

# POST IAN COASTAL IMPACTS AND RECOVERY PLAN FOR COLLIER, FLORIDA



Stephen Keehn, P.E. Senior Coastal Engineer, APTIM

Andy Miller, P.E., Collier County Coastal Zone Management

Nicole S. Sharp, P.E., Coastal Market Lead, APTIM

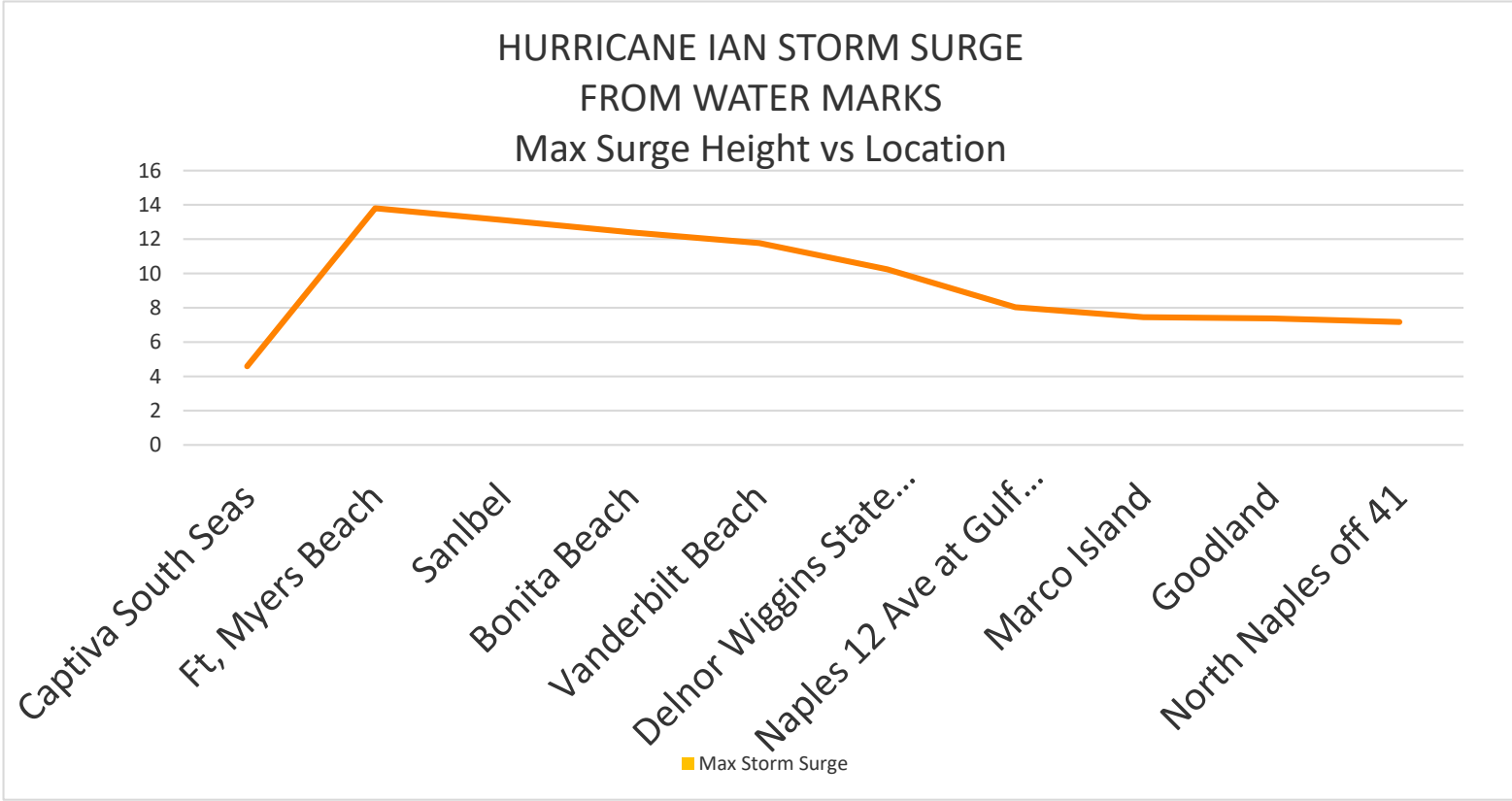
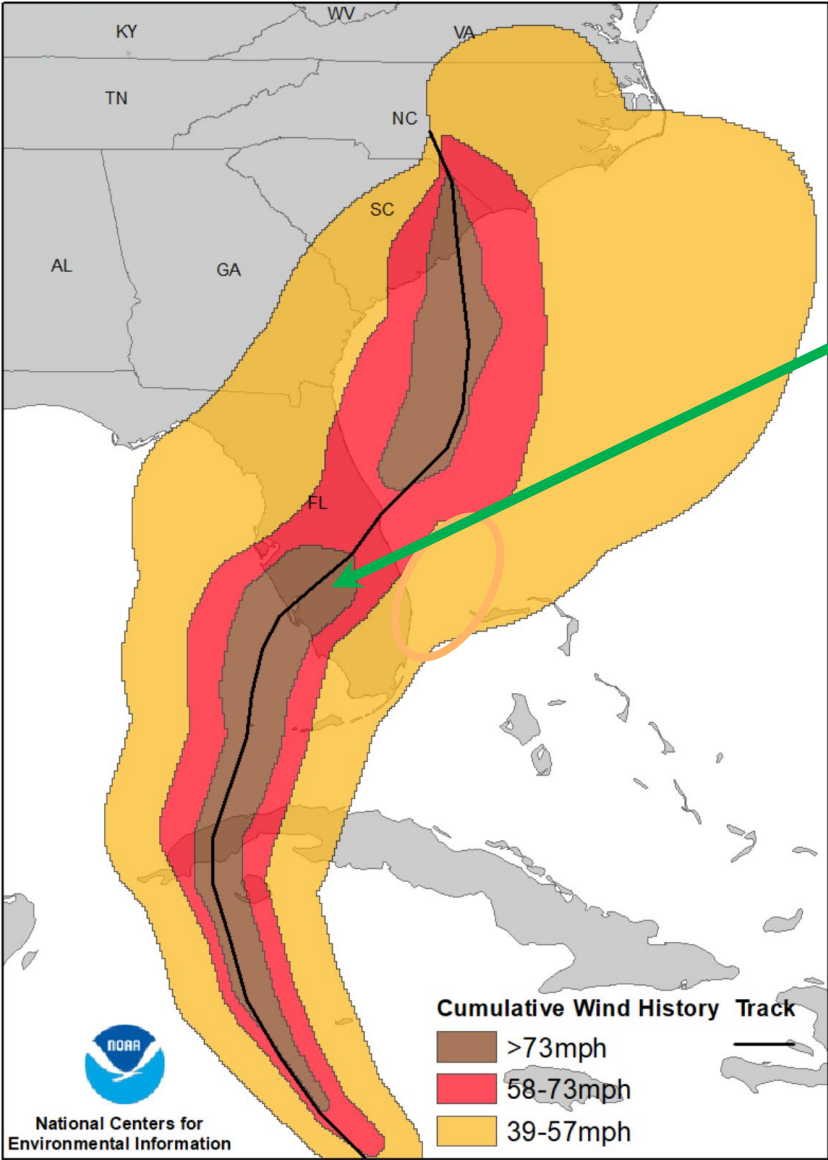


