

NEW PASS INLET MANAGEMENT STUDY: A DATA DRIVEN APPROACH TO PLAN DEVELOPMENT

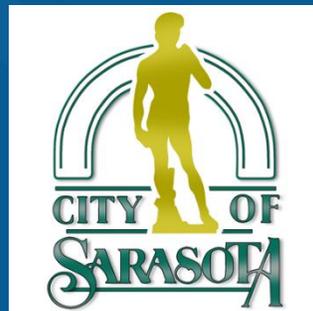
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FSBPA 39th Annual National Conference on Beach Preservation Technology
February 2026, St. Augustine Beach, Florida



2025 FLORIDA RESILIENCY CONFERENCE

66 Inlets in Florida

43 altered/managed Inlets

30 altered Inlets are listed in the Annual Inlet Report (2025)

30 Inlet's have IMP's

2 Inlets are close to having a new IMP

- Sir Guy Weeks

BALANCING FLORIDA'S INLET MANAGEMENT PROGRAM ACCOMPLISHMENTS, IMPLEMENTATION OF STRATEGIES, & POLICY

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**FLORIDA
RESILIENCE
CONFERENCE**

September 17-19, 2025 – Charlotte Harbor, FL

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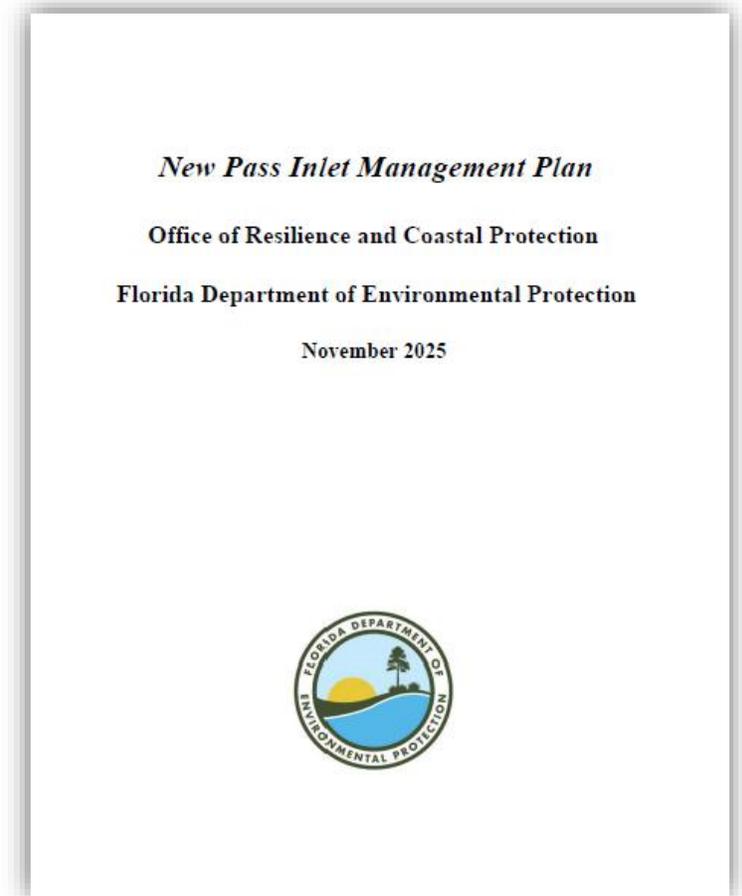
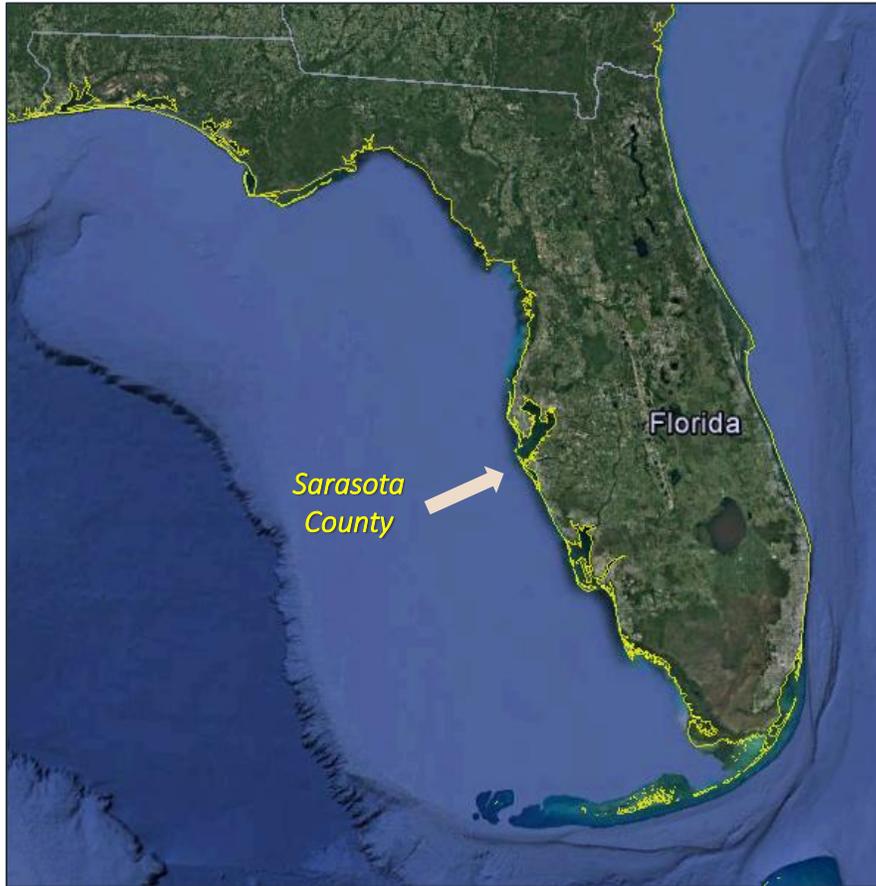
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NEW PASS, SARASOTA COUNTY, FLORIDA



2025 NEW PASS INLET MANAGEMENT STUDY

- Prepared in joint effort by APTIM & CPE for the City of Sarasota to support FDEP with adoption of an Inlet Management Plan (IMP) for New Pass
- Sediment budget update as part of permit-required monitoring and to align with the FDEP's Strategic Beach Management Plan (SBMP)
- Implement the intent of Section 161.142, Florida Statutes - Declaration of public policy relating to improved navigation inlets
- Coordinate with local governments with a Technical Advisory Committee (TAC)
- Evaluate sediment bypassing and strategies for inlet management
- Consider supplemental needs of the federally-authorized Lido Key HSDR Project
- Provide recommendations for the ongoing management of New Pass

TECHNICAL ADVISORY COMMITTEE (TAC)



City of Sarasota



Florida Department of Environmental Protection (FDEP)



Aptim Environmental & Infrastructure, LLC



U.S. Army Corps of Engineers (USACE)



Coastal Protection Engineering LLC (CPE)



Sarasota County

Sarasota County



West Coast Inland Navigation District (WCIND)



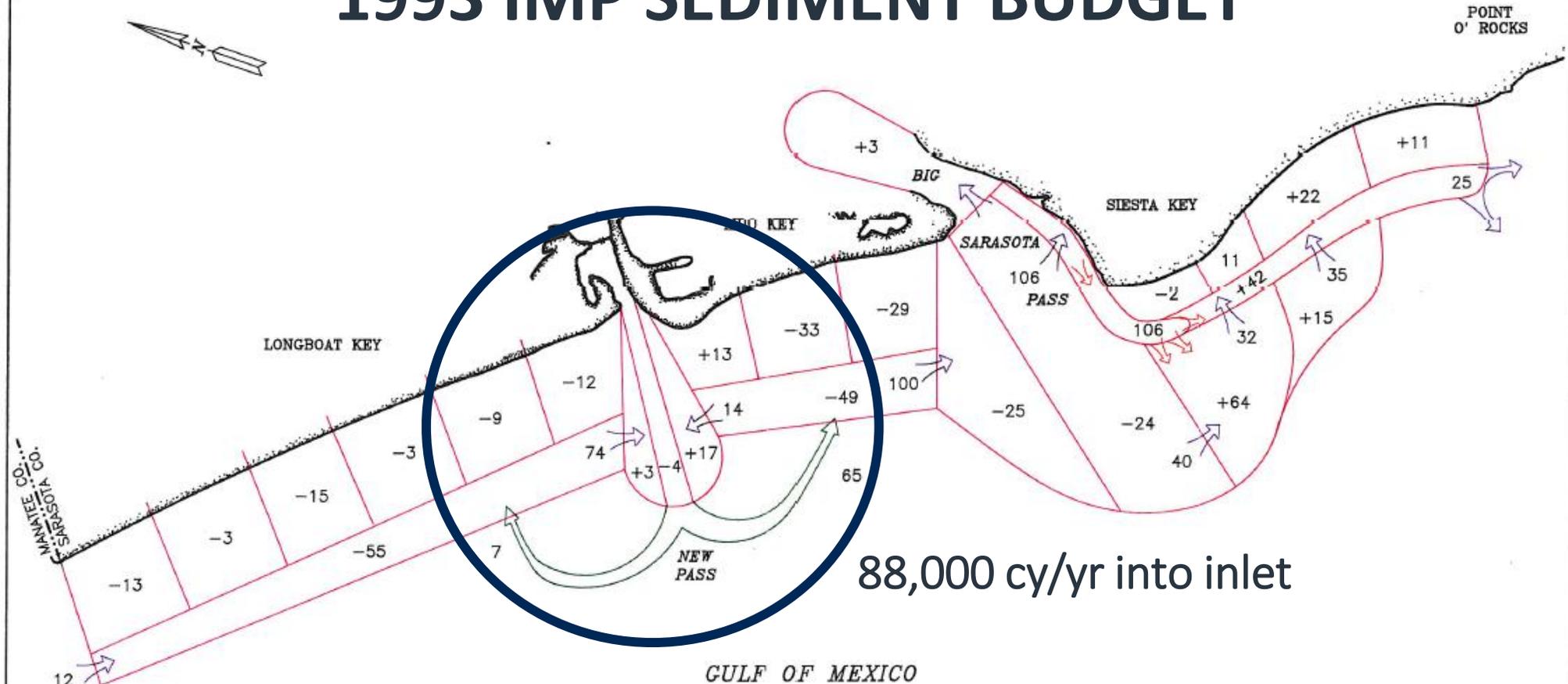
Town of Longboat Key



1993 INLET MANAGEMENT PLAN

- Inlet Management Plan (IMP) prepared but not formally adopted by State
- Sediment budget from 1974 to 1987 (Longboat Key) and to 1992 (Lido Key)
- Recommended actions:
 - Continue USACE maintenance of New Pass, remove eastern 1500 ft of deposition basin, maintain 1993 channel alignment
 - Modify the sand sharing agreement such that Lido Key receives 84.6% of sand dredged from New Pass channel, and Longboat Key receives 15.4%
 - Continue beach renourishment programs on Lido Key and Longboat Key
 - Continue beach, inlet shoals, and environmental monitoring
 - Consider addition of erosion control structures adjacent to inlet

1993 IMP SEDIMENT BUDGET



LEGEND

- TIDAL CURRENT QUANTITY
- LITTORAL DRIFT QUANTITY
- DREDGED QUANTITY
- CONTROL BOUNDARY

Note: All quantities in CU.YDS/YEAR X 1000.

- 7,000 cy/yr bypassed to Longboat Key (8%)
- 65,000 cy/yr bypassed to Lido Key (74%)
- 16,000 cy/yr net change in inlet (18%)

1974 - 1987/1991
SEDIMENT BUDGET
SARASOTA COUNTY, FLORIDA

COASTAL PLANNING & ENGINEERING, INC.
 2481 NW BOCA RATON BLVD.
 BOCA RATON, FL 33431



SAND SHARING AGREEMENTS



■ 1990 Interlocal Agreement

- Sarasota County, City of Sarasota, and Town of Longboat Key
- Material from the 1991 New Pass maintenance dredging by USACE shall be shared 65% on Lido Key and 35% on Longboat Key
- New Pass maintenance dredging projects by USACE following 1991 project shall be shared 50/50 until the total sand sharing ratio since 1973 equals the 65/35 ratio
- After 65/35 ratio reached, all subsequent dredging New Pass dredging projects shall be shared at 65/35

■ 2014 Interlocal Agreement (DRAFT)

- City of Sarasota and Town of Longboat Key
- Draft being updated for regional coordination (not finalized)
- Implied intent for 50/50 sand sharing

NEW PASS CHANNEL DREDGING

Since 1990 Interlocal Agreement

- Total = 1,747,800 cy
- Timeframe ~ 32 years
- Average = 54,600 cy/yr
- Longboat Key: 823,600 cy (47%)
- Lido Key: 924,200 cy (53%)

Date Completed	Volume (cy)	Sand Source	Project Location	City	Length (mi)
1991	120,000	New Pass channel	R-22 - R-25	Longboat Key	0.6
1991	240,000	New Pass channel	R-35 - R-37.5	Lido	0.6
1996	178,000	New Pass channel	R-34.5 - R-38	Lido	0.6
1997	171,200	New Pass channel	R-22.6 - R-27.4	Longboat Key	0.9
February 2003	125,000	New Pass channel	R-35.5 - R-43.2	Lido	1.4
Mar. 2003	100,000	New Pass channel	R-22 - R-28	Longboat Key	1.1
April 2009	157,600	New Pass channel	R-34 - R-44	Lido	1.6
October 2016	234,000	New Pass channel	R24-R28	Longboat Key	0.8
April 2019	223,600	New Pass channel	R-37 - R-43.8	Lido	1.2
July 2021	198,400	New Pass channel	R-25.5 - R-29.4	Longboat Key	0.7
Total:	1,747,800				

* Does not account for sand dredged from ebb shoal

NEW PASS DREDGING FOR LONGBOAT KEY AND LIDO KEY BEACH NOURISHMENT PROJECTS

- City of Sarasota and Town of Longboat Key co-permittees
- FDEP and USACE 15-yr permits issued 2015 / 2016
- Periodic dredging of New Pass ebb shoal for placement on Lido Key and Longboat Key
- Dredge / nourishment events under joint permit:
 - 2016 Longboat Key – 234,000 cy
 - 2019 Lido Key – 223,600 cy
 - 2021 Longboat Key – 198,400 cy
- Permitted for seaward channel cuts only
- USACE navigation channel includes interior cuts



