# HIDEAWAY BEACH EROSION CONTROL PROJECT 2025 MONITORING REPORT



DEP Permit 0309260-001-JC

Prepared for:

City of Marco Island 50 Bald Eagle Drive Marco Island, FL 34144

and

Florida Department of Environmental Protection 3900 Commonwealth Boulevard Tallahassee, FL 32399-3000

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**CEC File No. 25.020** 

Prepared by:



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### 1 Introduction

In April 2019, the City of Marco Island completed construction of the 2019 Hideaway Beach Erosion Control Project by dredging the permitted Nearshore Borrow Area and placing fill material along the South Point Beach, Marco Gulf-front Central Beach, and Royal Marco Point Beach (Figure 1). Approximately 56,120 cubic yards were excavated from the Nearshore Borrow Area adjacent to Hideaway Beach. Approximately 55,450 cubic yards of sand were placed within the permitted fill limits on Hideaway Beach between H-1 and H-14.5.

This report summarizes the sixth-year monitoring survey, which was completed by Coastal Engineering Consultants, Inc. (CEC) in accordance with the Physical Monitoring Plan (PMP) dated June 28, 2012, as outlined in the Florida Department of Environmental Protection (FDEP) Permit 0309260-001-JC.

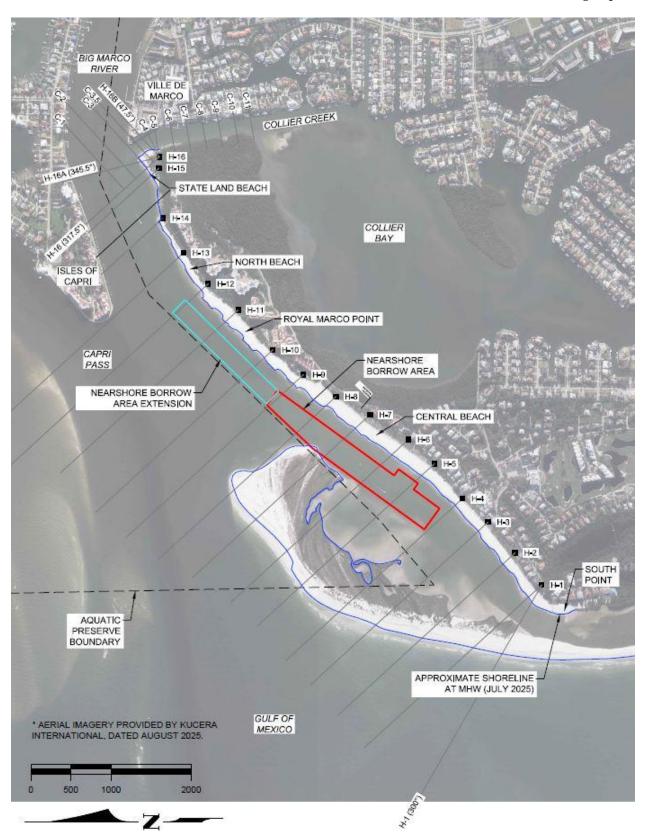


Figure 1. Location Map.

#### 2 SCOPE OF WORK

CEC performed the following scope of work.

Establish horizontal and vertical control, one-time, on the uplands within the Project. Field verify control information utilized in the survey. Conduct the monitoring survey of the beach profiles according to the JCP Permit No. 0309260-001-JC PMP dated June 28, 2012. Conduct the monitoring survey of the Mean High Water (MHW) from the southern end of the South Point Fill to the terminal jetty / west side of Collier Creek; and along Sand Dollar Island between the limits of the Nearshore Borrow Area. Conduct bathymetric survey of the Nearshore Borrow Area.

Conduct wading beach profile using standard techniques from the dune across the beach and seaward to a depth of approximately -3 feet NAVD88. Conduct offshore, hydrographic portions of the profiles utilizing a survey vessel outfitted with a digital fathometer, Differential Global Positioning System, and navigational software. Provide an approximate 50-foot overlap between the seaward terminus of the beach profiles and the landward origination of the hydrographic profiles in order to verify correct equipment operations. Measure tidal fluctuations and compensate for same on the survey vessel using Real Time Kinematic Global Positioning System technology. Record tidal data for the duration of the vessel surveys and apply corrections during data reduction to achieve elevations referenced to NAVD88.

Obtain elevations of the beach profiles at appropriate intervals and at all noticeable breaks in grade (greater than 1 foot vertically). Soundings from offshore portions of beach profiles were obtained at appropriate intervals. Survey transects originated at stations in the upland area of the beach corresponding to the established monuments and extended offshore along historic azimuths (degrees clockwise from magnetic north). Monitoring of the beach and offshore profiles included the beach fill areas along with the State's property extending to the jetty (H-14 to H-16). The azimuths and line lengths coincided with the PMP.

Contract with an aerial flight company to obtain scale rectified aerials of the Project area.

#### 3 SURVEYS

CEC performed the first-year monitoring survey of the beach profiles, Nearshore Borrow Area, and MHW positions (MHW = +0.43 feet NAVD88) from the southern end of the South Point Fill to the terminal jetty at Collier Creek and along Sand Dollar Island between May 20-22, 2020. The second-year monitoring survey was conducted by CEC May 11-12, 2021. The third-year monitoring survey was conducted by CEC on April 15 and 18, 2022. The fourth-year monitoring survey of the beach was conducted by CEC on June 22 and 23, 2023 noting that a fourth-year survey of the Nearshore Borrow Area was not included in the PMP and was not performed. The fifth-year monitoring survey of the beach and Nearshore Borrow Area was conducted by CEC on July 8, 2024. The sixth-year monitoring survey of the beach and Nearshore Borrow Area was conducted by CEC on July 31 and August 19, 2025.

The survey control map is presented in Figure 2. The survey report is presented in Appendix 1. All work activities and deliverables were conducted in accordance with the latest update of the FDEP Monitoring Standards for Beach Erosion Control Projects, Sections 01000, 01100, and 01200.

Bathymetric survey data collection was conducted in calm seas. Maximum wave heights during the data collection period were less than 3 feet. The data was collected at intervals not exceeding 25 feet and at all grade breaks along the profile sufficient to accurately describe the bathymetry at the profile locations.

Bathymetric survey data collection was performed as close in time as possible with the upland topographic survey data collection. This significantly increased the efficiency by conducting the work with the same base station set-up. Safety was also increased by having both crews visible to each other at all times.

The surveys were conducted along the historic profile lines between monuments H-1 and H-16 including half monuments between H-4 and H-9 and ten (10) additional stations between H-10 and H-16 along Hideaway Beach, and along the historic cross sections between C-1 and C-11 in Collier Creek. The cross-section lines of the Nearshore Borrow Area were surveyed at 100-foot spacing interval from Station 0+00 to Station 42+00 with additional stations at template inflection points.

The surveys were conducted during shorebird nesting season. CEC did not enter any posted area. Thus, there may be data gaps in the upland data.

The beach profile deliverables were produced by merging the upland and offshore survey data in Hypack 2017. The processed data was exported into AutoCAD and individual profiles/sections were plotted to the specified scale.

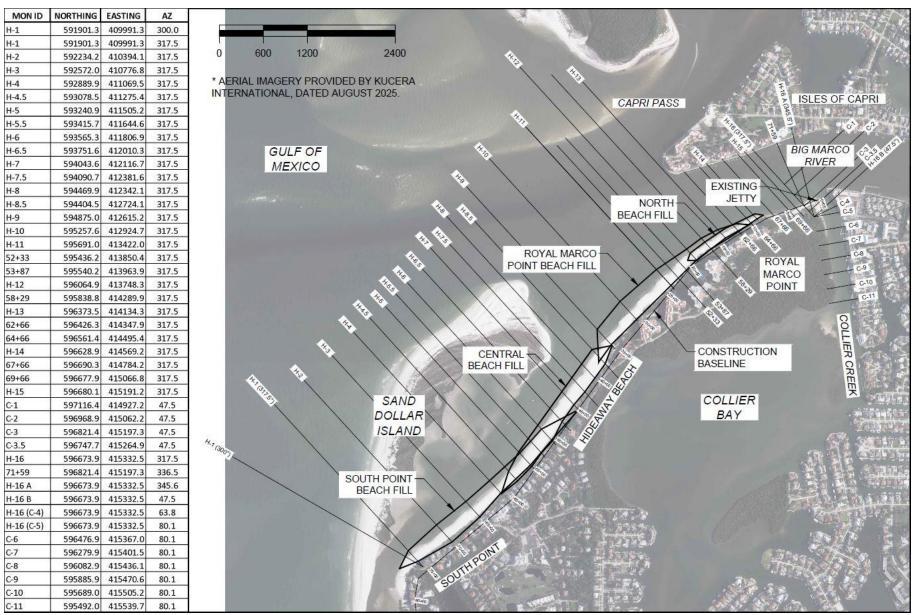


Figure 2. Survey Control Map.

#### 4 PHYSICAL MONITORING

#### 4.1 Beach Profiles

Appendix 2 presents the beach profiles measured at each monument for the 2019 pre-construction and post-construction surveys, 2022, 2023, 2024 and 2025 monitoring surveys noting that the 2020 and 2021 survey profiles were included in the 2023 Monitoring Report (CEC, 2023).

Table 1 presents the 2019-post-construction and 2022, 2023, 2024 and 2025 monitoring survey shoreline changes at MHW (= +0.43 feet NAVD88) measured from the 2019-pre-construction MHW shoreline positions along the construction baseline established for the 2019 Project at 50-foot intervals. The last column in the table also presents the shoreline change between the 2024 and 2025 monitoring survey. Figure 3 presents the 2019 post-construction, 2022, 2023, 2024 and 2025 monitoring survey MHW relative to the 2019 pre-construction survey in plan view.

Table 2 and Figure 4 present volumetric changes calculated to the -10 feet NAVD88 elevation, which was defined as a seaward limit of changes along the beach profiles, by comparing the 2024 and 2025 monitoring surveys. The total volume change was a net gain of approximately 1,250 cubic yards.

It should be noted that in 2022, the City of Marco Island began construction of the restoration of Sand Dollar Island just south of Hideaway Beach. This project was completed in June of 2023. The restoration included dredging of the Sand Trap off Tigertail/Sand Dollar Island Spit from approximately station H-7.5 to H-12, as well as the interior flow channel along Hideaway Beach from approximately R-131 north to approximately H-4. The dredged sand was placed within the gulf-front permitted beach fill template along the Tigertail/Sand Dollar Island beach segment spanning from R-133 north to H-2.

It should also be noted that in April-May 2023, the City of Marco Island dredged approximately 3,850 cubic yards from the Collier Creek permitted template with placement along the permitted fill template on Hideaway Beach between monuments H-12 and H-14.5.

In April 2025, the City of Marco Island completed beach and dune restoration along Hideaway Beach to address impacts from the 2024 hurricane season. These included reclaiming overwash sand due to storm surge and placing it to restore berm and dune elevations. The total volume of the reclaimed overwash sand was approximately 10,000 cubic yards, which was also supplemented with upland sand volume of approximately 200 yards from Stewart mine through truck haul to complete the restoration. The storm induced gullies between T-groins were restored with uniform grading along the beach between R-128 at South Point to H-12 at Royal Marco Point.

Table 1. 2019-2025 Shoreline Changes at MHW.

1 4010 11	Station Station	MHW Change (ft)								
Beach	Along	2010 D 2010 D 2010 D. 2010 D. 2010 D. 2021 35								
Segment	Construction Baseline	2019-Pre- 2019-Post	2019-Pre 2022-Mon	2019-Pre- 2023-Mon	2019-Pre- 2024-Mon	2019-Pre- 2025-Mon	2024-Mon- 2025-Mon			
	0+00	N/A*	N/A	N/A	N/A	N/A	N/A			
	0+50	N/A	N/A	N/A	N/A	N/A	N/A			
	1+00	-5.6	-11.0	-6.4	-0.1	1.2	1.3			
	1+50	4.8	6.2	1.2	0.0	-10.8	-10.7			
	2+00	1.8	5.4	-4.6	-3.4	-18.2	-14.7			
	2+50	0.2	2.8	-6.7	-5.7	-21.9	-16.2			
_	3+00	-1.0	1.7	-8.0	-5.9	-23.4	-17.5			
ach	3+50	-1.6	-1.2	-12.4	-7.9	-27.7	-19.8			
Be	4+00	-1.6	-3.6	-17.7	-11.2	-34.4	-23.1			
p	4+50	-2.5	-6.3	-23.4	-15.4	-41.3	-25.8			
	5+00	-2.0	-8.9	-26.7	-19.6	-46.6	-27.0			
<b>[</b> 2	5+50	-2.0	-11.4	-17.8	-19.5	-34.5	-15.0			
State Land Beach	6+00	-1.6	-9.2	-10.9	-15.1	-24.0	-8.9			
• • • • • • • • • • • • • • • • • • • •	6+50	-1.0	-10.1	-11.7	-17.8	-24.3	-6.5			
	7+00	-0.8	-5.3	-5.4	-11.6	-20.1	-8.5			
	7+50	2.6	-0.4	6.1	-8.3	-16.1	-7.8			
	8+00	8.3	1.4	27.5	-9.3	-17.4	-8.1			
	8+50	19.6	-3.9	31.5	-11.8	-20.8	-9.0			
	9+00	17.1	1.3	23.2	-6.3	-18.2	-11.9			
	9+50	3.1	-1.9	5.2	-5.0	-15.0	-10.0			
State Land F	Beach Average	2.1	-3.0	-3.2	-9.7	-23.0	-13.3			
	10+00	3.0	-2.0	7.6	-5.3	-12.6	-7.3			
	10+50	-1.5	-4.0	6.1	-6.5	-10.0	-3.6			
	11+00	0.8	-8.5	9.4	-10.4	-16.5	-6.1			
	11+50	2.5	-13.6	10.5	-18.9	-27.5	-8.5			
	12+00	2.6	-19.5	7.3	-23.2	-32.3	-9.1			
	12+50	1.8	-7.6	2.2	-12.7	-18.5	-5.8			
	13+00	1.7	-9.6	-2.2	-12.4	-17.8	-5.4			
	13+50	1.2	-8.3	-3.4	-13.8	-18.3	-4.5			
<u>9</u>	14+00	2.1	-7.6	-1.9	-10.3	-12.1	-1.9			
Royal Marco Point North Beach (RMPNB)	14+50	5.2	-9.4	-1.8	-12.4	-17.1	-4.7			
<b>Z</b>	15+00	8.4	-12.1	-4.1	-18.7	-24.0	-5.4			
nt L(F	15+50	10.9	-16.6	-12.1	-27.8	-32.1	-4.4			
80y Poi ach	16+00	11.9	-5.6	-4.9	-15.9	-16.9	-1.0			
F Be	16+50	9.9	-2.0	-6.3	-12.8	-8.7	4.1			
	17+00	7.7	-1.3	-8.1	-15.2	-8.3	7.0			
	17+50	8.2	-0.5	-7.2	-10.9	-5.4	5.6			
	18+00	9.3	2.1	1.5	-2.8	-2.9	-0.4			
	18+50	13.0	4.1	-0.9	-7.2	-5.0	2.3			
	19+00	17.0	6.0	-4.2	-8.0	-4.6	3.5			
	19+50	18.1	6.7	-6.7	-7.9	-2.6	5.4			
	20+00	9.6	7.3	-5.4	-2.7	7.0	9.7			
	20+50	13.5	0.6	-9.2	-7.2	3.7	10.9			
RMPNE	3 Average	7.1	-4.6	-1.5	-12.0	-12.8	-0.9			

D 1	Station	MHW Change (ft)					
Beach Segment	Along Construction Baseline	2019-Pre- 2019-Post	2019-Pre 2022-Mon	2019-Pre- 2023-Mon	2019-Pre- 2024-Mon	2019-Pre- 2025-Mon	2024-Mon- 2025-Mon
	21+00	2.5	-0.8	-1.0	-0.2	0.6	0.7
	21+50	14.4	3.5	-5.5	-13.5	-5.3	8.2
	22+00	18.8	5.4	-9.1	-14.8	-10.3	4.5
	22+50	20.2	6.5	-8.9	-13.4	-6.8	6.6
	23+00	21.0	7.3	-6.8	-8.4	0.4	8.5
	23+50	16.5	9.9	4.9	11.5	12.2	0.8
	24+00	35.5	8.8	5.5	6.7	20.2	13.4
	24+50	19.0	7.5	3.2	3.0	11.6	8.7
	25+00	12.7	5.6	5.0	-5.0	-4.1	1.0
	25+50	37.7	13.5	2.4	-6.3	-0.8	5.6
	26+00	35.8	14.6	-1.3	-7.0	0.4	7.1
	26+50	30.8	13.8	-2.8	-5.0	2.3	7.3
	27+00	4.4	3.0	3.3	4.1	4.5	0.5
	27+50	26.7	26.5	16.8	24.4	25.8	1.4
	28+00	20.0	17.6	-4.0	-5.1	18.0	23.0
co th	28+50	20.2	19.6	19.2	18.8	19.6	0.9
Royal Marco Point South Beach (RMPSB)	29+00	59.5	24.7	30.8	31.4	34.5	3.2
yal int h (F	29+50	61.8	42.9	42.7	43.8	47.2	3.5
Roy Po Seac	30+00	58.5	56.8	48.6	50.1	53.4	3.2
	30+50	56.1	57.7	50.2	55.2	47.3	-7.9
	31+00	0.3	0.9	-1.6	0.2	-4.9	-5.1
	31+50	23.8	19.9	20.3	16.3	22.3	6.0
	32+00	7.6	7.7	6.6	6.8	1.8	-5.0
	32+50	32.1	22.7	27.9	20.4	18.5	-2.0
	33+00	33.8	13.8	24.0	18.6	13.5	-5.1
	33+50	36.2	18.2	17.3	14.3	10.4	-3.9
	34+00	30.2	22.3	10.4	10.1	7.9	-2.3
	34+50	20.1	18.2	1.8	0.6	-1.4	-1.9
	35+00	31.4	45.5	30.3	15.9	15.4	-0.6
	35+50	32.1	38.9	31.9	22.8	22.5	-0.5
	36+00	48.5	51.3	31.7	14.1	6.9	-7.2
	36+50	48.6	43.8	28.8	10.0	4.2	-5.8
	37+00	22.9	29.0	20.9	5.3	-0.4	-5.4
	37+50	6.3	5.0	12.4	-3.0	-8.2	-5.2
RMPSE	3 Average	27.8	20.1	13.4	9.5	11.2	1.7

2025 Monitoring Report

Beach	Station						
Segment	Along Construction Baseline	2019-Pre- 2019-Post	2019-Pre 2022-Mon	2019-Pre- 2023-Mon	2019-Pre- 2024-Mon	2019-Pre- 2025-Mon	2024-Mon- 2025-Mon
	38+00	-2.3	-3.5	-0.9	-4.2	-6.7	-2.6
	38+50	6.9	7.7	8.8	6.1	4.1	-2.0
	39+00	11.5	12.3	13.1	12.9	12.4	-0.7
	39+50	7.6	6.2	5.1	3.8	1.5	-2.4
	40+00	16.8	11.1	0.7	-2.0	-2.2	-0.5
	40+50	9.5	7.1	-3.1	-8.8	-5.2	3.6
	41+00	5.3	3.8	-0.6	-11.5	-9.6	2.0
	41+50	1.3	2.0	6.7	-2.2	-4.2	-2.0
	42+00	1.0	0.5	1.4	-1.7	-3.2	-1.5
	42+50	0.4	1.2	5.0	-0.8	-2.4	-1.6
	43+00	-0.8	0.4	5.2	3.3	0.6	-2.9
	43+50	0.3	0.9	4.4	3.7	-0.4	-3.8
	44+00	0.5	3.2	7.2	1.3	-9.1	-10.4
	44+50	0.7	5.0	10.4	7.8	-12.5	-20.2
	45+00	-0.3	1.6	12.9	12.6	-7.8	-20.4
	45+50	-1.0	-0.7	13.5	23.0	1.2	-21.9
	46+00	-1.0	1.3	13.5	32.7	-5.3	-38.1
	46+50	-1.2	1.7	11.9	25.6	2.3	-23.4
	47+00	0.4	1.5	7.7	11.7	9.5	-2.2
	47+50	1.2	3.8	5.9	10.7	4.0	-6.7
_	48+00	1.8	7.2	11.4	17.5	2.4	-15.1
Central Beach	48+50	3.6	8.9	13.2	17.4	3.2	-14.2
Be	49+00	2.1	5.5	8.0	8.6	2.3	-6.4
ral	49+50	1.3	3.1	5.9	15.9	6.0	-9.9
ent	50+00	1.7	4.5	7.1	16.9	10.2	-6.7
ŭ	50+50	1.6	4.0	8.9	15.7	6.8	-8.9
	51+00	1.4	3.8	9.1	15.9	2.4	-13.5
	51+50	2.7	5.8	9.3	13.5	2.9	-10.7
	52+00	0.4	9.5	8.5	12.0	-1.1	-13.0
	52+50	2.0	6.7	4.7	4.2	-5.7	-9.9
	53+00	5.0	7.0	5.8	9.3	2.1	-7.3
	53+50	6.8	8.7	10.7	14.7	11.9	-2.8
	54+00	5.7	6.5	7.4	10.7	11.2	0.7
	54+50	15.1	14.7	14.1	17.7	16.5	-1.2
	55+00	13.5	13.7	11.5	12.4	14.2	1.8
	55+50	7.3	5.9	5.3	6.2	2.7	-3.5
	56+00	13.9	10.9	14.0	12.2	14.3	2.2
	56+50	12.0	14.7	16.7	17.8	16.1	-1.8
	57+00	11.4	15.6	17.1	20.6	17.9	-2.7
	57+50	16.2	17.5	20.7	19.3	20.9	1.6
	58+00	5.7	5.1	-0.5	5.4	-1.5	-6.9
	58+50	10.6	9.9	4.9	9.2	7.9	-1.4
	59+00	6.4	5.8	3.5	7.5	2.9	-4.6
	59+50	11.8	12.1	11.3	10.1	10.1	-0.4
	60+00	23.9	21.8	30.0	26.6	24.6	-2.0
	60+50	27.8	22.2	32.9	27.8	27.2	-0.8

2025 Monitoring Report

Darah	Station	$\Theta \setminus \gamma$					
Beach Segment	Along Construction Baseline	2019-Pre- 2019-Post	2019-Pre 2022-Mon	2019-Pre- 2023-Mon	2019-Pre- 2024-Mon	2019-Pre- 2025-Mon	2024-Mon- 2025-Mon
Central Be	each Average	5.8	6.9	9.1	10.6	4.2	-6.4
	61+00	20.9	23.7	34.3	36.7	30.2	-6.5
	61+50	24.0	30.1	37.7	38.6	35.7	-2.9
	62+00	12.8	15.4	19.2	38.4	18.6	1.6
	62+50	7.6	7.6	6.9	17.0	7.4	-2.8
	63+00	3.7	4.3	-0.4	10.2	5.2	-2.0
	63+50	4.0	4.2	1.6	7.1	6.2	-0.4
	64+00	5.3	4.9	3.8	6.4	6.2	-1.9
	64+50	26.9	23.8	29.2	8.0	37.2	9.8
	65+00	21.5	20.7	20.7	27.3	35.8	12.1
	65+50	21.7	23.8	22.9	23.7	36.2	11.5
	66+00	24.5	20.5	21.2	24.7	33.1	11.8
	66+50	2.4	2.1	-1.5	21.3	2.1	-1.1
	67+00	13.5	11.9	6.6	3.1	13.6	-2.4
ų	67+50	9.0	9.4	0.8	15.9	10.6	-0.9
3eac	68+00	52.0	42.8	46.0	11.4	56.1	12.8
nt E	68+50	44.6	40.8	41.1	43.3	61.9	15.8
South Point Beach	69+00	39.1	40.9	41.8	46.1	66.3	20.2
ıth	69+50	37.6	40.5	42.4	46.1	63.6	22.0
Sor	70+00	28.0	35.1	28.6	41.6	36.2	0.6
	70+50	13.4	13.0	6.6	35.7	14.1	-0.5
	71+00	13.8	13.2	7.8	14.3	14.1	-1.0
	71+50	15.9	16.5	11.3	15.0	17.3	-1.5
	72+00	24.1	17.6	16.9	18.7	32.8	15.8
	72+50	23.4	16.9	16.0	17.0	31.3	13.9
	73+00	23.8	17.3	20.7	17.4	28.1	9.0
	73+50	12.9	15.2	19.7	19.1	13.7	-5.4
	74+00	4.6	8.2	11.3	19.1	11.3	0.5
	74+50	-0.4	-1.8	4.0	11.0	11.9	7.7
	75+00	-0.1	-3.4	-1.9	4.2	-9.8	-4.8
	75+50	-5.3	-10.4	1.7	-5.0	-33.0	-26.7
	76+00	-0.8	13.5	24.2	-6.3	-25.7	-39.8
	76+50	-1.4	-4.6	28.7	14.1	-10.8	-50.8
South Point	Beach Average	16.3	16.1	17.8	20.0	20.5	0.4
	each Average	12.7	8.9	8.9	6.7	3.5	-3.2

<sup>\*</sup> N/A = MHW measurement not available

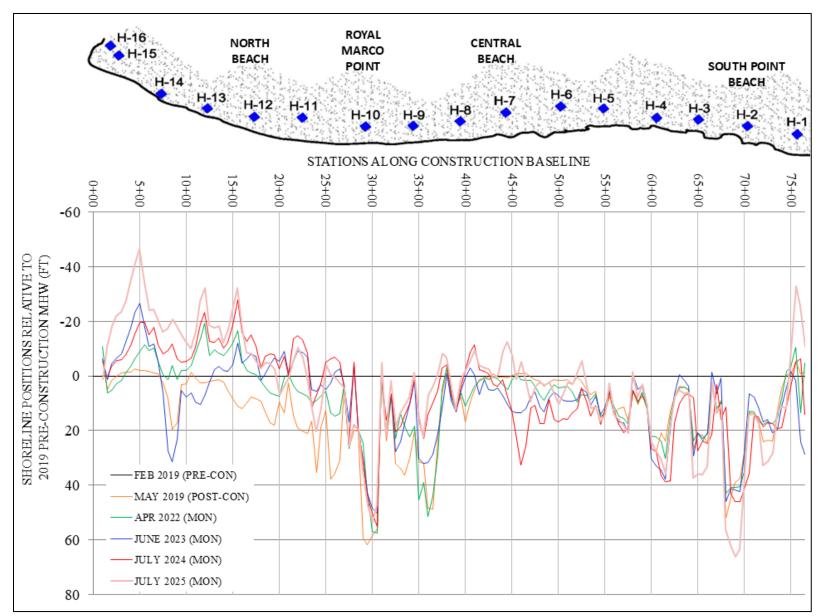


Figure 3. 2019 Post-Con, 2022, 2023, 2024 and 2025 Monitoring MHW Shoreline Positions Relative to 2019 Pre-Con Shoreline Positions.

