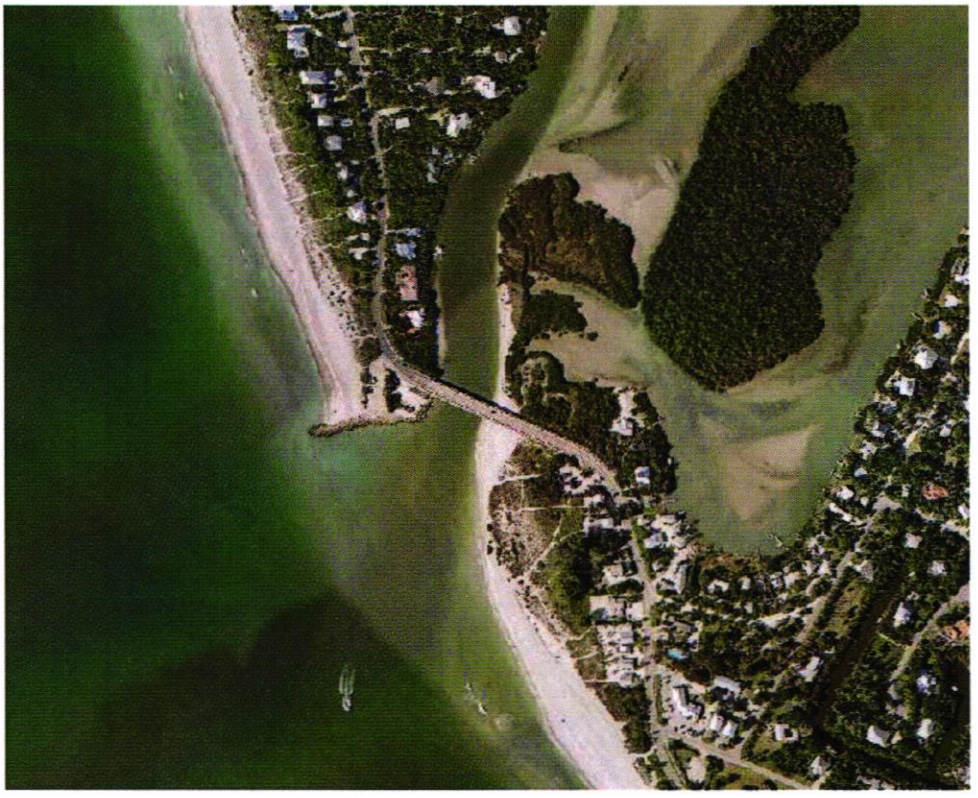
LEE COUNTY BLIND PASS RESTORATION PROJECT

POST-CONSTRUCTION AND 6-MONTH MONITORING REPORT



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Prepared by:

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1.0 INTRODUCTION

In 2009, Lee County completed construction of their Blind Pass restoration project by opening previously closed Blind Pass. This report summarizes the results of the pre-construction and post-construction beach, ebb shoal and pass surveys and post-construction hydraulic conditions. The work was performed by Coastal Engineering Consultants (CEC). Funding for the monitoring and report was provided by the Florida Department of Environmental Protection (FDEP), Captiva Erosion Prevention District, Lee County, and County residents.

The Contractor, Energy Resources, Inc. (Energy Resources), began mobilizing on December 1, 2008 and finished demobilizing on December 12, 2009. Based upon progress surveys during construction, a total of approximately 148,000 cubic yards of sand were excavated and placed in three areas. Between December 3, 2008, and July 31, 2009, Energy Resources excavated and placed approximately 105,100 cubic yards on the beach fill (Sanibel Island) between R-112 and just south of R-114. Between December 3 and April 7, 2009, Energy Resources excavated and placed approximately 31,800 cubic yards in the nearshore immediately seaward of the Sanibel Island beach fill between R-112 and just south of R-114. Between March 20 and April 10, 2009, Energy Resources excavated and placed approximately 11,100 cubic yards in the containment cell just south of the Blind Pass Bridge between R-109 and R-110, all of which was hauled away to a disposal site from April 10 to May 5, 2009, to be used by the City of Sanibel Public Works Department.

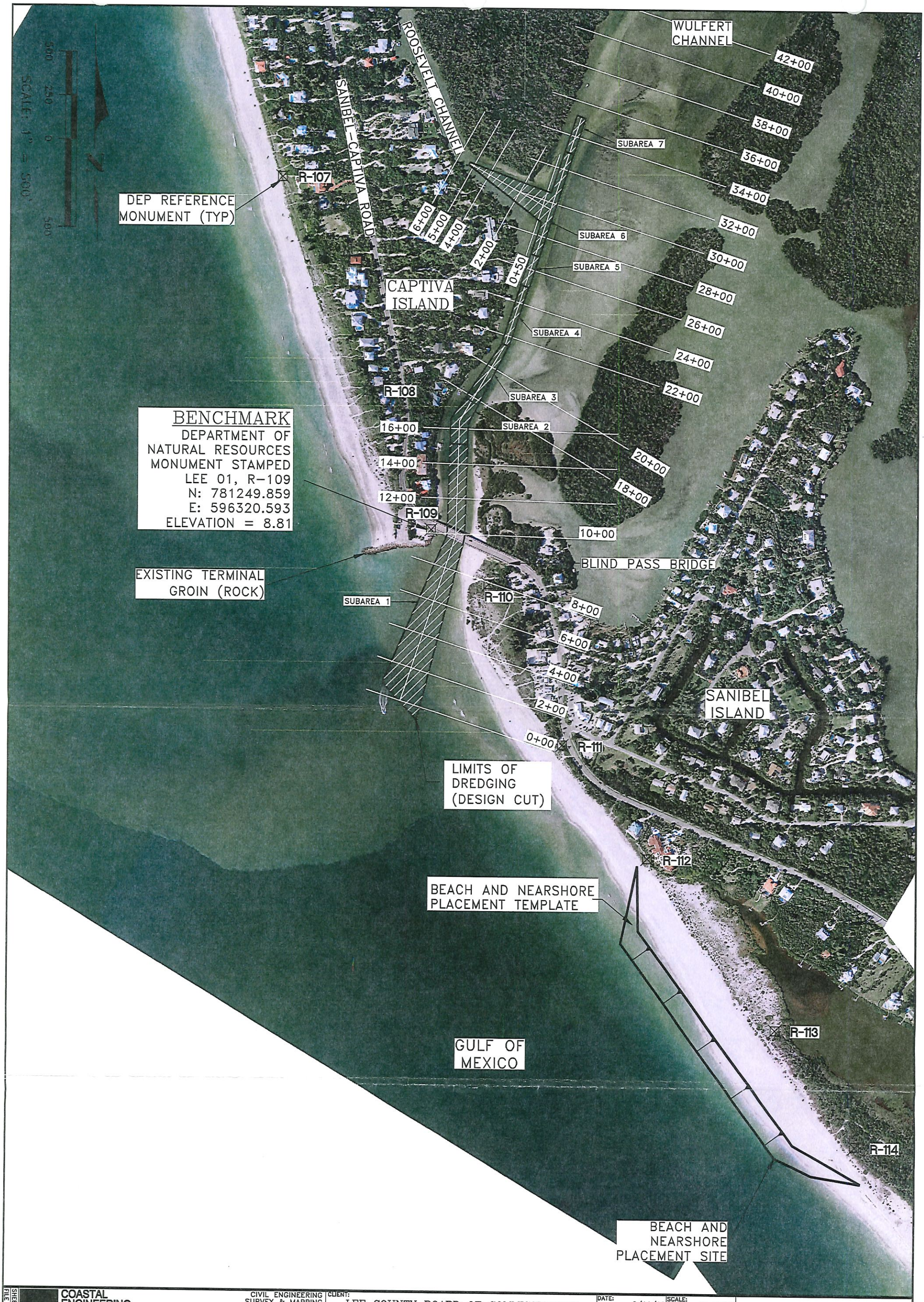
Based on the pre- and post-construction monitoring surveys, a total volume of approximately 133,200 cubic yards was removed from the Blind Pass restoration template. Based on the post-construction monitoring survey, a total of approximately 17,100 cubic yards was remaining in the template.

The tidal range and current velocities measured at Blind Pass in October-November 2009 were approximately 3.3 feet and 4.0 feet/sec, respectively. The tidal prism calculated based on the hydraulic parameters was approximately $7.71*10^7$ cubic feet.

During construction Energy Resources tracked their cutterhead positions, a summary of which prepared by Lee County is presented herein.

Post-construction sediment samples were collected and analyzed, a summary of which is presented herein.

Seagrass monitoring was also conducted. The surveys and results will be presented in a separate report.



SHEET 1 OF
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CLIENT: LEE COUNTY BOARD OF COMMISSIONERS

TITLE:

FIGURE 1
BLIND PASS LOCATION MAP

DATE:	2/11/10
SCALE:	AS NOTED
DRAWN:	VVA
F.B.	
CHECKED:	MTP
PG.	
SEC.	TWP. RNG.
ACAD NO.	08043_Location Map.dwg
REF. NO.	08.043

NO.	DATE	BY	REVISION DESCRIPTION

2.0 SCOPE OF WORK

The contracted Scope of Work included the following components.

Ebb Shoal Survey: Conduct pre- and post-construction surveys of the ebb shoal. The survey lines shall be spaced no greater than 200 feet apart, and shall be aligned parallel to the shoreline. The alignment spacing shall be sufficient to document the channel position and shoal formation. The work shall extend 1000 feet either side of the pass or to the Mean High Water (MHW) line, whichever is less. The seaward extent of the surveys shall be a minimum of 3,000 feet offshore. Data points shall be collected at a maximum spacing of 25 feet.

Blind Pass Survey: Conduct pre- and post-construction surveys of the Blind Pass, Wulfert Channel and Roosevelt Channel. The survey lines shall be spaced no greater than 200 feet apart, and shall be aligned parallel to the shoreline. The alignment spacing shall be sufficient to document the channel position and any potential flood shoal formation. The work shall extend 1000 feet either side of the pass or to the Mean High Water (MHW) line, whichever is less. The landward extent of the survey shall be 600 feet inland past the work area. Data points shall be collected at a maximum spacing of 25 feet. The inlet shoreline position (MHW) shall be measured for the post-construction survey to provide a baseline for future analyses described in the reporting section.

Beach Profiles (post-construction only): Conduct post-construction survey of the beach profiles. Profile surveys of the active beach zone will be collected along the shoreline at each reference monument (R monument) from R106, north of Blind Pass, to R118, south of the fill area and will include half monuments from R110.5 to R113.5. Field verify control information utilized in the survey. The surveys shall be utilized to identify the shoreline position, average beach width and sediment transport rates in the vicinity of Blind Pass. The beach portion of the profile survey shall extend from a minimum of 150 feet landward of the monument or from the edge of a building or road, whichever is the most seaward, to a wading depth deep enough to provide a 50-foot overlap with the offshore portion of the profile survey where environmental conditions allow. Profile data points along the beach portion of the profile survey shall be collected at a maximum interval of 25 feet and at all breaks in grade. The offshore portion of the profile survey shall extend from as close to shore as safely possible to provide at least a 50-foot overlap with the beach portion of the profile survey where environmental conditions allow to length of at least 1,500 feet from the MHW line or an elevation of -15 feet NAVD88, whichever is more landward. Profile data points along the offshore portion of the profile survey shall be collected at a maximum interval of 25 feet. The beach and offshore portions of the profile survey shall be collected within 7 days of each other for each profile line.

Aerial Photographs: Utilizing the imagery provided by the County, prepare the report required aerial photograph exhibits.

Sediment Analysis: Conduct post-construction sediment sampling and analyses in accordance with the Sediment Quality Assurance / Quality Control Plan. Post-construction samples shall be collected at each full and half R monument in the fill area on approximate 500 foot intervals. The samples shall be taken after the Contractor has tilled and finished graded the beach. The samples shall be excavated from depths of 6 to 12 inches below the surface in the newly constructed

berm. The location, date, and time shall be archived. A grain size analysis shall be conducted and consist of the following phi sized sieves: -4.25, -4.00, -3.50, -3.00, -2.50, -2.25, -2.00, -1.50, -1.00, -0.50, -0.00, 0.50, 1.00, 1.50, 2.00, 3.00, 3.75 and 4.00. All sieve reports shall be included in the post-construction monitoring report with the presence or absence of gravel and fines noted.

Hydraulic Monitoring: Conduct the hydraulic monitoring outlined in the Blind Pass Restoration Physical Monitoring Plan (FDEP Permit 0265943-JC) commencing within six (6) weeks of opening the inlet to tidal flow, and for a 30-day period. Concurrent measurements shall include the tidal amplitude in Pine Island Sound, Wulfert Channel, and Gulf of Mexico within the Project area, along with current velocities within the Blind Pass channel throat.

3.0 EQUIPMENT AND QA/QC PROCEDURES

3.1 Survey Report

The Survey Report is presented in Appendix 1.

3.2 Equipment

Upland: CEC employed two Leica 1200 RTK GPS systems for the upland surveys along with a Leica SR530 base station. These systems are capable of delivering RTK positions with coordinate accuracy of ±10mm+2ppm. CEC constructed a custom backpack to allow us to collect data seaward of the mean high water line, while protecting the equipment from the elements and also served as a flotation device allowing the operator data collection access in water up to 5 feet deep.

Offshore: The survey vessel used for this work was an 18-foot fiberglass hull powered by an outboard. An Innerspace 456 depth sounder was used with a side mounted transducer. The GPS antenna utilized the same side mount bracket as the transducer to place it directly above the transducer. A Leica GPS SR530 series rover unit was integrated with the on-board computer system. The Hypack 2009 software package was the hydrographic guidance program utilized.

3.3 QA/QC Procedures

CEC employs an advanced QA/QC program to ensure our work meets the FDEP accuracy standards. 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, squat, roll and pitch variables, 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 nearshore profile data, the necessary information to achieve the "overlap" specification.

Upland Data Collection: CEC mobilized one operator and GPS rover unit to collect survey data from the approximate mean high water line landward to the existing dune while an additional operator with the waterproof backpack and unit 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 ±3.00 feet horizontal and ±0.16 feet vertical. QA/QC procedures were maintained by both comparison of values with higher accuracy and by repeat measurement.

The Leica SR530 base station was setup on a suitable control point for GPS observations, either a point with provided GPS coordinates or a point with coordinates derived from observations performed during monumentation. The point designation, record coordinates, and the GPS model and antenna height were logged in the field book. At least one check shot was recorded for each RTK rover on a point with known coordinates as well as periodic checks throughout the day ensuring integrity of the data.

An electronic list of R-monument 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 R-mon and a measurement was taken on the R-mon when possible. The extent of the vegetation line and prominent features such as seawalls and/or asphalt roads where also noted in the data collection. The measurements were taken seaward along the azimuth line to a minimum depth of –5.0 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 and end of each survey day. A direct depth measurement check was conducted and recorded at both shallow and maximum depths relative to the work area at the beginning and end of each survey day, and more frequently if necessary. If sea conditions precluded performing the bar check at the end of the day, sea conditions and indication of inability to perform the depth check was recorded and reported. If the day's final bar check was not possible as a result of adverse sea conditions, then the last survey line was repeated during the next day of survey to verify the measurements. Latency checks were conducted periodically throughout each day. Latency on the order of 0.5 to 1 second was experienced using the GPS system. The latency corrections were calculated and adjustments were made to the data using the Hypack subroutines.

Bathymetric survey data collection was conducted in calm seas. Maximum wave heights during the data collection period were less than 2 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. The beach profile survey extended seaward to a minimum of 1,500 feet from the MHW or to –15 feet NAVD88, whichever was reached first. The seaward extent of the ebb shoal survey extended to a minimum of 3,000 feet offshore.

The vertical accuracy of the profile data meets or exceeds the GPS-derived heights (0.2 to 0.5 feet) standard. The horizontal positioning system accuracy of the data was within 2 feet and the off-line horizontal deviation was within 30 feet. If necessary, tide staffs were installed for manual tide readings periodically throughout the survey as a check for the tides measured by the RTK GPS as necessary.

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. Difference in time between the onshore and offshore data was no greater than 2 days.

3.4 Data Reduction and Deliverables

The profile measurement data from the upland and offshore surveys were merged together using the Hypack 2009 subroutines. The digital data is provided in Appendix 2, Survey Data, in ASCII format arranged and including all information as required by FDEP specifications and in "x,y,z" format. The processed data was exported into AutoCAD and individual profiles were plotted to the specified scale. Copies of the profiles and cross sections are included in Appendixes 3 and 4, respectively.

4.0 PHYSICAL MONITORING

4.1 Depth of Closure

The offshore depth beyond which the net sediment transport does not result in significant changes in mean water depth is known as the depth of closure. According to Birkemeier (1985), the depth of closure can be estimated as

$$h_c = 1.75H_c - 57.9\left(\frac{H_e^2}{gT_e^2}\right) \qquad (1)$$

where H_e is the effective wave height wave height which is exceeded during only 12 hours per year, T_e is the associated period, and g is the acceleration due to gravity.

Wave data were obtained from the Wave Information Studies (WIS) project (Hubertz, 1992) which produces a high-quality online database of hindcast, nearshore wave conditions covering U.S. coastlines (http://chl.erdc.usace.army.mil/). The acquired data cover a 20-year period from January 1, 1980 through December 31, 1999. The time interval of the data is one hour.

Wave data at WIS station 290 (WIS-290), the nearest to Blind Pass located approximately 10 miles south-west of the pass, were utilized to calculate the depth of closure. Since the WIS data covered a 20-year period, the effective wave height and its corresponding period were calculated for each year and then averaged to obtain values representative over the 20-year period, which resulted in the effective wave height of 11.5 feet and wave period of 8.2 seconds. The depth at WIS-290 is approximately 52 feet. According to the dispersion relationship (Dean and Dalrymple, 1991), the 8.2-second wave is approximately 282 feet long in 52-foot water. This yields an h/L ratio of 0.2 (where h is the depth and L is the wave length) indicating that the wave is an intermediate water wave. In order to calculate the effective wave parameters for shallow water waves whose interaction with bottom is more significant, the STWAVE model was used to propagate the 11.5-foot 8.2-second wave closer to the shore. The calculated effective wave height and period near Blind Pass were on the order of 8.8 feet and 8.3 seconds, respectively. Plugging these values in the equation above yields a depth of closure of -13.3 feet NAVD88. Coastal Planning & Engineering (CPE) reported a depth of closure of -13 feet NAVD88 for their Captiva and Sanibel Islands Beach Renourishment Project (CPE, 2007), thus verifying the above calculations.

4.2 Beach Profiles: Pre-Construction and Post-Construction

Appendix 3 presents the beach profiles measured between R-106 and R-118 at each R-monument for the 2008 survey conducted by CPE and 2009 post-construction monitoring survey conducted by CEC. The survey dates are presented in Table 1. The 6-month monitoring survey conducted by CEC in January 2010 did not include beach profiles.

TABLE 1. SURVEY DATES

Survey	2008	2009 Post-Construction	2010 6-month Monitoring
Beach Profiles	March 25-27, 2008	September 16, 2009	N/S*
Blind Pass	November 11-12, 2008	August 25-27, 2009	January 28, 2010
Ebb Shoal	November 12, 2008	August 25, 2009	January 28, 2010

* N/S denotes Not Surveyed

It should be noted that slightly different azimuths were used at R-106, R-107, R-108, and R-109, in the 2008 and 2009 beach profile surveys, 260° and 270°, respectively. The remaining R-lines were surveyed along the same azimuths in both surveys.

Table 2 presents the 2008 and 2009 shoreline positions at mean high water (MHW = 0.28 feet NAVD88) along with the shoreline changes between the two surveys.

TABLE 2. SHORELINE POSITIONS AND CHANGES AT MHW BETWEEN 2008 SURVEY AND 2009 SURVEY

MON	POSITION 2008 (FT)	POSITION 2009 (FT)	2008-2009 SHORELINE CHANGE (FT)	2008-2009 AVERAGE SHORELINE CHANGE (FT)	
R-106*	517.3	533.3	16.0	-18.6	**Updrift of Blind Pass**
R-107*	154.1	154.0	-0.1		
R-108*	288.7	262.6	-26.1		
R-109*	369.4	305.2	-64.2		
Blind Pass					
R-110	282.9	156.4	-126.5	24.3	**Downdrift of Blind Pass**
R-110.5	269.2	294.6	25.4		
R-111	116.0	208.5	92.5		
R-111.5	153.3	259.0	105.7		
R-112	106.6	209.3	102.7	126.3	**Downdrift Beach Fill**
R-112.5	484.7	604.2	119.5		
R-113	188.0	355.4	167.4		
R-113.5	161.9	306.6	144.7		
R-114	169.6	266.8	97.2		
R-115	110.1	52.4	-57.7	-19.4	**Downdrift of Beach Fill**
R-116	138.6	78.7	-59.9		
R-117	84.4	67.0	-17.4		

MON	POSITION 2008 (FT)	POSITION 2009 (FT)	2008-2009 SHORELINE CHANGE (FT)	2008-2009 AVERAGE SHORELINE CHANGE (FT)	
R-118	225.1	282.4	57.3		

* Shoreline positions are based on different azimuth R-lines used in 2008 and 2009 surveys

A summary of the shoreline changes based on the comparisons between the 2008 and 2009 surveys at the R-monuments is presented below.

Updrift of Blind Pass: The beach north of Blind Pass, extending from R-106 to R-109, receded on average approximately 18.6 feet between March 2008 and September 2009. The range of shoreline change measured at MHW was from 64.2 feet of erosion at R-109 to 16.0 feet of accretion at R-106. Again, it should be noted that shoreline positions along this beach segment were based on different azimuth R-lines used in 2008 and 2009 surveys, 260 and 270, respectively.

Downdrift of Blind Pass: The beach south of Blind Pass, extending from R-110 to R-112, advanced on average approximately 24.3 feet between March 2008 and September 2009. The range of shoreline change measured at MHW was from 126.5 feet of erosion at R-110 to 105.7 feet of accretion at R-111.5.

Beach Fill: The 2009 downdrift beach fill extends from R-112 to just south of R-114 (Figure 1). The segment's shoreline measured at MHW advanced on average approximately 126.3 feet between March 2008 and September 2009 as a result of the beach fill and nearshore placement. The range of shoreline change was from 97.2 feet of accretion at R-114 to 167.4 feet of accretion at R-113.

Downdrift of Beach Fill: The beach south of the beach fill, extending from just south of R-114 to R-118, receded on average approximately 19.46 feet between March 2008 and September 2009. The range of shoreline change measured at MHW was from 59.9 feet of erosion at R-116 to 57.3 feet of accretion at R-118.

Figures 2 and 3 present contour maps based on the March 2008 and September 2009 beach profile survey data, respectively. The figures depict the limits of dredging and fill placement. Figure 4 presents a morphology change map depicting changes in elevations that occurred between the two surveys.

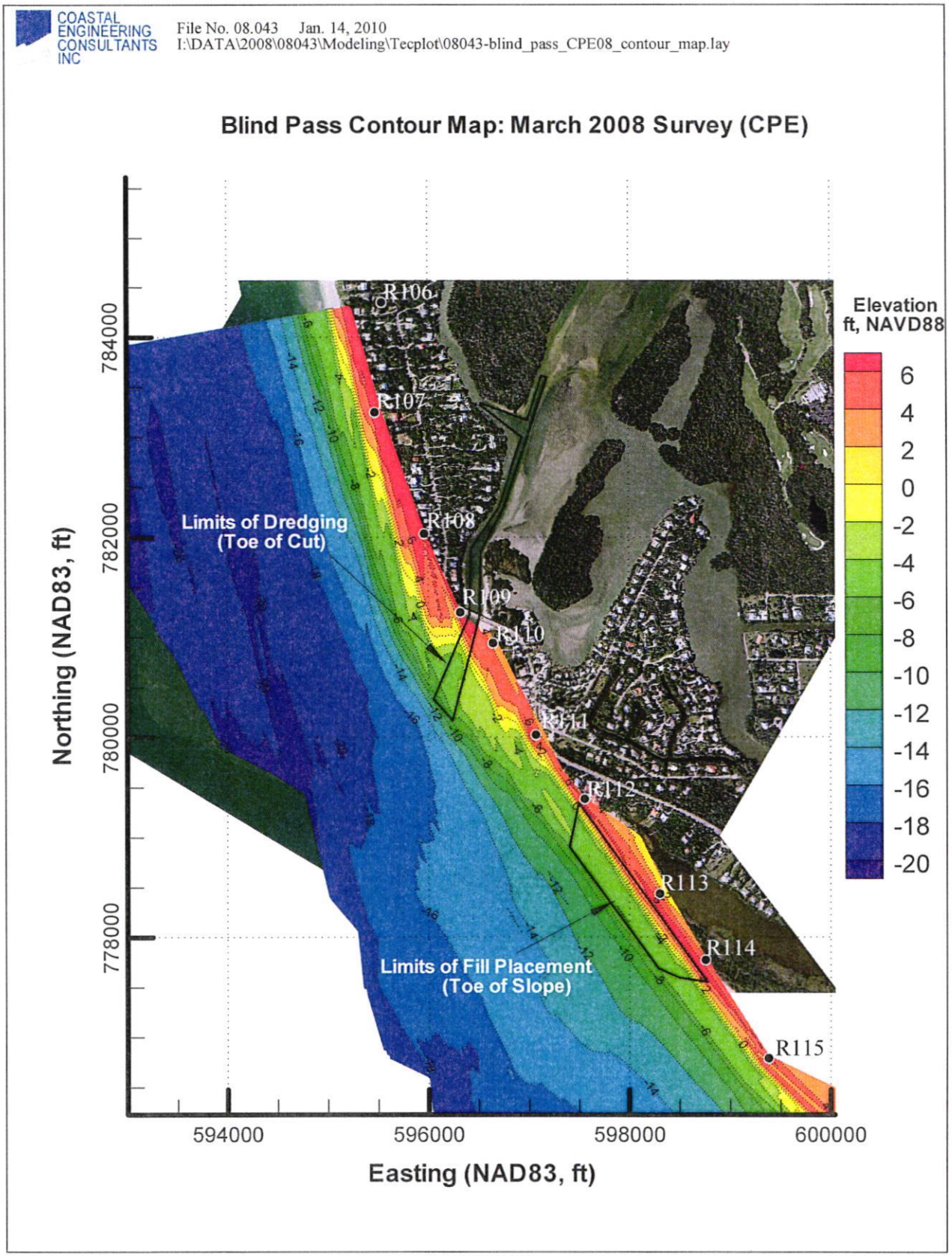

FIGURE 2
MARCH 2008 CONTOUR MAP

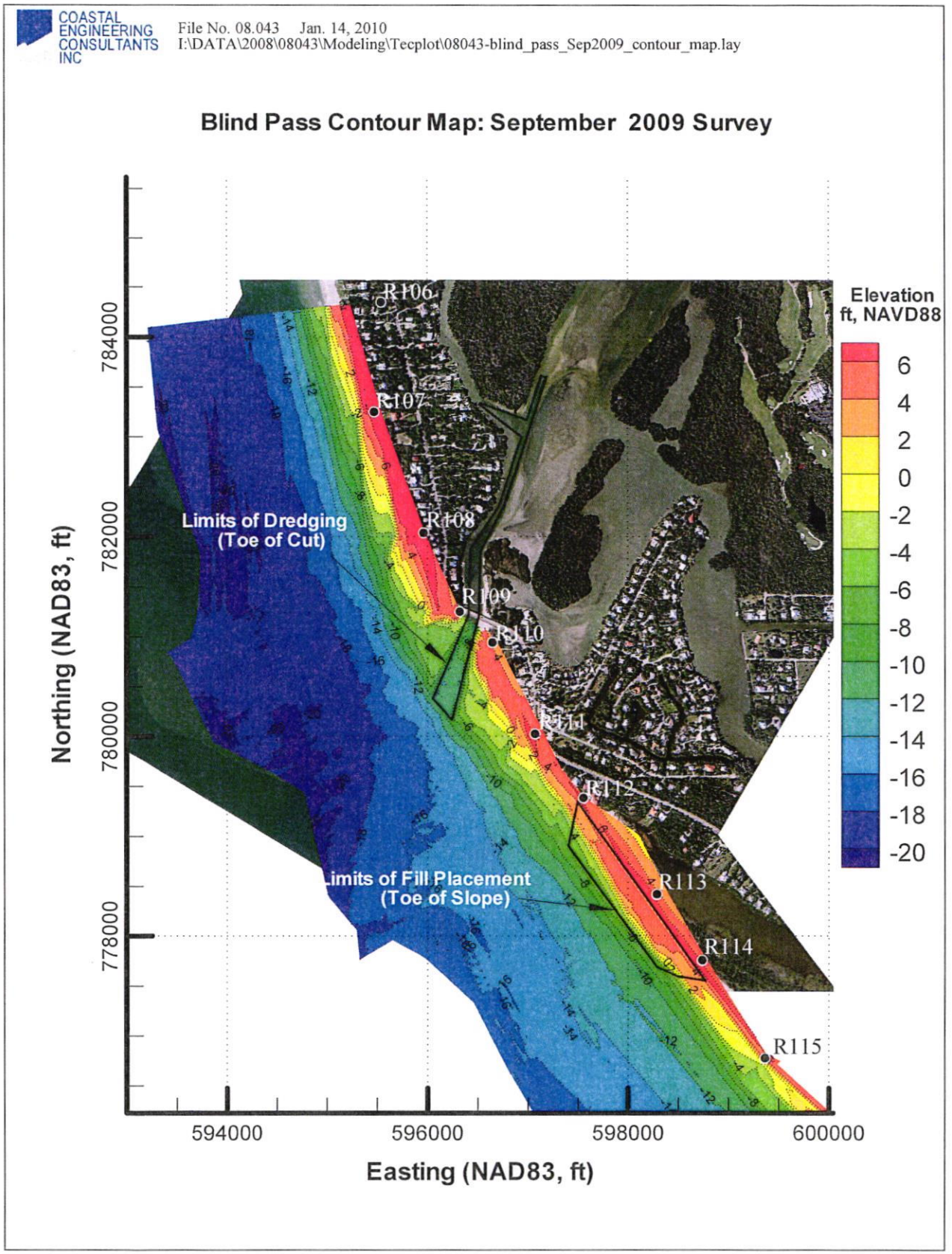

FIGURE 3
SEPTEMBER 2009 CONTOUR MAP

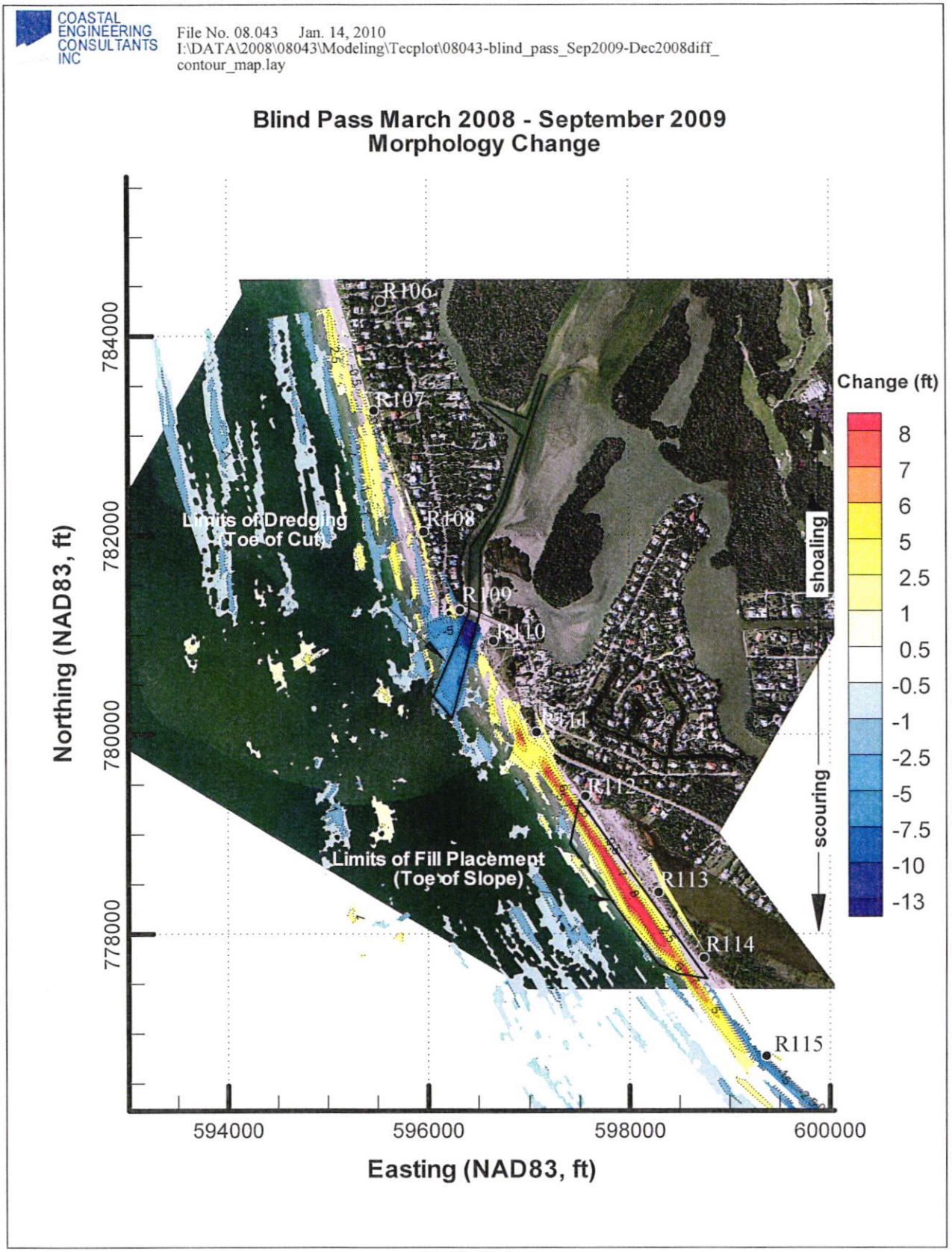

FIGURE 4
MORPHOLOGIC CHANGES BETWEEN MARCH 2008 AND SEPTEMBER 2009

4.3 Blind Pass and Ebb Shoal: Pre-Construction and Post-Construction

Appendix 4 presents the Blind Pass cross sections surveyed in November 2008 (pre-construction), August 2009 (post-construction), and January 2010 (6-month monitoring). The restoration template and stations are depicted in Figure 1.

The total volume removed from the Blind Pass restoration template based on the November 2008 and August 2009 surveys was approximately 135,200 cubic yards. Table 3 presents the overall volumetric changes within the dredge template calculated from comparing the 2008 and 2009 monitoring surveys.

TABLE 3. BLIND PASS VOLUMETRIC CHANGES WITHIN DREDGE TEMPLATE BETWEEN 2008 SURVEY AND 2009 SURVEY

STA	AREA (CY/FT)	AVG AREA (CY/FT)	LENGTH (FT)	VOLUME (CY)
WULFERT CHANNEL				
0+00	13.9			
		35.7	200	7,146
2+00	57.5			
		62.1	200	12,425
4+00	66.7			
		51.8	200	10,366
6+00	36.9			
		59.9	200	11,977
8+00	82.8			
		70.2	200	14,033
10+00	57.5			
		51.4	200	10,284
12+00	45.4			
		43.5	200	8,706
14+00	41.7			
		44.5	200	8,891
16+00	47.2			
		39.9	200	7,971
18+00	32.5			
		28.6	200	5,711
20+00	24.6			
		20.6	200	4,120
22+00	16.6			
		16.0	200	3,207
24+00	15.5			
		15.5	200	3,096
26+00	15.5			
		16.7	200	3,345
28+00	18.0			
		20.6	200	4,117
30+00	23.2			

STA	AREA (CY/FT)	AVG AREA (CY/FT)	LENGTH (FT)	VOLUME (CY)
		19.4	200	3,885
32+00	15.7			
		15.5	200	3,106
34+00	15.4			
		14.3	100	1,428
35+00	13.2			
ROOSEVELT CHANNEL				
0+50	48.9			
		39.5	150	5,924
2+00	30.1			
		21.9	200	4,385
4+00	13.8			
		10.6	100	1,062
5+00	7.5			
TOTAL				**135,184**

Based on the August 2009 survey, the total volume remaining in the Blind Pass restoration template was approximately 16,000 cubic yards. Table 4 presents the remaining volume calculated for individual stations.

TABLE 4. VOLUME REMAINING WITHIN BLIND PASS DREDGE TEMPLATE AFTER 2009 POST-CONSTRUCTION SURVEY

STA	AREA (CY/FT)	AVG AREA (CY/FT)	LENGTH (FT)	VOLUME (CY)
WULFERT CHANNEL				
0+00	0.4			
		0.5	200	100
2+00	0.6			
		1.9	200	390
4+00	3.3			
		9.4	200	1,880
6+00	15.5			
		14.5	200	2,896
8+00	13.4			
		9.8	200	1,967
10+00	6.2			
		8.3	200	1,666
12+00	10.4			
		8.3	200	1,663
14+00	6.2			
		3.8	200	767
16+00	1.5			
		3.1	200	624
18+00	4.8			

STA	AREA (CY/FT)	AVG AREA (CY/FT)	LENGTH (FT)	VOLUME (CY)
		2.8	200	570
20+00	0.9			
		1.2	200	230
22+00	1.4			
		1.5	200	303
24+00	1.6			
		0.9	200	175
26+00	0.1			
		0.3	200	64
28+00	0.5			
		1.1	200	213
30+00	1.6			
		1.8	200	358
32+00	2.0			
		1.7	200	337
34+00	1.4			
		1.8	100	178
35+00	2.2			
ROOSEVELT CHANNEL				
0+50	4.9			
		5.1	150	768
2+00	5.3			
		3.8	200	766
4+00	2.3			
		1.2	100	117
5+00	0.0			
TOTAL				**16,032**

Figures 5 and 6 present contour maps based on the ebb shoal and pass monitoring surveys conducted in November 2008 (pre-construction) and August 2009 (post-construction), respectively. The figure depicts the limits of dredging and fill placement. Figure 7 presents a morphology change map depicting changes in elevations that occurred between the pre-construction and post-construction monitoring surveys. The net change within the limits of dredging (toe of the cut) based on the volume calculation between the 2008 and 2009 surfaces equaled approximately 103,400 cubic yards of material removed and naturally eroded.

