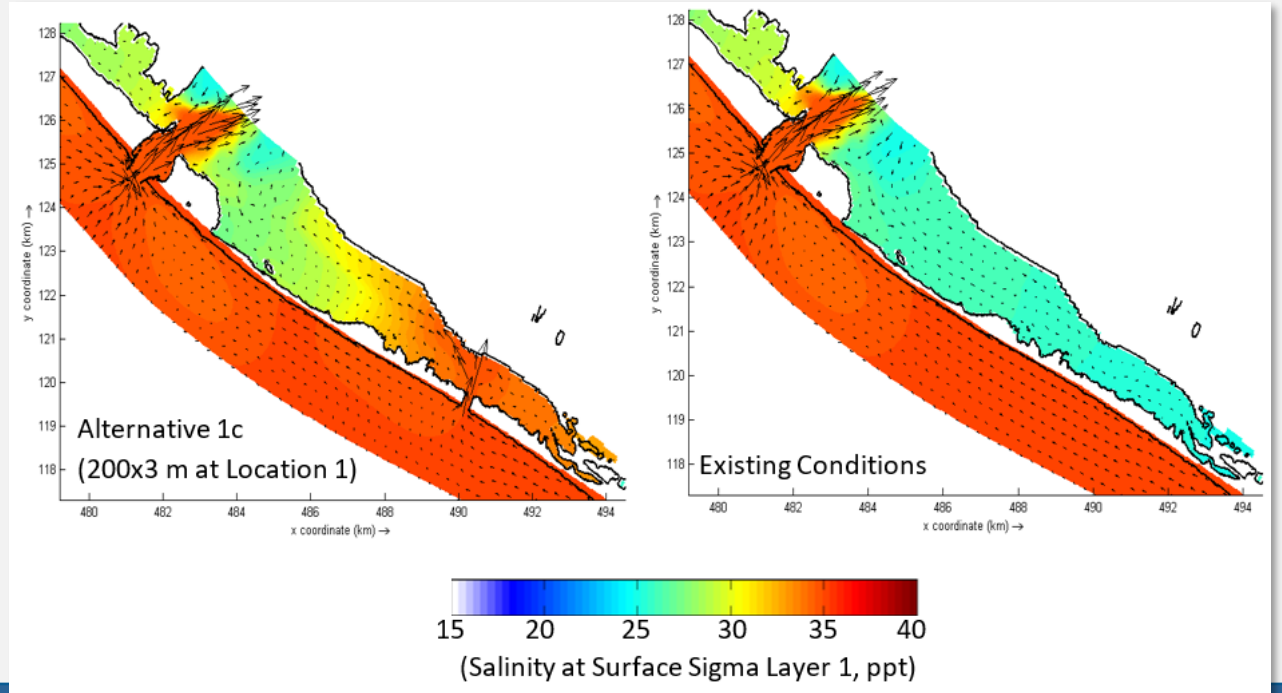
Simulated particle concentration after 96-hours the (left) existing conditions and for the (right) preferred alternative (1c). The black dot indicates the location of the injection of particles.

PHASE 1 – FEASIBILITY AND DESIGN
PREFERRED ALTERNATIVE ANALYSIS

Preferred (Recommended) Alternative Performance:

- Water Quality Modeling - Salinity

✓ Results of Delft3D modeling showed an increase in salinity of the Old Pass Lagoon when compared to existing conditions.



Comparison of salinity in Old Pass Lagoon during peak flood tide for (left) the preferred alternative (1c) and (right) existing conditions (no dual inlets) after 30 days.