Table 2. 2024 – 2025 Monitoring Volumetric Changes Above -10-foot NAVD88.

	Monument	Area (yd³/ft)	Avg Area (yd³/ft)	Length (ft)	Volume (yd³)	Total Volume (yd³)
	H-1 (317.5)	1.4	,		,	,
ıt			1.4	522	750	
oii h	H-2	1.5				
South Point Beach			2.9	510	1,464	3,256
out B	H-3	4.2				
Š			2.4	431	1,042	
	H-4	0.6				
			0.4	279	107	  -
_	H-4.5	0.1	0.2	270	4.4	
_	TT <b>5</b>	0.2	0.2	279	44	-
_	H-5	0.2	-0.5	221	-106	-
_	H-5.5	-1.1	-0.5	221	-100	_
_	11 0.0	1.1	-1.8	221	-400	
ack	H-6	-2.5				
Central Beach			-2.6	276	-712	-
ral	H-6.5	-2.7	2.2	276	222	-2,663
ent	11.7	2.0	-3.3	276	-900	-
Ŭ	H-7	-3.9	-2.1	227	-477	-
-	H-7.5	-0.3	-2.1	221	-4//	-
	11 7.5	0.5	0.4	227	89	-
	H-8	1.1				
			0.0	237	11	
	H-8.5	-1.0				  -
	11.0	1.7	-1.3	237	-318	
	H-9	-1.7	-1.1	487	-546	
_	H-10	-0.6	-1.1	707	-340	-
int	11 10	0.0	1.1	221	254	
Po Ich	46+51	2.9				
arco Poi Beach			2.4	214	508	
Aan th 1	48+65	1.9			2.71	1,326
Royal Marco Point South Beach	TT 11	1.2	1.6	224	351	-
S S	H-11	1.3	2.2	144	322	-
~	52+33	3.2	۷.۷	177	344	1
	52.55	J.2	2.8	154	436	1
	53+87	2.4				
			2.0	195	396	
<u>+</u>	H-12	1.6	1.5	0	267	_
Royal Marco Point North Beach	50+20	1.5	1.6	247	387	-
yal Marco Po North Beach	58+29	1.5	1.1	247	259	-
arc Be	H-13	0.6	1.1	Z4/	239	718
rt X	11-13	0.0	-0.5	193	-101	, 10
yal No	62+66	-1.6				]
Ro			-0.9	200	-171	
	64+66	-0.1				_
			-0.5	100	-53	

	Monument	Area (yd³/ft)	Avg Area (yd³/ft)	Length (ft)	Volume (yd³)	Total Volume (yd³)
	H-14	-1.0				
			-0.5	200	-104	
	67+66	-0.1				
4			-2.4	200	-474	
eac	69+66	-4.7				
B			-3.1	93	-285	
anc	H-15	-1.4				-1,391
L			-2.3	100	-227	
State Land Beach	H-16 (317.5)	-3.1				
N.			-2.5	34	-85	
	71+59	-2.0				
			-2.0	110	-216	
	H-16 A (345.5)	-1.9				

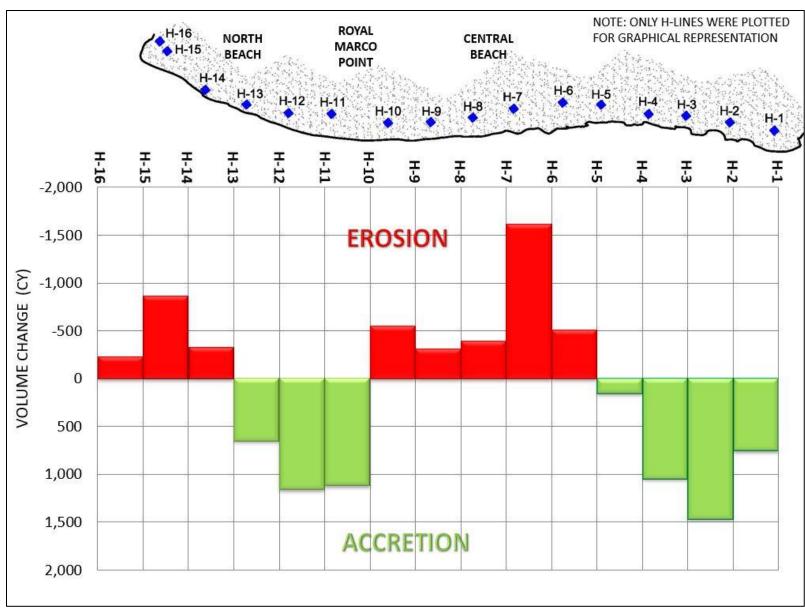


Figure 4. 2024 Monitoring – 2025 Monitoring Volumetric Changes Above -10-foot NAVD88.

A summary of the shoreline and volumetric changes based on the comparisons between the 2024 and 2025 monitoring surveys at the monuments is presented below.

South Point Beach: The beach segment extending from H-1 to H-4 advanced on average 0.4 feet. The range of shoreline change measured at MHW was from 50.8 feet of recession to 22.0 feet of advancement. The area gained approximately 3,260 cubic yards above -10 feet NAVD88.

Central Beach: The beach segment extending from H-4 to H-9 receded on average 6.4 feet. The range of shoreline change measured at MHW was from 38.1 feet of recession to 3.6 feet of advancement. The area lost approximately 2,660 cubic yards of material above -10 feet NAVD88.

Royal Marco Point South Beach: The beach segment extending from H-9 to approximately 200 feet southwest of H-12 advanced on average 1.7 feet. The range of shoreline change measured at MHW was from 7.9 feet of recession to 23.0 feet of advancement. The area gained approximately 1,330 cubic yards above -10 feet NAVD88.

Royal Marco Point North Beach: The beach segment extending from approximately 200 feet southwest of H-12 to H-14 receded on average 0.9 feet. The range of shoreline change measured at MHW was from 9.1 feet of recession to 10.9 feet of advancement. The area gained approximately 720 cubic yards above -10 feet NAVD88.

State Land Beach: The beach segment extending from H-14 to H-16 receded on average 13.3 feet. The range of shoreline change measured at MHW was from 27.0 feet of recession to 1.3 feet of advancement. The area lost approximately 1,390 cubic yards above -10 feet NAVD88.

#### 4.2 Borrow Area

Appendix 3 presents the Nearshore Borrow Area cross sections for the 2019 pre-construction and post-construction, 2022, 2024 and 2025 monitoring surveys. Table 3 presents the Nearshore Borrow Area volume changes calculated by comparing the 2024 and 2025 monitoring surveys. An accretion of approximately 4,140 cubic yards occurred between Stations 0+00 and 26+00. Figure 5 presents the Nearshore Borrow Area volume changes as a histogram.

Table 4 presents the volume remaining within the borrow area based on the 2025 monitoring survey including the one-foot overdredge tolerance. The total remaining volume is approximately 44,710 cubic yards.

In 2022, a permit modification was issued to extend the nearshore borrow area northeast by approximately 1,650 feet between H-9 and H-12 from Station 25+25 to Station 41+63. The extension was dredged during the June 2023 dredging of the Sand Trap off Tigertail/Sand Dollar Island Spit project. Based on the August 2025 survey, the total volume remaining within the extension is approximately 1,400 cubic yards (Table 5).

Table 3. 2024 – 2025 Monitoring Nearshore Borrow Area Volume Changes.

Station	Area (yd³/ft)	Avg Area (yd³/ft)	Length (ft)	Volume (yd³)
0+00	2.1		, ,	<b>Y</b> /
		0.8	100	83
1+00	-0.5			
		0.7	100	68
2+00	1.8	0.7	100	- 00
2:00	1.0	2.1	100	214
3+00	2.4	2.1	100	211
3100	2.7	2.5	75	191
3+75	2.6	2.3	13	171
<b>3</b> ±13	2.0	2.7	25	67
4+00	2.7	2.1	23	07
4+00	2.7	2.8	25	69
4 : 25	2.0	2.8	25	69
4+25	2.8	2.1	7.7	271
		3.4	75	251
5+00	3.9			
		3.1	100	305
6+00	2.2			
		2.2	75	169
6+75	2.3			
		1.5	25	38
7+00	0.8			
		1.4	25	36
7+25	2.1	111		
	2.1	1.7	75	125
8+00	1.2	1.7	15	123
0 : 00	1.2	1.3	100	133
9+00	1.5	1.3	100	133
<i>7</i> = <b>UU</b>	1.3	1.3	100	134
10+00	1.2	1.3	100	134
10+00	1.2	1.0	100	104
11.00	2.6	1.9	100	194
11+00	2.6	2.2	100	217
		2.2	100	215
12+00	1.7			
		1.6	100	157
13+00	1.5			
		0.9	100	87
14+00	0.3			
		1.1	100	114

Table 3. 2024 – 2025 Monitoring Nearshore Borrow Area Volume Changes Cont'd.

Station	Area	Avg Area	Length	Volume
	(yd³/ft)	(yd³/ft)	(ft)	(yd³)
15+00	2.0			
		0.6	100	65
16+00	-0.7			
		3.5	100	350
17+00	7.7			
		7.0	100	699
18+00	6.3			
		3.3	100	332
19+00	0.4			
		0.1	100	14
20+00	-0.1		- 0 0	
20.00	0.1	0.0	100	5
21+00	0.2		- 0 0	
21.00	V.2	0.1	100	15
22+00	0.1	011	100	10
	V.1	0.1	100	8
23+00	0.1	0.1	100	Ŭ
20:00	0.1	0.0	100	-3
24+00	-0.1	0.0	100	3
24:00	0.1	-0.1	75	-4
24+75	0.0	0.1	13	·
24:13	0.0	0.0	25	1
25+00	0.1	0.0	23	1
23100	0.1	0.1	25	2
25+25	0.1	U.1	23	<u> </u>
<u> </u>	0.1	0.0	75	3
26+00	0.0	0.0	75	3
26+00	0.0	_		
	Tota	al		4,137

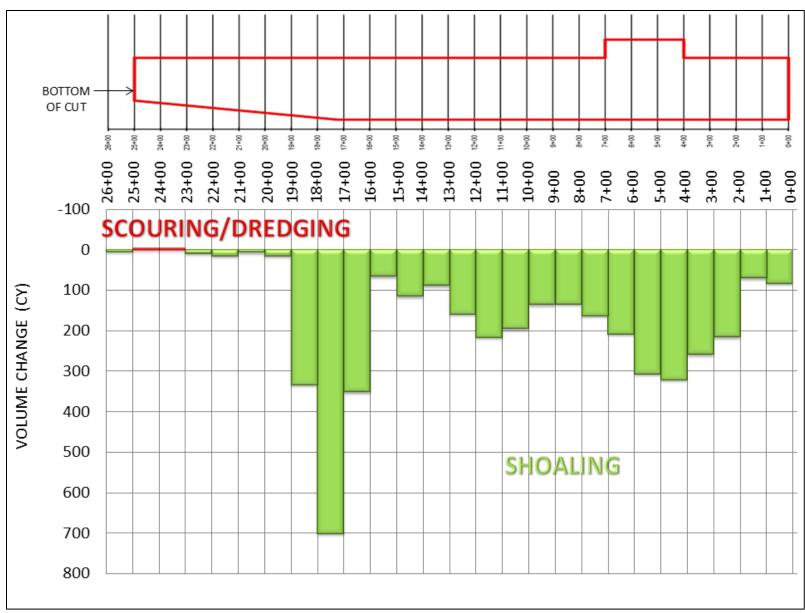


Figure 5. 2024 Monitoring – 2025 Monitoring Nearshore Borrow Area Volume Changes.

**Table 4. 2025 Volume Remaining Within Permitted Dredge Template.** 

abic 7. 2023 v 0		g Within Permitt		
Station	Area (yd³/ft)	Avg Area (yd³/ft)	Length (ft)	Volume (yd³)
0+00	49.2			
		51.9	100	5,187
1+00	54.5			
		37.3	100	3,731
2+00	20.1	0.110		2,7,2,2
2.00	20.1	19.7	100	1,969
3+00	19.3	17.7	100	1,505
5.00	17.5	18.5	75	1,387
3+75	17.7	10.5	13	1,507
3173	17.7	18.8	25	470
4+00	19.9	10.0	23	470
4+00	19.9	10.7	25	402
4+25	10.5	19.7	25	492
4+25	19.5	20.2		1.70
		20.3	75	1,526
5+00	21.2			
		22.2	100	2,217
6+00	23.1			
		20.3	75	1,522
6+75	17.5			
		17.4	25	435
7+00	17.3			
		19.8	25	494
7+25	22.2			
7 : 20	22.2	23.5	75	1,764
8+00	24.8	23.5	7.5	1,701
0.00	21.0	23.6	100	2,363
9+00	22.4	23.0	100	2,505
7+00	22.4	21.2	100	2,122
10+00	20.0	21.2	100	2,122
10700	20.0	10.7	100	1 066
11.00	17.2	18.7	100	1,866
11+00	17.3	15.1	100	1.500
40:00	100	15.1	100	1,508
12+00	12.8	4.4.5	100	4.460
		14.6	100	1,460
13+00	16.4			
		13.7	100	1,365
14+00	10.9			
		11.6	100	1,162
15+00	12.3			
		13.9	100	1,391
16+00	15.5			
		33.0	100	3,305
17+00	50.5			ĺ
-		36.1	100	3,612
18+00	21.7	20.1	- 00	-,012
20.00	21.7	13.2	100	1,323
19+00	4.8	10.2	100	1,525
17:00	7.0	2.9	100	294
20+00	1.1	2.3	100	∠3 <del>*†</del>
<u> </u>	1.1			

Table 4. 2025 Volume Remaining Within Permitted Dredge Template Cont'd.

		1.0	100	101
21+00	0.9			
		3.2	100	320
22+00	5.5			
		6.0	100	595
23+00	6.4			
		5.3	100	534
24+00	4.3			
		2.2	75	168
24+75	0.2			
		0.2	25	4
25+00	0.1			
		0.1	25	3
25+25	0.1			
		0.3	75	19
26+00	0.4			
	44,709			

Table 5. 2025 Volume Within Dredge Template Extension.

Station	Area (yd³/ft)	Avg Area (yd³/ft)	Length (ft)	Volume (yd³)
25+25	0.1		,	, , , , , , , , , , , , , , , , , , ,
		0.3	75	19
26+00	0.4			
		1.7	100	171
27+00	3.1			
		1.8	100	179
28+00	0.5			
		0.4	100	39
29+00	0.2			
		0.3	100	27
30+00	0.3			
		0.1	100	15
31+00	0.0			
		0.4	100	44
32+00	0.9			
		0.4	100	44
33+00	0.0			
		0.0	100	3
34+00	0.1			
		0.6	100	59
35+00	1.1			
		2.2	100	223
36+00	3.3			
		3.3	100	327
37+00	3.2	2.0	100	20.5
20.00	0.0	2.0	100	205
38+00	0.9	0.4	100	4.4
20.100	0.0	0.4	100	44
39+00	0.0	0.0	100	
40.100	0.0	0.0	100	0
40+00	0.0	0.0	100	
41 + 00	0.0	0.0	100	0
41+00	0.0	0.0	(2	0
41+62	0.0	0.0	63	0
41+63	0.0 <b>Tot</b> a	<u> </u> -1		1,399

# 4.3 Morphologic Changes

Figures 6 and 7 present elevation contour maps based on the 2024 and 2025 monitoring surveys, respectively. The morphologic changes that occurred between the two surveys are presented in Figure 8.

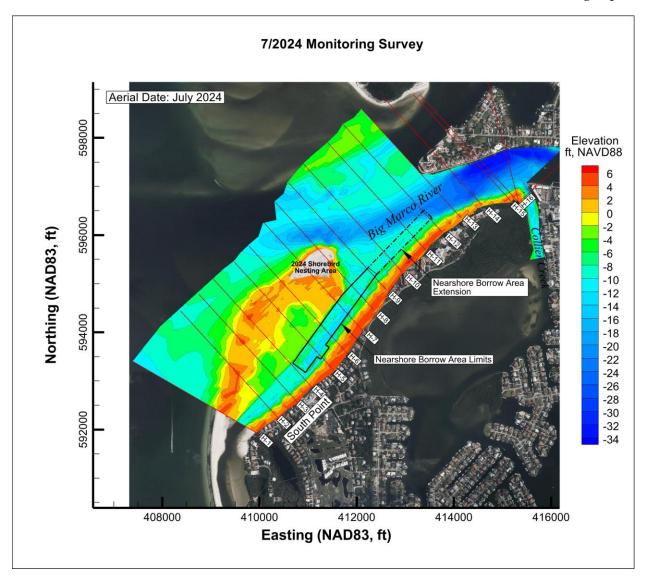


Figure 6. July 2024 Monitoring Survey Contour Map.

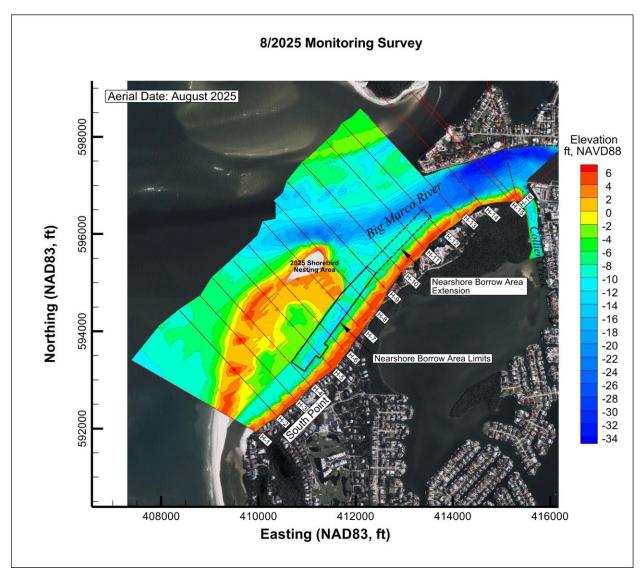


Figure 7. August 2025 Monitoring Survey Contour Map.

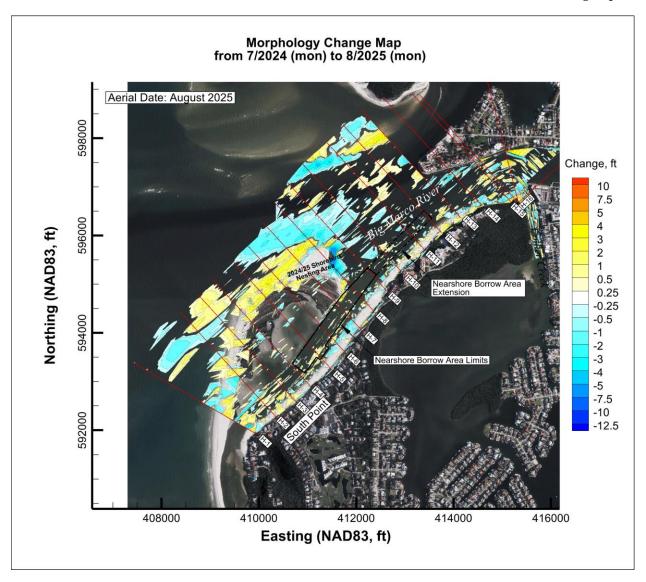


Figure 8. Morphologic Changes between July 2024 and August 2025 Surveys.

#### 5 ADAPTIVE MANAGEMENT PLAN

During permitting of the 2013 Project, FDEP and Rookery Bay expressed concerns regarding potential downdrift erosion on the State property between H-14 (approximate end of T-groin field) and H-16. To address these concerns, an assessment of downdrift impact due to the addition of three T-groin structures along the North Beach segment was to be performed annually as part of the monitoring requirements as described within the Adaptive Management Plan (AMP).

Table 6 presents MHW shoreline changes within the State property between the 2013 preconstruction and 2025 monitoring survey. The changes range from 91.3 feet of recession to 6.2 feet of recession with an average change of 58.4 feet of recession. Based on the 2024 monitoring survey, the 2013 to 2024 average recession was 43.7 feet (CEC, 2024). Thus, from 2024 to 2025, the AMP shoreline receded on average 14.7 feet.

Table 6. Adaptive Management Plan Shoreline Change Analysis.

	Station Along Construction Baseline	2013-Pre – 2025-Mon MHW Change (ft)
State Land Adaptive Management	1+50	-49.2
	2+00	-65.4
	2+50	-77.4
	3+00	-84.6
	3+50	-88.5
	4+00	-91.0
	4+50	-91.3
	5+00	-89.5
Area	5+50	-69.8
(H-14 to Terminal Groin)	6+00	-47.9
	6+50	-40.5
	7+00	-37.5
	7+50	-34.7
	8+00	-34.1
	8+50	-27.3
	9+00	-6.2
Average Shore	-58.4	

According to the approved PMP, if erosion is identified within the shoreline segment between H-14 and H-16 and it exceeds 27 feet measured from the 2013 pre-construction shoreline (reference shoreline) position, the shoreline shall be restored to the reference shoreline position as part of Hideaway Beach's future beach renourishment plans. Based on the 2025 monitoring survey, the shoreline recession exceeded 27 feet by 31.4 feet. The majority of the erosion occurred as a result of Hurricane impacts most notably Irma in 2017 (CEC, 2018), when this shoreline segment experienced erosion of 34.3 feet between the 2017 and 2018 monitoring surveys. In 2022, Hurricane Ian also impacted the Project Area resulting in measurable beach erosion. In August

2023, Hurricane Idalia impacted the Project Area. In 2024, Hurricanes Debby, Helene and Milton impacted the Project Area during this monitoring period. CEC will continue to monitor this segment.

It is also noted that Collier County is currently implementing their long-term management plan for Collier Creek and future renourishment along this segment should be evaluated once this plan is realized.

#### 6 CONCLUSION

This report describes the results of the sixth-year monitoring of the City of Marco Island's 2019 Hideaway Beach Erosion Control Project. The information presented herein provides the baseline data for both the City and FDEP to observe and assess, with quantitative measurements, the performance of the Project, any adverse effects which have occurred, and the need for any adjustments, modifications, or mitigative response to the Project. The monitoring process also provides the City and FDEP information necessary to plan, design, and optimize subsequent follow-up projects, potentially reducing the need for and costs of unnecessary work, as well as potentially reducing any environmental impacts that may have occurred or be expected.

Between the 2024 and 2025 monitoring surveys, the beach fill segments experienced total volumetric changes, measured above -10 feet NAVD88, of approximately 3,260 cubic yards of gain, 2,660 cubic yards of loss, 1,330 cubic yards of gain, and 720 cubic yards of gain for the South Point Beach, Central Beach, Royal Marco Point South Beach, and Royal Marco Point North Beach, respectively. The State Land Beach lost approximately 1,390 cubic yards. The net change for the entire area was a gain of approximately 1,250 cubic yards.

The average MHW shoreline change for the entire length of the monitoring area was approximately 3.2 feet of recession. Within the State Land Beach, the MHW shoreline receded on average 13.3 feet.

An assessment of downdrift impact due to the addition of three T-groin structures along the North Beach segment was performed as part of the AMP. Based on the 2025 monitoring survey, the average shoreline recession between 2013 and 2025 was 58.4 feet which exceeded the AMP criteria by 31.4 feet. It is noted multiple significant storm events impacted the Project Area during this period, with the majority of the losses being attributed to Hurricane Irma in 2017 when this shoreline segment experienced erosion of 34.3 feet. It is also noted that Hurricanes Ian and Idalia impacted the Project Area in 2022 and 2023, respectively. In 2024, Hurricanes Debby, Helene and Milton impacted the Project Area.

### 7 REFERENCES

Coastal Engineering Consultants. 2018. Hideaway Beach Erosion Control Project – Phase III, 2018 Annual Monitoring Report. November 14, 2018.

Coastal Engineering Consultants. 2023. Hideaway Beach Erosion Control Project – Phase III, 2023 Monitoring Report. September 27, 2023.

Coastal Engineering Consultants. 2024. Hideaway Beach Erosion Control Project – Phase III, 2024 Monitoring Report. September 5, 2024.

# APPENDIX 1

SURVEY REPORT



### 2025 HIDEAWAY BEACH PHYSICAL MONITORING SURVEY REPORT

Coastal Engineering Consultants (CEC) conducted the Annual Physical Monitoring Hydrographic and Topographic Survey of the beach on July 31, 2025. The nearshore borrow area was surveyed on August 19, 2025. CEC utilized Trimble Real Time Kinematic (RTK) Global Positioning Systems (GPS). All GPS base station control referenced during this survey was previously established by Florida Department of Environmental Protection (FDEP) and meets or exceeds Geospatial Positioning Accuracy Standards, Range VIII.