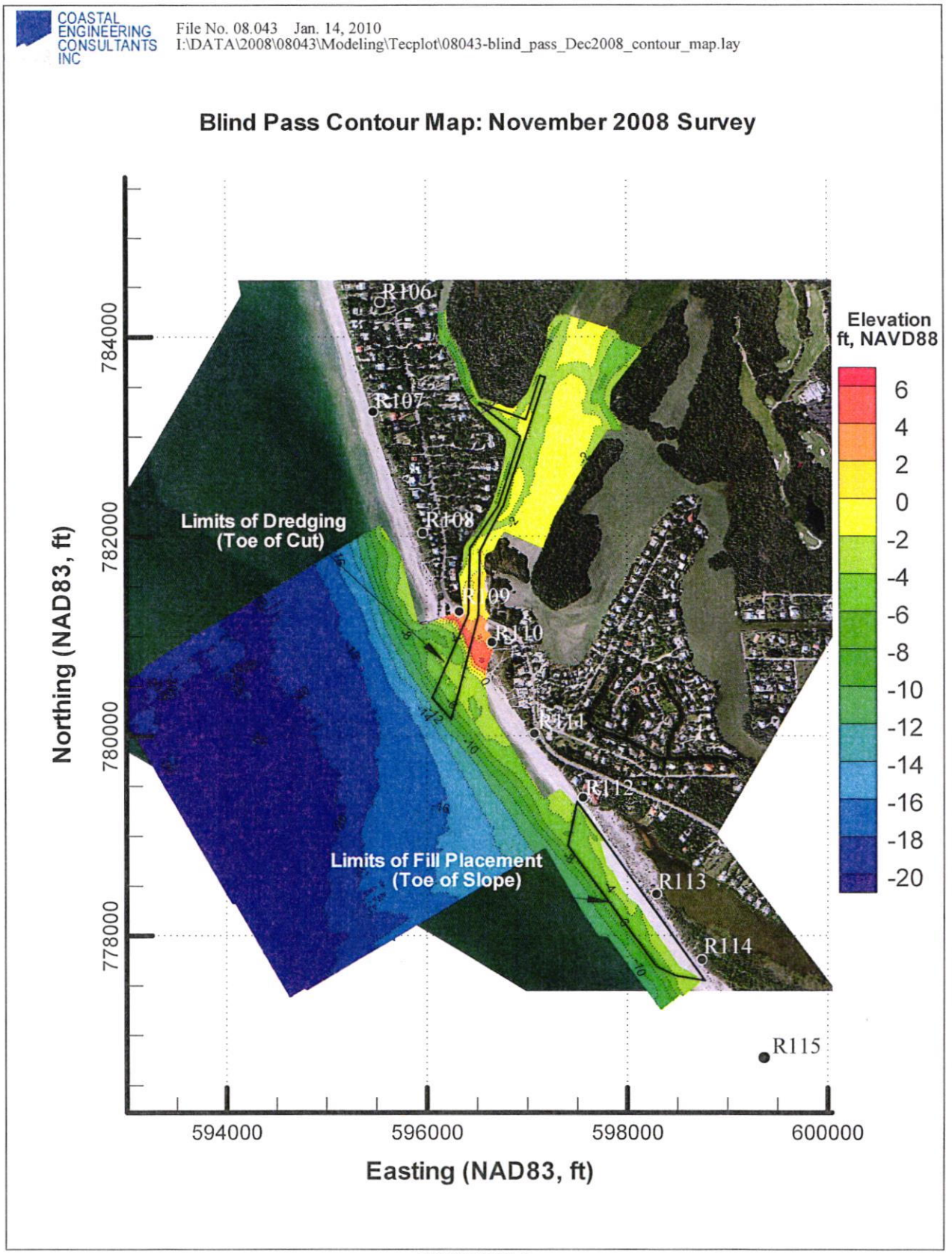

FIGURE 5
NOVEMBER 2008 (PRE-CONSTRUCTION) CONTOUR MAP

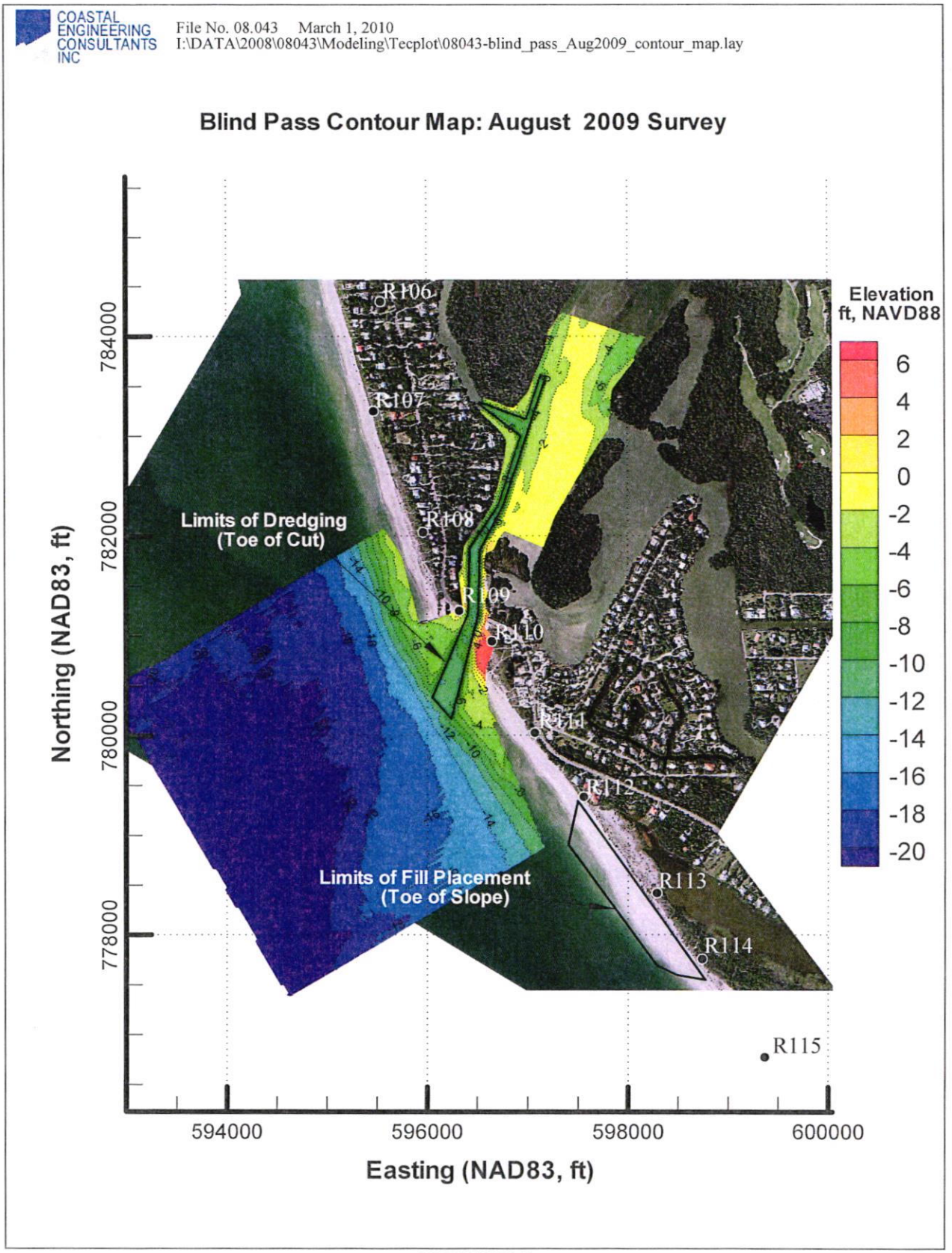

FIGURE 6
AUGUST 2009 (POST-CONSTRUCTION) CONTOUR MAP

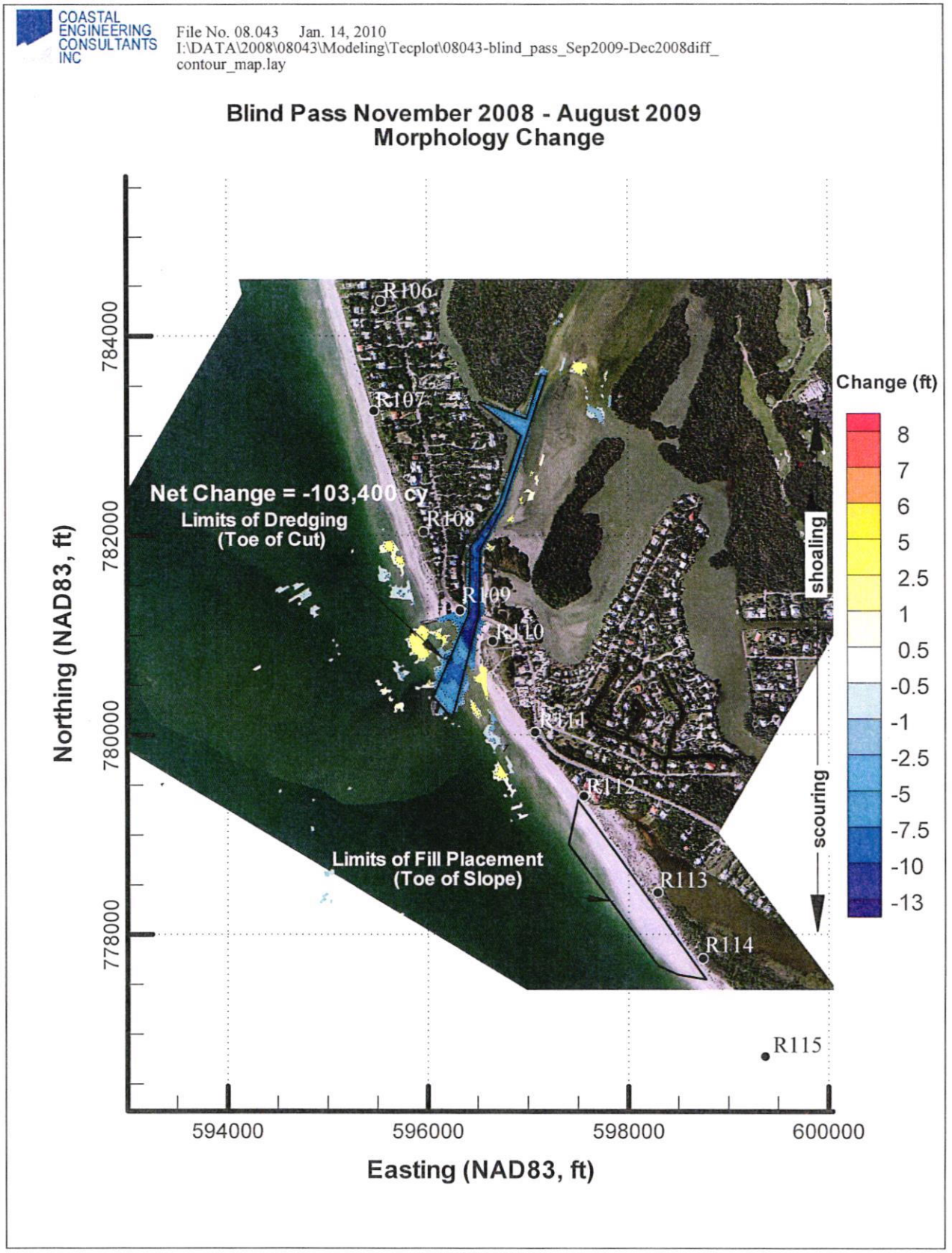

FIGURE 7
BLIND PASS AND EBB SHOAL MORPHOLOGIC CHANGES BETWEEN NOVEMBER 2008 AND AUGUST 2009

4.4 Blind Pass and Ebb Shoal: Post-Construction and 6-month Monitoring

Significant shoaling of Blind Pass occurred between August 2009 and January 2010. The amount of sand that shoaled into the restoration template was approximately 40,100 cubic yards. Table 5 presents the overall volumetric changes within the dredge template calculated from comparing the 2009 and 2010 surveys.

TABLE 5. BLIND PASS VOLUMETRIC CHANGES WITHIN DREDGE TEMPLATE BETWEEN 2009 SURVEY AND 2010 SURVEY

STA	AREA (CY/FT)	AVG AREA (CY/FT)	LENGTH (FT)	VOLUME (CY)
WULFERT CHANNEL				
0+00	3.6			
		24.1	200	4,822
2+00	44.6			
		50.4	200	10,087
4+00	56.3			
		41.8	200	8,365
6+00	27.4			
		20.1	200	4,013
8+00	12.8			
		17.2	200	3,441
10+00	21.6			
		13.4	200	2,673
12+00	5.1			
		7.0	200	1,399
14+00	8.9			
		10.8	200	2,150
16+00	12.6			
		6.0	200	1,202
18+00	-0.6			
		0.4	200	85
20+00	1.4			
		1.2	200	248
22+00	1.1			
		0.7	200	136
24+00	0.3			
		0.1	200	20
26+00	-0.1			
		-0.2	200	-37
28+00	-0.3			
		0.9	200	189
30+00	2.2			
		1.9	200	377
32+00	1.6			
		2.1	200	423

STA	AREA (CY/FT)	AVG AREA (CY/FT)	LENGTH (FT)	VOLUME (CY)
34+00	2.6			
		1.5	100	152
35+00	0.4			
ROOSEVELT CHANNEL				
0+50	4.9			
		2.1	150	318
2+00	-0.6			
		0.0	200	-7
4+00	0.6			
		0.5	100	54
5+00	0.5			
TOTAL				**40,109**

Based on the January 2010 survey, the total volume remaining in the Blind Pass restoration template was approximately 56,000 cubic yards. Table 6 presents the remaining volume calculated for individual stations.

TABLE 6. VOLUME REMAINING WITHIN BLIND PASS DREDGE TEMPLATE AFTER 2010 6-MONTH MONITORING SURVEY

STA	AREA (CY/FT)	AVG AREA (CY/FT)	LENGTH (FT)	VOLUME (CY)
WULFERT CHANNEL				
0+00	4.0			
		24.6	200	4,922
2+00	45.2			
		52.4	200	10,476
4+00	59.6			
		51.2	200	10,245
6+00	42.9			
		34.5	200	6,909
8+00	26.2			
		27.0	200	5,409
10+00	27.9			
		21.7	200	4,339
12+00	15.5			
		14.1	200	2,822
14+00	12.7			
		13.4	200	2,677
16+00	14.1			
		9.1	200	1,826
18+00	4.2			
		3.3	200	654
20+00	2.3			
		2.4	200	478

STA	AREA (CY/FT)	AVG AREA (CY/FT)	LENGTH (FT)	VOLUME (CY)
22+00	2.4			
		2.2	200	439
24+00	1.9			
		1.0	200	195
26+00	0.0			
		0.1	200	27
28+00	0.3			
		2.0	200	402
30+00	3.8			
		3.7	200	736
32+00	3.6			
		3.8	200	760
34+00	4.0			
		3.3	100	330
35+00	2.6			
ROOSEVELT CHANNEL				
0+50	9.8			
		7.2	200	1,448
2+00	4.7			
		3.8	200	759
4+00	2.9			
		1.7	100	171
5+00	0.5			
TOTAL				**56,024**

Figure 8 presents an elevation surface map based on the January 2010 (6-month monitoring) ebb shoal and pass survey data. By subtracting the January 2010 surface from the August 2009 (Figure 6) surface a morphology change map presented in Figure 9 depicting changes in elevations that occurred during the 6-month post-construction period was derived.

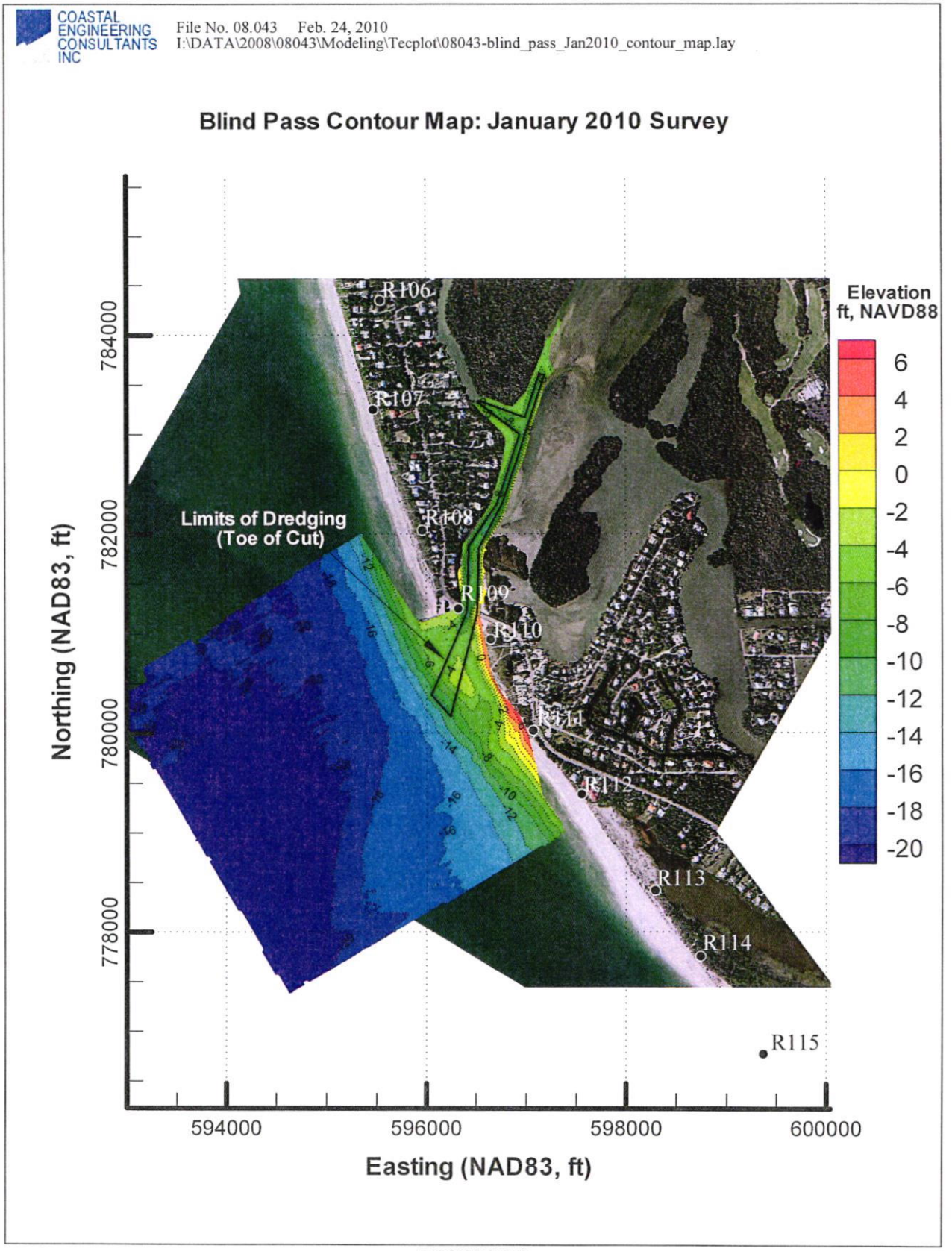

FIGURE 8
JANUARY 2010 (6-MONTH MONITORING) CONTOUR MAP

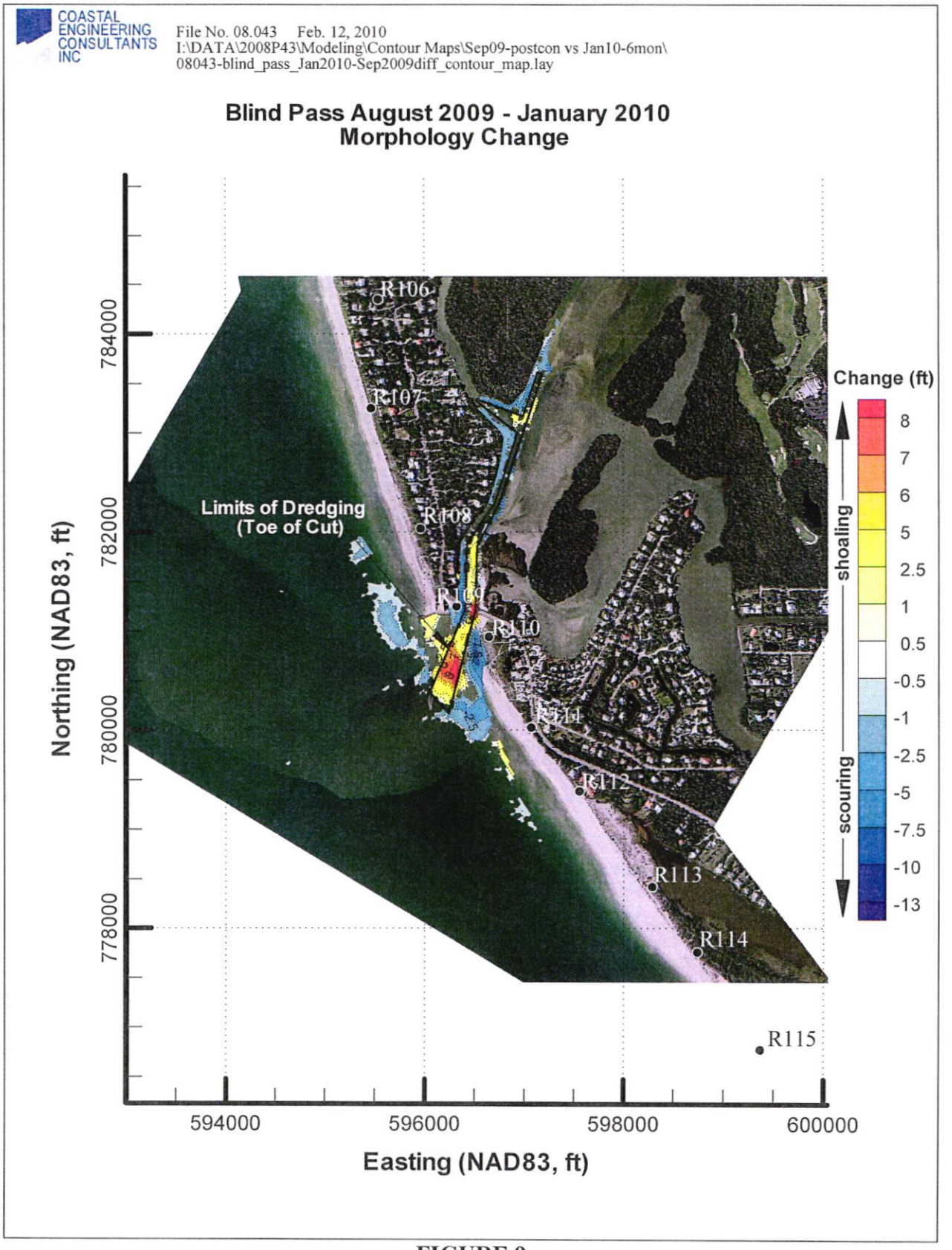

FIGURE 9

BLIND PASS AND EBB SHOAL MORPHOLOGIC CHANGES BETWEEN AUGUST 2009 AND JANUARY 2010

4.5 Aerial Photographs

Aerial photographs dated October 2009 were provided by Lee County and are presented in Appendix 5.

4.6 Hydraulic Monitoring

4.6.1 Hydraulic Monitoring Data

The field work for the 2009 hydraulic monitoring was performed between October 9, 2009 and November 15, 2009. Water elevation data were collected using MactoTide tide gauges at two locations: in the Gulf of Mexico approximately 3,800 feet south of Blind Pass (W82°10'57.4", N26°28'20.7") in 15.7-foot deep water and in Pine Island Sound approximately 2.7 miles northeast of the pass (W82°08'58.5", N26°30'29.7") in 11.9-foot deep water. Current velocity data were collected using Nortek Aquadopp current profilers at three Blind Pass locations, near the Blind Pass bridge (W82°10'56.9",.2") in approximately 10-foot deep water, near the entrance to Roosevelt Channel (W82°10'55.0", N26°29'18.6") in approximately 8-foot deep water, and near the entrance to Dinken Bayou (W82°10'40.9", N26°29'15.7") in approximately 6-foot deep water. The Nortek Aquadopp current profilers were capable of measuring currents throughout the water column at 20-inch (50 cm) increments. It allowed for more detailed information about the vertical structure of the current profile. The profilers were installed about 1 foot above the bottom. Instruments' location map is presented in Figure 10.

FIGURE 10
LOCATION MAP OF TIDE GAUGES AND CURRENT PROFILERS (ADCP)

The hydraulic results of the monitoring event are shown below in Figures 11 and 12. Some occasional noise occurred due to unknown reasons. This, however, did not affect the overall analysis of the hydraulic conditions as the noise was filtered out. A new moon was observed on October 18, 2009 and a full moon occurred on November 2, 2009. The measured tidal range on the Gulf of Mexico side was 3.0 feet and 2.9 feet during the new moon and full moon, respectively; the maximum tidal range, 3.4 feet, occurred on November 5, 2009. In Pine Island Sound, the tidal ranges during the new moon and full moon were 2.8 feet and 2.7 feet, respectively; the maximum tidal range, 3.0 feet, occurred on November 5, 2009. The maximum current velocity, 4.3 feet/sec, occurred on October 18, 2009 during the new moon. The average daily peak velocities over a 28-day period between October 10, 2009 and November 8, 2009 were 2.7 feet/sec and 2.9 feet/sec for the flood and ebb tidal phases, respectively.

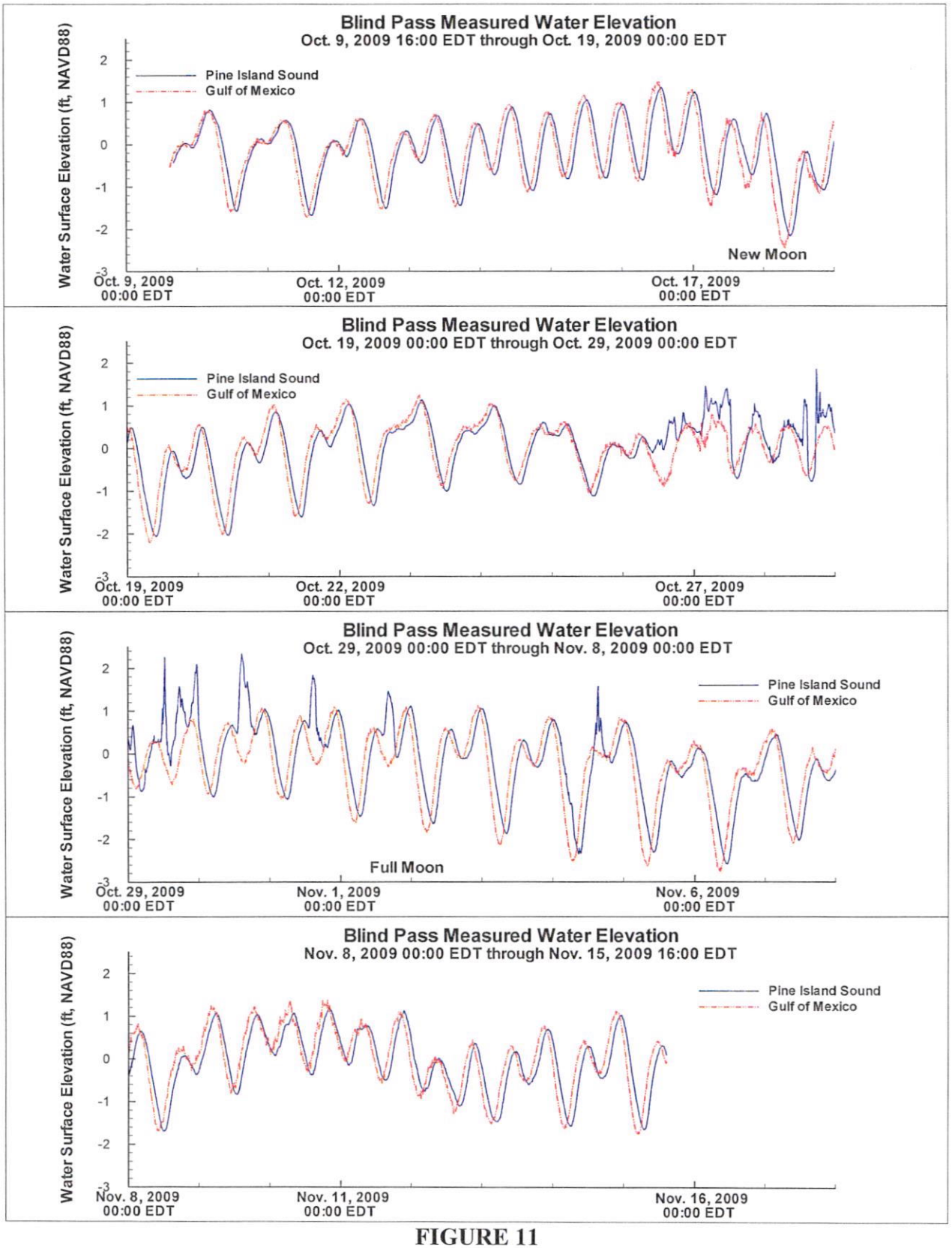

FIGURE 11
WATER SURFACE ELEVATIONS MEASURED BETWEEN OCTOBER 9 AND NOVEMBER 15, 2009 IN GULF OF MEXICO AND PINE ISLAND SOUND

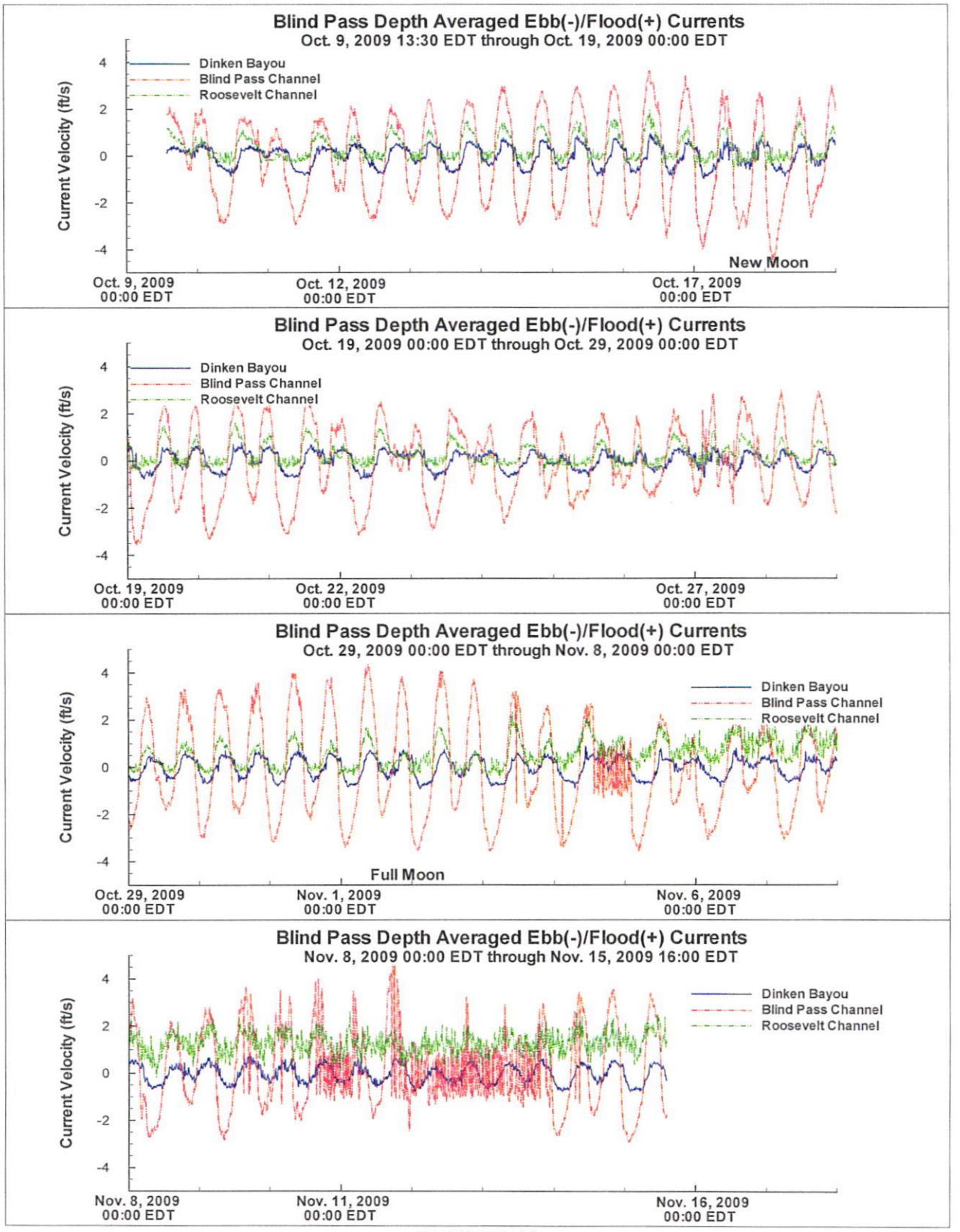

FIGURE 12

DEPTH AVERAGED CURRENT VELOCITIES MEASURED BETWEEN OCTOBER 9 AND NOVEMBER 15, 2009 IN GULF OF MEXICO AND PINE ISLAND SOUND

4.6.2 Summary of Hydraulic Measurements

Tide near Blind Pass is of a mixed nature which can be thought of as a transitional tide occurring between areas of semi-diurnal and diurnal tides. Table 7 presents major tidal constituents in the area based on ADCIRC tidal database.

TABLE 7. DOMINANT TIDAL CONSTITUENTS

CONSTITUENT	PERIOD (HR)	AMPLITUDE (FT)
M_2	12.4206	0.77
K_1	23.9345	0.48
O_1	25.8193	0.47
S2	12.0000	0.31

Table 8 provides a summary of the hydraulic conditions observed between October 9 and November 15, 2009. The tidal prism for this period was calculated using the following Keulegan (1951) expression:

$$P = \left(\frac{TV_{\max} A_c}{\pi C} \right) \tag{2}$$

where

P = tidal prism (ft^3)
T = tidal period (s)
V_{max} = maximum velocity (ft/s)
A_c = cross-sectional area (ft^2) below MSL (= -0.6 ft NAVD88).
C = parameter (0.86)

TABLE 8. SUMMARY OF HYDRAULIC PARAMETERS

PARAMETER	2009 POST-CON
Maximum Tidal Range† (ft)	3.0
Maximum Tidal Range†† (ft)	3.3
Peak Current Velocity†† (ft/s)	4.3
Cross-section Area†† (ft^2)	1,165
Tidal Prism†† (ft^3)	$82.9 \cdot 10^6$

† Pine Island Sound
†† Blind Pass

Erickson Consulting Engineers (ECE) designed the Blind Pass restoration project in 2006 (ECE, 2006) and recommended Alternative F as the "preferred alternative" that was constructed in 2009. ECE performed a tidal hydraulics analysis to predict post-construction hydraulic parameters including an "average tidal prism" at Blind Pass which was defined as the average daily tidal prism over a 14-day period which included the spring and neap tidal cycles. CEC utilized hydraulic measurements over a 28-day period between October 10, 2009 and November

8, 2009 which included two spring and two neap tidal cycles to compute the post-construction average ebb and flood tidal prisms and compared them to the average ebb and flood tidal prisms predicted by ECE (2006). Equation 2 was used to compute the average ebb and flood tidal prisms for the 2009 post-construction conditions with the exception of the V_{max} velocity parameter which was replaced with the average peak ebb and flood velocities, respectively. Table 9 presents a comparison analysis between the predicted and measured hydraulic parameters.

TABLE 9. COMPARISON ANALYSIS OF HYDRAULIC PARAMETERS

PARAMETER	PREDICTED CONSTRUCTION DESIGN†	2009 POST-CON MEASURED	% Difference
Average Peak Flood Current Velocity (ft/s)	3.8	2.7	41%
Average Peak Ebb Current Velocity (ft/s)	4.1	2.9	41%
Cross-section Area (ft^2)	1,500	1,165	29%
Average Flood Tidal Prism (ft^3)	$90 \cdot 10^6$	$52 \cdot 10^6$	73%
Average Ebb Tidal Prism (ft^3)	$110 \cdot 10^6$	$56 \cdot 10^6$	96%

† According to ECE (2006)

The comparison analysis demonstrates that the daily average peak flood and ebb current velocities predicted for the constructed design by ECE (2006) were overestimated by 41%. Further, the predicted average flood tidal prism was approximately 73% larger than the average flood tidal prism computed based on the measured hydraulic parameters. Similarly, the predicted average ebb tidal prism was approximately 96% larger than the post-construction average ebb tidal prism. One of the reasons the construction design tidal prisms were significantly overestimated is that the construction design cross-sectional critical area was 29% larger compared to the critical cross-sectional area based on the August 2009 post-construction survey.

According to Mehta et al. (1991), the stable cross-sectional area at Blind Pass is about 1,345 square feet and 1,615 square feet based on averaged and more extreme conditions, respectively. The 2009 post-construction cross-sectional area, 1,165 square feet, does not fall within the stable cross-sectional area range.

5.0 DREDGE CUT POSITION DATA

Appendix 6 presents a statistical analysis of the cutterhead positioning deviations that occurred during the construction period. Positions were recorded every 3 minutes. Based on the dredge records, total operating times were 1,046.62 hours and 1,014.57 hours for Dredge Michael and Dredge Nate, respectively. The total deviations exceeding the 0.5-foot vertical accuracy standard represent approximately 2.5% and 16.9% of the total operating time for Dredge Michael and Dredge Nate, respectively. A summary of these deviations is presented in Table 10.

TABLE 10. SUMMARY OF CUTTERHEAD POSITIONING DATA

Deviation Description	Dredge Michael # of Occurrences	Dredge Nate # of Occurrences
Outside of Template	22	41
0.0 to 0.5 ft	1,952	4,522
0.5 to 1.0 ft	237	1,312
1.0 to 2.0 ft	160	1,189
Greater than 2.0 ft	100	896

6.0 SEDIMENTS

A grain size analysis was performed on sediment samples collected on September 24, 2009. The samples were collected in accordance with the projects Sediment Quality Assurance / Quality Control plan. The samples were collected at each full and half R-monument in the fill area (R-112 to R-114). The samples were excavated from depths of 6 to 12 inches below the surface in the newly constructed berm at the toe of the dune, mid-beach and approximate MHW. The average mean grain size of the sediment samples collected was 0.55 mm. The average gravel content of the sediment grab samples was 6.1% and the average silt content (finer than the #230 sieve) was 0.23%. The samples of the post construction grain size analysis are presented in Appendix 7. Based on Lee County and CEC staff observations and sampling during construction, and results of the post-construction sampling, the sediment placed on the beach and in the nearshore met the specifications of the Sediment Quality Assurance / Quality Control plan

7.0 CONCLUSION

This report describes the post-construction physical monitoring results of Lee County's Blind Pass restoration project completed in 2009. The information presented herein provides the necessary data for both Lee County and FDEP to regularly 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 County 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.

The data used in the physical monitoring analysis included beach profile surveys conducted in March 2008 and September 2009, ebb shoal surveys conducted in November 2008 and August 2009, Blind Pass surveys conducted in November 2008 and August 2009, and hydraulic measurements performed in October-November 2009.

Based on the monitoring survey results, between the November 2008 (pre-construction) and August 2009 (post-construction) surveys a total volume of approximately 133,200 cubic yards was removed from the Blind Pass restoration template through excavation and natural scouring. Based on the August 2009 survey, a total of approximately 17,100 cubic yards was remaining in the template.

The tidal range and current velocities measured at Blind Pass in October-November 2009 were approximately 3.3 feet and 4.0 feet/sec, respectively. The maximum tidal prism calculated based on the hydraulic parameters was approximately $7.71*10^7$ cubic feet.

A comparison analysis between the measured hydraulic parameters and the hydraulic parameters predicted by ECE in their restoration design report (ECE, 2006) demonstrated that the predicted daily average peak flood and ebb current were overestimated by 41%. Also, the predicted average flood and ebb tidal prisms were larger than the average flood tidal prism computed based on the measured hydraulic parameters by approximately 73% and 93%, respectively. Some of the overestimation of the predicted parameters was a result of a larger, by 29%, critical cross-sectional area designed for construction compared to the critical cross-sectional area measured during the August 2009 post-construction survey. Further, the post-construction cross-sectional area, 1,165 square feet, does not fall within the stable cross-sectional area range predicted by Mehta et al. (1991) equal to 1,345 square feet and 1,615 square feet based on averaged and more extreme conditions, respectively.

Based on the grain size analysis performed in September 2009, the average mean grain size of the sediment samples excavated from depths of 6 to 12 inches below the surface in the newly constructed berm at the toe of the dune was 0.55 mm. Further, the average gravel content of the sediment grab samples was 6.1% and the average silt content was 0.23%.

The 6-month monitoring survey conducted in January 2010 demonstrated significant shoaling of Blind Pass since construction completion. The amount of sand that shoaled into the restoration template was approximately 40,100 cubic yards. The total volume remaining in the Blind Pass restoration template was approximately 56,000 cubic yards.

Seagrass monitoring was conducted, the results of which will be presented in a separate report.

Based on the monitoring, there were no documented adverse impacts to the natural resources or coastal system within the project area as a result of construction.

8.0 REFERENCES

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APPENDIX 1

BLIND PASS POST-CONSTRUCTION AND 6-MONTH SURVEY REPORT

Coastal Engineering Consultants (CEC) utilized multiple Real Time Kinematic (RTK) Global Positioning Systems (GPS) for the Pre-Construction Hydrographic Survey conducted in November, 2008, Post-Construction Hydrographic Survey conducted in August, 2009 and the 6-month progress Hydrographic Survey conducted in January, 2010. All GPS base station control referenced during this survey was previously established by Florida Department of Environmental Protection (FDEP) Bureau of Beaches and Coastal Systems (BBCS) and meets or exceeds Geospatial Positioning Accuracy Standards, Range VIII.

CEC occupied several FDEP "A monuments" (2nd order control) at the beginning of the project (December 1, 2008) and tied in all existing FDEP "R monuments" within the project area. BBCS provided CEC an x,y,z coordinate file of the monumentation previously observed by BBCS. CEC collected GPS static observations on each GPS base point to confirm the coordinates listed on BBCS's monument control list. Horizontal and vertical positions of all found monuments were verified and documented. These results are summarized in Tables 1 and 2.

The Hydrographic surveys were conducted utilizing boat-mounted echo sounding equipment. The upland and surf zone portion of the Project was surveyed with pack-mounted GPS RTK rovers. All "R monument" and intermediate beach profiles and were collected on the State Plane Coordinate System Grid, Florida West Zone and survey data was collected along FDEP established grid bearings as outlined in the project Scope of Work prepared by Lee County. The horizontal and vertical datums were North American Datum (NAD) of 1983/1990 Adjustment and North American Vertical Datum (NAVD) of 1988, respectively.

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.