PHASE 1 – FEASIBILITY AND DESIGN
PREFERRED ALTERNATIVE ANALYSIS

Preferred (Recommended) Alternative (1c) Performance:

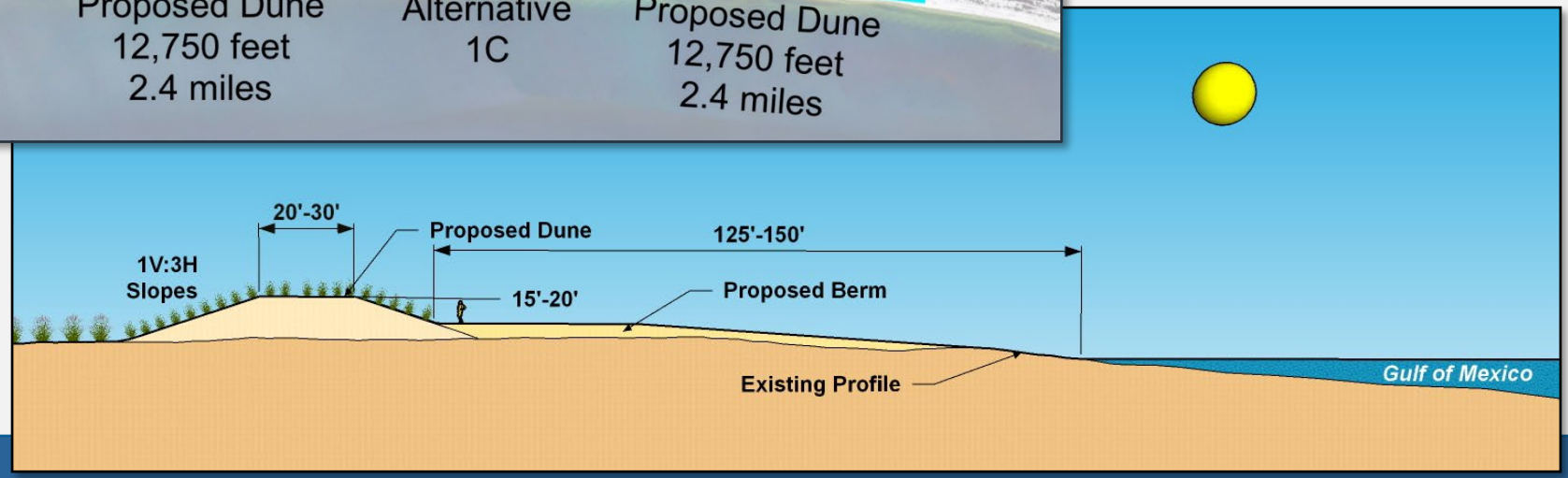
- Effects on St. Andrew Bay Entrance (SABE)
  - ✓ Simulations of the reopening of East Pass did not cause adverse impacts to SABE. The discharge through SABE and the tidal prism were within 1% of the existing conditions.

Alternative	SABE		Reopened East Pass	
	Flood (*ft^3)	Ebb (*ft^3)	Flood (*ft^3)	Ebb (*ft^3)
Existing Conditions	879×10^7	-575×10^7	-	-
Alternative 1c	893×10^7	-572×10^7	73.1×10^7	-48.4×10^7

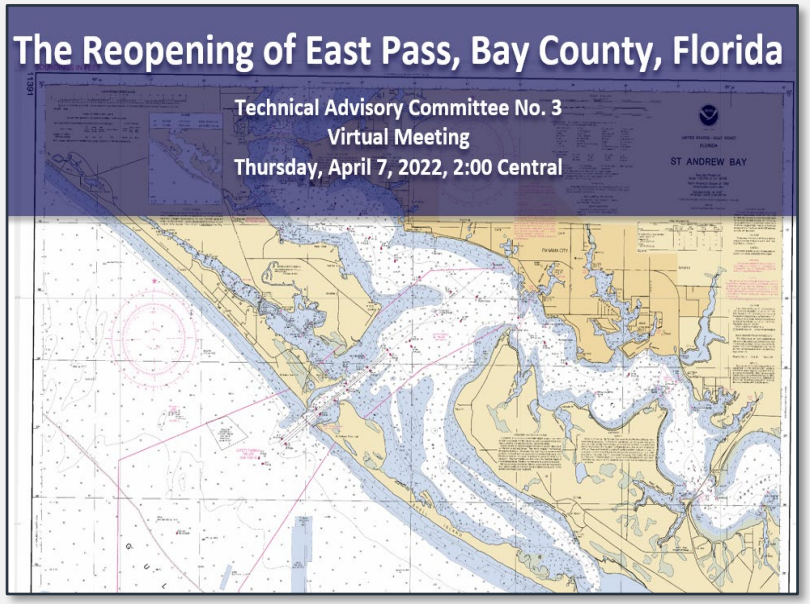
*Note: 1 ft^3 is equal to 0.0283 m^3.