All "H" monument (H-mon) and intermediate beach profiles were collected along FDEP established grid bearings as outlined in the project Scope of Work. The horizontal and vertical datums were North American Datum (NAD) of 1983/2012 Adjustment, State Plane Florida East Zone, and North American Vertical Datum (NAVD) of 1988, Geoid 2018, respectively.

CEC occupied several H-mons during the project. CEC collected GPS static observations on each GPS base point to confirm the coordinates listed on the published H-mon control list. Horizontal and vertical positions of all found monuments were verified and documented.

All survey control was established as part of the upland topographic survey control work and conducted in accordance with the FDEP Monitoring Standards for Beach Erosion Control Projects. These surveys meet the requirements set forth in Chapter 5J-17 (F.A.C.) Florida Administrative Code. The following published vertical control was used during the survey:

872 4991D Tidal Northing 591,727.19 feet Easting 417,229.65 feet Elevation 2.10 feet NAVD88

FDEP A24 (6478) Northing 588,145.15 feet Easting 410,914.69 feet Elevation 2.32 feet NAVD88

### Equipment

*Upland:* CEC employed two Trimble Real Time Kinetic (RTK) GPS rover receivers with GLONASS capability systems for the upland surveys. These systems are capable of delivering RTK positions with coordinate accuracy of  $\pm 10$ mm+2ppm. Wireless Bluetooth technology allows our surveyors to collect data seaward of the Mean High Water line in the "surf zone" up to 5 feet deep.

Offshore: The survey vessel used for this work was a 20-foot fiberglass hull powered by an outboard. A CEE ECHO single beam echo sounder was used with a side mounted transducer. A Trimble R8 GPS antenna with GLONASS capability was installed on the side mount bracket directly above the transducer. A Trimble R8 receiver was integrated with the on-board computer system. Hypack 2021 software package was the hydrographic guidance program utilized.

#### **QA/QC Procedures**

CEC upland field crews utilize RTK systems for data collection. CEC also incorporates the necessary equipment on the survey vessel to collect bathymetric survey data "Real-Time". To meet the specification calling for an approximate 50-foot overlap in data between the boat and the upland crew, CEC implements the following procedure. Utilizing "Real-Time" data collection, the boat crew immediately accounts for the tide correction, as well as the draft, and reports measured water depth in NAVD88 at each profile with the upland crew. This gives the upland crew, who simultaneously collects the upland and near shore profile data, the necessary information to achieve the "overlap" specification.

Upland Data Collection: CEC mobilized one surveyor equipped with a Trimble RTK GPS rover unit to collect survey data from the approximate Mean High Water line landward to the existing dune while an additional surveyor with similar equipment collected data just landward of the mean high water seaward to wading depth or approximately -5 feet NAVD88. The recorded data was maintained within tolerances of  $\pm 0.20$  feet horizontal and  $\pm 0.10$  feet vertical. QA/QC procedures were maintained by both comparison of values with higher accuracy and by repeat measurement.

An electronic list of H-mon coordinates and profile azimuths was loaded into the rover units and measurements were recorded along the azimuth line at intervals no greater than 25 feet or wherever geographical features dictated. The measurements were taken landward along the azimuth line to the location of the H-mon and a measurement was taken on the H-mon when possible. The measurements were taken seaward along the azimuth line to a minimum depth of –5 feet NAVD88 or as far as conditions dictated, to maintain a minimum of 50 feet of overlap with the data being collected by the offshore survey crew. This data was then compiled and merged with the offshore data to produce the profile drawings.

Offshore Data Collection: All survey equipment was properly calibrated and operated in accordance with FDEP standards. Bar checks to calibrate the fathometer were performed for verification of accuracy at the beginning of each survey day. A direct depth measurement check was conducted and

2025 Hideaway Beach Physical Monitoring Survey Report Page 3

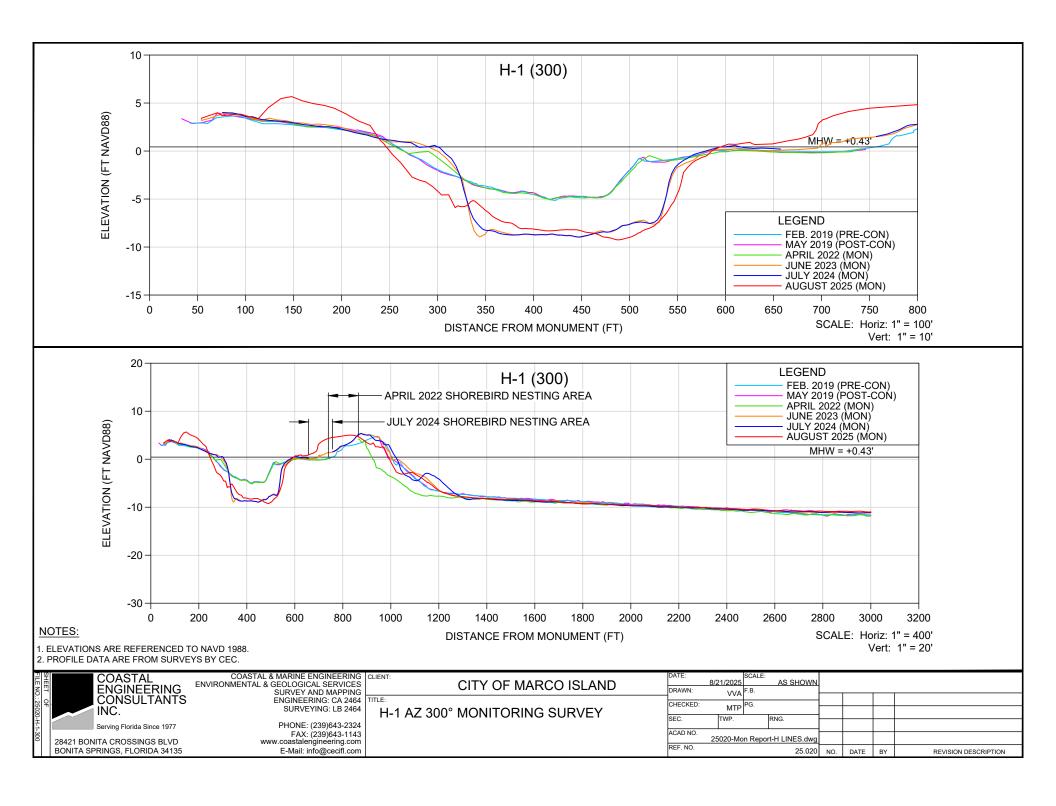
recorded at both shallow and maximum depths relative to the work area at the beginning of each survey day, and more frequently if necessary.

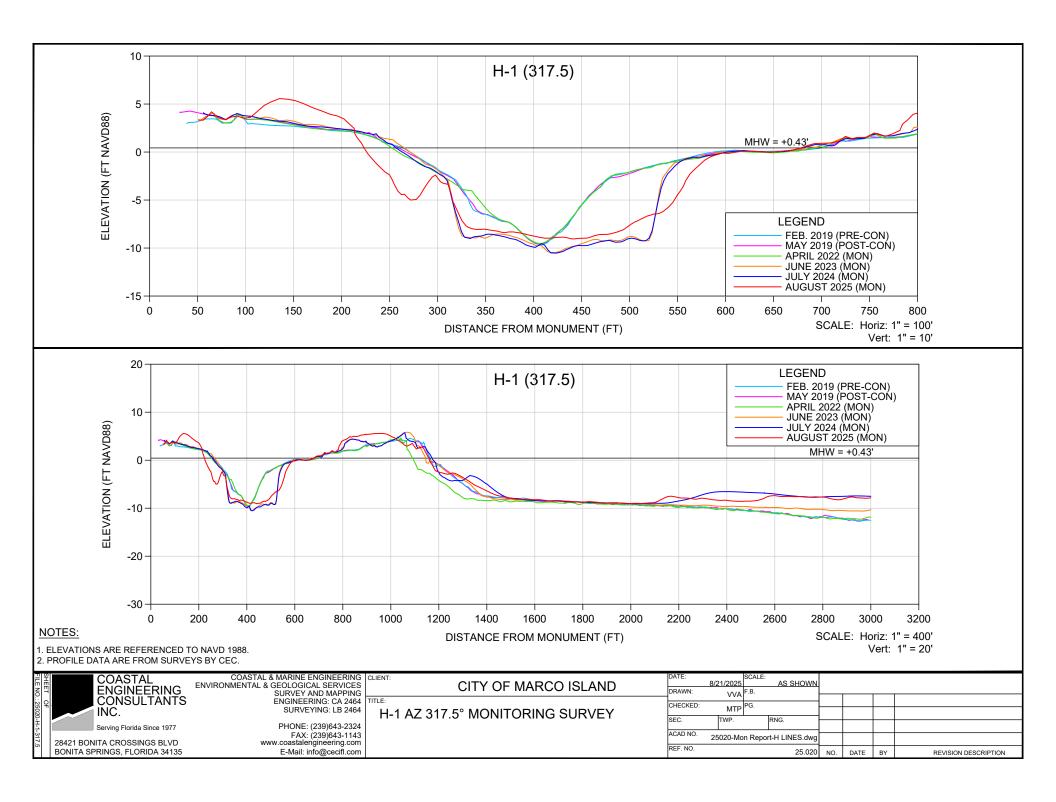
COASTAL ENGINEERING CONSULTANTS, INC. FLORIDA BUSINESS AUTHORIZATION NO. LB 2464

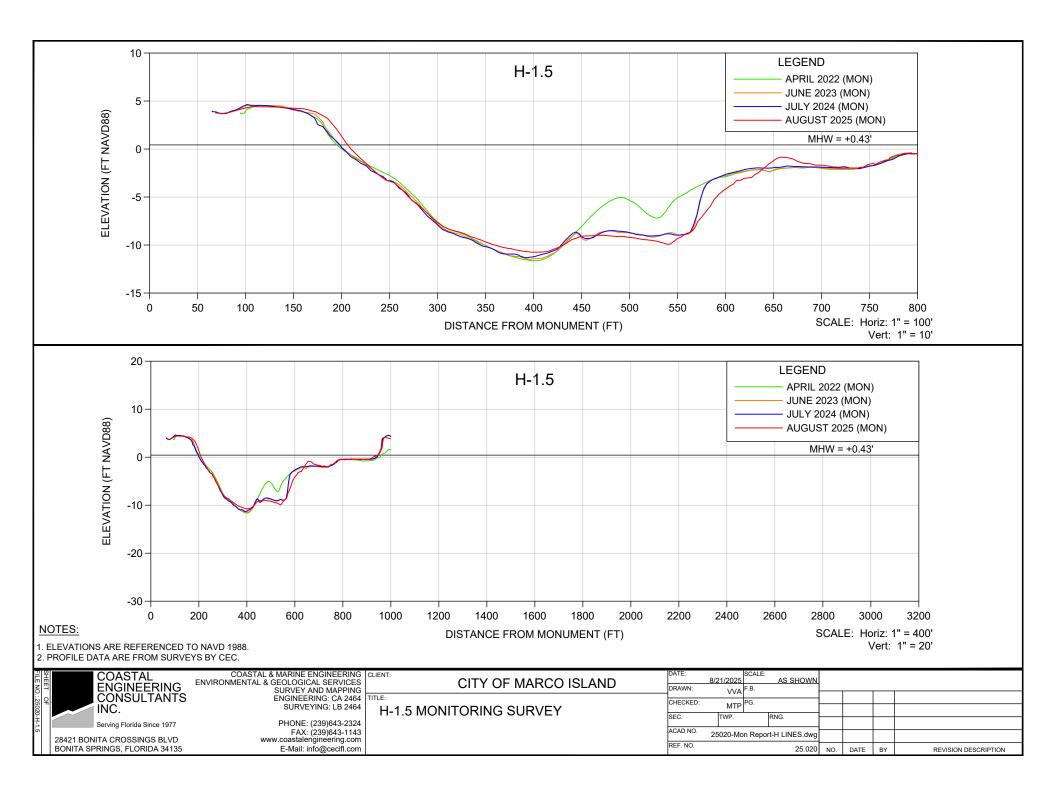
Richard J. Ewing, P.S.M.
Professional Surveyor and Mapper
Florida Certificate No. 5295
NOT VALID WITHOUT THE SIGNATURE AND
THE ORIGINAL RAISED SEAL OF A FLORIDA
LICENSED SURVEYOR AND MAPPER
CEC FILE NO. 25.020