# PROJECT LOCATION



# TRACK OF HURRICANE IAN

Critical Geographic Feature (shoreline recurve) is a bend in the shoreline at the intersection of Collier County and Lee County. This is the shoreline from Barefoot Beach through Bonita to Ft Myers Beach and Sanibel, which has a large influence on the storm currents and surges, which appear to be concentrated in this area.





# FEMA BEACH AND DUNE EROSION

Area	Beach Erosion (CY)	Dune Erosion (CY)
North Collier Co. R-22 to R-79	+20,900	-333,070
Marco Island R-143 to R-148	+9,800	-34,533
Barefoot Beach R-1 to R-9	N/A	-1,900

Erosion and Accretion do not balance within traditional active profile template to DOC---It shows a gain.

- ▶ Dune Erosion Qualifiers:
- ▶ 1. Have easement
- ▶ 2. Must equal or less than dune actual loss
- ▶ 3. Must need fill to reach 5 year run up
- ▶ 4. Must be improved property



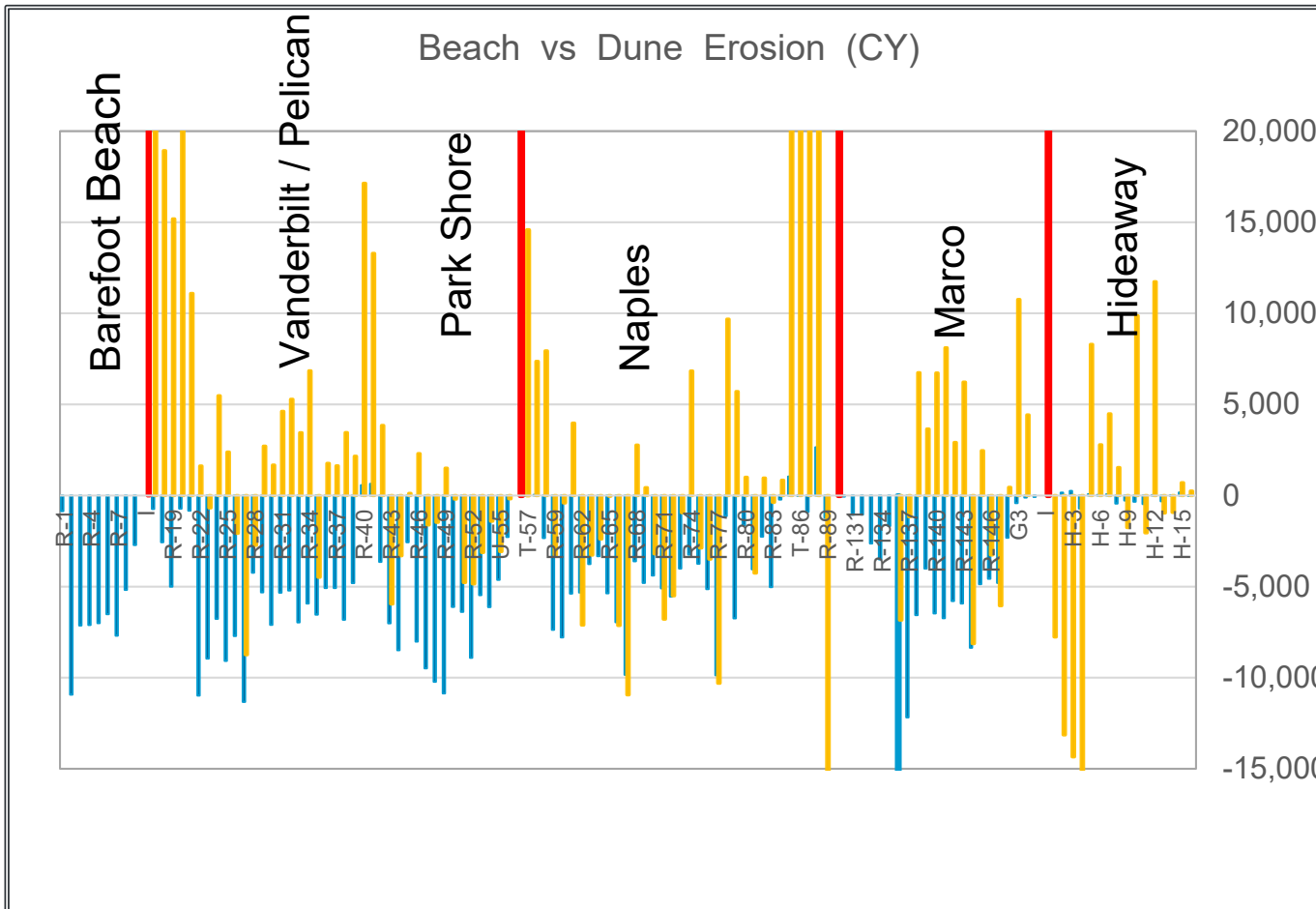