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. 08.043

DATE OF SIGNATURE: 3.9.2010

LEE COUNTY RANGE MONUMENT COMPARISON USED BYCOASTAL ENGINEERING CONSULTANTS, INC.
for LEE COUNTY EROSION CONTROL PROJECT ANNUAL MONITORING
2009

DATUMS: NAD83/90 / NAVD1988

DEP GIVEN CONTROL						CONTROL USED BY CONTRACTOR 2009 SURVEY						CONTROL FOUND BY CONTRACTOR 2009						GIVEN -VS-USED				GIVEN -VS-FOUND				FOUND-VS-USED			
MON ID	M. DATE	NORTHING	EASTING	AZ	M. ELEV.	MON ID	M. DATE	NORTHING	EASTING	AZ	M. ELEV.	MON ID	M. DATE	NORTHING	EASTING	AZ	M. ELEV.	ΔN	ΔE	ΔAZ	ΔZ	ΔN	ΔE	ΔAZ	ΔZ	ΔN	ΔE	ΔAZ	ΔZ
R106	1974	784350.78	595542.25	264.0	4.4	R106	1974	784350.78	595542.25	264.0	4.4							0.000	0.000	0.0	0.00								
R107	2001	783251.82	595470.49	266.0	8.89	R107	2001	783251.82	595470.49	266.0	8.89	R107	2001	783252.42	595470.69	266.0	9.03	0.000	0.000	0.0	0.00	-0.602	-0.202	0.0	-0.14	-0.602	-0.202	0.0	-0.14
R108	1982	782037.27	595961.74	265.0	4.42	R108	1982	782037.27	595961.74	265.0	4.42							0.000	0.000	0.0	0.00								
R109	2001	781249.23	596320.30	215.0	8.67	R109	2001	781249.85	596320.59	215.0	8.81	R109	2001	781249.85	596320.59	215.0	8.81	-0.620	-0.293	0.0	-0.14	-0.620	-0.293	0.0	-0.14	0.000	0.000	0.0	0.00
R109	2001	781249.23	596320.30	270.0	8.67	R109	2001	781249.85	596320.59	270.0	8.81	R109	2001	781249.85	596320.59	270.0	8.81	-0.620	-0.293	0.0	-0.14	-0.620	-0.293	0.0	-0.14	0.000	0.000	0.0	0.00
R110	1990	780942.06	596646.95	250.0	2.99	R110	1990	780942.06	596646.95	250.0	2.99	R110	1990	780942.60	596648.63	250.0	3.10	0.000	0.000	0.0	0.00	-0.541	-1.676	0.0	-0.11	-0.541	-1.676	0.0	-0.11
R110.5		780471.80	596888.80	250.0	2.63	R110.5		780471.80	596888.80	250.0	2.63							0.000	0.000	0.0	0.00								
R111	1993	780026.82	597069.39	255.0	6.09	R111	1993	780026.82	597069.39	255.0	6.09	R111	1993	780027.35	597071.14	255.0	6.15	0.000	0.000	0.0	0.00	-0.526	-1.752	0.0	-0.06	-0.526	-1.752	0.0	-0.06
R111.5		779736.90	597360.20	240.0	4.38	R111.5		779736.90	597360.20	240.0	4.38	R111.5	1993	779737.54	597360.51	240.0	4.56	0.000	0.000	0.0	0.00	-0.639	-0.312	0.0	-0.18	-0.639	-0.312	0.0	-0.18
R112	1993	779385.95	597555.16	240.0	4.53	R112	1993	779385.95	597555.16	240.0	4.53	R112	CPE 2000	779377.97	597541.45	240.0	6.20	0.000	0.000	0.0	0.00	7.976	13.707	0.0	-1.67	7.976	13.707	0.0	-1.67
R112.5		779074.50	598216.60	240.0	1.14	R112.5		779074.50	598216.60	240.0	1.14							0.000	0.000	0.0	0.00								
R113	1992	778420.05	598285.85	240.0	0.42	R113	1992	778420.05	598285.85	240.0	0.42							0.000	0.000	0.0	0.00								
R113.5		778033.00	598512.90	240.0	3.16	R113.5		778033.00	598512.90	240.0	3.16							0.000	0.000	0.0	0.00								
R114		777758.64	598739.71	240.0	1.8	R114		777758.64	598739.71	240.0	1.8							0.000	0.000	0.0	0.00								
R115	1998	776778.55	599364.66	225.0	1.32	R115	1998	776778.55	599364.66	225.0	1.32							0.000	0.000	0.0	0.00								
R116	1998	775929.83	600134.25	220.0	0.57	R116	1998	775929.83	600134.25	220.0	0.57	R116	M&E 2005	776006.92	600198.92	220.0	3.68	0.000	0.000	0.0	0.00	-77.086	-64.667	0.0	-3.11	-77.086	-64.667	0.0	-3.11
R117	1974	775201.74	600911.20	220.0	3.14	R117	1974	775201.74	600911.20	220.0	3.14	R117	M&E 2005	775355.81	601039.93	220.0	2.71	0.000	0.000	0.0	0.00	-154.065	-128.734	0.0	0.43	-154.065	-128.734	0.0	0.43
R118	1974	774720.73	601888.70	210.0	3.17	R118	1974	774720.73	601888.70	210.0	3.17	R118	1974	774721.50	601890.34	210.0	3.20	0.000	0.000	0.0	0.00	-0.774	-1.639	0.0	-0.03	-0.774	-1.639	0.0	-0.03

Table 2

CONTROL MONUMENT USED BY COASTAL ENGINEERING CONSULTANTS, INC. for BLIND PASS PHYSICAL MONITORING PROJECT 2009	
DATUMS: NAD83/90 / NAVD1988	
DESIGNATION	R-109
STAMPING	LEE 2001
NORTHING	781249.85
EASTING	596320.59
HORIZONTAL RMSE	0.000
ELEVATION	8.810
VERTICAL RMSE	0.000
DESCRIPTION	FOUND DNR BRASS DISC STAMPED R109 LEE 01 IN CONCRETE FLUME SE OF STORM DRAIN LOCATED AT NW END OF BLIND PASS BRIDGE

CONTROL MONUMENT USED BY COASTAL ENGINEERING CONSULTANTS, INC. for BLIND PASS PHYSICAL MONITORING PROJECT 2009	
DATUMS: NAD83/90 / NAVD1988	
DESIGNATION	A-51
STAMPING	ILLEGIBLE
NORTHING	789039.22
EASTING	594356.43
HORIZONTAL RMSE	0.130
ELEVATION	9.120
VERTICAL RMSE	0.060
DESCRIPTION	FOUND CONCRETE MONUMENT WITH DNR BRASS DISC SET IN CONCRETE STAMPING IS ILLEGIBLE. MONUMENT IS ACROSS FROM 16213 CAPTIVA DRIVE AND 5' WEST OF EDGE OF PAVEMENT OF SOUTHBOUND LANE

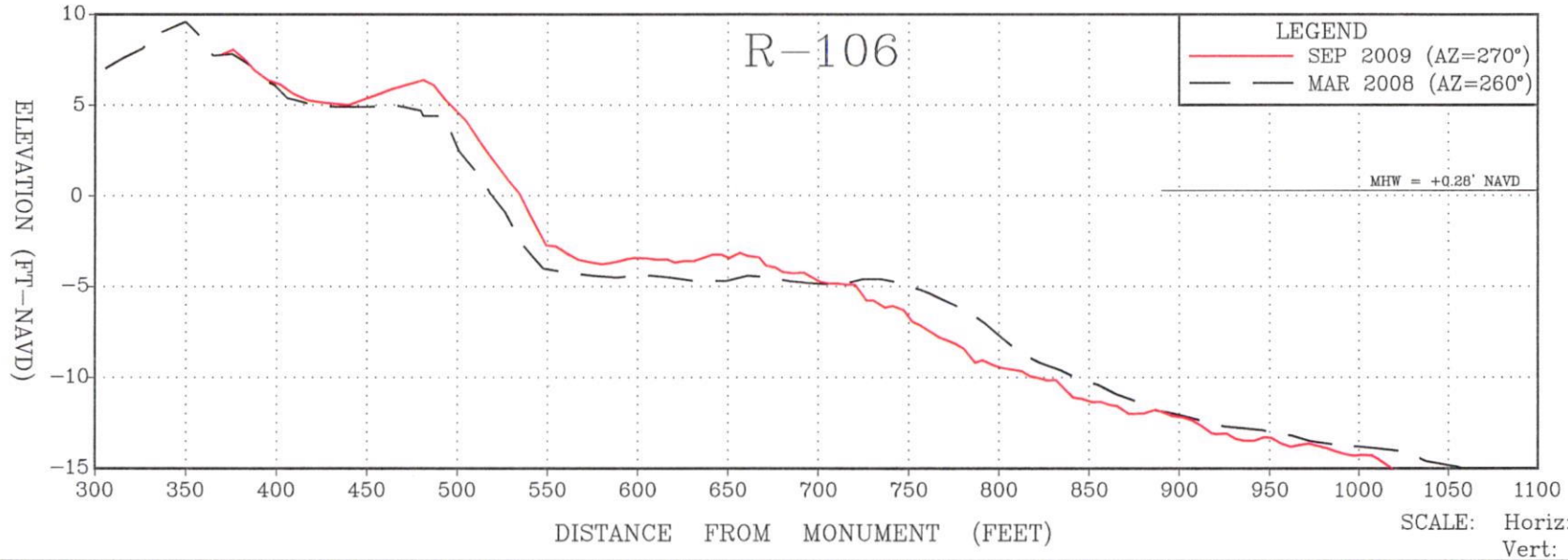
CONTROL MONUMENT USED BY COASTAL ENGINEERING CONSULTANTS, INC. for CHARLOTTE COUNTY EROSION CONTROL PROJECT 2005	
DATUMS: NAD83/90 / NAVD1988	
DESIGNATION	872 5383 TIDAL 1
STAMPING	USGS NO 1 1965
NORTHING	780464.89
EASTING	597100.29
HORIZONTAL RMSE	0.040
ELEVATION	3.380
VERTICAL RMSE	-0.080
DESCRIPTION	FOUND BRASS DISC SET IN TOP OF CONCRETE BASE NEAR SOUTHEAST CORNER OF CASTAWAYS MOTEL LOBBY

APPENDIX 2

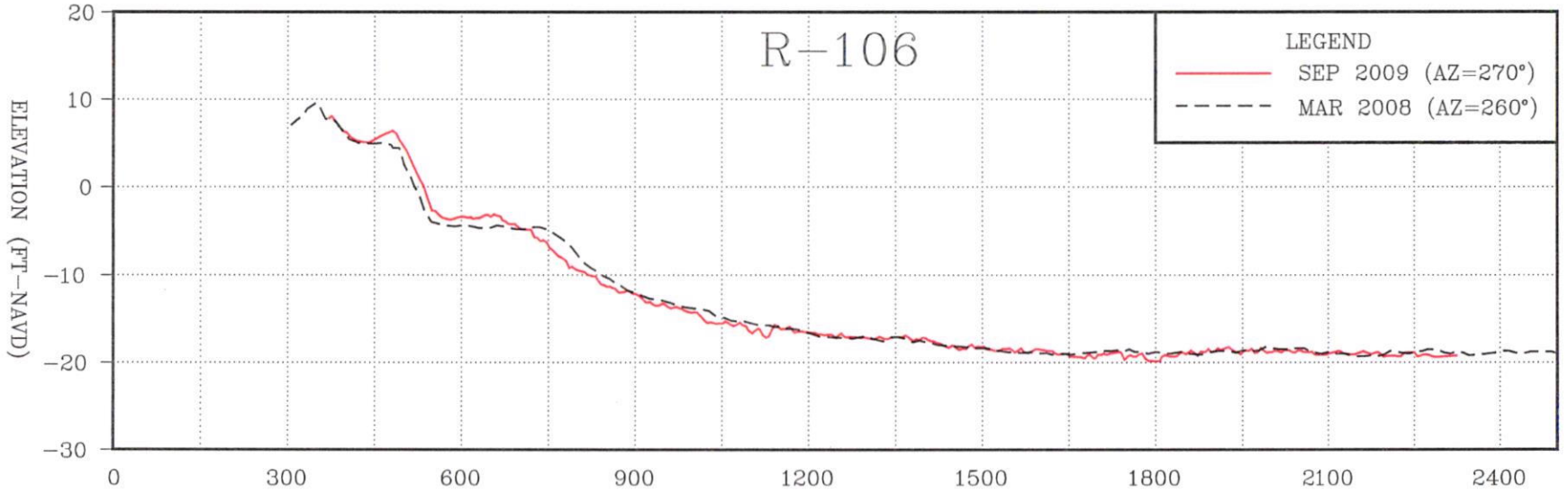
SURVEY DATA

APPENDIX 3

BEACH PROFILES



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



SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

1. ELEVATIONS ARE REFERENCED TO NAVD 1988.
2. PROFILE DATA IS FROM SURVEYS BY CEC.
   CEC JOB NO. 08.043

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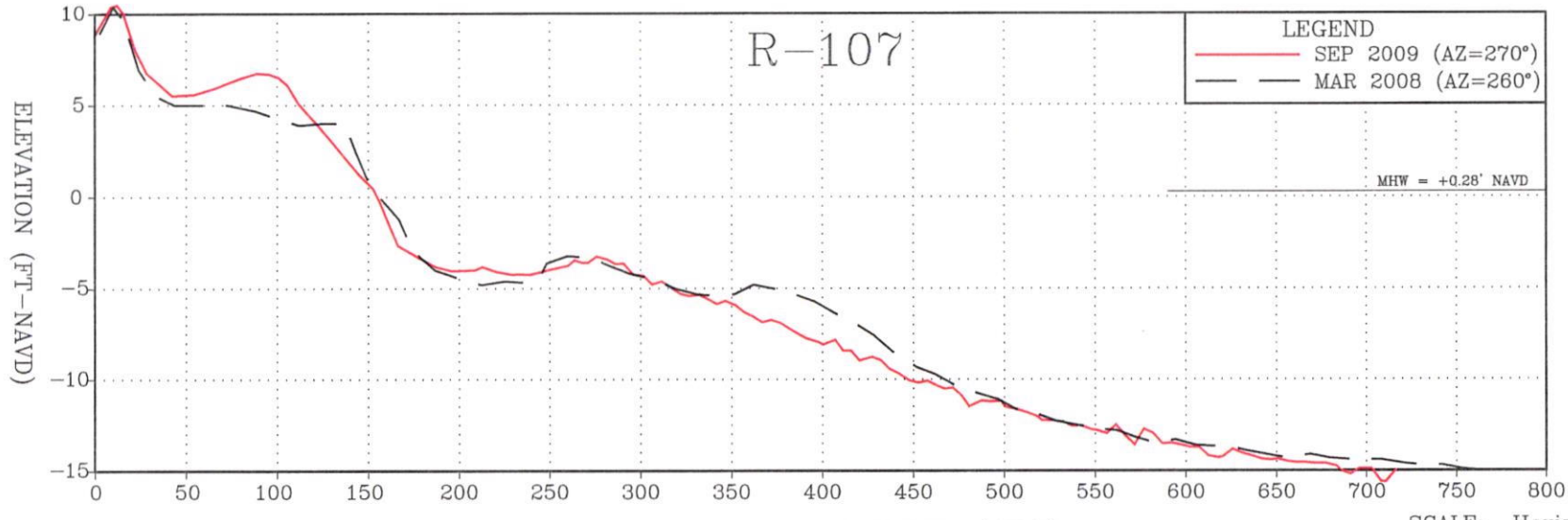
SHEET OF
FILE NO.: 08043

CLIENT: LEE COUNTY

TITLE: R-106 MONITORING SURVEY

DATE: MAR 1, 2010		SCALE: AS SHOWN	
DRAWN: SPC		F.B.	
CHECKED: MTP		PG.	
SEC.	TWP.	RNG.	
ACAD NO.	08043 RMON XSEC.DWG		
REF. NO.	08043		

NO.	DATE	BY	REVISION DESCRIPTION



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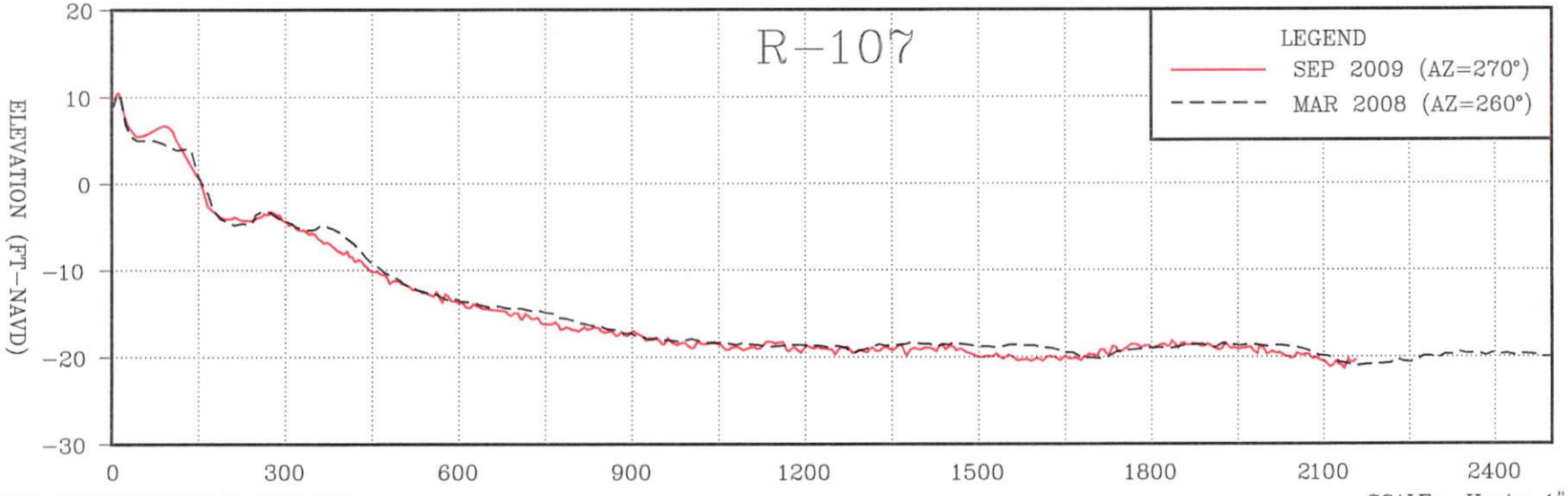
Vert: 1" = 10'



SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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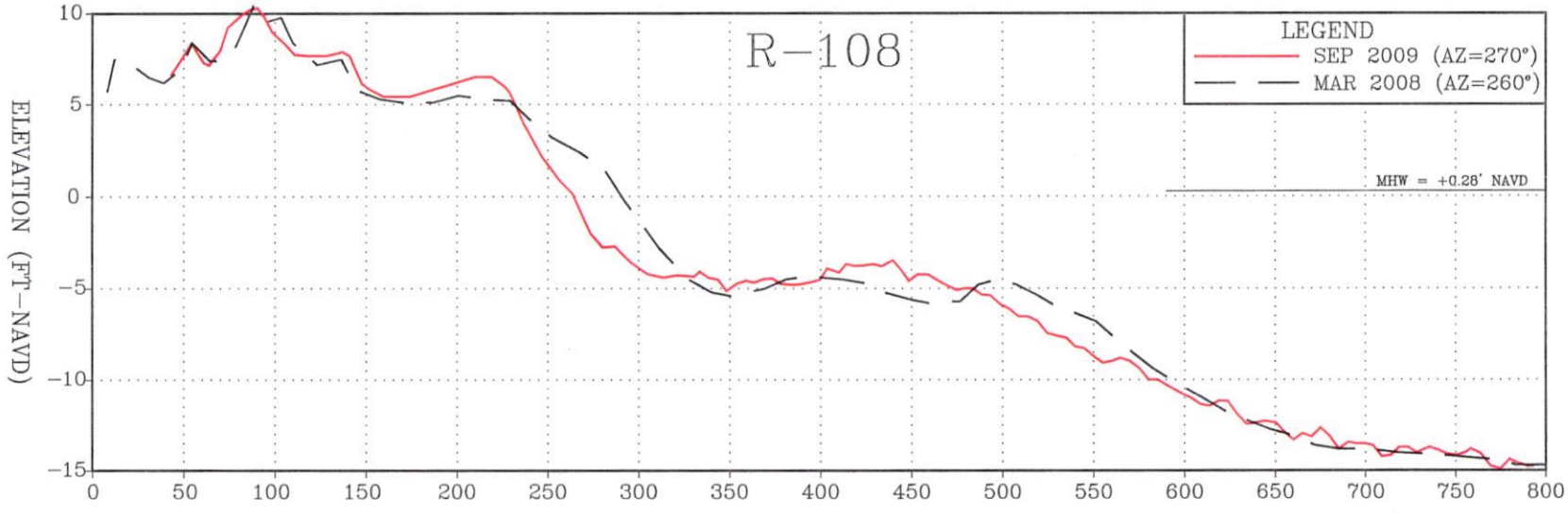
SHEET OF
FILE NO.: 08043

CLIENT: LEE COUNTY

TITLE: R-107 MONITORING SURVEY

DATE: MAR 1, 2010		SCALE: AS SHOWN	
DRAWN: SPC		F.B.	
CHECKED: MTP		PG.	
SEC.	TWP.	RNG.	
ACAD NO.	08043 RMON XSEC.DWG		
REF. NO.	08043		

NO.	DATE	BY	REVISION DESCRIPTION



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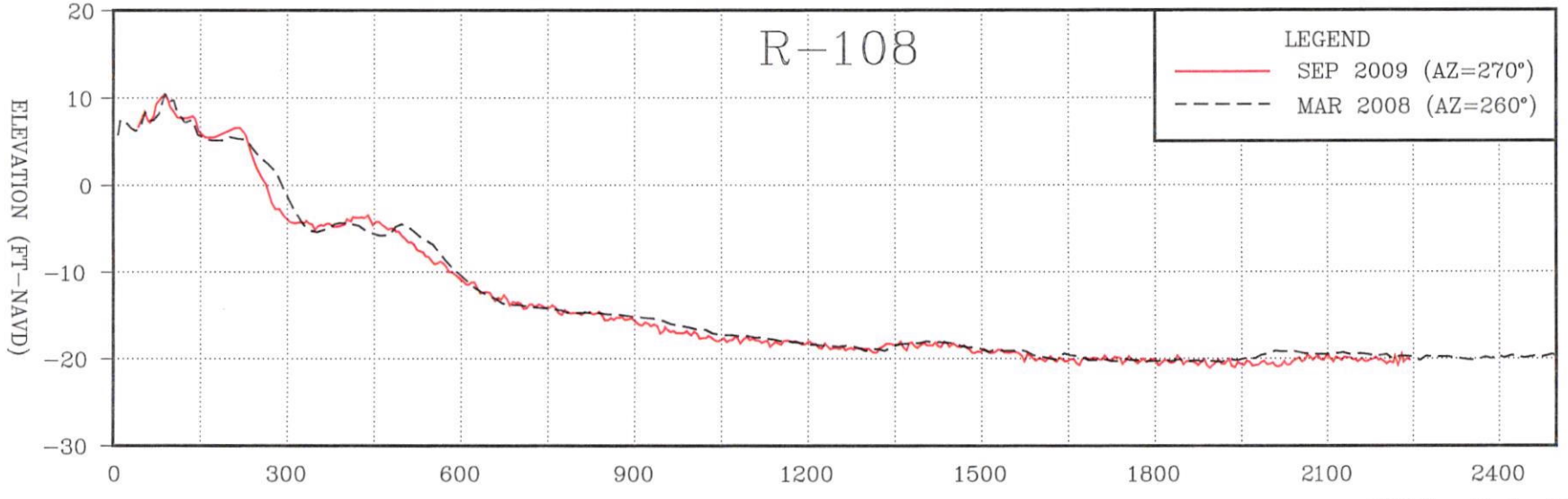

SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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2. PROFILE DATA IS FROM SURVEYS BY CEC.
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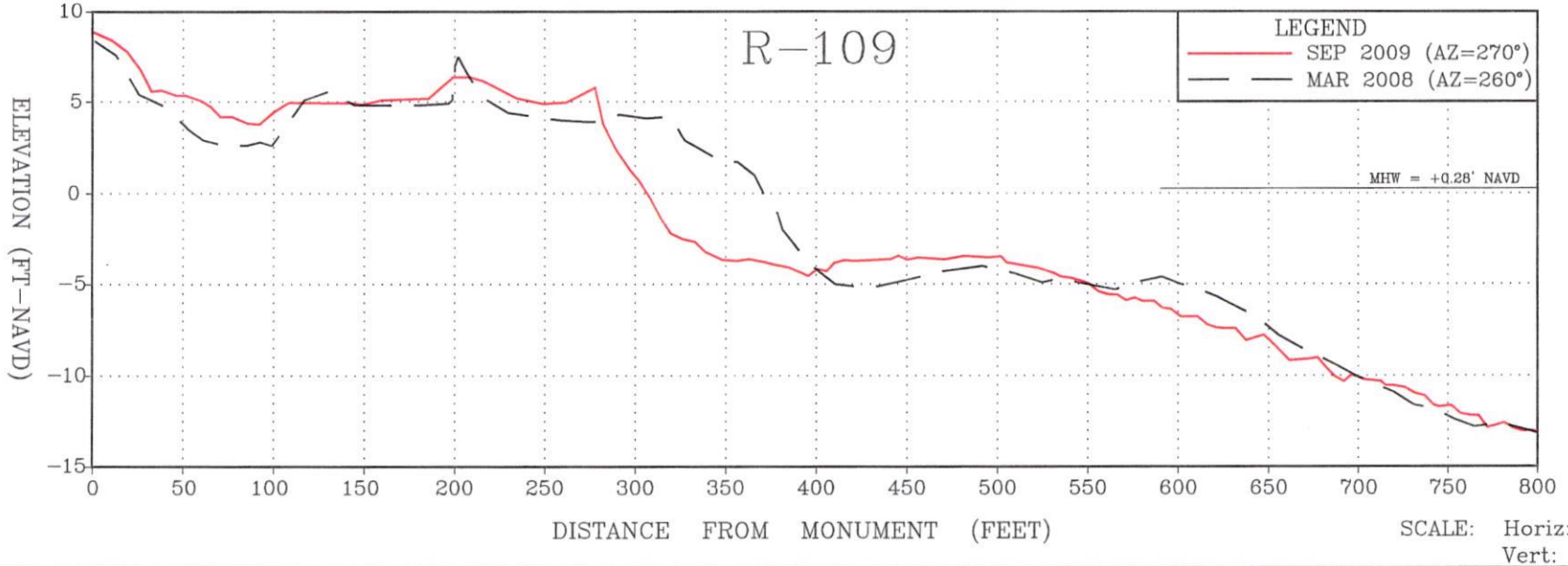
SHEET OF
FILE NO.: 08043

CLIENT: LEE COUNTY

TITLE: R-108 MONITORING SURVEY

DATE: MAR 1, 2010	SCALE: AS SHOWN		
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO. 08043 RMON XSEC.DWG			
REF. NO. 08043			

NO.	DATE	BY	REVISION DESCRIPTION



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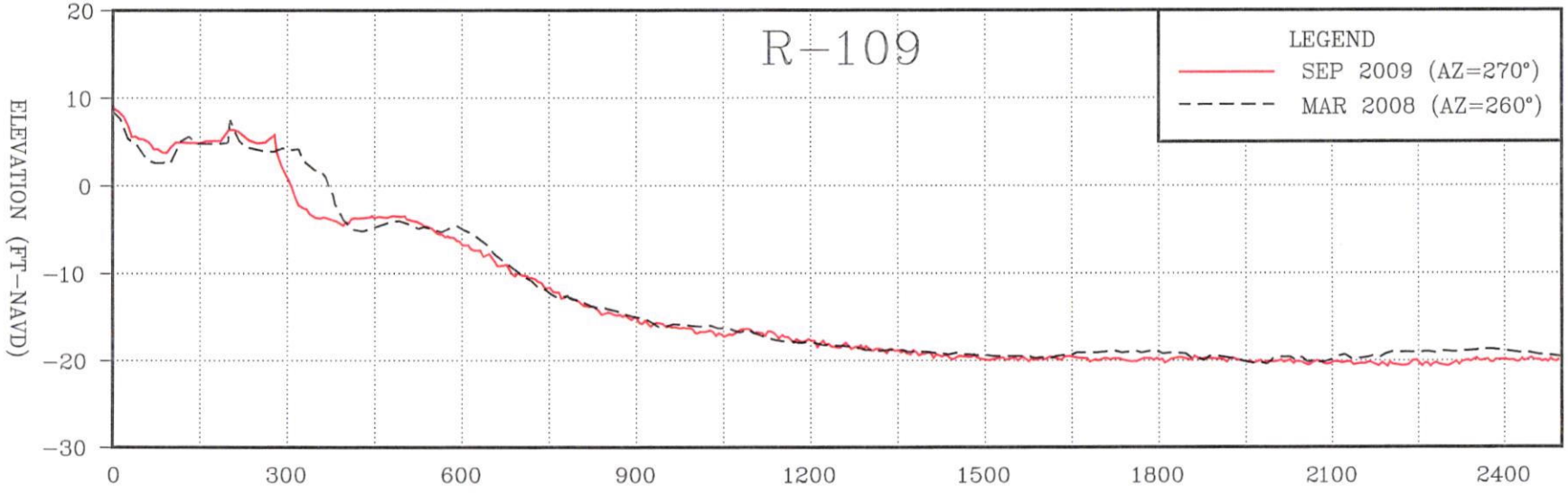

SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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2. PROFILE DATA IS FROM SURVEYS BY CEC.
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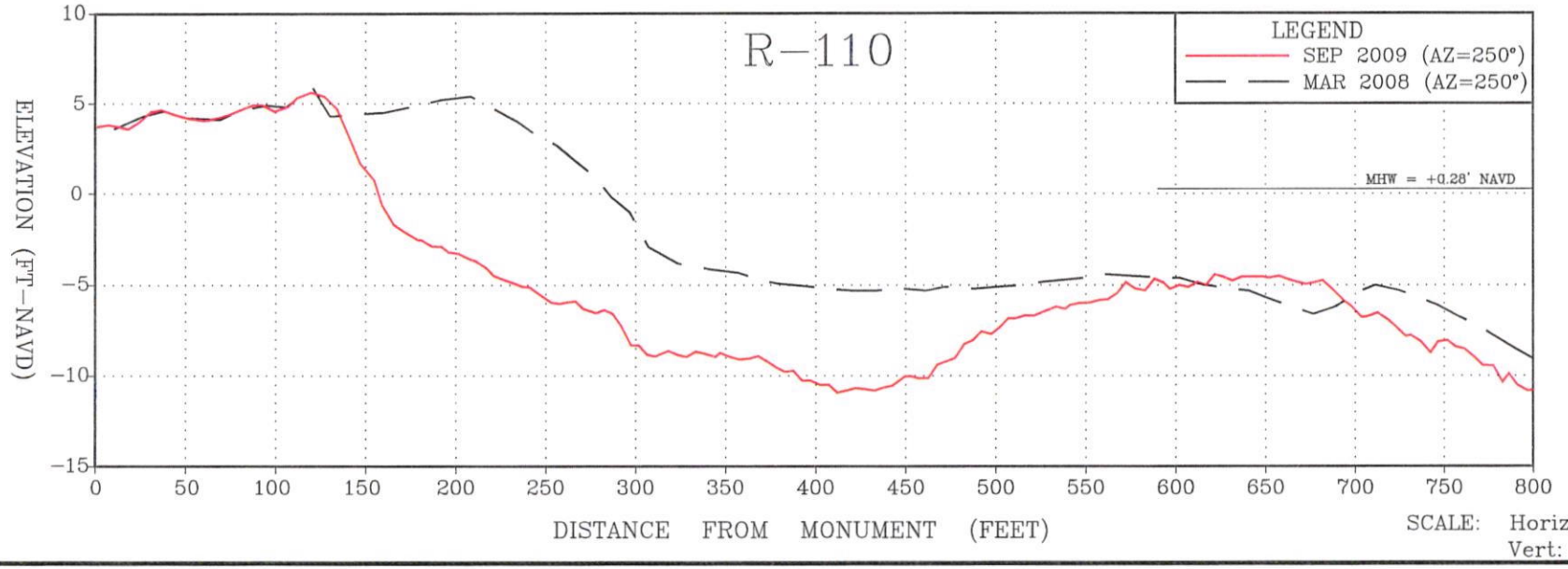
SHEET OF
FILE NO.: 08043

CLIENT: LEE COUNTY

TITLE: R-109 MONITORING SURVEY

DATE: MAR 1, 2010	SCALE: AS SHOWN		
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO. 08043 RMON XSEC.DWG			
REF. NO. 08043			

NO.	DATE	BY	REVISION DESCRIPTION



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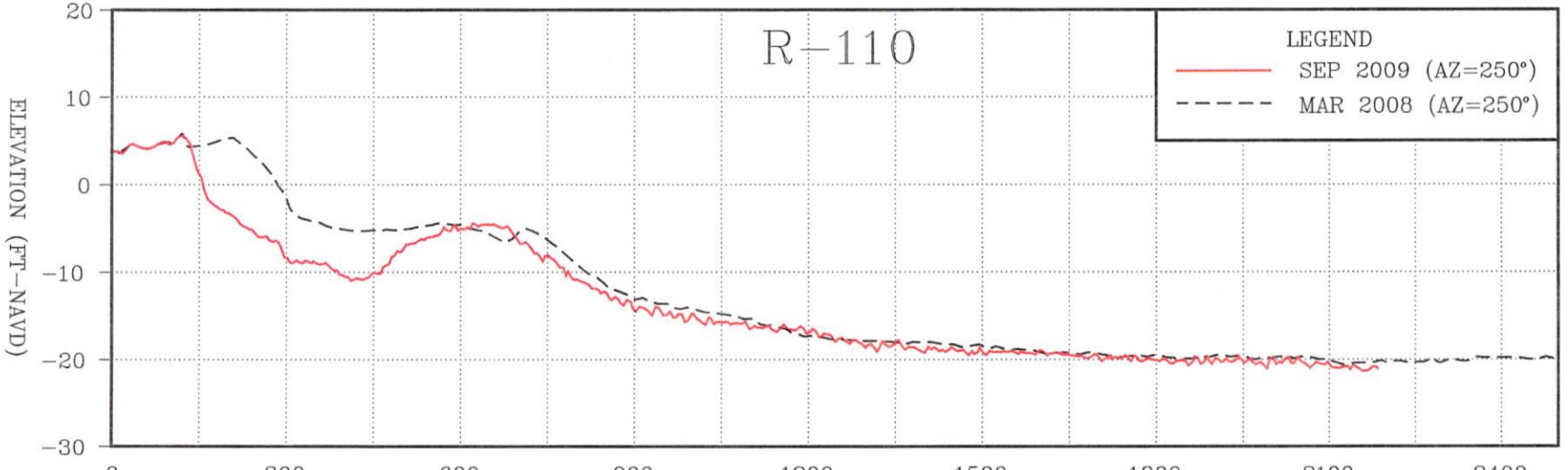

SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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SHEET OF
FILE NO.: 08043

CLIENT: LEE COUNTY

TITLE: R-110 MONITORING SURVEY

DATE: MAR 1, 2010	SCALE: AS SHOWN		
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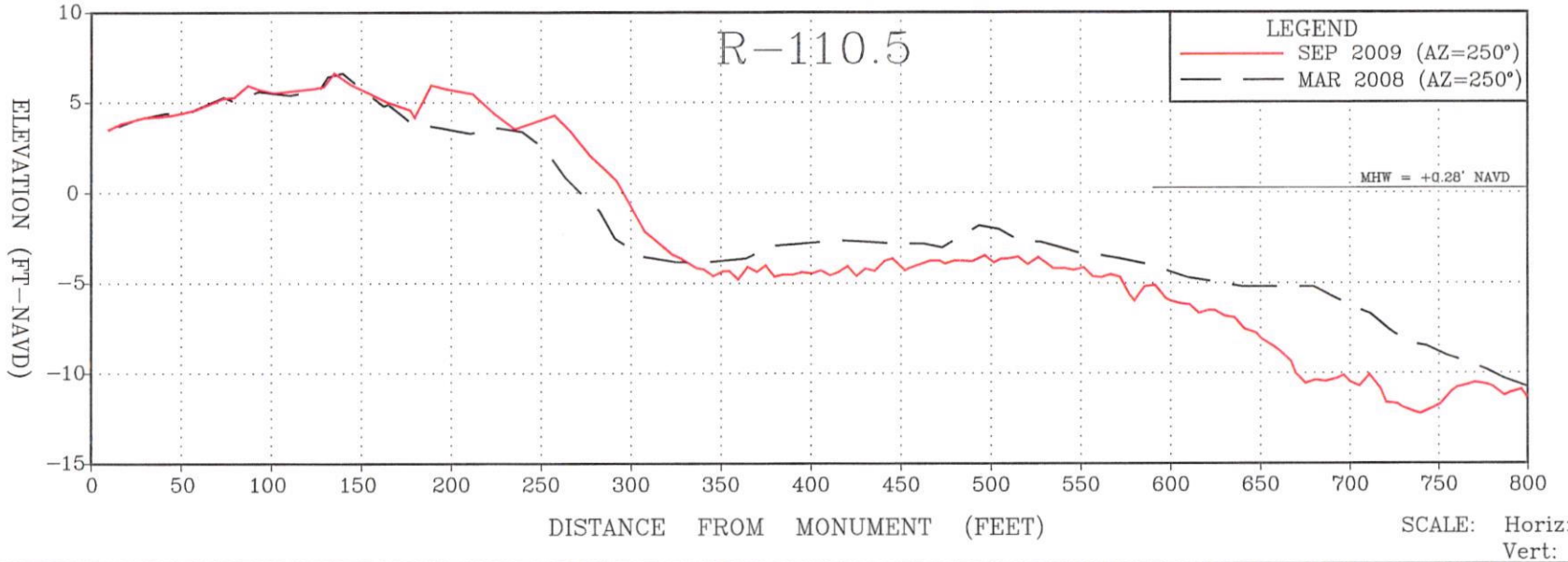
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO. 08043 RMON XSEC.DWG			
REF. NO. 08043			

NO.	DATE	BY	REVISION DESCRIPTION



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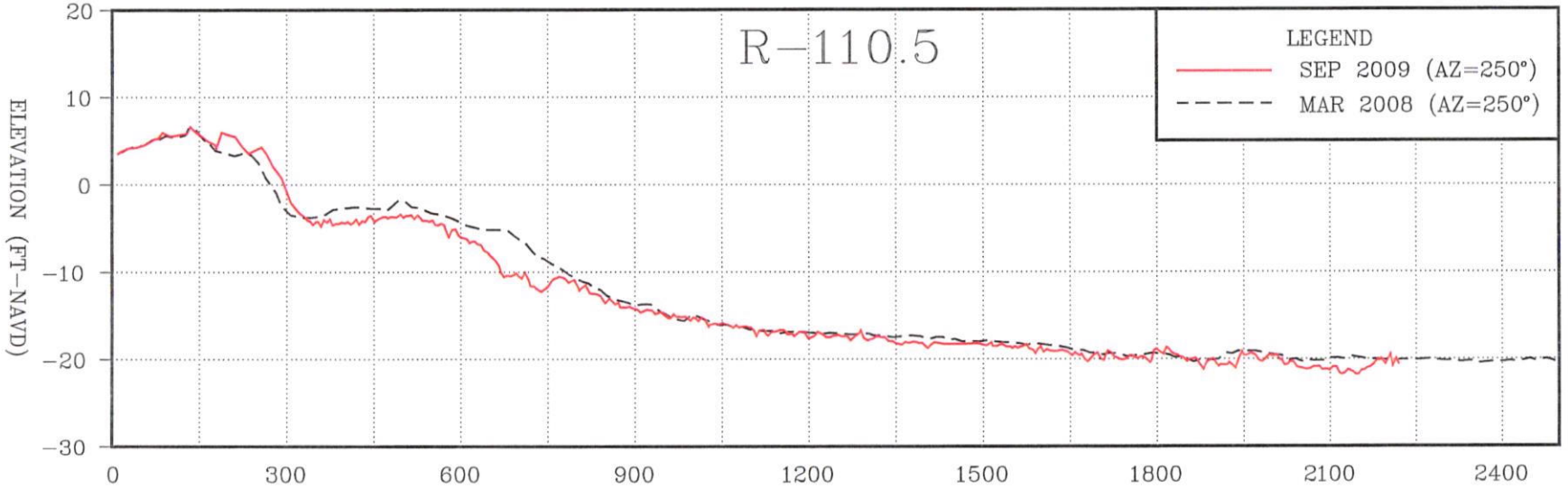
Vert: 1" = 10'



SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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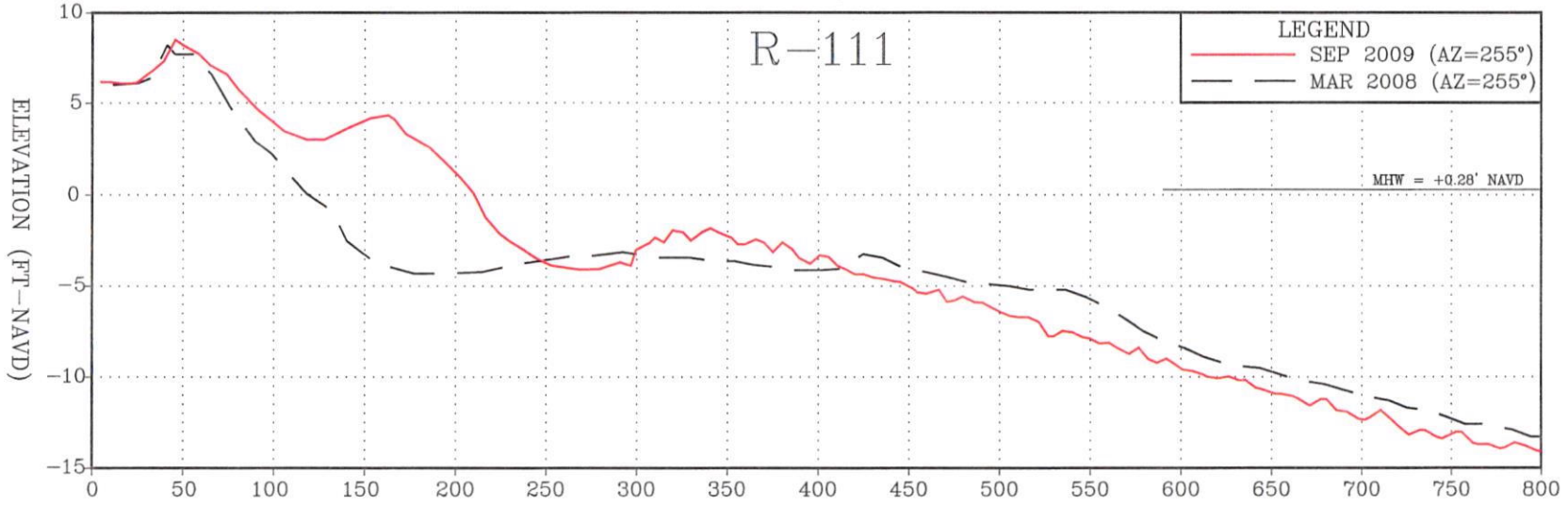
SHEET OF
FILE NO.: 08043

CLIENT: LEE COUNTY

TITLE: R-110.5 MONITORING SURVEY

DATE: MAR 1, 2010		SCALE: AS SHOWN	
DRAWN: SPC		F.B.	
CHECKED: MTP		PG.	
SEC.	TWP.	RNG.	
ACAD NO.	08043 RMON XSEC.DWG		
REF. NO.	08043		