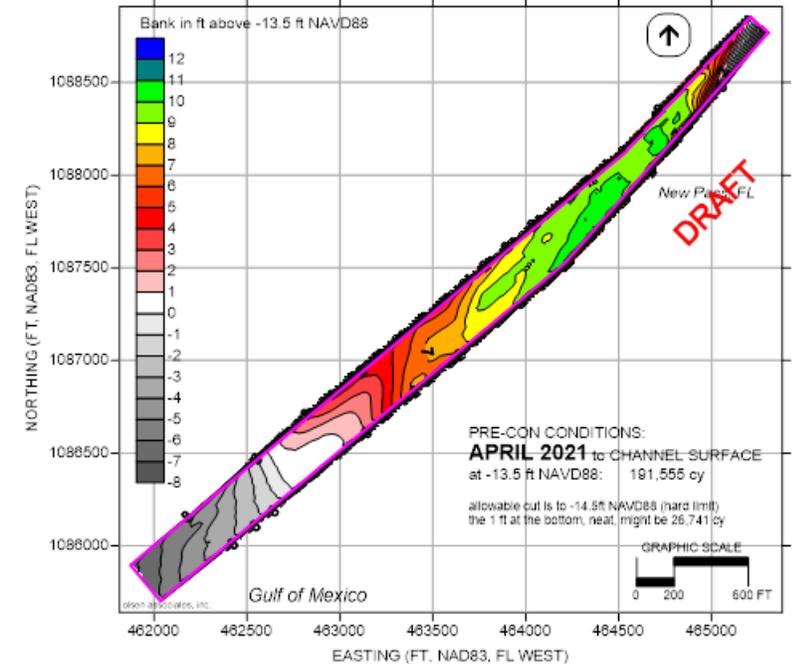
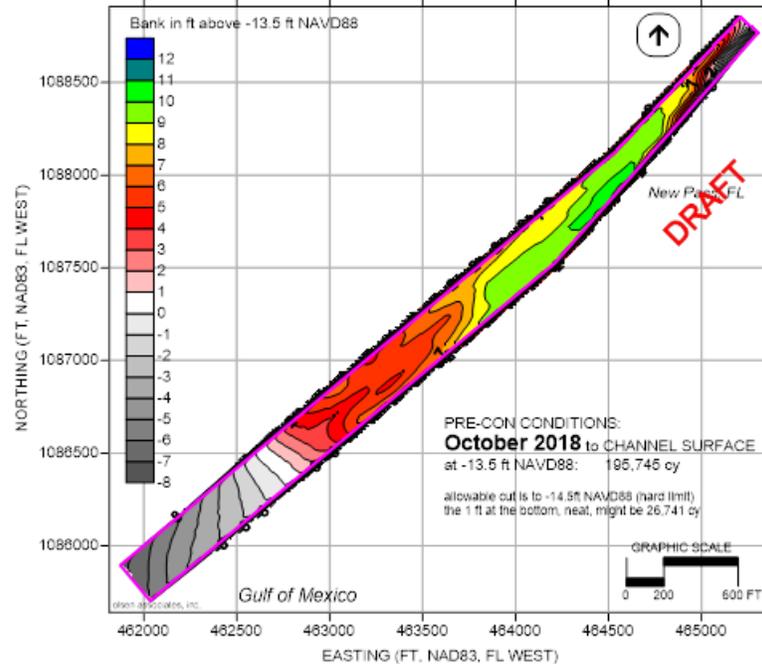
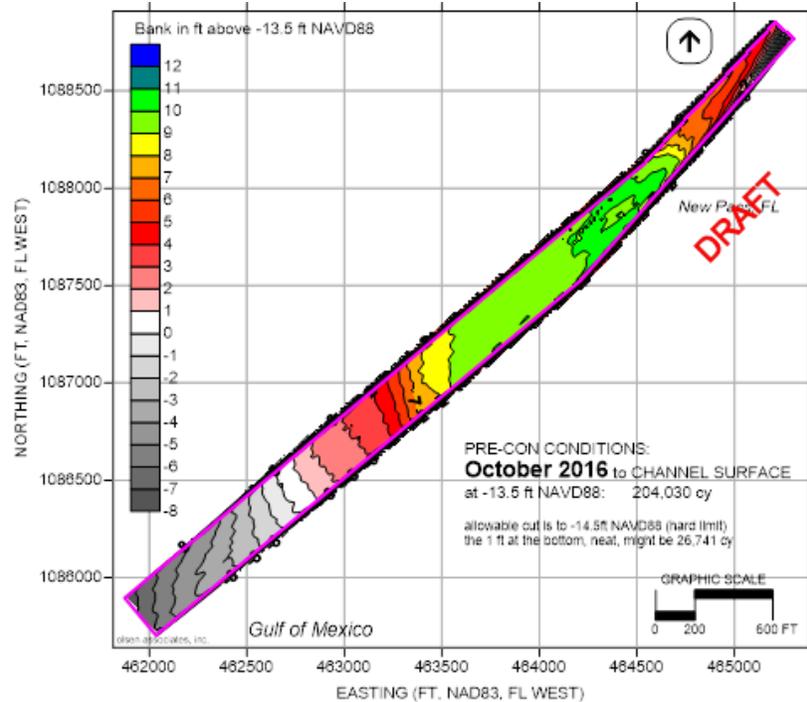
CHANNEL SHOALING RATES

(source: Olsen Associates, April 2021)

June 2016 – 204,000 cy

October 2018 – 195,750 cy

April 2021 – 191,550 cy



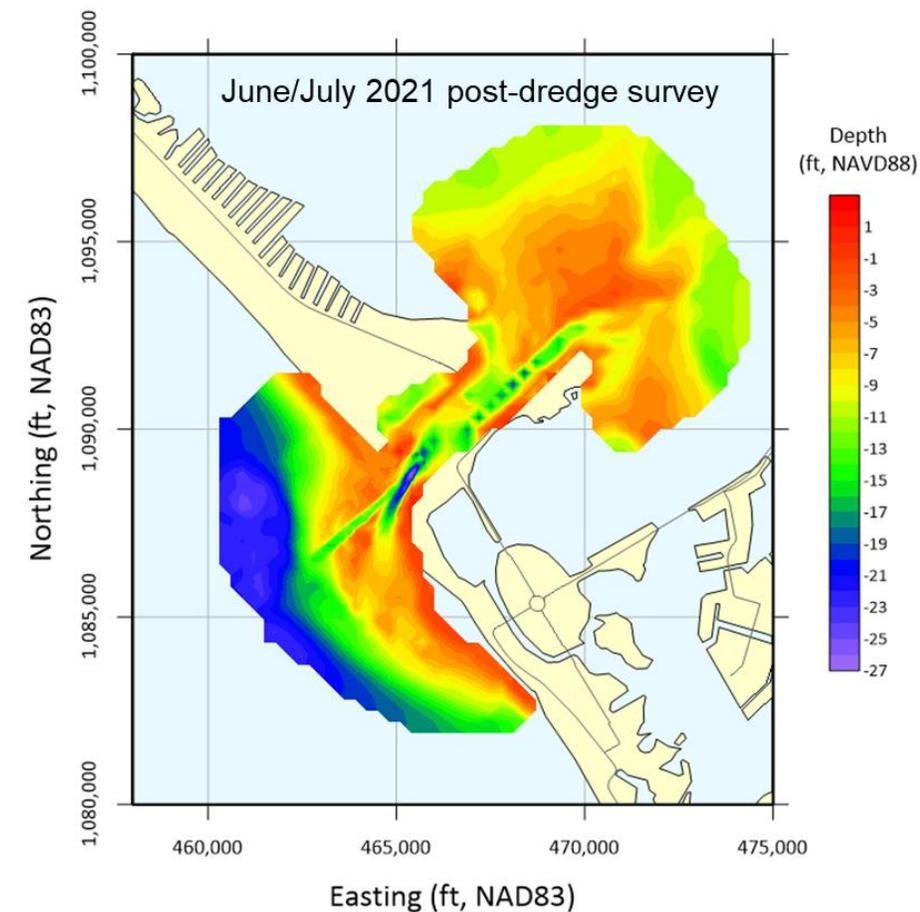
June 2016, pre-dredge survey:
204,000 cy available after 7 years

October 2018, pre-dredge survey:
195,750 cy after 2 years (24 months)

April 2021, pre-dredge survey:
191,550 cy after 2 years (23 months)

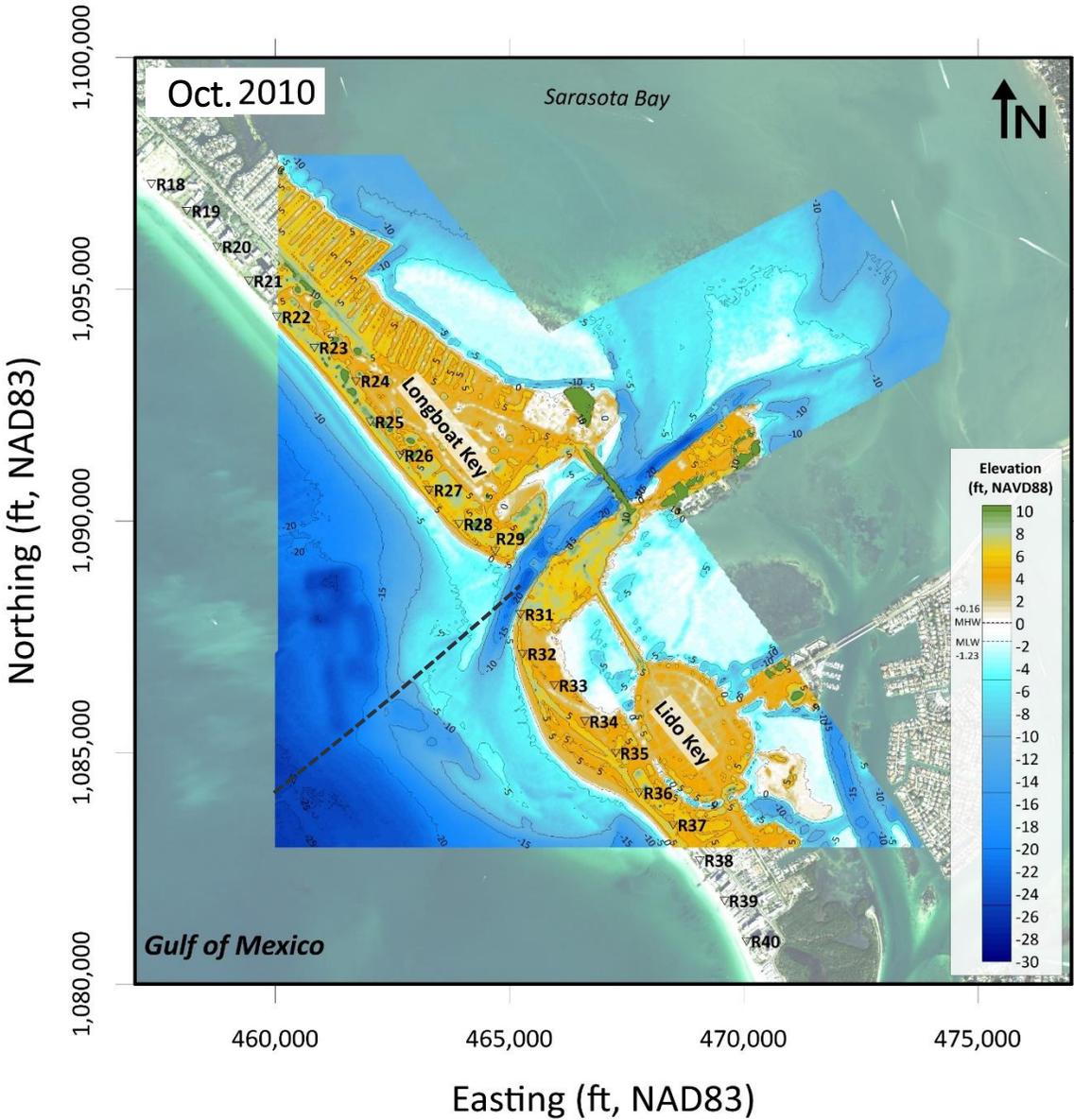
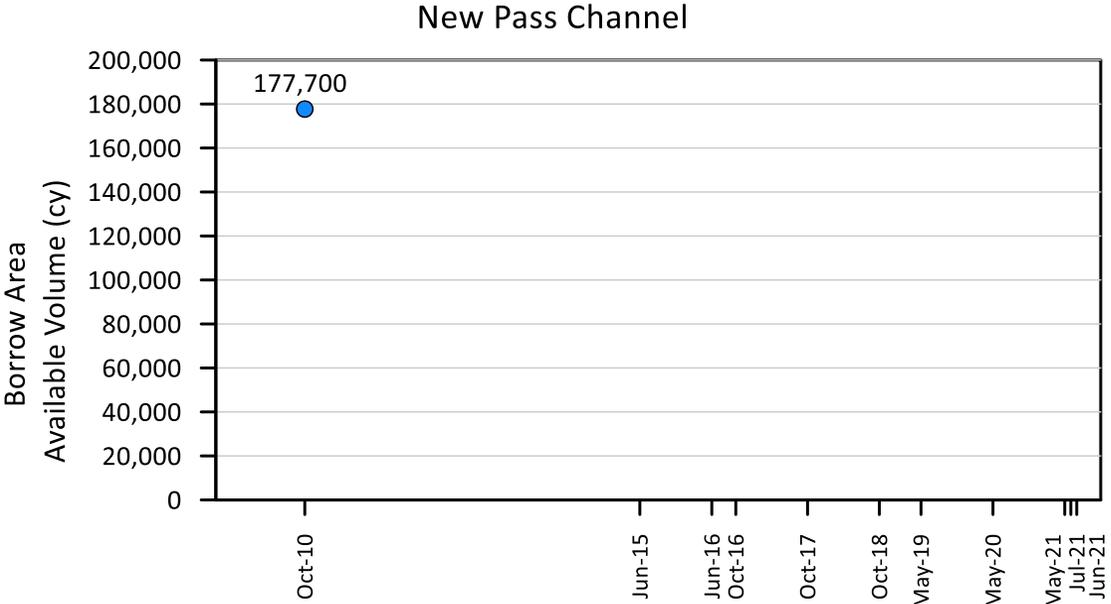
DATA-DRIVEN APPROACH

- Analytical methods utilizing monitoring data
- Sediment transport pathways (morphology)
- Shoreline and volume changes
- Alongshore extent of inlet influence
- Alongshore volume exchange (cell method)
- Evaluation of bypassing rates
- Wave-driven sediment transport potential (net and gross)
- Net transport (inlet infilling rates and changes on adjacent beaches)
- Sediment budget development to assess bypassing targets