## Observations

- ▶ Beach erosion increase from south to north in Collier County
- ▶ There appears to be a large accretion of sand offshore which appears to be much larger than net erosion losses on the beach.
- ▶ Losses are mostly landward of the -6 foot contour, with gains further offshore. The offshore gains are about  $\frac{1}{2}$  to  $\frac{3}{4}$  million CY.
- ▶ Need offshore contours to better define the sediment paths.
- ▶ It is likely that some sand was lost landward through overwash and breaching. There also appears to be a large alongshore sediment transport to the north. It would be helpful to get the Lidar result earlier – perhaps labeled a rough cut short of fully approved data.



# DUNE AND BEACH LOSS MAGNITUDE AND LOCATION COLLIER COUNTY, FLORIDA



- ▶ Blue is dune losses
- ▶ Tan is beach gains and losses
- ▶ Red is location of inlets

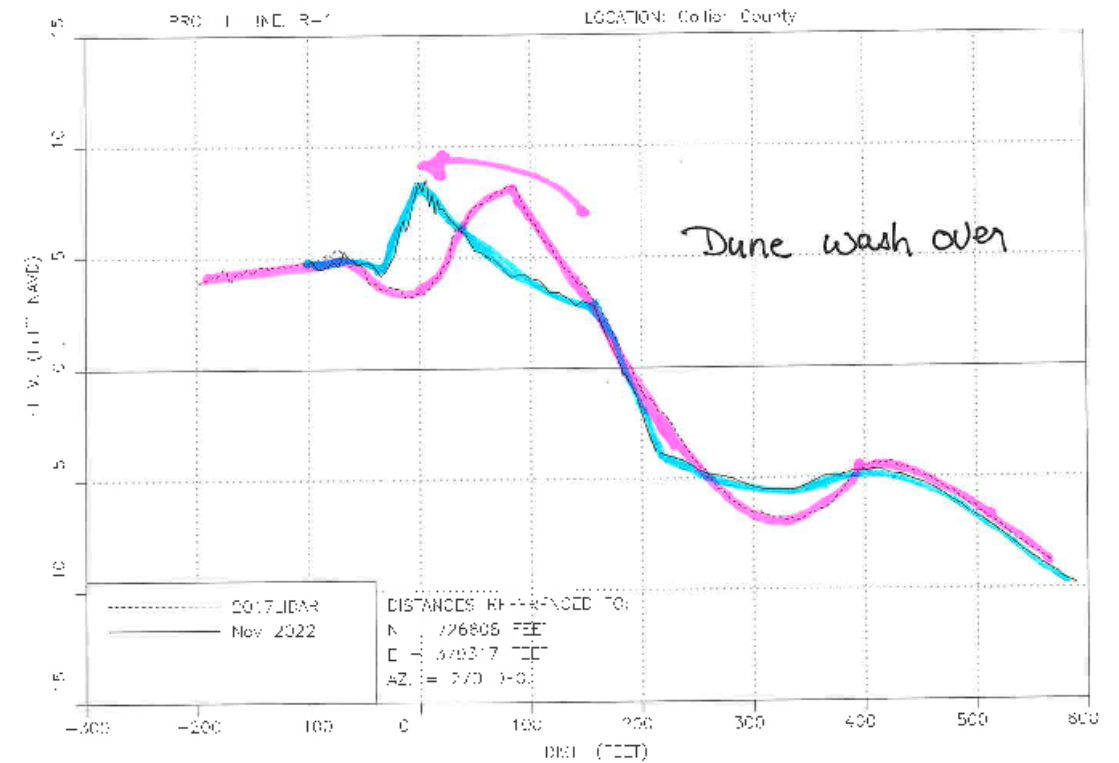
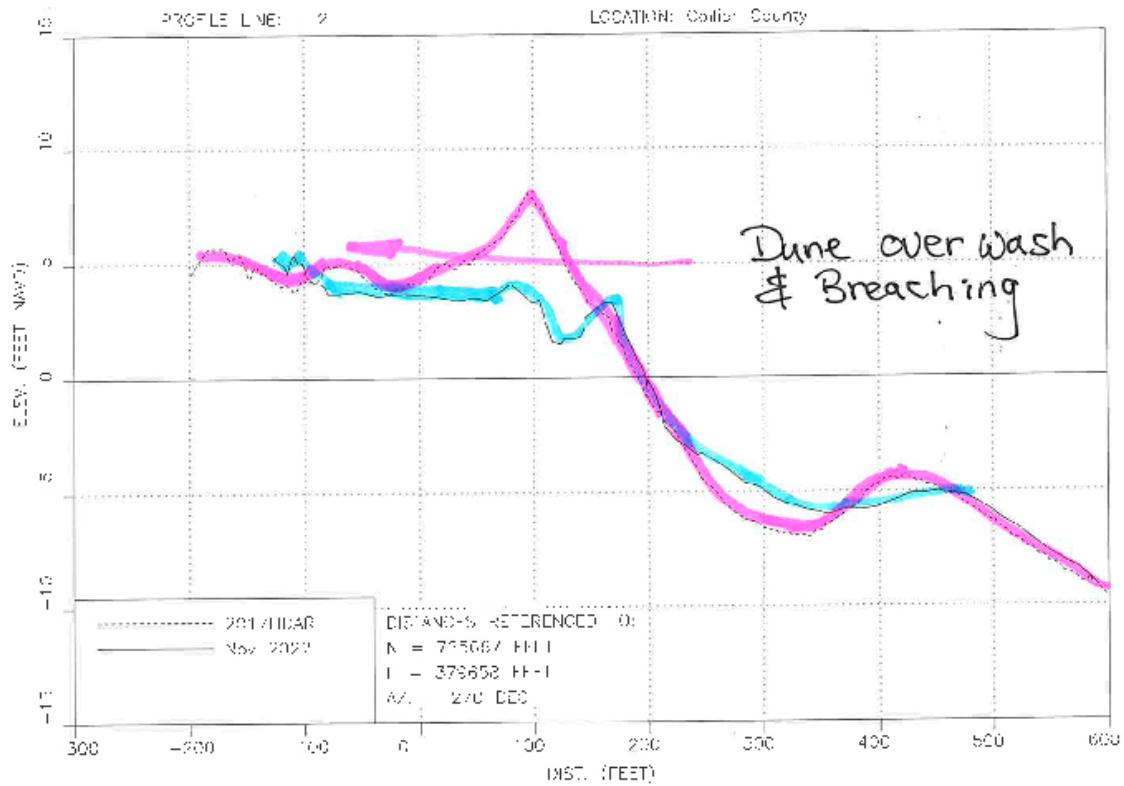