PHASE 1 – FEASIBILITY AND DESIGN
PREFERRED ALTERNATIVE ANALYSIS

- Beneficial Sediment Use Conceptual Design
  - Sediment could be used to build dunes for ~ 2.4 miles on either side adjacent to inlet, within Tyndall AFB property with native vegetation planted
  - Other possible ideas being explored (bayside shoreline enhancements, living shorelines, etc.)



PHASE 1 - FEASIBILITY AND DESIGN OVERVIEW

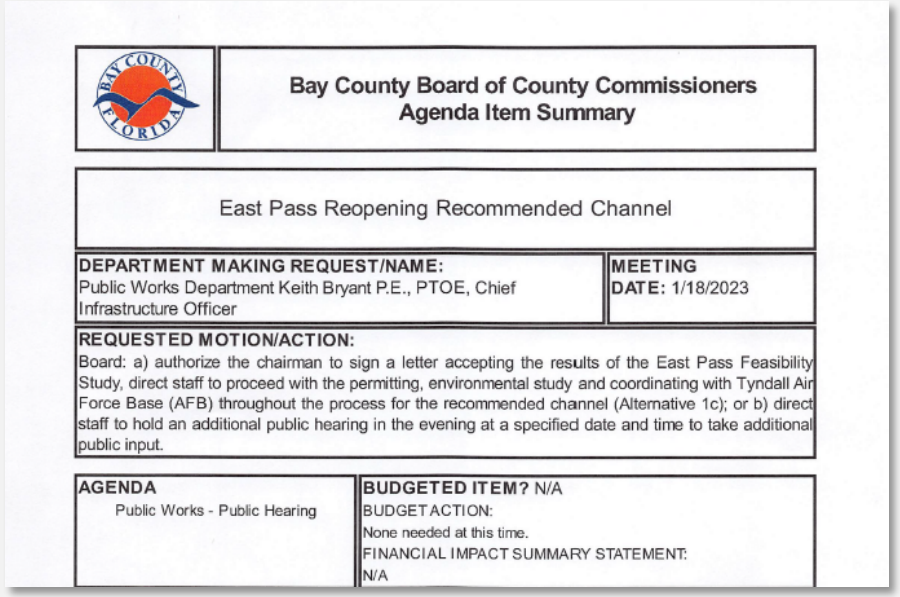


TAC Meetings

- Multiple meetings in 2021 & 2022
- Acquire preliminary stakeholder Input

Reports

- Summary Report
- Numerical Modeling Documentation
- Feasibility and Design Assessment



Bay County Board of County Commissioners
Agenda Item Summary

East Pass Reopening Recommended Channel

DEPARTMENT MAKING REQUEST/NAME:
Public Works Department Keith Bryant P.E., PTOE, Chief Infrastructure Officer

MEETING DATE: 1/18/2023

REQUESTED MOTION/ACTION:
Board: a) authorize the chairman to sign a letter accepting the results of the East Pass Feasibility Study, direct staff to proceed with the permitting, environmental study and coordinating with Tyndall Air Force Base (AFB) throughout the process for the recommended channel (Alternative 1c); or b) direct staff to hold an additional public hearing in the evening at a specified date and time to take additional public input.