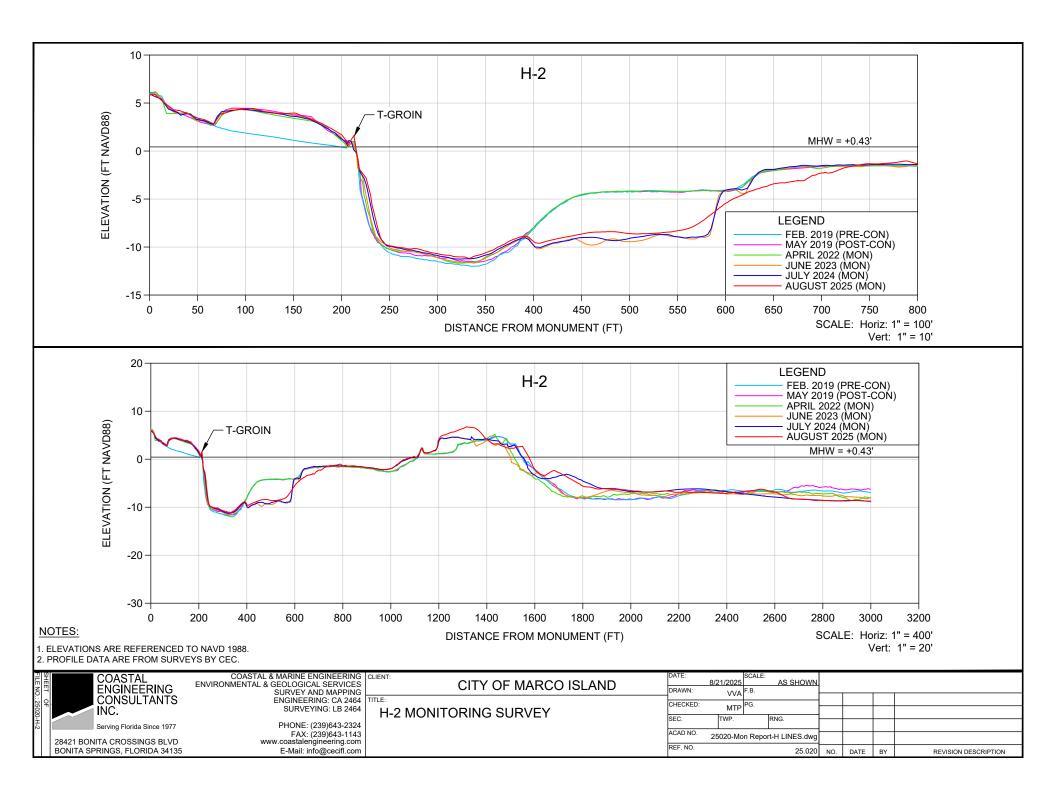
# APPENDIX 2

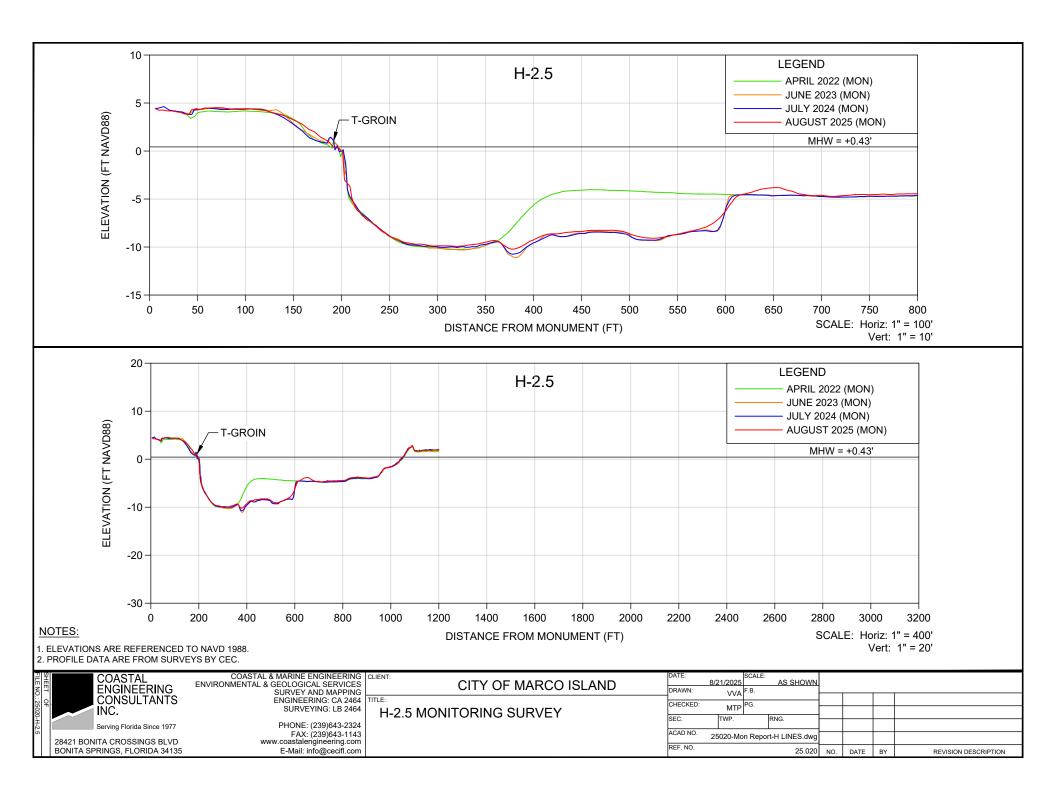
# BEACH PROFILES

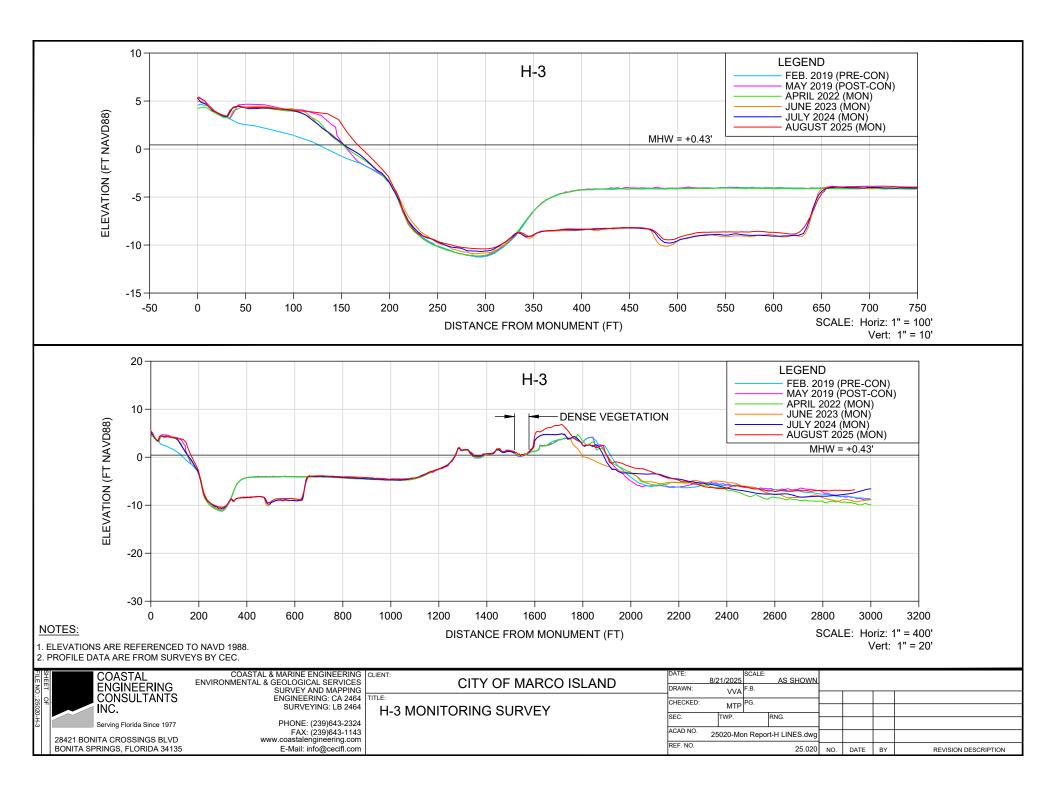


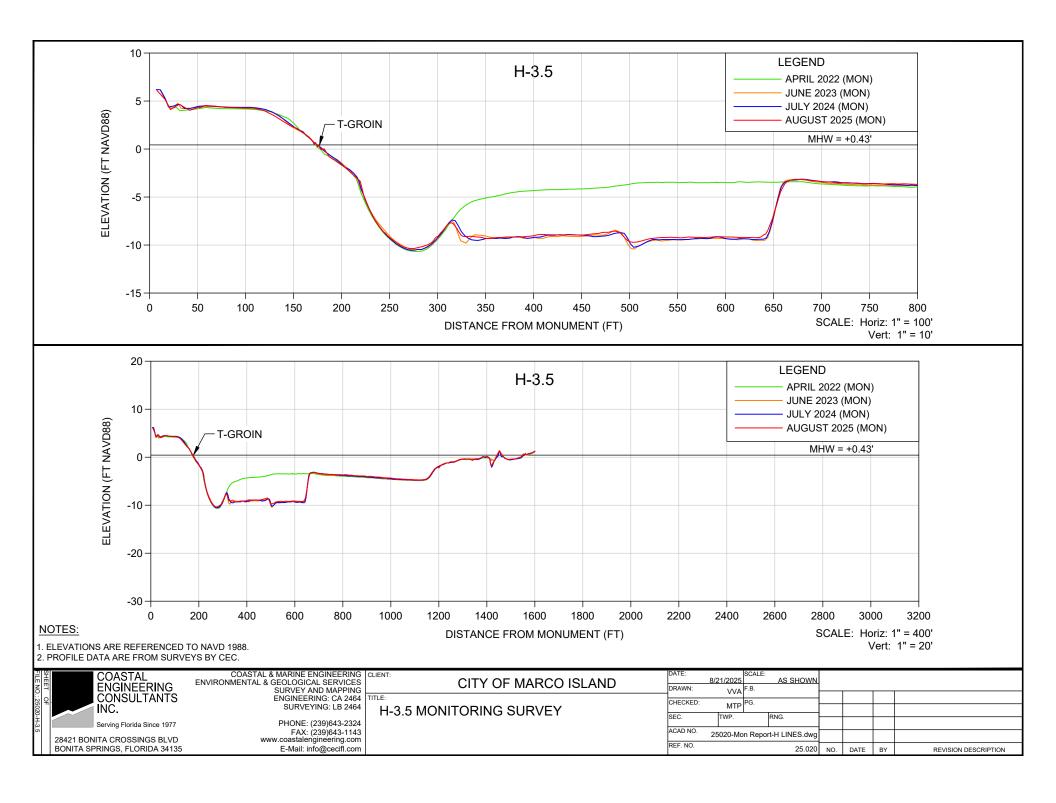


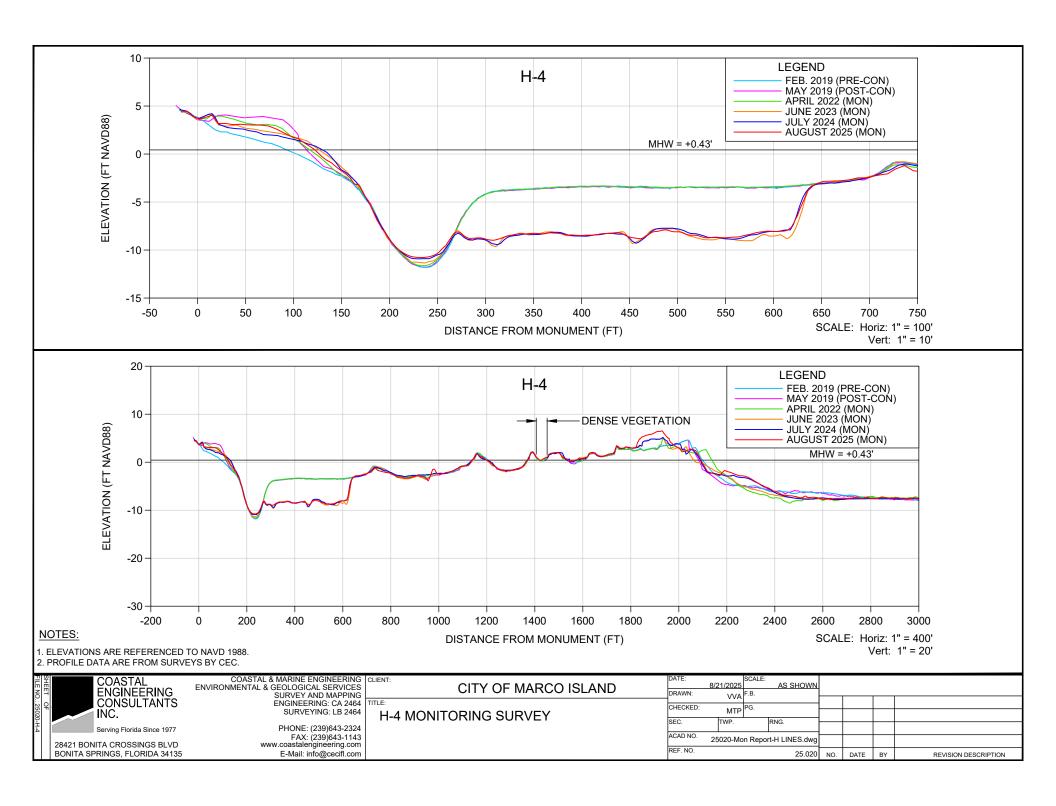


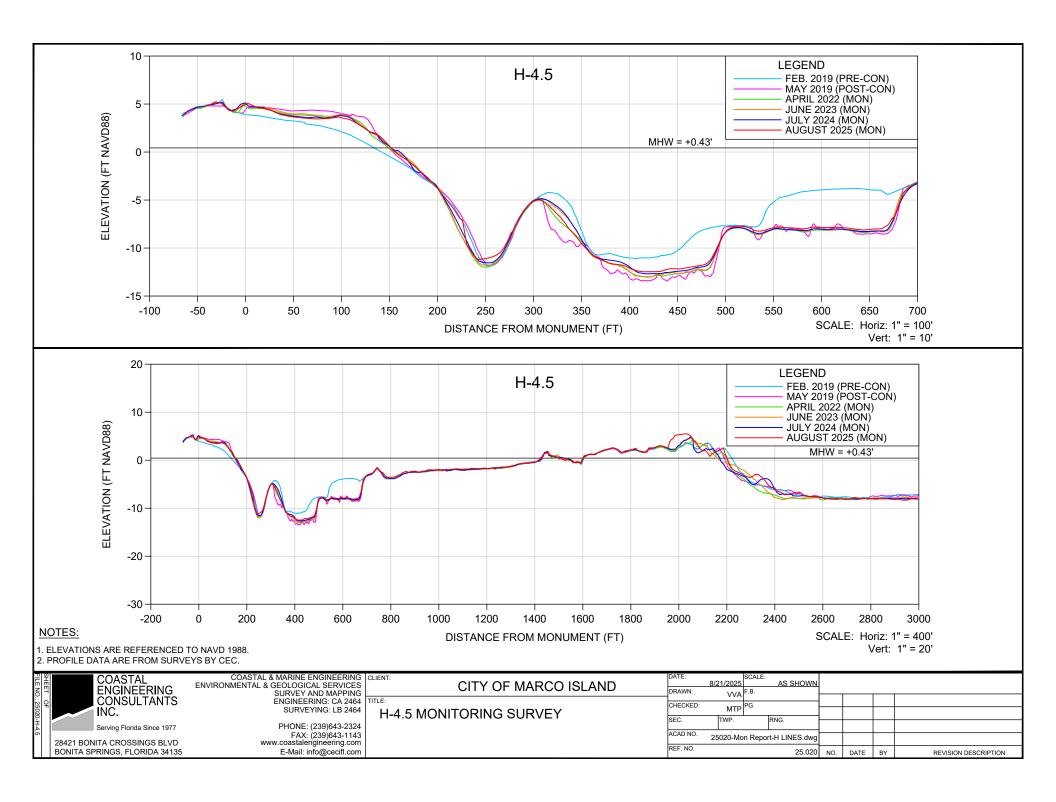


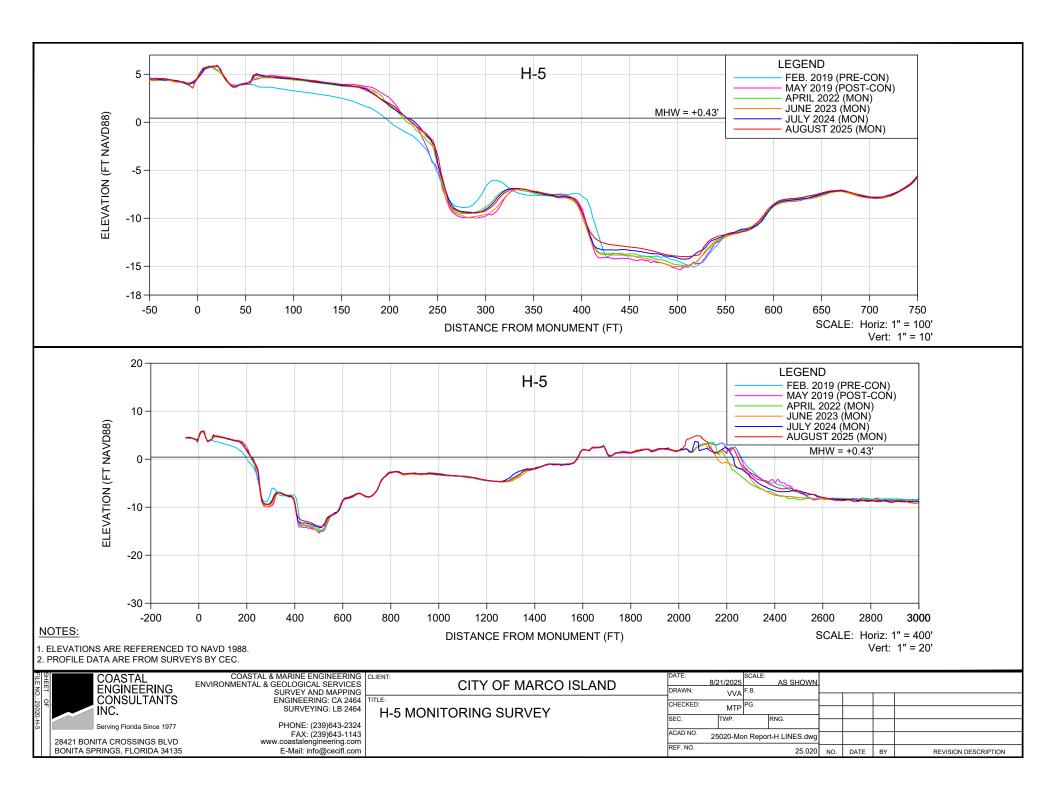


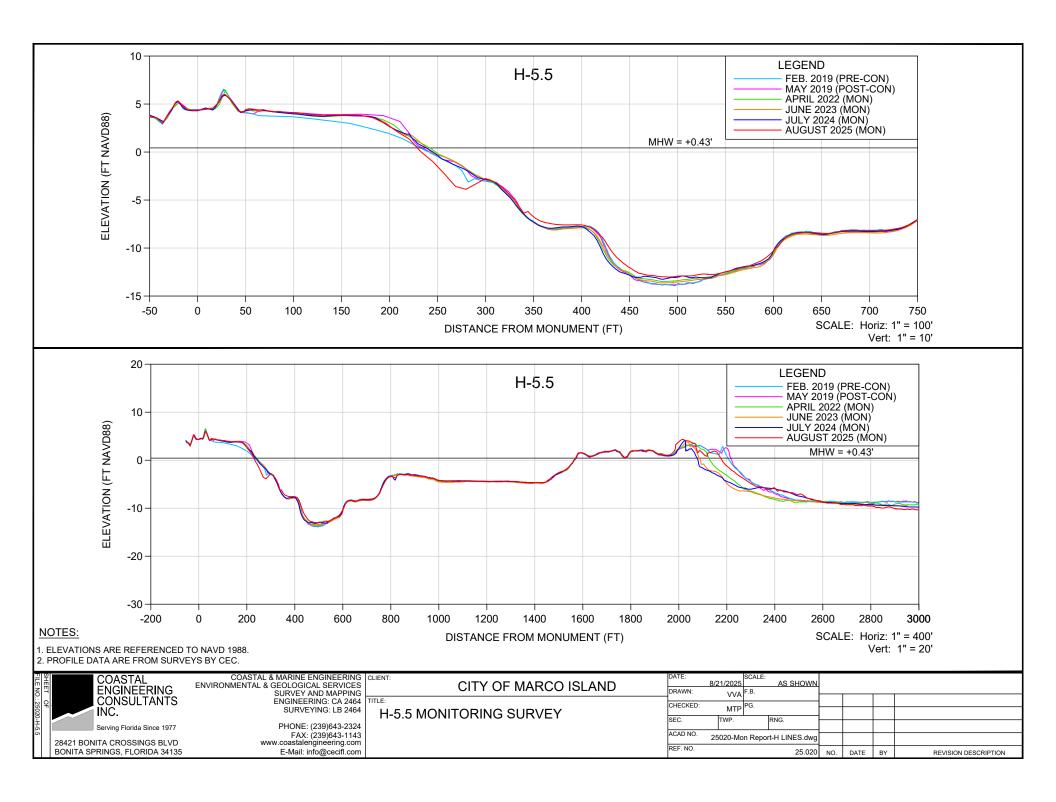


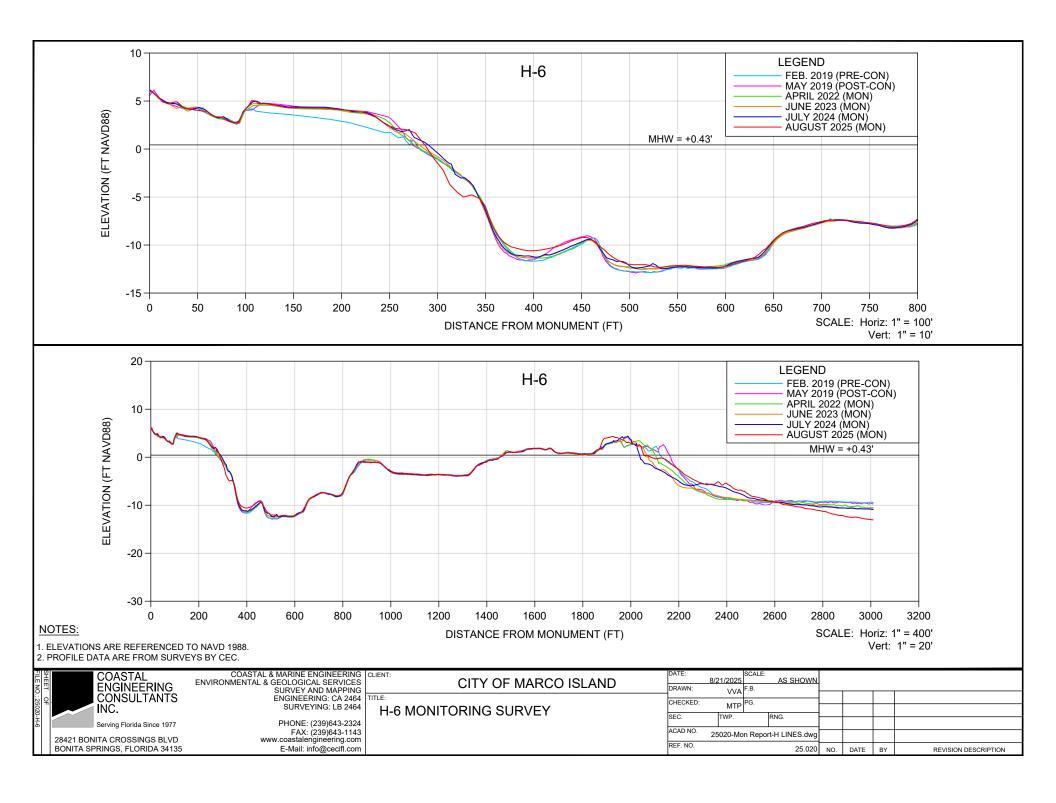


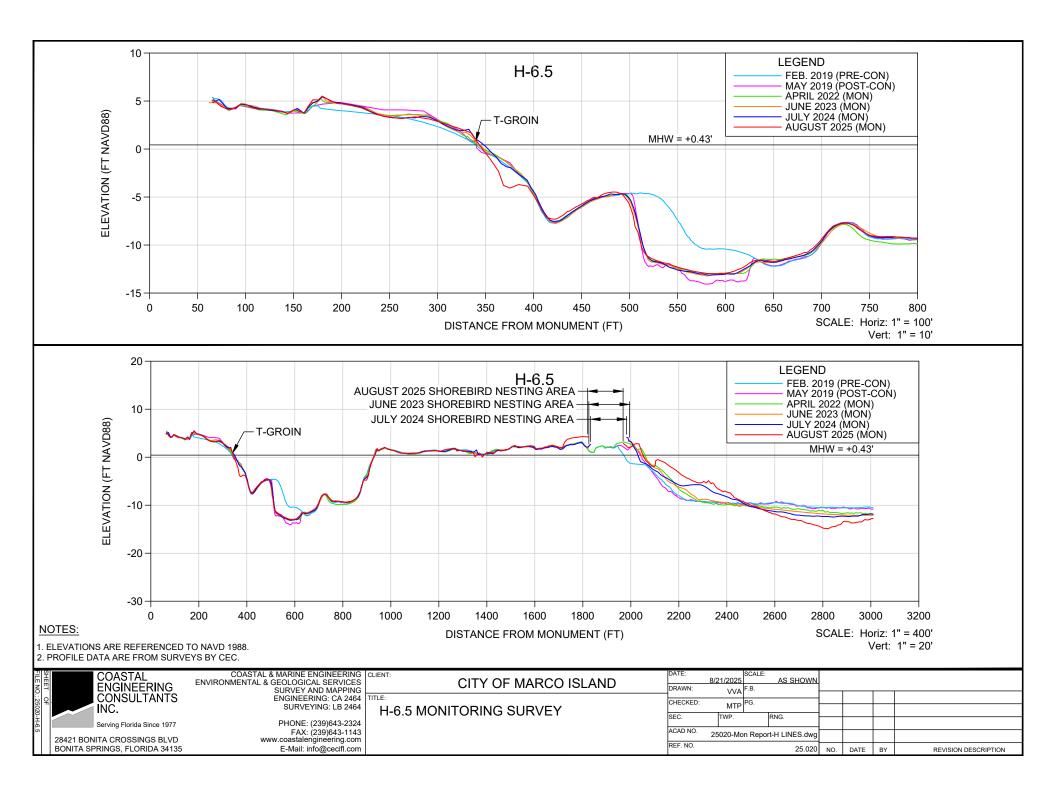


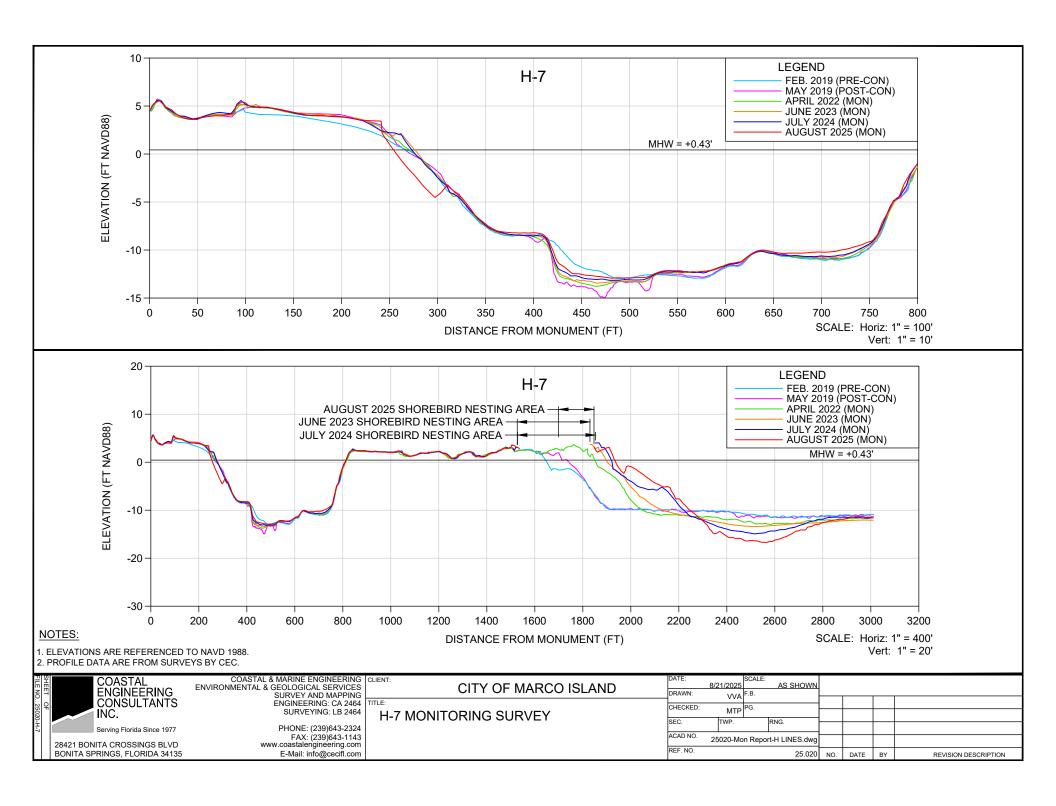


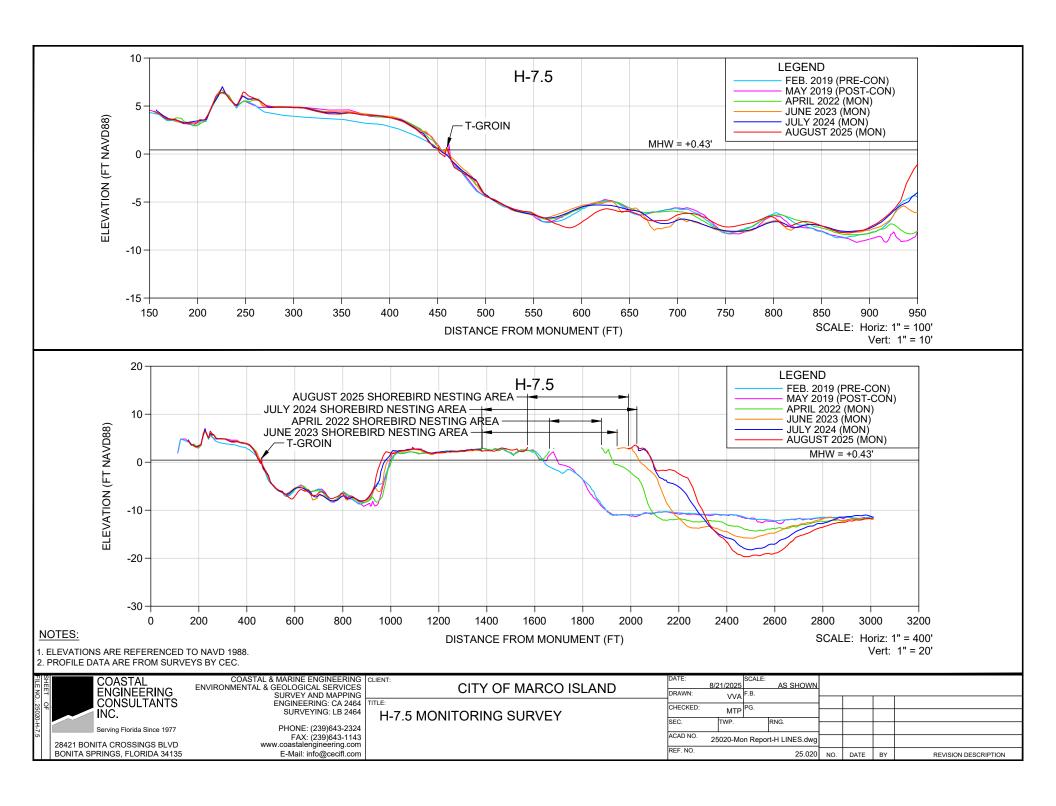


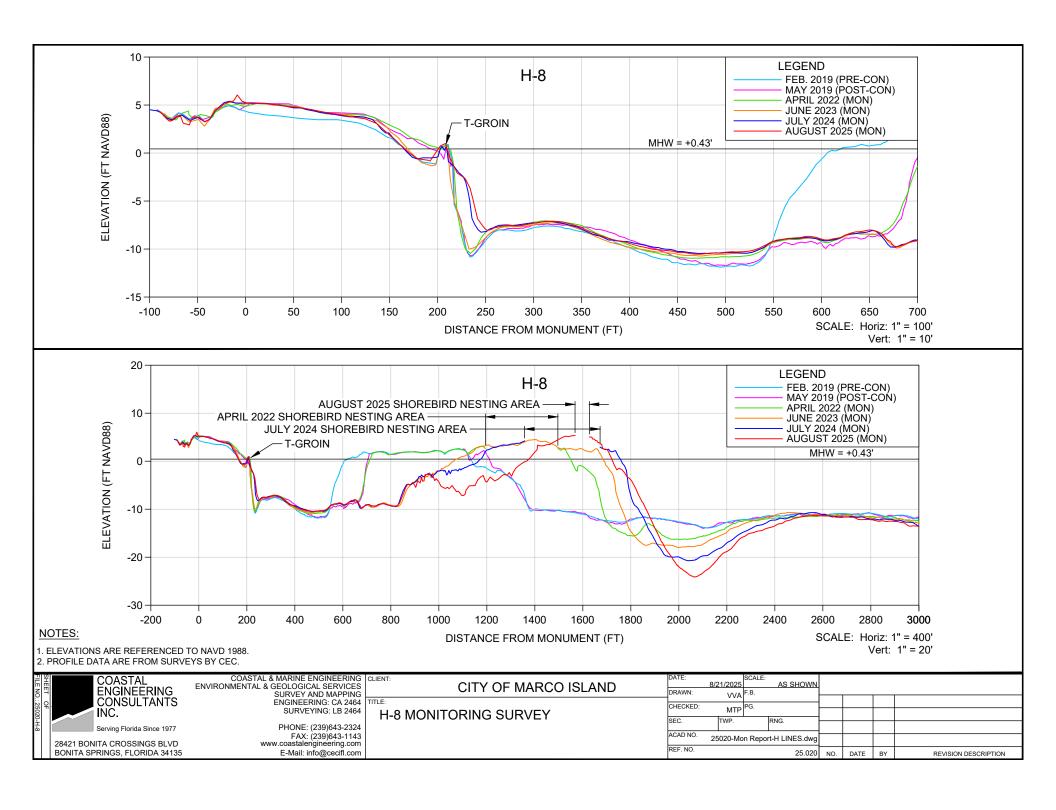