# DUNE OVERWASH AND BREACHING TYPES





# DUNE OVERWASH AND FRANGIBLE STRUCTURE

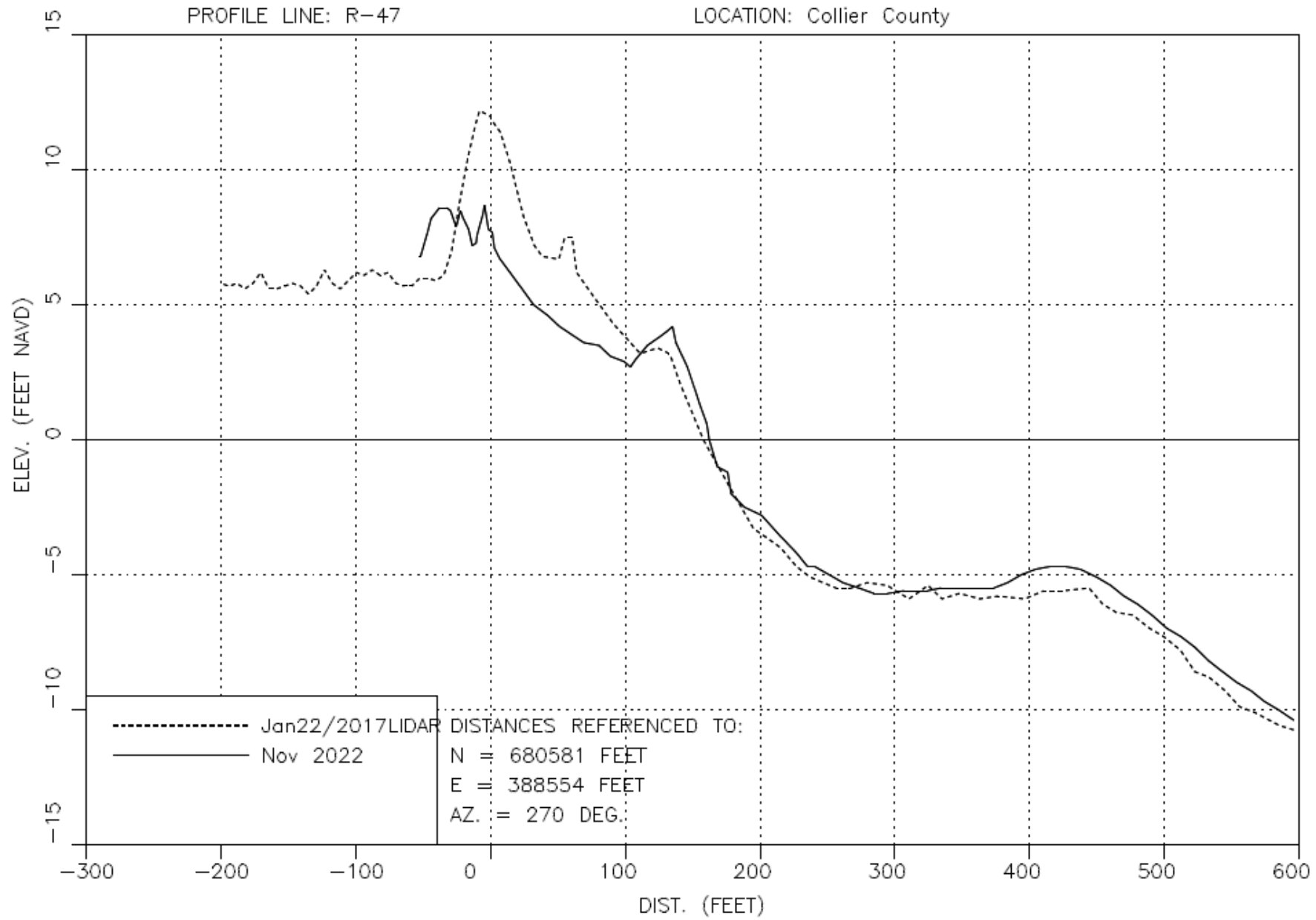




# STONE REINFORCED SAND DUNES WITH SIDEWALK









