2022

Folly Beach 4-Yr Post-Nourishment Monitoring Report

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2022 FOLLY BEACH 4-YR POST-NOURISHMENT MONITORING REPORT

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Cover Photo: July 3, 2022 photo looking west from the Folly Beach Pier (under re-construction)

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Executive Summary

This is the fourth monitoring report of the 2018 renourishment project, which placed 1,200,000 cubic yards (cy) of sand during Fall 2018. In June 2022, the Folly Beach Shore Protection Project was 146.9 ft wide and the 8-ft storm berm was 63.1 ft wide on average. For comparison, the beach was 150 ft wide four years after the 2014 project. In June 2022, **0% of the nourished sand volume remained in the project area**. There has been 1,273,121 cy of erosion since 2018. For comparison four years after the 2014 project, 6% of the volume remained in the project. In 2022, nine (9) of the 26 profiles within the project area contain an 8-ft berm that is less than 15 ft wide. This represents 35% of the project area and as such, **the project has met the USACE trigger for renourishment** (25% of the project area).

The rehabilitated groin field between 8th and 14th St. E. is functioning as designed. Significant dune growth has been documented within the new groin field in the attached, "*Folly Beach Groin Rehabilitation, Annual Monitoring Report, June 2022."* While the groin field effect is promising, the overall performance of the 2018 project is worse than that of the 2014 project.

Introduction

Elko Coastal Consulting, Inc. (ECC) was contracted by the City of Folly Beach to provide beach nourishment monitoring services for the 2014 and 2018 **Folly Beach Federal Shore Protection Project.** ECC collected the topographic and hydrographic data and subcontracted the preliminary data analysis to eTrac.

The purpose of this work is to monitor the sediment placed on Folly Beach (Figure 1) during the 2018 federal renourishment project, and compare those results to the performance of the 2014 project. Monitoring tracks the movement of sediment along and out of the project area, providing important data for future renourishment planning, budgeting, and design. The federal project has historically been renourished about every eight years. However, erosion had encroached on private property prior to the 2014 project, and to a lesser extent, prior to the 2018 project. Also, during the last renourishment interval, the project was impacted by multiple hurricanes resulting in the need for renourishment in 2018. Finally, the city rehabilitated nine groins between 8th St. E. and 14th St. E in 2018 concurrent with the federal renourishment. Monitoring of these newly rehabilitated groins is required by S.C. DHEC OCRM and submitted under a separate report (Attachment A).

In addition to collecting beach profile data, ECC conducted the annual superintendent inspection required by the federal Operations & Maintenance (O&M) Manual of the U.S. Army Corps of Engineers (USACE) Folly Beach Shore Protection Project (see Digital Appendix). Photos and beach conditions for several locations are included in the volumetric life cycle analysis section.

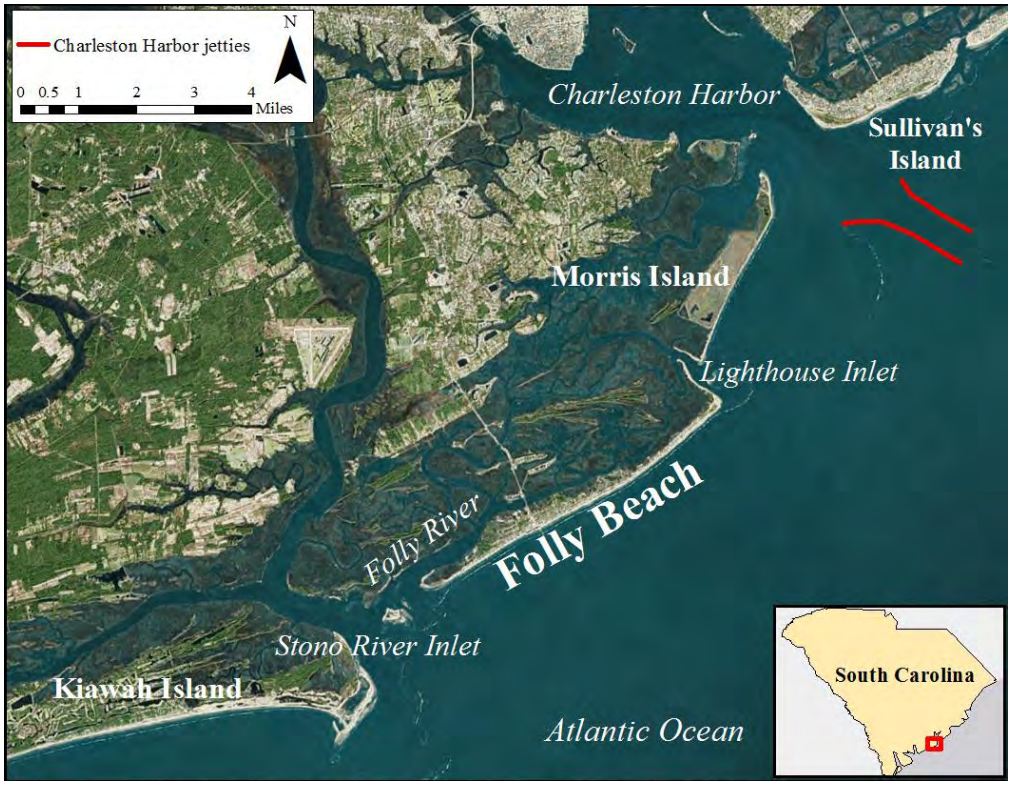


Figure 1. Location map of Folly Beach.

2018 Federal Renourishment

Impacts from Hurricanes Matthew, Irma, and Florence prompted the Charleston District, USACE to request $20 million in Flood Control and Coastal Emergencies (FCCE) funds to replace 1.2 million cubic yards of sand during the 2018 renourishment project. The project was approximately 26,000 ft long (Figure 2) and was constructed by Marinex Construction with the cutterhead dredge "The Savannah." Renourishment began in July and was completed in December 2018.

In contrast to the offshore borrow areas for the 2014 project, sand for the 2018 project was dredged from the Folly River (Figure 2). The use of the Folly River borrow area resulted in considerable cost savings with a unit cost of $9 to $12 per cubic yard, depending on location, and a total mobilization of $3.5 million. Compare the cost of this $20 million project to the $30.7 million project constructed in 2014 to understand the implication of using an inlet borrow area, which is protected and closer to the beach, than an exposed borrow area, farther offshore.

Dune vegetation planting and sand fencing installation occurred as a local effort following the 2018 renourishment. Sea oats (*Uniola paniculata*) and bitter panicum/panic grass (*Panicum amarum*) were planted along most of the project area. Sand fencing was installed in individual V-shaped sections open to the shoreline as needed. This is another element of the 2018 emergency project that differed from the 2014 periodic renourishment when the USACE hired a contractor to install vegetation and sand fencing along the entire project area.

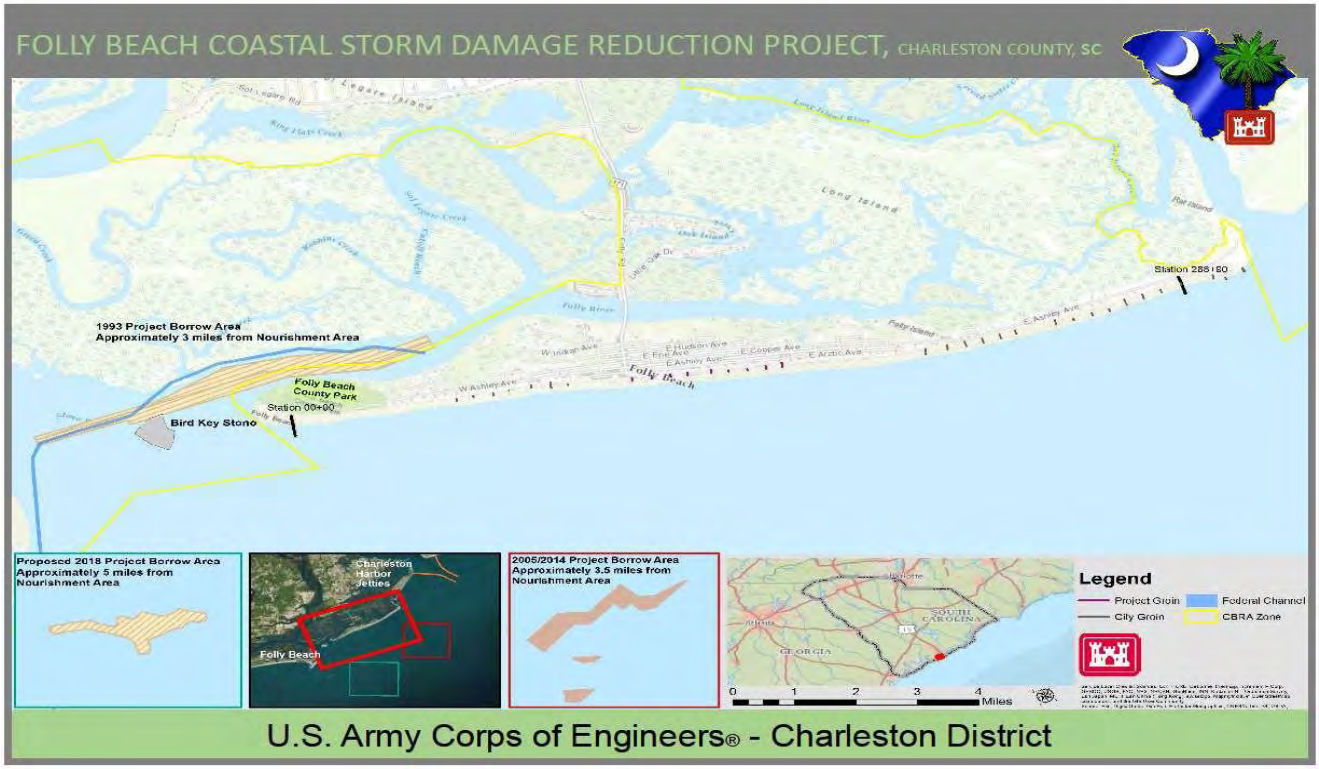


Figure 2. Map of the project and borrow areas for the 2018 federal renourishment of Folly Beach.

Survey Methodology

For this report, topographic and hydrographic data collection (beach profile surveys) occurred between June 14 and 17, 2022. A total of 31 profile surveys were conducted at existing Coastal Council/OCRM monuments (Figure 3). Twenty-six of these monuments/survey lines are located within the Federal project area.

The monuments are survey benchmarks, which are permanent metal disks in the ground with information stamped on the face that mark a specific point that can be consistently reoccupied. On Folly Beach, these survey benchmarks begin with monument 2801 at the southwest end of the island at Folly Beach County Park and adjacent to the Folly River and end at monument 2895 at Lighthouse Inlet. The lines illustrated in Figure 3 extending offshore from the monuments are the profile lines along which surveyors collect elevation measurements. These measured beach profiles describe a cross-section of the topography and bathymetry of the land surface along the dry beach and nearshore/sand bar regions (e.g., Figure 4). By surveying the same line routinely, scientists can measure the change in sand volume or shoreline position, for example.

Each profile extended from the monument landward of the Perpetual Easement Line (PEL) to either -14 NAVD88 or 1,400 feet from the PEL whichever was more landward. Although USACE requires low tide wading depth surveys to be conducted by the city, longer surveys to the "depth of closure" were collected in order to appropriately calculate volume changes along the template.

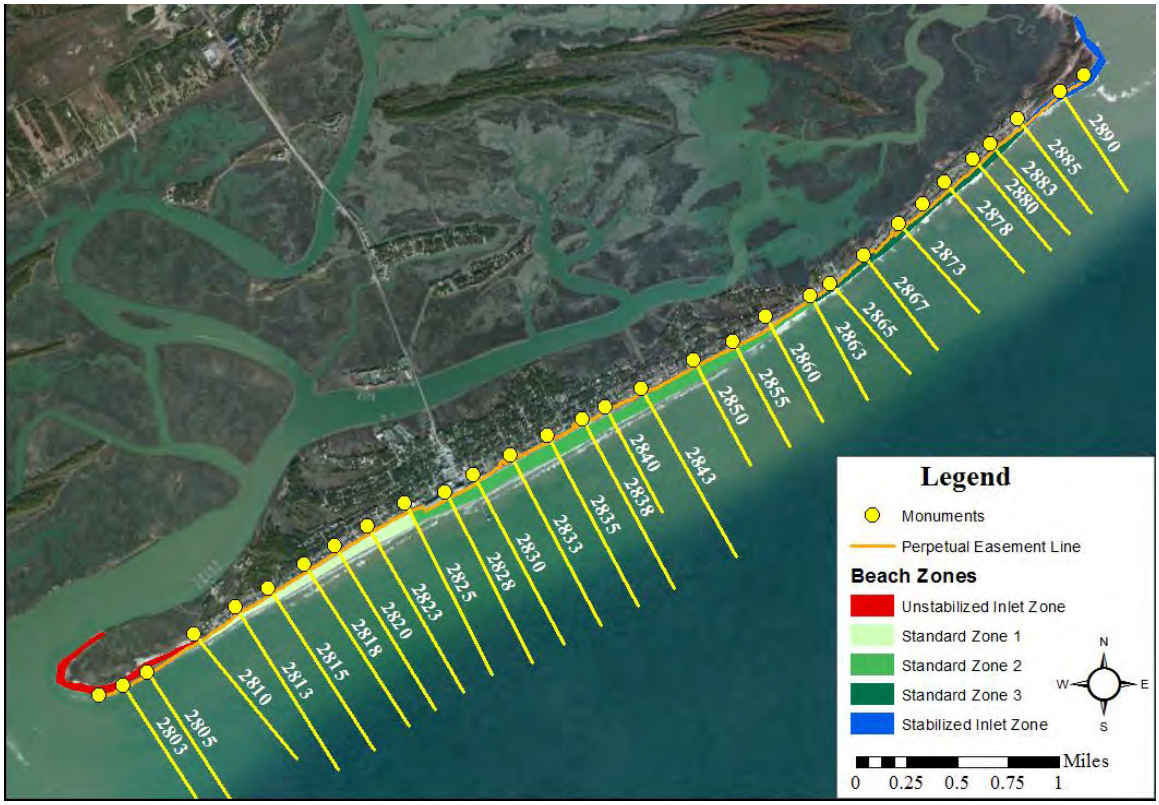


Figure 3. Aerial photo depicting the perpetual easement line (PEL), SC DHEC-OCRM Monument locations and survey lines, and State Management Zones on Folly Beach.

The upland portion of the profiles was conducted by RTK GPS standard land surveying techniques using the state of South Carolina's Virtual Reference Station (VRS) as a base station, and extended seaward to a wading depth deep enough to ensure overlap with the offshore portion of the profile survey. Profile data points were collected at a maximum interval of 20 feet and at all significant elevation changes such as dunes, berms, scarp lines, seawalls, or sand bars.

The offshore portion of the survey was conducted by hydrographic techniques using a vessel mounted fathometer along with kinematic GPS. Data points were continuously collected during the hydrographic work. The beach and offshore work met the technical standards for surveying established by USACE in their standards for hydrographic surveying.

Beach Nourishment Performance Evaluation

Two methods are utilized to evaluate the performance of the 2018 federal beach nourishment project: contour migration and volume calculations.

8-ft berm and MHW contours migration

According to the USACE O&M Manual, "*periodic nourishment will be initiated upon a mutual agreement between the Government and the Local Sponsor based on the results of annual inspections and surveys. Periodic nourishment is deemed necessary when 25% of the length of the project storm berm has reached a 15-foot width*

at elevation 9.0 NGVD. At this time an approximate high tide beach width of 60-75 feet will exist." The USACE presumably selected this storm berm width method due to the ease of determination by a single individual.

Please note that a new datum (NAVD88) is now in use, which is about 1 ft lower than the datum used to design the initial nourishment project (NGVD). Thus, the storm berm elevation is now 8.0 ft NAVD88, and is hereafter referred to as the "8-ft berm." Figure 4 illustrates the 15 ft wide berm and the mean high water (MHW) location along an example cross-section.

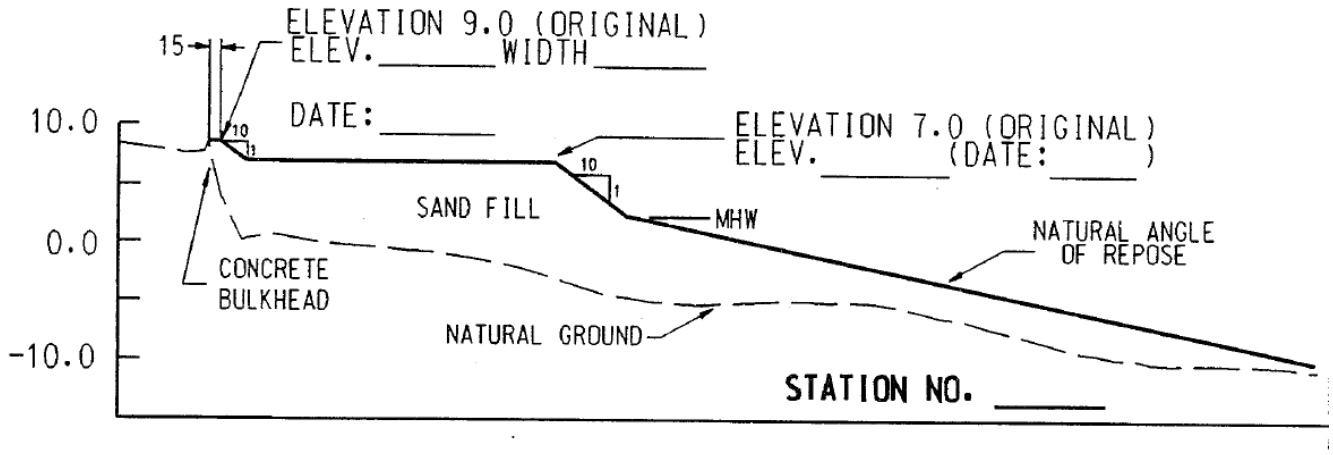


Figure 4. Example profile cross-section of the federal project, illustrating the 8-ft berm (shown here as Elevation 9.0) and the MHW location (from the 1991 USACE O&M manual).