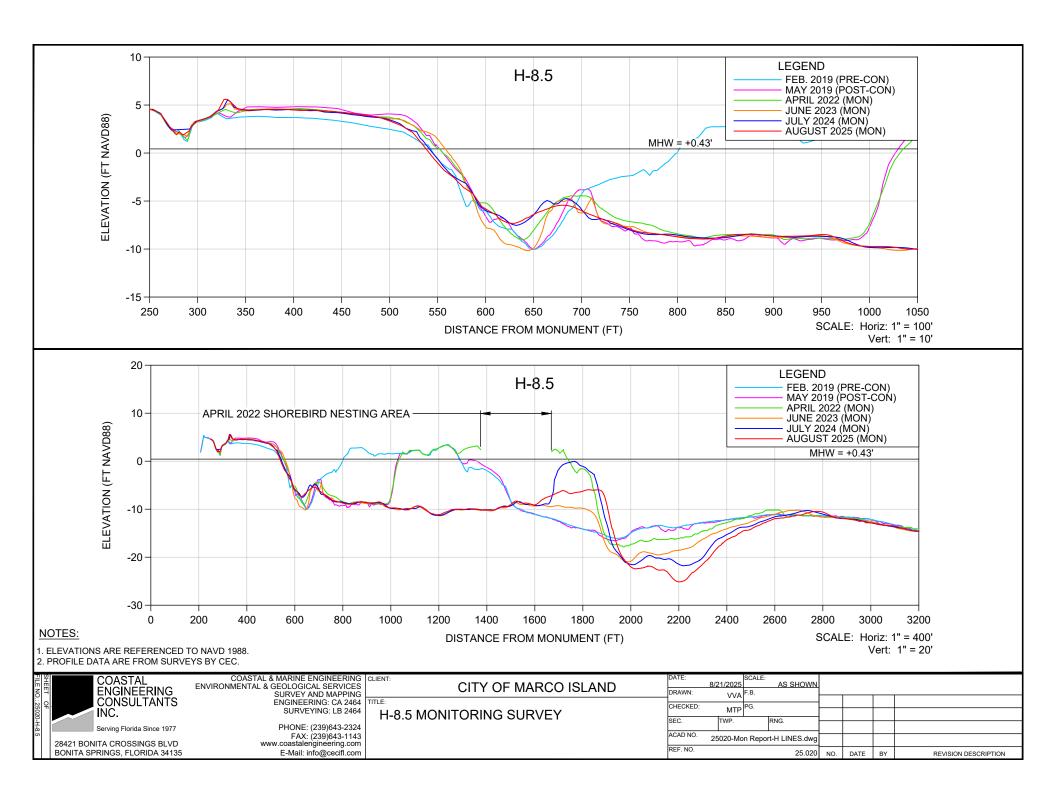


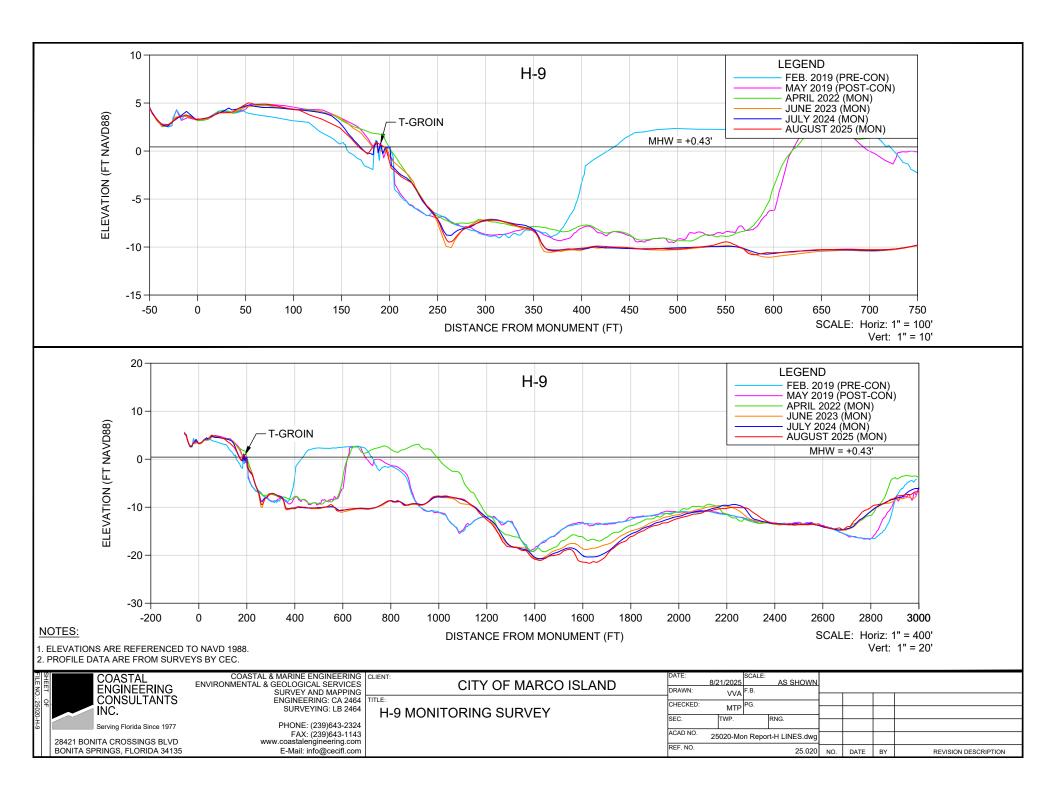


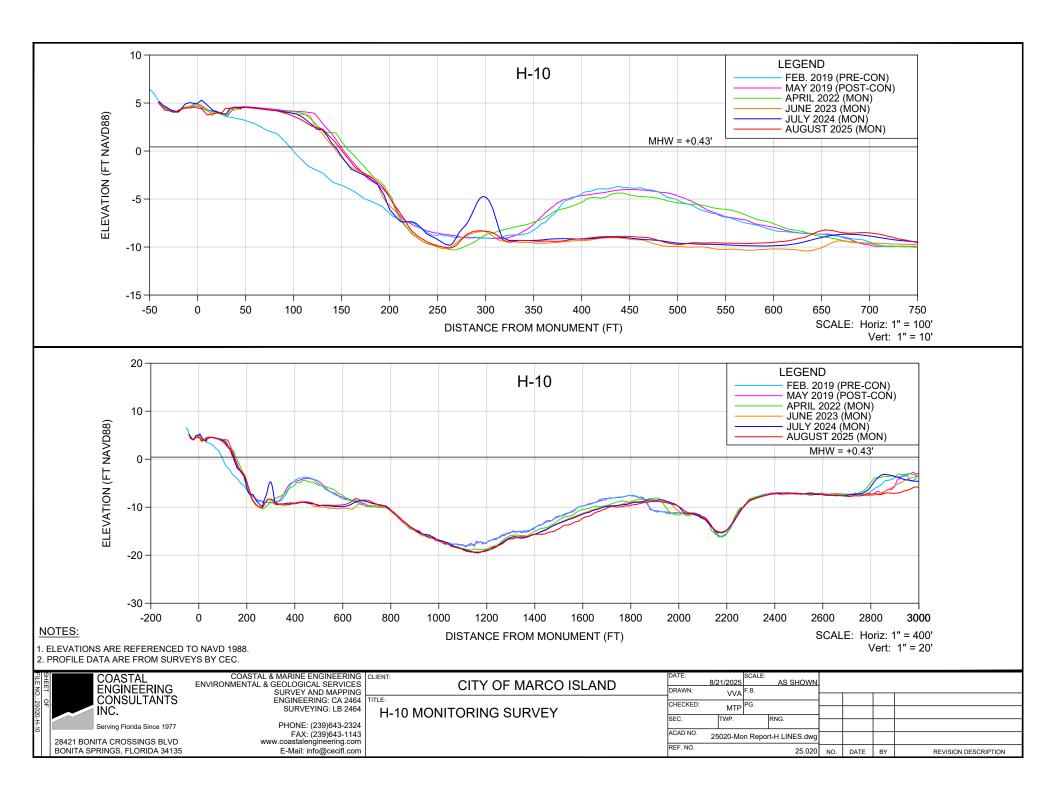


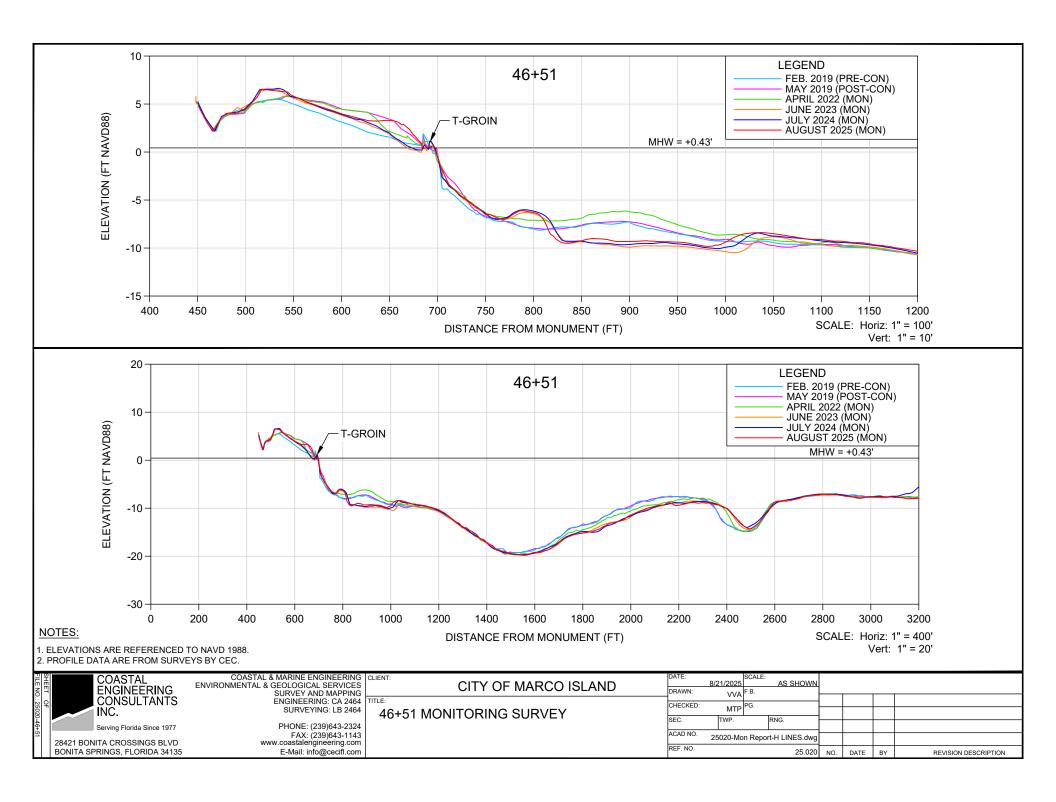


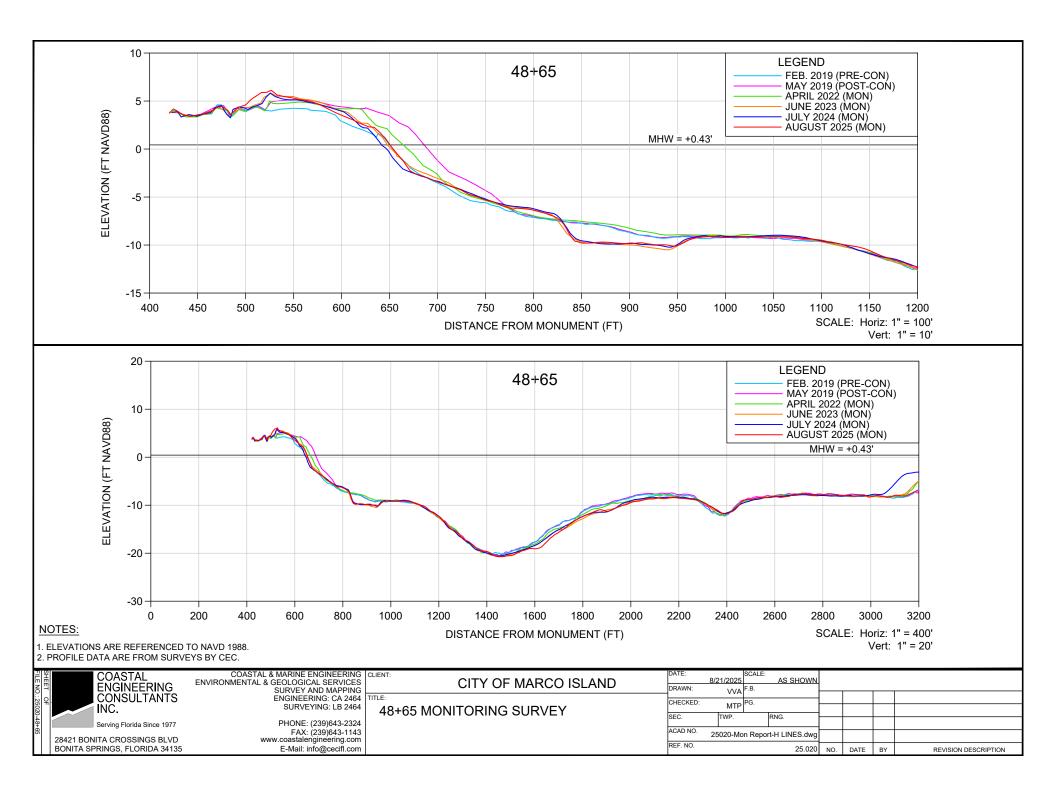


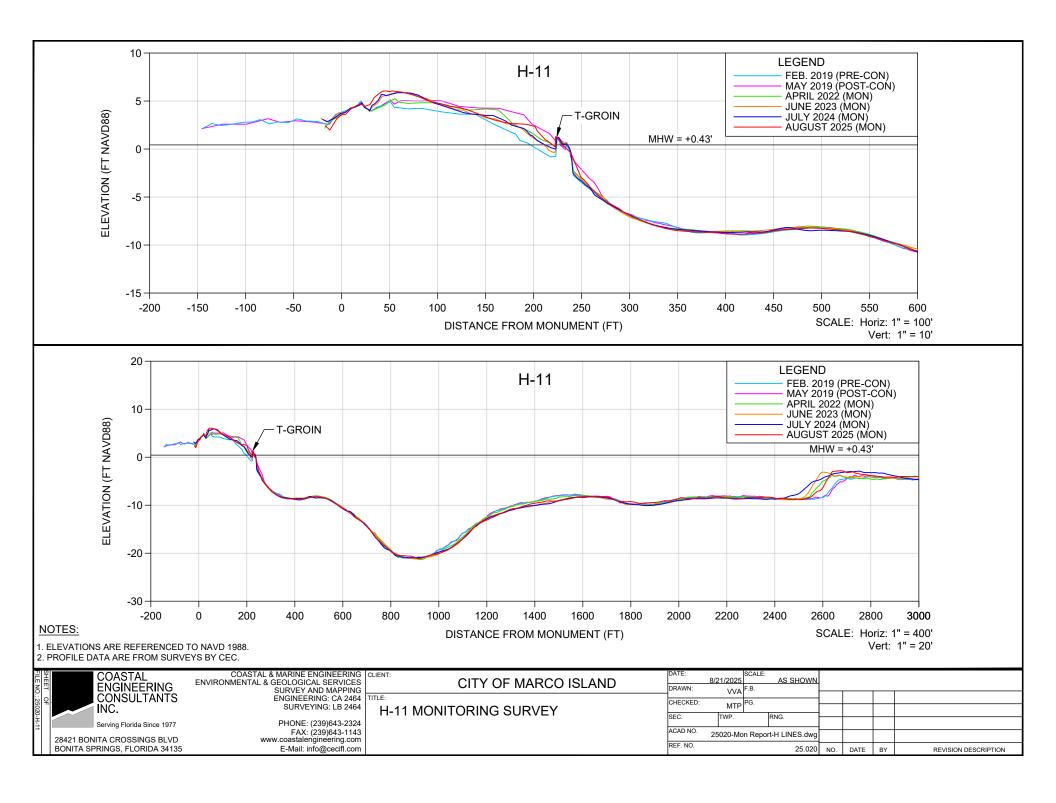


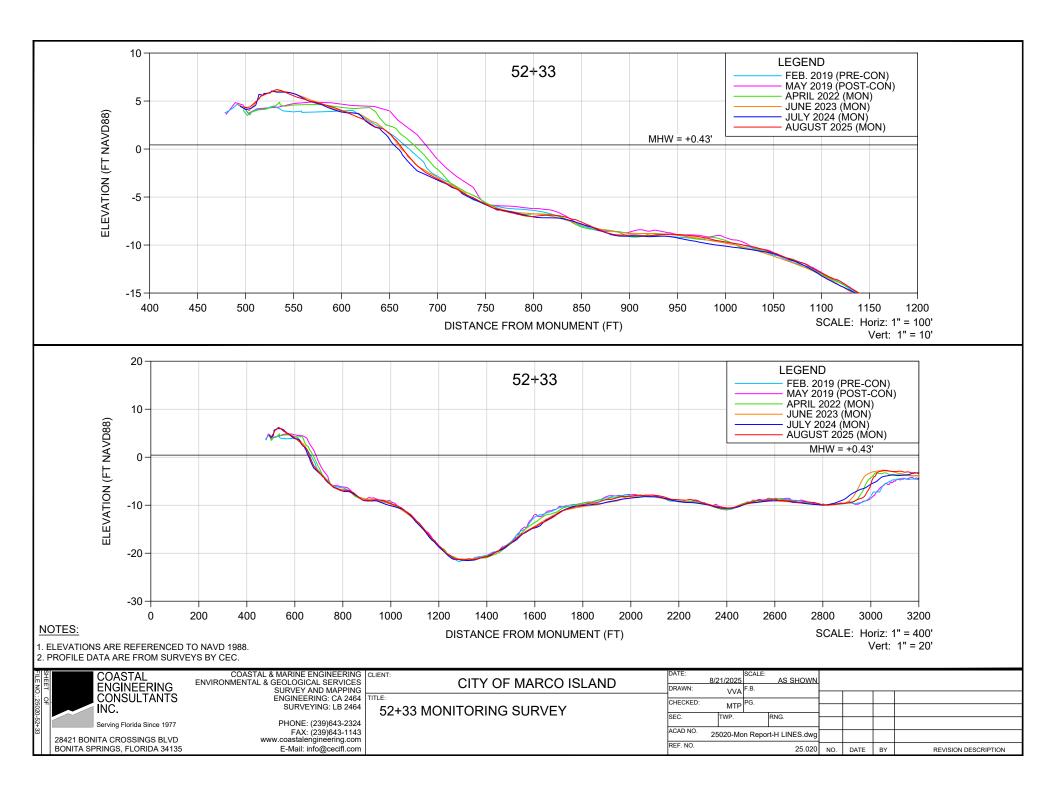


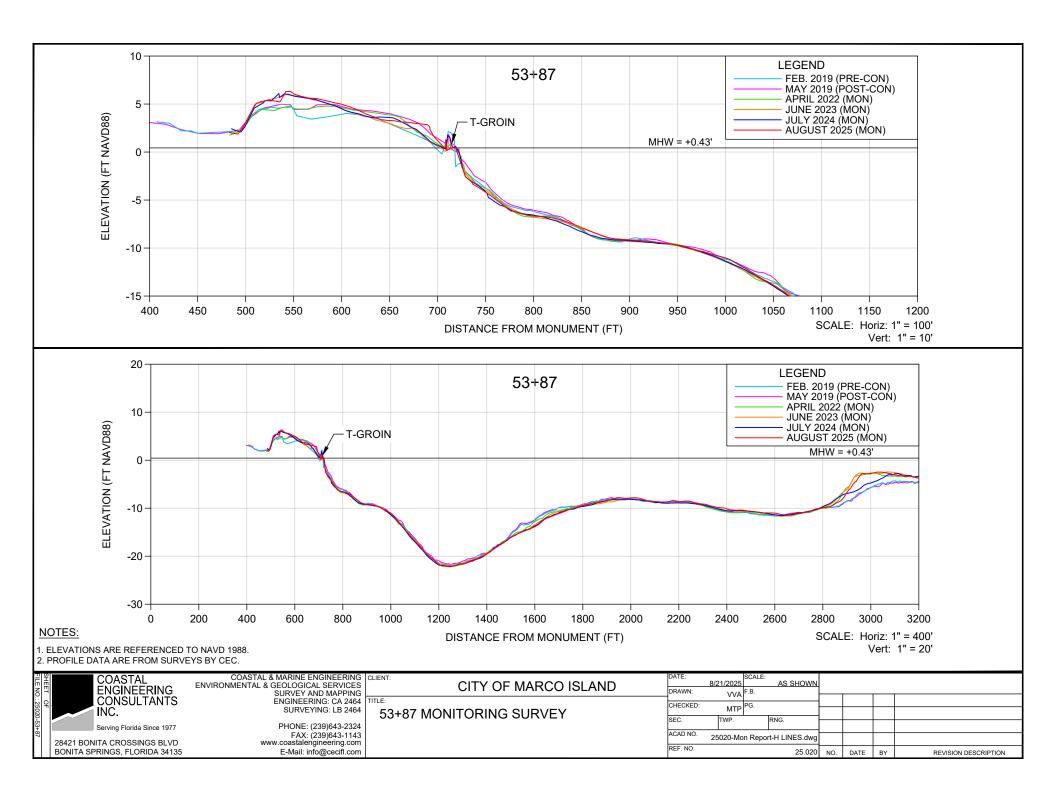


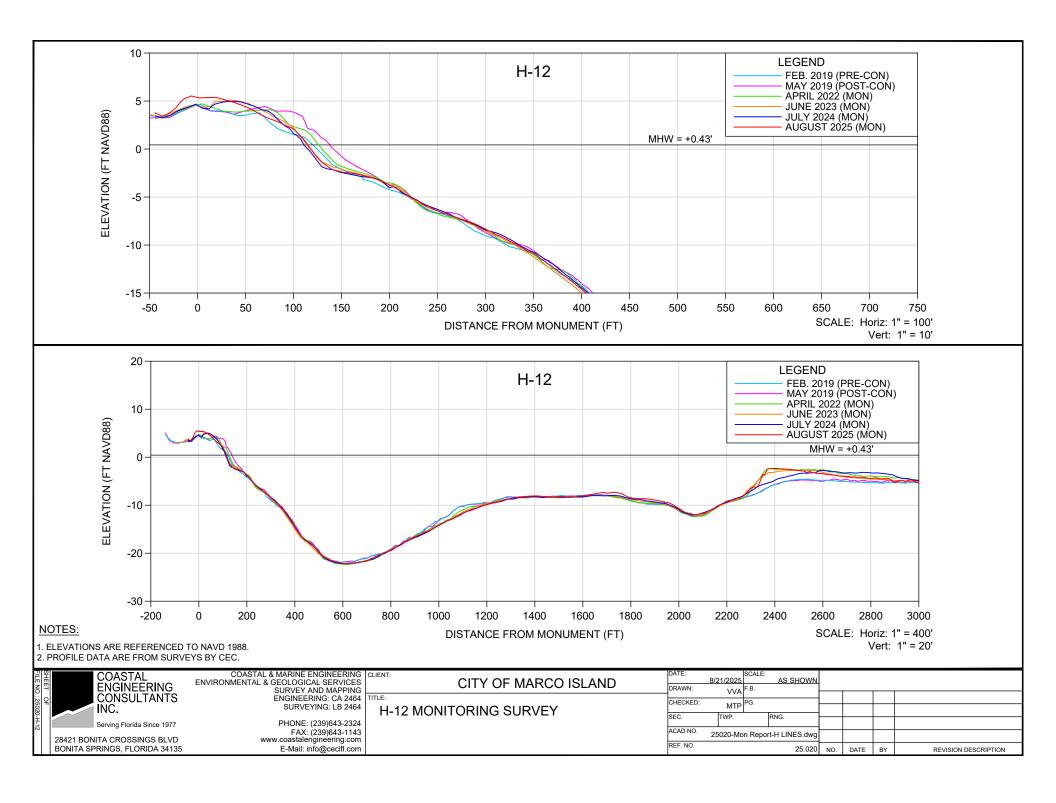


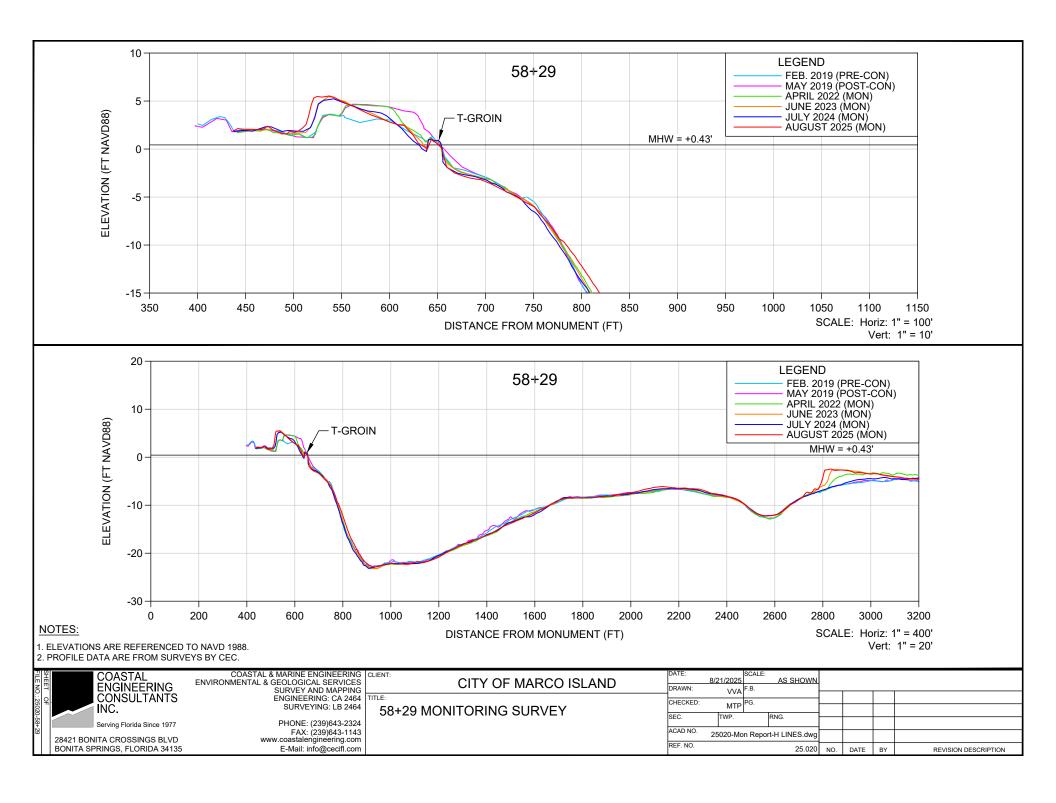


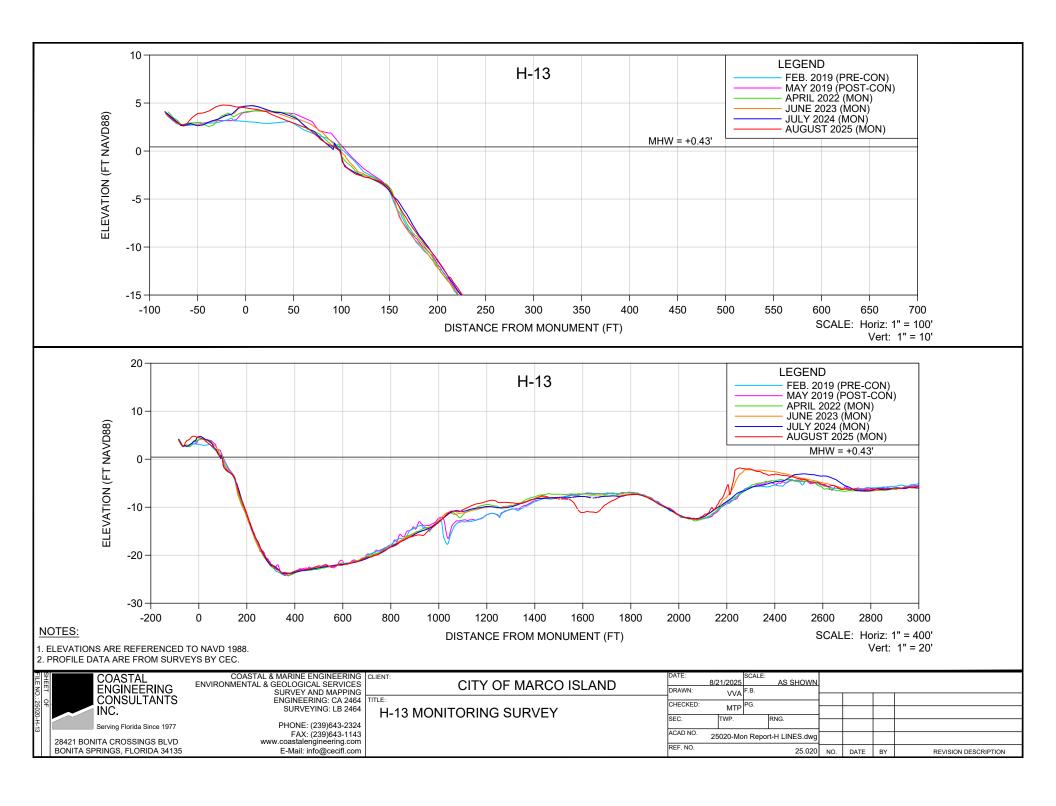


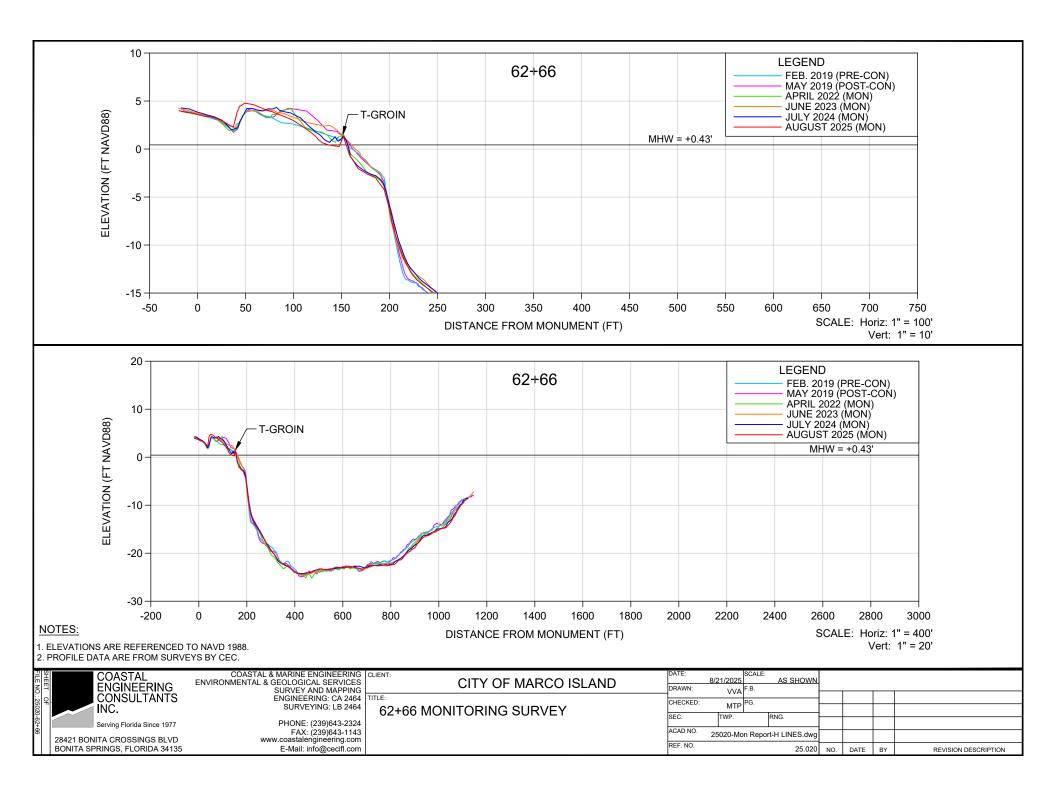


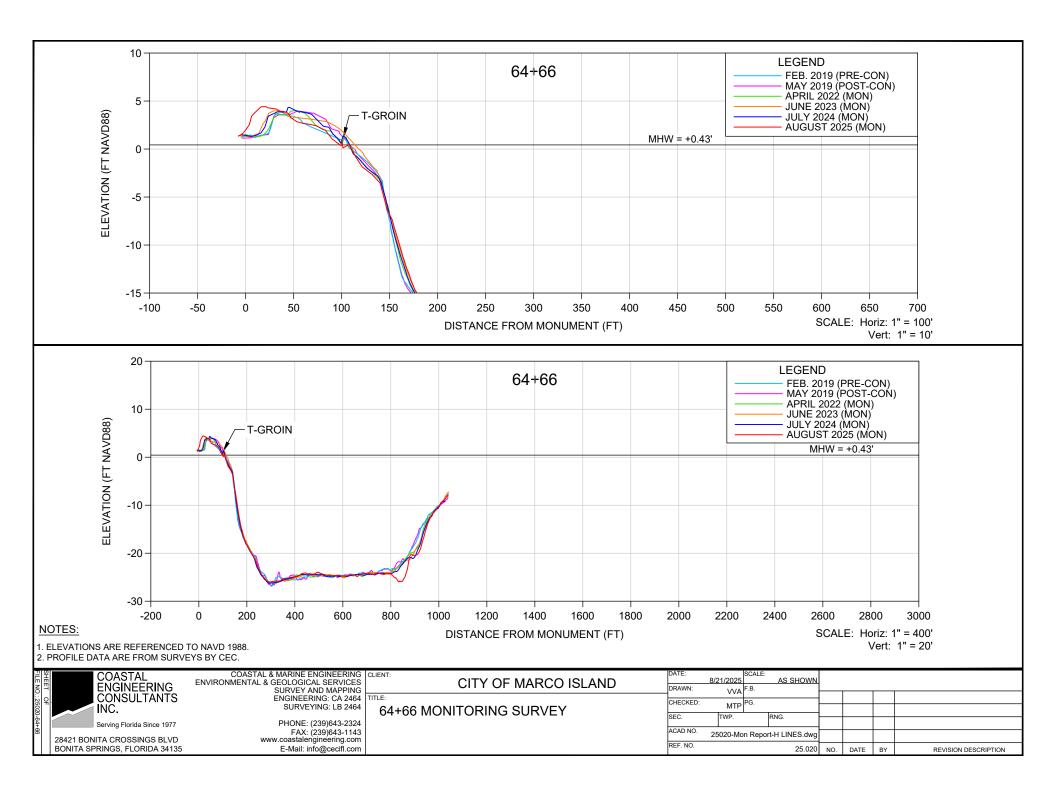