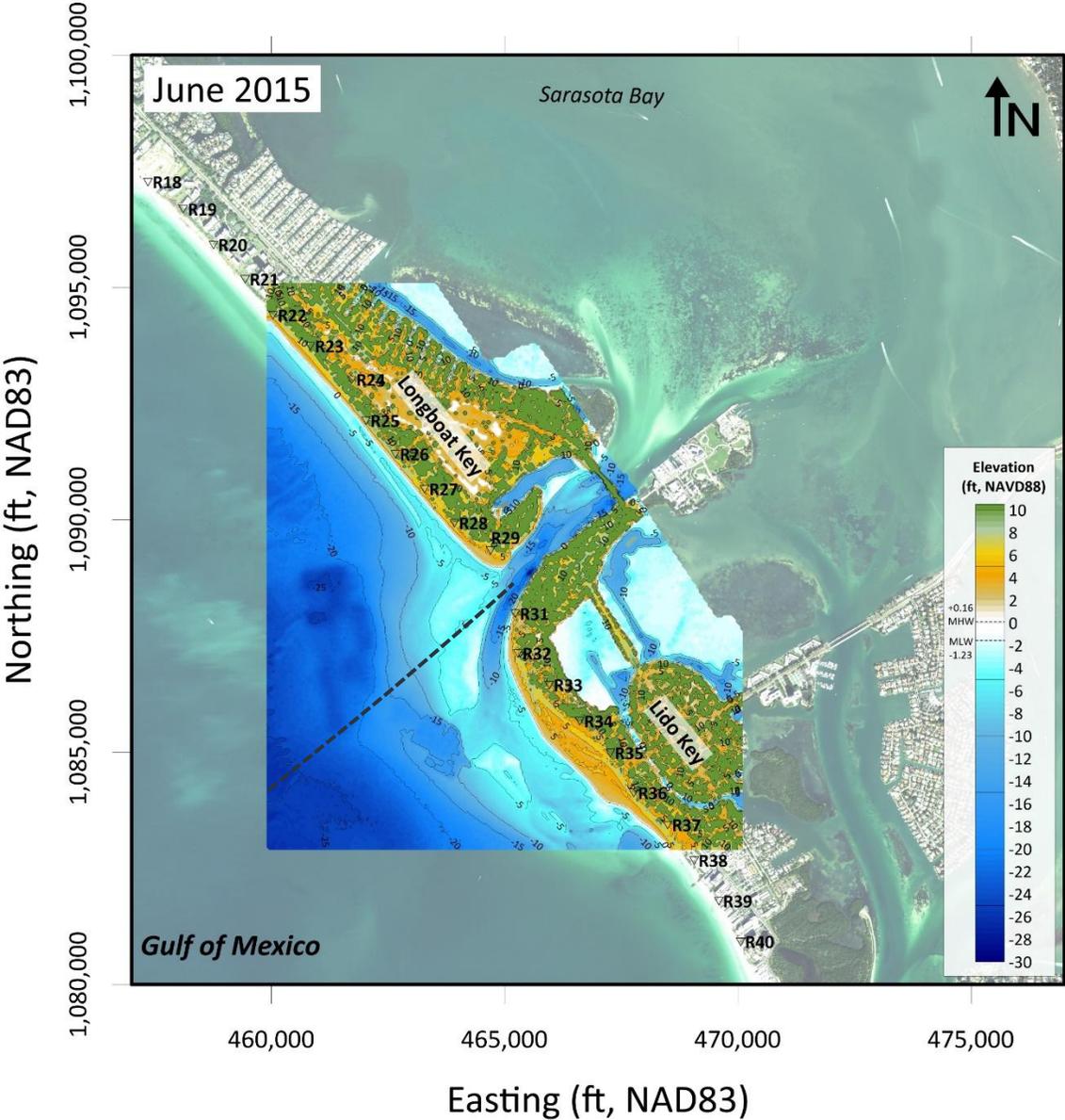
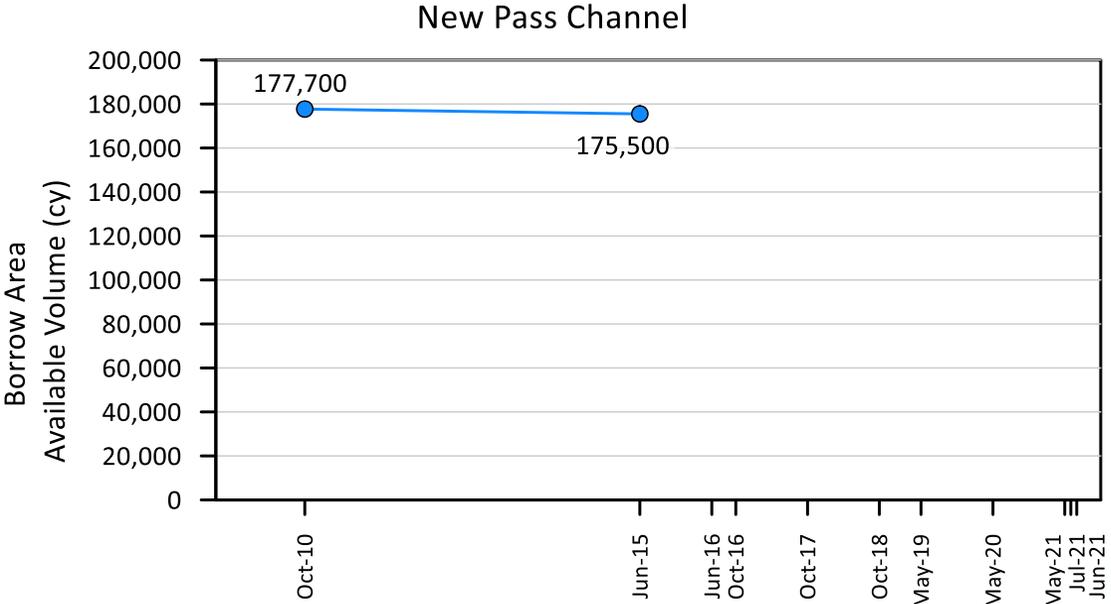
DREDGING AND INFILLING

- October 2010 – monitoring



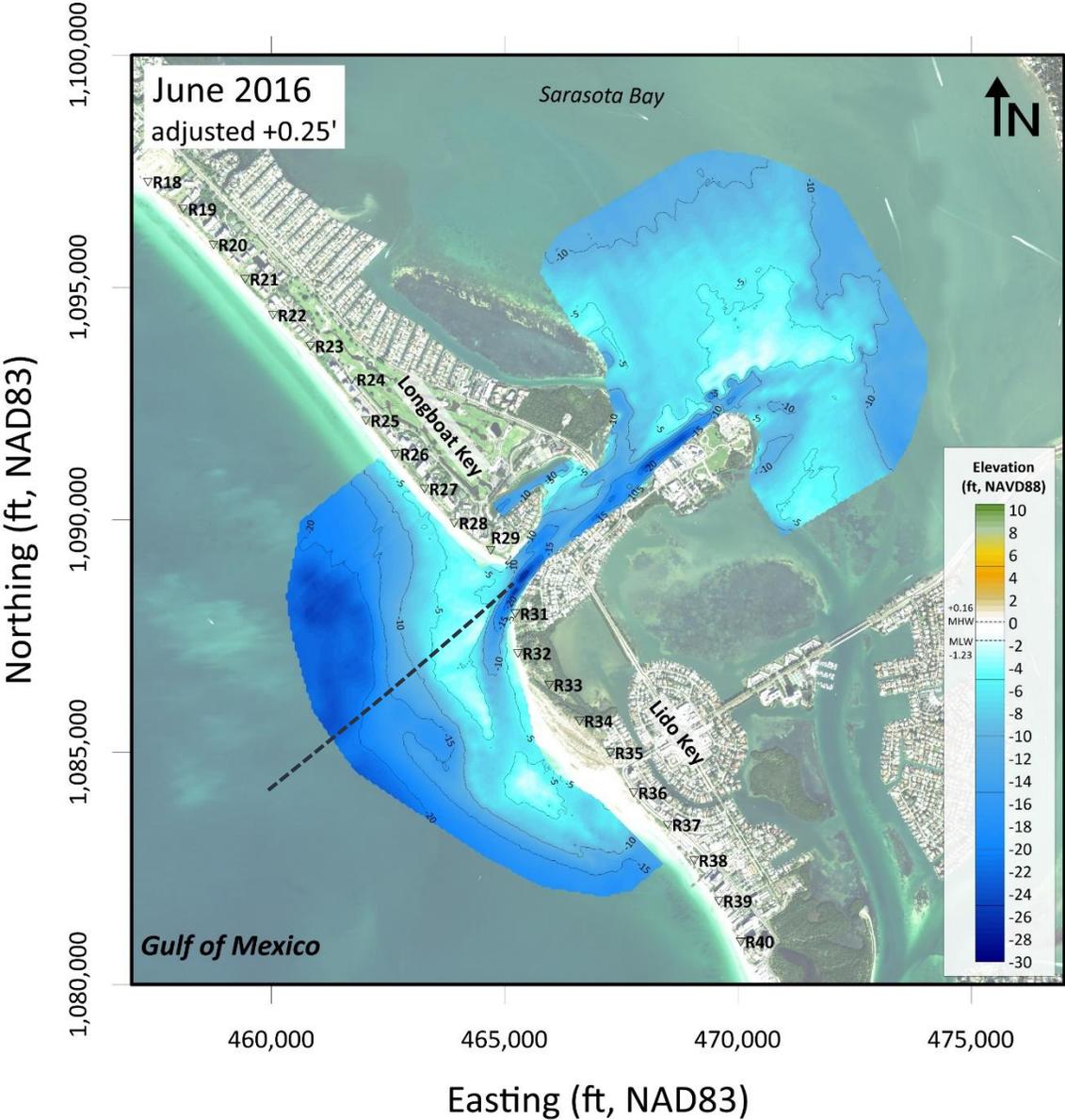
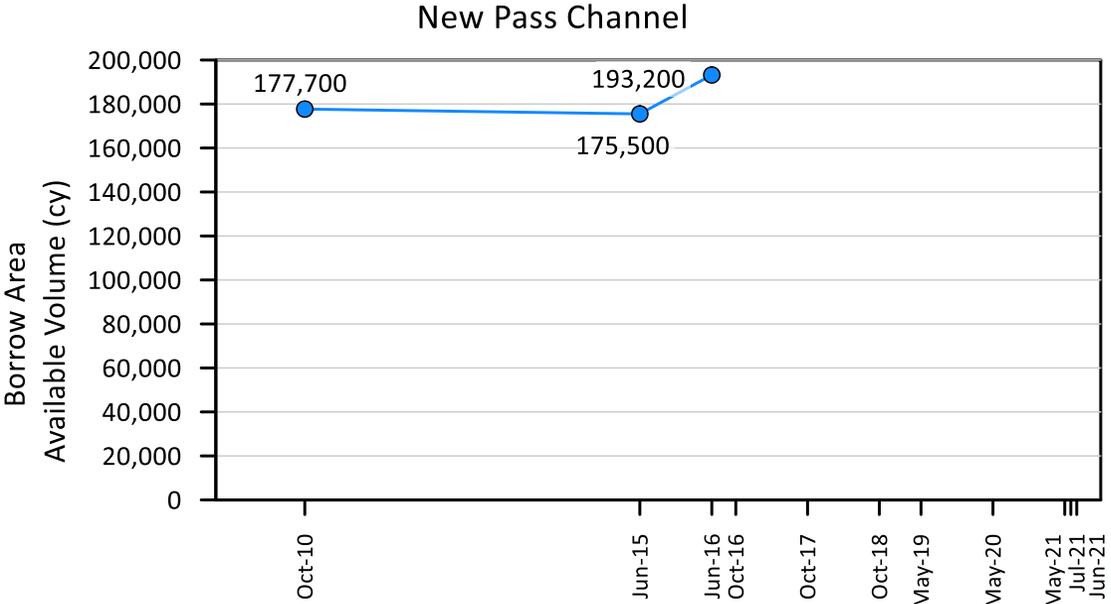
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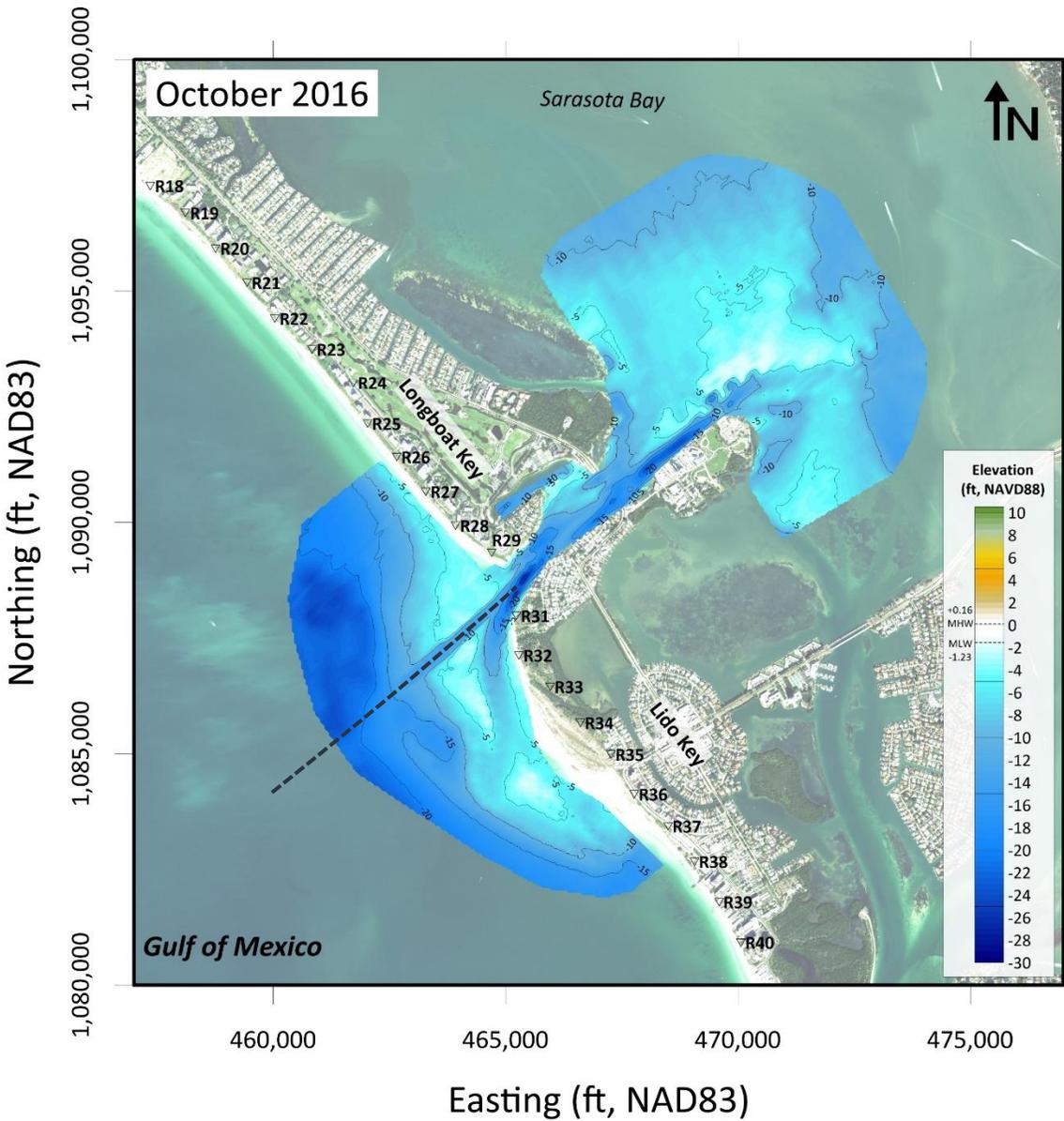
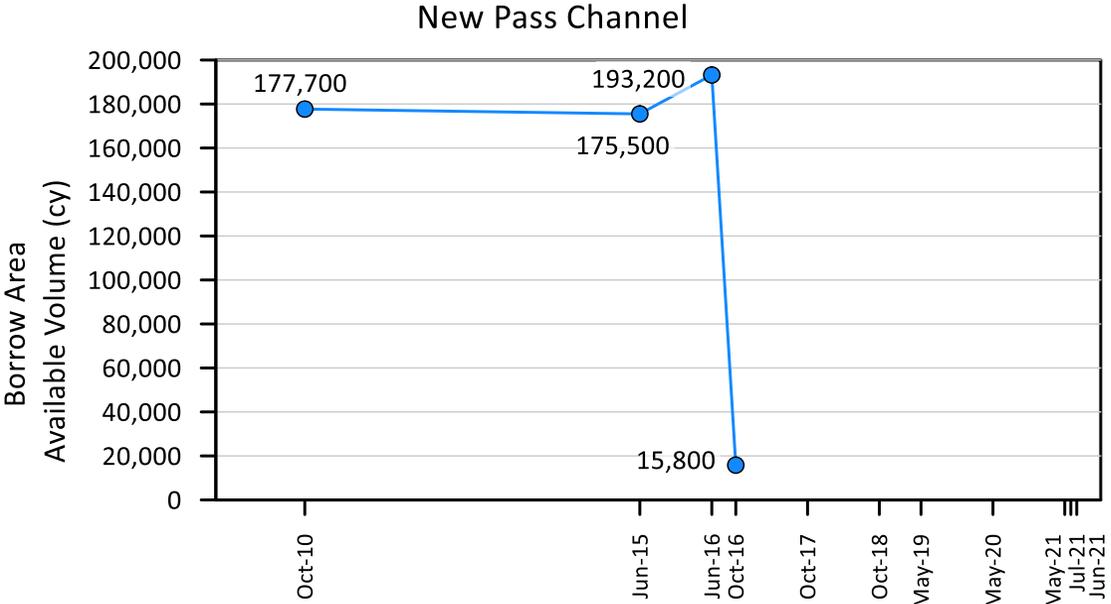
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- October 2010 – monitoring
- June 2015 – monitoring
- June 2016 – before dredging