AGENDA
Public Works - Public Hearing

BUDGETED ITEM? N/A
BUDGET ACTION:
None needed at this time.
FINANCIAL IMPACT SUMMARY STATEMENT:
N/A

Bay County Approval

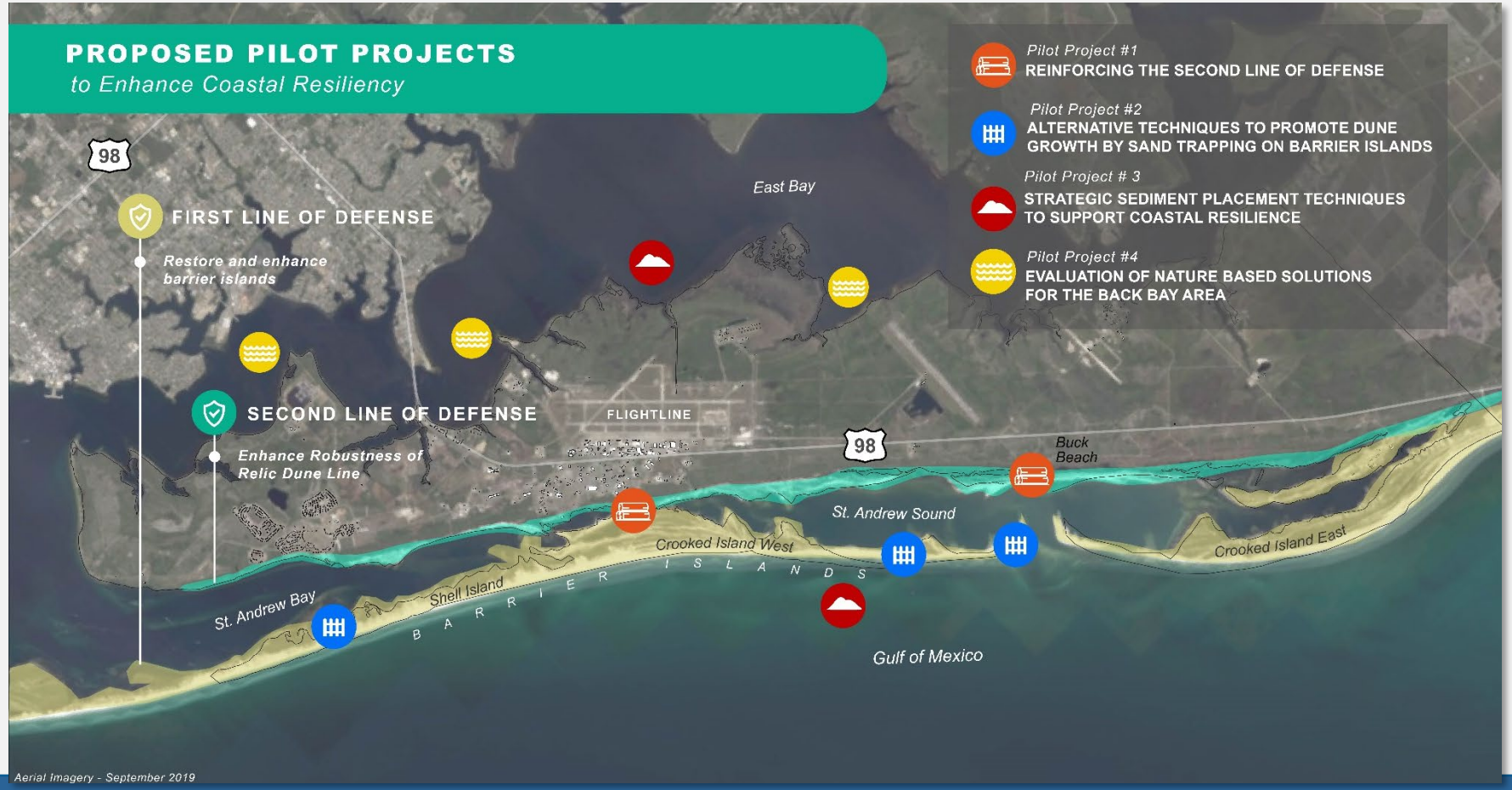
- Bay County BOCC Approved Report and Recommendations