# SAND TRANSPORT THROUGH VEGETATION, BAREFOOT BEACH PARK





# IAN FOUNDATION DAMAGE



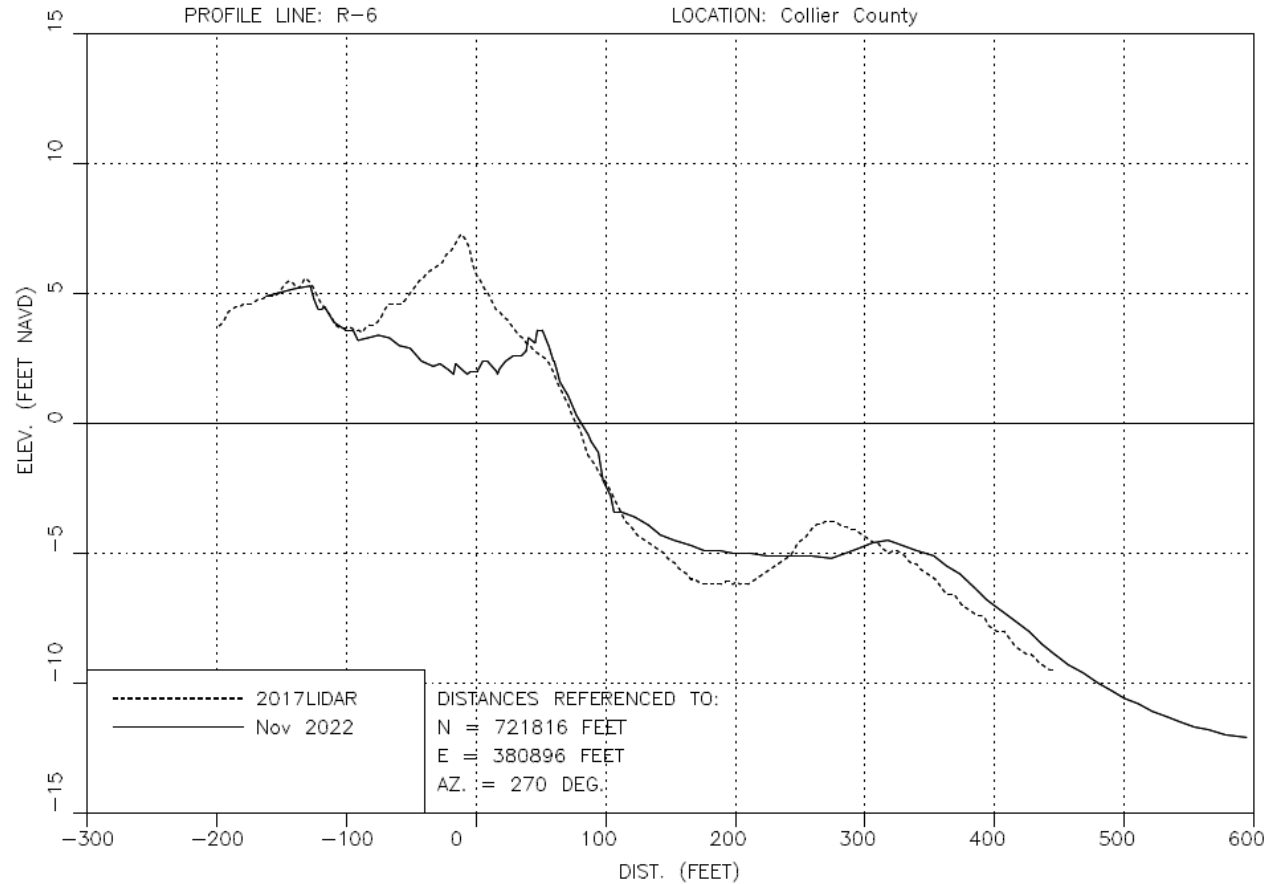
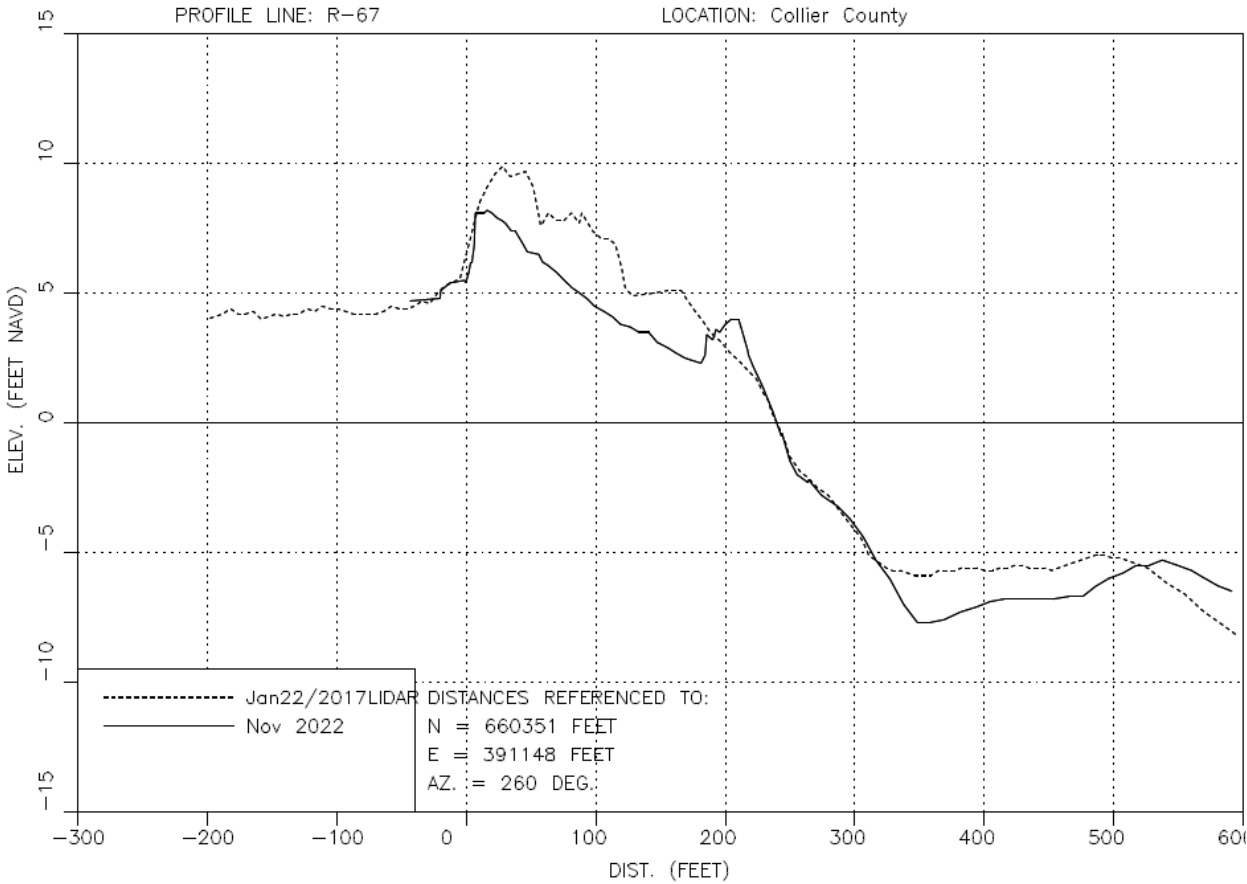