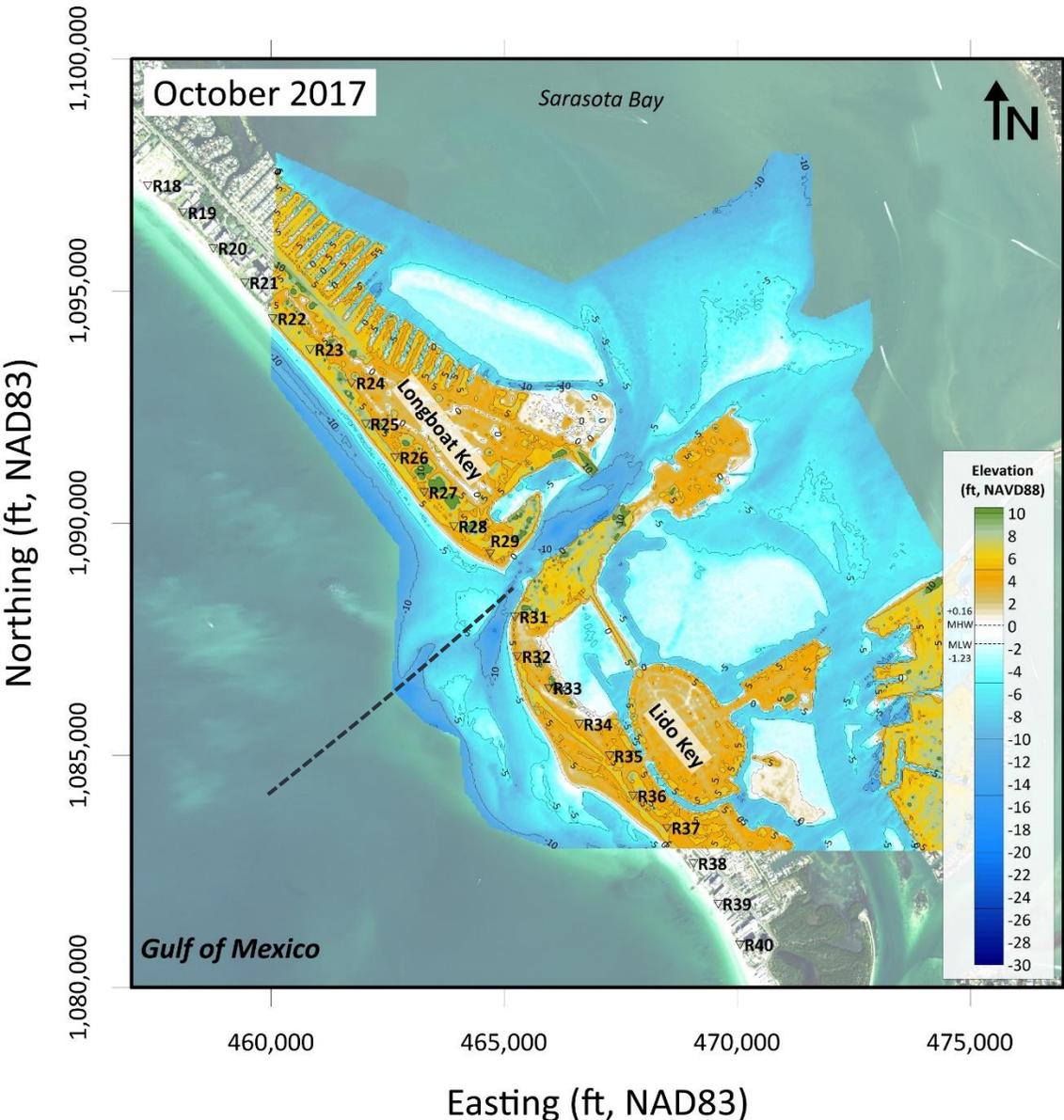
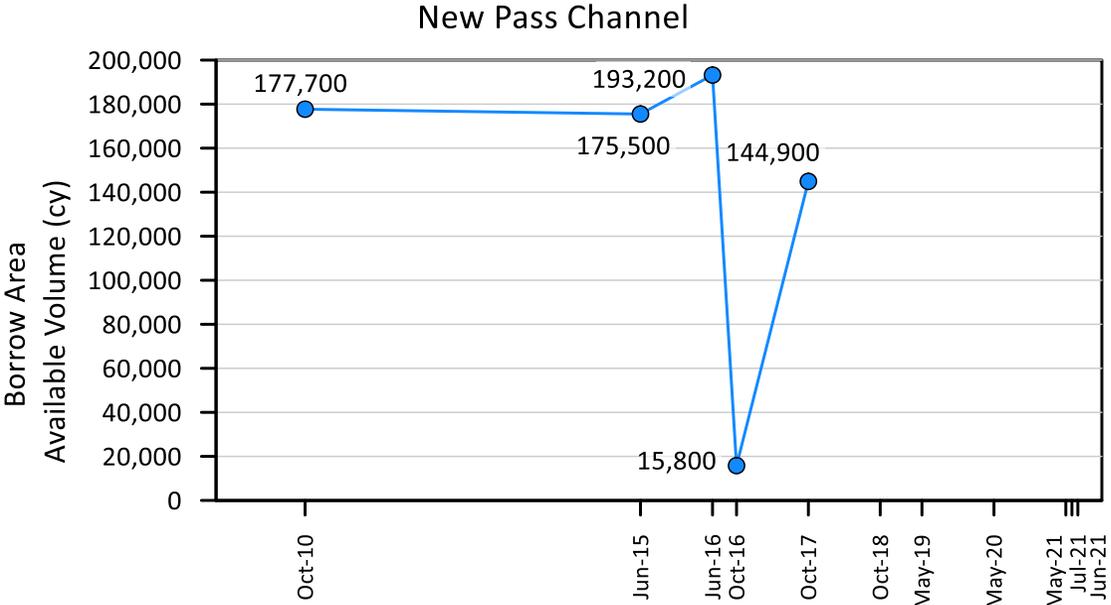
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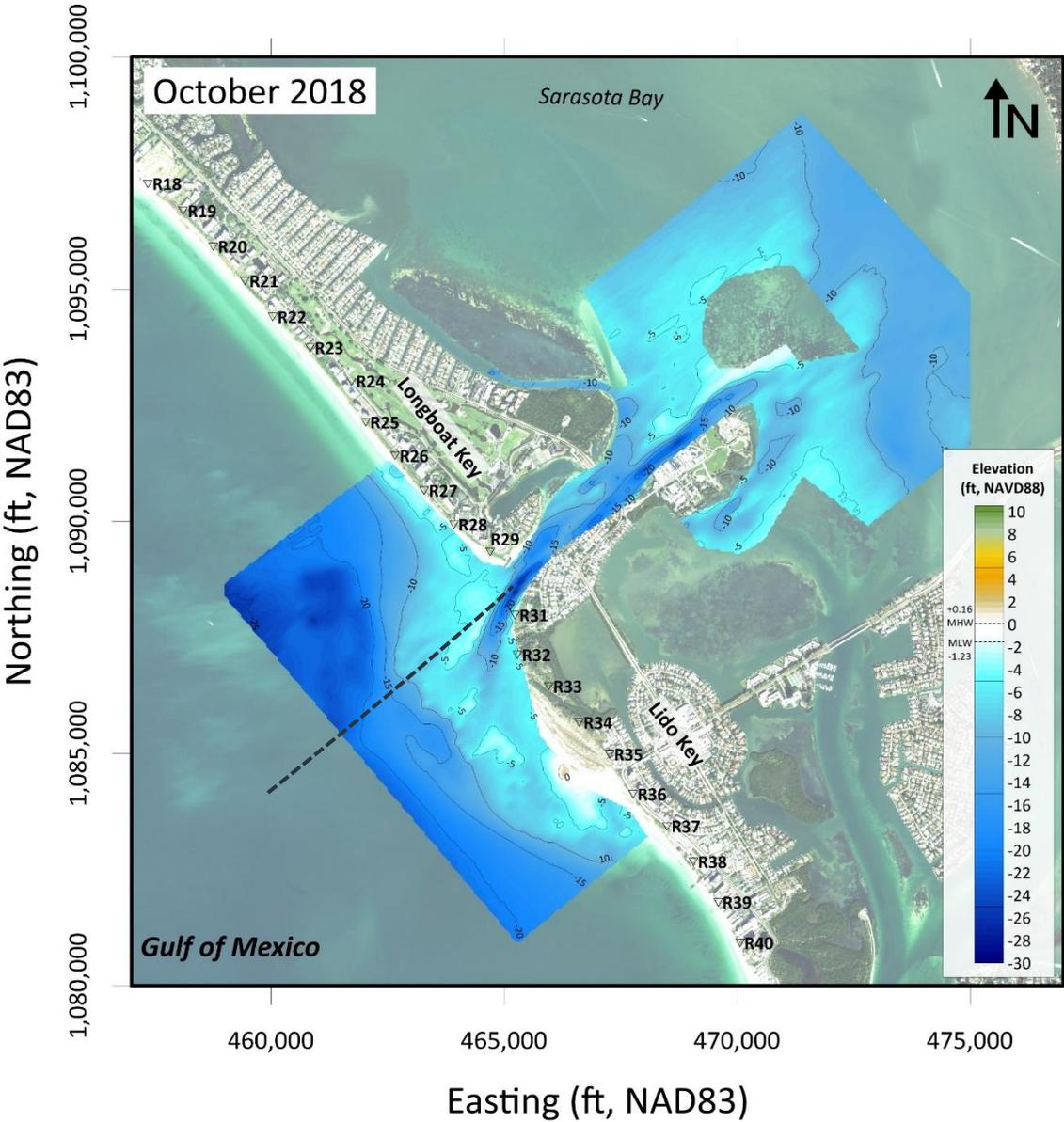
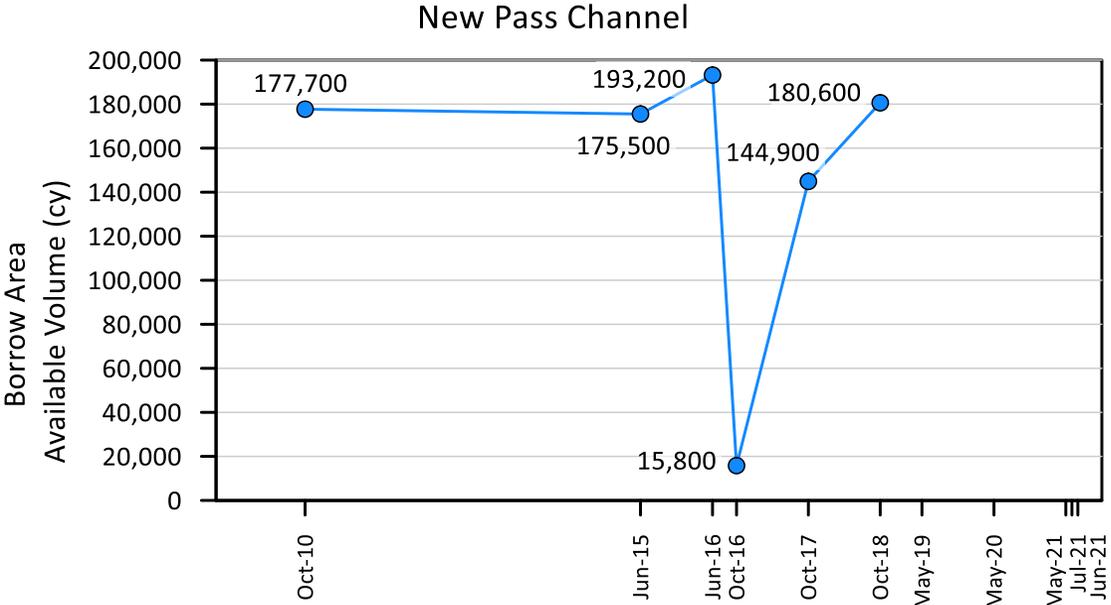
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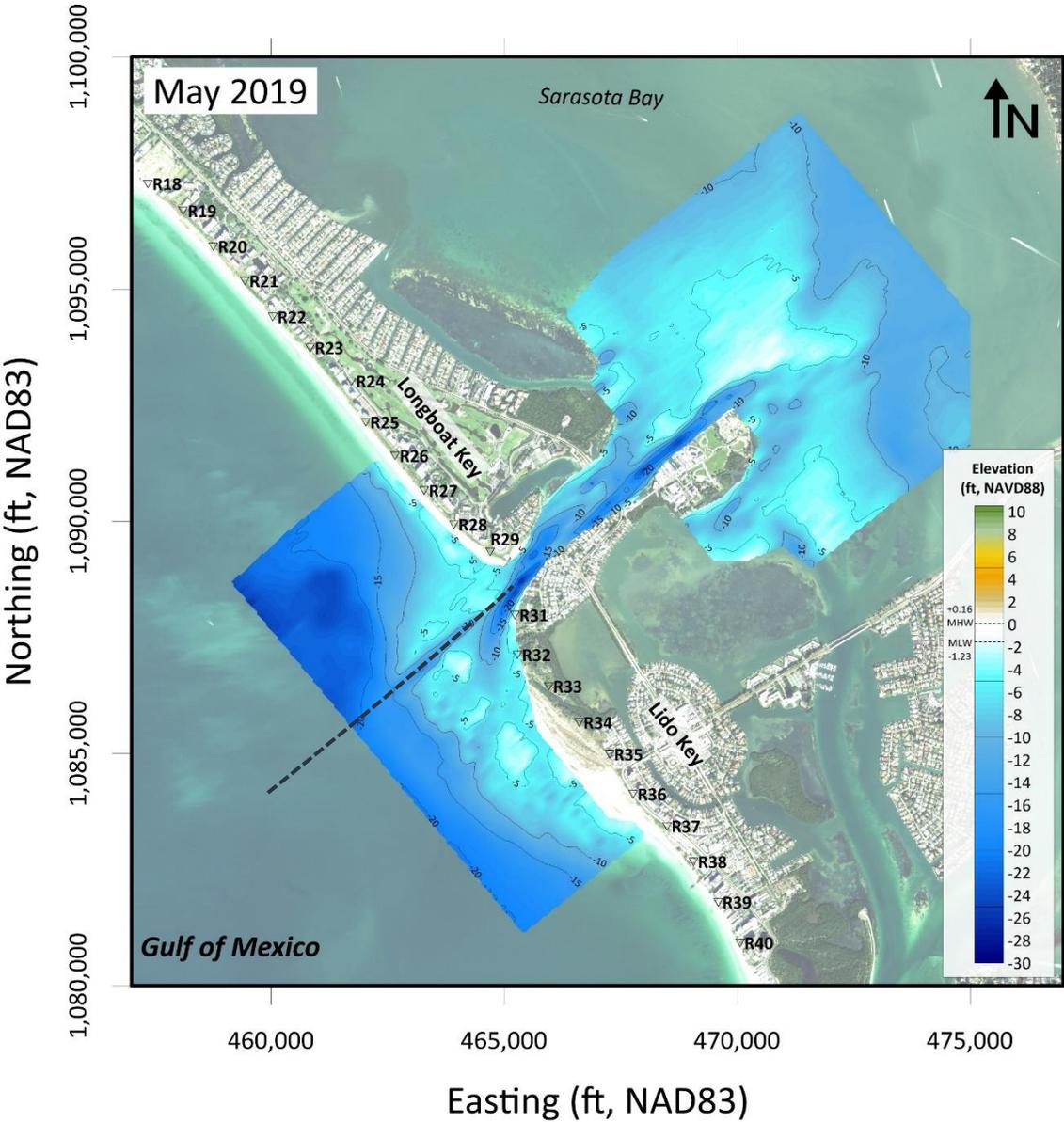
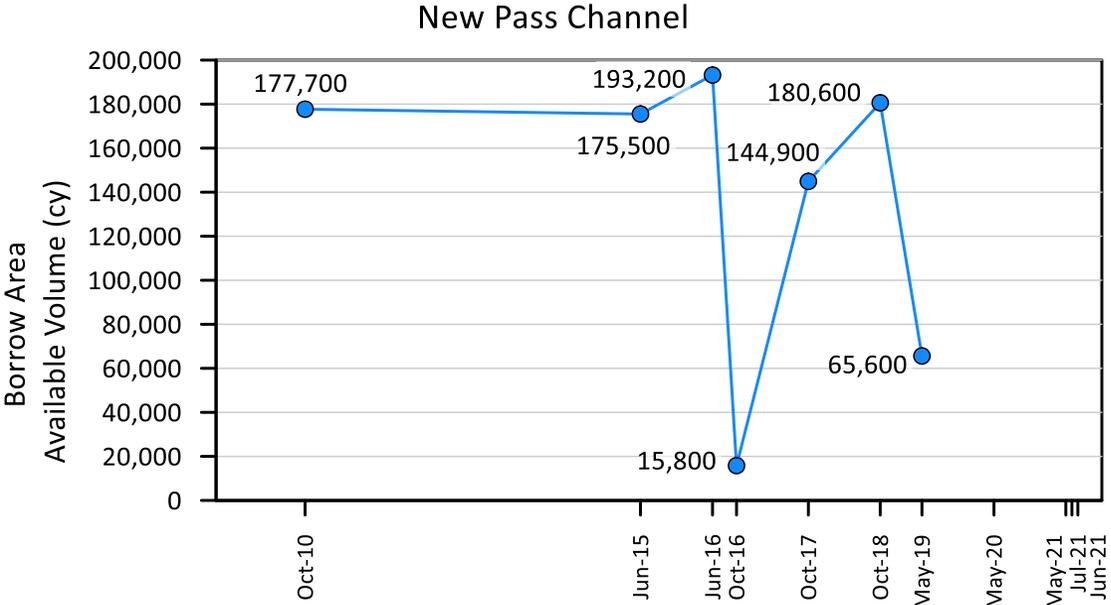
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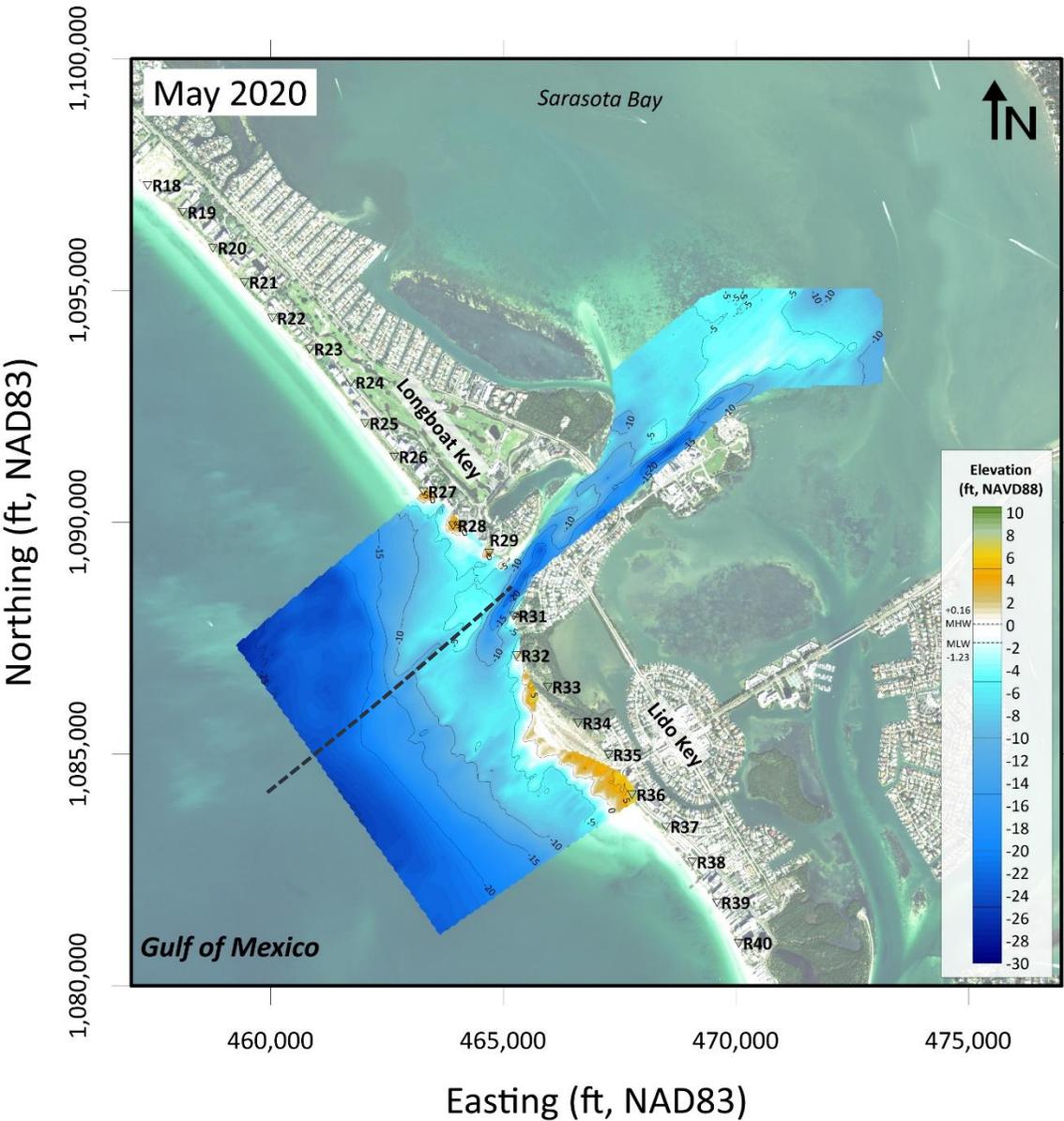
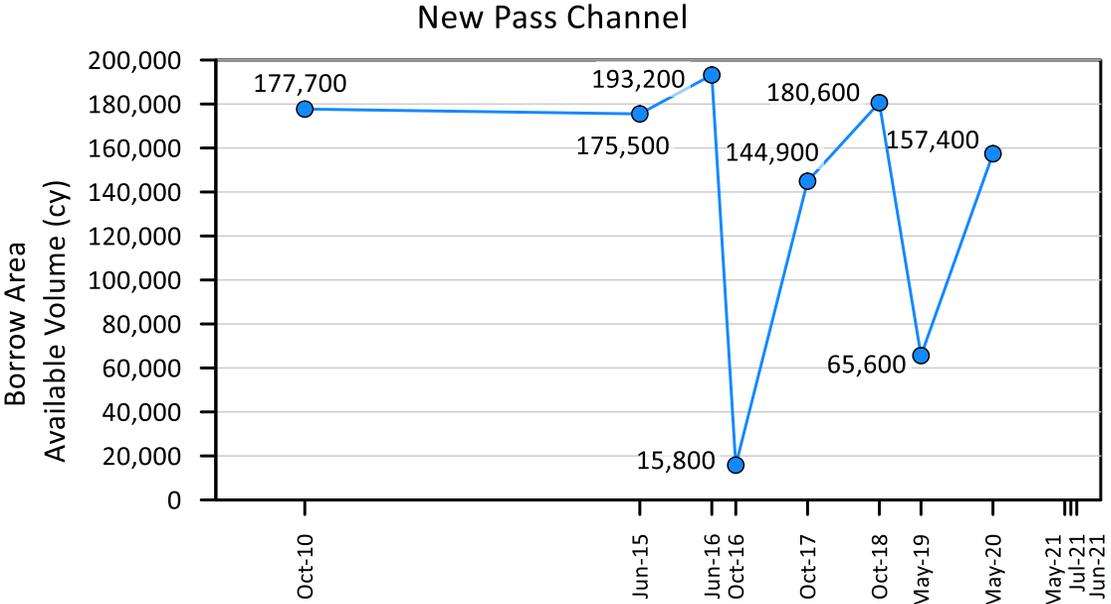
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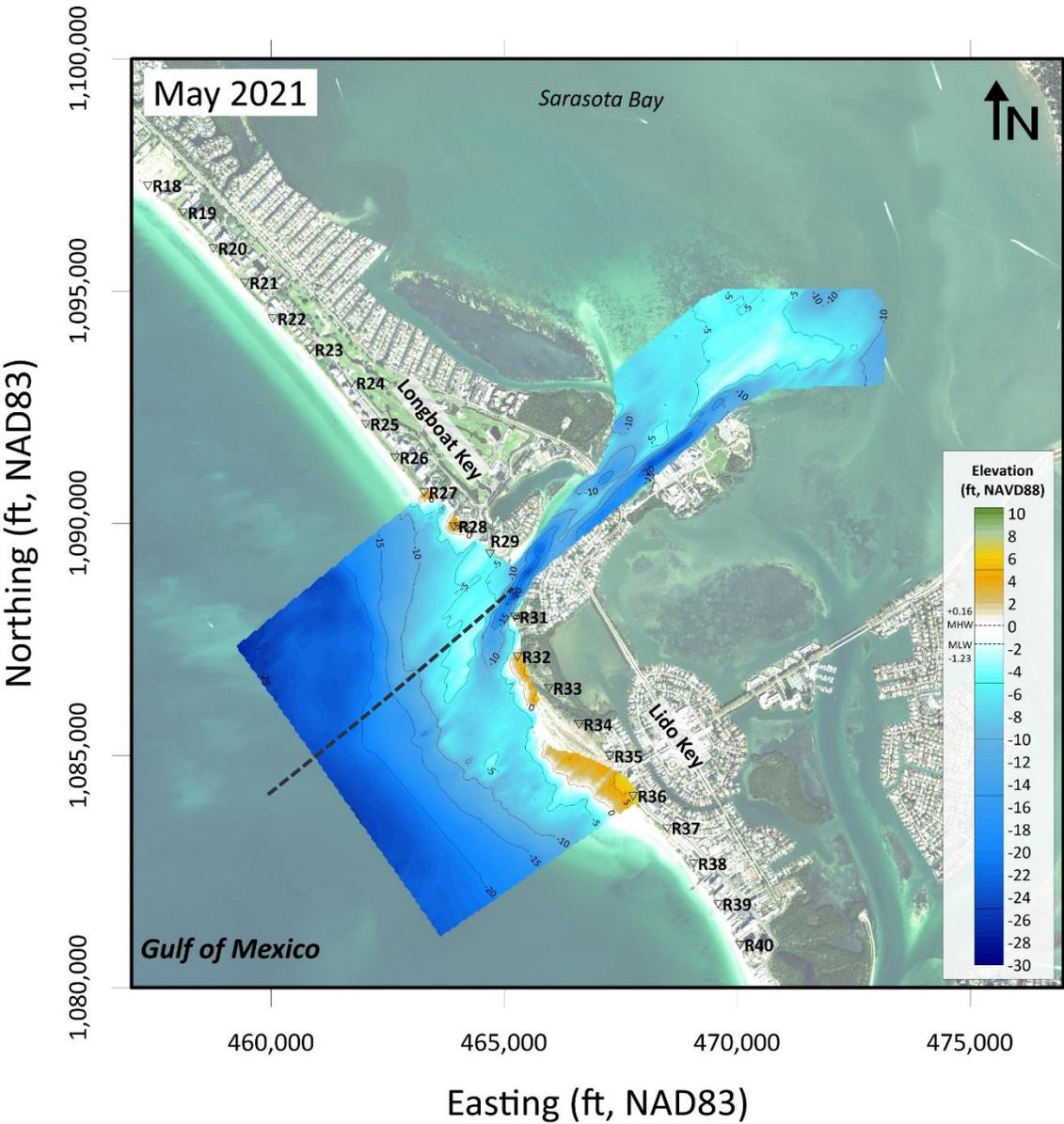