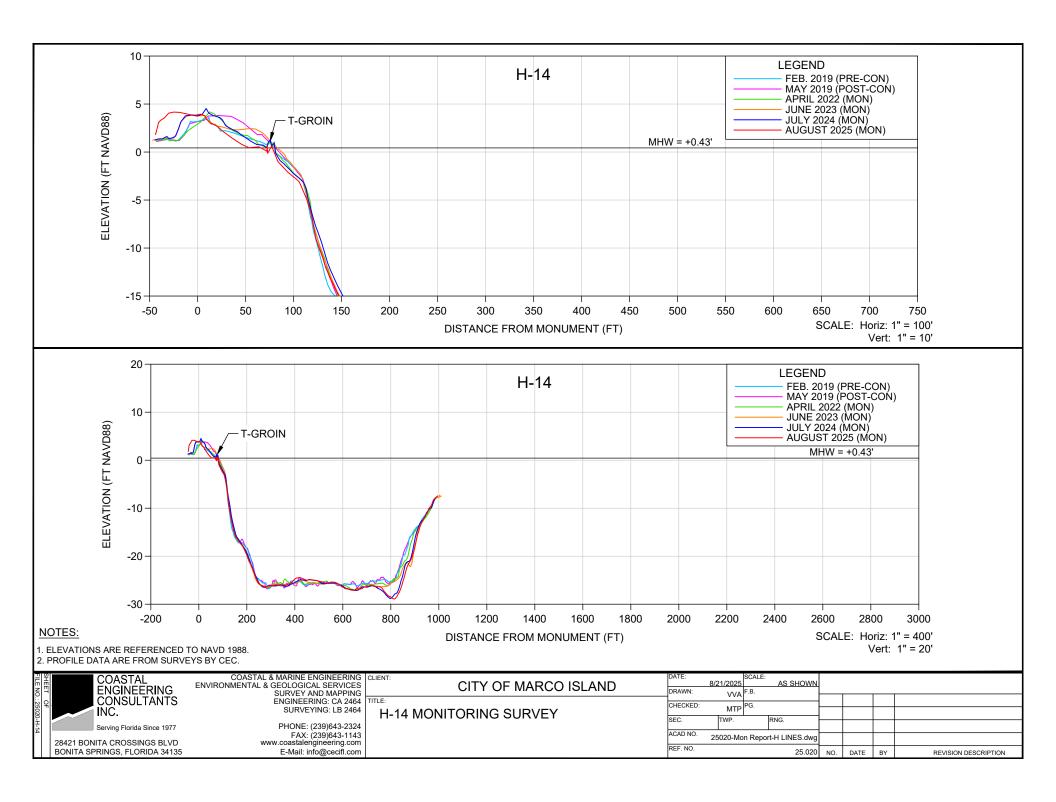


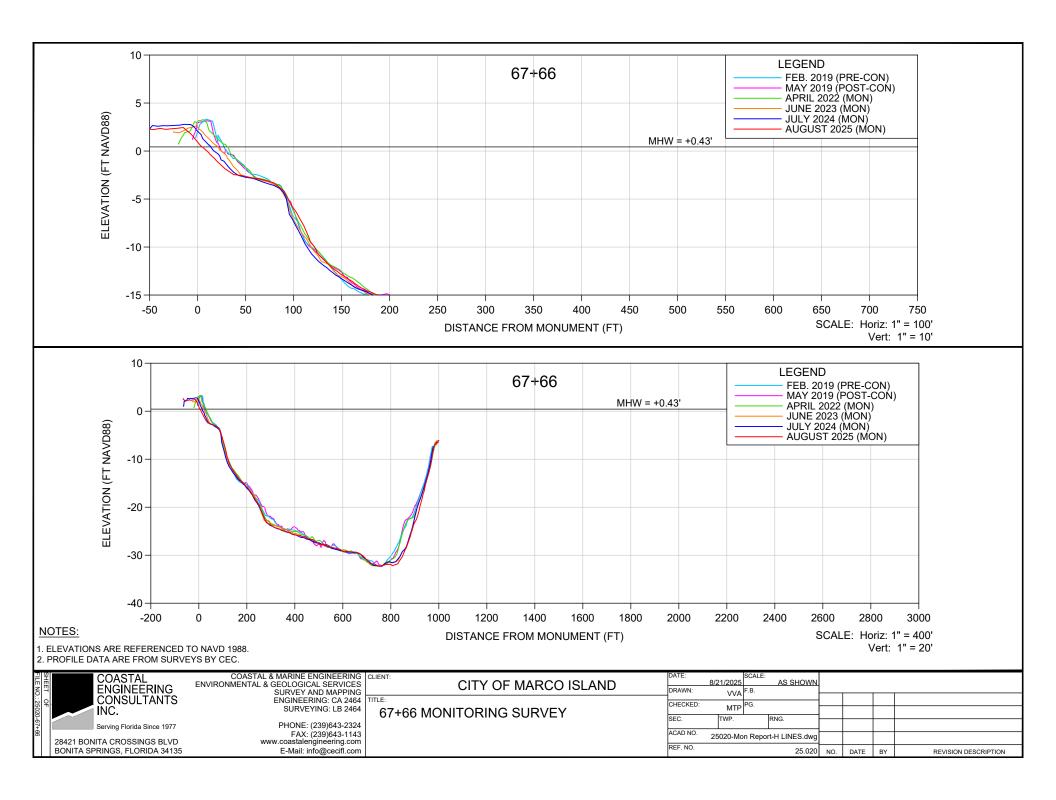


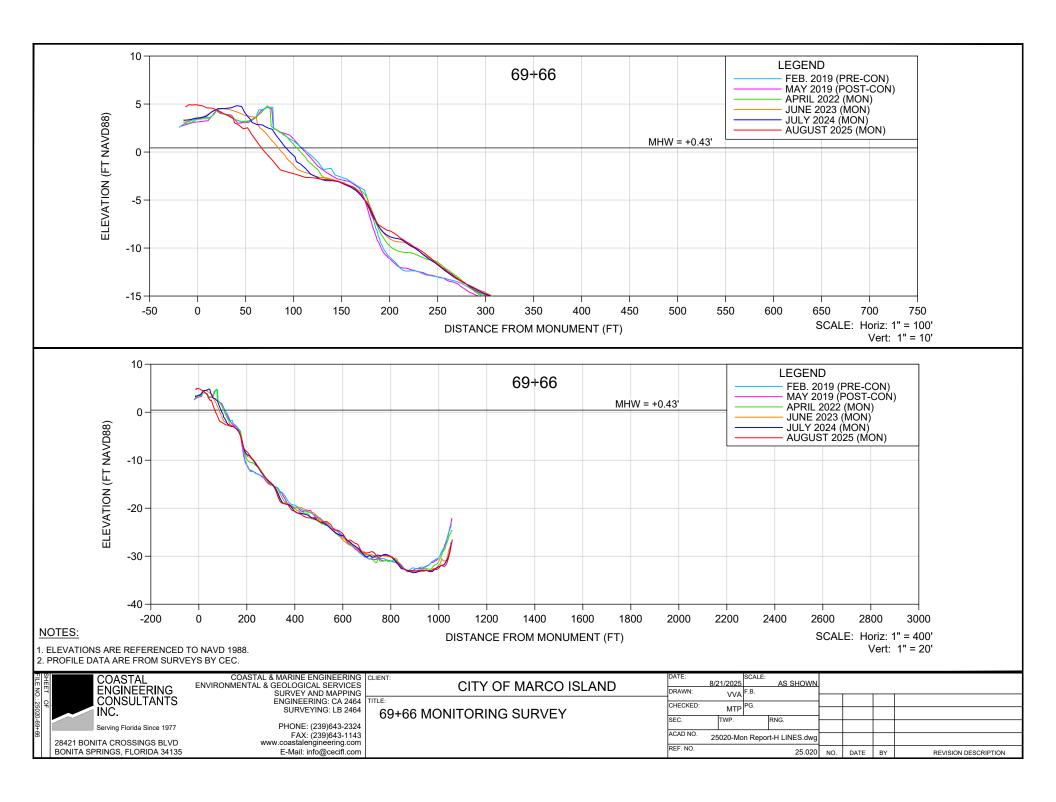


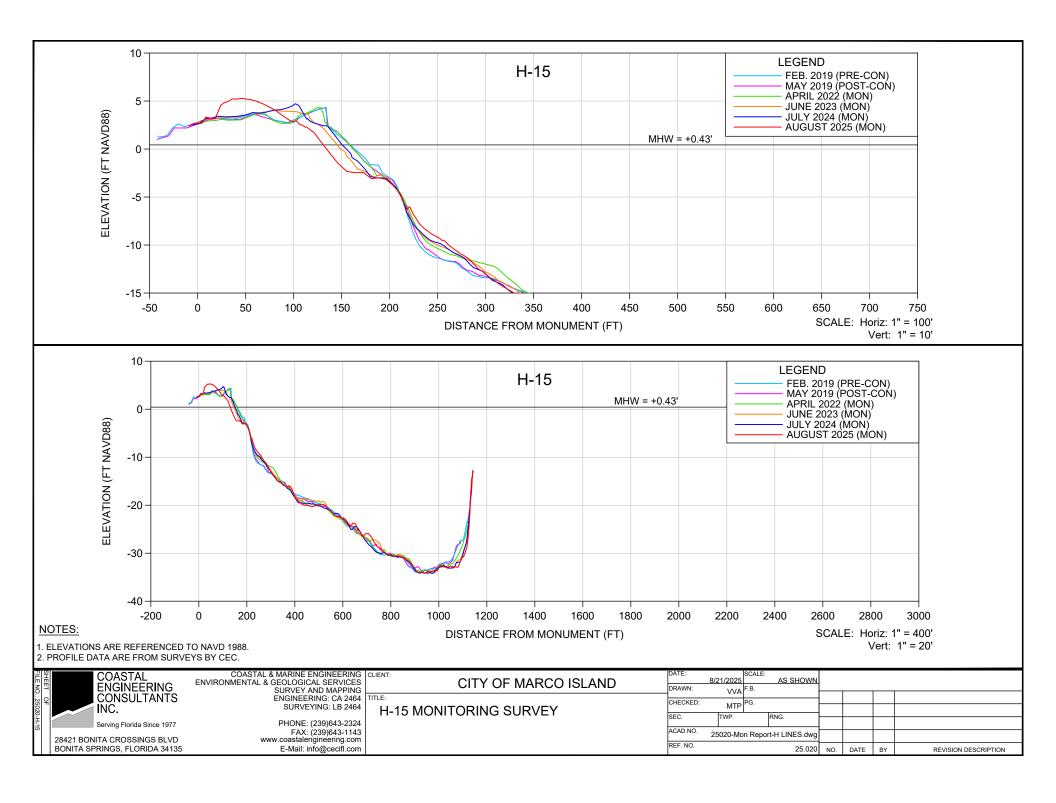


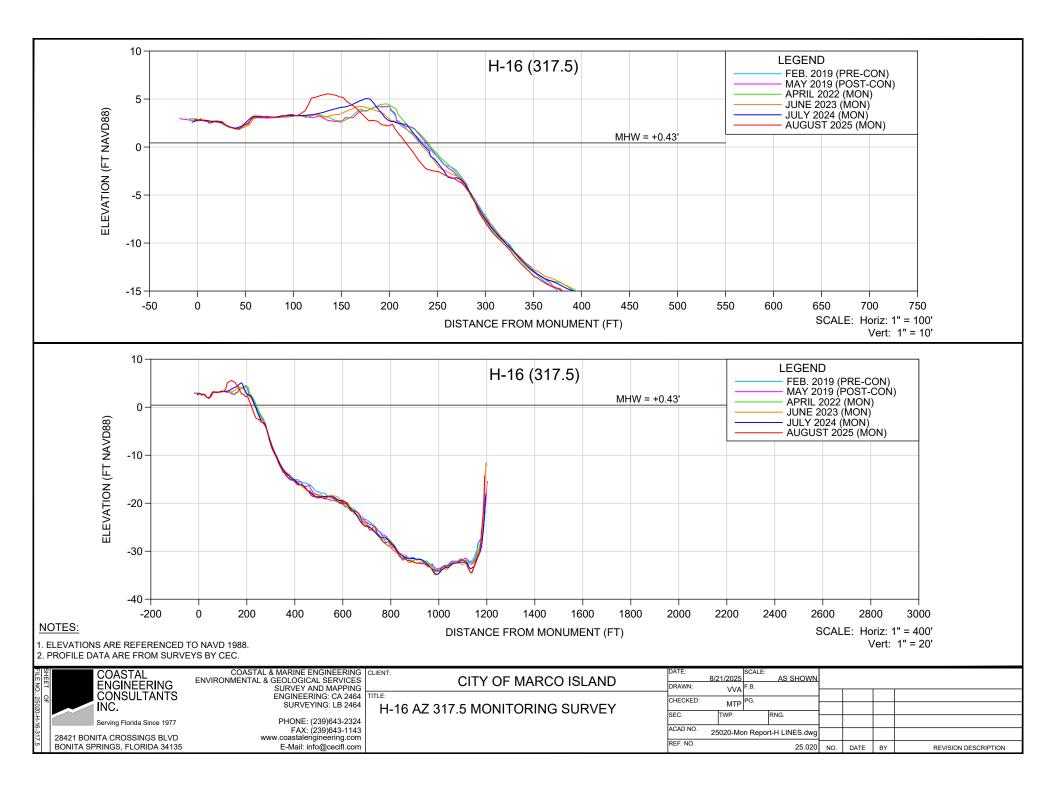


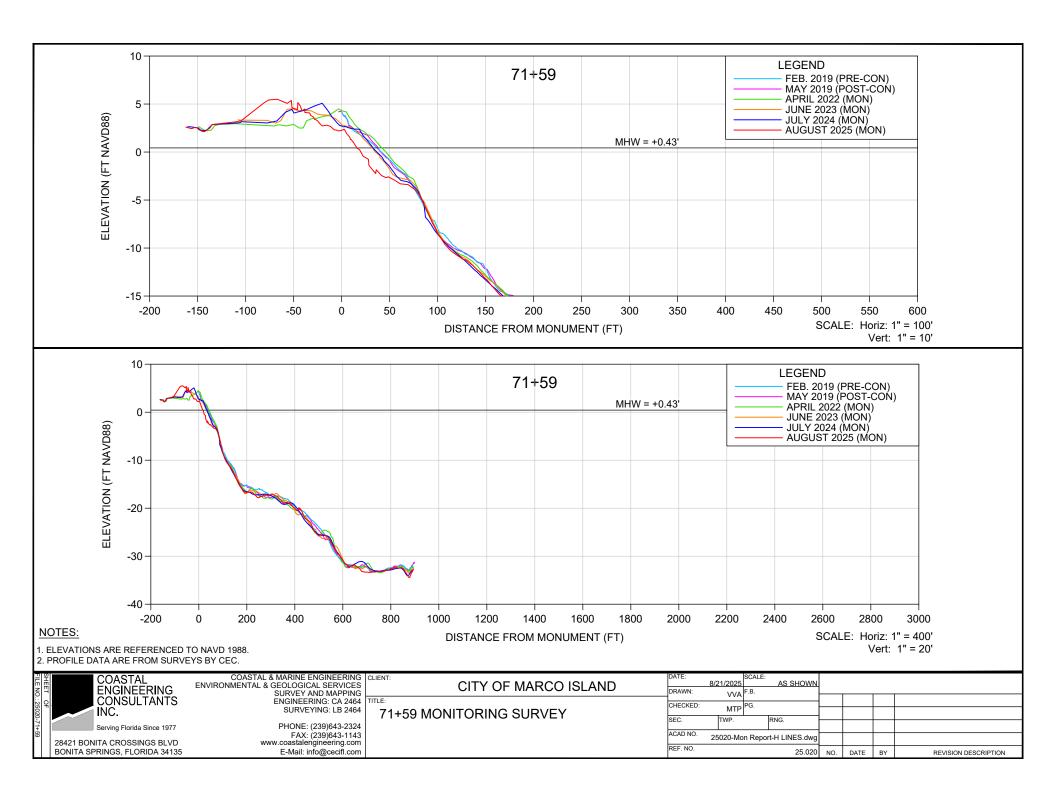


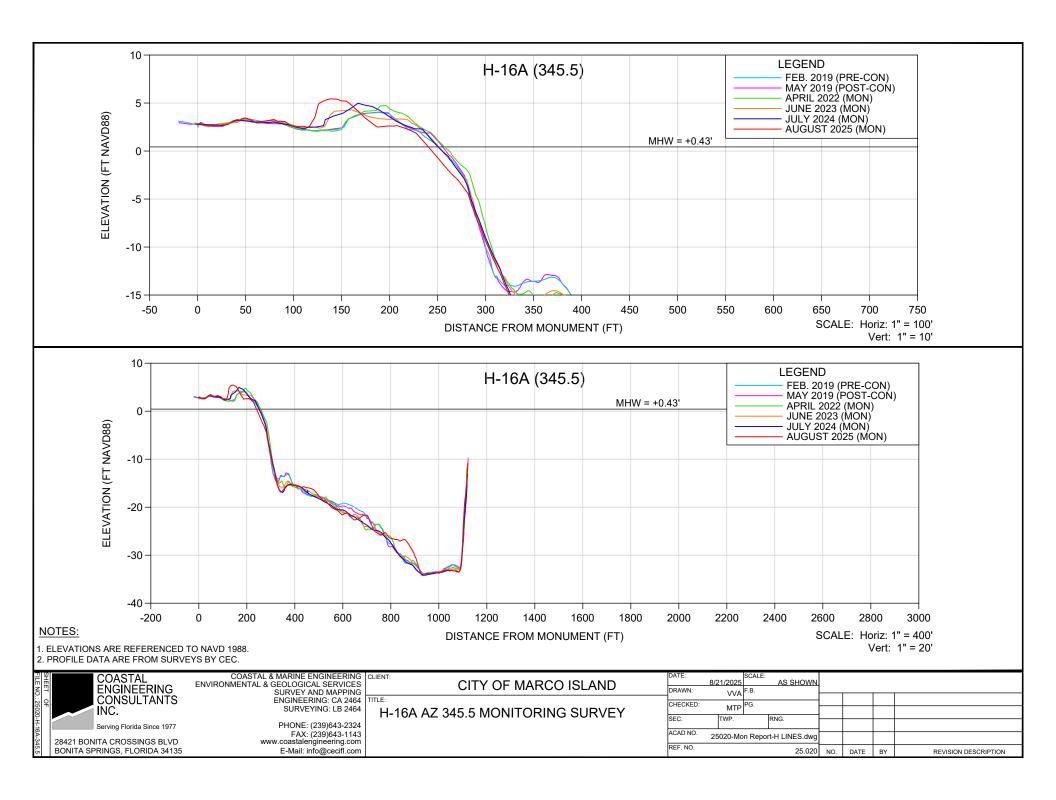


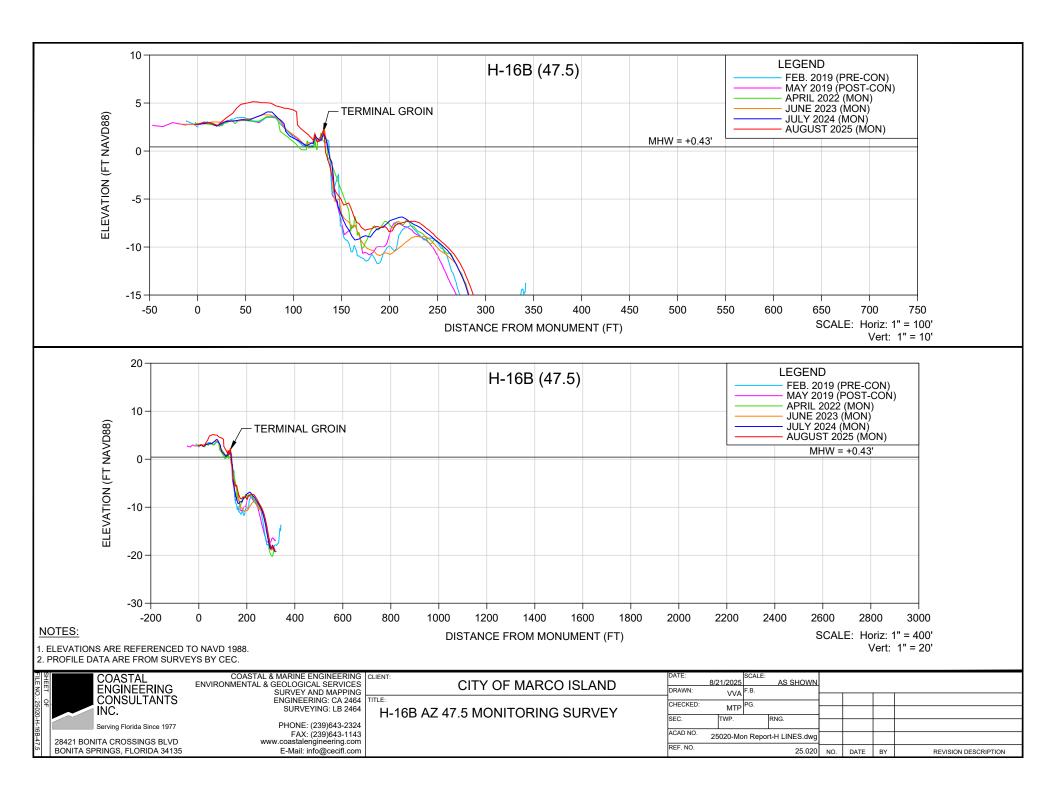


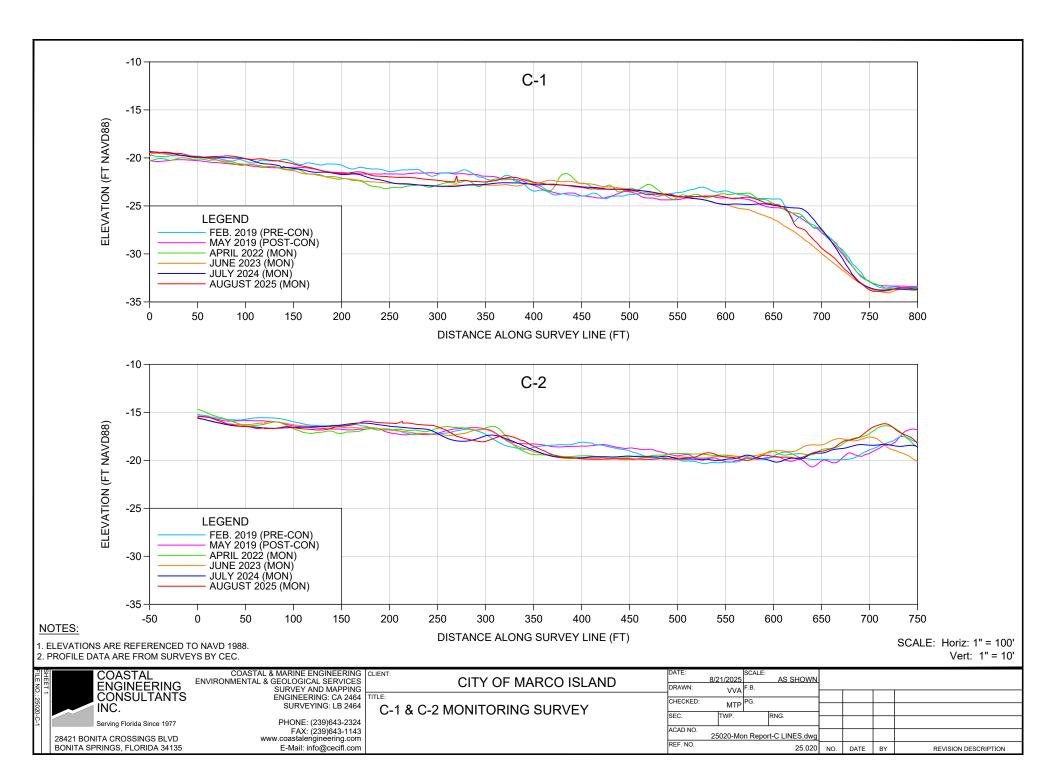


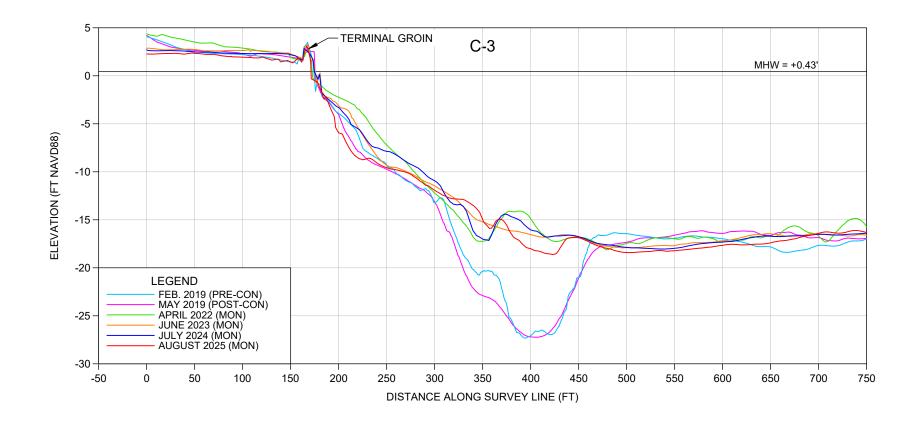










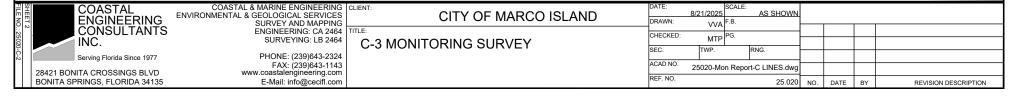


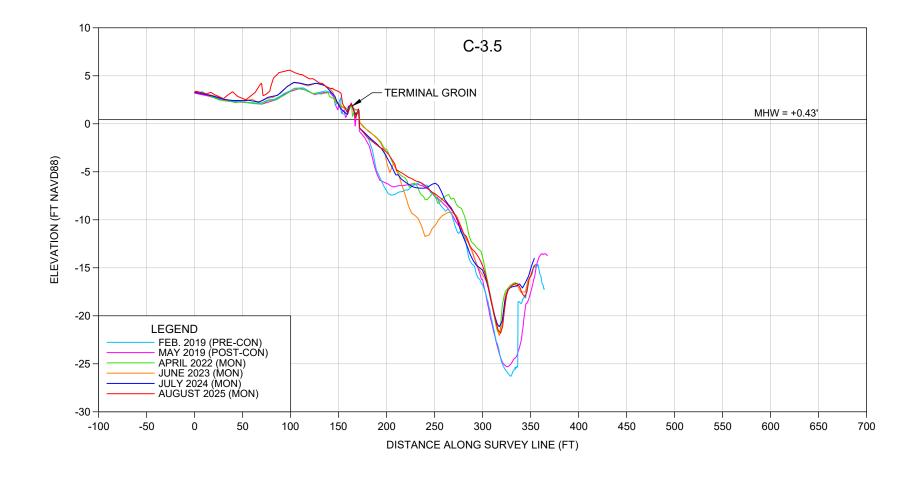
## NOTES:

1. ELEVATIONS ARE REFERENCED TO NAVD 1988.