The so-called storm berm is at an elevation roughly consistent with the base of the dune along Folly Beach. This storm berm is intended for protection from runup during extreme events. The storm berm was constructed 15 feet wide, so any erosion of the berm will result in the trigger being met at that location.

Volumetric Analysis

An accurate method to determine beach nourishment performance is through a volumetric analysis of quantitative surveys. The sand volume remaining at each monument can be determined from the surveys.

The limits of the sand volume calculation were from the Perpetual Easement Line (PEL) on the landward end extending offshore to the depth of closure, which represents the federal placement area (i.e., no private property is included). The depth of closure represents the offshore location where measurable sediment transport ceases. Here, closure depth is roughly -12 ft NAVD88 or 1,400 ft offshore of the PEL.

Unit volumes in cubic yards per foot (cy/ft) were calculated at each monument profile line then multiplied by half the distance to the stations on either side (effective distance) to determine the total volume between profiles in cubic yards (cy). Unit volumes were also calculated above -5ft NAVD88 for purposes of comparison to historical

profiles. For comparison, a nominal unit volume of 100 cy/ft, measured to the depth of closure, is a rule of thumb target volume for a nourished beach[1].

Life Cycle Projection

Prior to construction of the initial federal nourishment in 1993, a Perpetual Easement Line (PEL) was established along the landward edge of the project. The line was established along seawalls or the eroded dune/edge of vegetation demarking the line between the publicly funded renourished beach and the upland private property.

Prior to the 2014 and 2018 renourishment projects, erosion had become so severe that portions of Folly Beach lost 100% of the federal project, resulting in private property land loss. In other words, the beach eroded landward of the PEL. Recently, the City adopted ordinance 30-17 to require beachfront property owners to maintain their private property landward of the PEL at an elevation that would not compromise the integrity of the federal project.

The 15 ft wide storm berm described above is measured from the PEL toward the ocean. The MHW position relative to the PEL was also measured. When the 8-ft berm erodes completely (= 0), the base of the 8-ft berm will have reached the PEL and erosion will begin to encroach on private property. If the MHW line reaches the PEL, private property will be lost unless a seawall holds the MHW line. The life cycle for the project was inferred from MHW and 8-ft berm contour movement, as well as volumetric data.

Results

As described above, MHW and 8-ft berm positions relative to the PEL were measured. In addition, volume calculations for each profile and the project area were determined.

MHW and 8-ft berm positions relative to the PEL

In June 2022, the average MHW position relative to the PEL along the project area was 146.9 ft (Table 1). In other words, the beach was on average nearly 147 ft wide, about 15 ft narrower than at the same time last year. Following the 2014 renourishment, the beach within the project area was about 150 ft wide on average four years after nourishment.

[1] Dean, R.G., 2002. Beach Nourishment: Theory and Practice, Advanced Series on Ocean Engineering, Vol 18, World Scientific Publishing Co., 399p.

Table 1. MHW (as a proxy for shoreline) position relative to the PEL location after construction in 2018, June 2021, and June 2022 as well as the shoreline change between construction and June 2022 and over the last year.

	Mon. No.	MHW Position Rel to PEL			MHW Chg (ft/yr)	
		Post-Constr: Aug-Nov 2018	3rd Year Mon: June 2021	4th Year Mon: June 2022	Post 2018 - June 2022	April 2021 - June 2022
West End	2801		-	-		
	2803	96.7	77.9	-	-	-
	2805	271.3	225.0	221.5	-49.8	-3.5
Taper	2810	226.5	158.0	150.0	-76.5	-8.0
Project Area	2813	250.9	206.5	214.3	-36.6	7.7
	2815	215.0	186.1	181.0	-34.0	-5.1
	2818	266.4	202.3	204.3	-62.1	2.0
	2820	267.7	243.6	227.7	-40.1	-15.9
	2823	301.2	312.0	276.4	-24.8	-35.6
	2825	349.3	298.4	239.8	-109.6	-58.7
	2828	316.7	210.8	144.4	-172.3	**-66.4**
	2830	363.3	292.8	274.6	-88.7	-18.2
	2833	352.9	282.9	277.0	-75.8	-5.9
	2835	352.2	256.2	193.0	-159.3	**-63.2**
	2838	339.0	213.7	182.6	-156.4	-31.1
	2840	327.9	186.4	175.2	-152.7	-11.2
	2843	333.9	201.9	165.6	-168.2	-36.3
	2850	262.3	188.0	143.9	-118.4	-44.1
	2855	246.6	138.5	124.3	-122.3	-14.2
	2860	206.1	75.8	63.6	-142.5	-12.2
	2863	241.5	97.2	72.3	-169.1	-24.9
	2865	255.4	63.6	41.7	-213.7	-21.9
	2867	238.6	121.6	105.2	-133.3	-16.4
	2873	333.6	86.5	73.2	-260.4	-13.4
	2875	231.6	52.0	36.9	-194.7	-15.0
	2878	254.9	69.1	64.2	-190.7	-4.8
	2880	288.1	76.8	65.9	-222.2	-11.0
	2883	293.9	85.3	57.5	-236.3	-27.8
Taper	2885	199.9	72.5	64.1	-135.8	-8.4
East End	2890		178.7	188.4	188.4	9.7
	2895		57.8	54.4	54.4	-3.4
AVG. in project area		**281.4**	**168.4**	**146.9**	**-134.5**	**-21.5**

In the last year, between June 2021 and 2022, the beach width decreased by 21.5 ft along Folly Beach (Table 1). Compare this to an average of 171 ft of beach width reduction during the first year after the 2018 renourishment, when profile equilibration occurred (Figure 5), a beach width reduction of nearly 44 ft during the second year after nourishment, and nearly zero change during the third year. A majority of the profile lines showed landward migration (erosion) of the mean high-water line during this monitoring interval.

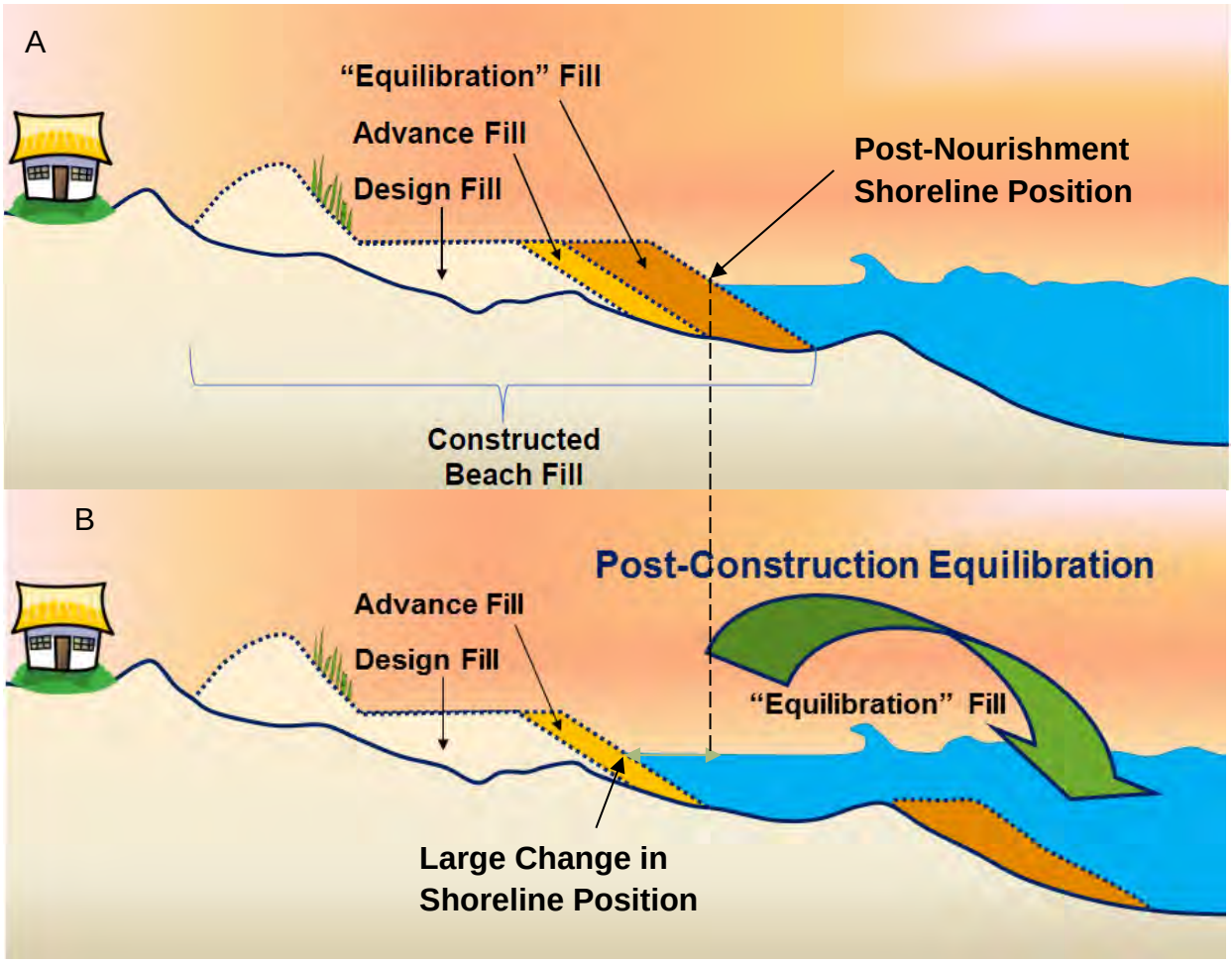


Figure 5. Schematic diagram illustrating that beach nourishment projects are designed to immediately transfer sand offshore through the process of post-construction equilibration[2]. Note the large change in shoreline position.

The maximum beach width reduction (-66.4 ft) over the last year occurred at monument 2828 on the west side of the Folly Beach Fishing Pier at 110W. Beach width reduction was also quite high (-63.2 ft) at monument 2835 near 4th St. E (Table 1).

The maximum beach width reduction in the last four years occurred at monument 2873 once again, on the east end where the beach has narrowed by about 260 feet since renourishment. However, most of this erosion occurred during the first year after nourishment. In general, this is consistent with past performance, as the

[2] *Willson, K., Thomson, G., Briggs, T.M.R., Elko, N., and Miller, J., 2017. Beach Nourishment Profile Equilibration: What to expect after sand is placed on a beach, Shore and Beach, 85(2): 49-51.*

northeast portion of the Folly Beach project (NE of 2865, the "Washout") tends to exhibit consistently high erosion rates for several years after nourishment.

Figure 6 illustrates that the areas within the rehabilitated groin field and just to the west, as well as southwest of the pier, had high shoreline erosion rates over the last year.

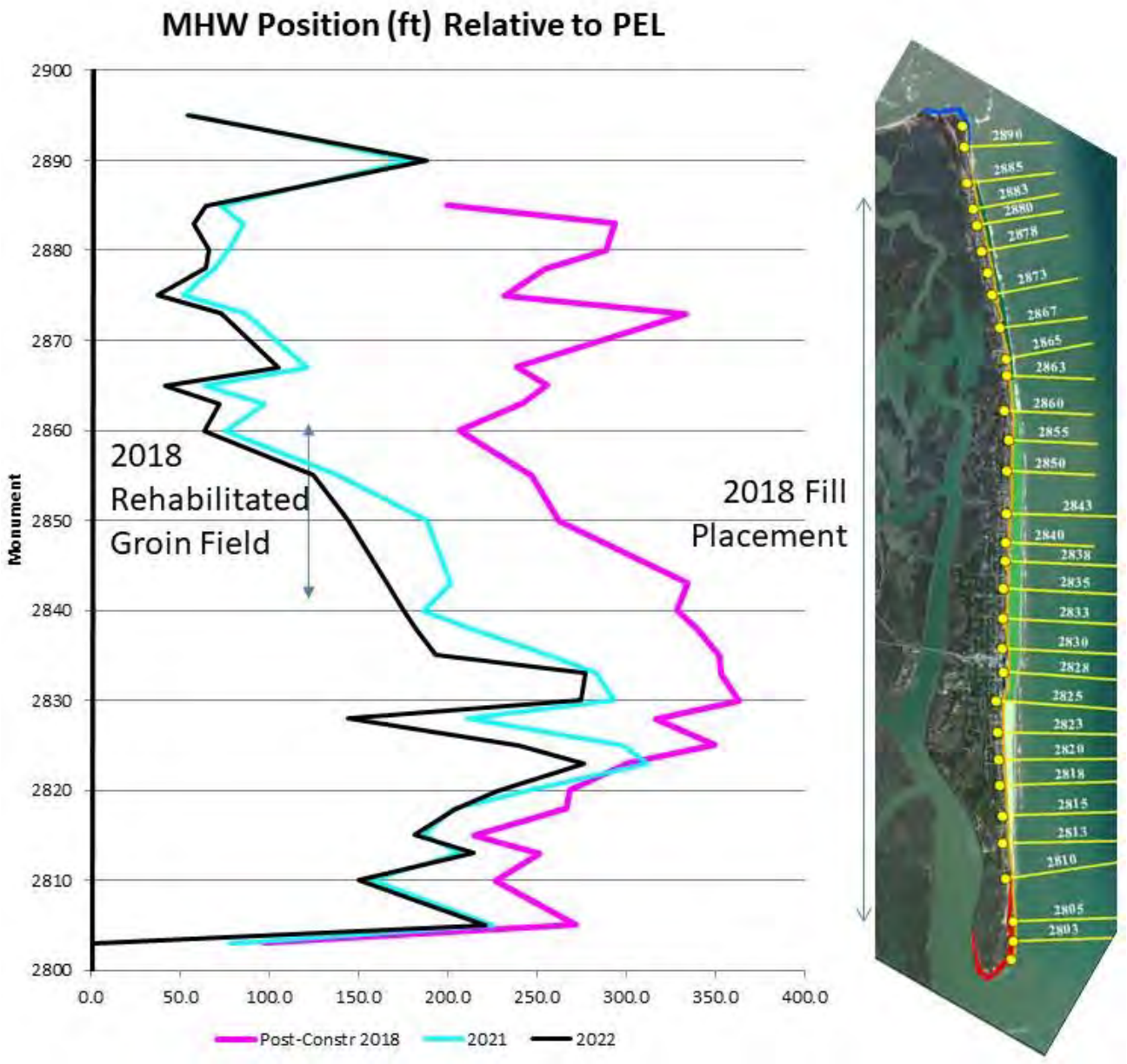


Figure 6. Plot comparing the Mean High Water (MHW) position within the project area relative to the PEL (black line at zero) after the 2018 renourishment, in June 2021, and June 2022. The aerial photo map from Figure 3 is rotated and included for reference.

Table 2. The 8-ft storm berm width after construction in 2018, June 2019, May 2020, June 2021, and June 2022. Monuments with the 2022 8-ft berm in red bold text have met the USACE renourishment trigger.

-	Mon. No.	8 ft Design Berm Width				
		Post-Constr. 2018	June 2019	May 2020	June 2021	June 2022
Taper	2810	35.0	30.9	32.9	28.1	26.2
Project Area	2813	45.5	47.6	70.6	76.6	75.4
	2815	51.0	55.4	68.1	72.6	79.0
	2818	77.7	86.8	89.2	97.4	102.8
	2820	100.3	97.5	108.0	110.2	110.6
	2823	139.7	142.8	149.0	150.3	154.9
	2825	121.6	117.8	139.4	143.6	143.9
	2828	58.3	42.9	54.8	61.6	52.5
	2830	23.0	81.9	119.4	157.7	152.8
	2833	211.5	193.3	204.0	210.5	184.3
	2835	185.0	178.7	174.1	171.0	137.6
	2838	169.2	159.1	146.2	124.3	106.4
	2840	130.0	124.1	114.5	109.4	104.7
	2843	39.0	56.8	65.1	85.3	77.0
	2850	27.3	35.6	41.3	55.3	56.5
	2855	30.8	24.3	26.7	**0.0**	35.7
	2860	44.3	0.0	**0.0**	**0.0**	**0.0**
	2863	39.1	16.4	**13.4**	**3.8**	**2.9**
	2865	28.4	7.8	**7.1**	**7.3**	**0.0**
	2867	36.5	33.9	40.4	40.4	32.8
	2873	29.5	29.5	17.3	**13.5**	**4.5**
	2875	34.4	11.0	**0.0**	**0.0**	**0.0**
	2878	30.1	18.0	**7.9**	**0.0**	**0.0**
	2880	30.5	33.7	27.3	**13.4**	**0.6**
	2883	38.4	35.8	25.5	**12.6**	**0.0**
Taper	2885	39.5	0.0	**0.0**	**0.0**	**0.0**
AVG. in Project Area		**69.1**	**63.9**	**67.0**	**66.2**	**63.1**

In June 2022, the 8-ft berm within the federal project area was on average 63.1 ft wide (Table 2). Between the end of construction in 2018 and June 2022, the average 8-ft berm width decreased by only about 3 ft. In June 2022, the 8-ft berm was less than 15 ft wide at nine (9) of the 26 (**35%**) profile lines within the project area (shown in red bold text in Table 2) Recall that periodic nourishment is deemed necessary when 25% of the length of the 8-ft berm has eroded to less than 15 ft wide. As such, **the project has met the trigger for renourishment**.