PHASE 1 – FEASIBILITY AND DESIGN
TAC AND STAKEHOLDER MEETINGS

- Community Workshop – May 20, 2021
- TAC #1 – October 14, 2021
- TAC #2 – January 13, 2022
- TAC #3 – April 7, 2022
- Tyndall AFB Meeting – October 17, 2022

CONSISTENCY WITH TYNDALL AFB COASTAL RESILIENCY GOALS

- Coastal Pilot Project #2 – Promote Dune Growth

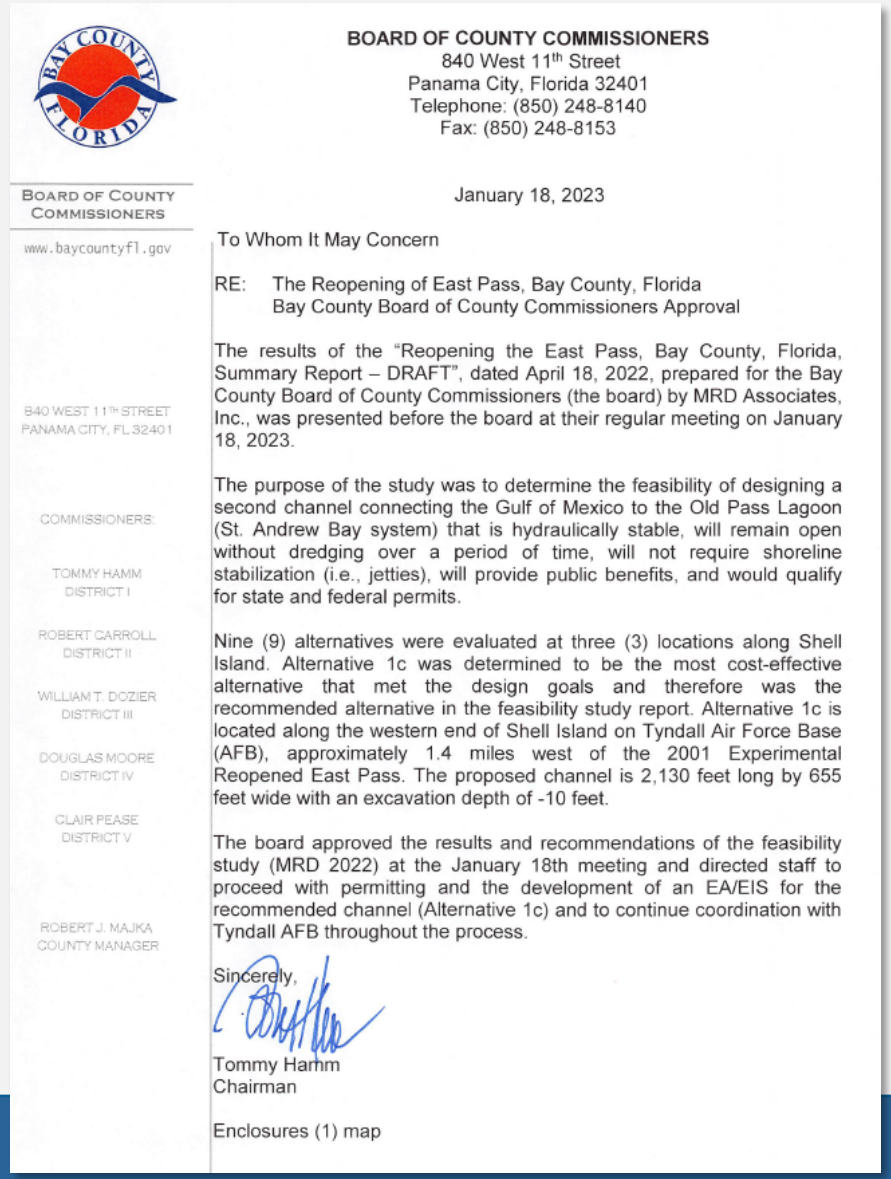


PHASE 1 – FEASIBILITY AND DESIGN

BAY COUNTY APPROVAL

Preferred (Recommended) (1c) Alternative Approved:

- Authorized to Proceed to Phase II on January 18, 2023
  - Phase II.A – State and Federal Permitting - ***underway***
  - Phase II.B – NEPA Documentation (EA/EIS) – ***pending guidance from USACE and Tyndall AFB***



BOARD OF COUNTY COMMISSIONERS
840 West 11th Street
Panama City, Florida 32401
Telephone: (850) 248-8140
Fax: (850) 248-8153

BOARD OF COUNTY COMMISSIONERS
www.baycountyfl.gov

840 WEST 11TH STREET
PANAMA CITY, FL 32401

COMMISSIONERS:
TOMMY HAMM
DISTRICT I
ROBERT CARROLL
DISTRICT II
WILLIAM T. DOZIER
DISTRICT III
DOUGLAS MOORE
DISTRICT IV
CLAIR PEASE
DISTRICT V

ROBERT J. MAJKA
COUNTY MANAGER

January 18, 2023

To Whom It May Concern

RE: The Reopening of East Pass, Bay County, Florida
Bay County Board of County Commissioners Approval

The results of the "Reopening the East Pass, Bay County, Florida, Summary Report – DRAFT", dated April 18, 2022, prepared for the Bay County Board of County Commissioners (the board) by MRD Associates, Inc., was presented before the board at their regular meeting on January 18, 2023.

The purpose of the study was to determine the feasibility of designing a second channel connecting the Gulf of Mexico to the Old Pass Lagoon (St. Andrew Bay system) that is hydraulically stable, will remain open without dredging over a period of time, will not require shoreline stabilization (i.e., jetties), will provide public benefits, and would qualify for state and federal permits.