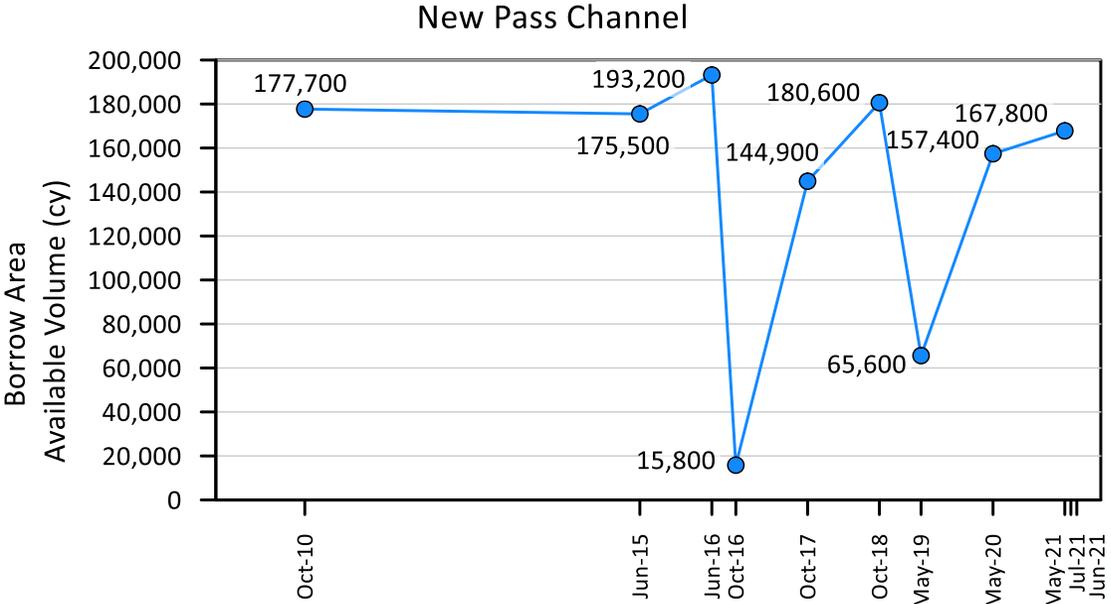
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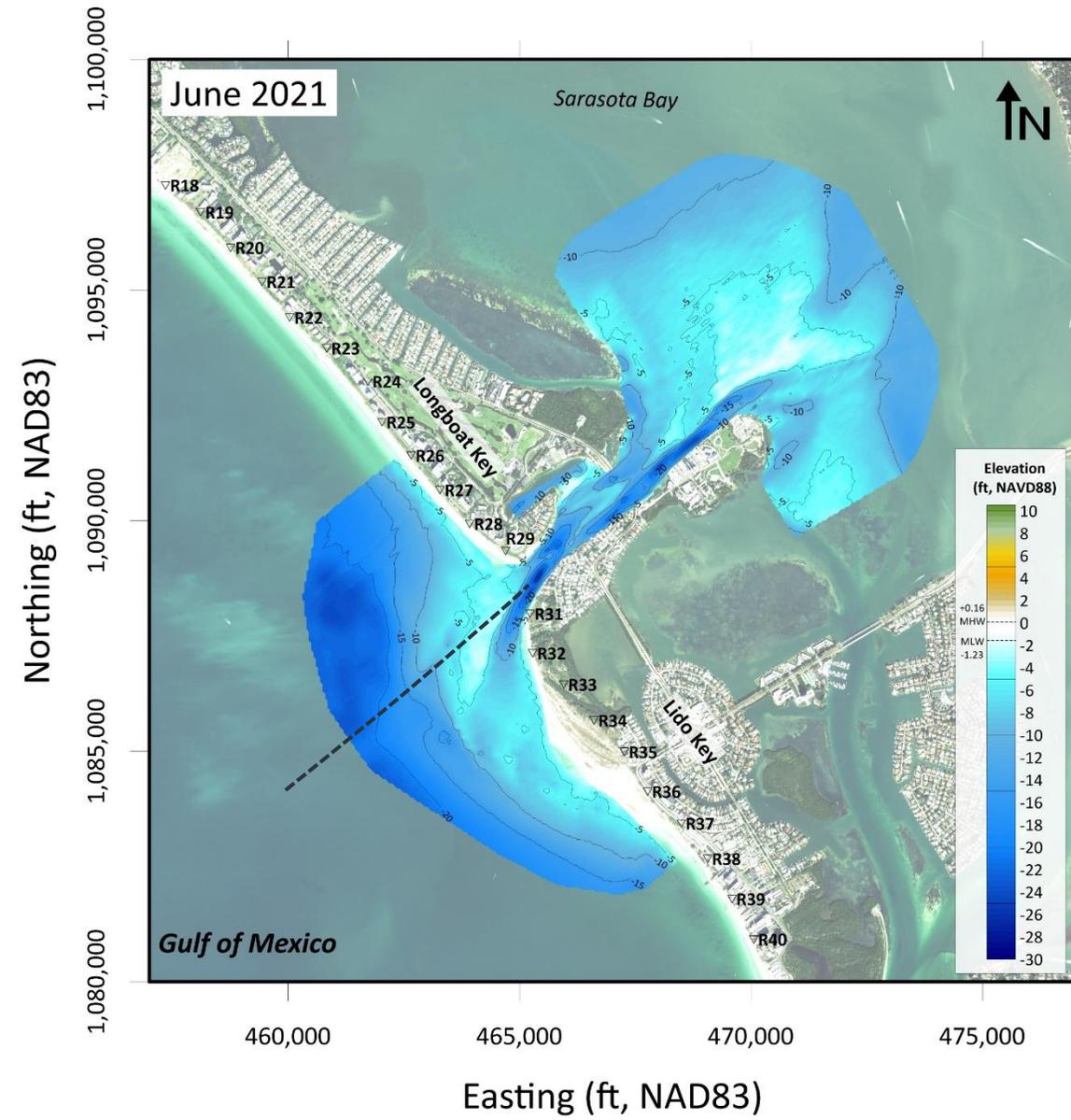
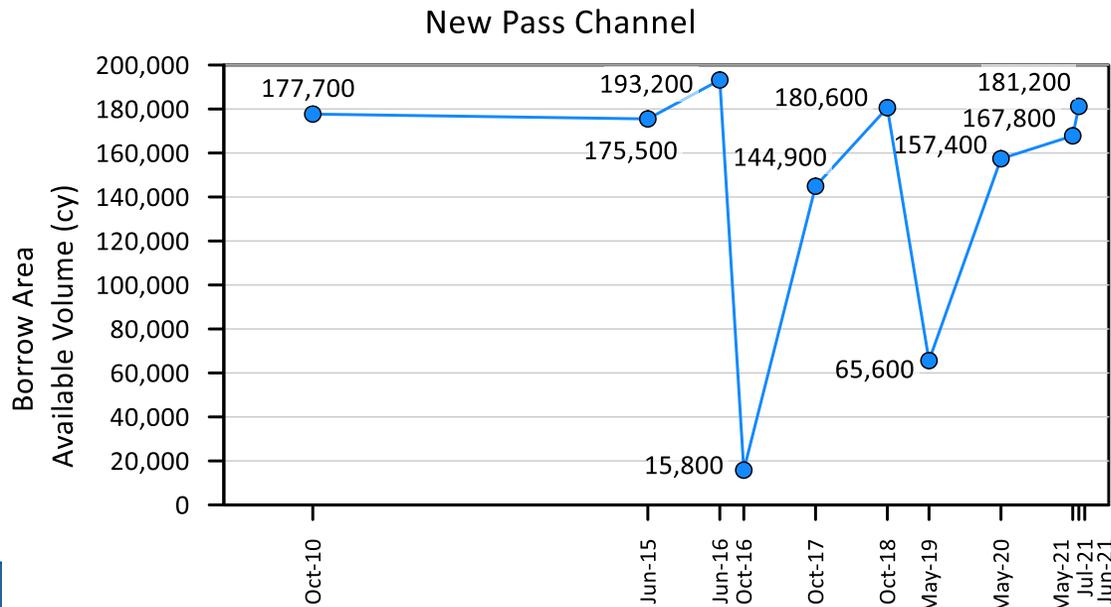
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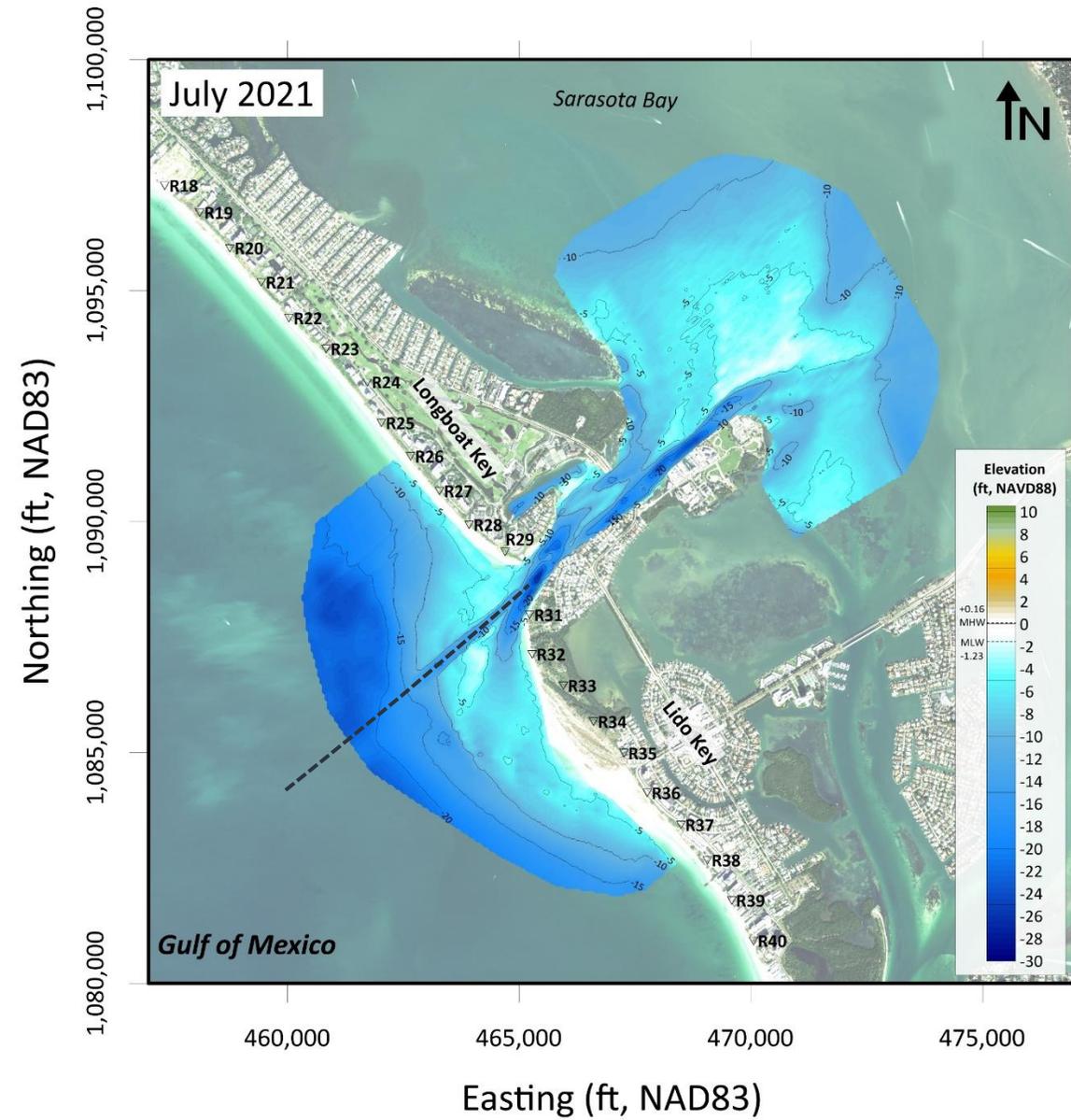
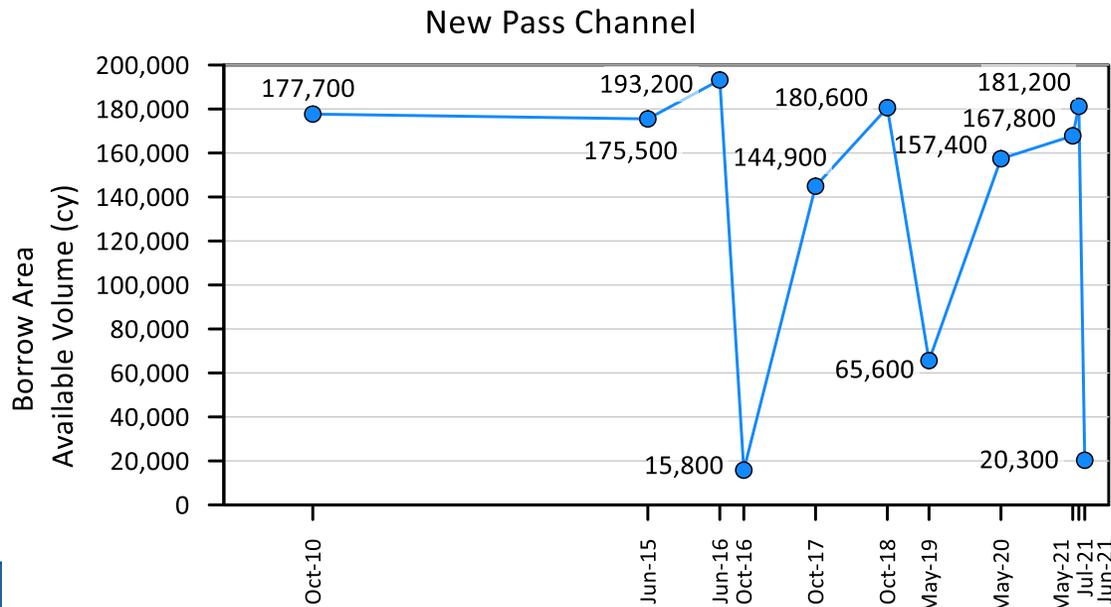
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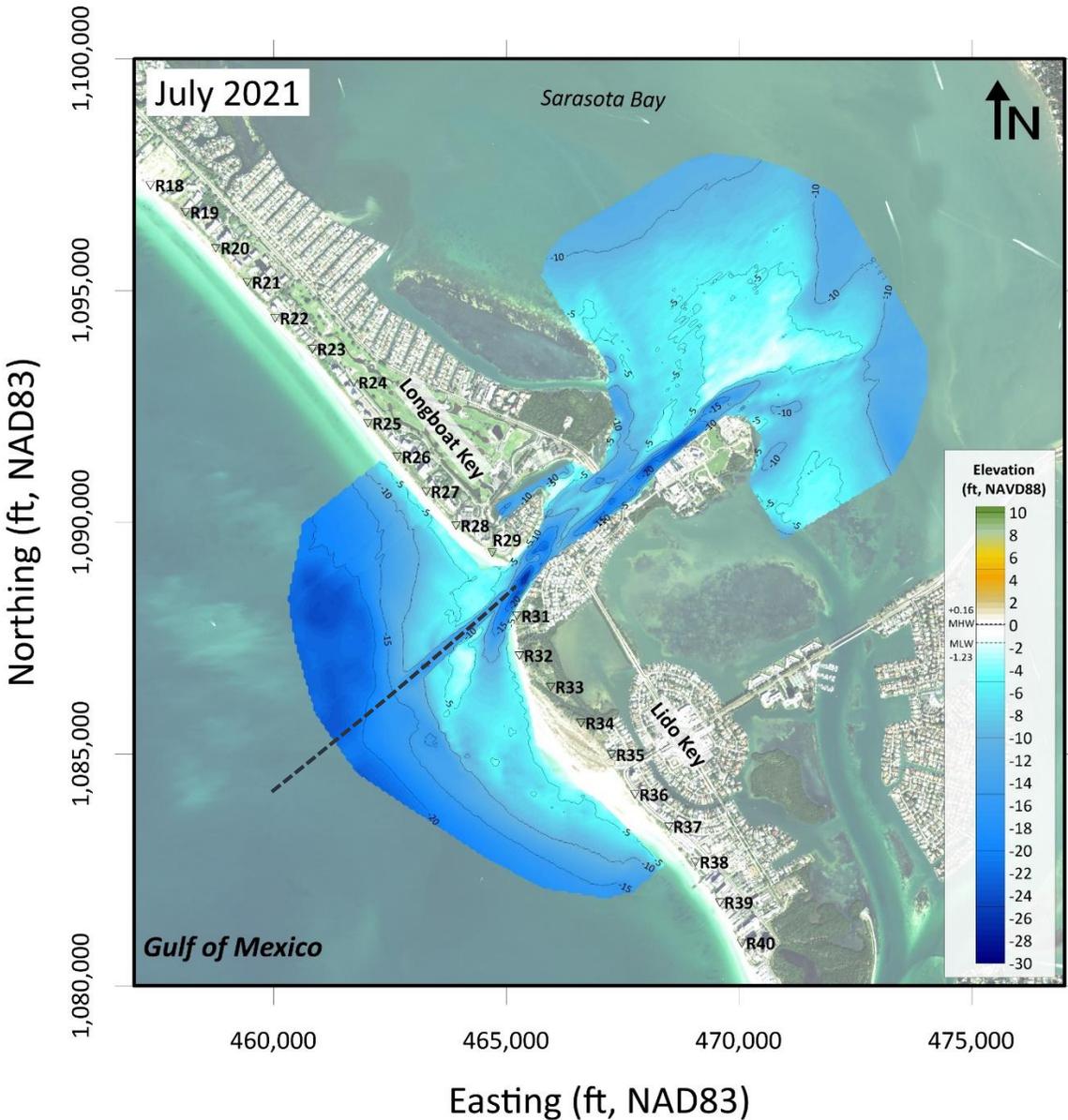
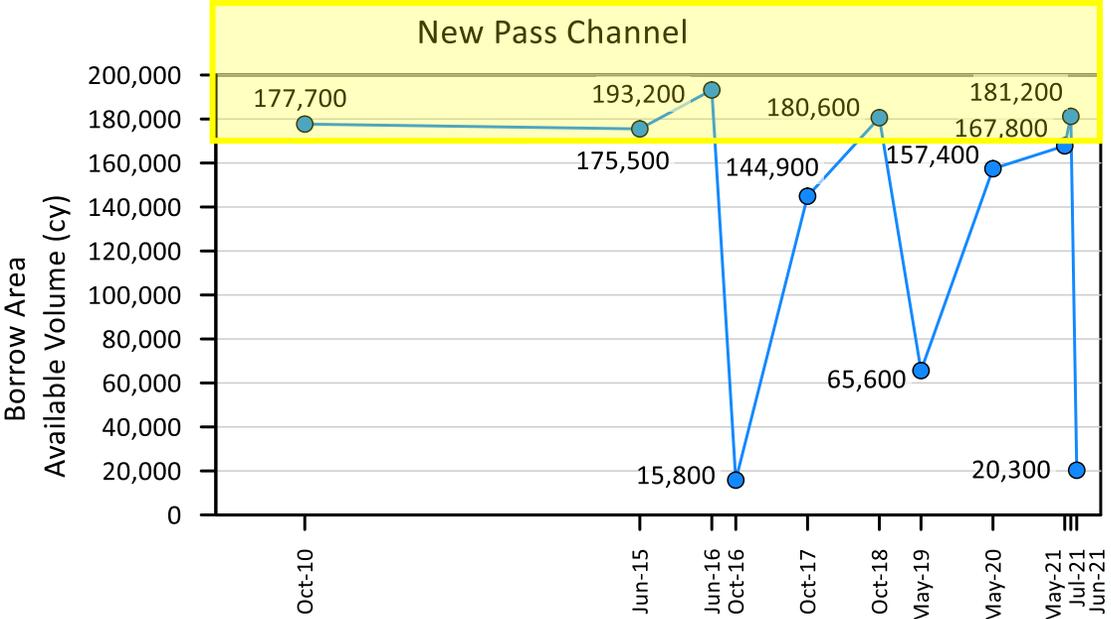
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DREDGING AND INFILLING