The nine profiles with an 8-ft berm less than 15 ft wide in 2021 are all located northeast of profile 2855 (near the east end of E. Arctic Ave.) Interestingly, the 8-ft berm at several profiles (e.g., 2855) had eroded during the third year after nourishment in 2021 but recovered. It is this variability in profile form that leads engineers to favor the volume calculation method for assessing nourishment performance.

Figure 7 illustrates the change in the 8ft berm along the project area during the fourth year after the 2018 renourishment project. The section of the project from the southwestern project limit north to monument 2855 (approximately 1110 E) is performing very well with the exception of the area between 2833 and 2840. Along most of this area, the 8-ft berm has actually grown since the 2018 renourishment; however, the area downdrift of the rehabilitated groin field has lost a significant amount of the post-construction 8-ft berm (Figure 7 - patterned). Berm recovery and dune growth has occurred landward of the PEL within the rehabilitated groin field (2843-2863). This is shown by the 8-ft berm width being wider than it was post-nourishment (Figure 7), and is evident in Appendix A. Along the easternmost 2 miles of the Folly Beach federal project area (northeast of 2855), 9 out of the 10 profiles have lost all or most of the protective 8-ft berm.

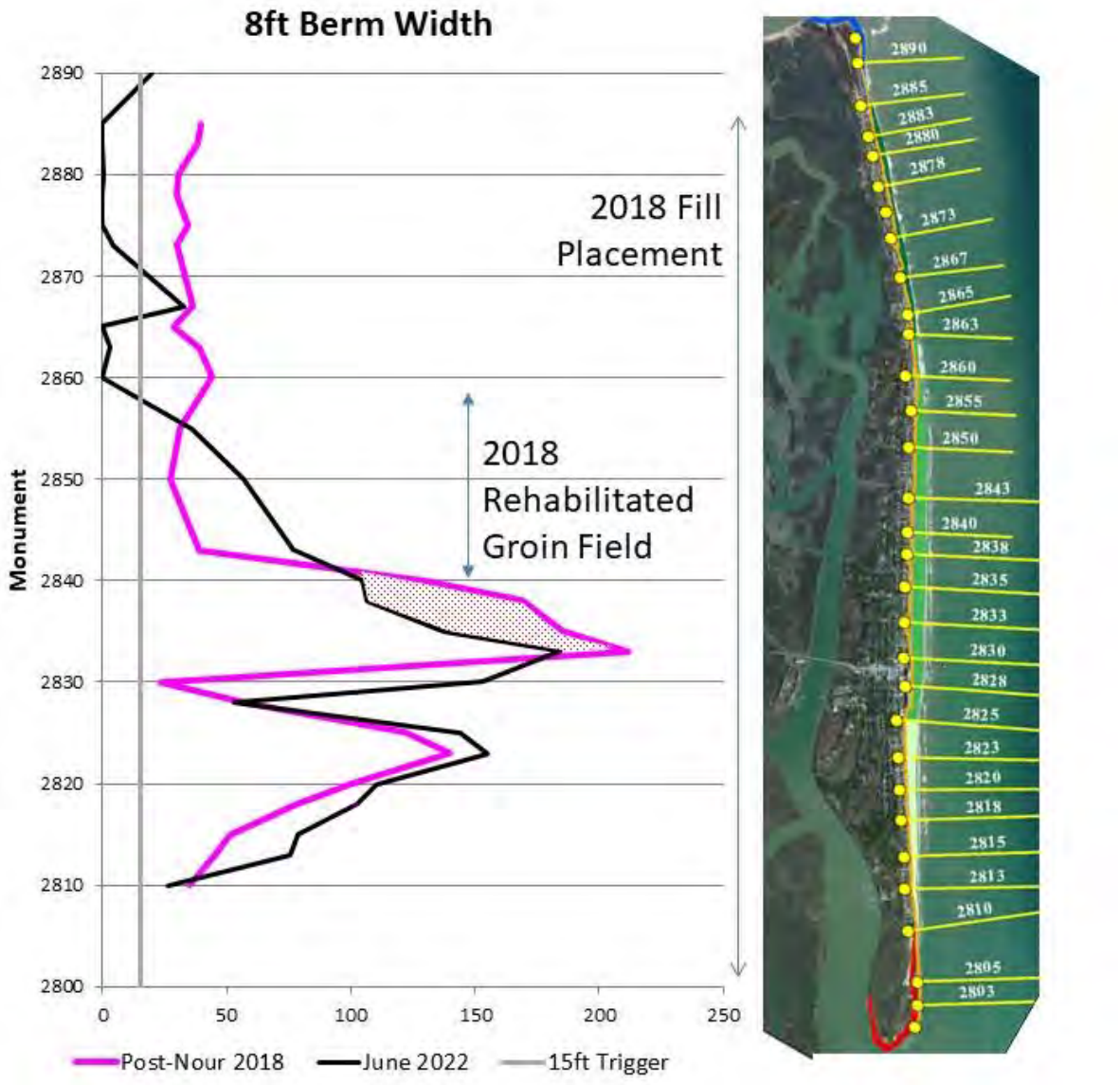


Figure 7. Plot of 8-ft berm width within the project area after nourishment in 2018 and June 2022, including the 15 ft trigger for renourishment. The pattern filled area between 2833 and 2840 indicates an area of significant berm loss downdrift of the rehabilitated groin field. The aerial photo map from Figure 3 is rotated and included for reference.

Volumetric Performance Analysis

The overall volume change is summarized in Table 3. The 2018 federal renourishment project placed 1.2 million cubic yards (cy) of sand within the project area. Between the post-construction surveys and June 2022, the project lost 1,273,121 cy. As of June 2022, more sand has eroded from the project area than was placed in 2018. Essentially, 0% of the sediment placed remains four years after nourishment.

This represents poor performance. The performance is worse than four years after the 2014 federal renourishment project when approximately 1.4 million cy were placed in the project area. In 2018, roughly 6%, or 80,256 cy, of the sediment placed remained in the project area. The beach was renourished shortly thereafter.

Table 3. Volume change in the project area after construction in 2018 to June 2022.

Total volume placed by 2018 project (cy)	1,200,000	100%
Volume change from post-construction 2018 to June 2019	-543,364	
Volume change from June 2019 to May 2020	-302,898	
Volume change from May 2020 to June 2021	-246,332	
Volume change from June 2021 to June 2022	-325,789	
Total volume change from 2018 to 2022	-1,273,121	
Volume remaining in June 2022 (cy)	**0**	**0%**

Unit volume changes alongshore from post-construction in 2018 to June 2022 are displayed in Figure 8. Recall that volume was calculated from the PEL out to -14 ft NGVD (Federal project limits only, not private property).

Volume change during the last year was relatively stable along the west end of the project area from 2810 northwest to monument 2825 (3rd St. W.) and northeast of 2855 (11th St. E.). The southwestern portion, and the area downdrift of, the rehabilitated groin field lost the most volume (Figure 8). This same trend is shown in Appendix A.

This volume performance is consistent with the 2014 renourishment project with two notable exceptions. As suggested in the 2019 and 2020 post construction monitoring reports, the transition point between the more stable west and more erosional east ends of the project has shifted to the east from approximately 7th St. E. during the 2014 project to about the Washout during this project. The explanation for this shift is the rehabilitated groin field between 8th and 14th St. E., constructed in 2018 (Figure 8). Additionally, this "more erosional" east end of the island was relatively stable during this monitoring interval with some profile lines (2875 and 2878) gaining volume. Sediment from the sand bar attachment event around Lighthouse Inlet that was documented in the 2020 monitoring report is likely feeding this area.

Outside of the project area, the extreme northeast end of Folly Beach, east of the project area was fairly stable; whereas, the extreme southwest end of Folly Beach west of the terminal groin at the County Park eroded significantly.

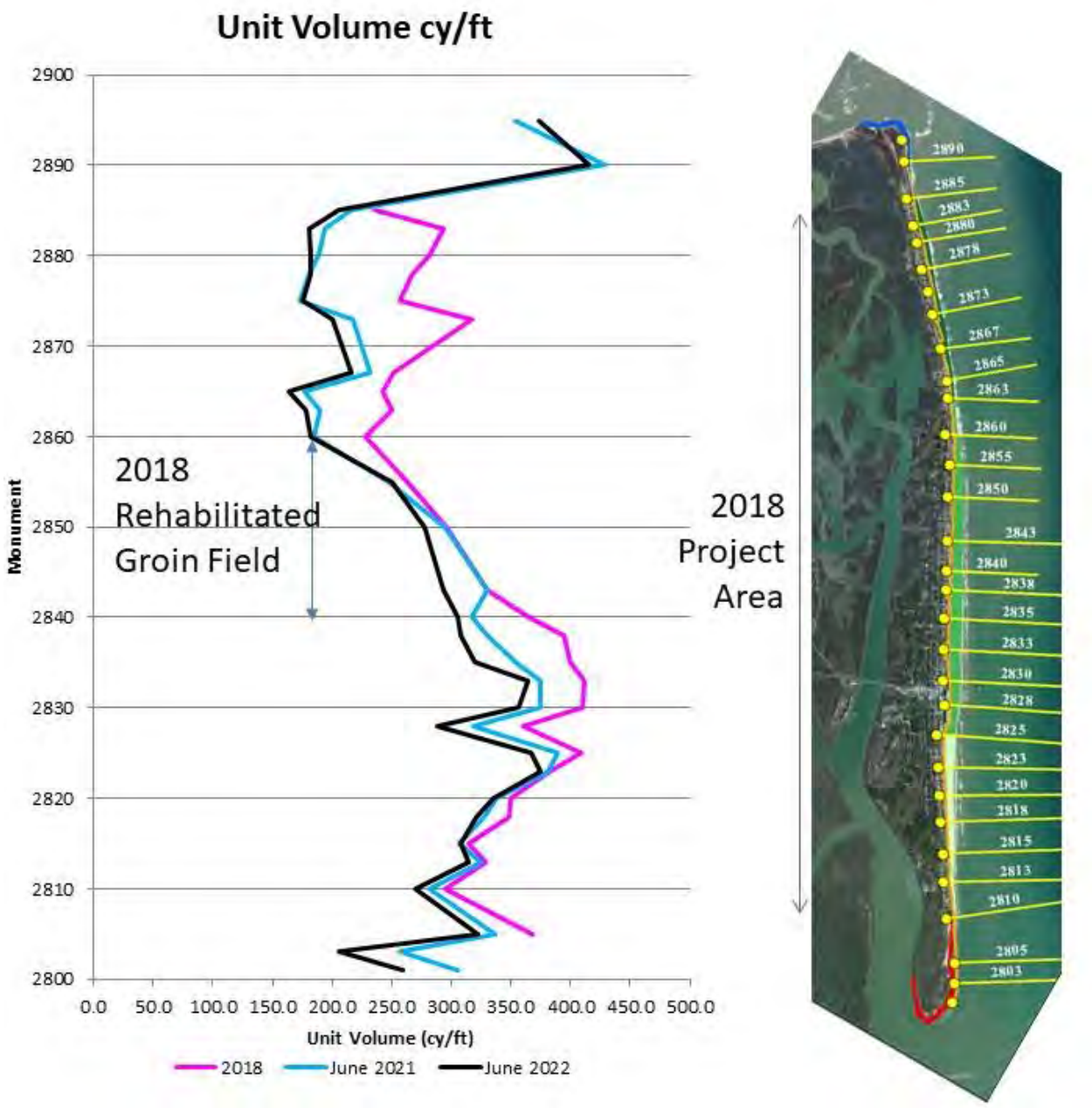


Figure 8. Unit volume measured immediately after construction in 2018 and during the third- and fourth-year monitoring surveys (June 2021 and 2022).

Summary of Superintendent Inspection

The annual superintendent inspection required by the federal Operations & Maintenance (O&M) Manual took place in late June 2022 (see Digital Appendix). Overall, the inspection confirmed the data analysis described above. The west end of the island displayed stable conditions with significant dune growth. The Folly Beach Fishing Pier remained under reconstruction during this monitoring interval. Reduced beach widths and dune loss were observed west of the pier east to the rehabilitated groin field.

The rehabilitated groin field between 8th and 14th St. E. is functioning as designed. Dune development in this region is impressive as documented in the attached, "*Folly Beach Groin Rehabilitation, Annual Monitoring Report, June 2022.*"

Summary of Monitoring

In June 2022, the average MHW position relative to the PEL along the project area was 146.9 ft, about 20 ft narrower than this time last year. By comparison, four years after the 2014 renourishment, the beach was about 150 ft wide on average. Between construction completion in Fall 2018 and June 2022, the beach width narrowed by an average of 135 ft across the project area with the largest changes in beach width happening immediately after nourishment.

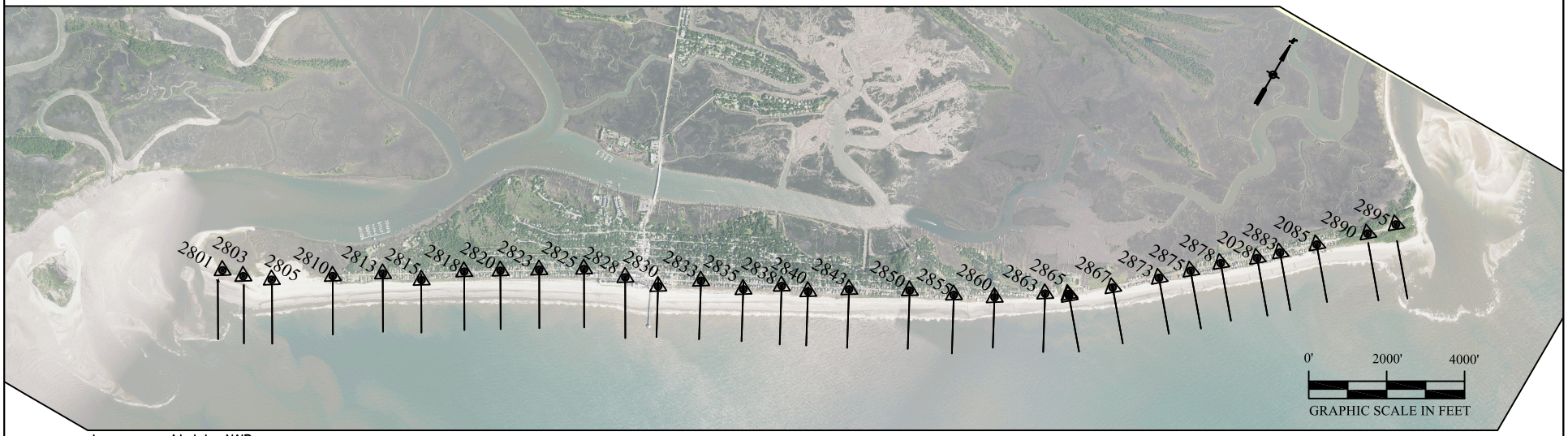
In June 2022, the 8-ft berm within the federal project area was on average 63.1 ft wide; however, the 8-ft berm was less than 15 ft wide at nine (9) of the 26 (35%) profile lines within the project area. As such, **the project has met the trigger for renourishment**. These statistics are heavily influenced by the central and west portions of the project and do not adequately reflect the erosional hot spots on the east end.

The volume measurements paint a more accurate picture, revealing that 0% of the 2018 nourished material remains in the federal project area as of June 2022. Approximately 1.27 million cubic yards of the 1.2 million cubic yards placed have eroded. This suggests that sediment that was in place prior to the 2018 project has eroded. For example, a row of primary dunes downdrift of the renourished groin field is now gone. Four years after the 2014 federal renourishment project, when approximately 1.4 million cy were placed, 6% of the sand remained in the project area. The 2018 renourishment project was constructed shortly thereafter.

The most significant difference in the 2014 and 2018 renourishment performance is the effect of the rehabilitated the rehabilitated groin field between 8th and 14th St. E., which is functioning as designed and causing downdrift erosion as expected. Previous monitoring reports have noted a transition zone between the erosional east end and the more stable central and west ends of the project area near 8th St. E. As a result of the groin field, this transition area appears to have shifted to The Washout and perhaps beyond. While the groin field effect is promising, the overall performance of the 2018 project is worse than the performance of the 2014 project.

Appendix A: Engineering Analysis of 8-ft Berm & Volumetric Change

CITY OF FOLLY BEACH
4-YR (2022) POST CONSTRUCTION PHYSICAL MONITORING
8-FT BERM & VOLUMETRIC CHANGE ANALYSIS



Imagery provided by NAIP

PREPARED FOR: ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

SHEET INDEX:

SHEET: 01 OF 21

SCALE: AS SHOWN

FILE: 2022 Folly Beach 4-YR Monitoring sheet 1.dwg

DESIGN: REV:

DRAWN: SBM

APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
8-FT BERM & VOLUMETRIC CHANGE
COVER PAGE & SITE OVERVIEW

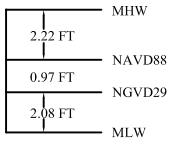
SURVEY CONTROL TABLE				
NAME	EASTING	NORTHING	ELEVATION	AZIMUTH
2801	2,316,658.05	295,397.01	5.50	59.60
2803	2,317,195.91	295,537.02	4.90	59.60
2805	2,317,872.34	295,825.08	7.06	59.60
2810	2,319,178.89	296,693.41	4.07	59.60
2813	2,320,259.07	297,394.38	4.85	59.60
2815	2,321,200.32	297,752.04	12.03	59.60
2818	2,322,036.92	298,490.57	6.50	59.60
2820	2,322,831.29	298,977.95	6.05	59.60
2823	2,323,678.31	299,499.37	6.00	59.60
2825	2,324,661.63	300,094.73	6.15	59.60
2828	2,325,685.61	300,443.81	8.43	59.60
2830	2,326,528.40	300,668.33	6.83	61.70
2833	2,327,411.44	301,342.29	8.35	61.70
2835	2,328,458.38	301,701.19	11.31	61.70
2838	2,329,266.76	302,270.25	7.45	61.70
NOTES:				
1. Monument names reference SCCC designations. (Ref. sht.3-5 for plan view.)				
2. Coordinates reference South Carolina State Plane (Single Zone) NAD 83 and NAVD 88.				
3. Azimuth reference degrees clockwise from Geodetic (True) North.				
4. Control information Obtained form National Geodetic Survey (NGS).				