2. PROFILE DATA ARE FROM SURVEYS BY CEC.

SCALE: Horiz: 1" = 100' Vert: 1" = 10'



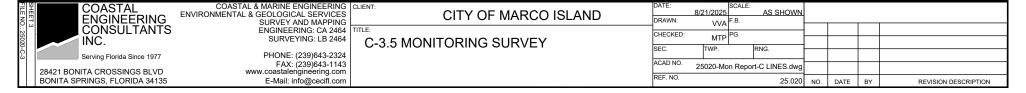


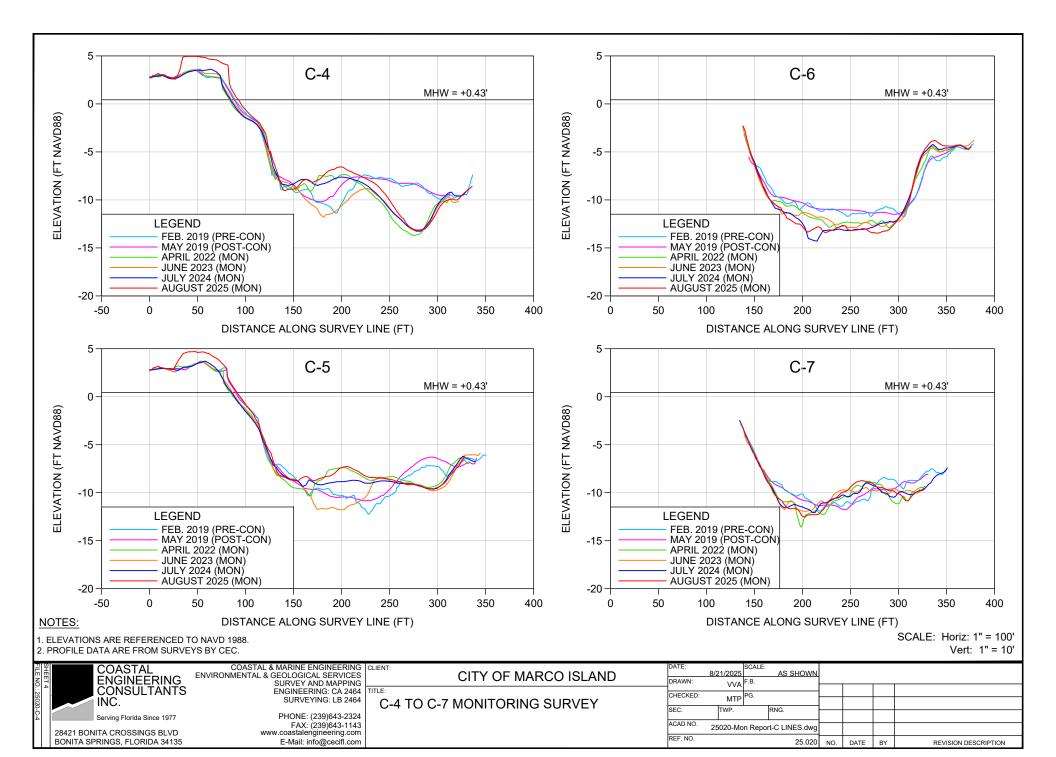
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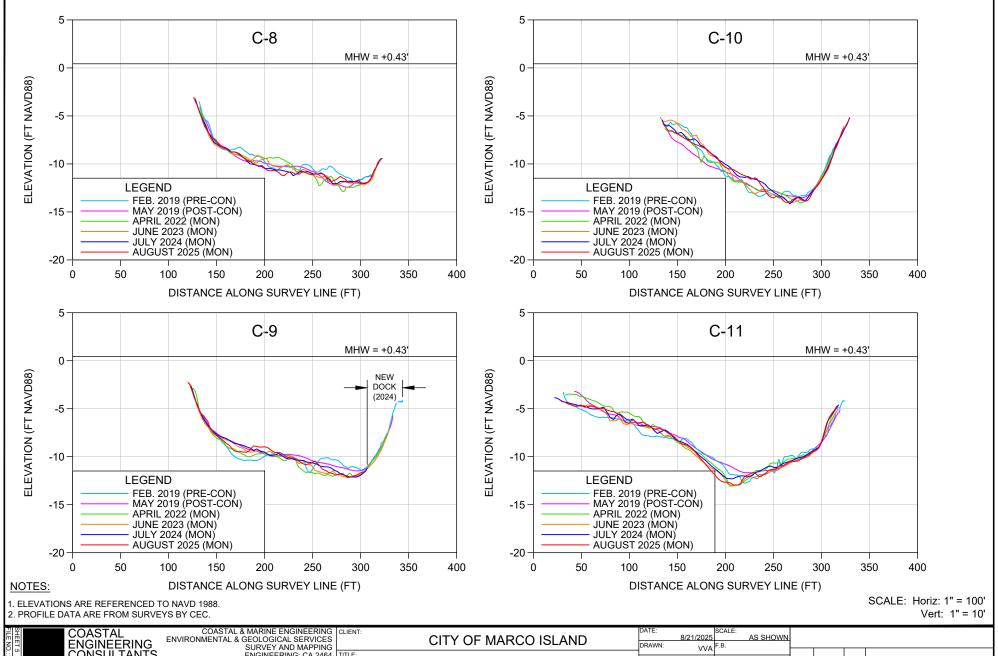
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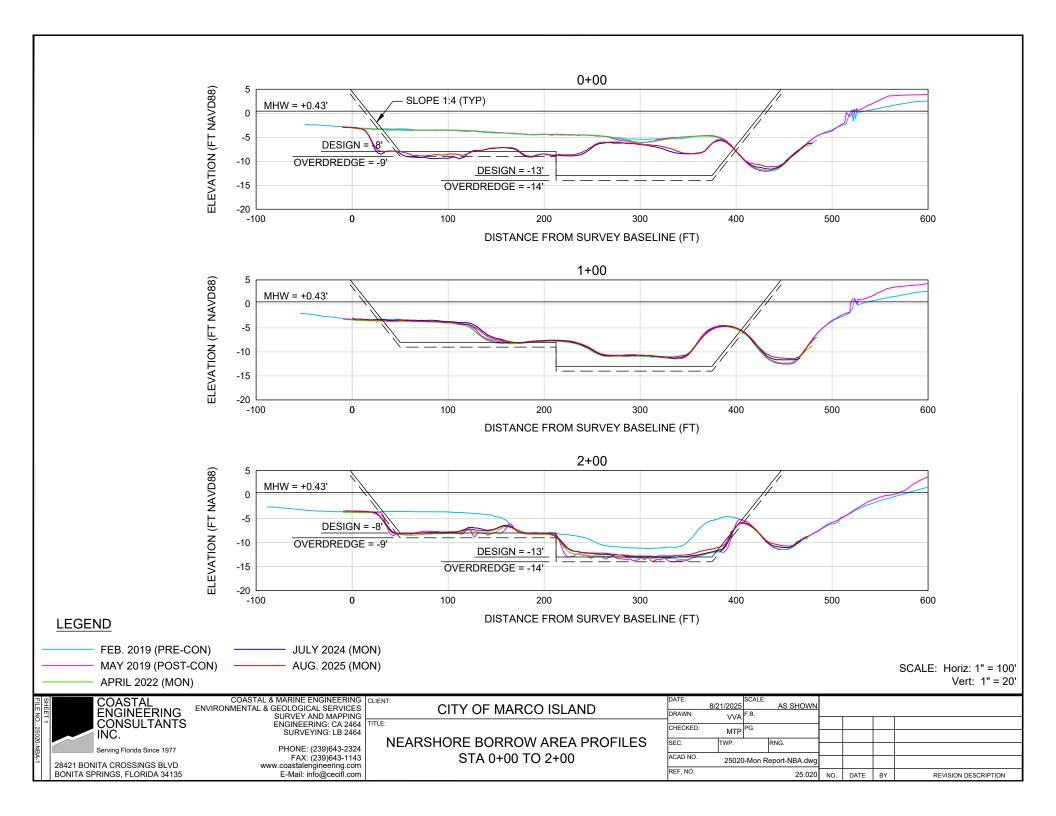
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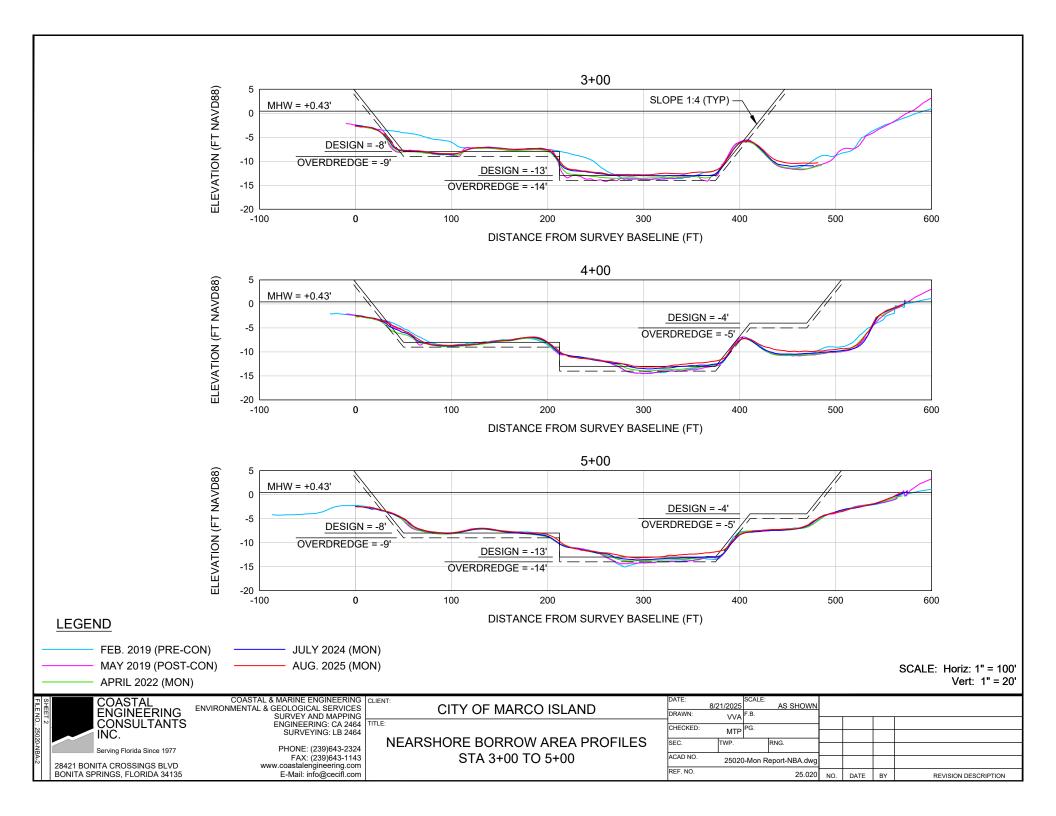
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REF. NO.			25.020	NO.	DATE	BY	REVISION DESCRIPTION