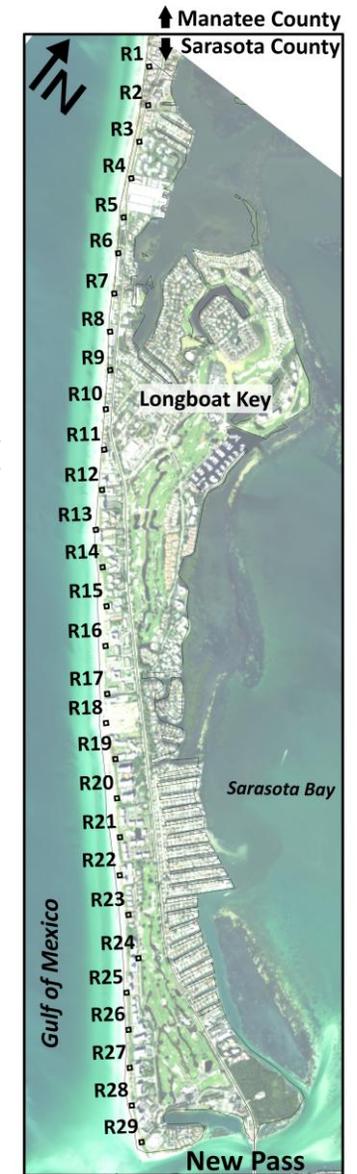
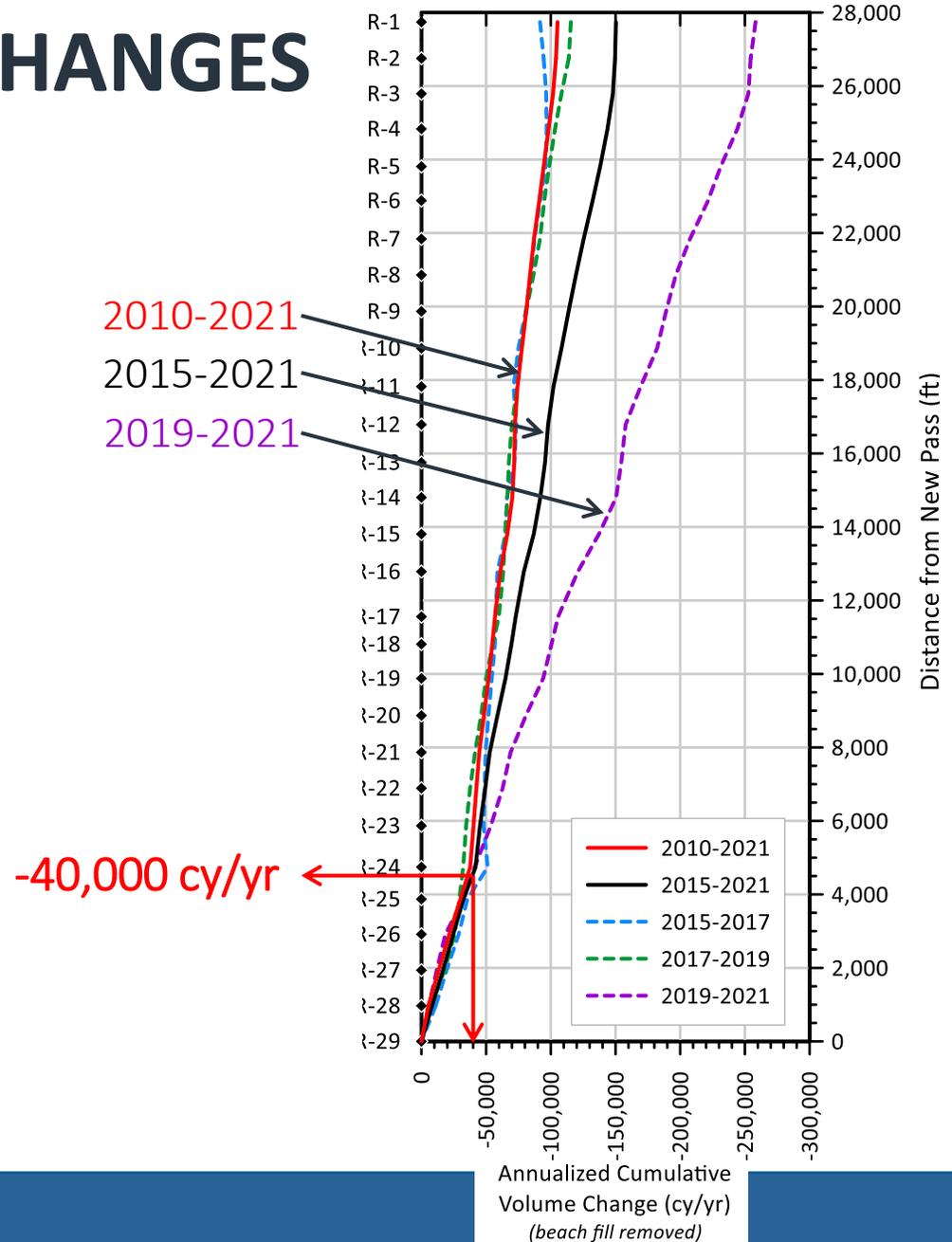
- Clear pattern of infilling after channel dredging
- Most infilling generally occurs in first 2 years
- During this time, channel migrates to south
- Channel template capacity: 180,000 - 200,000 cy
- Authorized channel re-established only by dredging