SURVEY CONTROL TABLE				
NAME	EASTING	NORTHING	ELEVATION	AZIMUTH
2840	2,329,923.68	302,488.95	8.62	61.70
2843	2,330,807.06	303,064.39	9.79	61.70
2850	2,332,164.90	303,821.63	6.59	61.70
2855	2,333,200.58	304,295.37	6.70	61.70
2860	2,334,137.20	304,766.60	8.82	61.70
2863	2,335,209.29	305,501.60	7.98	61.70
2865	2,335,771.33	305,759.72	9.08	49.60
2867	2,336,627.40	306,510.26	8.65	49.60
2873	2,337,532.22	307,320.56	8.65	49.60
2875	2,338,143.04	307,885.82	7.83	49.60
2878	2,338,710.48	308,444.46	7.91	49.60
2028	2,339,454.45	309,026.85	7.98	49.60
2883	2,339,890.35	309,444.20	8.78	49.60
2085	2,340,600.89	310,097.41	9.25	49.60
2890	2,341,590.09	310,996.52	7.95	49.60
2895	2,342,097.50	311,562.86	7.87	49.60
NOTES:				
1. Monument names reference SCCC designations. (Ref. sht.3-5 for plan view.)				
2. Coordinates reference South Carolina State Plane (Single Zone) NAD 83 and NAVD 88.				
3. Azimuth reference degrees clockwise from Geodetic (True) North.				
4. Control information Obtained form National Geodetic Survey (NGS).				

SURVEY NOTES

1. 4-YR POST CONSTRUCTION (2022) MONITORING SURVEY CONDUCTED BY ELKO CONSULTING,INC (JUNE 16-18, 2022).
2. 3-YR POST CONSTRUCTION (2021) MONITORING SURVEY CONDUCTED BY ELKO CONSULTING,INC (TOPO: JUNE 14-17, 2021 HYDRO: JUNE 15 & 17, 2021).
3. 2-YR POST CONSTRUCTION (2020) MONITORING SURVEY CONDUCTED BY ELKO CONSULTING,INC (TOPO: APRIL 20-22 & 27, 2020 HYDRO: APRIL 27 & 28, 2020).
4. 1-YR POST CONSTRUCTION (2019) MONITORING SURVEY CONDUCTED BY ELKO CONSULTING,INC (TOPO: MAY 28-30 2019 HYDRO: JUNE 1-3, 2019).
5. POST CONSTRUCTION (2018) MONITORING SURVEY CONDUCTED BY GBA (AUG - NOV 2018)
6. PRE-CONSTRUCTION (BD) SURVEY CONDUCTED BY GBA ON JULY 2018.
7. SURVEYS CAN ONLY BE CONSIDERED AS INDICATING THE GENERAL CONDITIONS EXISTING AT THAT TIME.
8. SURVEYS REFERENCE NAVD88 (VERTICAL) AND SOUTH CAROLINA STATE PLANE (NAD83) COORDINATES (SINGLE ZONE).
9. UNITS ARE IN INTERNATIONAL FEET.
10. HORIZONTAL AND VERTICAL POSITIONING OBTAINED USING TRIMBLE SPS RTK.
11. SOUNDINGS OBTAINED BY A KNUDSEN ECHOSOUNDER OPERATED AT 200KHz ON "SURVEY VESSEL ONE" (2020).

RELATIONSHIP BETWEEN NAVD88 AND MHW, MLW & NGVD29 FOR NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE) AS DEFINED BY NGS.



ANALYSIS NOTES

1. VOLUMES CALCULATED WITHIN THE LIMITS OF THE PRE-CONSTRUCTION (BD) SURVEY OR THE PEL, IF THE BD SURVEY EXTENDED BEYOND THE PEL, AND THE APPARENT DEPTH OF CLOSURE (DOC) OF -12 FT AS DETERMINED BY VISUAL INSPECTION.
2. VOLUMES CALCULATED USING THE AVERAGE-END-AREA METHODOLOGY.
3. SHORELINE DISTANCES DETERMINED AS THE STRAIGHT LINE MEASUREMENT BETWEEN MONITORING AZIMUTHS AT THE INTERSECTIONS WITH THE MHW CONTOUR. (PERPENDICULAR DISTANCES BETWEEN THE MONITORING AZIMUTHS USED FOR PROFILES OUTSIDE THE BD SURVEY LIMITS.)
4. THE PRE-CONSTRUCTION (BD) SURVEY DID NOT INCLUDE ALL SCCC MONUMENT PROFILES. WHERE NECESSARY, THE NEAREST BD SURVEY STATION WAS TRANSLATED HORIZONTALLY TO COINCIDE WITH A SCCC MONUMENT PROFILE. (REF SHT 3-5 FOR PLAN VIEW OF SURVEY LOCATIONS.)
5. 8-FT DESIGN BERM WIDTH MEASURED AT THE 7.5-FT CONTOUR DUE TO ALLOWABLE CONSTRUCTION TOLERANCES.

SHEET: 02 OF 21

SCALE: AS SHOWN

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

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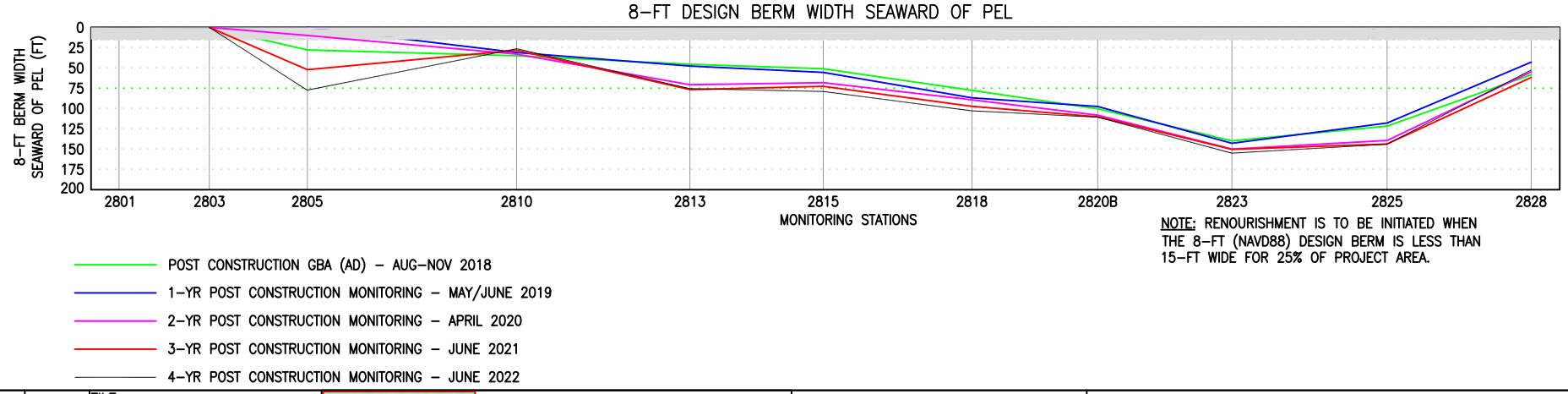
ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SURVEY CONTROL & SURVEY NOTES

Imagery provided by NAIP



NOTE: RENOURISHMENT IS TO BE INITIATED WHEN THE 8–FT (NAVD88) DESIGN BERM IS LESS THAN 15–FT WIDE FOR 25% OF PROJECT AREA.

SHEET: 03 OF 21

SCALE: AS SHOWN

FILE: 2022 Folly Beach 4–YR Monitoring sheet 3_5.dwg

DESIGN: REV:

DRAWN: SBM

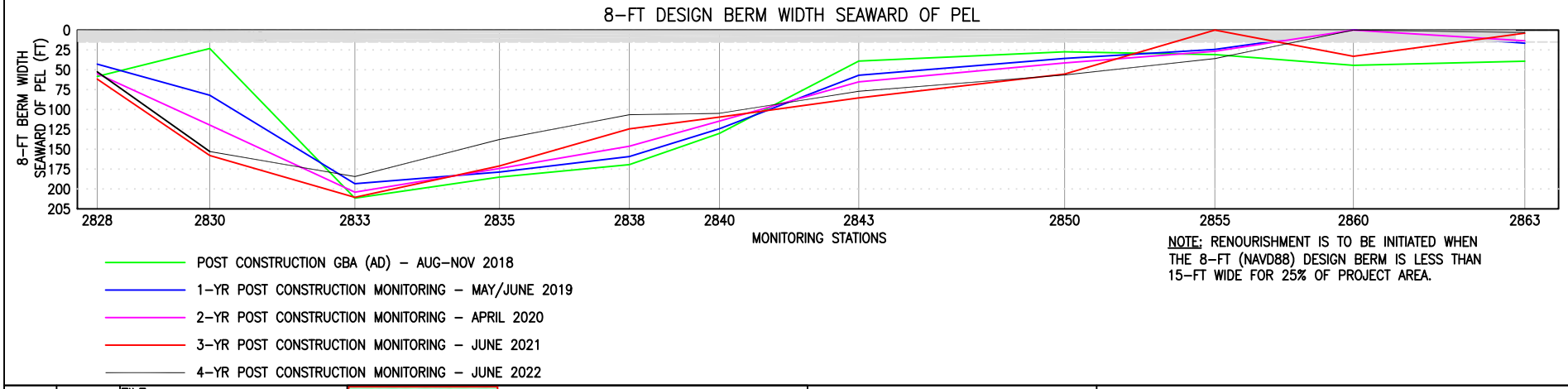
APPROVED: RAR

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE:

CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
8-FT BERM & VOLUMETRIC CHANGE
SCCC 2801 THRU 2828

Imagery provided by NAIP



NOTE: RENOURISHMENT IS TO BE INITIATED WHEN THE 8–FT (NAVD88) DESIGN BERM IS LESS THAN 15–FT WIDE FOR 25% OF PROJECT AREA.

SHEET: 04 OF 21

SCALE: AS SHOWN

FILE: 2022 Folly Beach 4–YR Monitoring sheet 3_5.dwg

DESIGN: | REV:

DRAWN: SBM

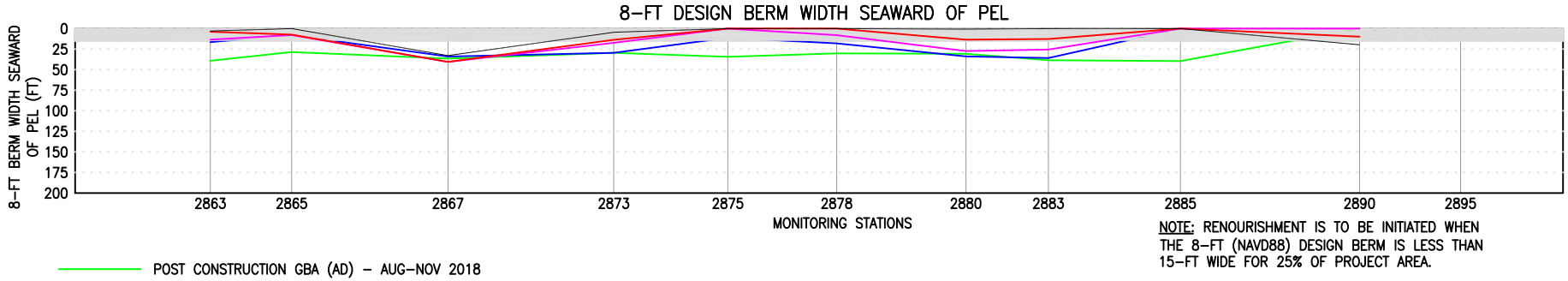
APPROVED: RAR

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE:

CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
8-FT BERM & VOLUMETRIC CHANGE
SCCC 2828 THRU 2863B

Imagery provided by NAIP



NOTE: RENOURISHMENT IS TO BE INITIATED WHEN THE 8-FT (NAVD88) DESIGN BERM IS LESS THAN 15-FT WIDE FOR 25% OF PROJECT AREA.

- POST CONSTRUCTION GBA (AD) – AUG–NOV 2018
- 1–YR POST CONSTRUCTION MONITORING – MAY/JUNE 2019
- 2–YR POST CONSTRUCTION MONITORING – APRIL 2020
- 3–YR POST CONSTRUCTION MONITORING – JUNE 2021
- 4–YR POST CONSTRUCTION MONITORING – JUNE 2022

SHEET: 05 OF 21

SCALE: AS SHOWN

FILE: 2022 Folly Beach 4–YR Monitoring sheet 3_5.dwg

DESIGN: | REV:

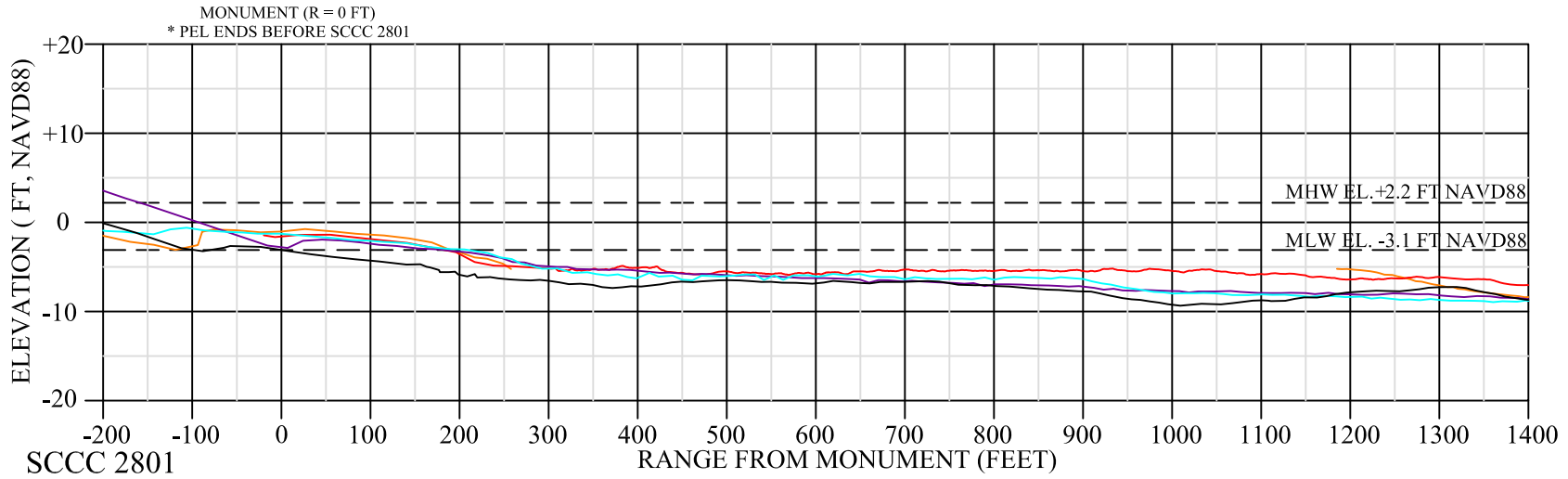
DRAWN: SBM

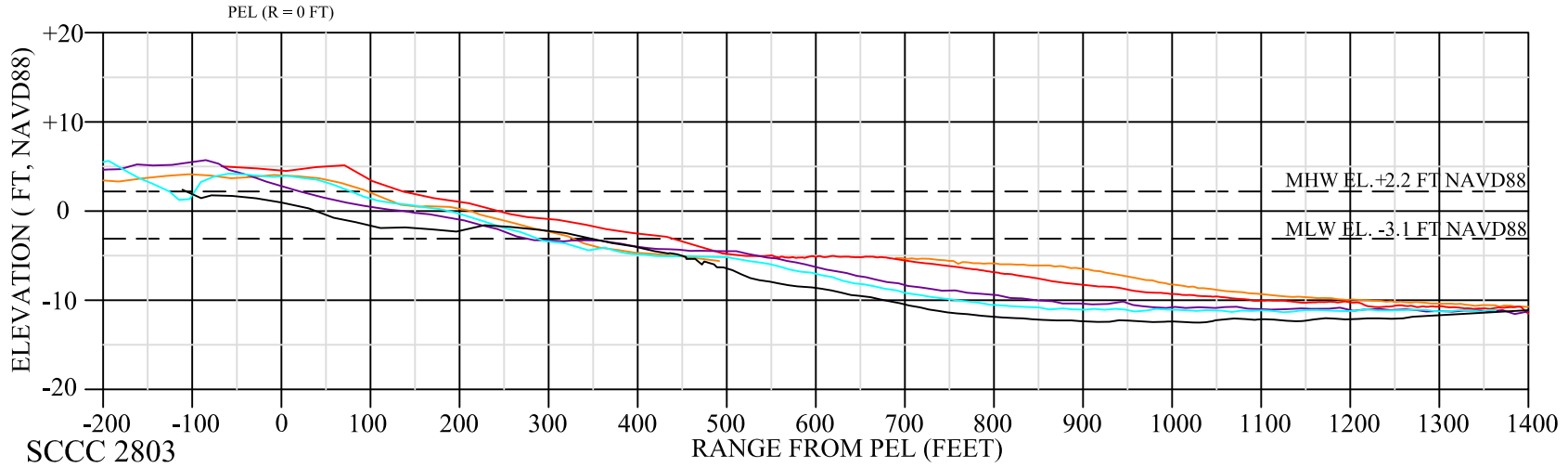
APPROVED: RAR

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE:

CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
8-FT BERM & VOLUMETRIC CHANGE
SCCC 2863B THRU 2895





MONITORING - JUNE 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JULY 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 06 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

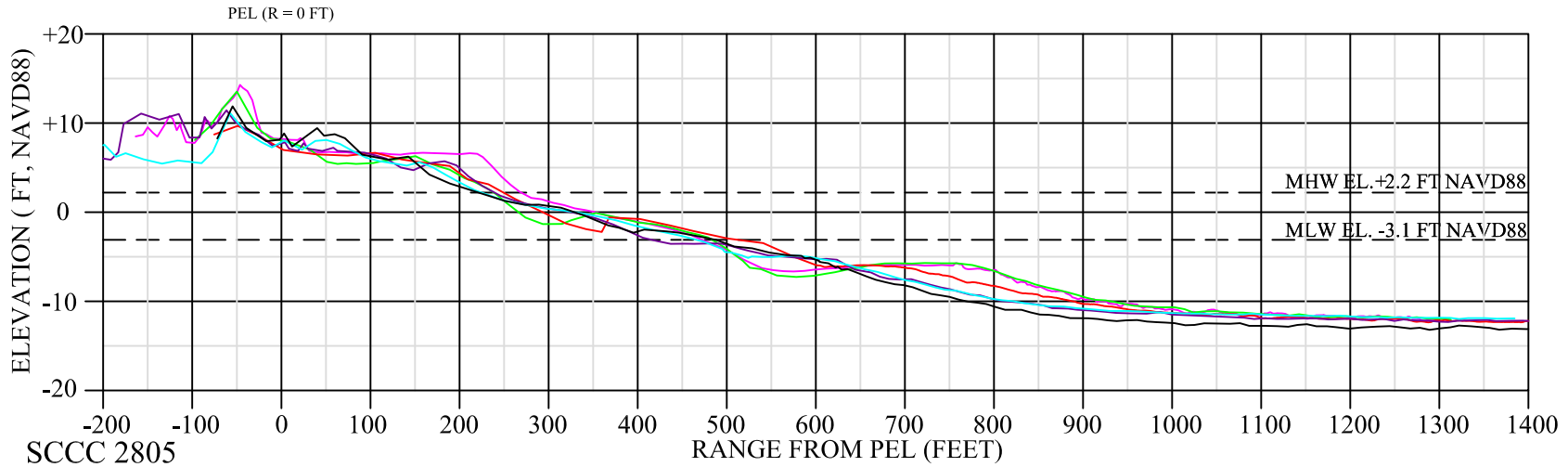
DRAWN: SBM

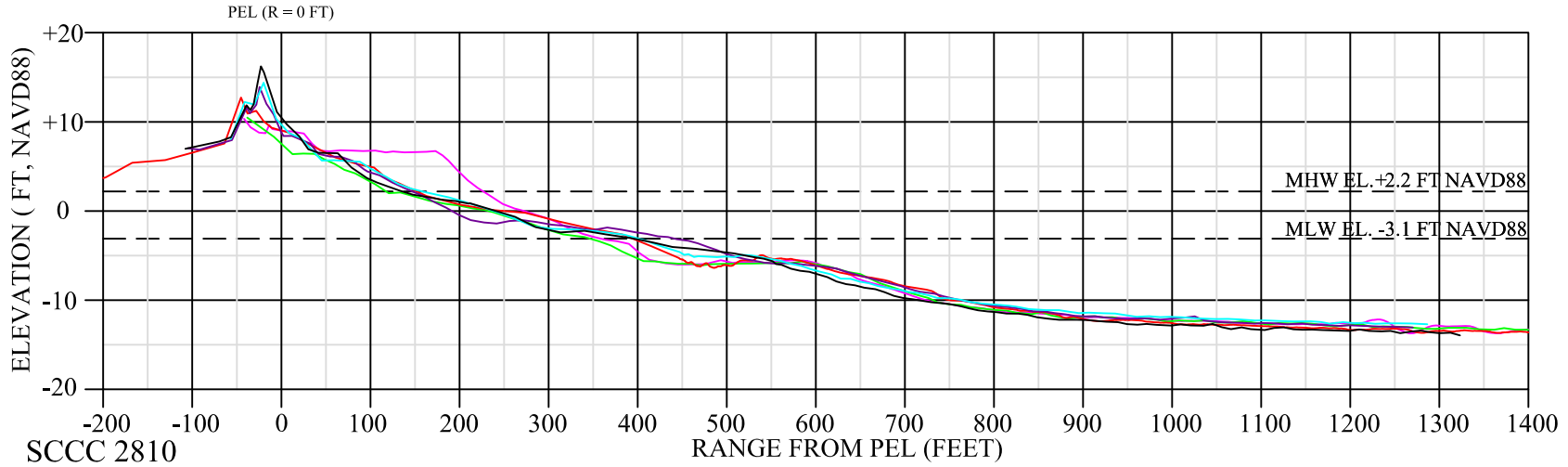
APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2801 & 2803





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 07 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

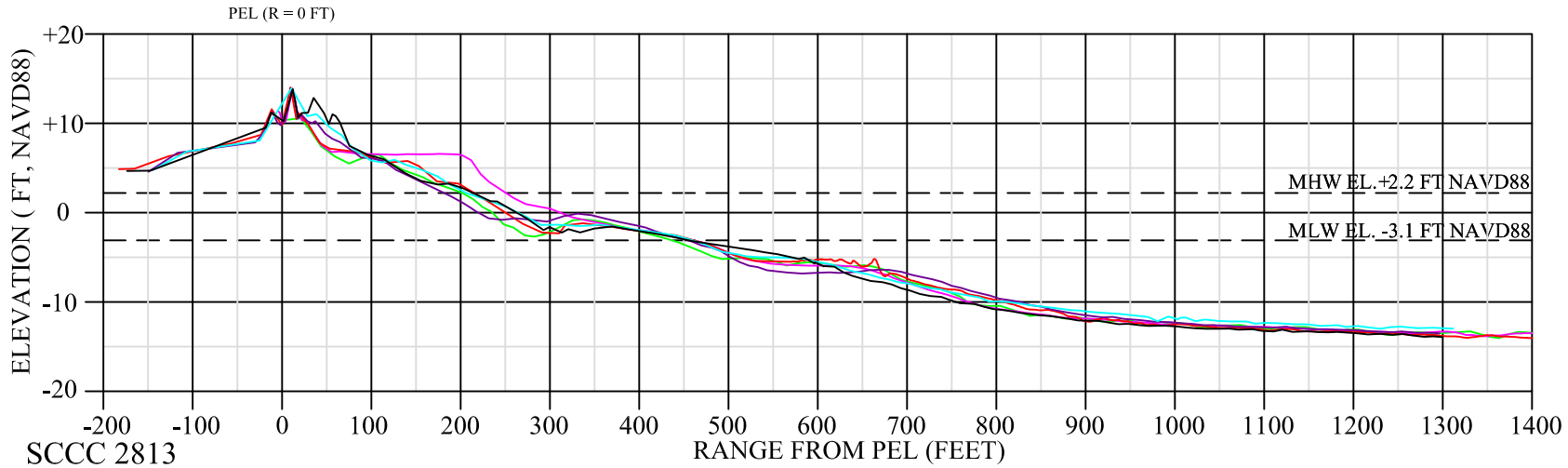
DRAWN: SBM

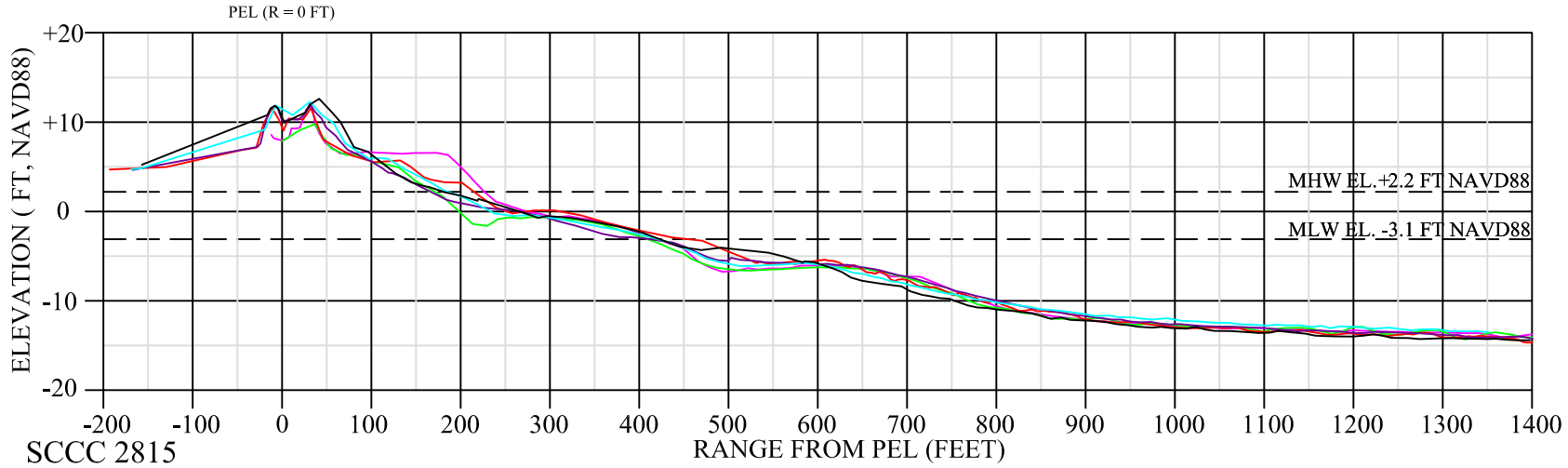
APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2805 & 2810





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 08 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

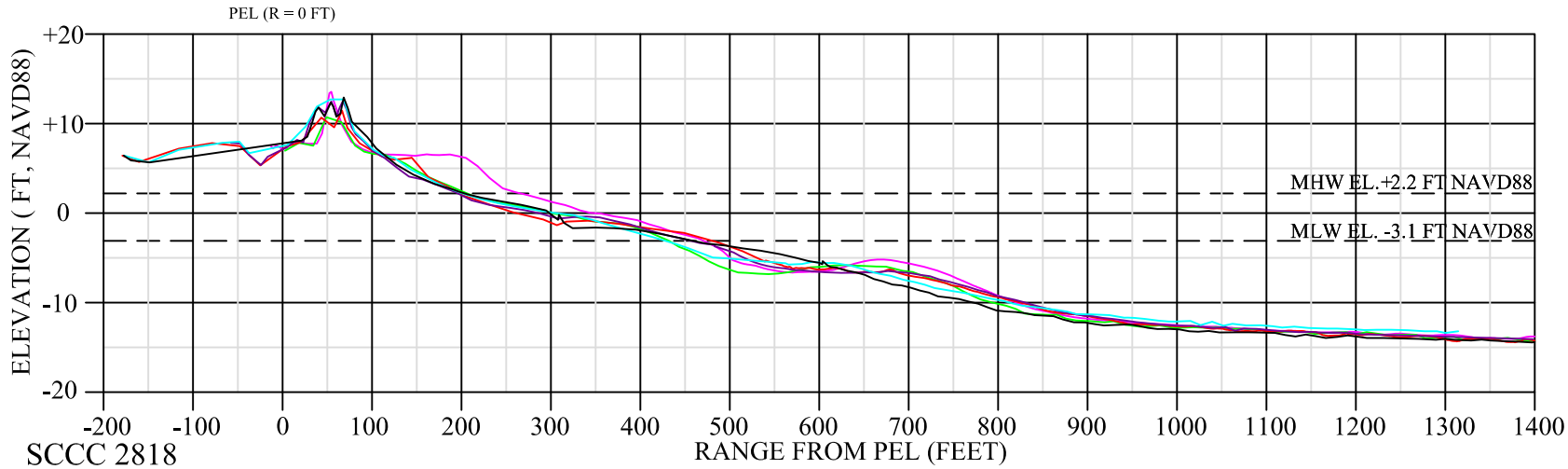
DESIGN: REV:

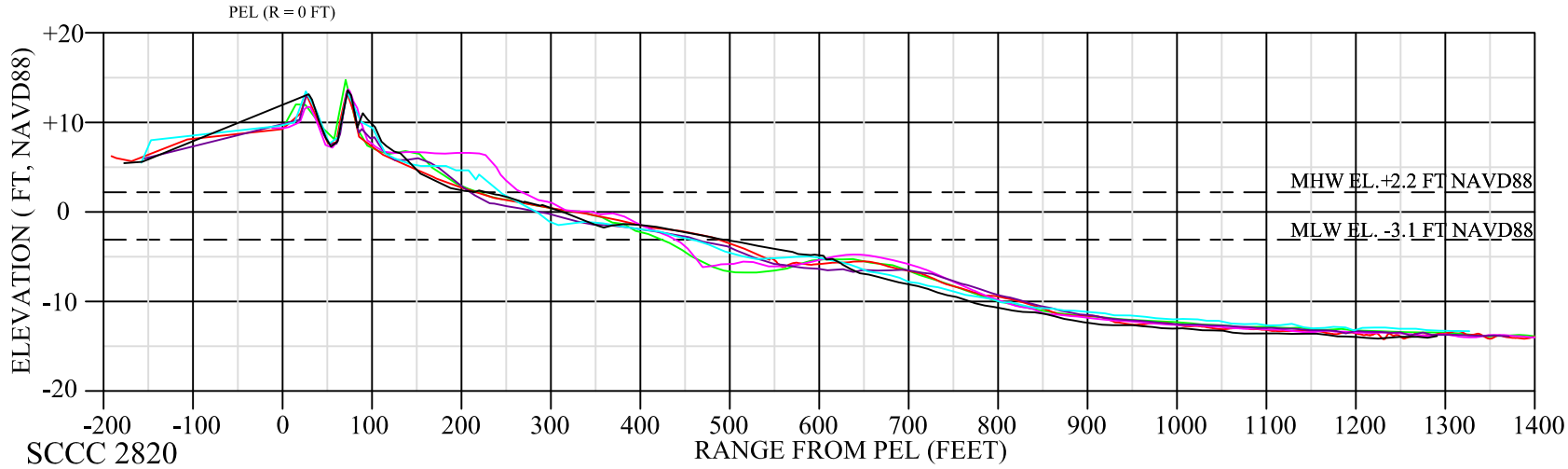
DRAWN: SBM

APPROVED: RAR

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2813 & 2815





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 09 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

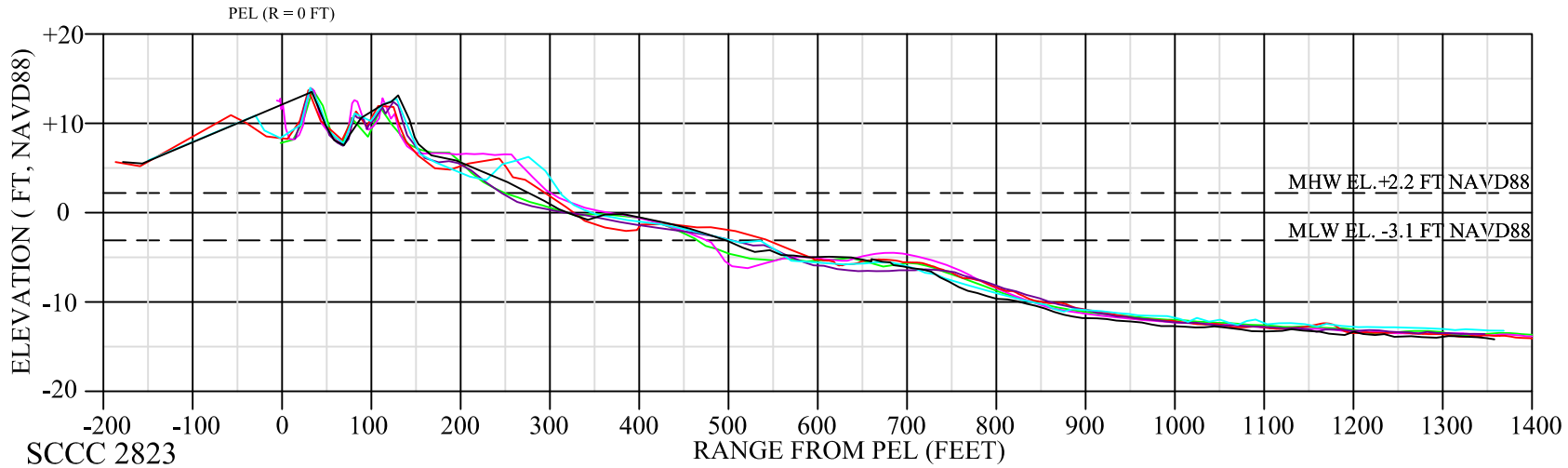
DESIGN: REV:

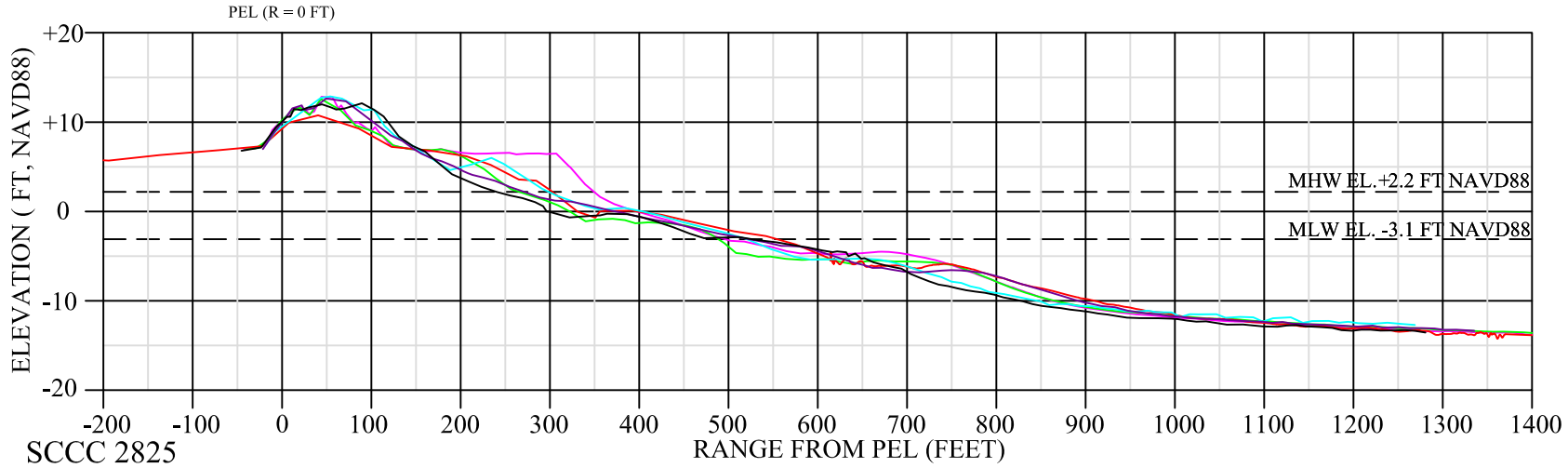
DRAWN: SBM

APPROVED: RAR

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2818 & 2820B





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 10 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

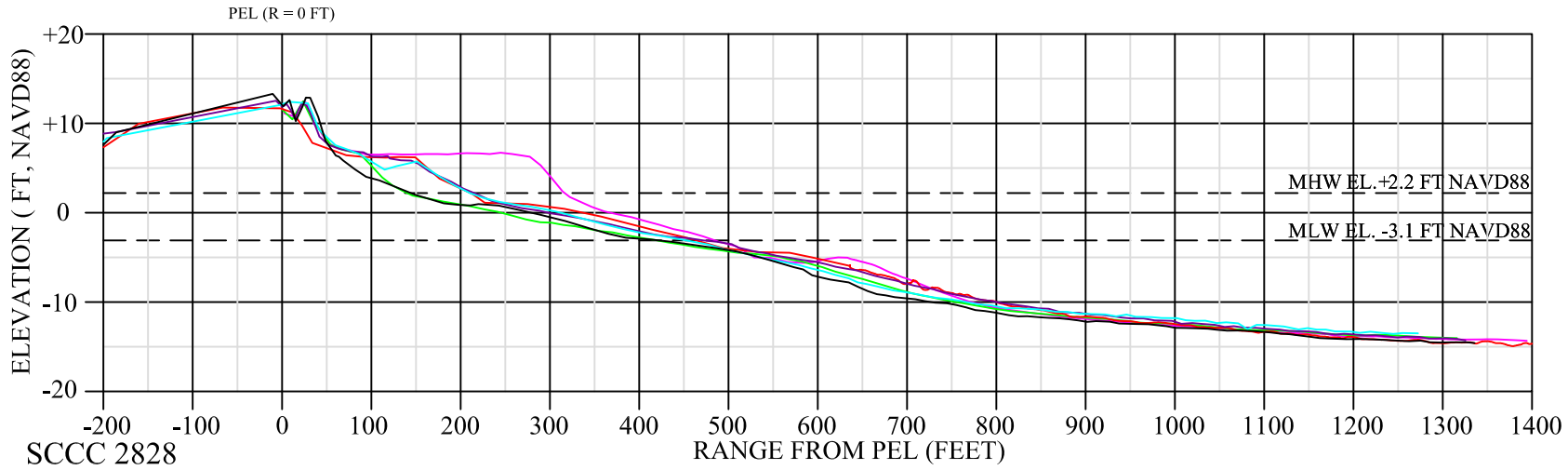
DRAWN: SBM

APPROVED: RAR

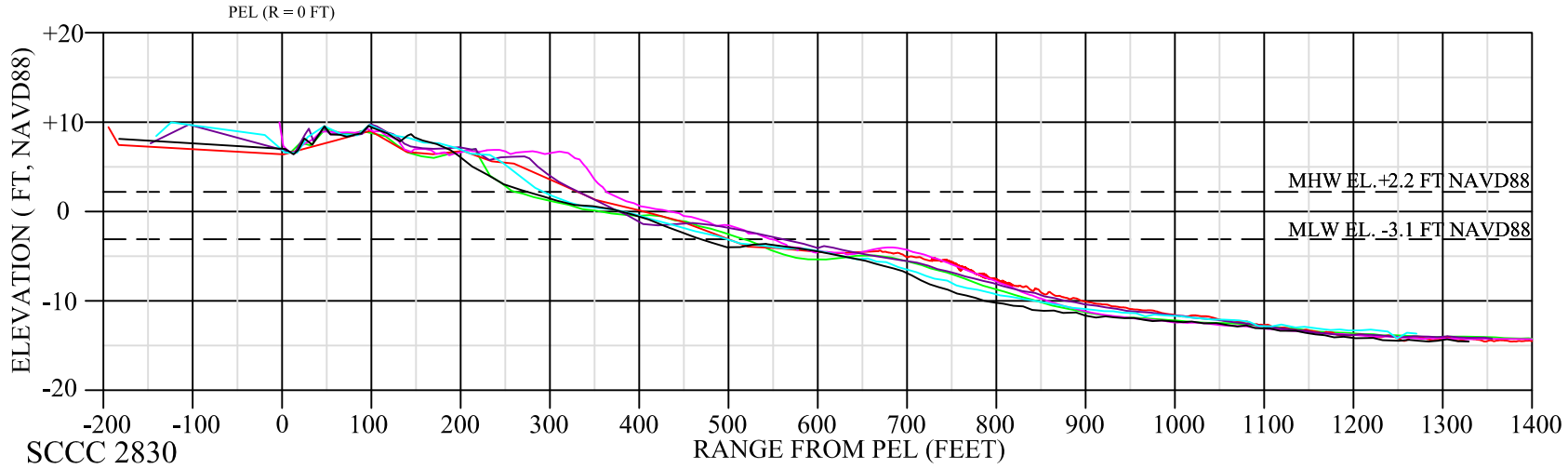
ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2823 & 2825



SCCC 2828



SCCC 2830

PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 11 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

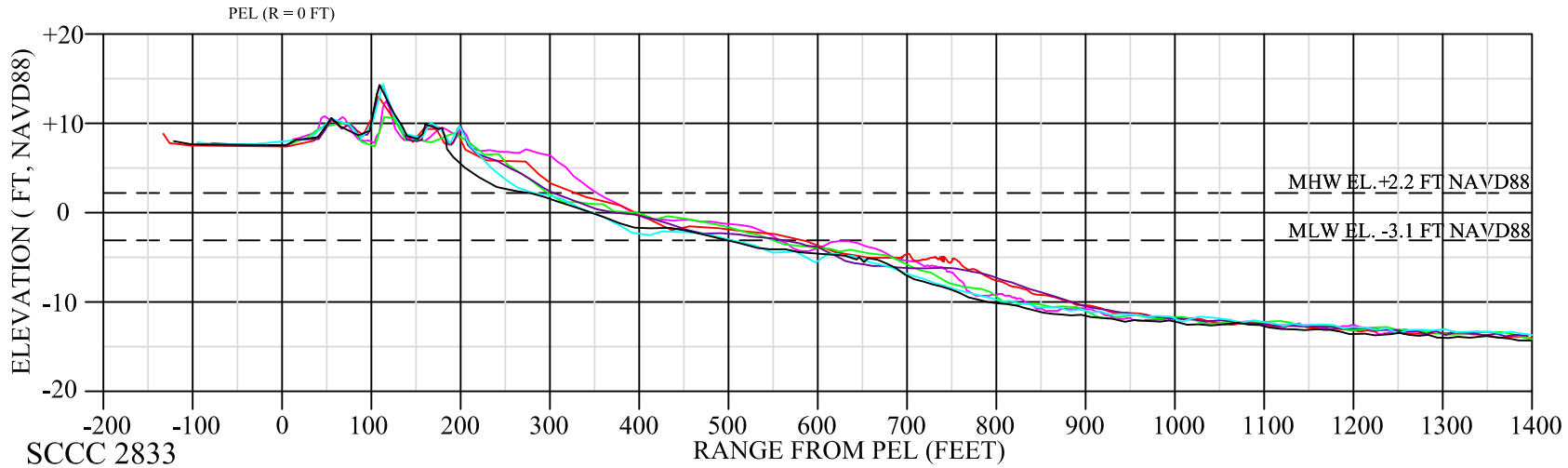
DRAWN: SBM

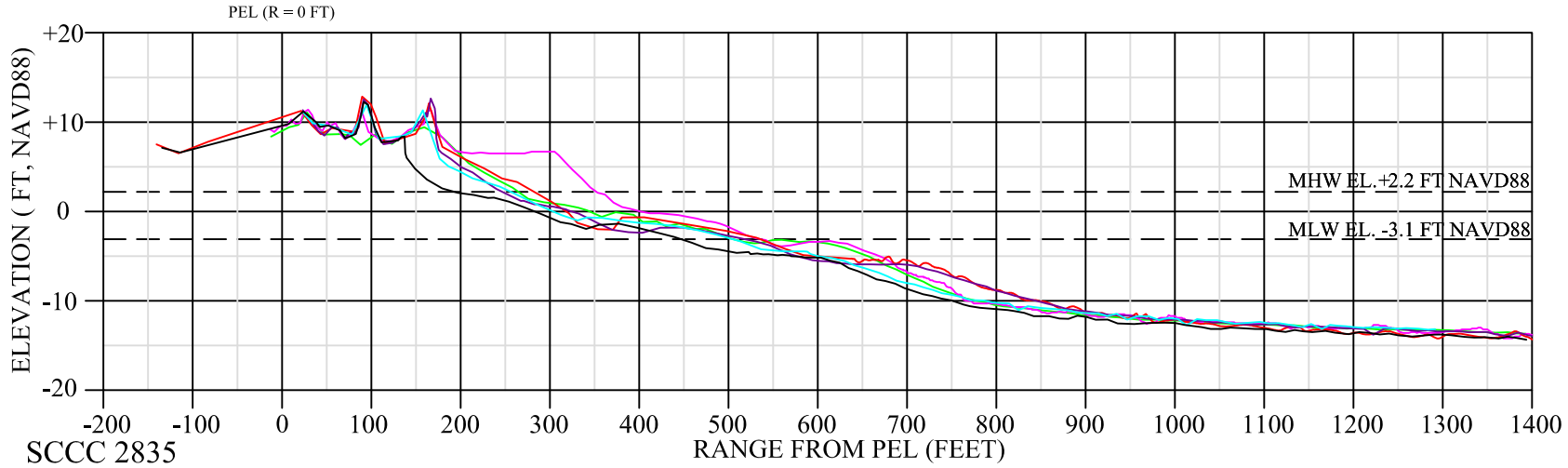
APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2828 & 2830





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 12 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

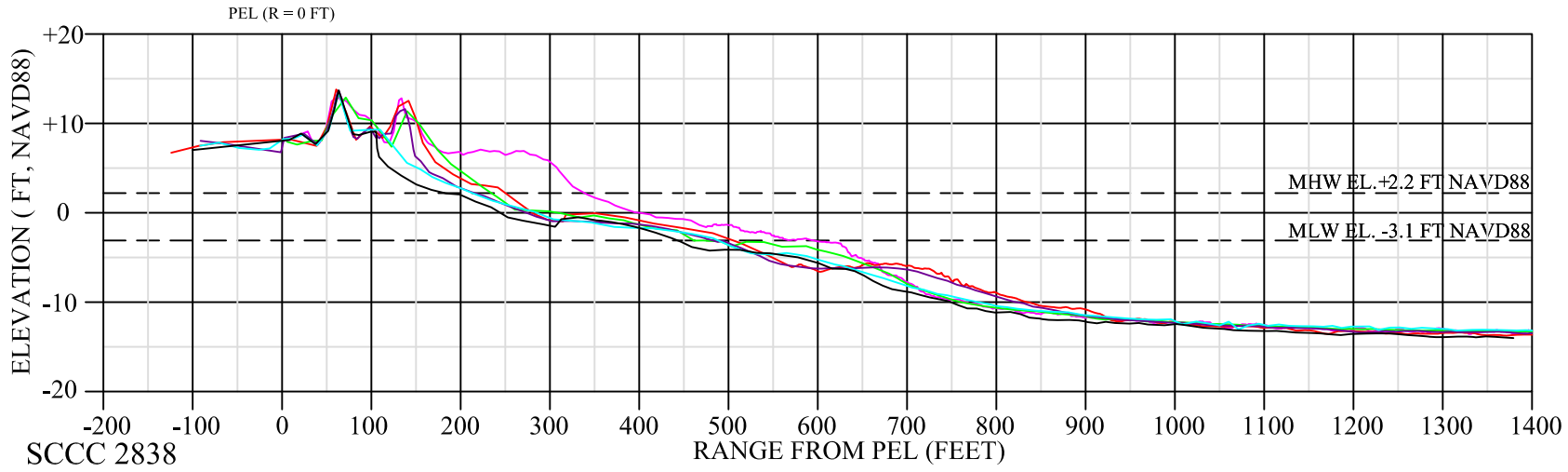
DRAWN: SBM

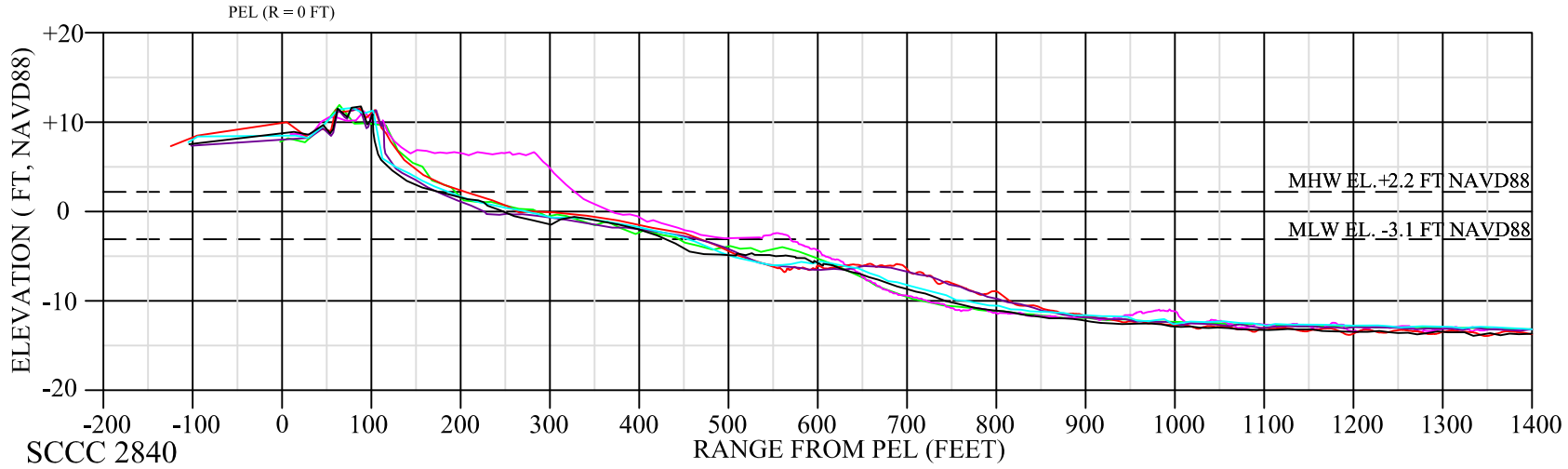
APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2833B & 2835





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 13 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

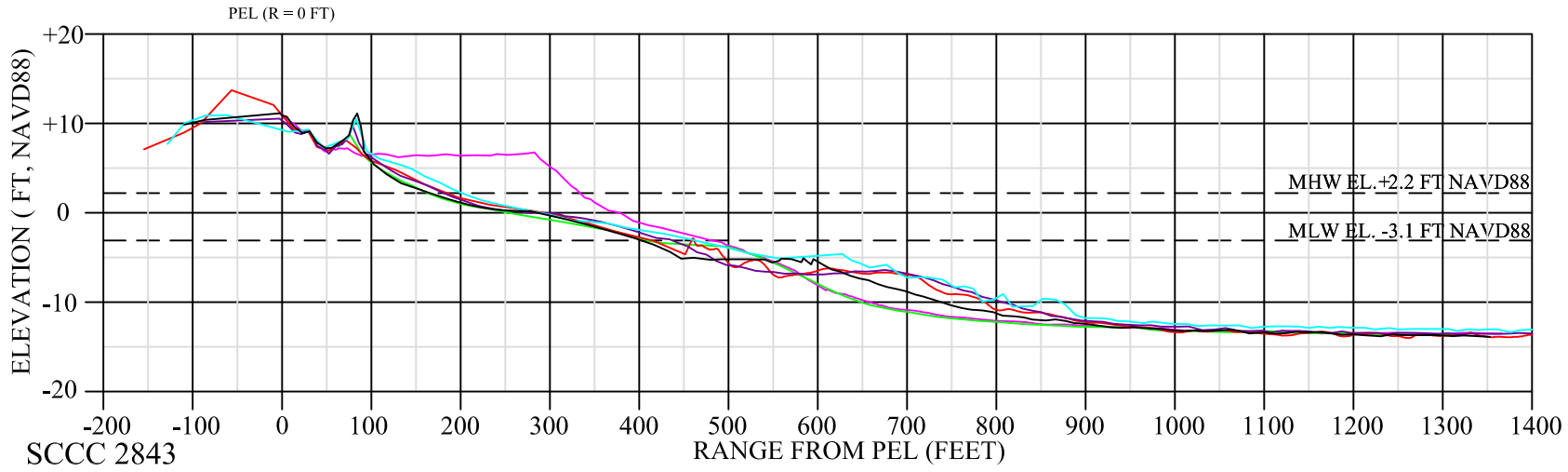
DESIGN: REV:

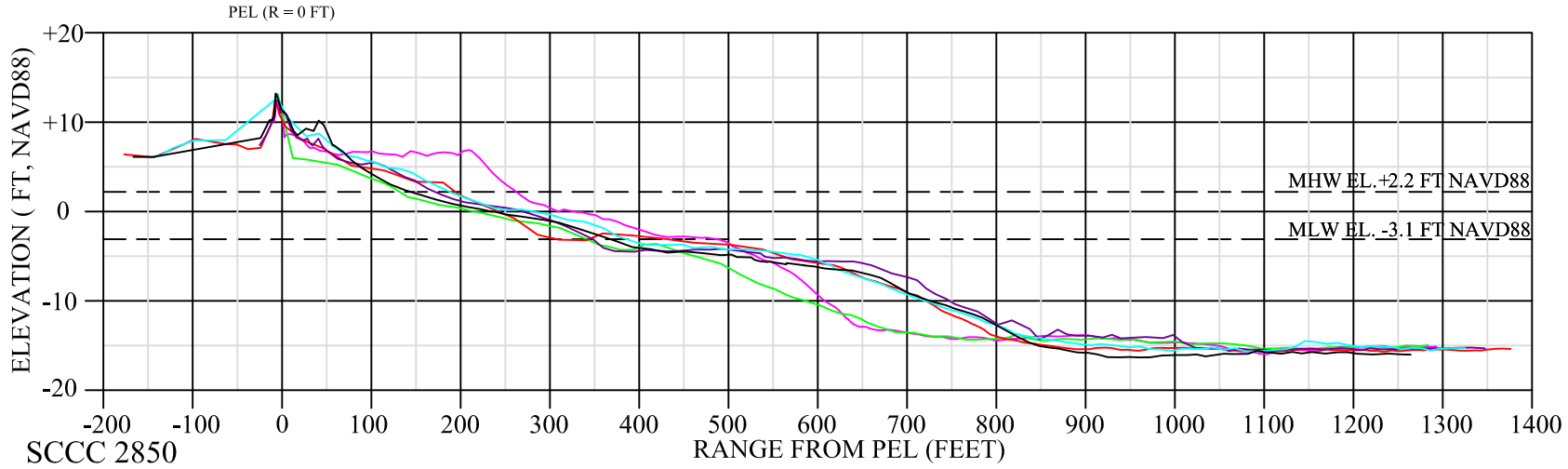
DRAWN: SBM

APPROVED: RAR

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2838 & 2840





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 14 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

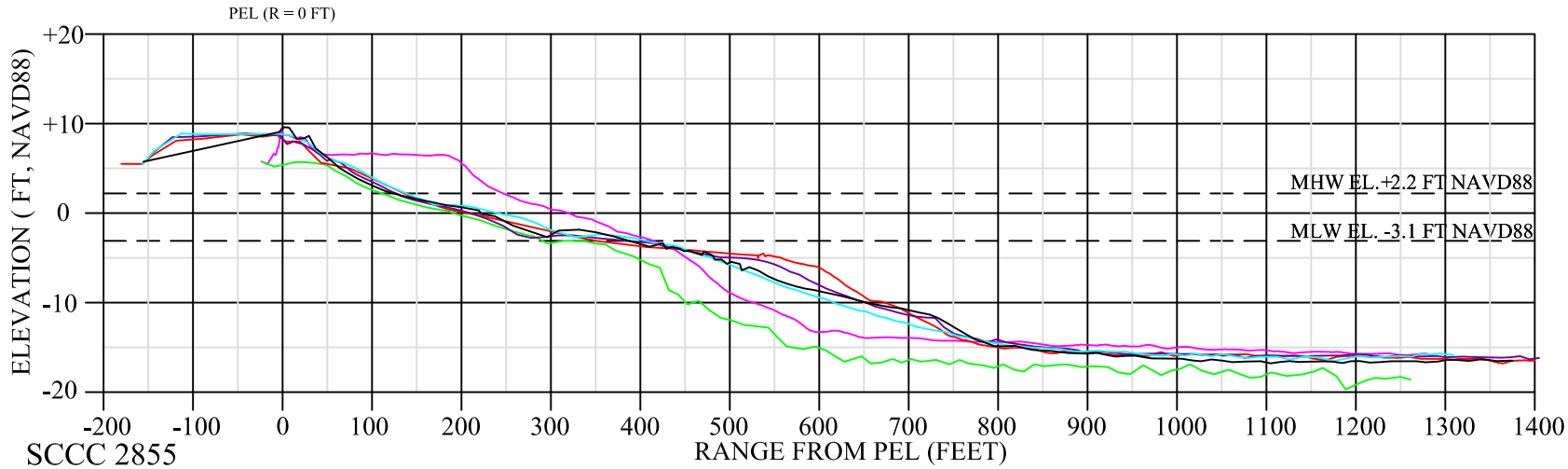
DESIGN: REV:

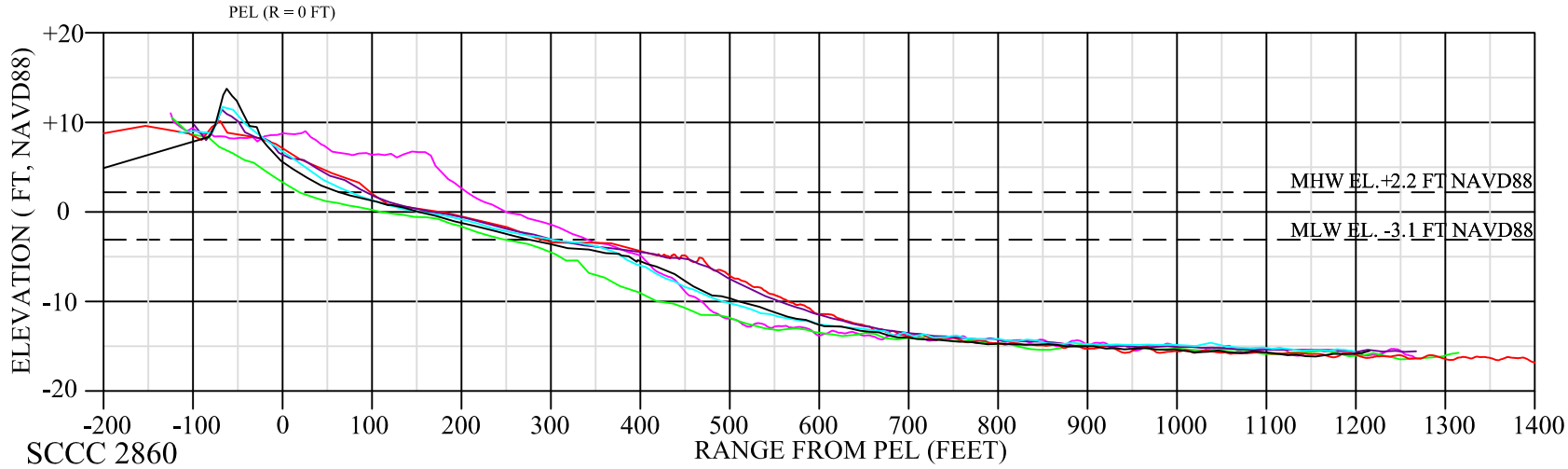
DRAWN: SBM

APPROVED: RAR

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2843 & 2850





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 15 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

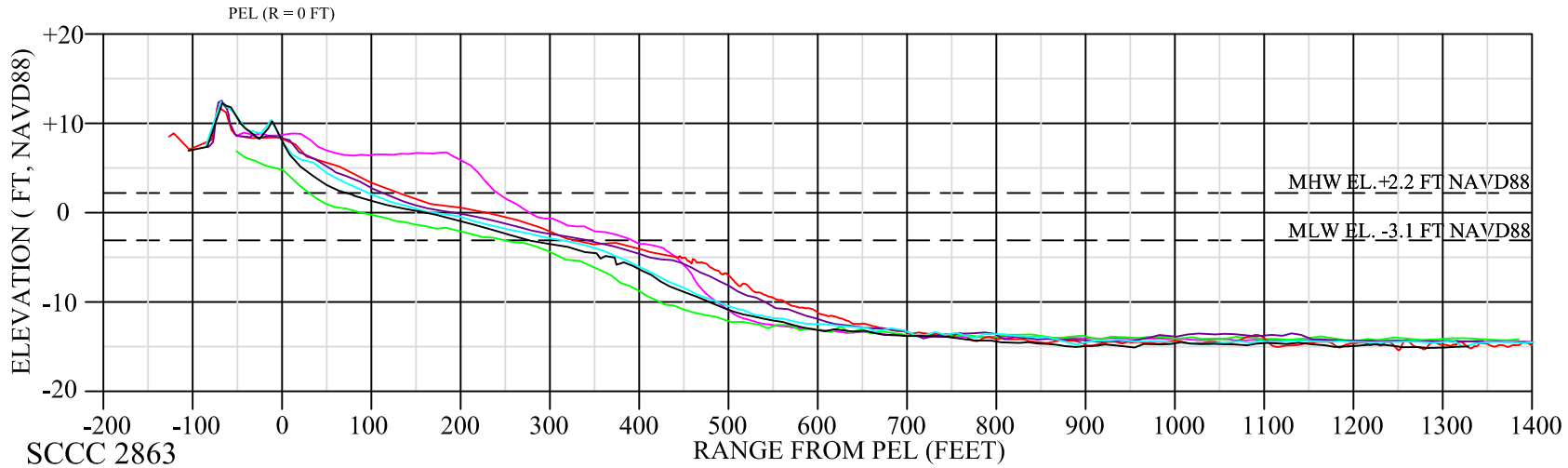
DRAWN: SBM

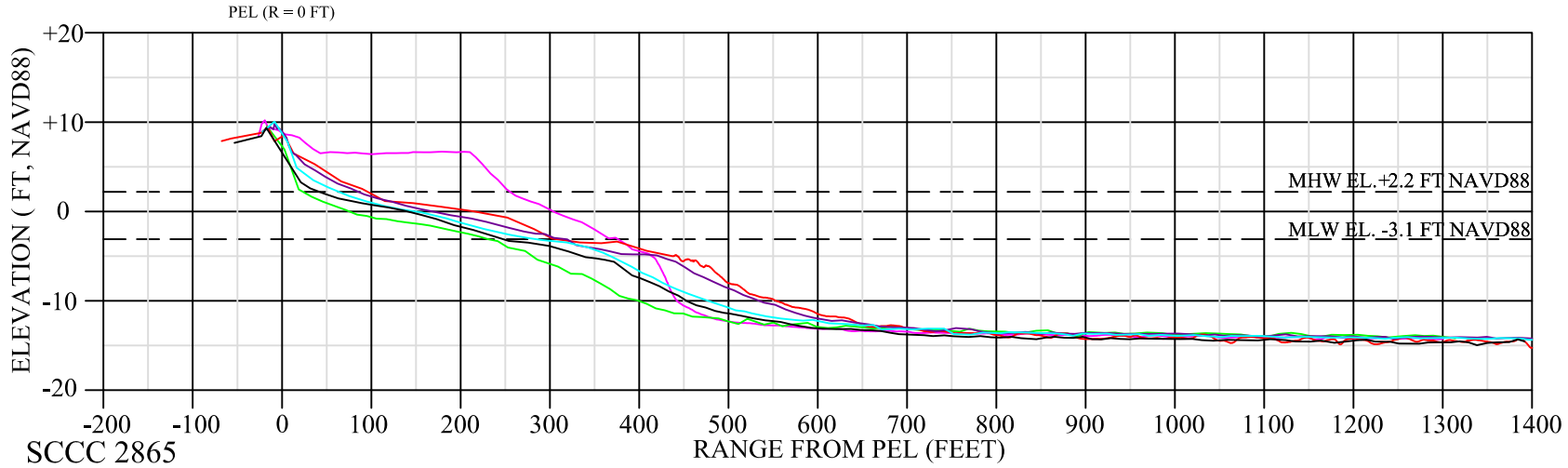
APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2855 & 2860





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 16 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

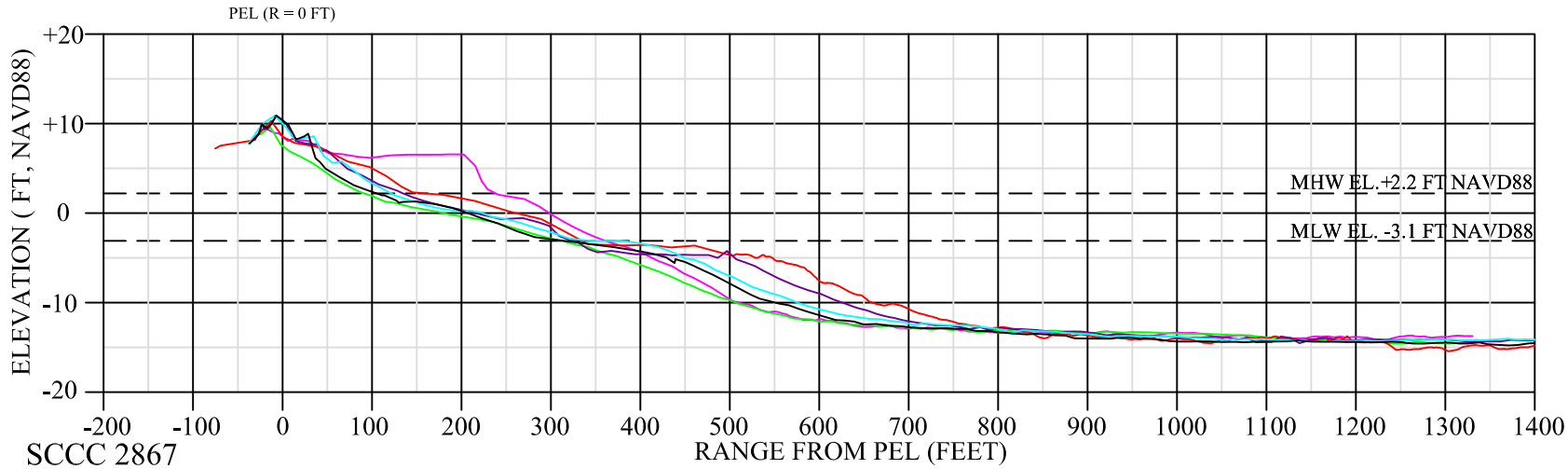
DRAWN: SBM

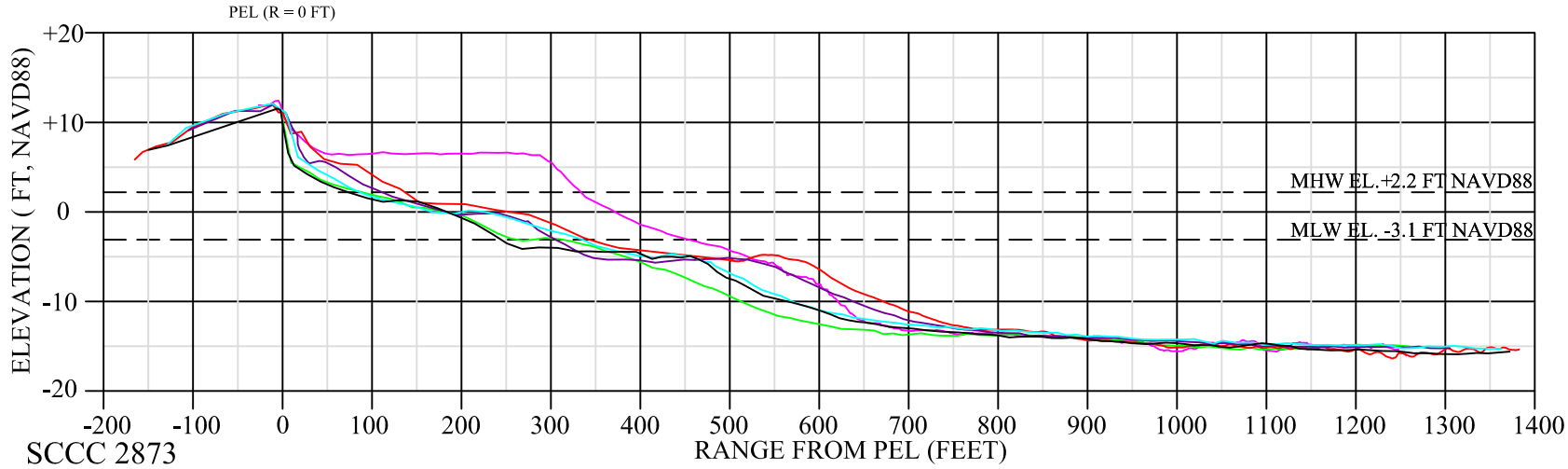
APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2863 & 2865