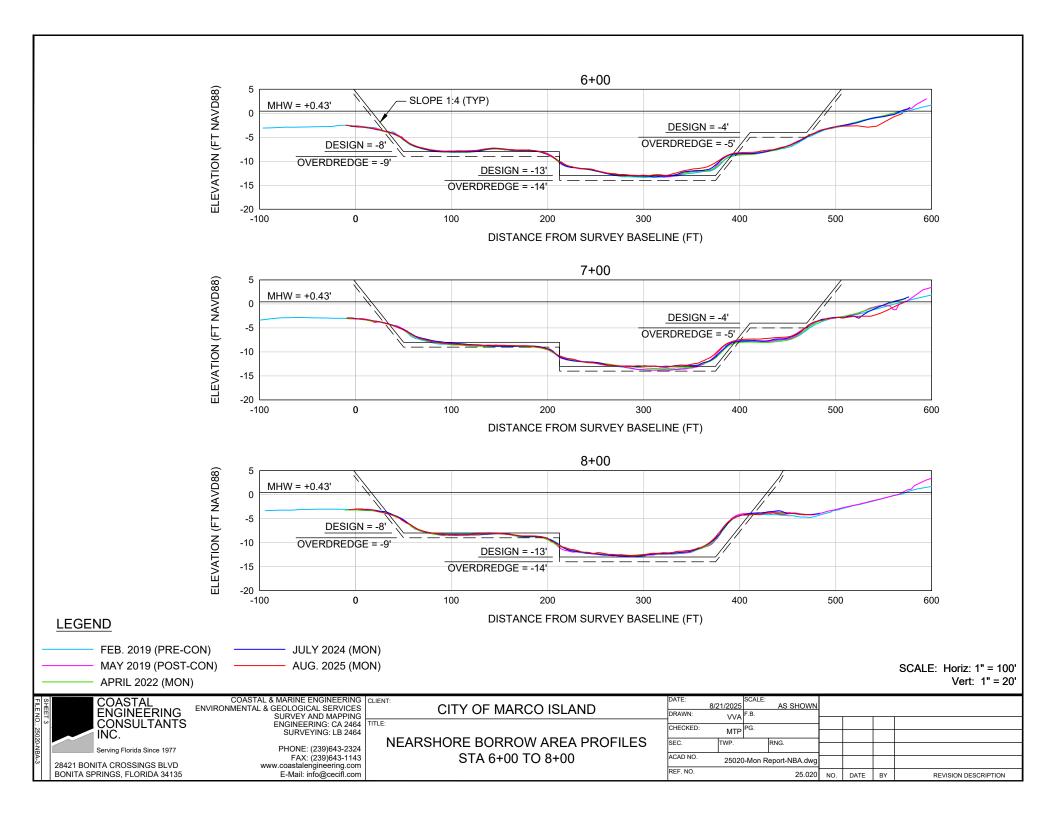
2025 Monitoring Report

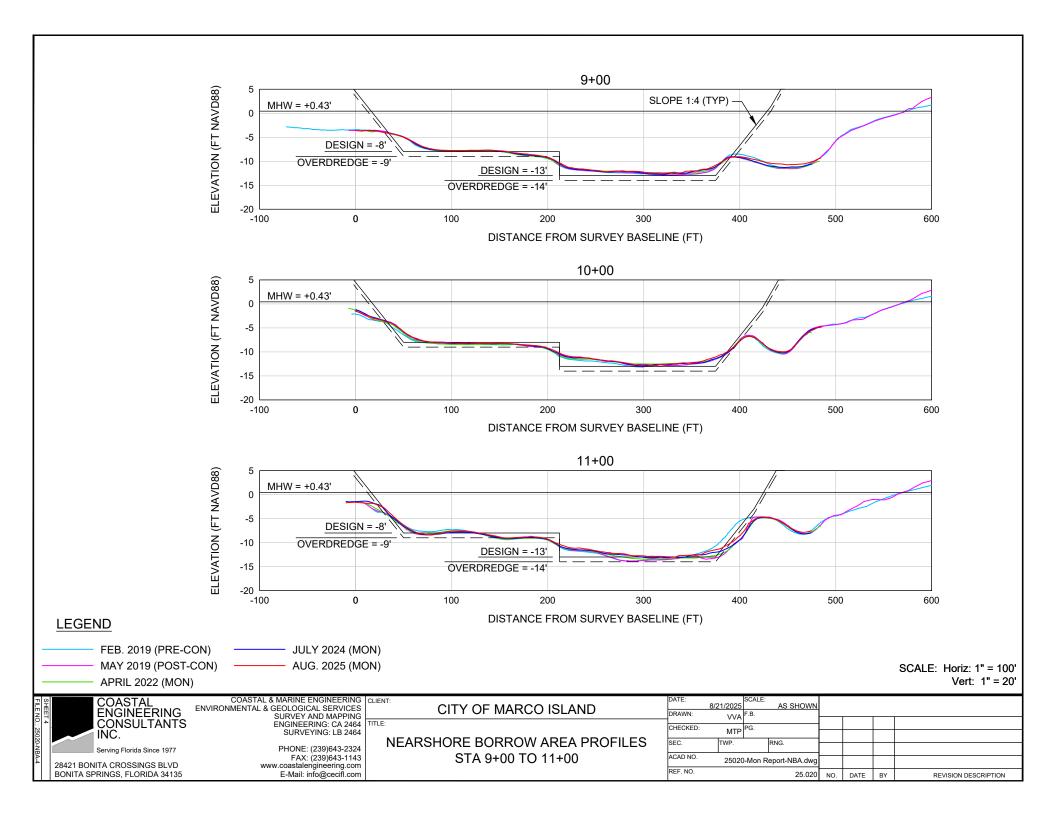
## APPENDIX 3

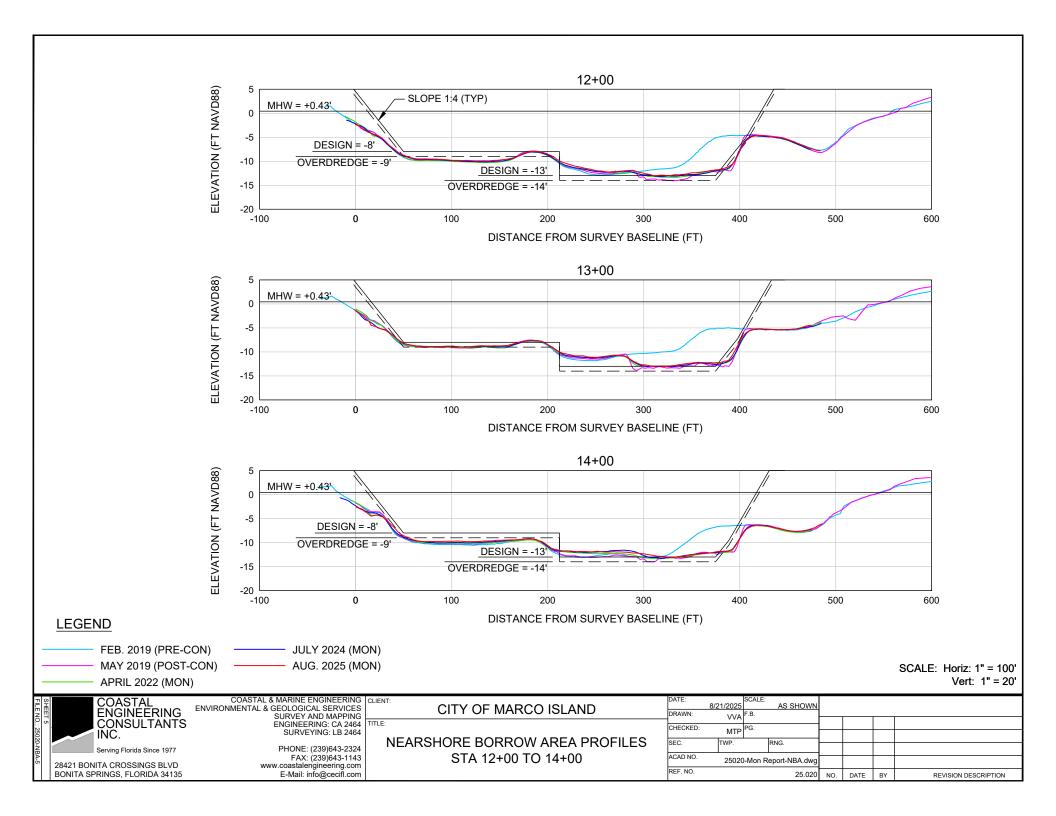
BORROW AREA CROSS SECTIONS

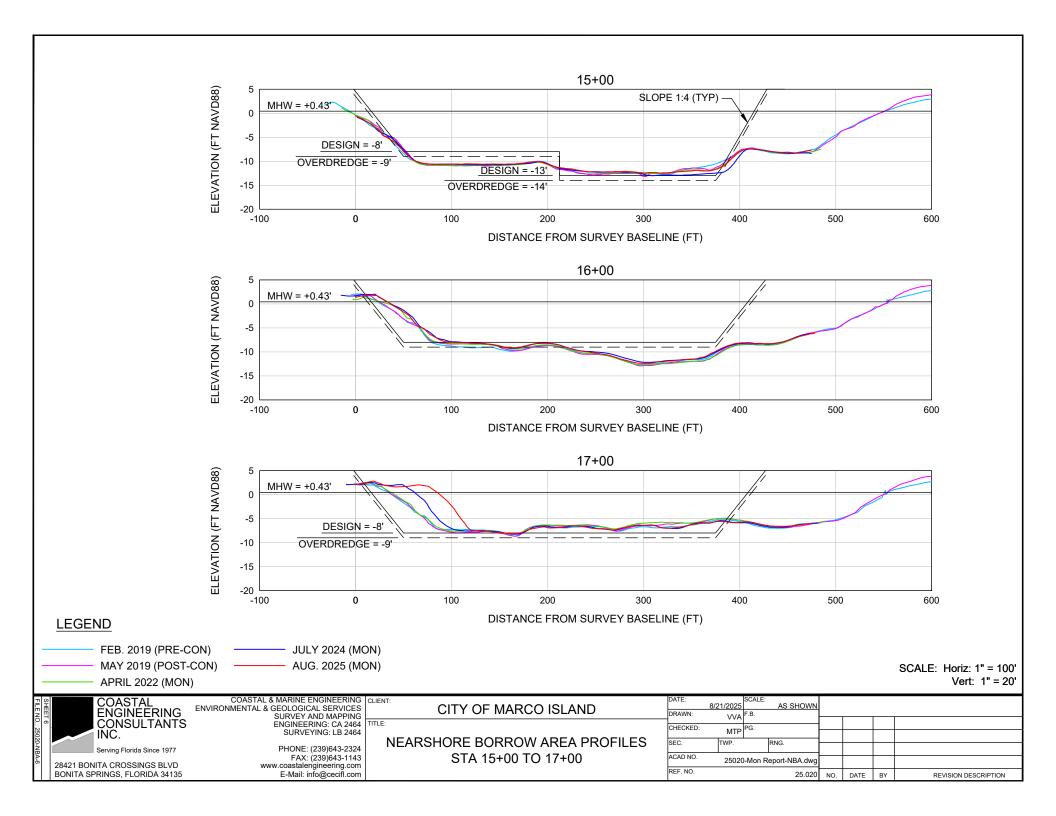


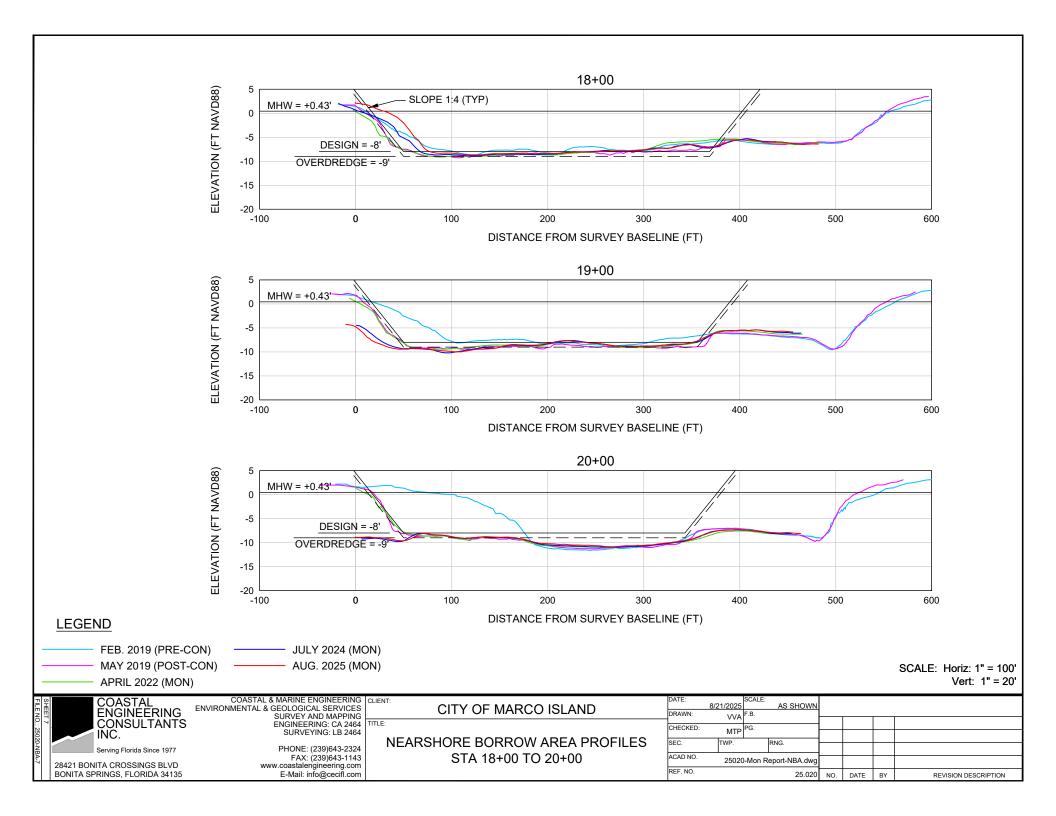


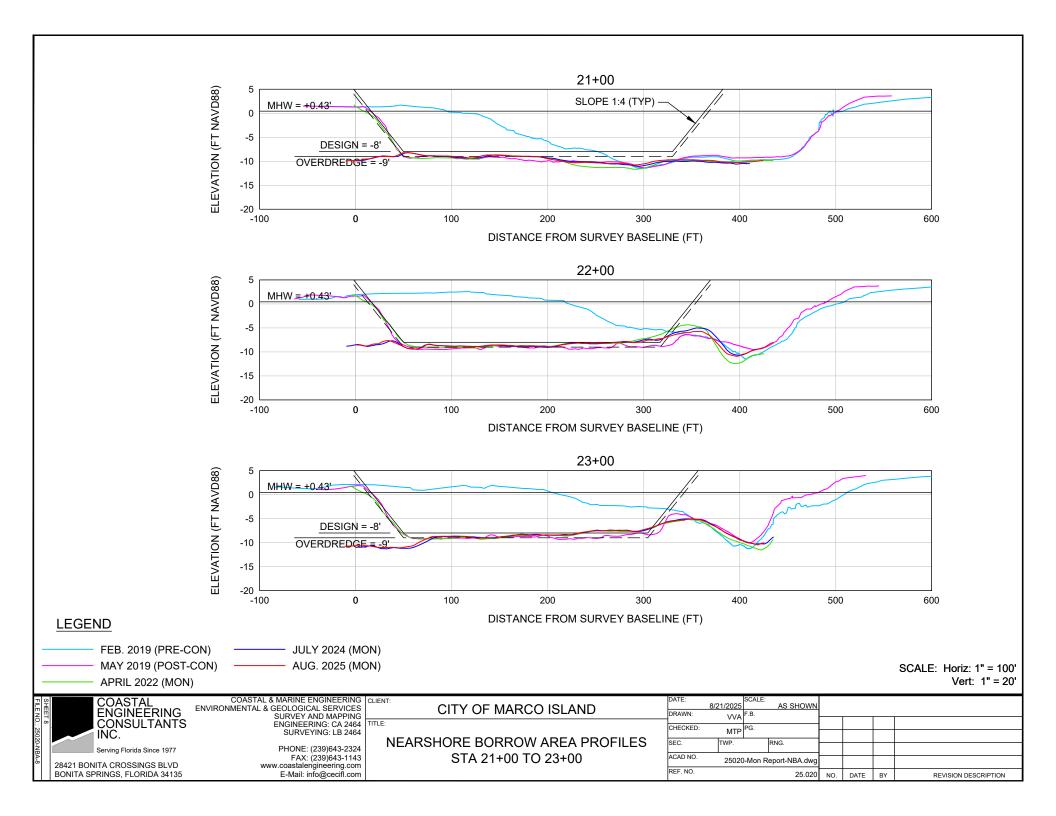


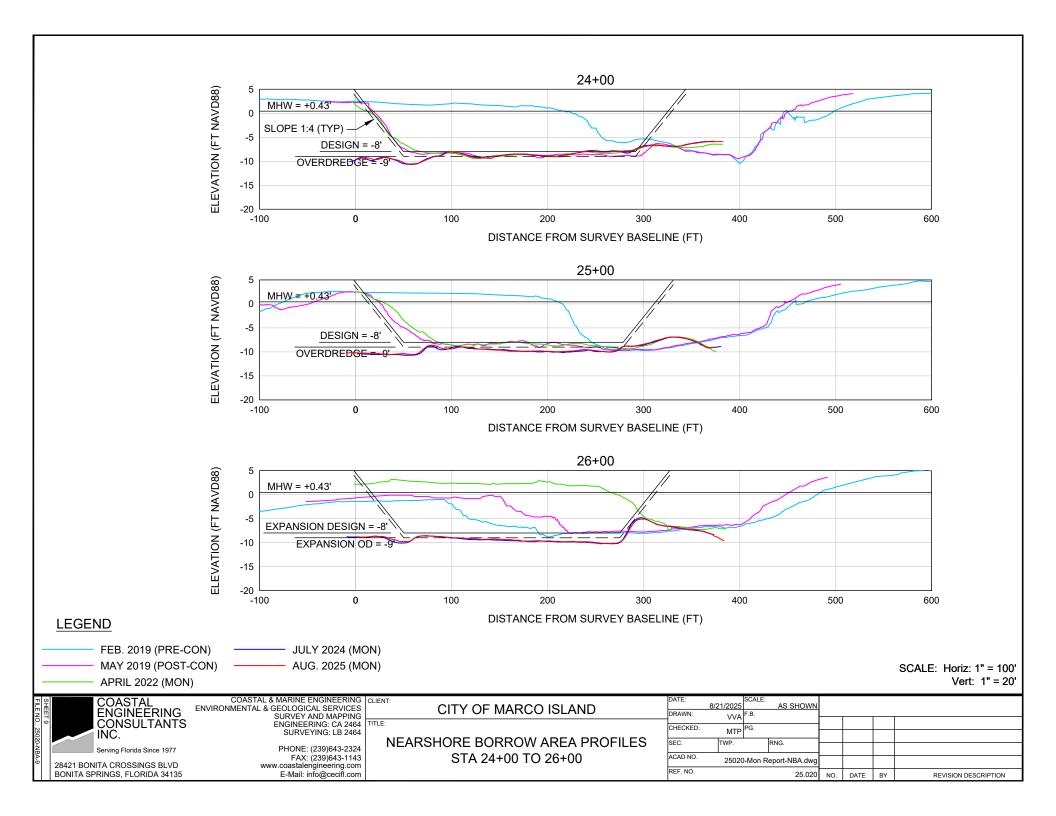


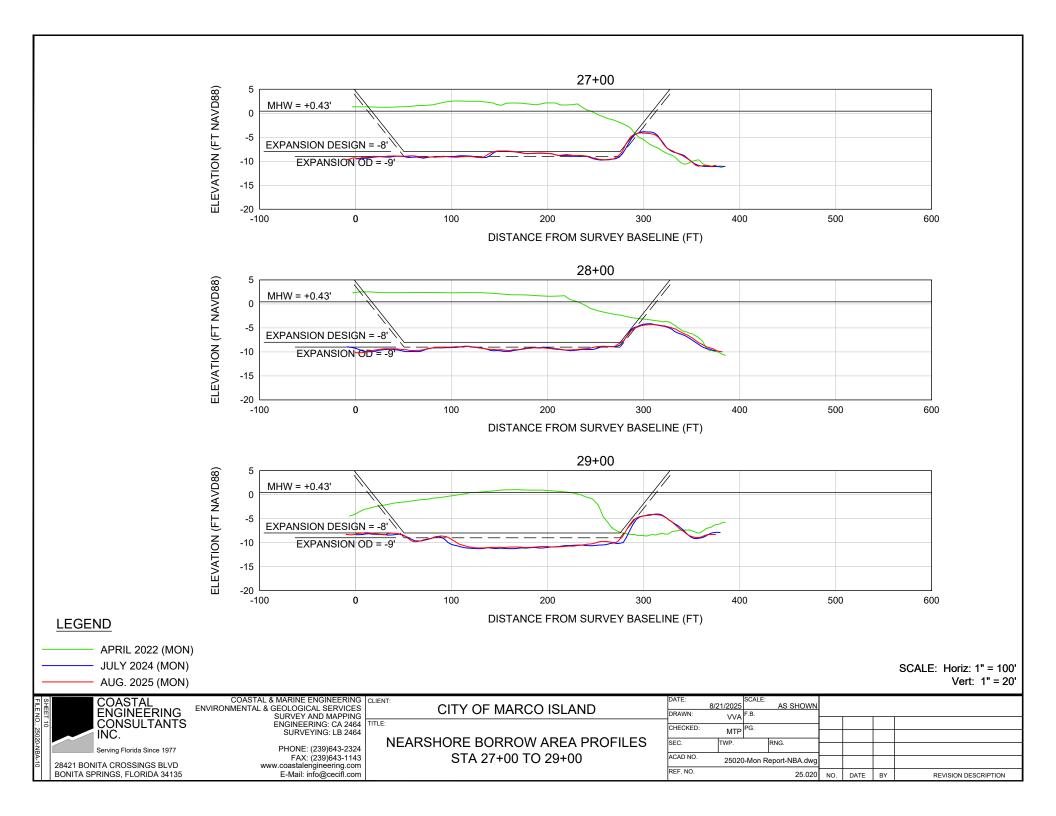


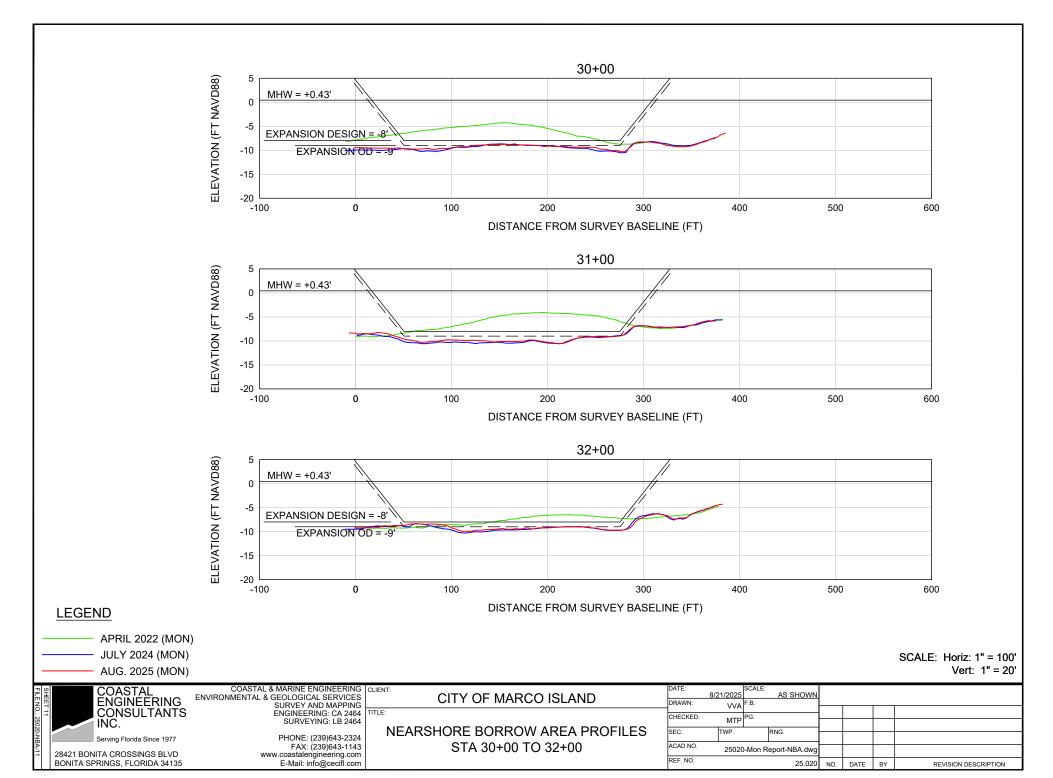


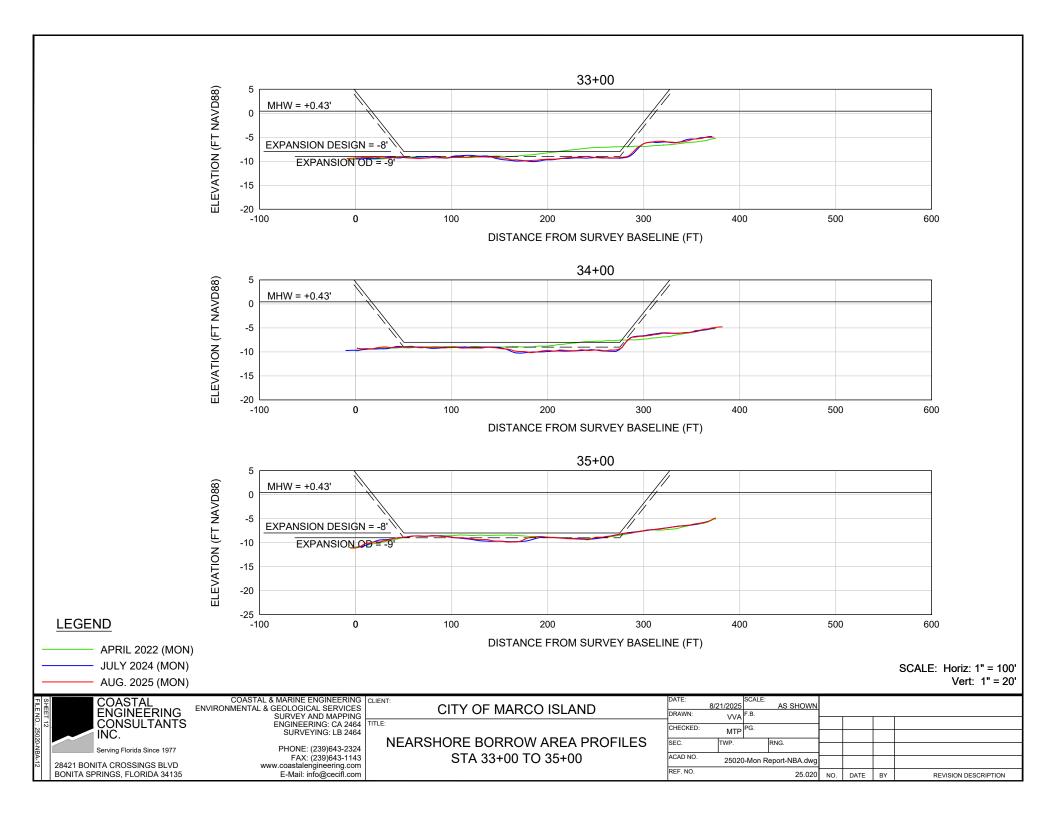


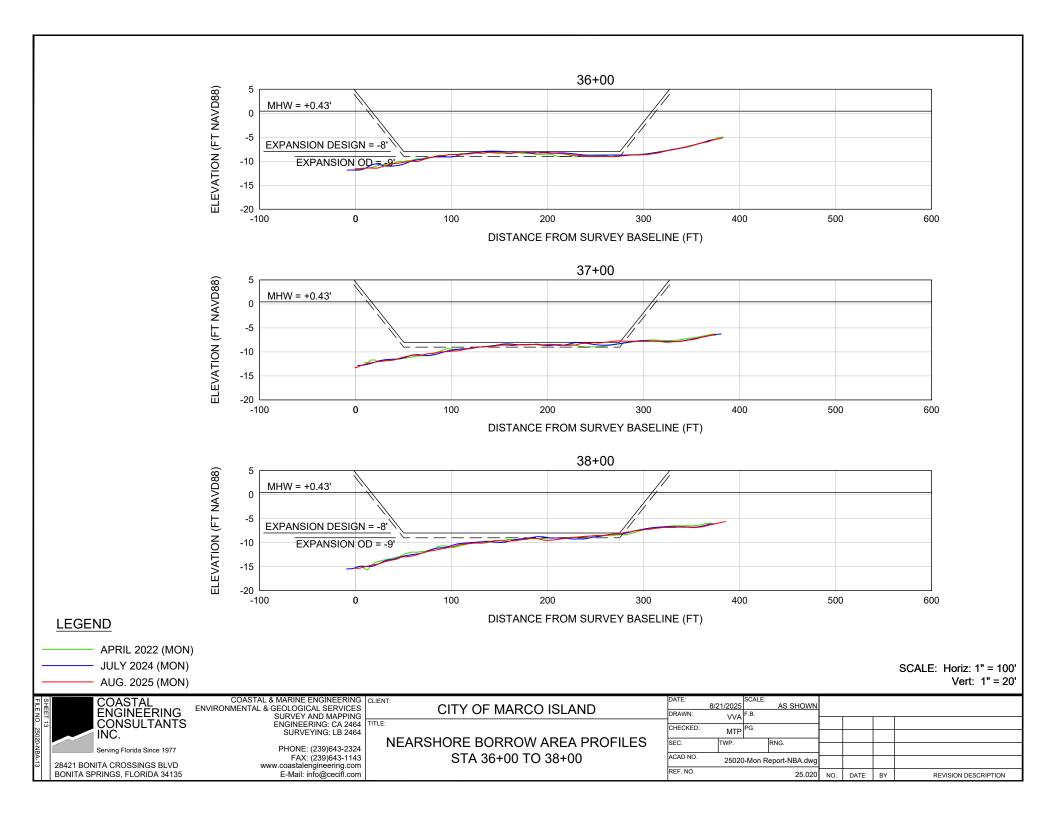


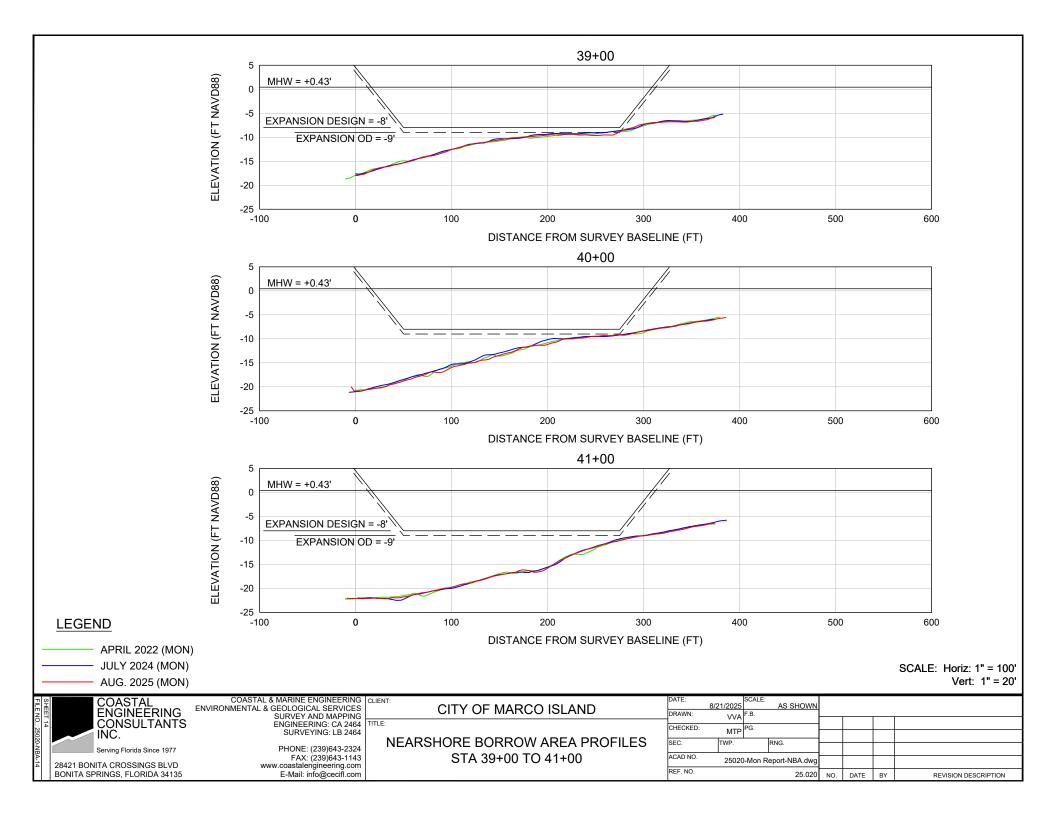


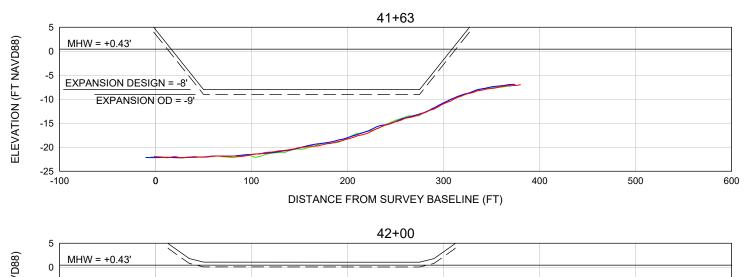


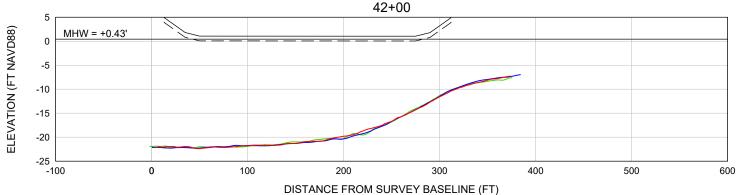












## **LEGEND**

APRIL 2022 (MON) JULY 2024 (MON) AUG. 2025 (MON)

SCALE: Horiz: 1" = 100'

Vert: 1" = 20'

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REF. NO. 25.020			NO.	DATE	BY	REVISION DESCRIPTION	