MEASURED VOLUME CHANGES

Longboat Key (annualized)

- Adjusted for beach fill and includes background erosion
- R-1 to R-3 relatively stable
- Erosion from R-4 to R-23 varies from -3.4 to -9.6 cy/ft/yr
- Erosion rates converge between R-24 and R-29 to about -7.2 cy/ft/yr
- Net volume change rate approximately -40,000 cy/yr within 1-mile of New Pass

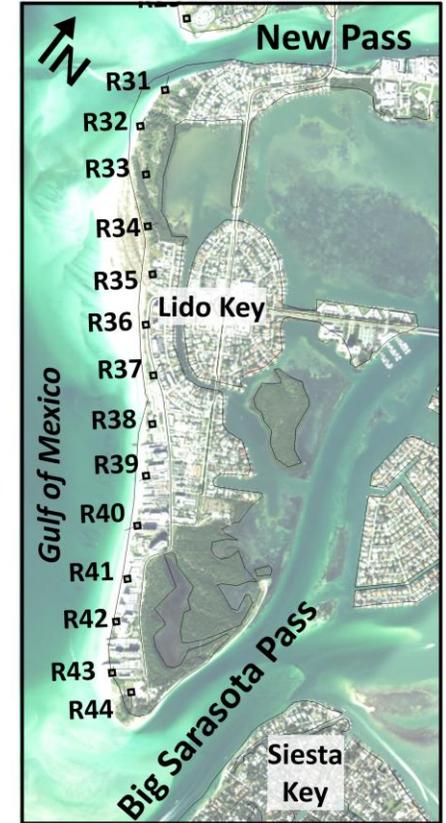
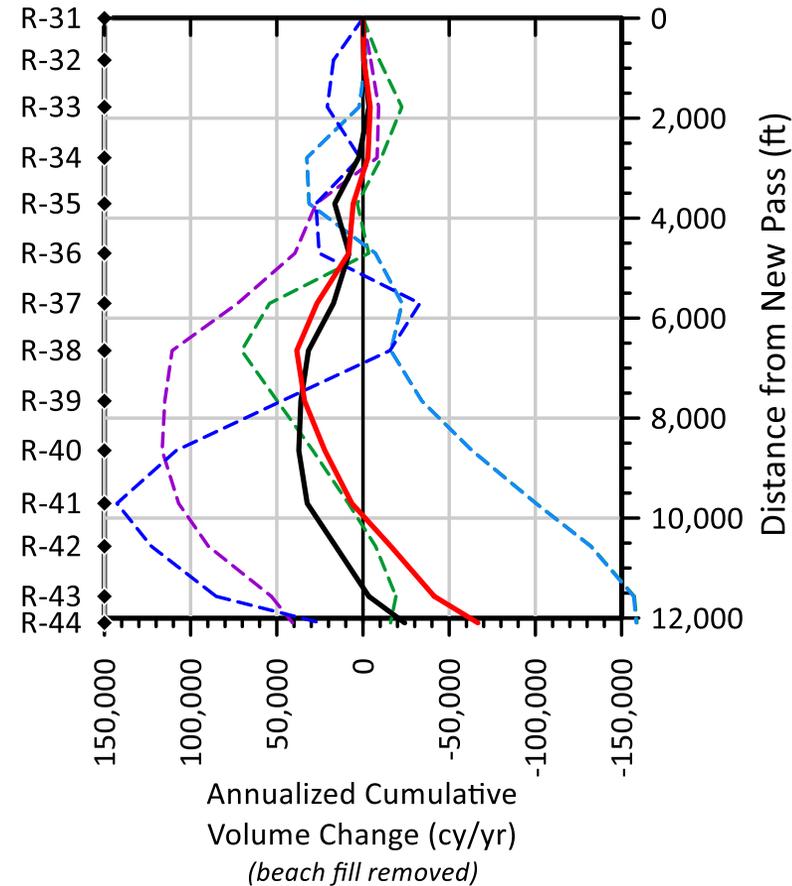
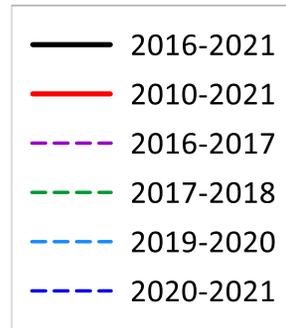


MEASURED VOLUME CHANGES

Lido Key (annualized)

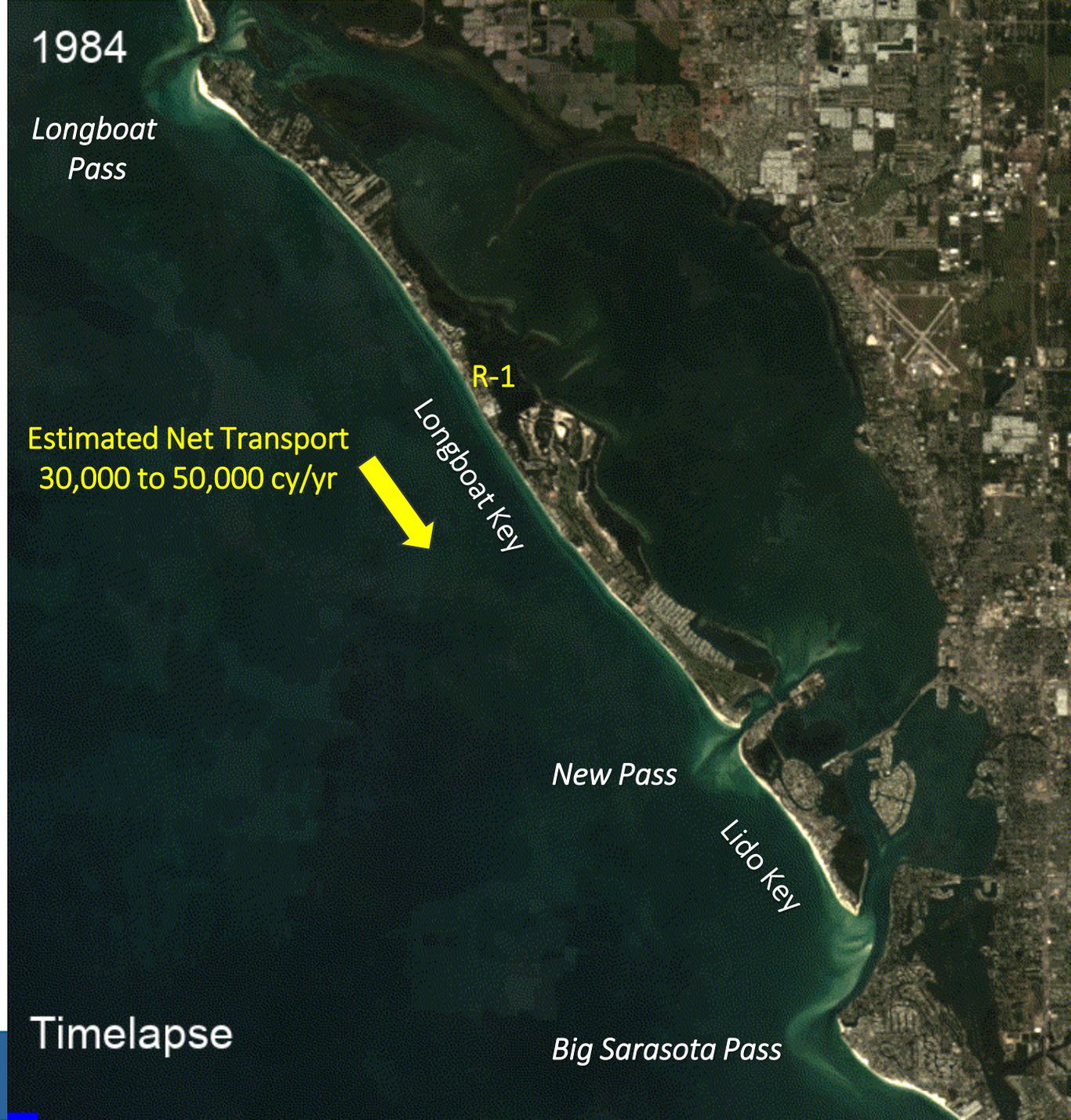
- Adjusted for beach fill and includes background erosion
- R-31 through R-36 stable to accretional
- R-37 to R-40 varies between erosional and accretional
- R-41 to R-44 erosional
- Net volume change rate across the island ranged from -20,000 to -60,000 kcy/yr

→ -40,000 cy/yr (average)



LITTORAL DRIFT RATES

- **Walton & Dean 1976:**
 - 29,200 cy/yr to the south (regional)
- **CP&E 1993:**
 - 12,000 cy/yr passing County line (R-1)
- **ATM 1994:**
 - 23,000 cy/yr passing County line (R-1)
- **Olsen (Foth) 2019:**
 - 53,000 cy/yr passing at County line (R-1)
- **Sediment Transport Potential:**
 - Gross Northerly ~ 70,000 to 100,000 cy/yr
 - Gross Southerly ~ 110,000 to 160,000 cy/yr
 - Net (Southerly) ~ 40,000 to 60,000 cy/yr