NO.	DATE	BY	REVISION DESCRIPTION



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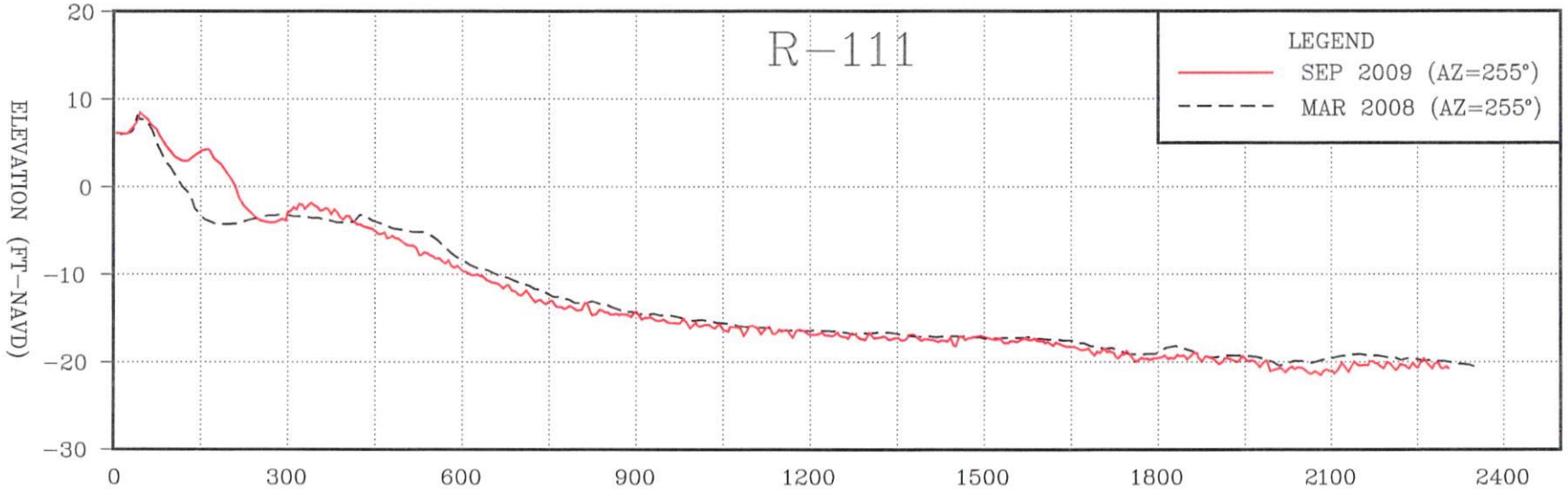

SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

1. ELEVATIONS ARE REFERENCED TO NAVD 1988.
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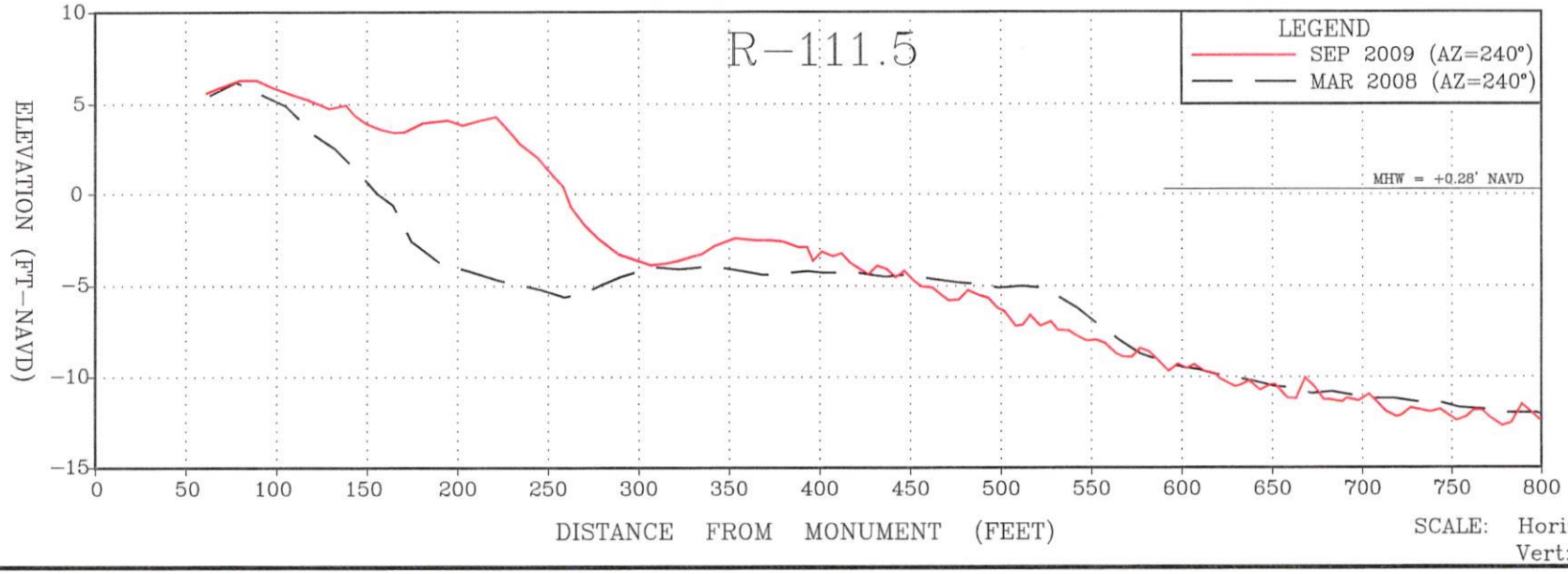
SHEET OF
FILE NO.: 08043

CLIENT: LEE COUNTY

TITLE: R-111 MONITORING SURVEY

DATE: MAR 1, 2010	SCALE: AS SHOWN		
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO. 08043 RMON XSEC.DWG			
REF. NO. 08043			

NO.	DATE	BY	REVISION DESCRIPTION



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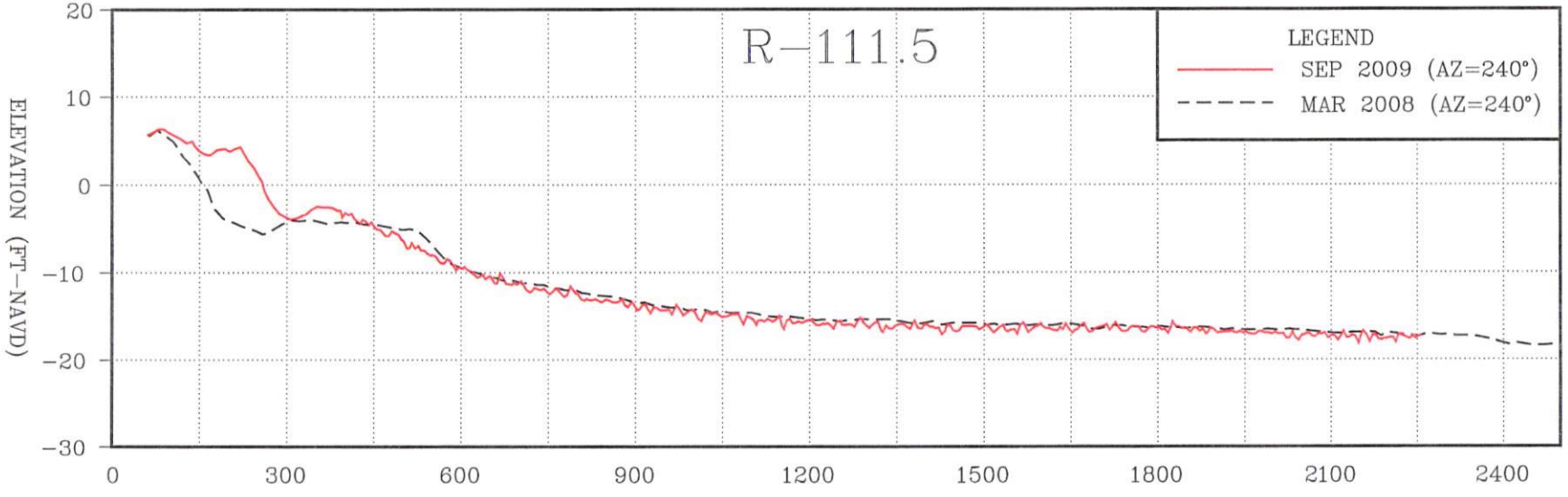
Vert: 1" = 10'



SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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2. PROFILE DATA IS FROM SURVEYS BY CEC. CEC JOB NO. 08.043

SHEET OF
FILE NO.: 08043

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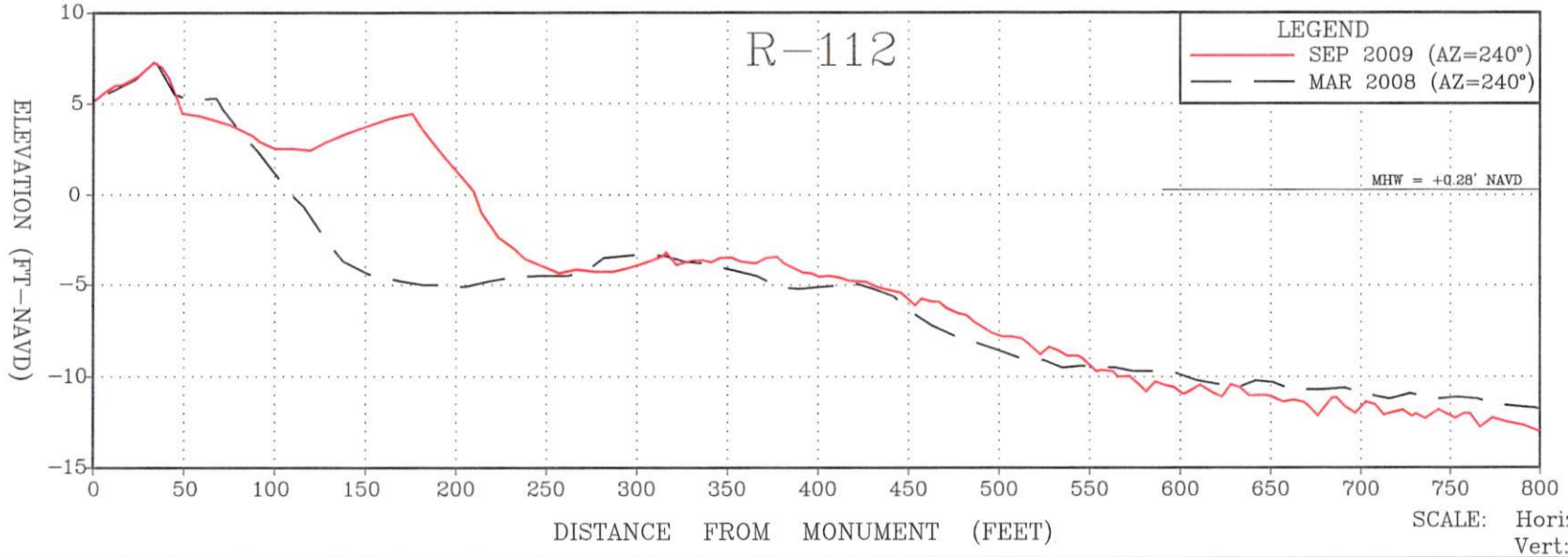
CLIENT: LEE COUNTY

TITLE: R-111.5 MONITORING SURVEY

DATE: MAR 1, 2010	SCALE: AS SHOWN		
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO. 08043 RMON XSEC.DWG			
REF. NO. 08043			

NO.	DATE	BY	REVISION DESCRIPTION



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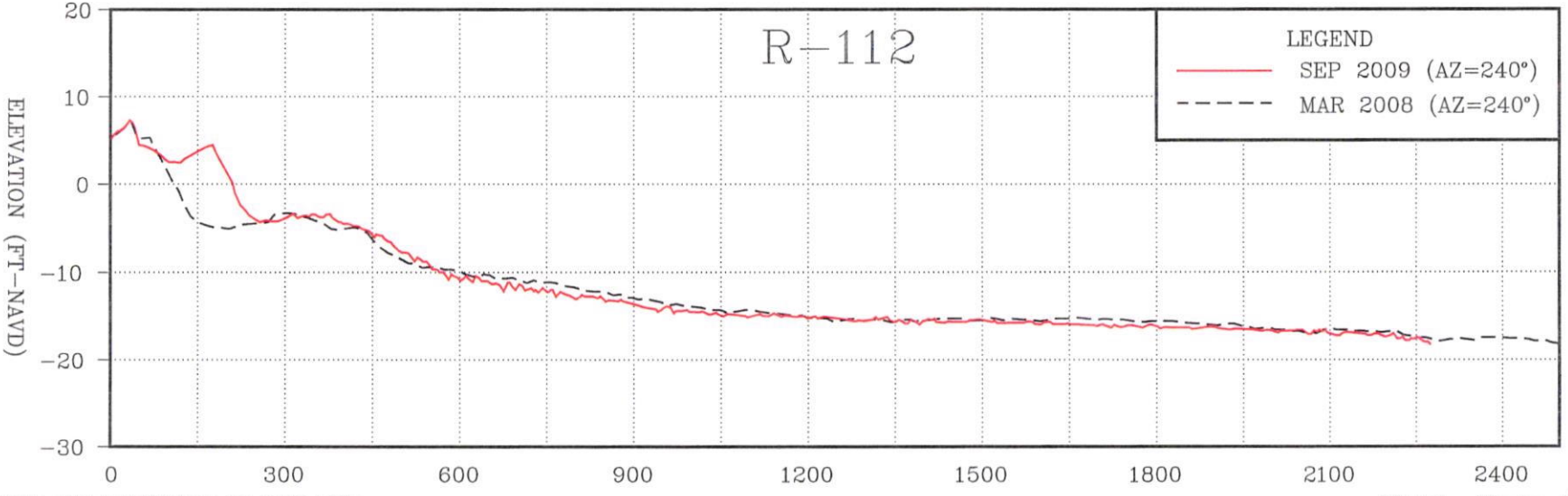

SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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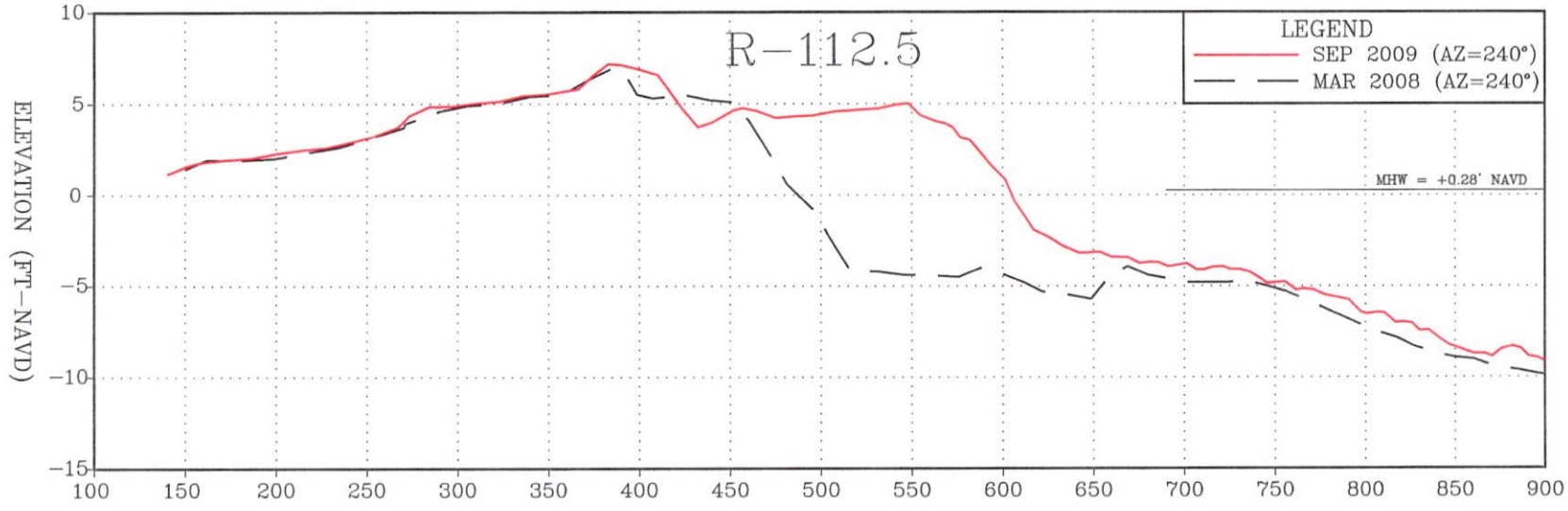
CLIENT: LEE COUNTY

TITLE: R-112 MONITORING SURVEY

DATE: MAR 1, 2010		SCALE: AS SHOWN	
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO. 08043 RMON XSEC.DWG			
REF. NO. 08043			

NO.	DATE	BY	REVISION DESCRIPTION



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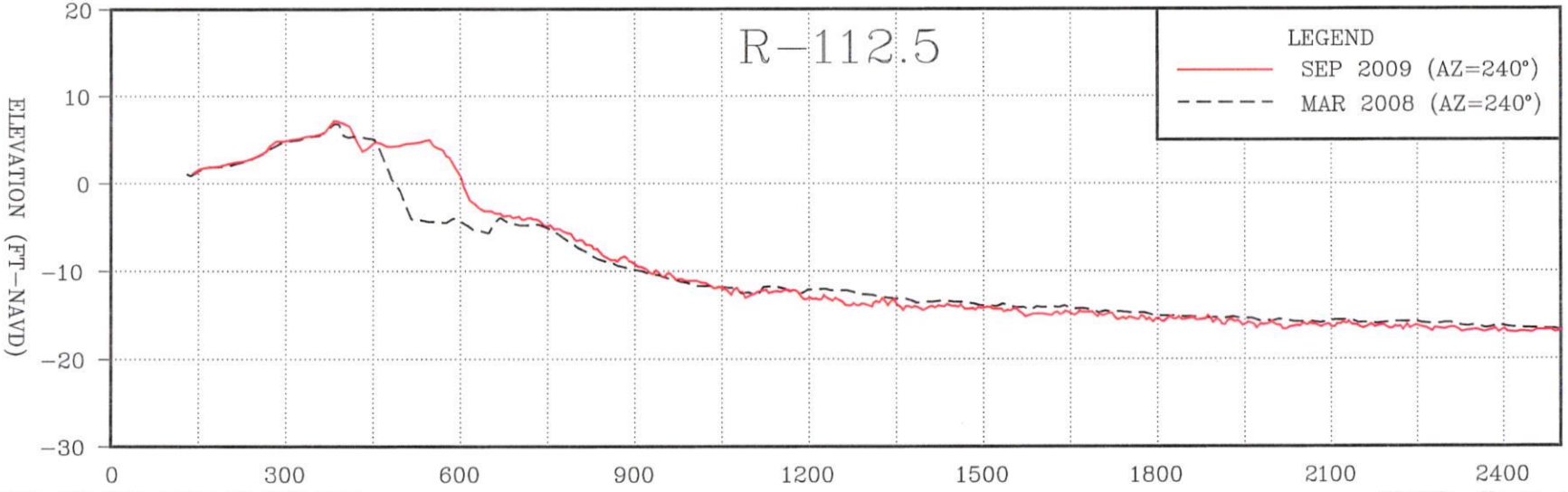

SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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2. PROFILE DATA IS FROM SURVEYS BY CEC.
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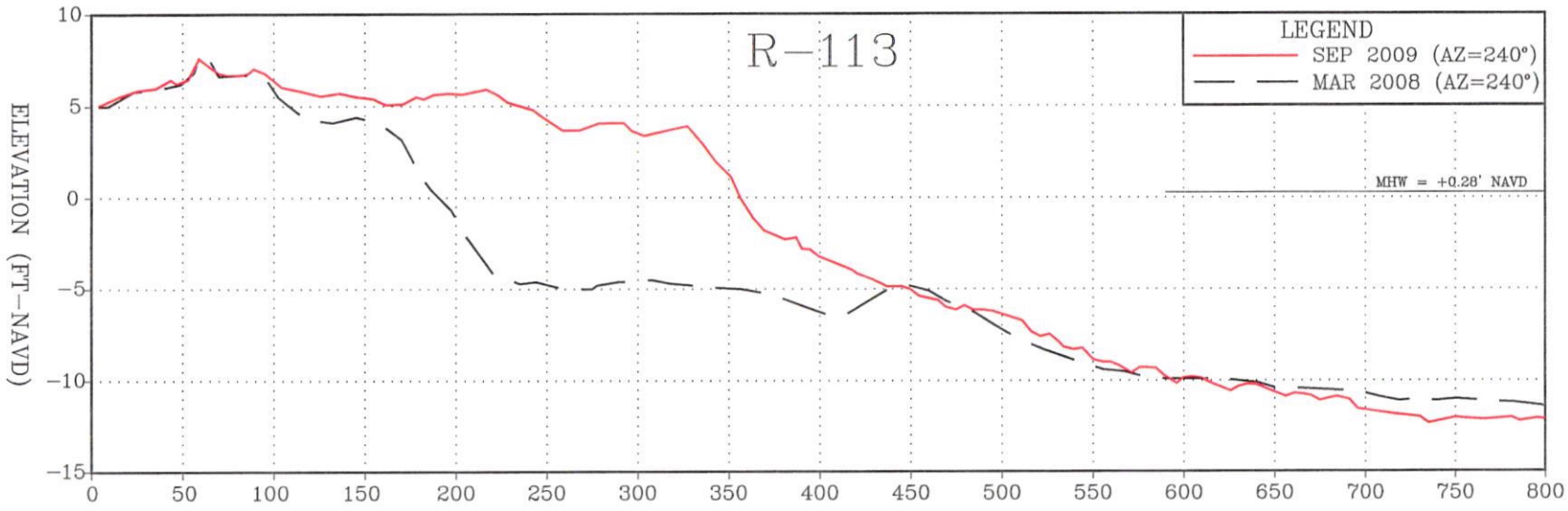
FILE NO.: 08043 SHEET OF

CLIENT: LEE COUNTY

TITLE: R-112.5 MONITORING SURVEY

DATE: MAR 1, 2010	SCALE: AS SHOWN		
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO. 08043 RMON XSEC.DWG			
REF. NO. 08043			

NO.	DATE	BY	REVISION DESCRIPTION



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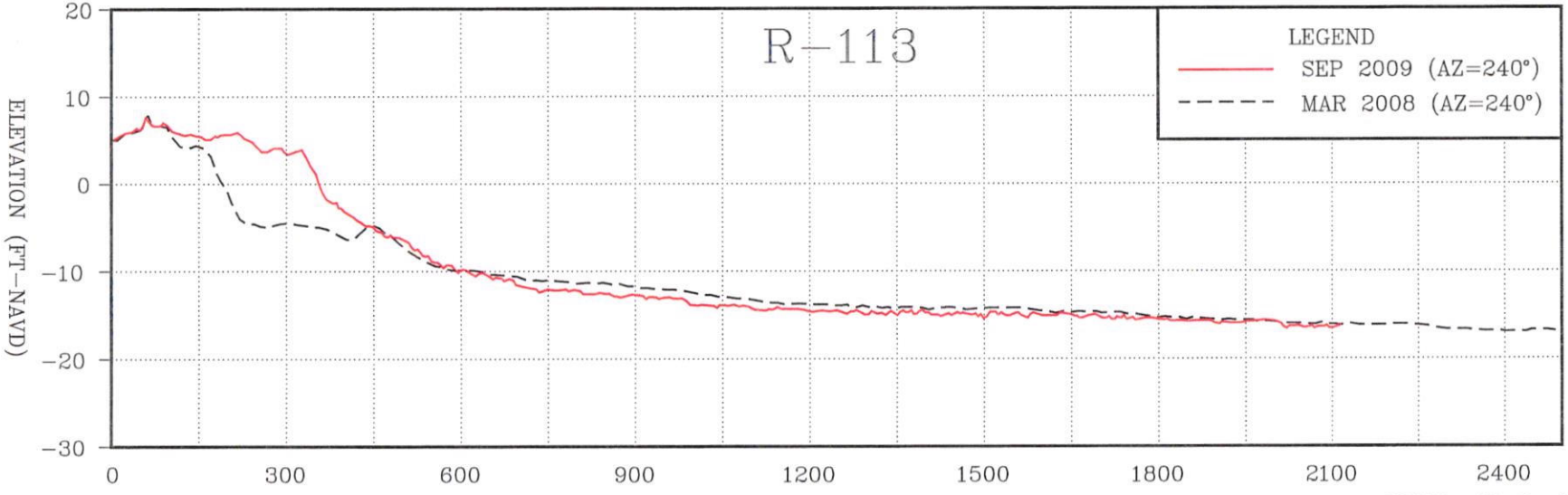

SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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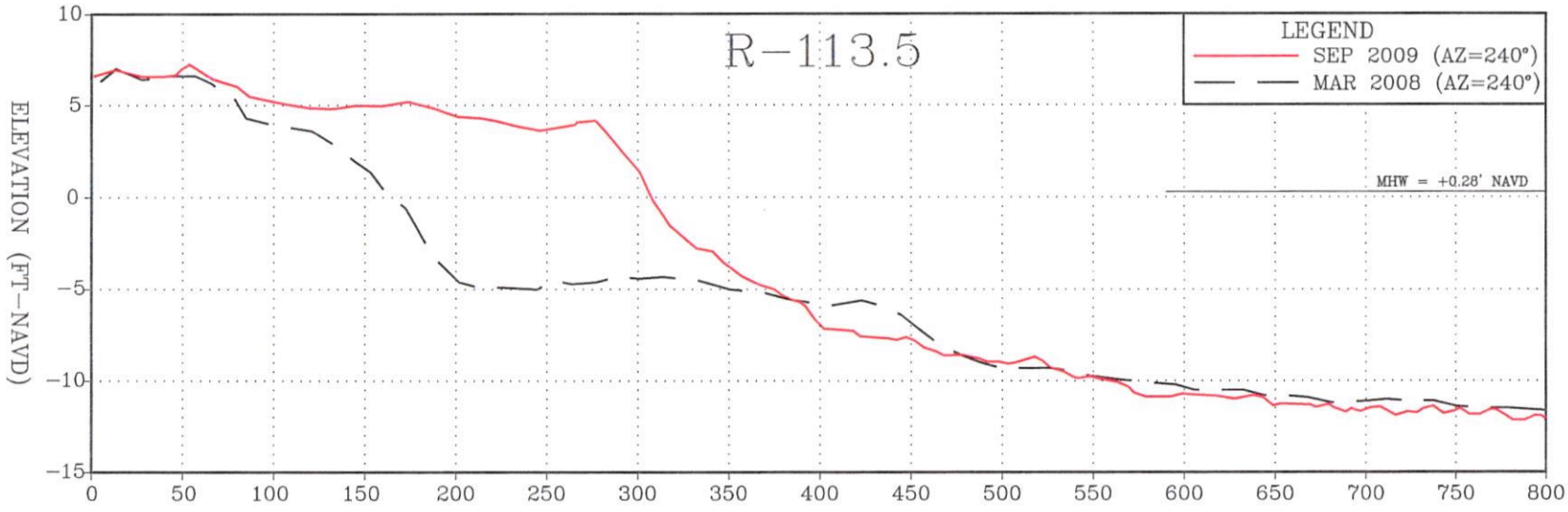
SHEET OF
FILE NO.: 08043

CLIENT: LEE COUNTY

TITLE: R-113 MONITORING SURVEY

DATE: MAR 1, 2010		SCALE: AS SHOWN	
DRAWN: SPC		F.B.	
CHECKED: MTP		PG.	
SEC.	TWP.	RNG.	
ACAD NO.	08043 RMON XSEC.DWG		
REF. NO.	08043		

NO.	DATE	BY	REVISION DESCRIPTION



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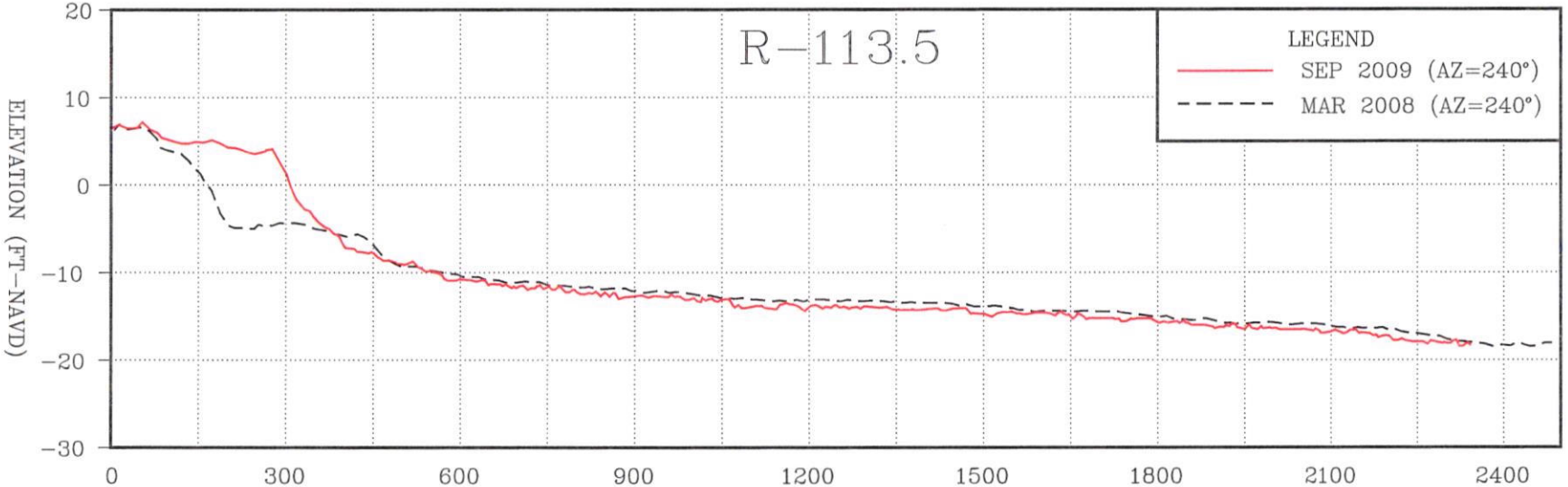

SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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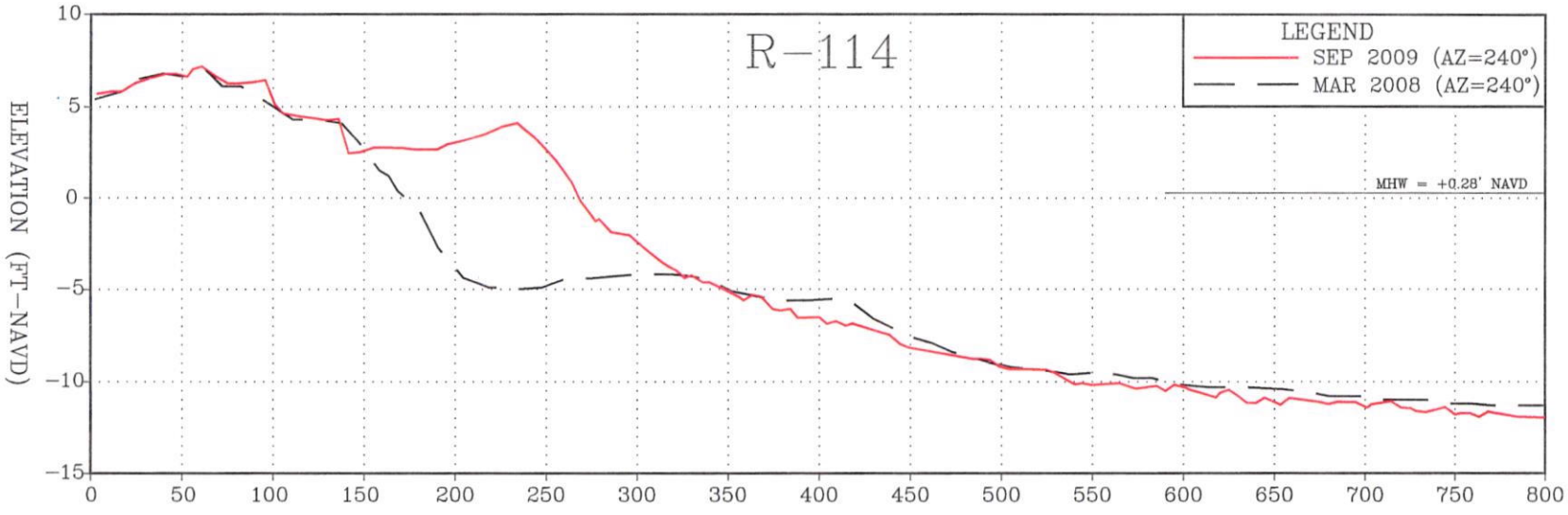
FILE NO.: 08043 SHEET OF

CLIENT: LEE COUNTY

TITLE: R-113.5 MONITORING SURVEY

DATE: MAR 1, 2010		SCALE: AS SHOWN	
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO. 08043 RMON XSEC.DWG			
REF. NO. 08043			

NO.	DATE	BY	REVISION DESCRIPTION



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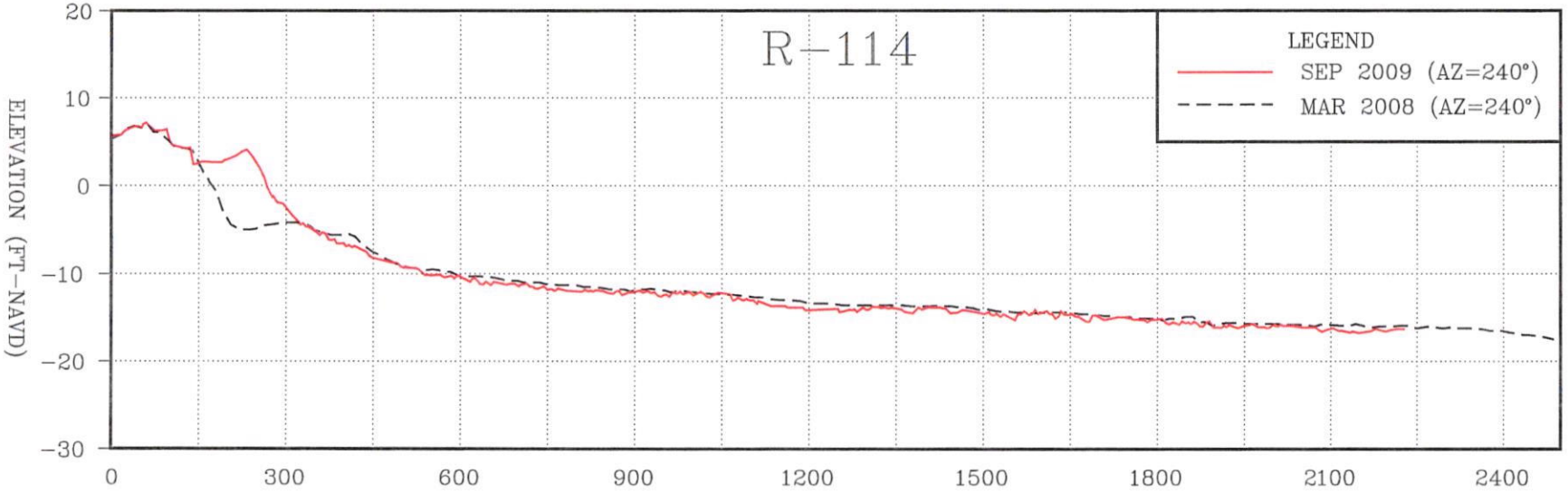
Vert: 1" = 10'



SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

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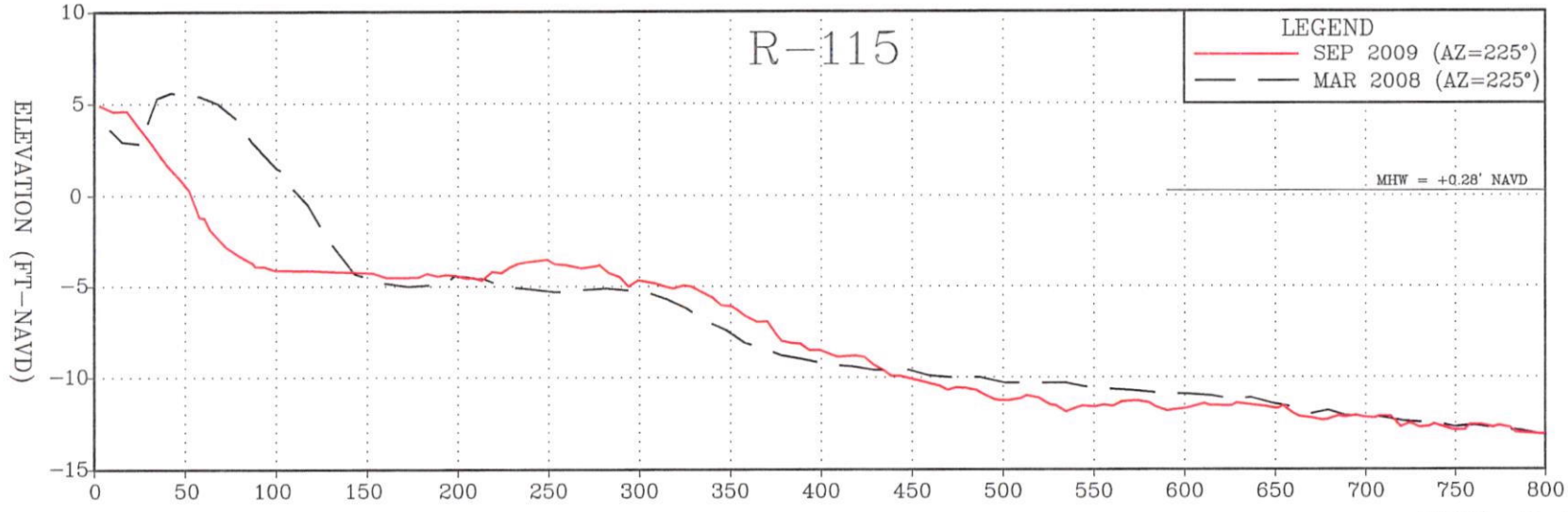
CLIENT: LEE COUNTY

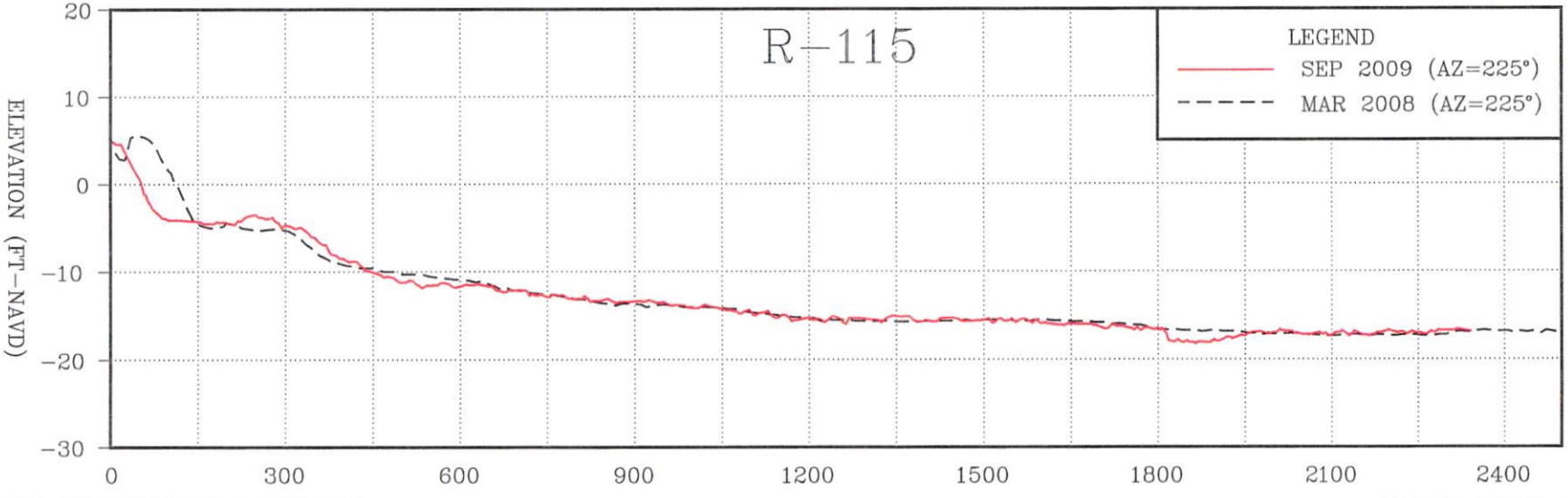
TITLE: R-114 MONITORING SURVEY

DATE: MAR 1, 2010	SCALE: AS SHOWN		
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO.	08043 RMON XSEC.DWG		
REF. NO.	08043		

NO.	DATE	BY	REVISION DESCRIPTION



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



SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

1. ELEVATIONS ARE REFERENCED TO NAVD 1988.
2. PROFILE DATA IS FROM SURVEYS BY CEC.
   CEC JOB NO. 08.043

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FAX: (239)643-1143
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E-Mail: engcollier@cecifl.com