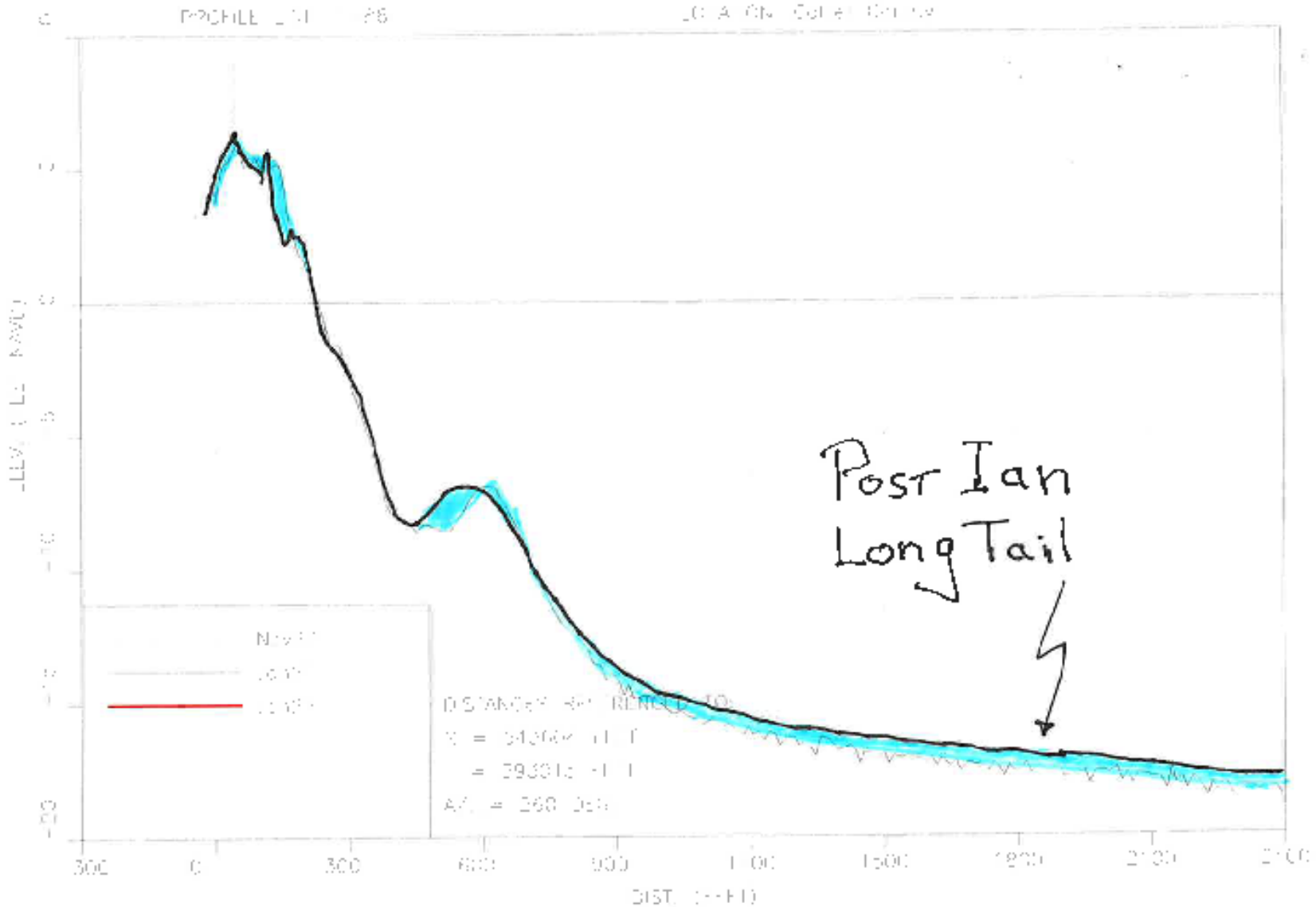
# FENCE DAMAGE IN SOUTH MARCO



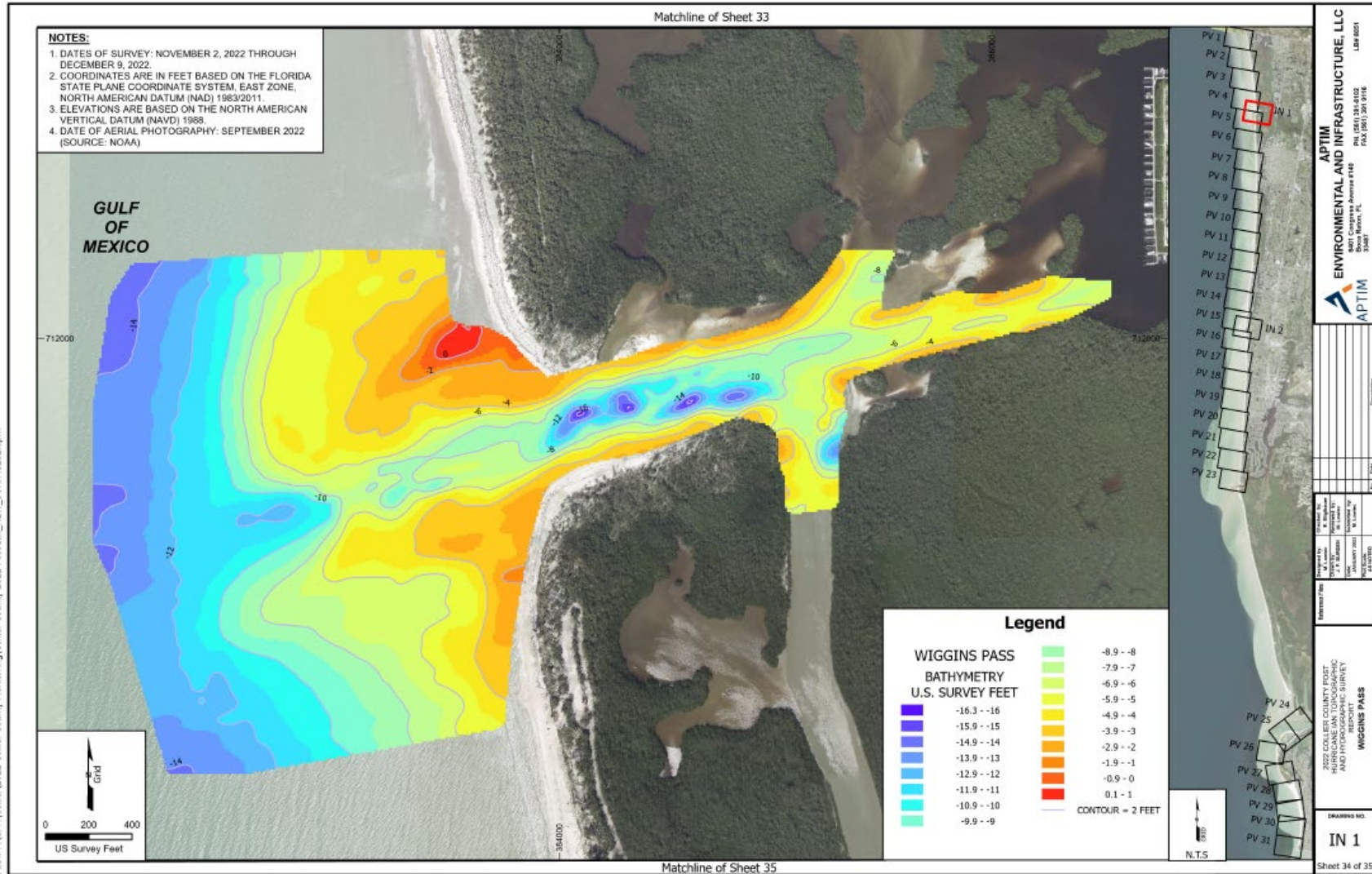


# DUNE LOSS



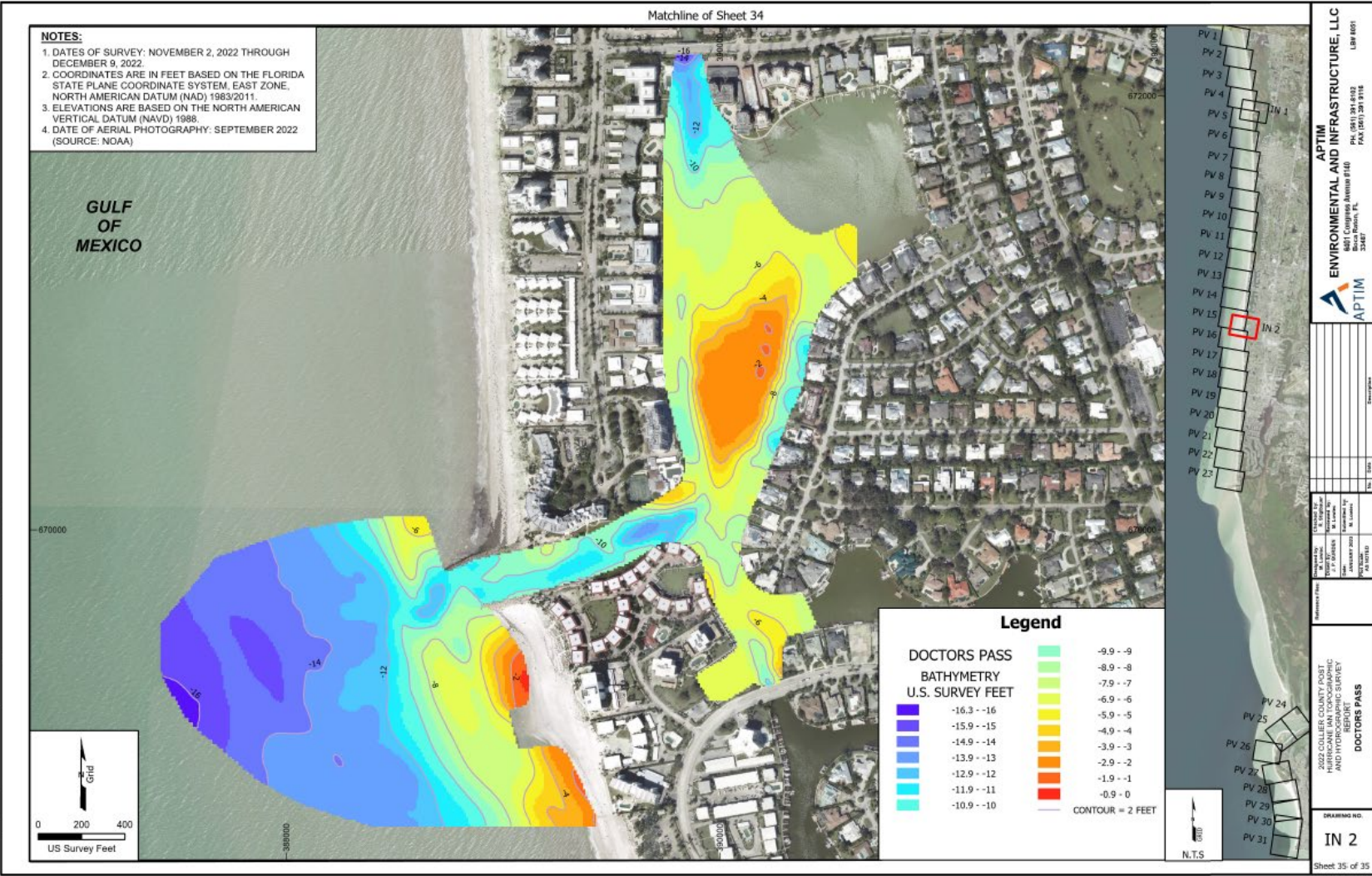


# WIGGINS PASS POST HURRICANE IAN BATHYMETRY LARGER TIDAL PRISM WITH RIVER





# DOCTORS PASS POST H. IAN BATHYMETRY ENCLOSED SMALLER TIDAL PRISM



Reach	Name	Alongshore Distance (FT)	Eligible FEMA Reimbursable Volume (CY)	Reach A	Reach B (North Co.)	Quantity Tons
R-1 to R-9	Barefoot Beach Condo.	7,683	46,098		46,098	69,147
R-22.3 to R-30.5	Vanderbilt	8,424	50,542		50,542	75,813
R-30.5 to R-36.3	Pelican Bay	5,809	34,043		34,043	51,065
R-44.3 to R-56.5	Park Shore	12,575	74,838	74,838		112,257
R-58A to R-79	Naples	18,998	111,082	111,082		166,623