Timelapse

Big Sarasota Pass

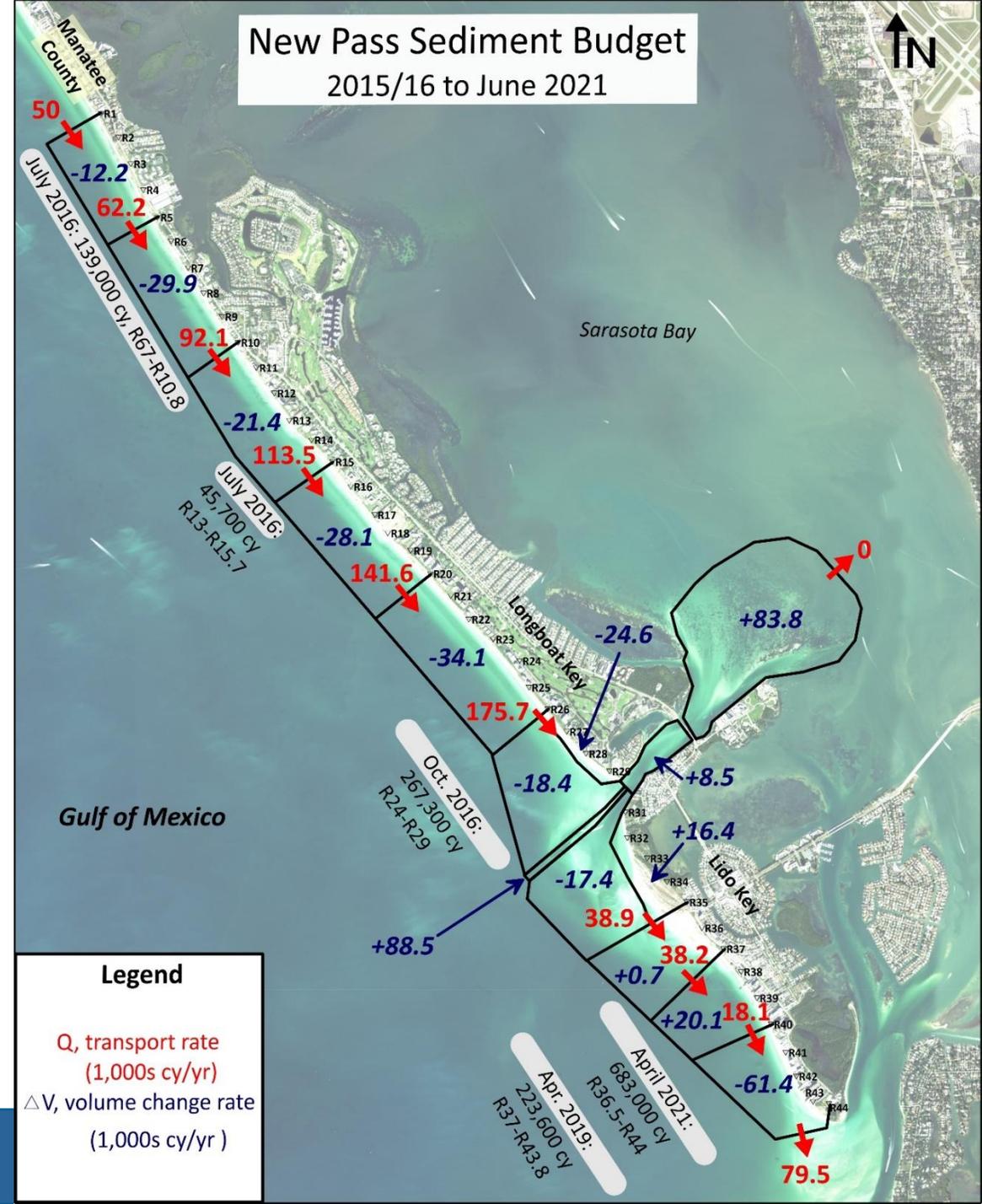
6-YEAR SEDIMENT BUDGET

- 2015/16 to 2021:
 - 50.0 kcy/yr entering northern study boundary
 - 175.7 kcy/yr entering inlet region
 - Flood shoal accreting; ebb shoal deflating
 - 38.9 k/cy exiting inlet system
 - 79.5 kcy/yr exiting southern study boundary

Sediment Budget Findings:

- Outer Channel = +88.5 kcy/yr
- Inner Channel = +8.5 kcy/yr
- Flood Shoal = +83.8 kcy/yr
- Longboat Key (R24-R29) = -54.3 kcy/yr
- Lido Key (R35-R44) = -40.6 kcy/yr

+180.8 kcy/yr
Influenced by
Hurricane Irma
and LBK beach
nourishment

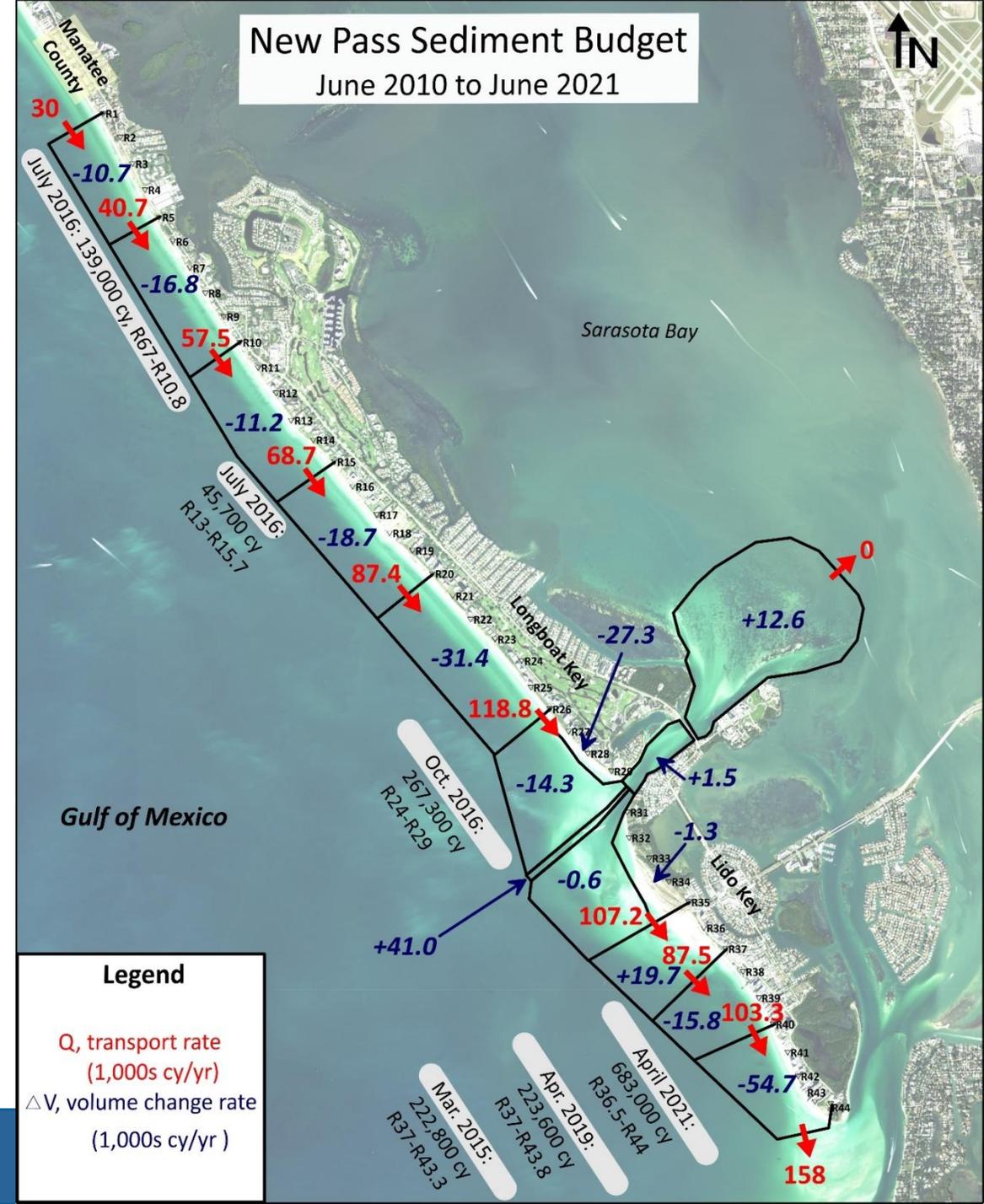


11-YEAR SEDIMENT BUDGET

- 2010 to 2021:
 - 30 kcy/yr entering northern study boundary
 - 118.8 kcy/yr entering inlet region
 - Flood shoal accreting; ebb shoal deflating
 - 107.2 k/cy exiting inlet system
 - 158 kcy/yr exiting southern study boundary

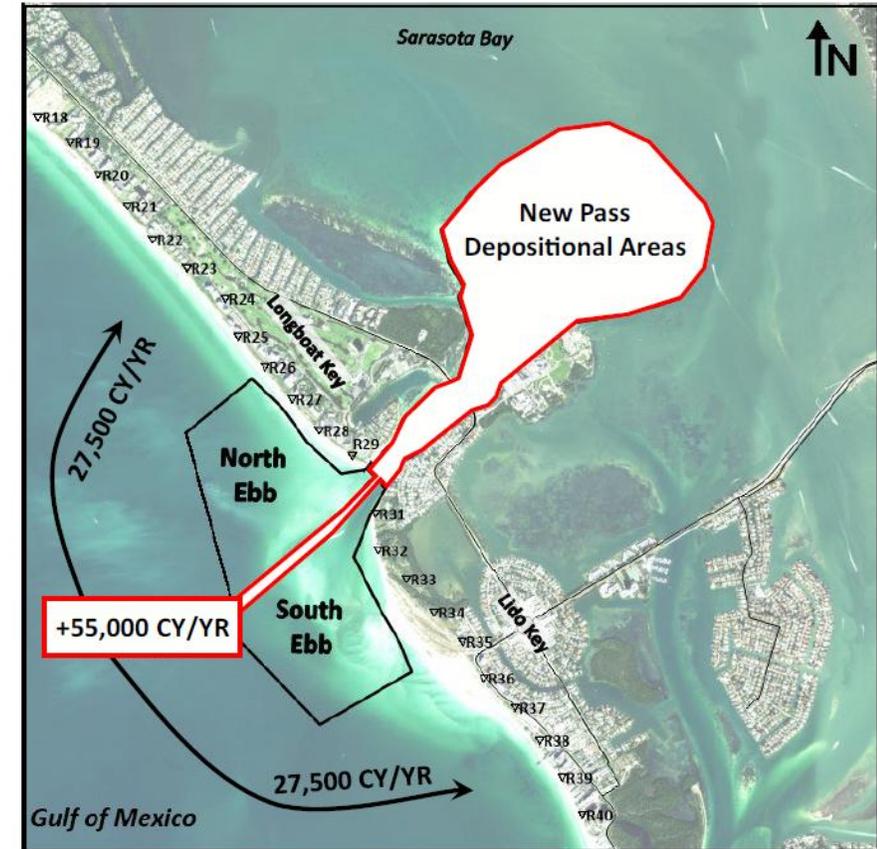
Sediment Budget Findings:

- Outer Channel = +41.0 kcy/yr
 - Inner Channel = +1.5 kcy/yr
 - Flood Shoal = +12.6 kcy/yr
 - Longboat Key (R24-R29) = -52.1 kcy/yr
 - Lido Key (R35-R44) = -50.8 kcy/yr
- } **+55.1 kcy/yr**
Aligns with
historic dredge
maintenance



OVERALL STUDY FINDINGS

- Post-dredging, northern ebb shoal fills channel and starts migration
- Channel infills to about 180,000 cy over 2 years (90,000 cy/yr)
- Natural bypassing resumes across channel to shoal after infilling
- Southern ebb shoal bypasses sand to northern Lido Key
- Patterns suggest littoral transport of sand to New Pass is:
 - Infilling channel and moving through ebb shoals
 - Going back into inlet from Lido Key
 - Getting stalled at northern Lido Key
 - Transported south along Lido Key
- Sand may be accreting in flood shoal at higher rates than expected
- Transport varies based on year, storm activity, and sediment supply from the two islands
- Data suggests that inlet impact is likely shared equally between adjacent beaches



Proposed bypassing objective based on 11-year (2010-2021) sediment budget.

SUMMARY & RECOMMENDATIONS

- Using historic and present beach survey data in developing the 11-year sediment budget, the impact of the inlet on adjacent beaches is estimated to be approximately 55,000 cy/yr, which aligns with the historical maintenance dredging since the 1990s.
- The proposed long-term average annual bypassing objective of 27,500 cy/yr equally to each is based on the updated 2010-2021 sediment budget, aligns with past navigation dredging maintenance rates, and supported by the overall study findings.
- Dredging the New Pass navigation channel every 3-4 years, and/or when the channel approaches infilling capacity, would work towards balancing the sediment budget in line with past practices and updated data analyses.
- Continued monitoring and further assessment of regional sediment dynamics may better inform the dual inlet effect on the adjacent beaches.

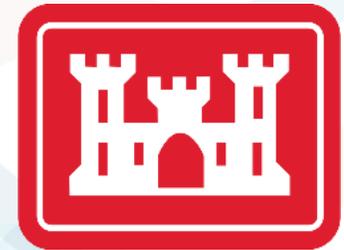
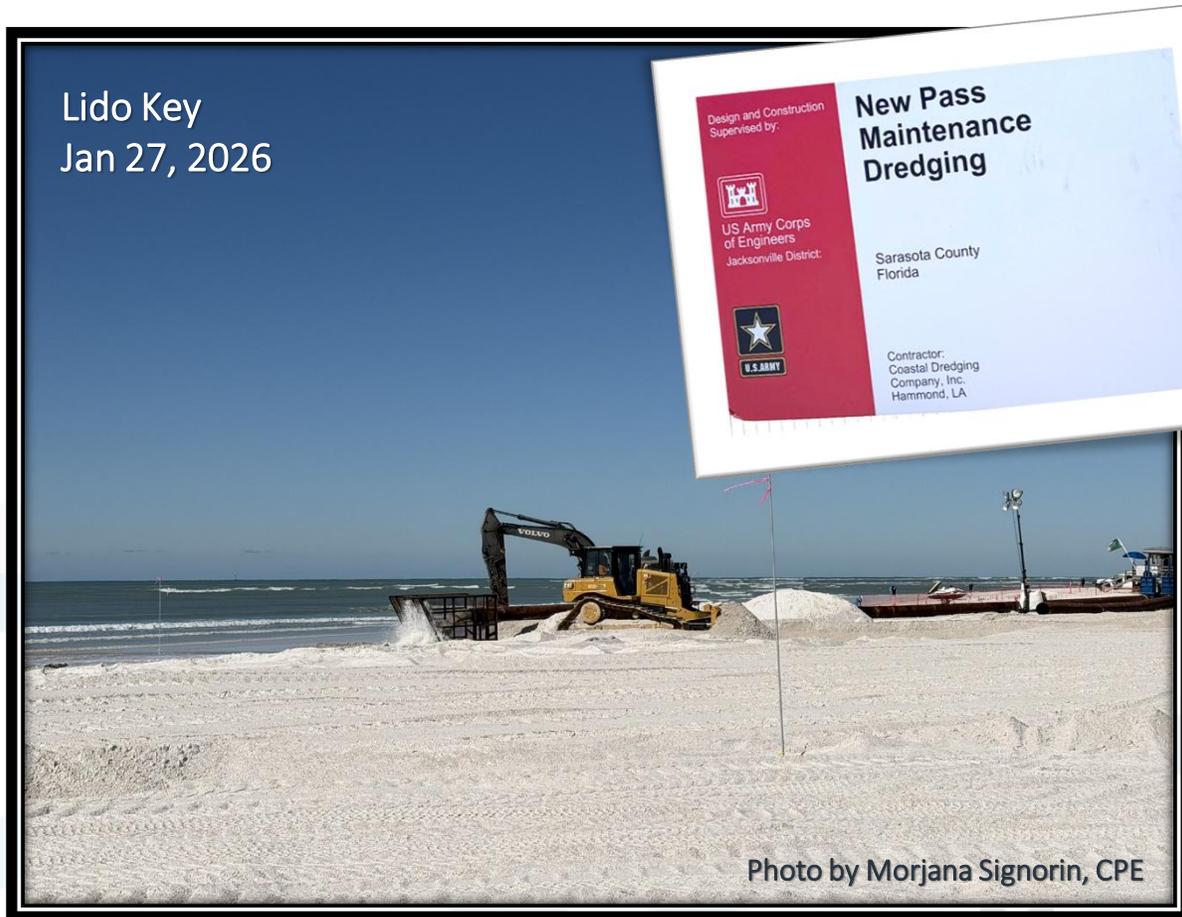


ADOPTED STRATEGIES (2025 IMP)

Future inlet management activities conducted by the City of Sarasota, Sarasota County, the Town of Longboat Key, the WCIND and/or the USACE shall be consistent with the following five strategies:

1. Comprehensive beach and inlet hydrographic monitoring program ... of the inlet system and adjoining beaches from R-1 on Longboat Key to R-44 on Lido Key.
2. Sand bypassing shall be performed from New Pass to the adjacent Gulf beaches or nearshore to the north and south of the inlet between DEP range/reference monuments R-20 and R-44.2.
3. On an average annual basis, the initial target inlet sand bypassing quantity at New Pass shall be 55,000 cy per year, with 27,500 cy placed annually to the north on Longboat Key and 27,500 cy placed annually to the south on Lido Key.
4. The source of sediment for meeting the target sand bypassing quantities in Strategy #3 shall be the New Pass Federal Navigation Channel.
5. Conduct a dual-inlet modeling study involving New Pass and Big Sarasota Pass to evaluate their combined influence on regional sediment dynamics.

THANK YOU!



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