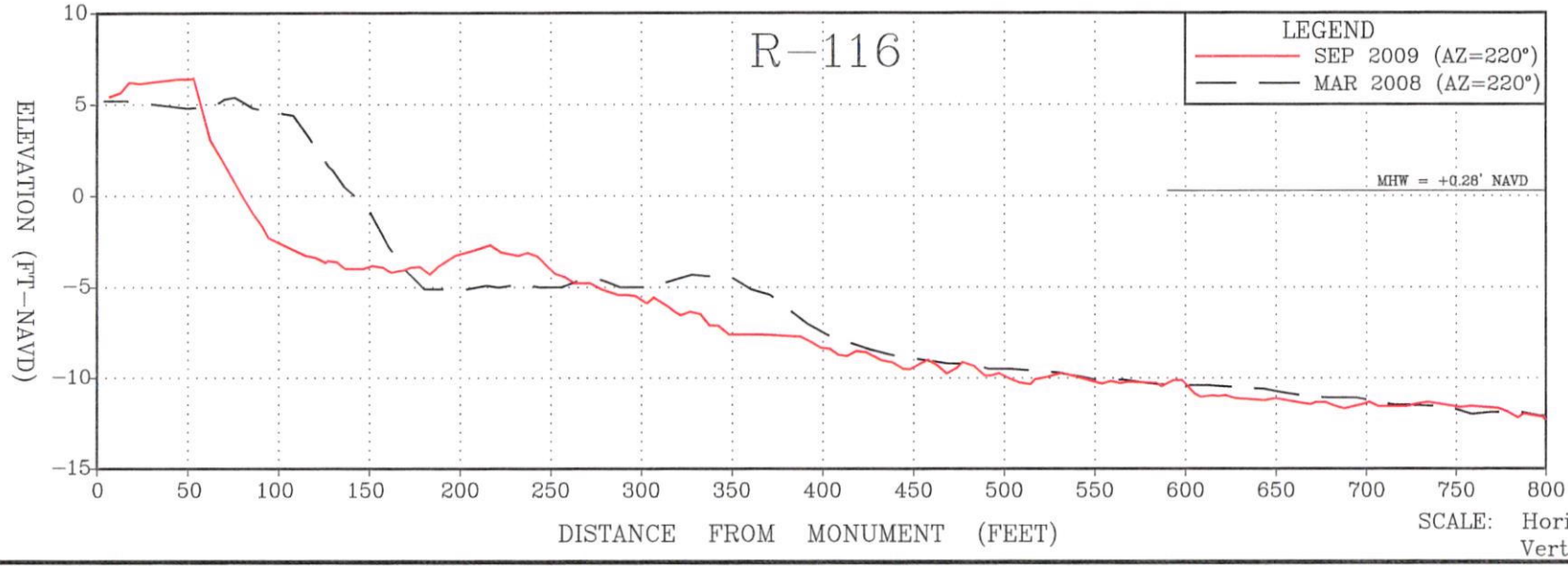
SHEET OF
FILE NO.: 08043

CLIENT: LEE COUNTY

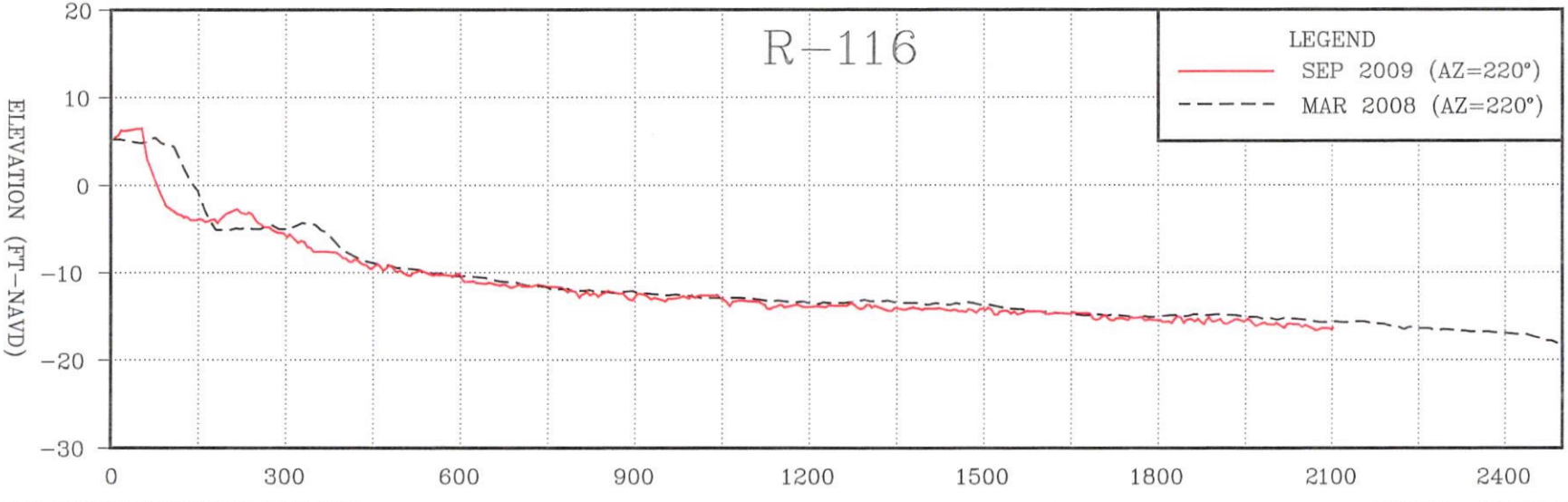
TITLE: R-115 MONITORING SURVEY

DATE: MAR 1, 2010		SCALE: AS SHOWN	
DRAWN: SPC		F.B.	
CHECKED: MTP		PG.	
SEC.	TWP.	RNG.	
ACAD NO.	08043 RMON XSEC.DWG		
REF. NO.	08043		

NO.	DATE	BY	REVISION DESCRIPTION



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



SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

1. ELEVATIONS ARE REFERENCED TO NAVD 1988.
2. PROFILE DATA IS FROM SURVEYS BY CEC.
   CEC JOB NO. 08.043

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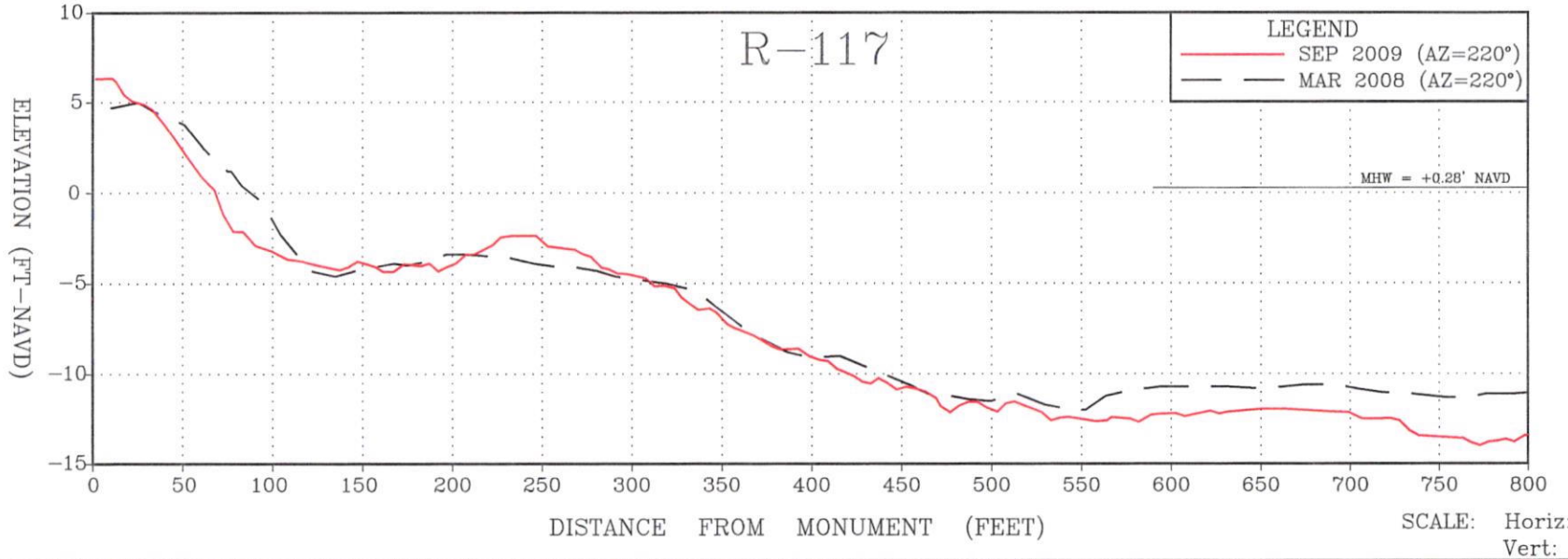
FILE NO.: 08043 SHEET OF

CLIENT: LEE COUNTY

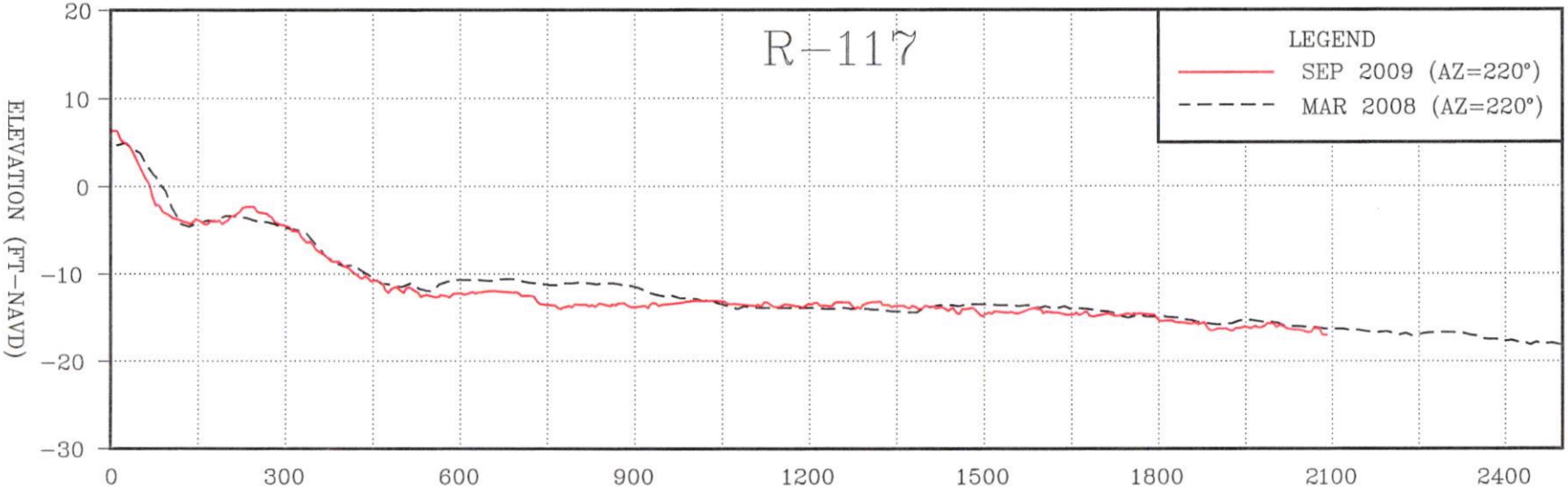
TITLE: R-116 MONITORING SURVEY

DATE: MAR 1, 2010	SCALE: AS SHOWN		
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO.	08043 RMON XSEC.DWG		
REF. NO.	08043		

NO.	DATE	BY	REVISION DESCRIPTION



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



SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

NOTES:

1. ELEVATIONS ARE REFERENCED TO NAVD 1988.
2. PROFILE DATA IS FROM SURVEYS BY CEC.
   CEC JOB NO. 08.043

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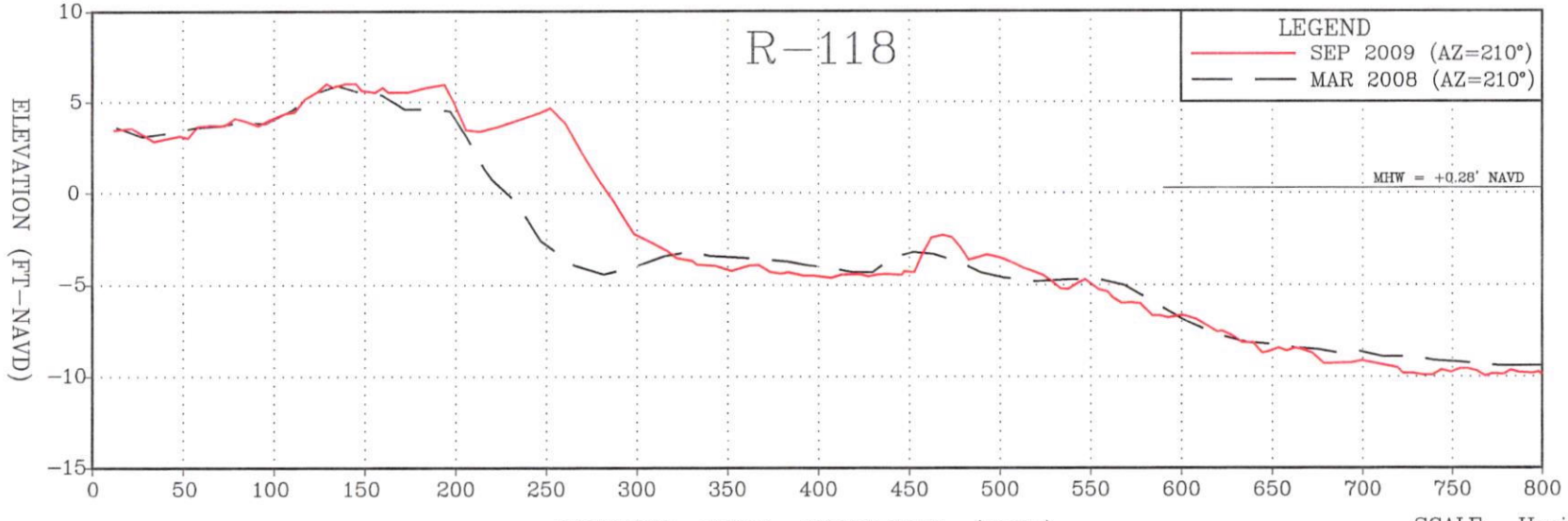
FILE NO.: 08043 SHEET OF

CLIENT: LEE COUNTY

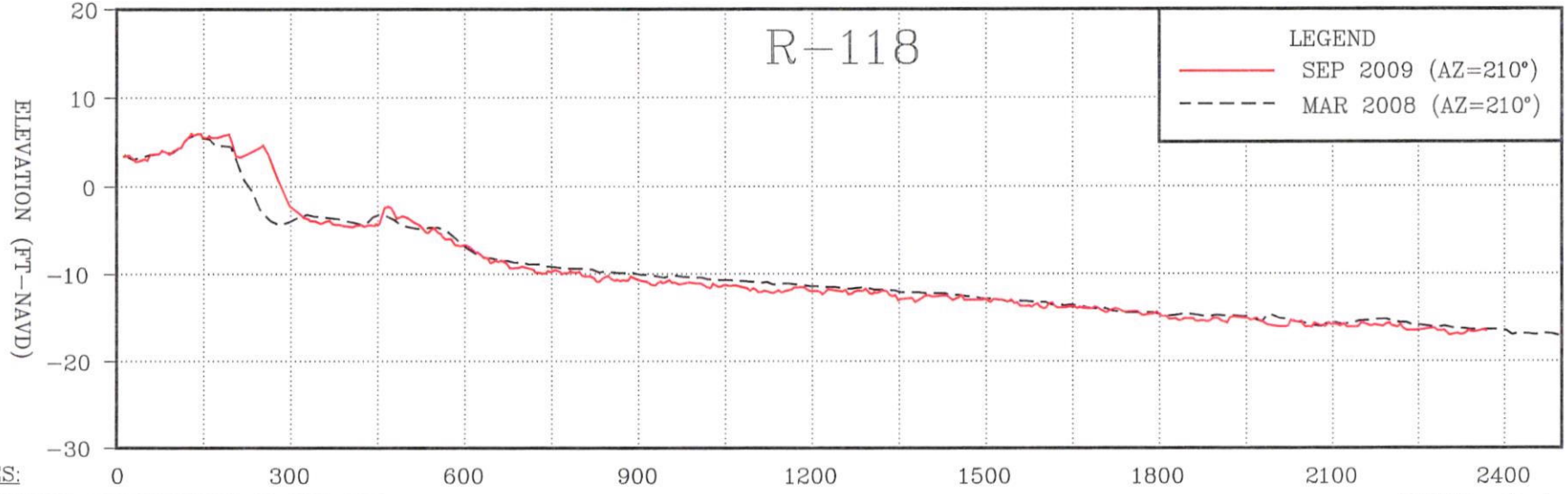
TITLE: R-117 MONITORING SURVEY

DATE: MAR 1, 2010	SCALE: AS SHOWN		
DRAWN: SPC	F.B.		
CHECKED: MTP	PG.		
SEC.	TWP.	RNG.	
ACAD NO.	08043 RMON XSEC.DWG		
REF. NO.	08043		

NO.	DATE	BY	REVISION DESCRIPTION



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



NOTES:

1. ELEVATIONS ARE REFERENCED TO NAVD 1988.
2. PROFILE DATA IS FROM SURVEYS BY CEC.
   CEC JOB NO. 08.043

SCALE: Horiz: 1" = 300'
Vert: 1" = 20'

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FILE NO.: 08043 SHEET OF

CLIENT: LEE COUNTY

TITLE: R-118 MONITORING SURVEY

DATE: MAR 1, 2010		SCALE: AS SHOWN	
DRAWN: SPC		F.B.	
CHECKED: MTP		PG.	
SEC.	TWP.	RNG.	
ACAD NO.	08043 RMON XSEC.DWG		
REF. NO.	08043		

NO.	DATE	BY	REVISION DESCRIPTION

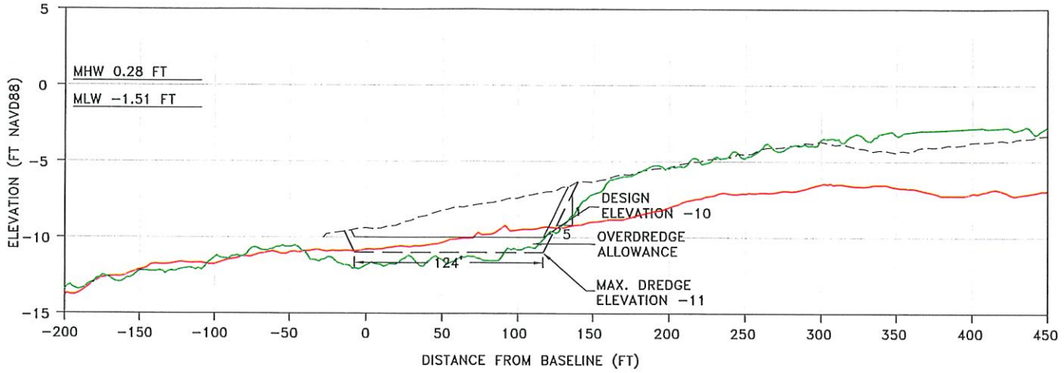
APPENDIX 4

BLIND PASS CROSS SECTIONS AND EBB SHOAL

SCALE:
H: 1" = 100'
V: 1" = 10'

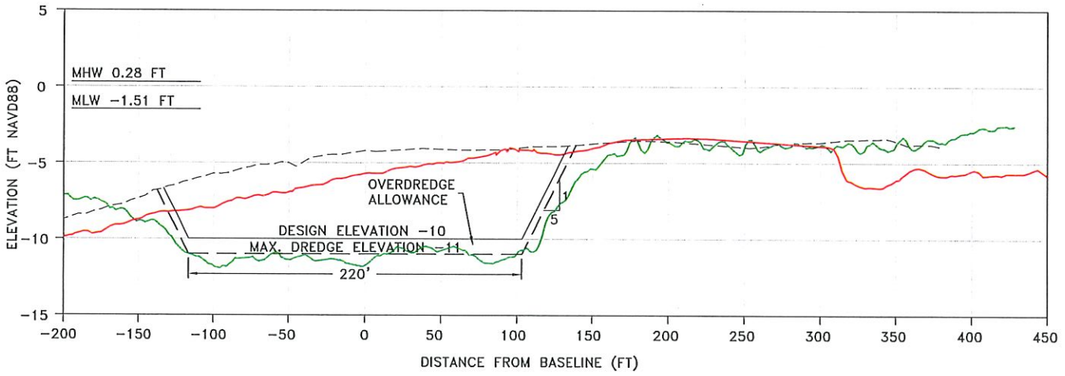
SUBAREA 1

STATION 0+00



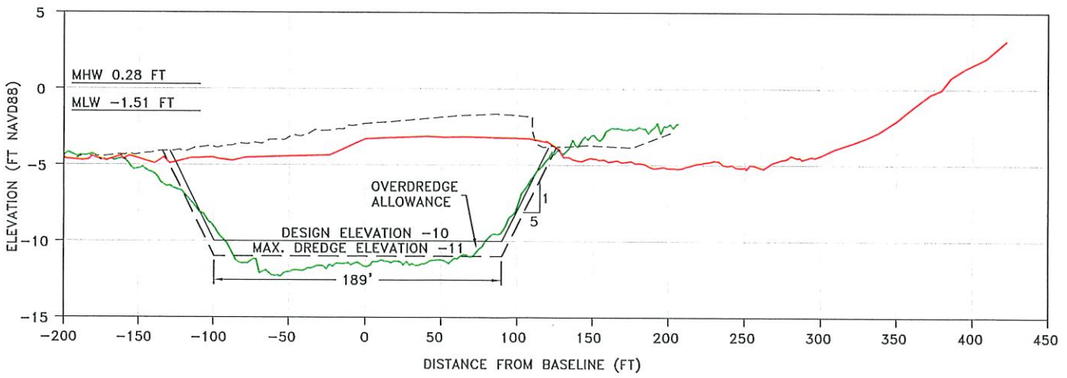
SUBAREA 1

STATION 2+00



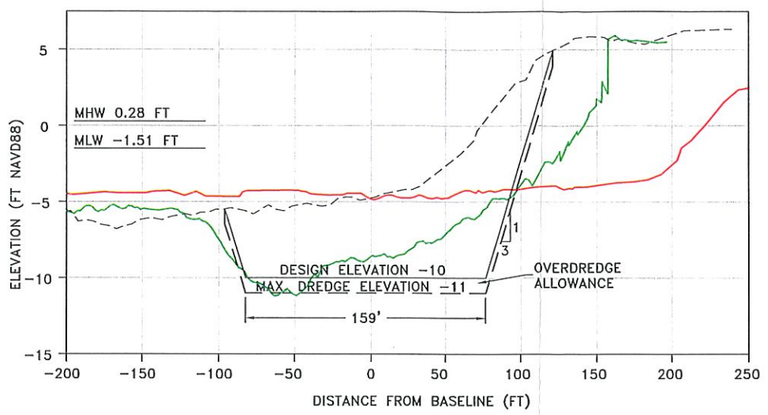
SUBAREA 1

STATION 4+00



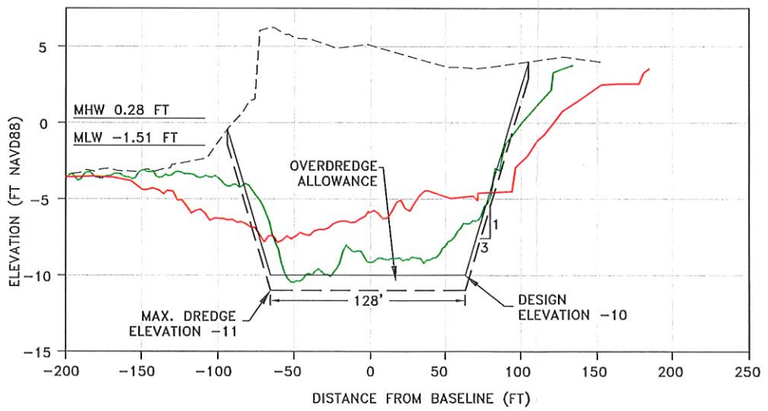
SUBAREA 1

STATION 6+00



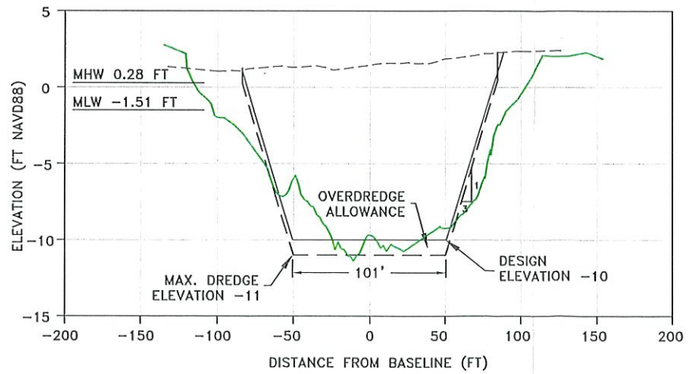
SUBAREA 1

STATION 8+00



SUBAREA 1

STATION 10+00



LEGEND
- SURVEY CONDUCTED JANUARY 28, 2010
- SURVEY CONDUCTED AUGUST 25, 2009
- SURVEY CONDUCTED NOVEMBER 11, 2008

NO.	DATE	BY	REVISION DESCRIPTION
1	1/29/10	VVA	MHW and MLW

DATE: 3/1/10 | SCALE: AS NOTED
DRAWN: SPC | F.B.
CHECKED: MTP | PG.
SEC. | TWP. | RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

CLIENT: LEE COUNTY BOARD OF COMMISSIONERS

TITLE: BLIND PASS RESTORATION
CROSS SECTIONS
STA 0+00 TO 10+00

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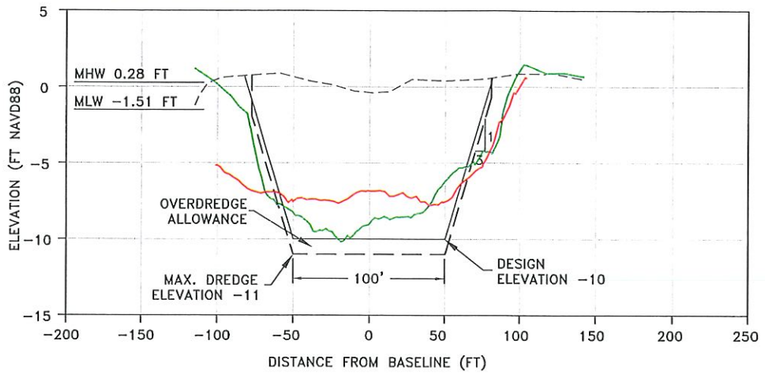
www.coastalengineering.com
E-Mail: engcollier@cecifl.com

SHEET 1 OF
FILE NO.: 08043

SCALE:
H: 1" = 100'
V: 1" = 10'

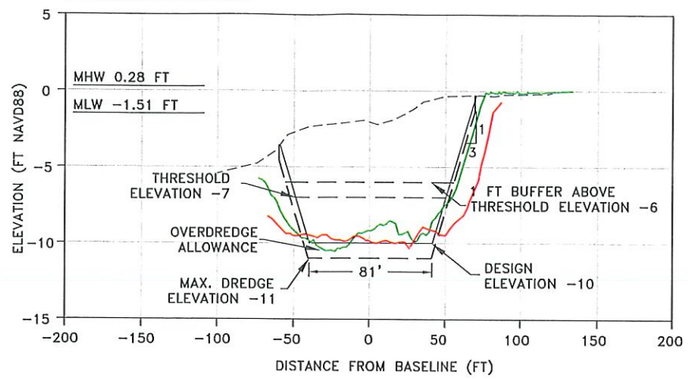
SUBAREA 1

STATION 12+00



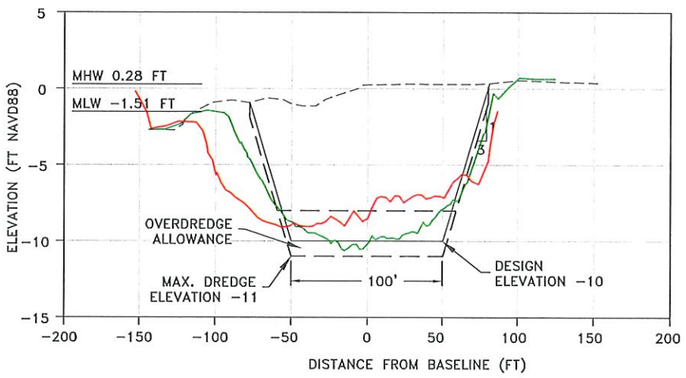
SUBAREA 3

STATION 18+00



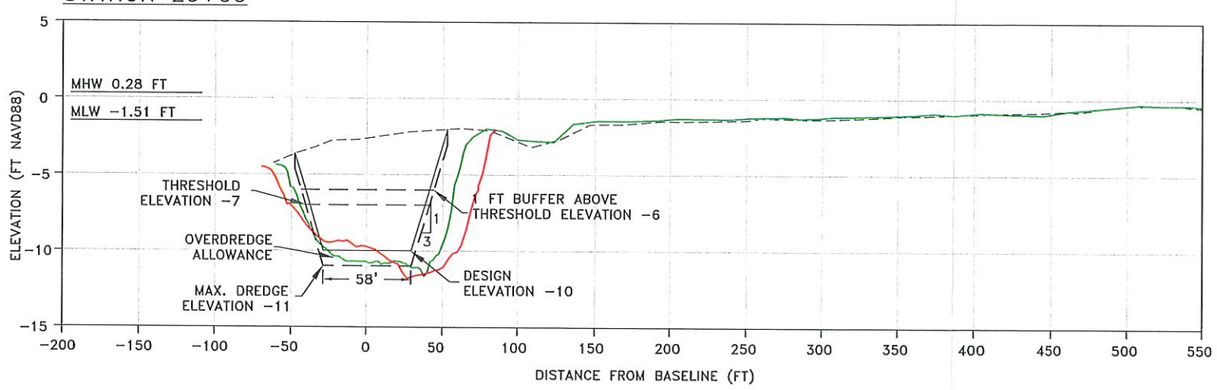
SUBAREA 1

STATION 14+00



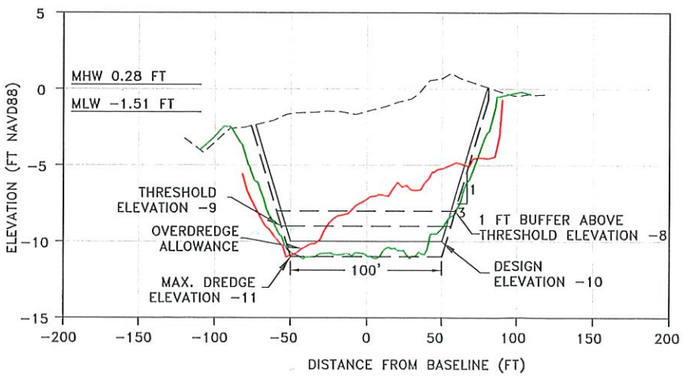
SUBAREA 3

STATION 20+00



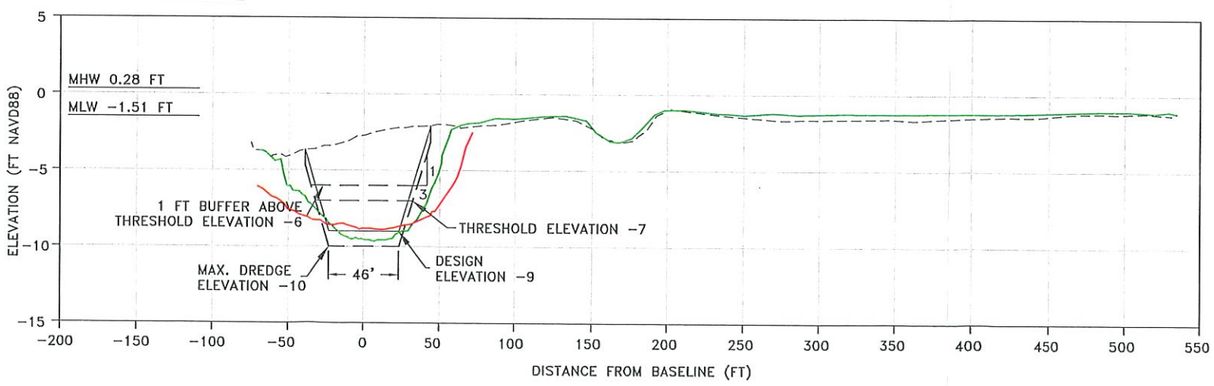
SUBAREA 2

STATION 16+00



SUBAREA 4

STATION 22+00



LEGEND
- SURVEY CONDUCTED JANUARY 28, 2010
- SURVEY CONDUCTED AUGUST 25, 2009
- SURVEY CONDUCTED NOVEMBER 11, 2008

NO.	DATE	BY	REVISION DESCRIPTION
08.043			

DATE: 3/1/10 SCALE: AS NOTED
DRAWN: SPC F.B.
CHECKED: MTP PG.
SEC. TWP. RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO.

CLIENT: LEE COUNTY BOARD OF COMMISSIONERS

TITLE: BLIND PASS RESTORATION
CROSS SECTIONS
STA 12+00 TO 22+00

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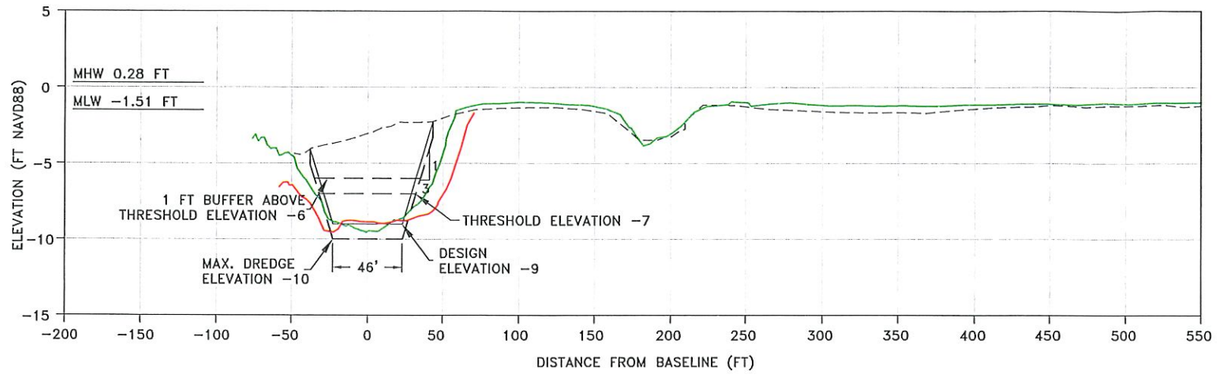
SHEET 2 OF
FILE NO.: 08043

SCALE:
H: 1" = 100'
V: 1" = 10'

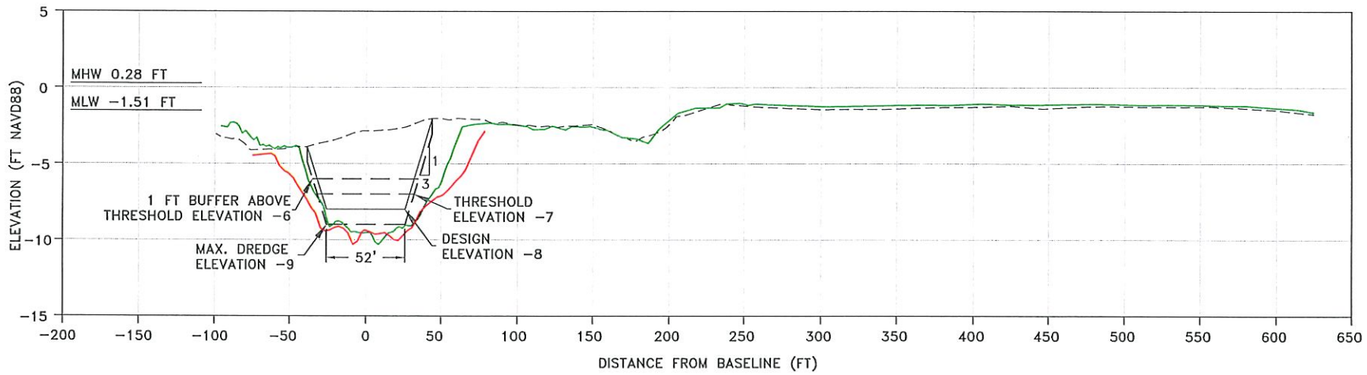
SUBAREA 4

STATION 24+00



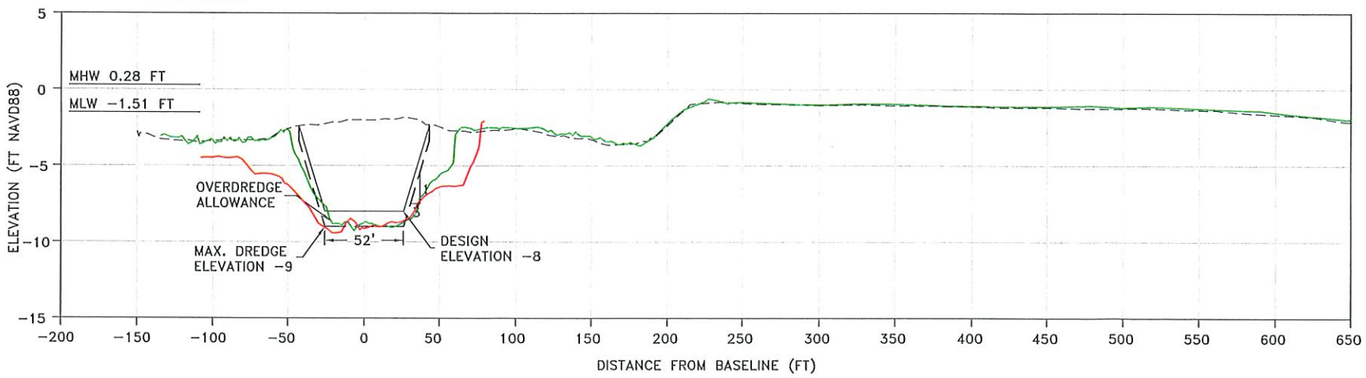
SUBAREA 5

STATION 26+00



SUBAREA 6

STATION 28+00



LEGEND
- SURVEY CONDUCTED JANUARY 28, 2010
- SURVEY CONDUCTED AUGUST 25, 2009
- SURVEY CONDUCTED NOVEMBER 11, 2008

NO.	DATE	BY	REVISION DESCRIPTION

DATE: 3/1/10 SCALE: AS NOTED
DRAWN: SPC F.B.
CHECKED: MTP PG.
SEC. TWP. RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

CLIENT: LEE COUNTY BOARD OF COMMISSIONERS

TITLE: BLIND PASS RESTORATION
CROSS SECTIONS
STA 24+00 TO 28+00

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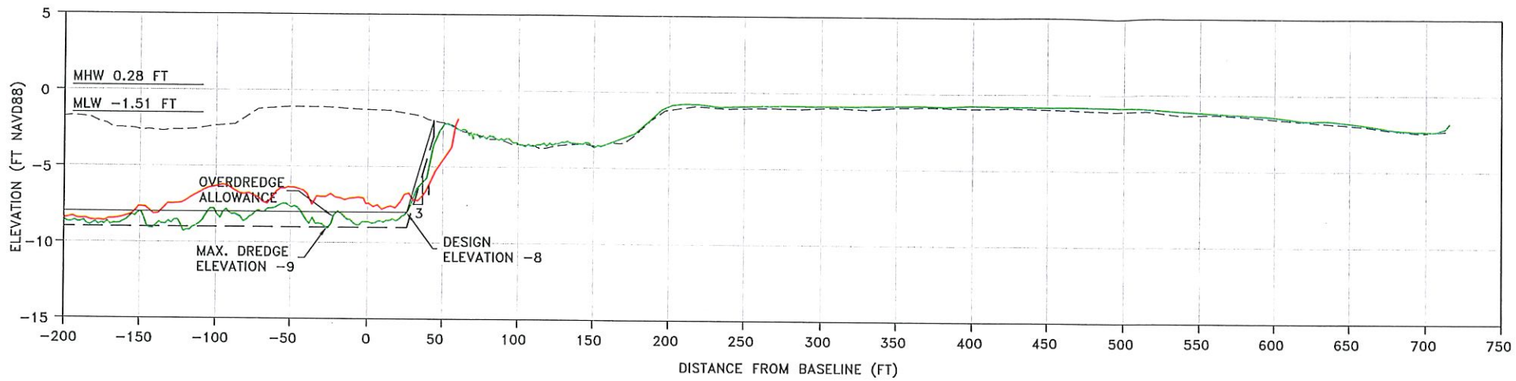
SHEET 3 OF
FILE NO.: 08043

SCALE:
H: 1" = 100'
V: 1" = 10'

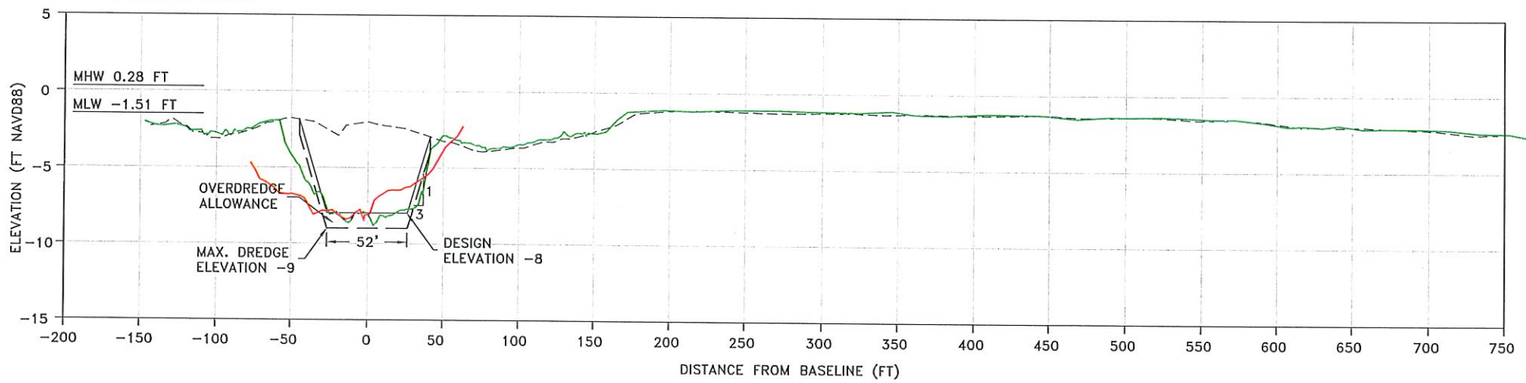
SUBAREA 6

STATION 30+00



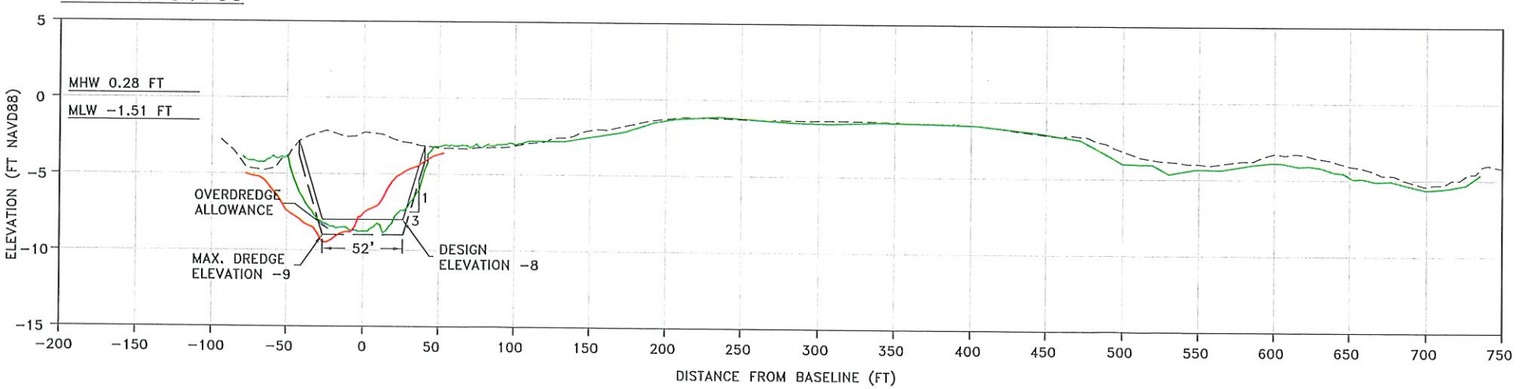
SUBAREA 6

STATION 32+00



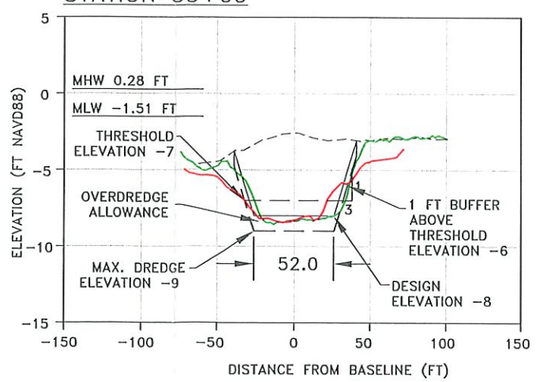
SUBAREA 7

STATION 34+00



SUBAREA 7

STATION 35+00



LEGEND
- SURVEY CONDUCTED JANUARY 28, 2010
- SURVEY CONDUCTED AUGUST 25, 2009
- SURVEY CONDUCTED NOVEMBER 11, 2008

NO.	DATE	BY	REVISION DESCRIPTION

DATE: 3/1/10 SCALE: AS NOTED
DRAWN: SPC F.B.
CHECKED: MTP PG.
SEC. TWP. RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