Nine (9) alternatives were evaluated at three (3) locations along Shell Island. Alternative 1c was determined to be the most cost-effective alternative that met the design goals and therefore was the recommended alternative in the feasibility study report. Alternative 1c is located along the western end of Shell Island on Tyndall Air Force Base (AFB), approximately 1.4 miles west of the 2001 Experimental Reopened East Pass. The proposed channel is 2,130 feet long by 655 feet wide with an excavation depth of -10 feet.

The board approved the results and recommendations of the feasibility study (MRD 2022) at the January 18th meeting and directed staff to proceed with permitting and the development of an EA/EIS for the recommended channel (Alternative 1c) and to continue coordination with Tyndall AFB throughout the process.

Sincerely,

Tommy Hamm
Chairman

Enclosures (1) map

DISCUSSION AND GUIDANCE FROM AGENCIES ON PERMITTING AND NEPA

DISCUSSION AND AGENCY GUIDANCE

- Permit Application Needs (FDEP and USACE)
- Data Gaps / Survey Needs
- Geological and Cultural Resource Investigations
- State Lands Considerations
- Aquatic Preserve Considerations
- Environmental Resource Impacts (Monitoring, Mitigation)
- NEPA Path for Project

THANK YOU

Michael Dombrowski, PE
President
MRD Associates, Inc.
850.654.1555
md@mrd-associates.com

Lauren Floyd
Senior Marine Biologist
Coastal Protection Engineering
954.551.2594
lfloyd@coastalprotectioneng.com

Joseph Morrow, PE
Senior Coastal Engineer
MRD Associates, Inc.
850.654.1555
jm@mrd-associates.com