R-79 to R-89	S. Naples/Port Royal	9,896	15,112	15,122		22,683
**	S. Naples/Port Royal		15,088	15,088		22,632
R-136 to R-144.5	Central Marco	8,677	52,062	0	-	-
R-142 to G-3	South Marco Island	2,000	16,976		34161	51,242
H-1 to H-14	Hideaway Beach	6,559	1,940		1,940	2,910
		80,621	402,691	216,130.00	166,784.00	<b>574,371</b>





# COLLIER COUNTY'S PLAN

- ▶ Build FEMA protective dune now
- ▶ Complete FEMA and State process and integrate results into a comprehensive project for next year
- ▶ Create a comprehensive plan
- ▶ Integrate following to the maximum extent practical and as ready
  - Finish post-storm restoration
  - Bring periodic nourishments up to date.
  - Complete dune rehabilitation: landward, higher with dune vegetation.
  - Add improvement for a higher & wider beach and improved dune.



# QUESTIONS?

**Andy Miller, P.E.**  
colliercountyfl.gov

**Steve Keehn, P.E.**  
Stephen.keehn@aptim.com  
561.361.3151

**Nicole Sharp, P.E.**  
nicole.sharp@aptim.com  
561.361.3150





**Expect the Extraordinary.**

- Ft. Myers Beach 13.80 Ft.
- Bonita Beach 12.40 Ft.
- Barefoot Beach Blvd. 11.76 Ft.
- Delnor-Wiggins Ste Park 10.24 Ft.
- Vanderbilt Beach 11.77 Ft.
- Naples – 12th Ave at Gulf Shore 8.03 Ft.
- ▶ (Approximately vic. NOAA Tide Gauge reading before it ceased)
- North Naples vic. Hwy 41. 7.17 Ft.
- Marco Island 7.45 Ft.





# CLOSING REMARKS