CLIENT: LEE COUNTY BOARD OF COMMISSIONERS

TITLE: BLIND PASS RESTORATION
CROSS SECTIONS
STA 30+00 TO 35+00

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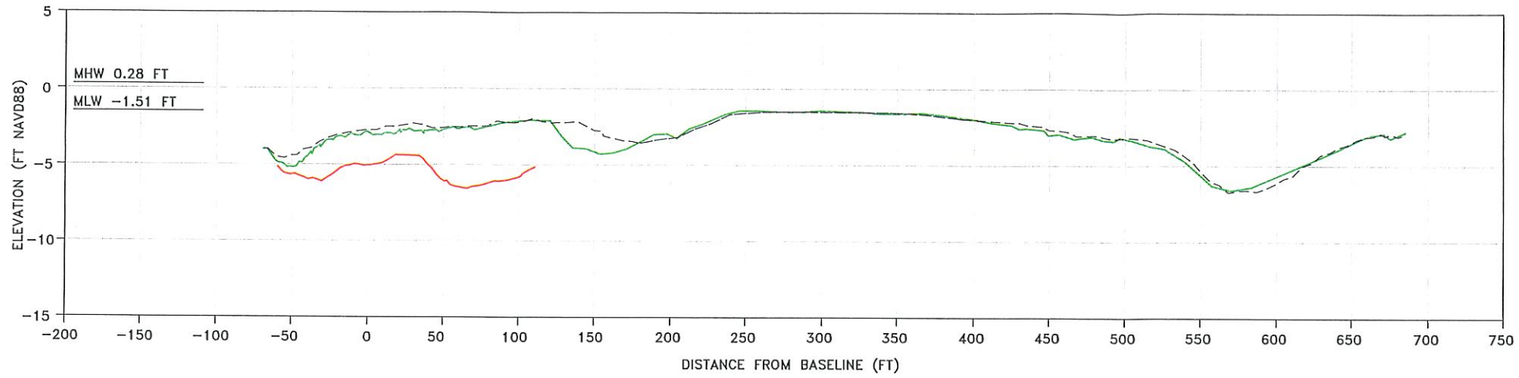
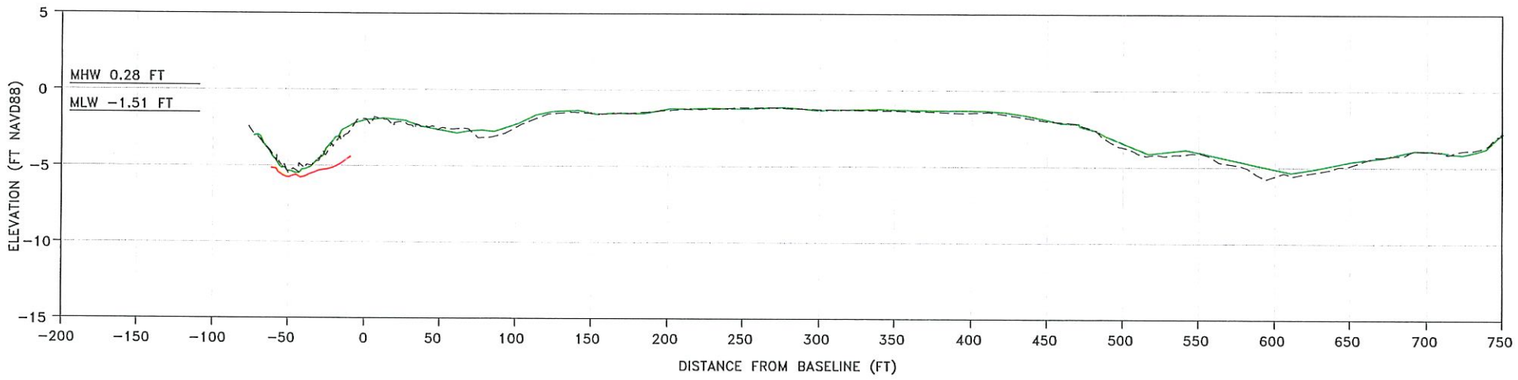
SHEET 4 OF
FILE NO.: 08043

SCALE:
H: 1" = 100'
V: 1" = 10'

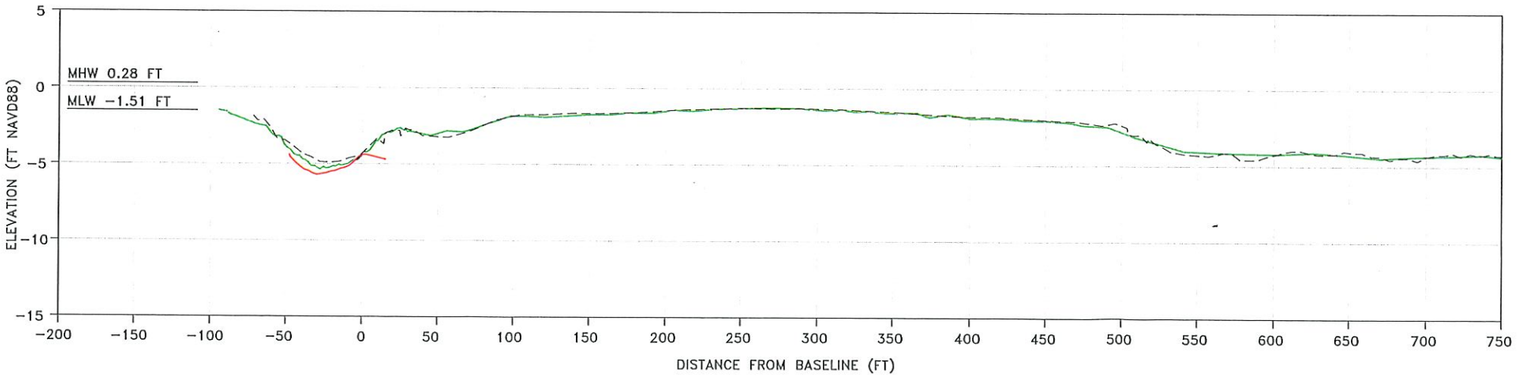
STATION 36+00



STATION 38+00



STATION 40+00



LEGEND
- SURVEY CONDUCTED JANUARY 28, 2010
- SURVEY CONDUCTED AUGUST 25, 2009
- SURVEY CONDUCTED NOVEMBER 11, 2008

NO.	DATE	BY	REVISION DESCRIPTION

DATE: 3/1/10 SCALE: AS NOTED
DRAWN: SPC F.B.
CHECKED: MTP PG.
SEC. TWP. RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

CLIENT: LEE COUNTY BOARD OF COMMISSIONERS

TITLE: BLIND PASS RESTORATION
CROSS SECTIONS
STA 36+00 TO 40+00

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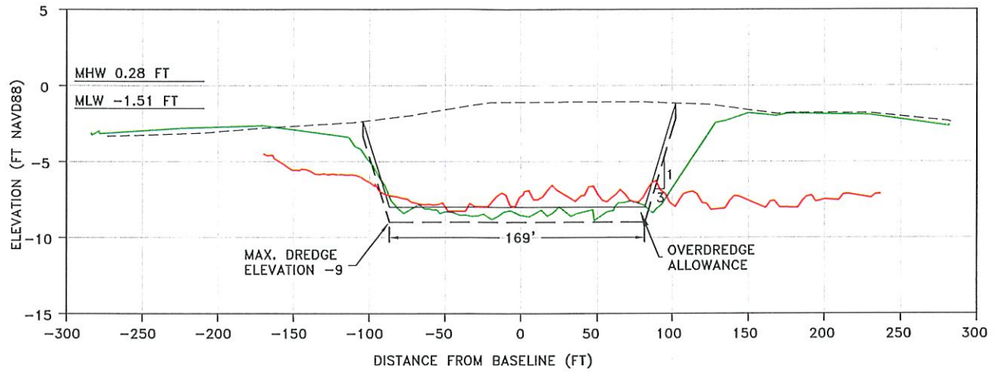
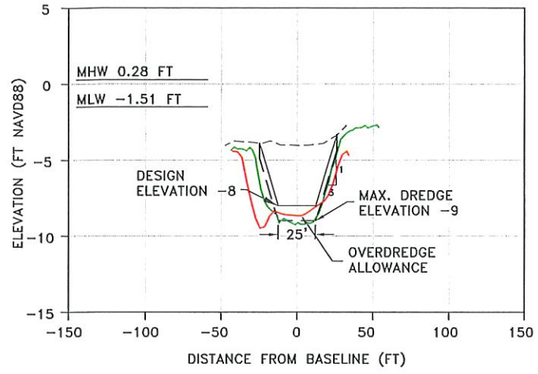
SUBAREA 6: ROOSEVELT CHANNEL

SCALE:
H: 1" = 100'
V: 1" = 10'

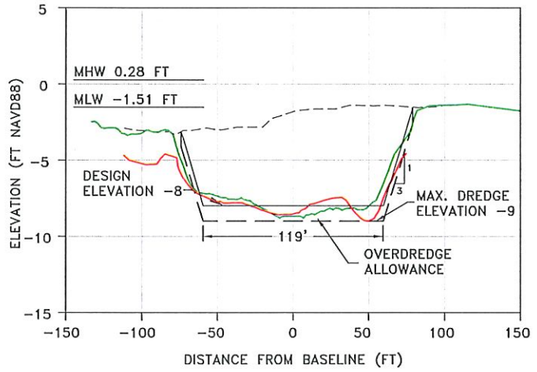
STATION 0+50



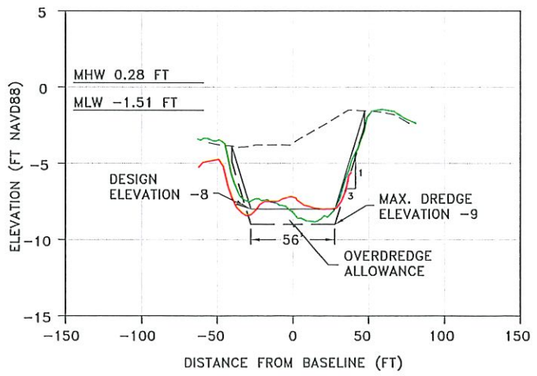
STATION 5+00



STATION 2+00



STATION 4+00



LEGEND
- SURVEY CONDUCTED JANUARY 28, 2010
- SURVEY CONDUCTED AUGUST 25, 2009
- SURVEY CONDUCTED NOVEMBER 11, 2008

NO.	DATE	BY	REVISION DESCRIPTION

DATE: 3/1/10 SCALE: AS NOTED
DRAWN: SPC F.B.
CHECKED: MTP PG.
SEC. TWP. RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

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TITLE: BLIND PASS RESTORATION
CROSS SECTIONS
STA 0+50 TO 5+00

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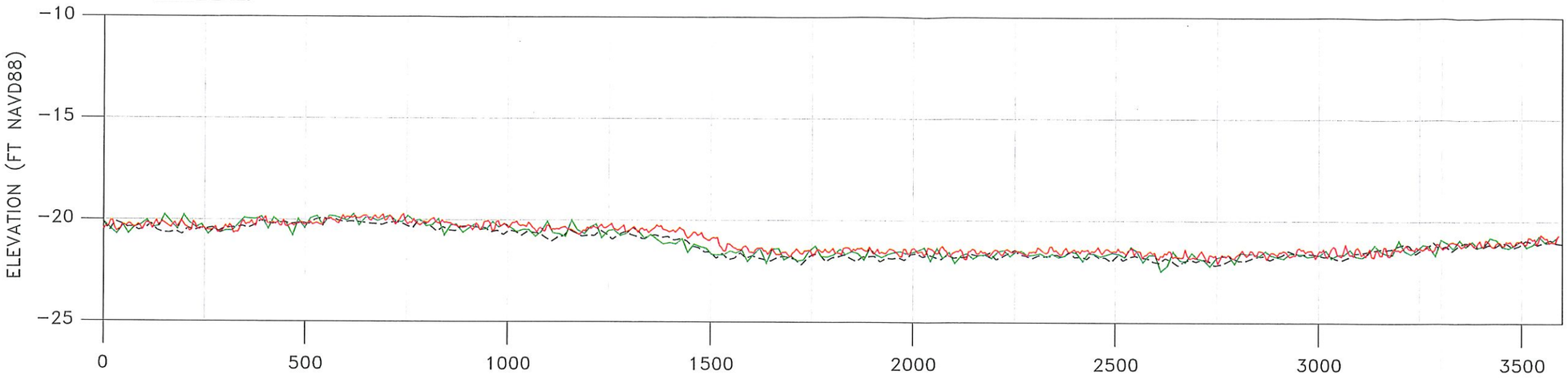
196+00



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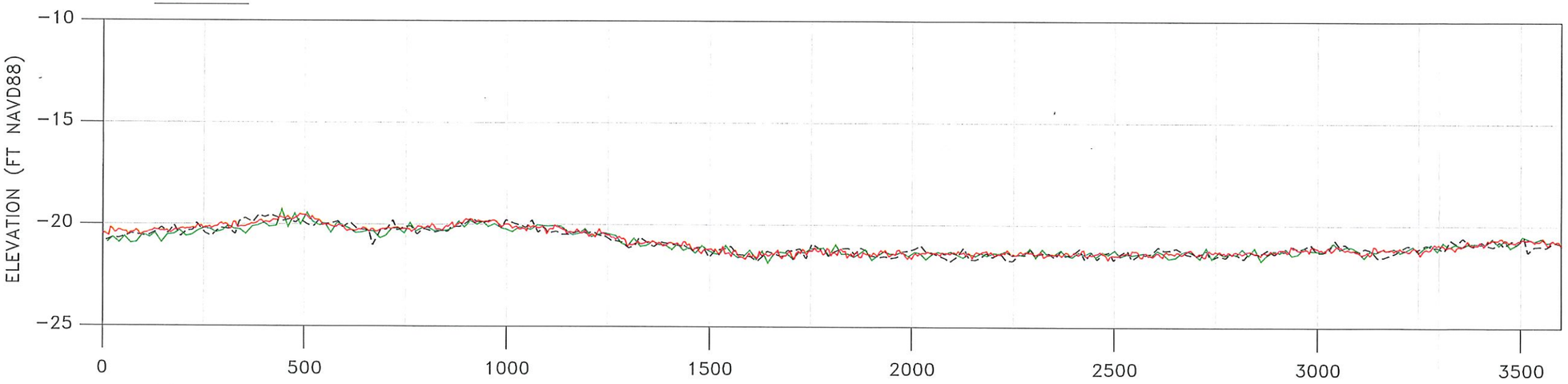

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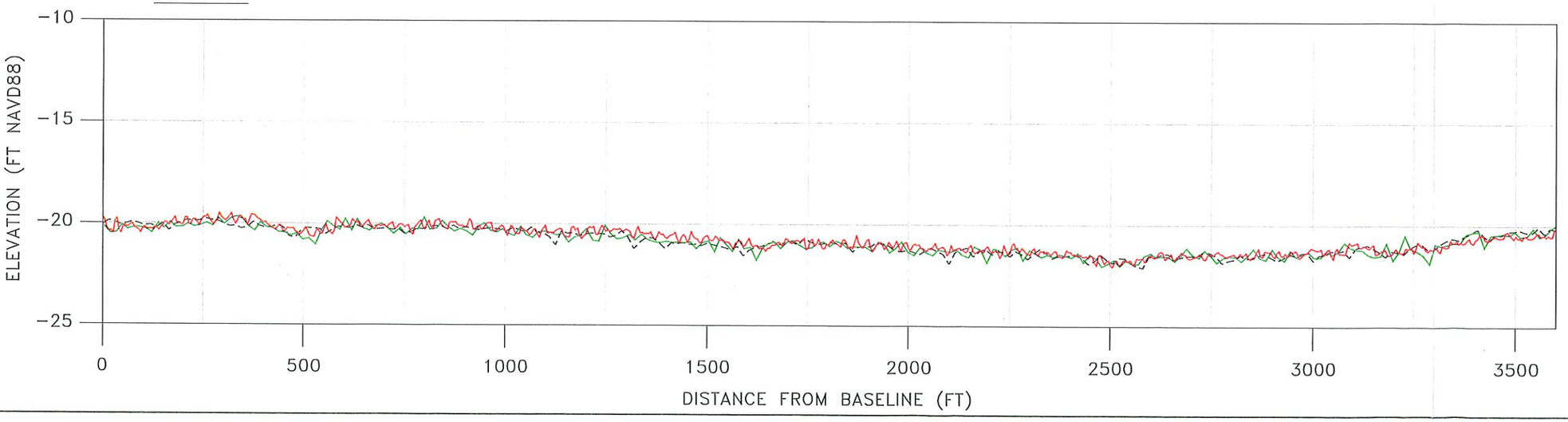

SCALE:
H: 1" = 300'
V: 1" = 6'

LEGEND
- SURVEY 1/28/10
- SURVEY 8/25/09
- SURVEY 11/12/08

NO.	DATE	BY	REVISION DESCRIPTION

DATE: 3/1/10 SCALE: AS NOTED
DRAWN: SPC F.B.
CHECKED: MTP P.G.
SEC. TWP. RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

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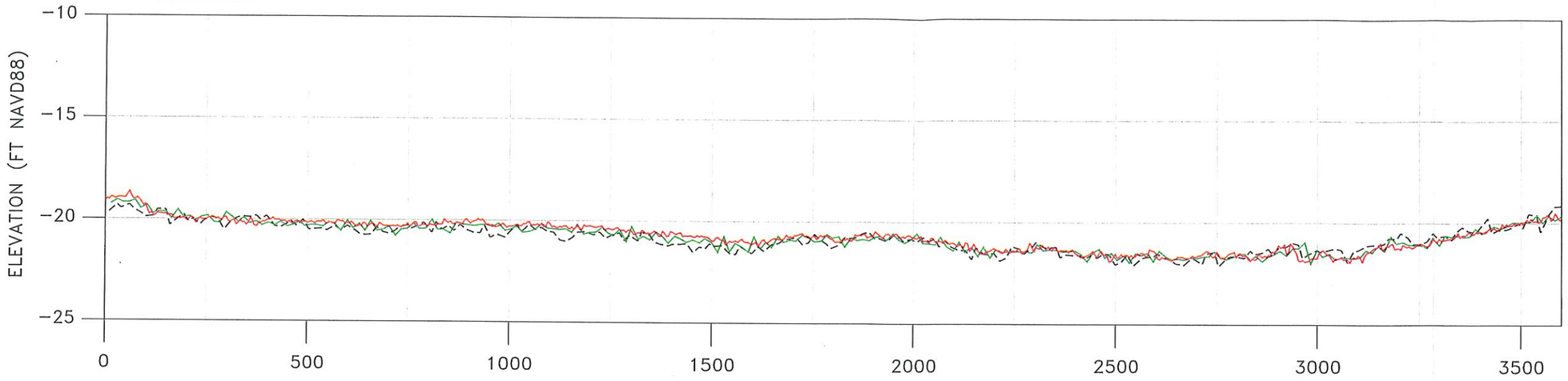
202+00



SCALE:
H: 1" = 300'
V: 1" = 6'

LEGEND
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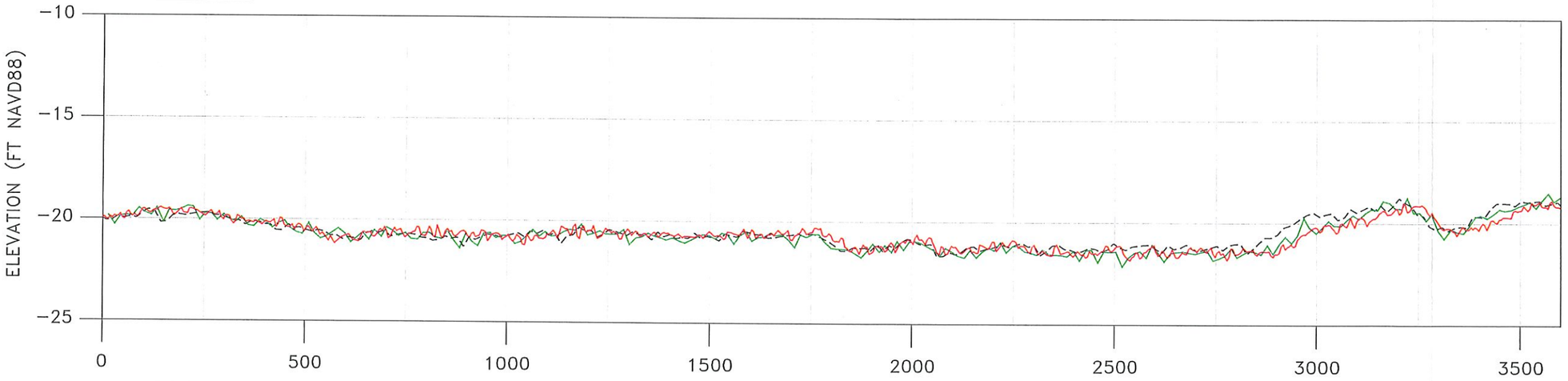
- SURVEY 8/25/09
- SURVEY 11/12/08

204+00



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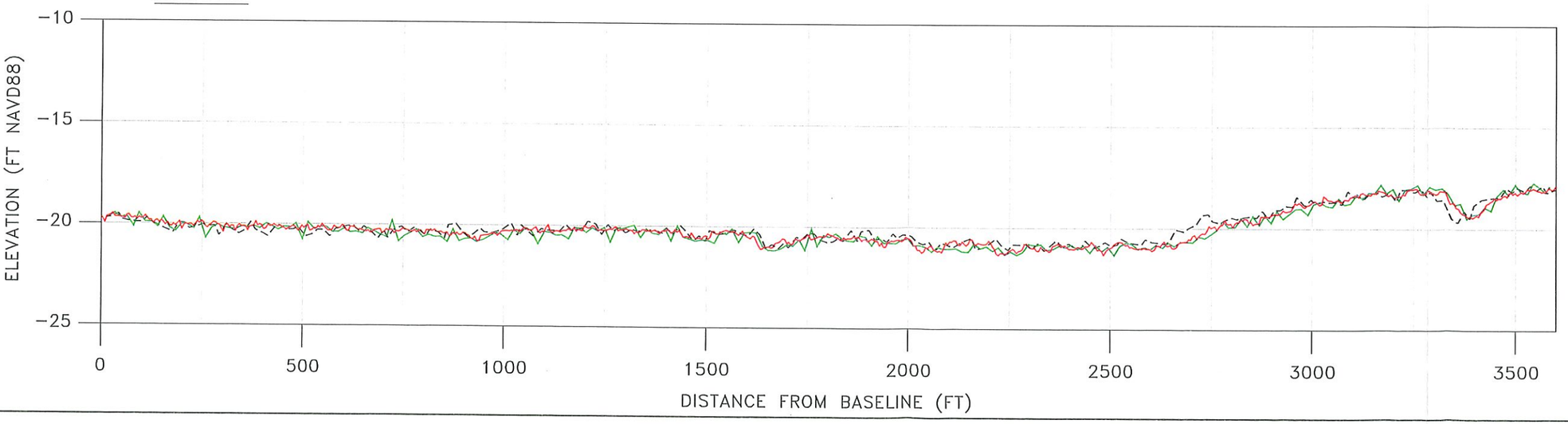

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SEC. TWP. RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

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FILE NO.: 08043

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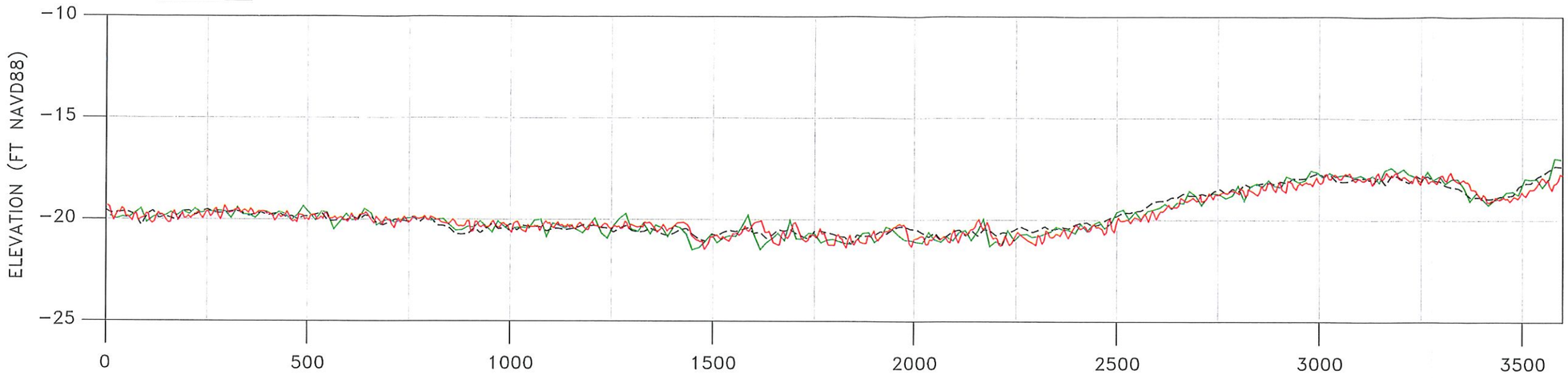
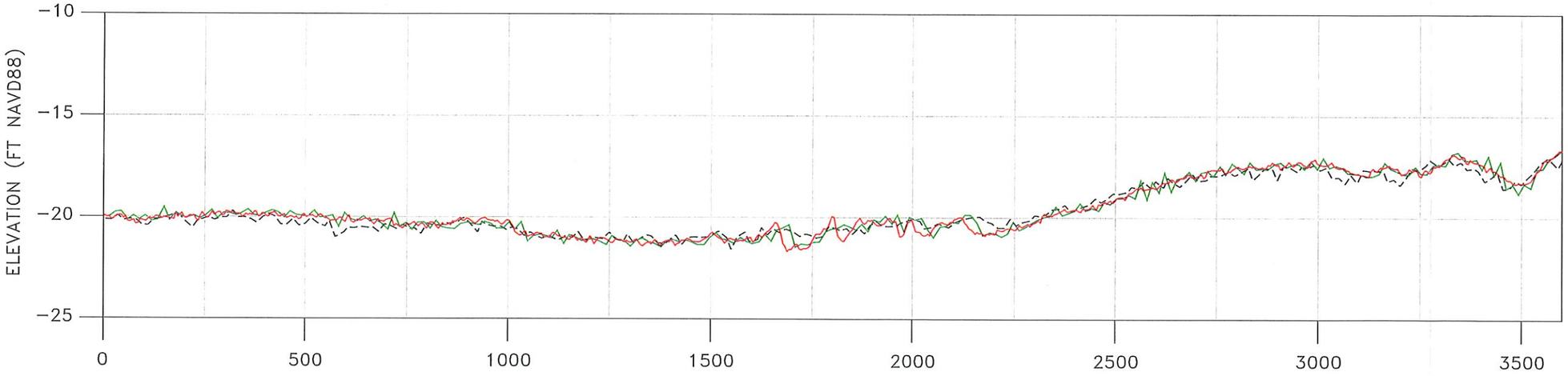


SCALE:
H: 1" = 300'
V: 1" = 6'

LEGEND
SURVEY 1/28/10
SURVEY 8/25/09
SURVEY 11/12/08

210+00



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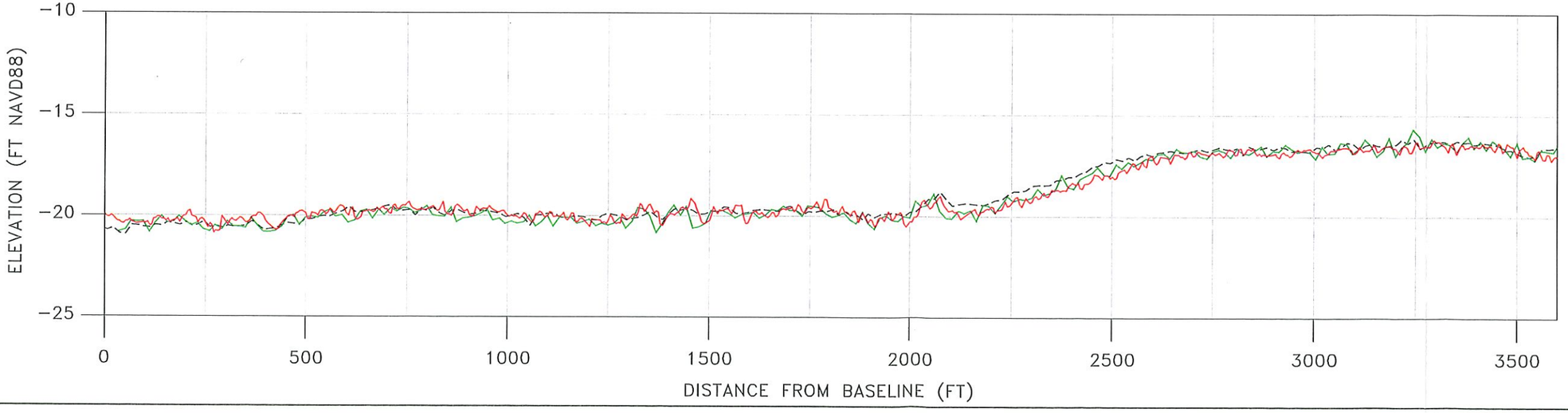

REVISION DESCRIPTION	BY	DATE	NO.

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SEC. TWP. RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

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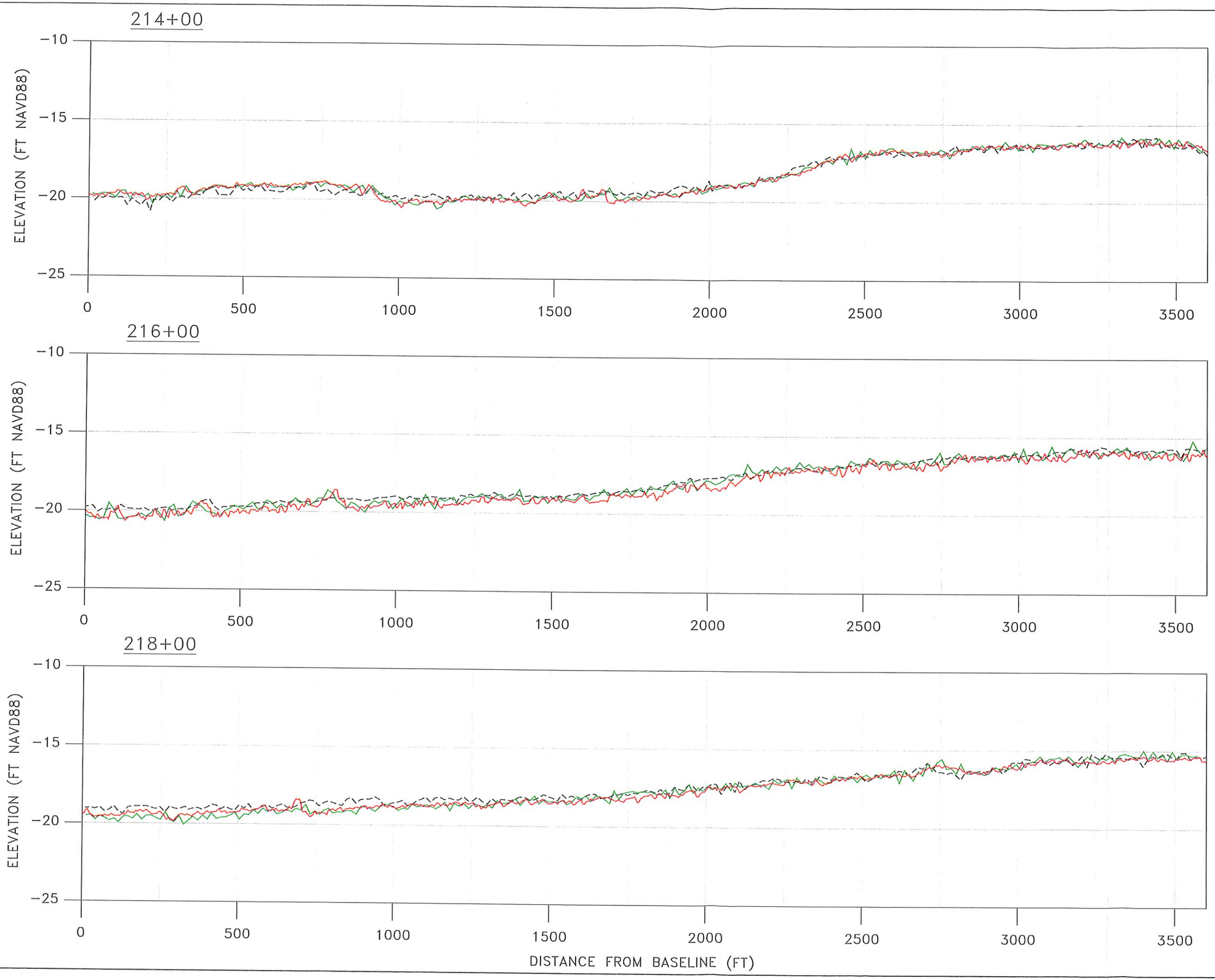

NO.	DATE	BY	REVISION DESCRIPTION

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SEC. TWP. RNG.
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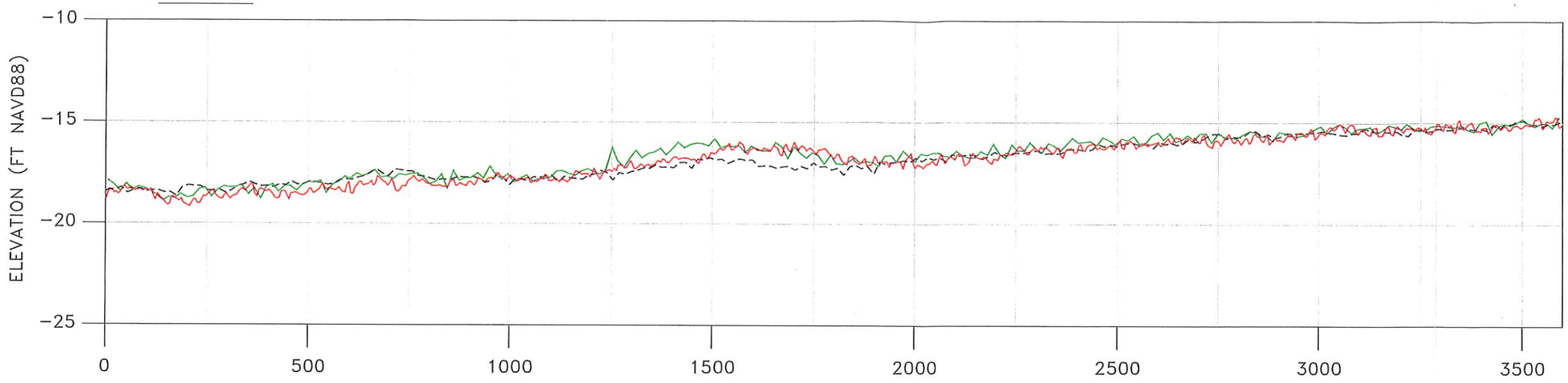

SCALE:
H: 1" = 300'
V: 1" = 6'

LEGEND
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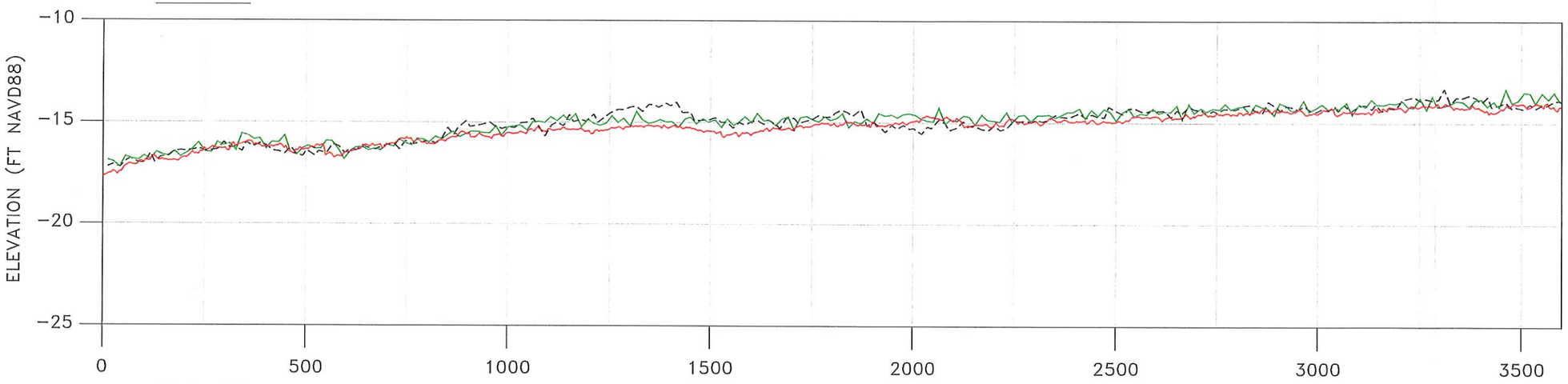
- SURVEY 8/25/09
- SURVEY 11/12/08

222+00



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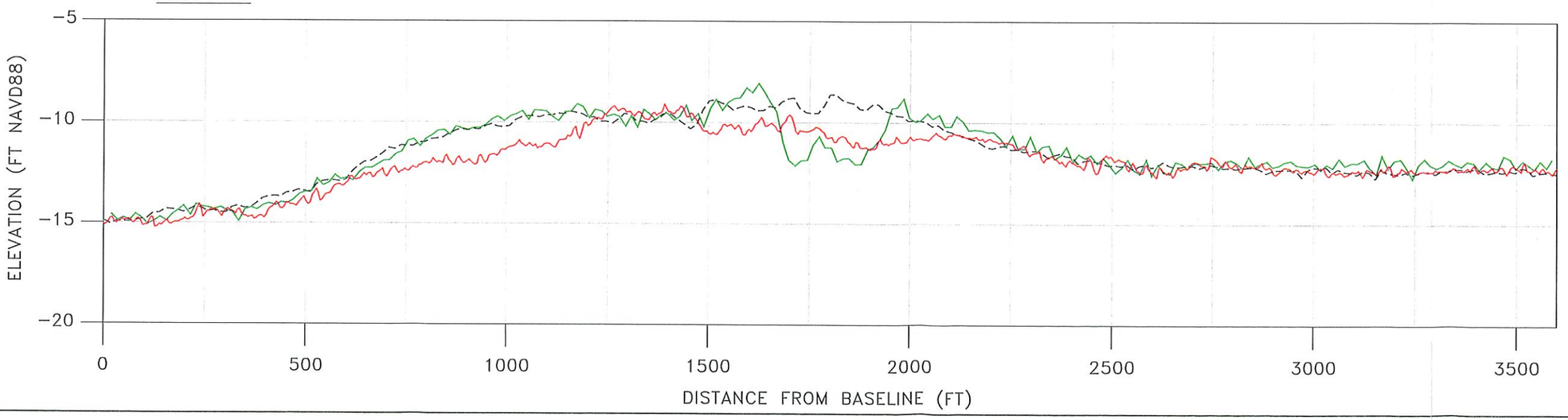

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SEC. TWP. RNG.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