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 17 OF 21

SCALE: 1"=20' V, 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

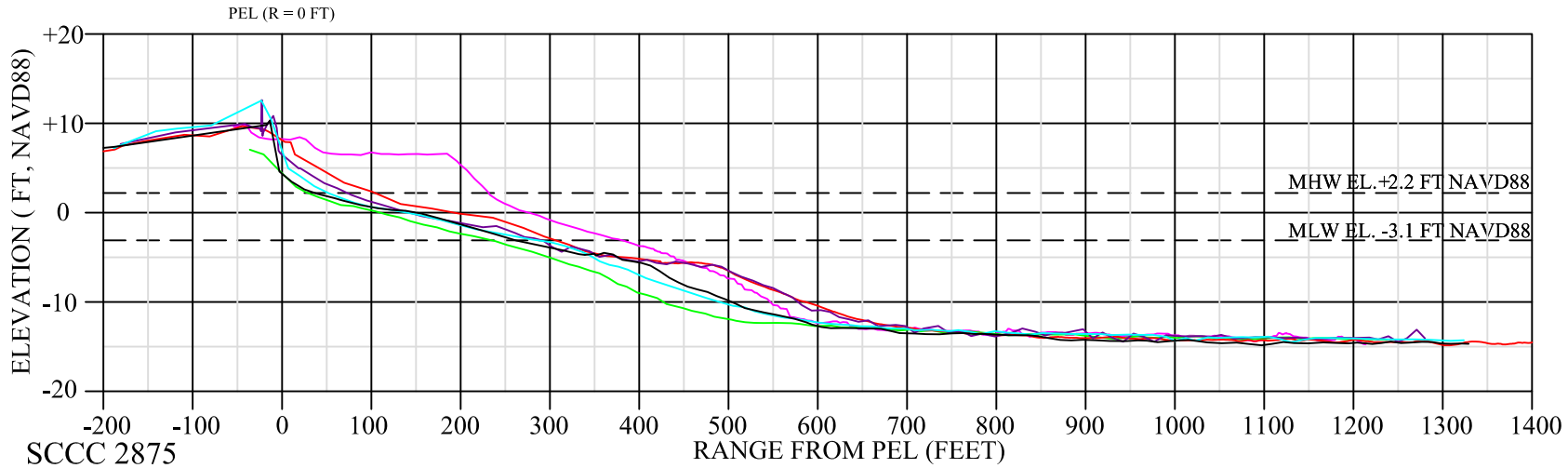
DESIGN: REV:

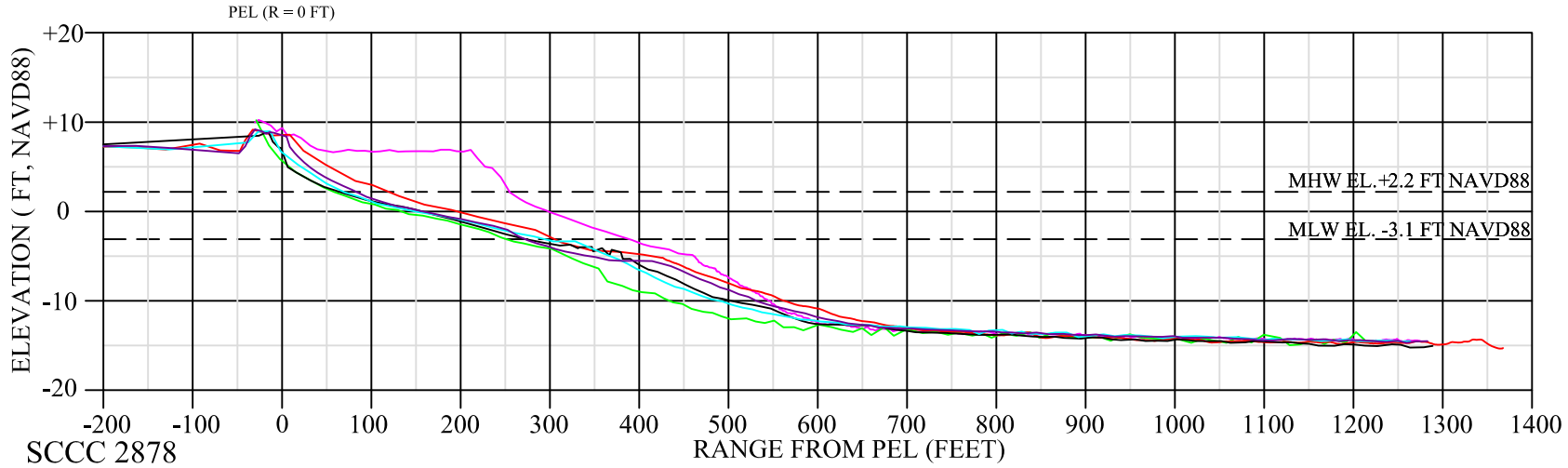
DRAWN: SBM

APPROVED: RAR

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2867 & 2873





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 18 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

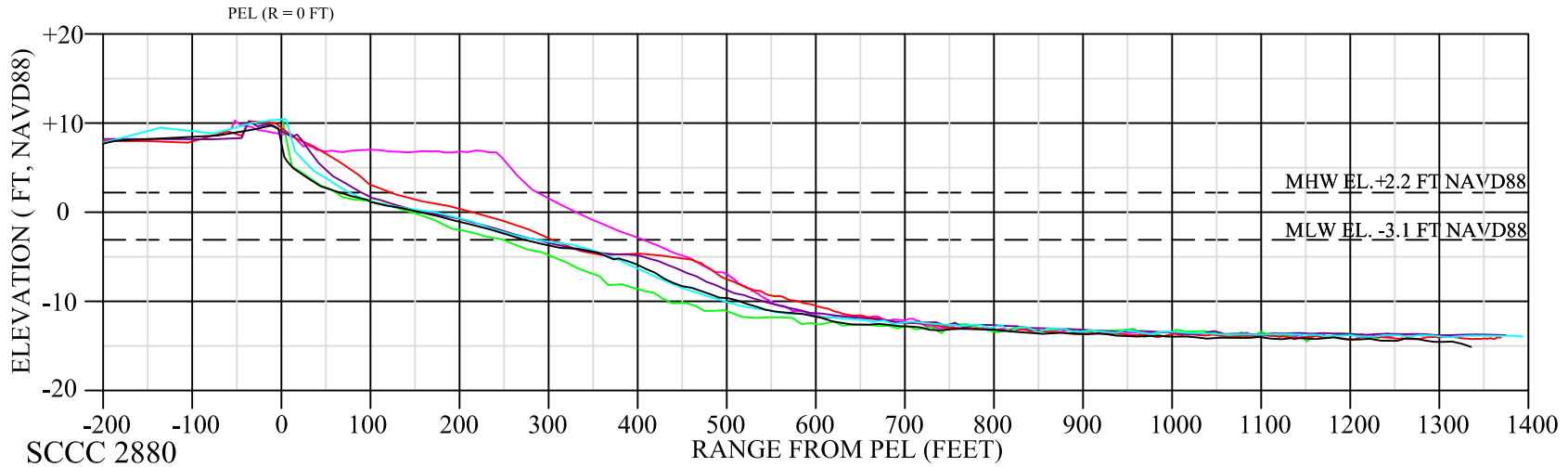
DESIGN: REV:

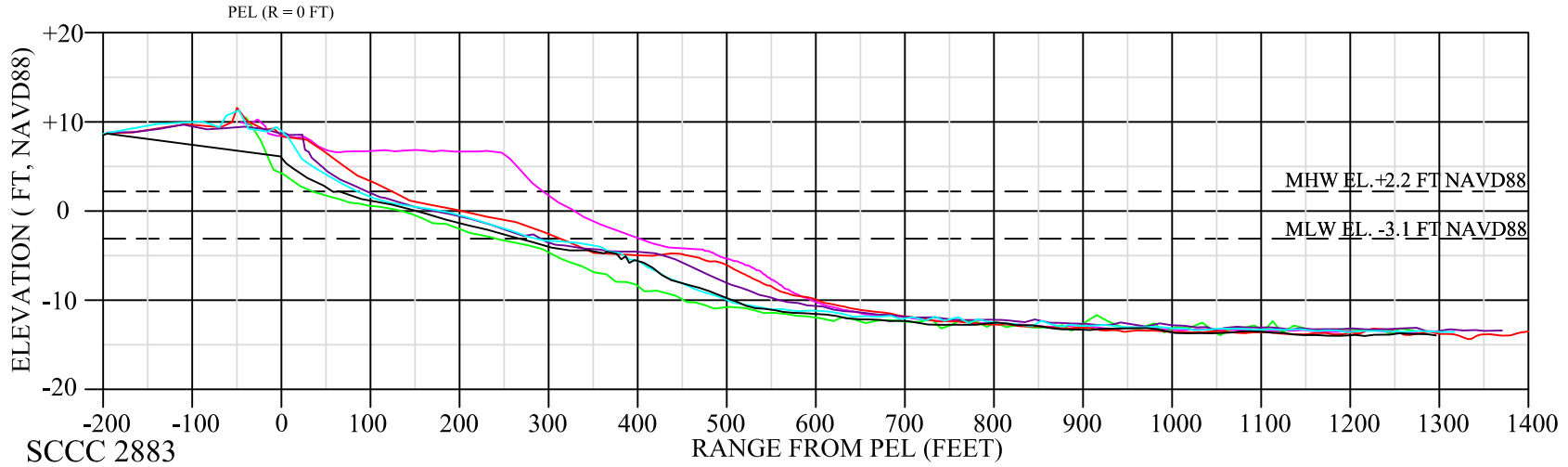
DRAWN: SBM

APPROVED: RAR

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2875 & 2878





PRE CONSTRUCTION GBA (BD) - JULY 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 19 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

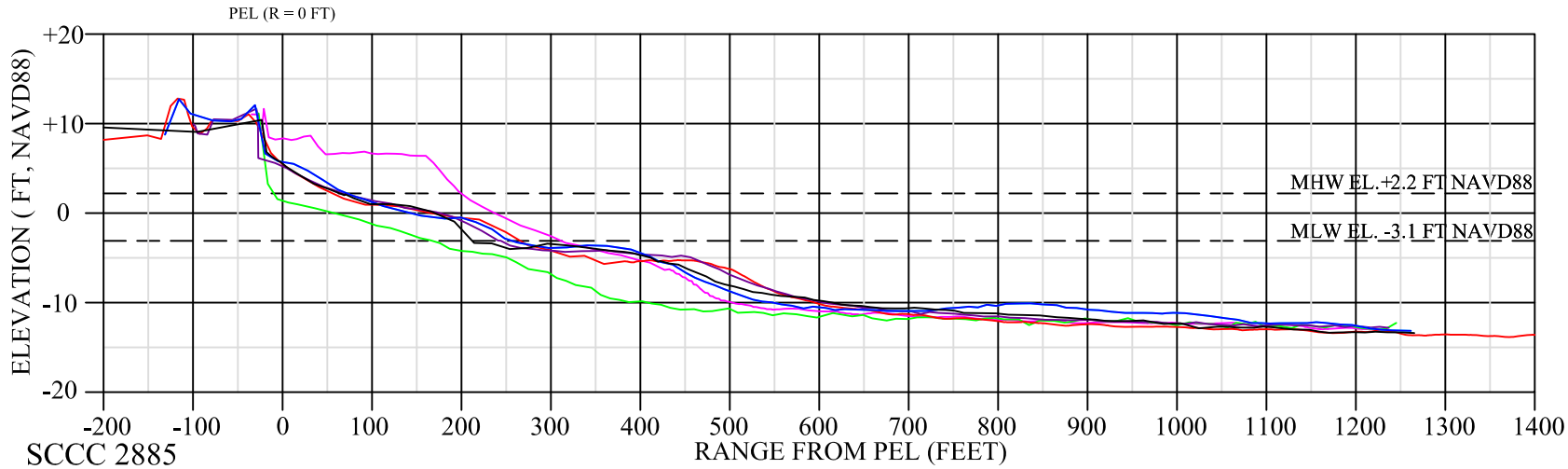
DRAWN: SBM

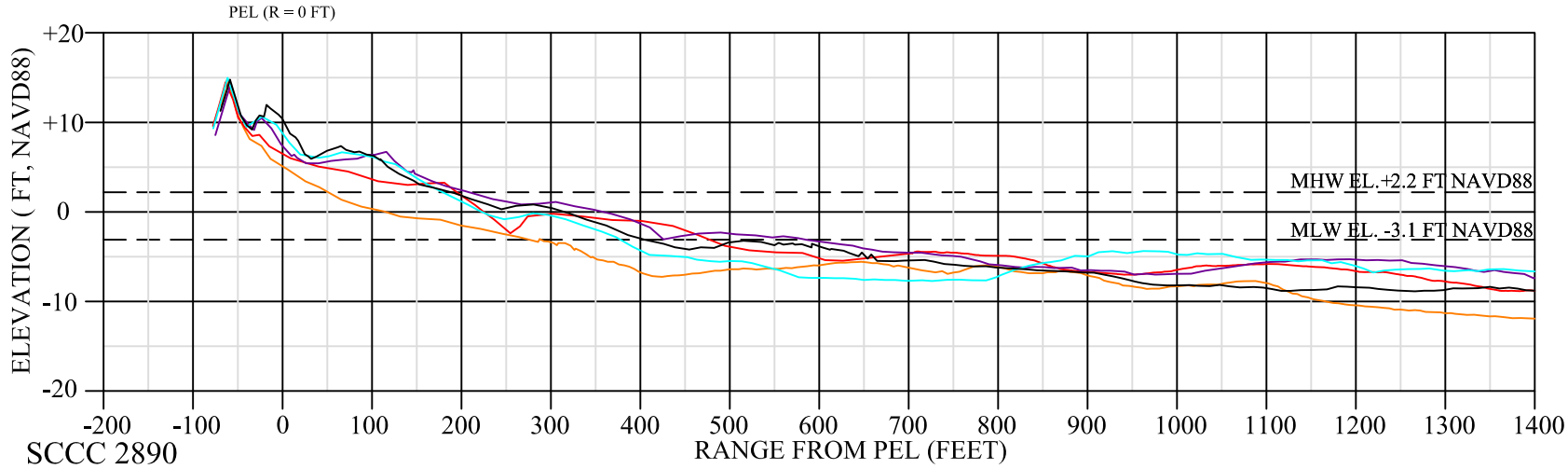
APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2880 & 2883





PRE CONSTRUCTION GBA (BD) - JULY 2018

MONITORING - JUNE 2018

POST CONSTRUCTION GBA (AD) - AUG-NOV 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 20 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

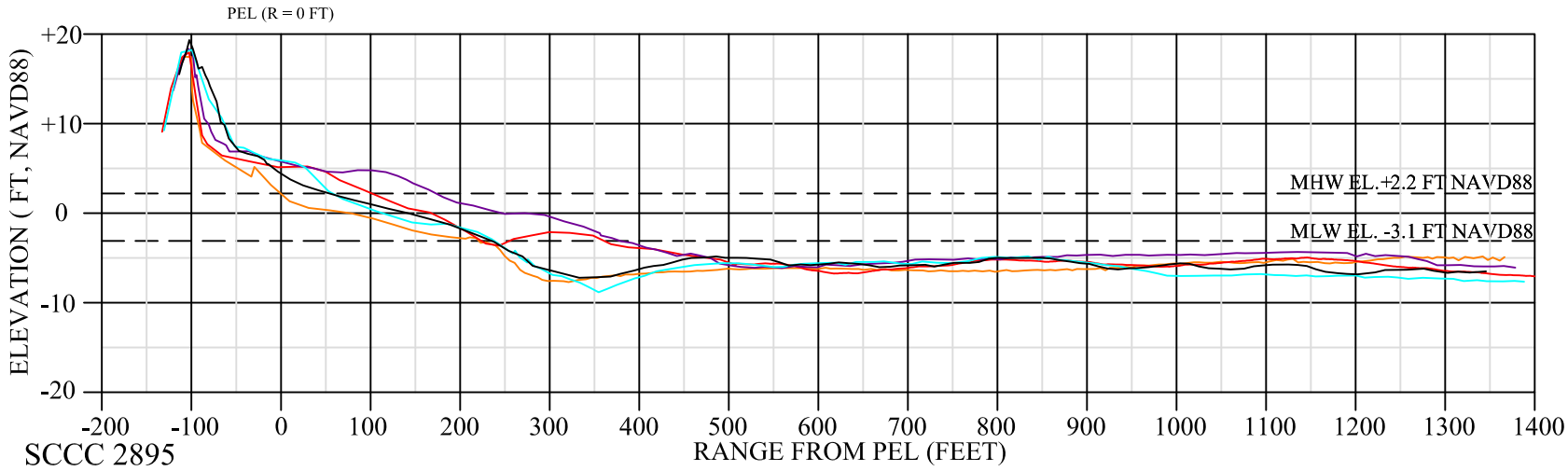
DRAWN: SBM

APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE: CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2885 & 2890



MONITORING - JUNE 2018

1-YR POST CONSTRUCTION MONITORING - MAY/JUNE 2019

2-YR POST CONSTRUCTION MONITORING - APRIL 2020

3-YR POST CONSTRUCTION MONITORING - JUNE 2021

4-YR POST CONSTRUCTION MONITORING - JUNE 2022

NOTES:
1. MHW & MLW EL. REFERENCED TO NOAA BENCHMARK 8666652 (FOLLY RIVER BRIDGE).

SHEET: 21 OF 21

SCALE: 1"=20' V 1"=200' H'

FILE: 2022 Folly Beach 4-YR Monitoring sheet 2_6-21.dwg

DESIGN: REV:

DRAWN: SBM

APPROVED: RAR

ELKO COASTAL CONSULTING INC.

ELKO COASTAL CONSULTING, INC.
P.O. BOX 1451
FOLLY BEACH, SC. 29439

TITLE:
CITY OF FOLLY BEACH
4-YR (2022) POST CON. MONITORING
BEACH PROFILES
SCCC 2895