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FILE NO.: 08043

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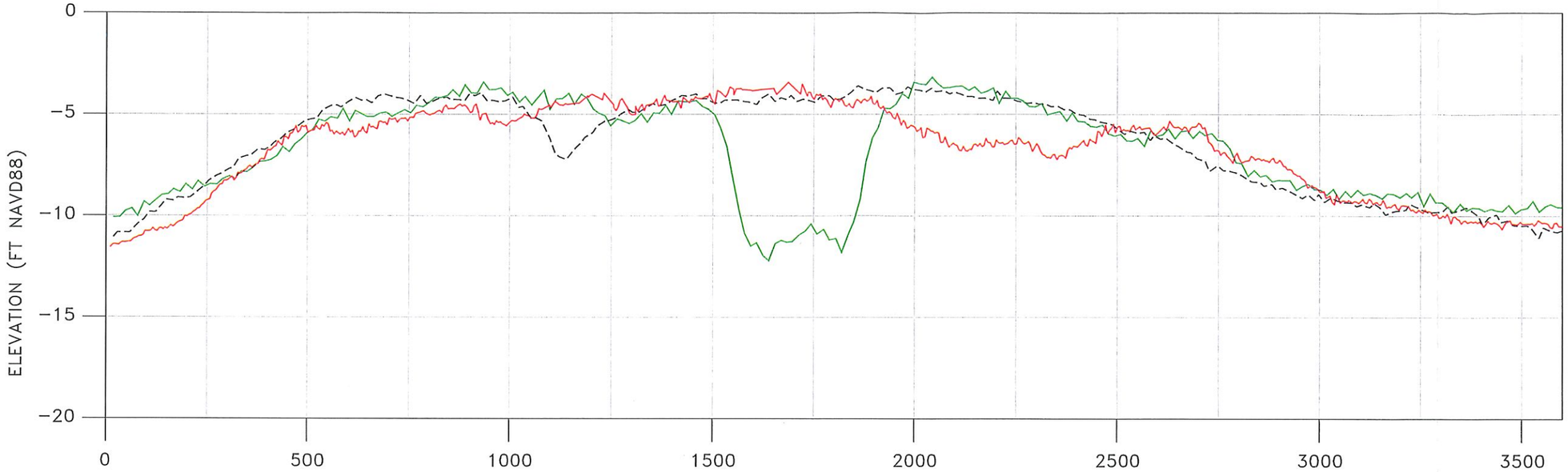
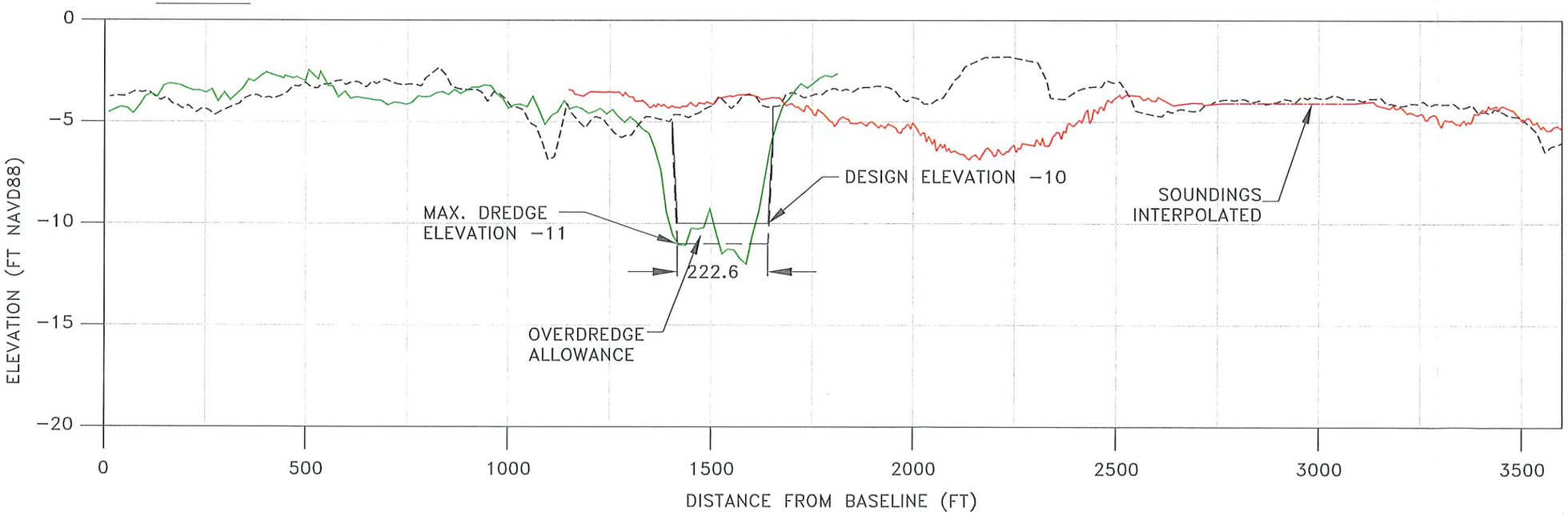


SCALE:
H: 1" = 300'
V: 1" = 6'

LEGEND
- SURVEY 1/28/10
- SURVEY 8/25/09
- SURVEY 11/12/08

228+00



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CHECKED: MTP TWP. RNG.
SEC.
ACAD NO. 08043-XSEC.dwg
REF. NO. 08.043

CLIENT: LEE COUNTY BOARD OF COMMISSIONERS

TITLE: BLIND PASS RESTORATION
EBB SHOAL
STA 226+00 TO 228+00

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FILE NO.: 08043

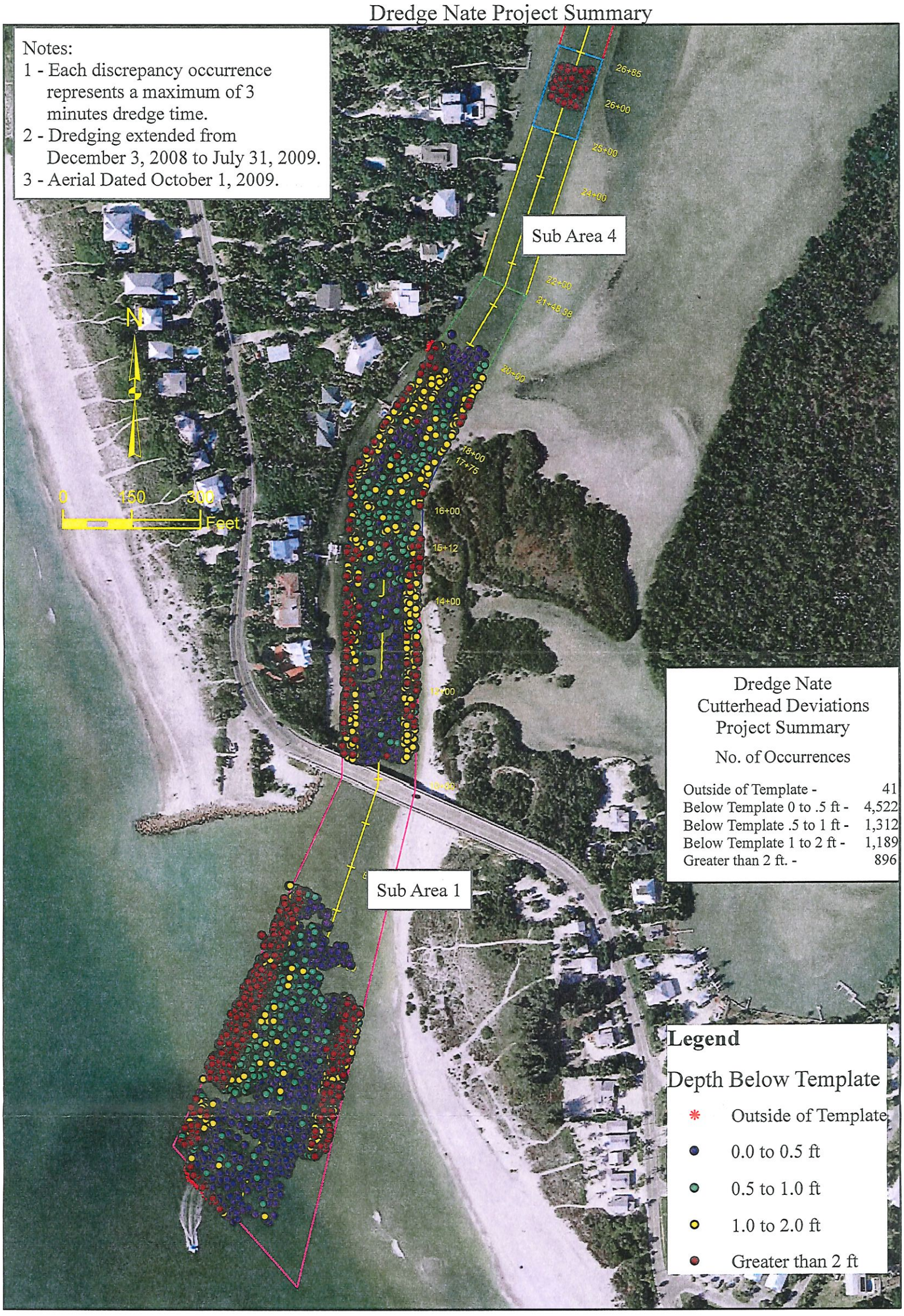
APPENDIX 5

AERIAL PHOTOGRAPHS

APPENDIX 6

CUTTERHEAD POSITIONING DATA

Blind Pass Maintenance Dredging
Cutterhead Positioning Deviations
Dredge Nate Project Summary



Blind Pass Maintenance Dredging
Cutterhead Positioning Deviations
Dredge Michael Project Summary

APPENDIX 7

SEDIMENT SAMPLES

Blind Pass Beach Fill
Physical Monitoring Samples
Lee County, Florida

Submitted to:

Coastal Engineering Consultants, Inc.
Naples, Florida

Submitted by:

Coastal Tech
Melbourne, Florida

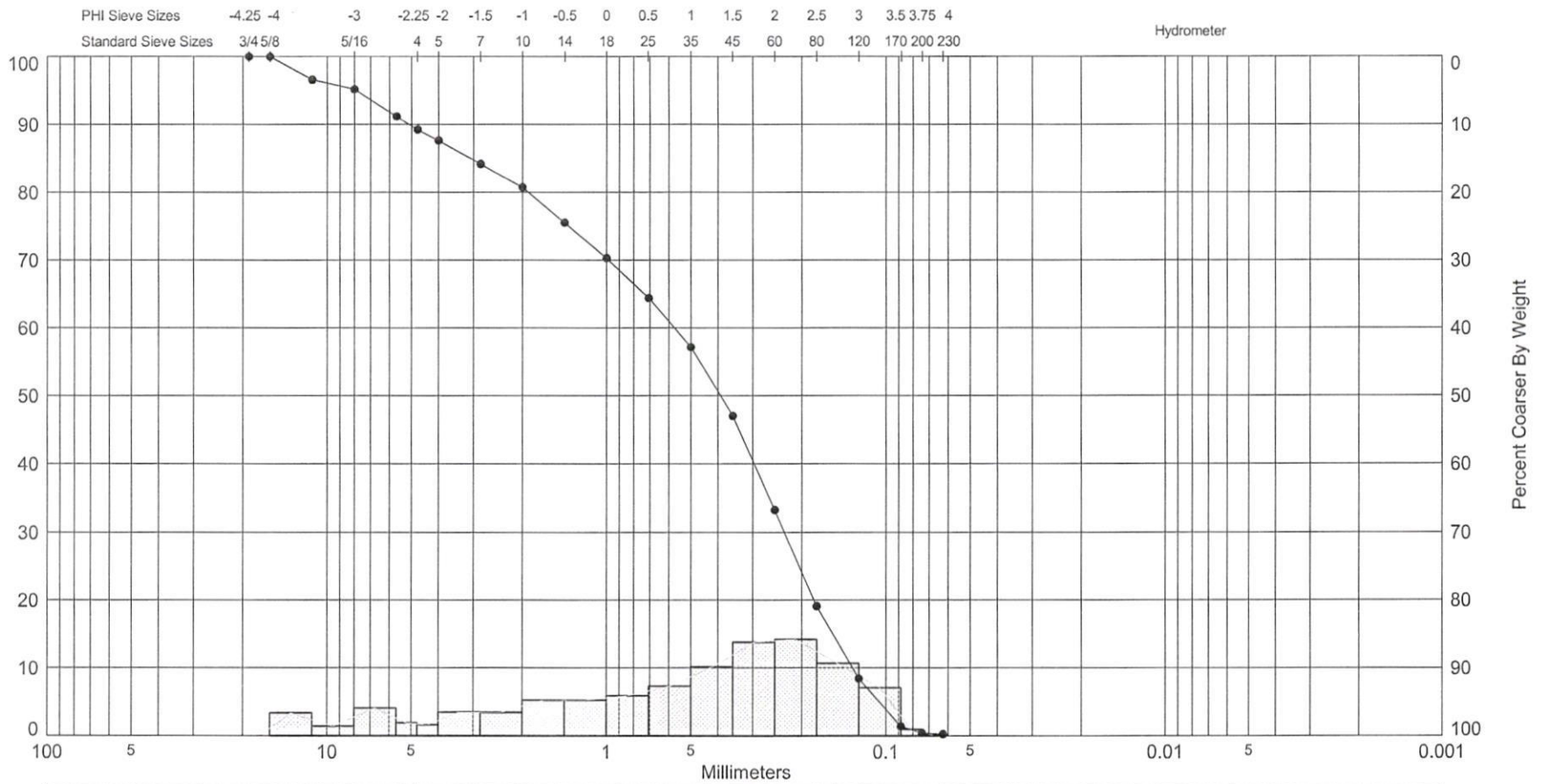
December 2, 2009

Coastal Technology Corporation

Sedimentological Summary

Sample	gINT Granularmetrics							USC	Organic Content (wt%)	Munsell Color Wet		Munsell Color Dry	
	Size Class (wt%)				Descriptive Statistics								
	*Gravel**	*Sand*	*<#200*	*<#230*	*Mean (mm)*	*Verbal*	*Std. Dev.(phi)*			*Verbal*	*Value*	*Verbal*	*Value*
R112 TOD	10.75	88.81	0.44	0.27	0.57	M	1.93	SW	0.9	white	2.5Y 8/1	white	2.5Y 8/1
R112 MB	5.10	94.43	0.47	0.28	0.50	M	1.60	SW	0.9	light gray	2.5Y 7/1	white	2.5Y 8/1
R112 MHW	2.09	97.74	0.17	0.15	0.45	M	1.19	SW	1.0	gray	2.5Y 6/1	light gray	2.5Y 7/1
R112.5 TOD	11.88	87.79	0.33	0.27	0.72	M	1.83	SW	1.1	gray	2.5Y 6/1	light gray	2.5Y 7/1
R112.5 MB	10.17	89.31	0.52	0.41	0.70	M	1.85	SW	1.2	light gray	2.5Y 7/1	white	2.5Y 8/1
R112.5 MHW	0.39	99.49	0.12	0.10	0.50	M	1.28	SW	0.8	gray	2.5Y 6/1	light gray	2.5Y 7/1
R113 TOD	5.21	94.23	0.56	0.41	0.38	F	1.66	SW	0.8	light gray	2.5Y 7/1	white	2.5Y 8/1
R113 MB	9.16	90.58	0.26	0.24	0.62	M	1.81	SW	1.0	light gray	2.5Y 7/1	white	2.5Y 8/1
R113 MHW	0.88	99.06	0.06	0.04	0.38	F	1.15	SW	0.8	gray	2.5Y 6/1	light gray	2.5Y 7/1
R113.5 TOD	3.94	95.74	0.32	0.31	0.43	F	1.45	SW	0.7	gray	2.5Y 6/1	light gray	2.5Y 7/1
R113.5 MB	19.01	80.61	0.38	0.36	1.21	M	1.80	SW w/ gravel	1.3	light gray	2.5Y 7/1	white	2.5Y 8/1
R113.5 MHW	1.76	97.98	0.26	0.25	0.55	M	1.20	SW	1.1	gray	2.5Y 6/1	light gray	2.5Y 7/1
R114 TOD	5.41	94.34	0.25	0.23	0.40	F	1.27	SW	1.0	gray	2.5Y 6/1	light gray	2.5Y 7/1
R114 MB	5.48	94.40	0.12	0.10	0.46	M	1.48	SW	0.8	gray	2.5Y 6/1	light gray	2.5Y 7/1
R114 MHW	0.09	99.88	0.03	0.03	0.32	F	1.04	SW	0.6	gray	2.5Y 6/1	light gray	2.5Y 7/1

*Gravel Content consists of 100% shell in all samples



Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R112 TOD	—●—		SW	#200 - 0.44 #230 - 0.27	0.90		1.35	0.8	-0.76	2.61	1.93

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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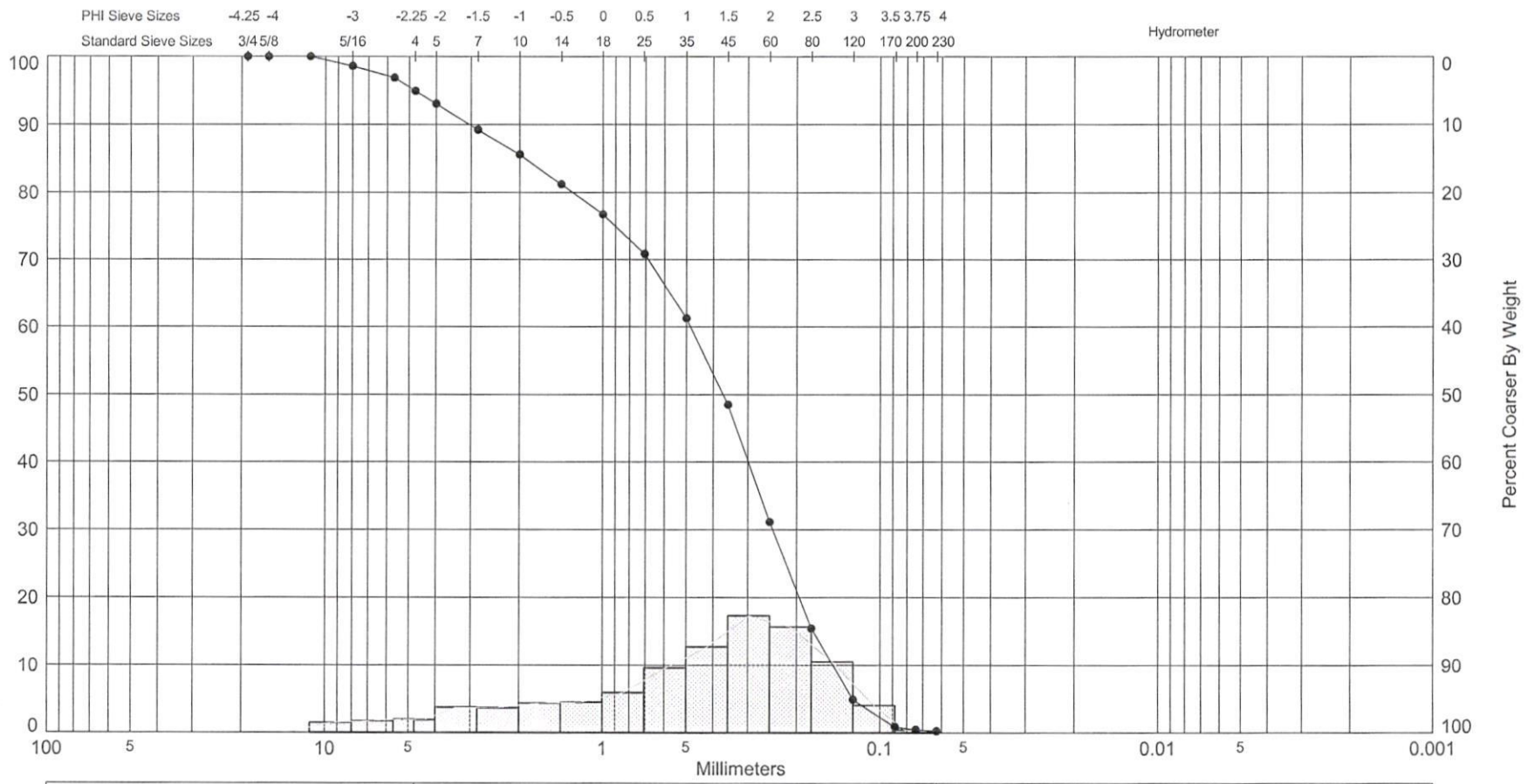
SIEVE ANALYSIS 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R112 MB	—●—		SW	#200 - 0.47 #230 - 0.28	0.90		1.44	1.01	-0.85	2.94	1.6

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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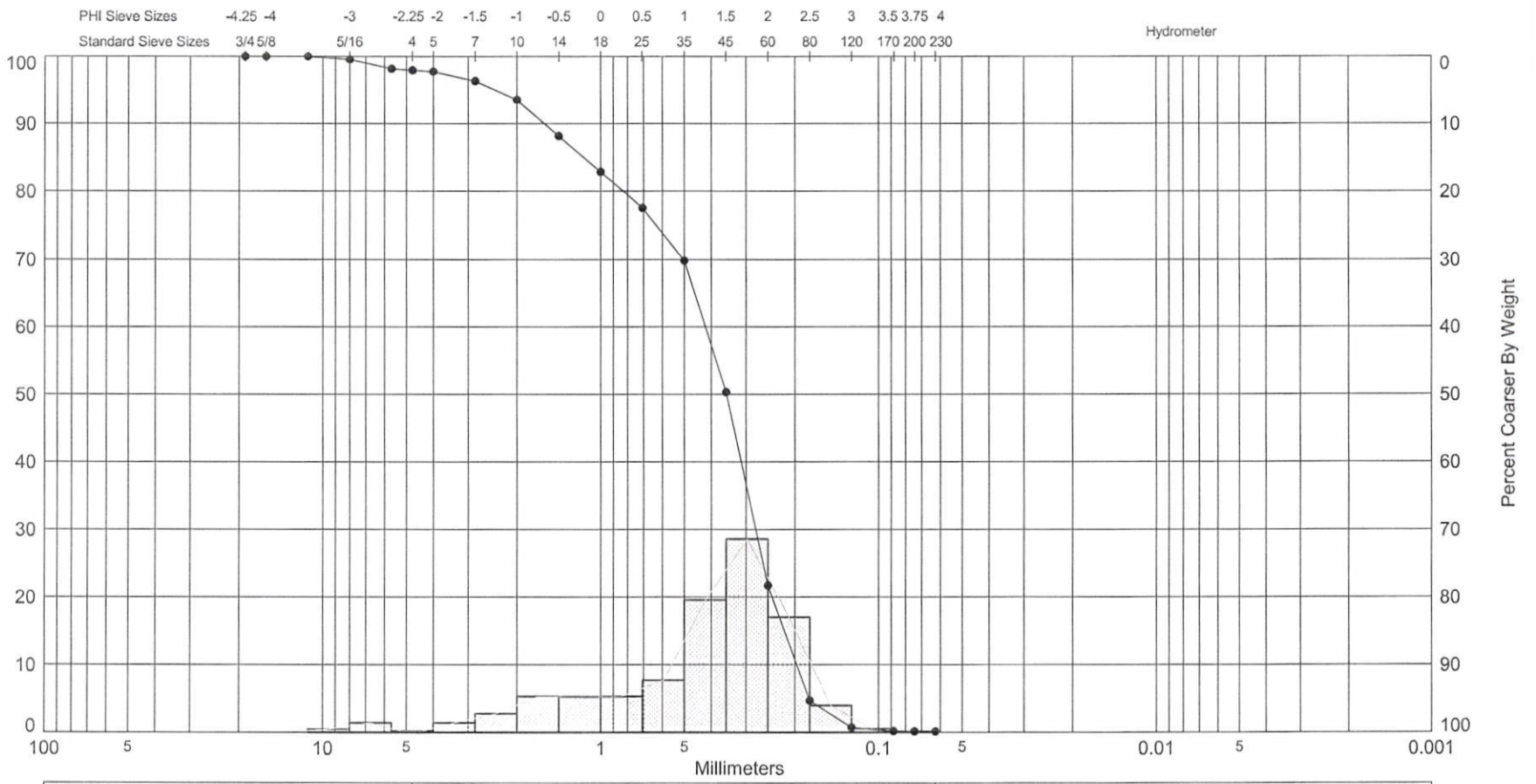

Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R112 MHW	—●—		SW	#200 - 0.17 #230 - 0.15	1.00		1.51	1.15	-1.29	4.5	1.19

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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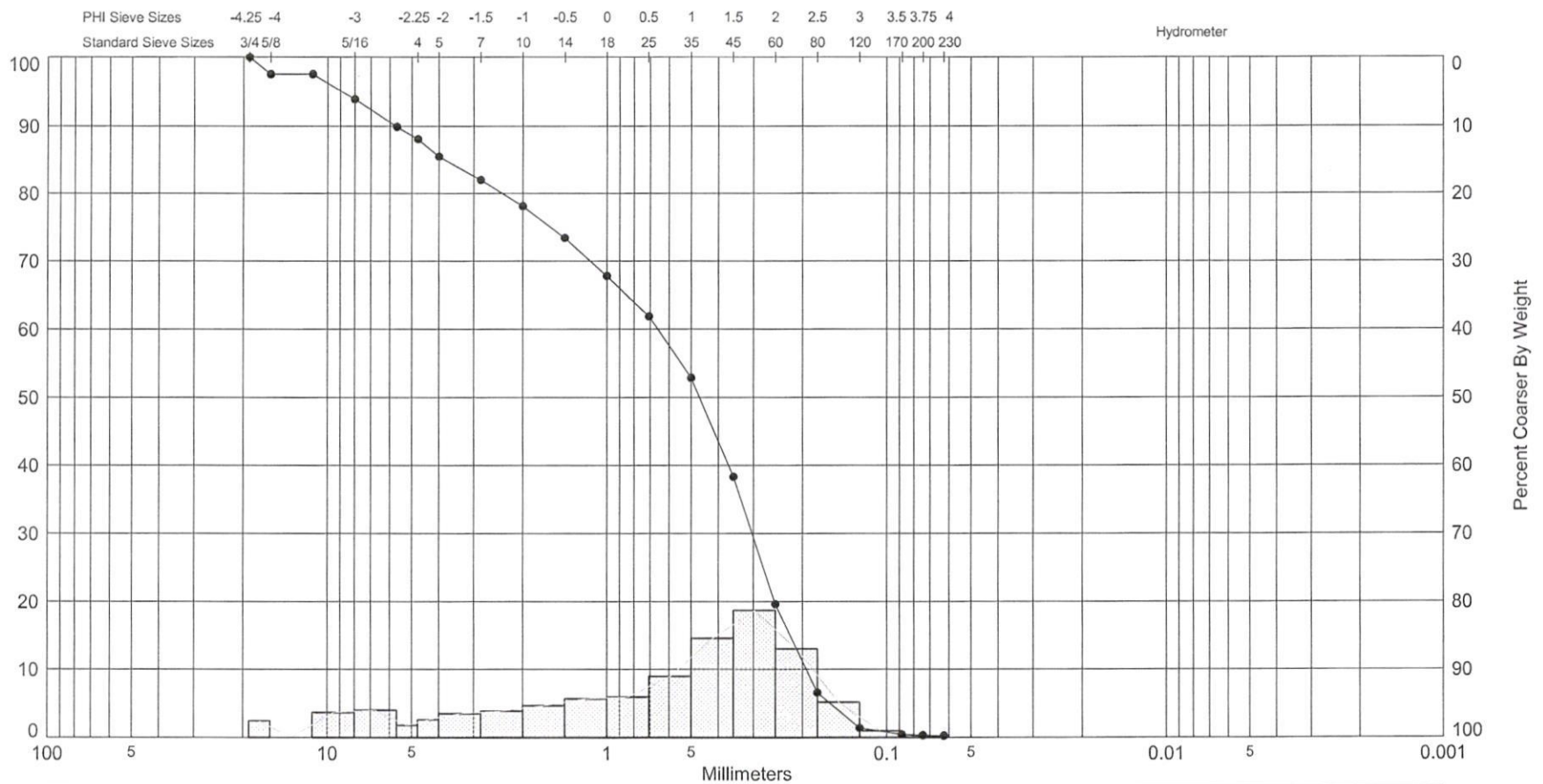

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R112.5 TOD	—●—		SW	#200 - 0.33 #230 - 0.27	1.10		1.1	0.48	-0.85	2.72	1.83

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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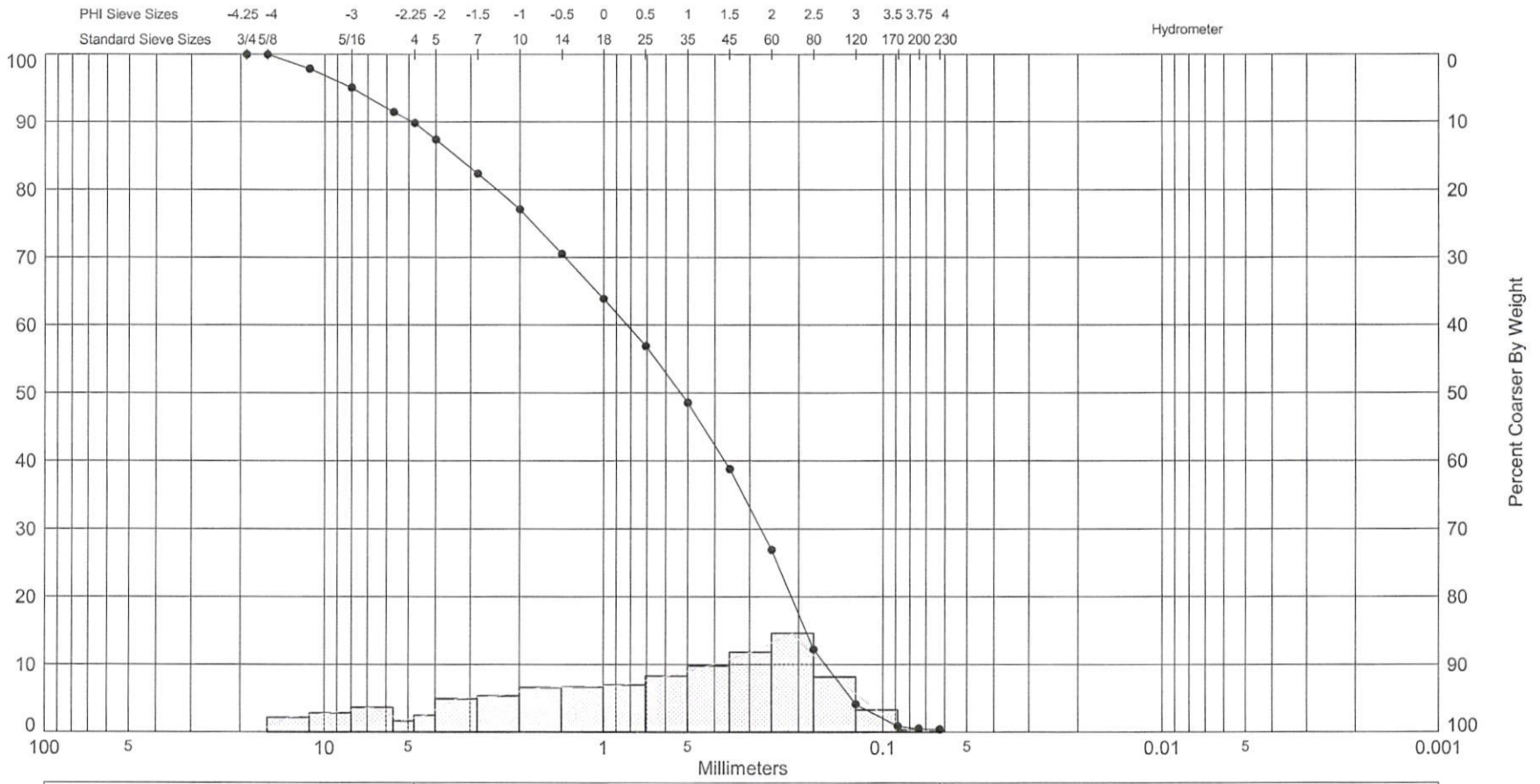

Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R112.5 MB	—●—		SW	#200 - 0.52 #230 - 0.41	1.20		0.92	0.51	-0.55	2.29	1.85

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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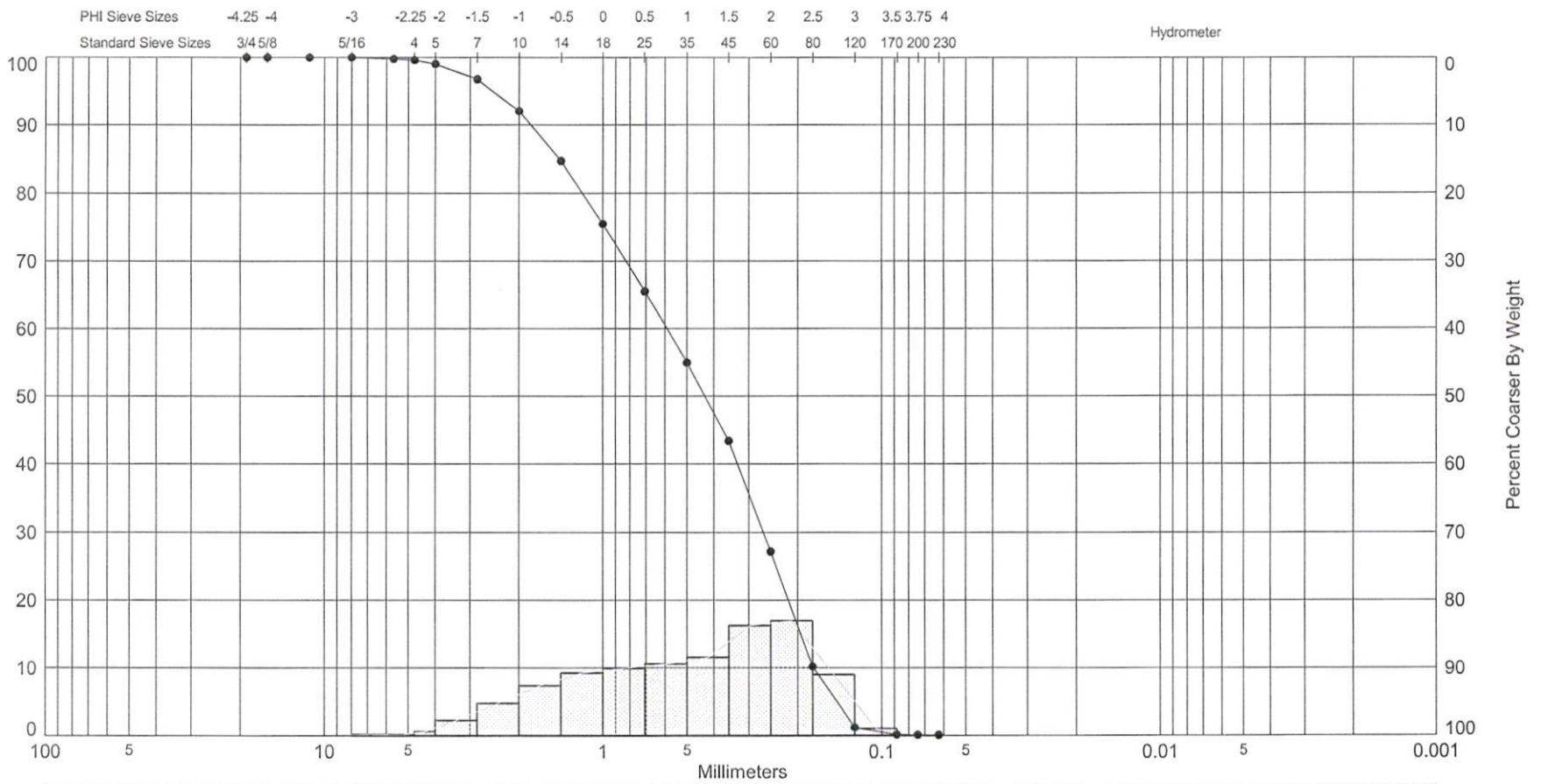

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R112.5 MHW	—●—		SW	#200 - 0.12 #230 - 0.10	0.80		1.21	1	-0.46	2.32	1.28

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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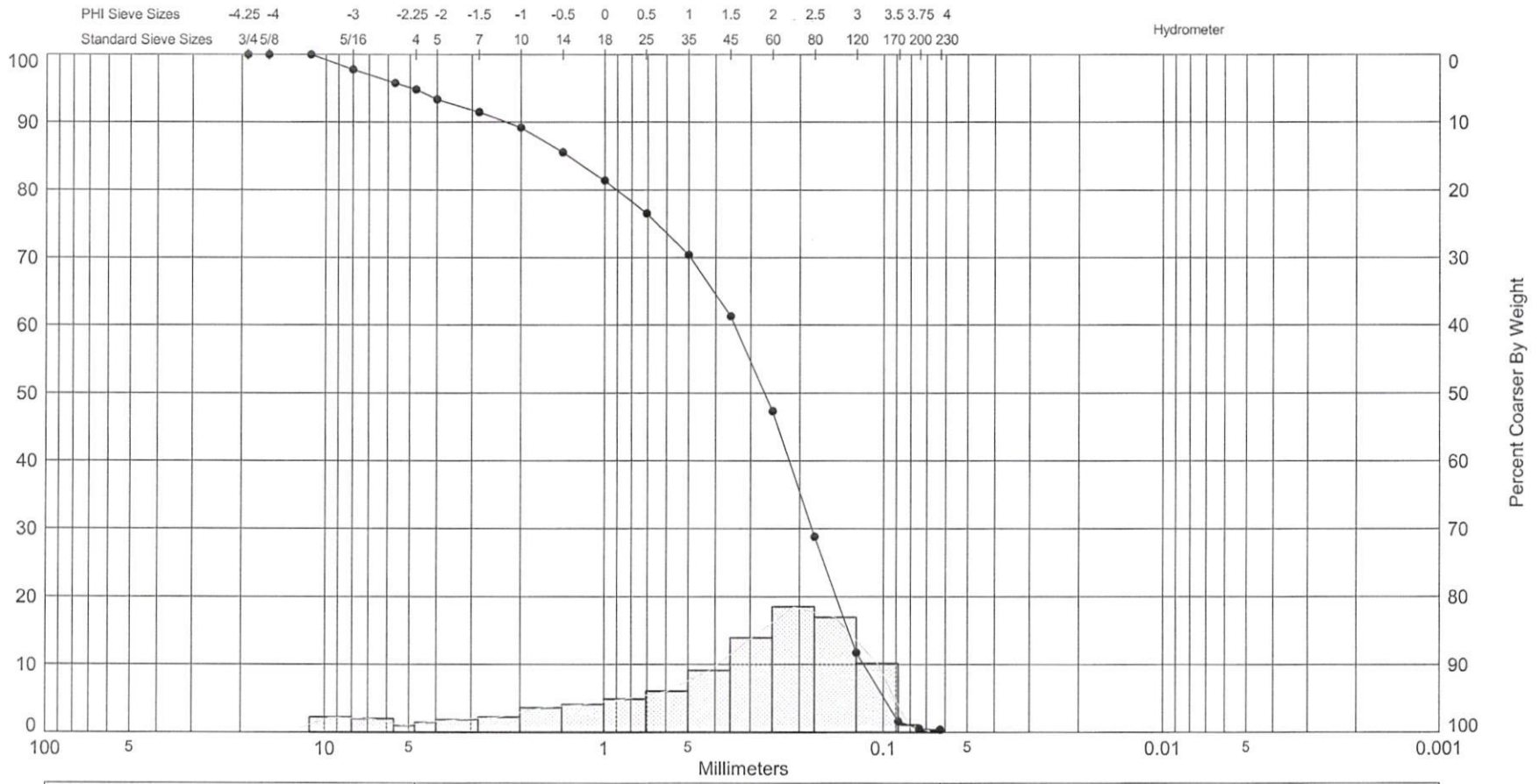

Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R113 TOD	—●—		SW	#200 - 0.56 #230 - 0.41	0.80		1.91	1.4	-1.14	3.58	1.66

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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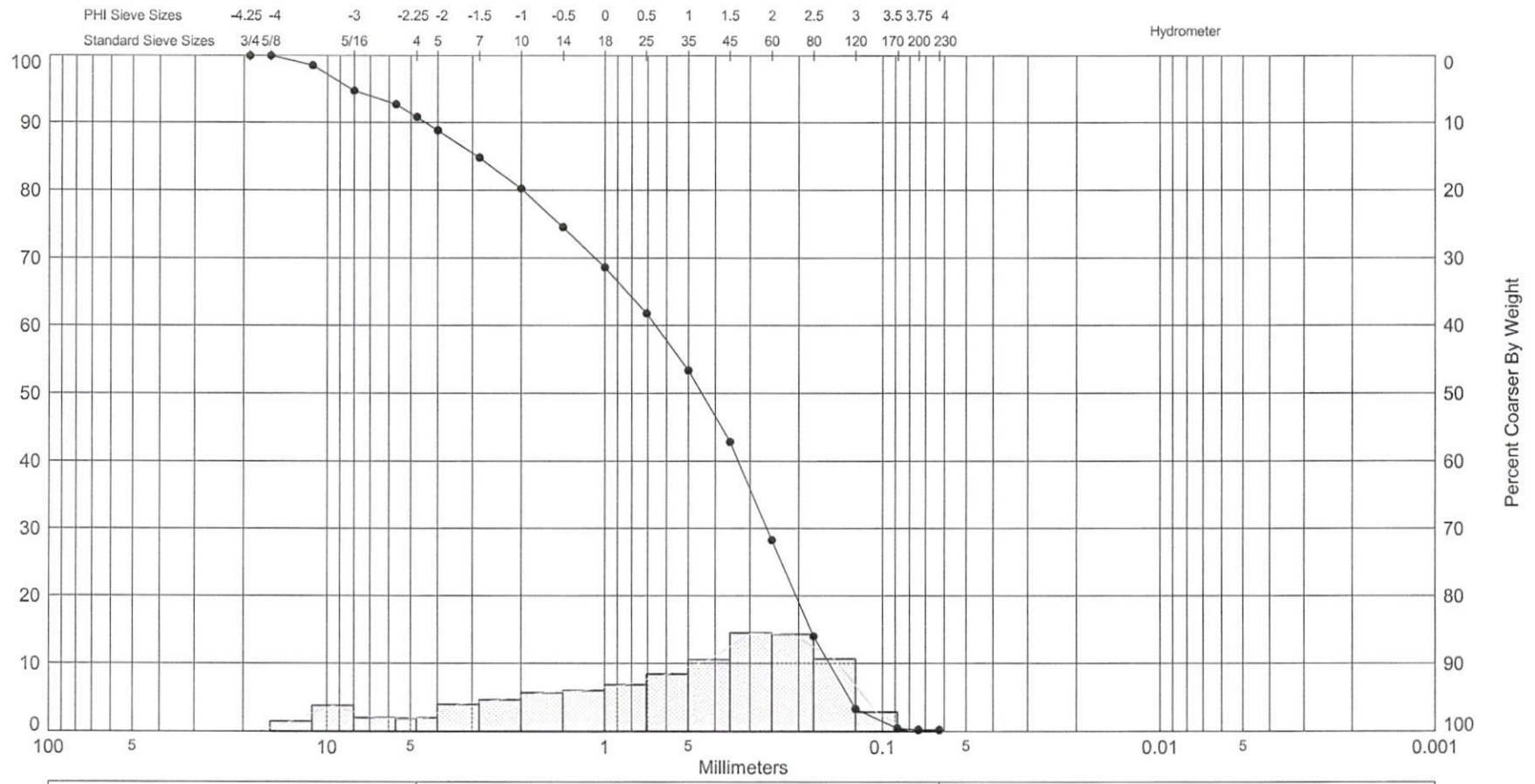

Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R113 MB	—●—		SW	#200 - 0.26 #230 - 0.24	1.00		1.16	0.68	-0.72	2.56	1.81

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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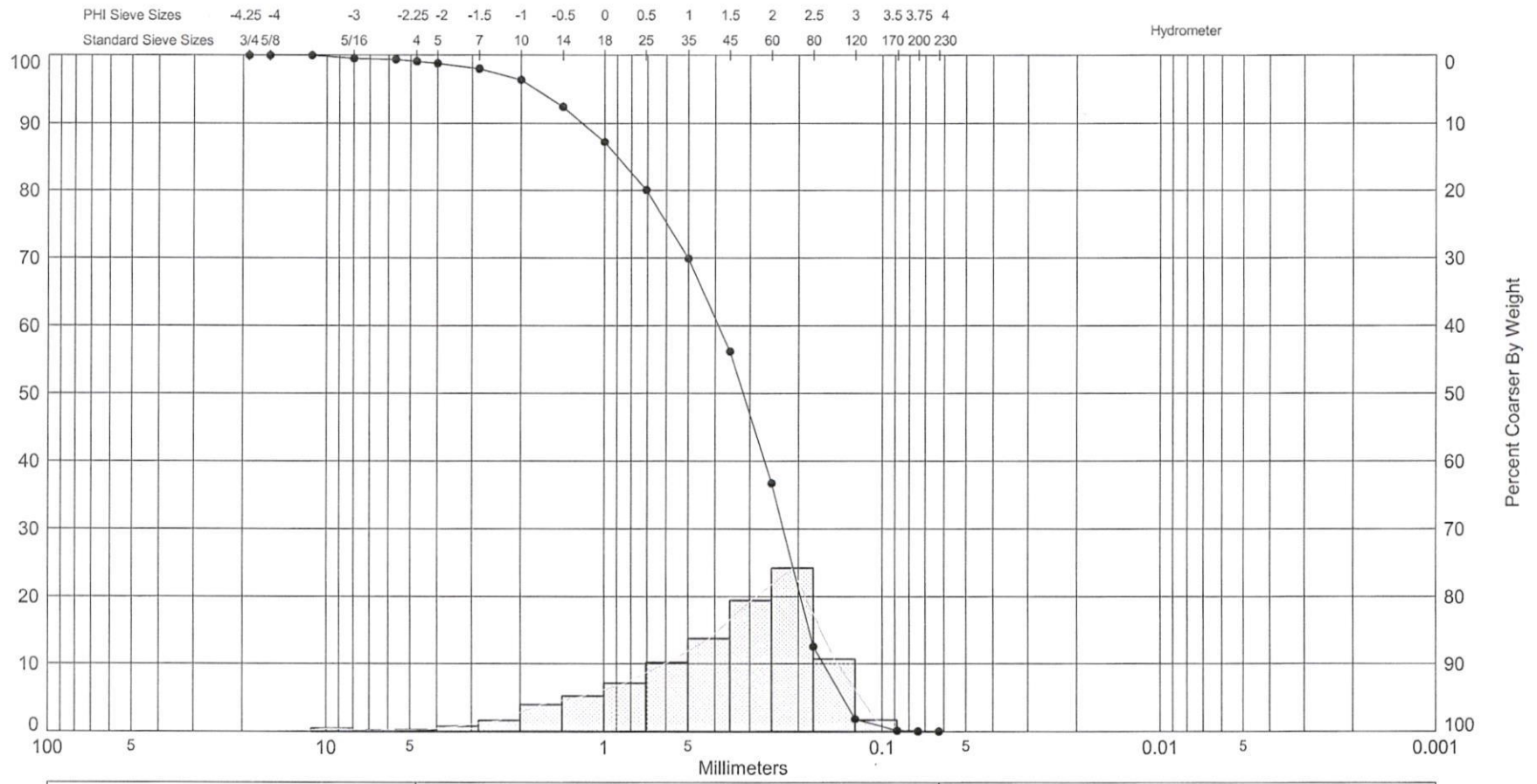

Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R113 MHW	—●—		SW	#200 - 0.06 #230 - 0.04	0.80		1.66	1.4	-1.06	4.19	1.15

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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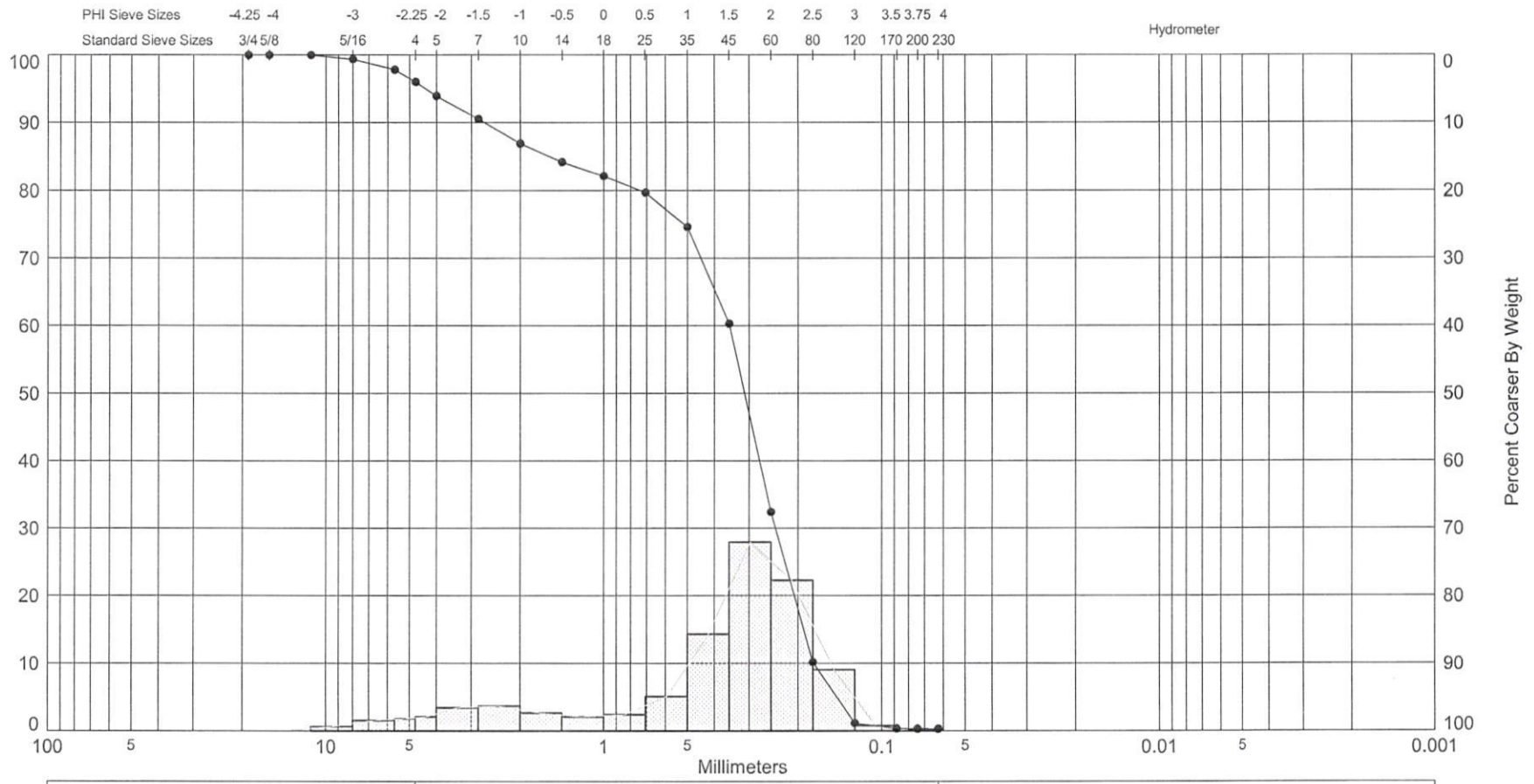

Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R113.5 TOD	—●—		SW	#200 - 0.32 #230 - 0.31	0.70		1.68	1.21	-1.36	3.89	1.45

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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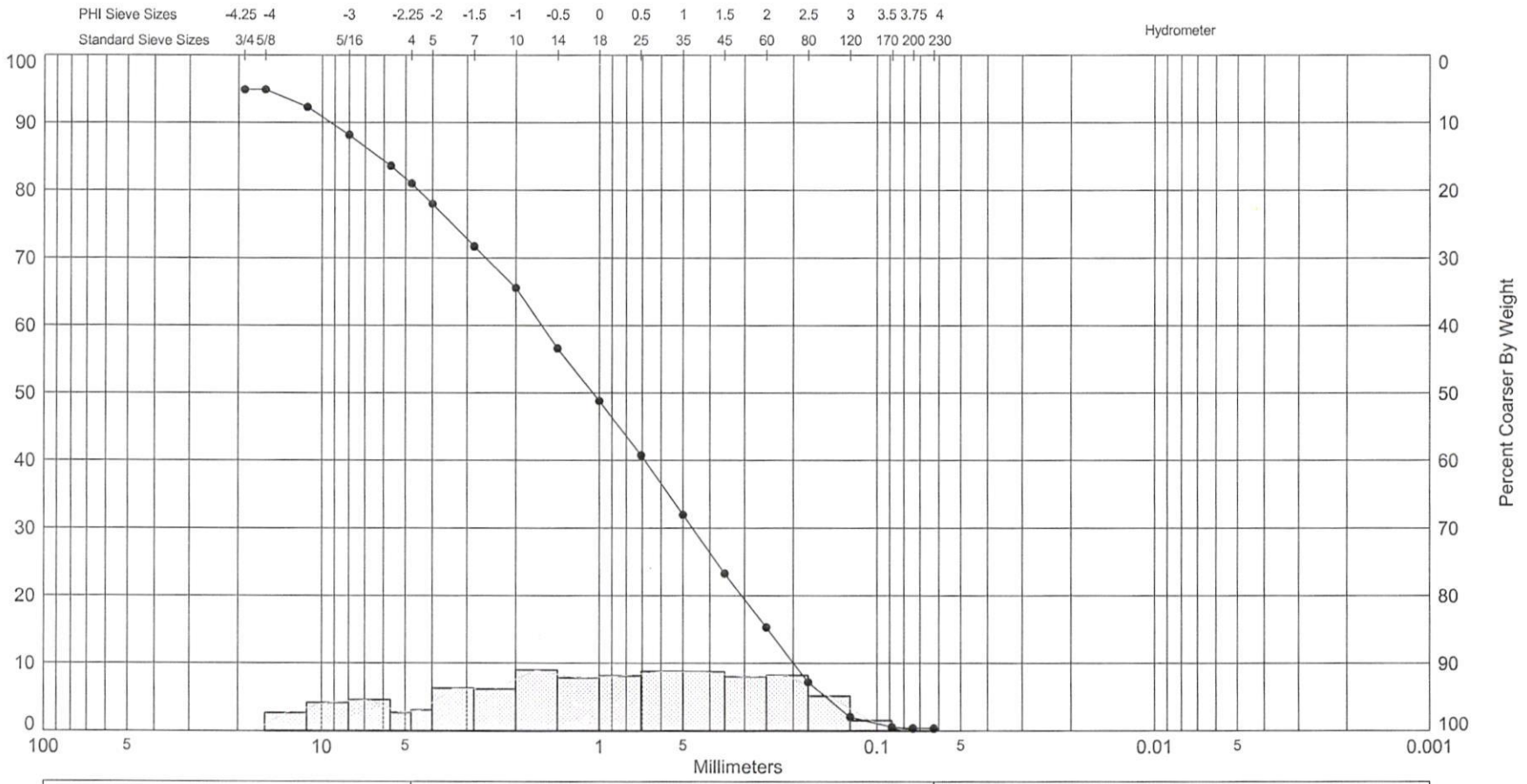

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R113.5 MB	—●—		SW WITH GRAVEL	#200 0.38 #230 0.36	1.30			-0.27	0.15	2.11	1.8

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

Comments:

Depths and elevations based on measured values

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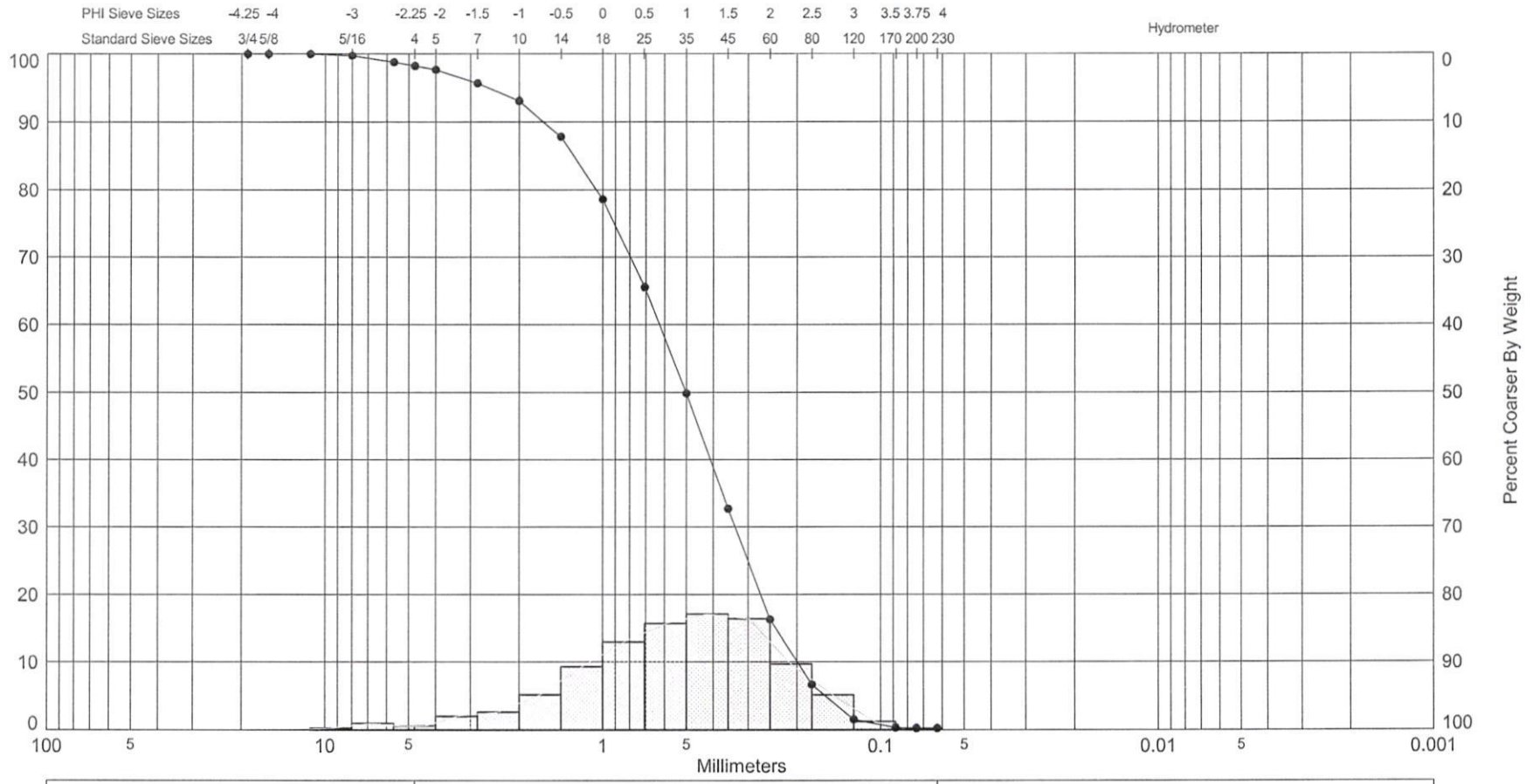

Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R113.5 MHW	—●—		SW	#200 - 0.26 #230 - 0.25	1.10		1	0.86	-0.61	3.39	1.2

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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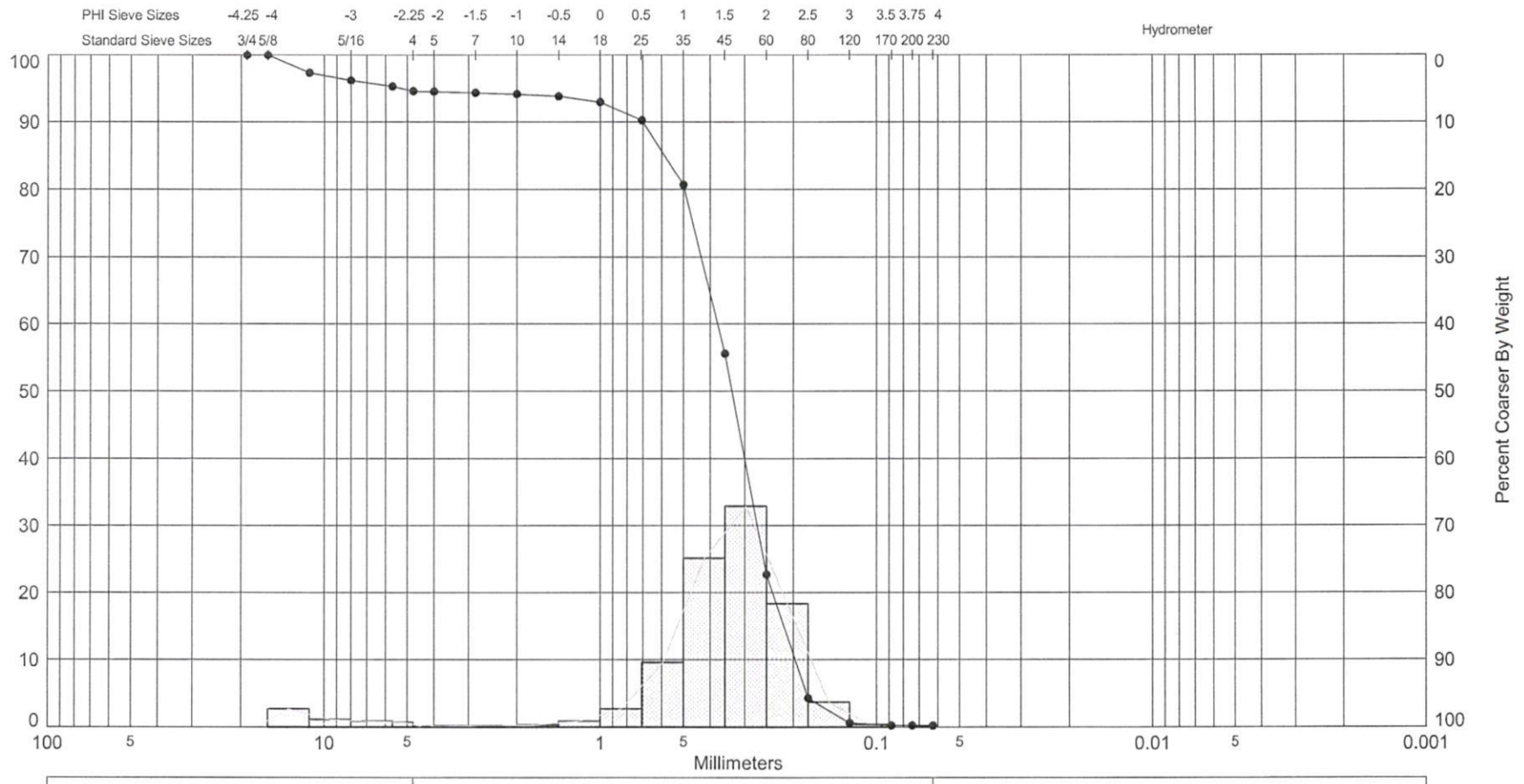

Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R114 TOD	—●—		SW	#200 - 0.25 #230 - 0.23	1.00		1.58	1.31	-2.62	10.33	1.27

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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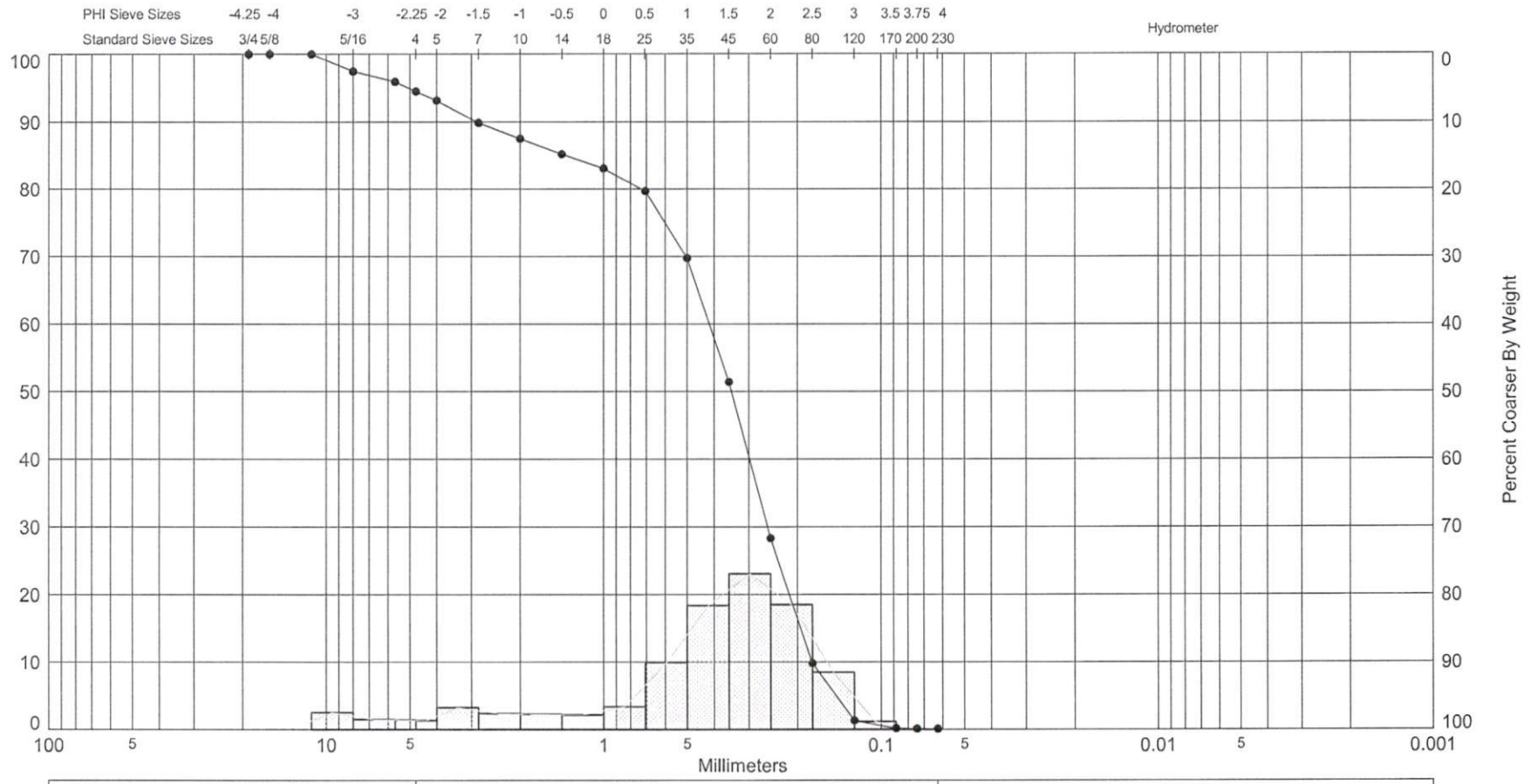

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R114 MB	—●—		SW	#200 - 0.12 #230 - 0.10	0.80		1.53	1.11	-1.38	4.26	1.48

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-09-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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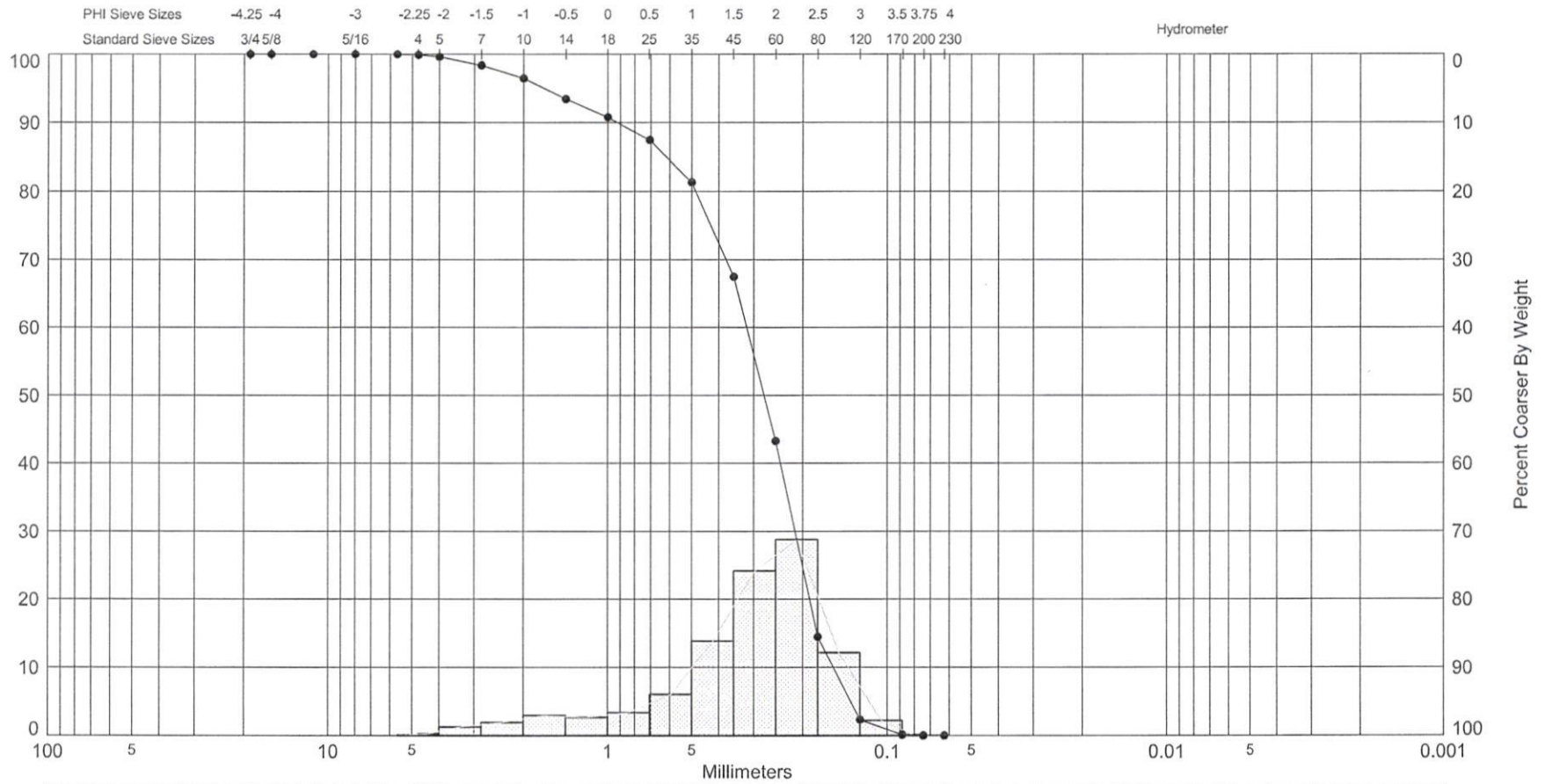

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
BP R114 MHW	—●—		SW	#200 - 0.03 #230 - 0.03	0.60		1.86	1.63	-1.35	4.79	1.04

Comments:

Depths and elevations based on measured values

Sample Information	
Project Name:	Blind Pass Beach Fill Monitoring
Analysis Date:	11-19-09
Analyzed By:	LA
Easting (X, ft):	
Northing (Y, ft):	
Horizontal System:	
Vertical System:	

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SIEVE ANALYSIS 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

Project Name: Blind Pass Beach Fill Monitoring

Sample Name: BP R112 TOD

Analysis Date: 11-19-09

Analyzed By: LA

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Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-8/1 Dry - 2.5Y-8/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
113.90	113.90	0.25	0.07	#200 - 0.44 #230 - 0.27	0.90		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	3.81	3.35	3.81	3.35
5/16"	-3.00	8.00	1.62	1.42	5.43	4.77
3.5	-2.50	5.66	4.61	4.05	10.04	8.82
4	-2.25	4.76	2.20	1.93	12.24	10.75
5	-2.00	4.00	1.84	1.62	14.08	12.37
7	-1.50	2.83	3.95	3.47	18.03	15.84
10	-1.00	2.00	3.89	3.42	21.92	19.26
14	-0.50	1.41	5.94	5.22	27.86	24.48
18	0.00	1.00	5.93	5.21	33.79	29.69
25	0.50	0.71	6.69	5.87	40.48	35.56
35	1.00	0.50	8.29	7.28	48.77	42.84
45	1.50	0.35	11.53	10.12	60.30	52.96
60	2.00	0.25	15.68	13.77	75.98	66.73
80	2.50	0.18	16.14	14.17	92.12	80.90
120	3.00	0.13	12.17	10.68	104.29	91.58
170	3.50	0.09	8.01	7.03	112.30	98.61
200	3.75	0.07	1.08	0.95	113.38	99.56
230	4.00	0.06	0.19	0.17	113.57	99.73

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.24	2.65	2.29	1.35	-0.45	-1.48	-2.97

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	0.8	0.57	1.93	-0.76	2.61

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

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Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R112 MB
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-7/1 Dry - 2.5Y-8/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
112.95	112.95	0.30	0.04	#200 - 0.47 #230 - 0.28	0.90		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	1.63	1.44	1.63	1.44
3.5	-2.50	5.66	1.92	1.70	3.55	3.14
4	-2.25	4.76	2.21	1.96	5.76	5.10
5	-2.00	4.00	2.13	1.89	7.89	6.99
7	-1.50	2.83	4.22	3.74	12.11	10.73
10	-1.00	2.00	4.14	3.67	16.25	14.40
14	-0.50	1.41	4.92	4.36	21.17	18.76
18	0.00	1.00	5.07	4.49	26.24	23.25
25	0.50	0.71	6.66	5.90	32.90	29.15
35	1.00	0.50	10.82	9.58	43.72	38.73
45	1.50	0.35	14.40	12.75	58.12	51.48
60	2.00	0.25	19.60	17.35	77.72	68.83
80	2.50	0.18	17.72	15.69	95.44	84.52
120	3.00	0.13	11.92	10.55	107.36	95.07
170	3.50	0.09	4.56	4.04	111.92	99.11
200	3.75	0.07	0.47	0.42	112.39	99.53
230	4.00	0.06	0.21	0.19	112.60	99.72

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.00	2.48	2.20	1.44	0.15	-0.82	-2.26

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	1.01	0.50	1.6	-0.85	2.94

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R112 MHW
Analysis Date: 11-19-09
Analyzed By: LA

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Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-6/1 Dry - 2.5Y-7/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
113.81	113.81	0.00	0.16	#200 - 0.17 #230 - 0.15	1.00		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.53	0.47	0.53	0.47
3.5	-2.50	5.66	1.59	1.40	2.12	1.87
4	-2.25	4.76	0.25	0.22	2.37	2.09
5	-2.00	4.00	0.23	0.20	2.60	2.29
7	-1.50	2.83	1.59	1.40	4.19	3.69
10	-1.00	2.00	3.18	2.79	7.37	6.48
14	-0.50	1.41	6.06	5.32	13.43	11.80
18	0.00	1.00	6.03	5.30	19.46	17.10
25	0.50	0.71	6.05	5.32	25.51	22.42
35	1.00	0.50	8.79	7.72	34.30	30.14
45	1.50	0.35	22.24	19.54	56.54	49.68
60	2.00	0.25	32.55	28.60	89.09	78.28
80	2.50	0.18	19.33	16.98	108.42	95.26
120	3.00	0.13	4.55	4.00	112.97	99.26
170	3.50	0.09	0.61	0.54	113.58	99.80
200	3.75	0.07	0.03	0.03	113.61	99.83
230	4.00	0.06	0.02	0.02	113.63	99.85

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.49	2.17	1.94	1.51	0.67	-0.10	-1.27

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	1.15	0.45	1.19	-1.29	4.5

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

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Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R112.5 TOD
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-6/1 Dry - 2.5Y-7/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
126.37	126.37	0.15	0.15	#200 - 0.33 #230 - 0.27	1.10		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	3.10	2.45	3.10	2.45
11/16"	-3.50	11.31	0.00	0.00	3.10	2.45
5/16"	-3.00	8.00	4.61	3.65	7.71	6.10
3.5	-2.50	5.66	5.03	3.98	12.74	10.08
4	-2.25	4.76	2.28	1.80	15.02	11.88
5	-2.00	4.00	3.32	2.63	18.34	14.51
7	-1.50	2.83	4.40	3.48	22.74	17.99
10	-1.00	2.00	4.90	3.88	27.64	21.87
14	-0.50	1.41	5.90	4.67	33.54	26.54
18	0.00	1.00	7.14	5.65	40.68	32.19
25	0.50	0.71	7.50	5.93	48.18	38.12
35	1.00	0.50	11.31	8.95	59.49	47.07
45	1.50	0.35	18.45	14.60	77.94	61.67
60	2.00	0.25	23.63	18.70	101.57	80.37
80	2.50	0.18	16.49	13.05	118.06	93.42
120	3.00	0.13	6.52	5.16	124.58	98.58
170	3.50	0.09	1.23	0.97	125.81	99.55
200	3.75	0.07	0.15	0.12	125.96	99.67
230	4.00	0.06	0.07	0.06	126.03	99.73

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.65	2.14	1.86	1.10	-0.66	-1.79	-3.30

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	0.48	0.72	1.83	-0.85	2.72

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

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Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R112.5 MB
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-7/1 Dry - 2.5Y-8/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
118.83	118.83	0.31	0.15	#200 - 0.52 #230 - 0.41	1.20		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	2.51	2.11	2.51	2.11
5/16"	-3.00	8.00	3.32	2.79	5.83	4.90
3.5	-2.50	5.66	4.31	3.63	10.14	8.53
4	-2.25	4.76	1.95	1.64	12.09	10.17
5	-2.00	4.00	2.92	2.46	15.01	12.63
7	-1.50	2.83	5.83	4.91	20.84	17.54
10	-1.00	2.00	6.35	5.34	27.19	22.88
14	-0.50	1.41	7.83	6.59	35.02	29.47
18	0.00	1.00	7.91	6.66	42.93	36.13
25	0.50	0.71	8.28	6.97	51.21	43.10
35	1.00	0.50	9.87	8.31	61.08	51.41
45	1.50	0.35	11.62	9.78	72.70	61.19
60	2.00	0.25	14.13	11.89	86.83	73.08
80	2.50	0.18	17.39	14.63	104.22	87.71
120	3.00	0.13	9.70	8.16	113.92	95.87
170	3.50	0.09	3.87	3.26	117.79	99.13
200	3.75	0.07	0.42	0.35	118.21	99.48
230	4.00	0.06	0.13	0.11	118.34	99.59

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.95	2.37	2.07	0.92	-0.84	-1.66	-2.99

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	0.51	0.70	1.85	-0.55	2.29

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

Project Name: Blind Pass Beach Fill Monitoring

Sample Name: BP R112.5 MHW

Analysis Date: 11-19-09

Analyzed By: LA

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-6/1 Dry - 2.5Y-7/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
120.42	120.42	-0.04	0.12	#200 - 0.12 #230 - 0.10	0.80		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.26	0.22	0.26	0.22
4	-2.25	4.76	0.21	0.17	0.47	0.39
5	-2.00	4.00	0.71	0.59	1.18	0.98
7	-1.50	2.83	2.70	2.24	3.88	3.22
10	-1.00	2.00	5.66	4.70	9.54	7.92
14	-0.50	1.41	8.85	7.35	18.39	15.27
18	0.00	1.00	11.11	9.23	29.50	24.50
25	0.50	0.71	11.96	9.93	41.46	34.43
35	1.00	0.50	12.75	10.59	54.21	45.02
45	1.50	0.35	13.96	11.59	68.17	56.61
60	2.00	0.25	19.56	16.24	87.73	72.85
80	2.50	0.18	20.41	16.95	108.14	89.80
120	3.00	0.13	10.84	9.00	118.98	98.80
170	3.50	0.09	1.25	1.04	120.23	99.84
200	3.75	0.07	0.05	0.04	120.28	99.88
230	4.00	0.06	0.03	0.02	120.31	99.90

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.79	2.33	2.06	1.21	0.03	-0.46	-1.31

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	1	0.50	1.28	-0.46	2.32

Granularmetric Report

Depths and elevations based on measured values

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R113 TOD
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-7/1 Dry - 2.5Y-8/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
116.19	116.19	0.16	0.28	#200 - 0.56 #230 - 0.41	0.80		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	2.60	2.24	2.60	2.24
3.5	-2.50	5.66	2.34	2.01	4.94	4.25
4	-2.25	4.76	1.11	0.96	6.05	5.21
5	-2.00	4.00	1.69	1.45	7.74	6.66
7	-1.50	2.83	2.17	1.87	9.91	8.53
10	-1.00	2.00	2.63	2.26	12.54	10.79
14	-0.50	1.41	4.23	3.64	16.77	14.43
18	0.00	1.00	4.81	4.14	21.58	18.57
25	0.50	0.71	5.71	4.91	27.29	23.48
35	1.00	0.50	7.09	6.10	34.38	29.58
45	1.50	0.35	10.59	9.11	44.97	38.69
60	2.00	0.25	16.22	13.96	61.19	52.65
80	2.50	0.18	21.53	18.53	82.72	71.18
120	3.00	0.13	19.77	17.02	102.49	88.20
170	3.50	0.09	11.80	10.16	114.29	98.36
200	3.75	0.07	1.25	1.08	115.54	99.44
230	4.00	0.06	0.17	0.15	115.71	99.59

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.33	2.88	2.61	1.91	0.62	-0.31	-2.30

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	1.4	0.38	1.66	-1.14	3.58

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R113 MB
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-7/1 Dry - 2.5Y-8/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
130.20	130.20	0.11	0.15	#200 - 0.26 #230 - 0.24	1.00		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	1.92	1.47	1.92	1.47
5/16"	-3.00	8.00	4.92	3.78	6.84	5.25
3.5	-2.50	5.66	2.62	2.01	9.46	7.26
4	-2.25	4.76	2.47	1.90	11.93	9.16
5	-2.00	4.00	2.61	2.00	14.54	11.16
7	-1.50	2.83	5.17	3.97	19.71	15.13
10	-1.00	2.00	6.02	4.62	25.73	19.75
14	-0.50	1.41	7.35	5.65	33.08	25.40
18	0.00	1.00	7.78	5.98	40.86	31.38
25	0.50	0.71	8.89	6.83	49.75	38.21
35	1.00	0.50	10.98	8.43	60.73	46.64
45	1.50	0.35	13.72	10.54	74.45	57.18
60	2.00	0.25	18.91	14.52	93.36	71.70
80	2.50	0.18	18.62	14.30	111.98	86.00
120	3.00	0.13	13.91	10.68	125.89	96.68
170	3.50	0.09	3.71	2.85	129.60	99.53
200	3.75	0.07	0.27	0.21	129.87	99.74
230	4.00	0.06	0.03	0.02	129.90	99.76

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.92	2.43	2.12	1.16	-0.54	-1.41	-3.03

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	0.68	0.62	1.81	-0.72	2.56

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R113 MHW
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-6/1 Dry - 2.5Y-7/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
120.15	120.15	-0.01	0.04	#200 - 0.06 #230 - 0.04	0.80		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.57	0.47	0.57	0.47
3.5	-2.50	5.66	0.18	0.15	0.75	0.62
4	-2.25	4.76	0.31	0.26	1.06	0.88
5	-2.00	4.00	0.36	0.30	1.42	1.18
7	-1.50	2.83	0.92	0.77	2.34	1.95
10	-1.00	2.00	1.96	1.63	4.30	3.58
14	-0.50	1.41	4.77	3.97	9.07	7.55
18	0.00	1.00	6.31	5.25	15.38	12.80
25	0.50	0.71	8.58	7.14	23.96	19.94
35	1.00	0.50	12.20	10.15	36.16	30.09
45	1.50	0.35	16.50	13.73	52.66	43.82
60	2.00	0.25	23.34	19.43	76.00	63.25
80	2.50	0.18	29.03	24.16	105.03	87.41
120	3.00	0.13	12.88	10.72	117.91	98.13
170	3.50	0.09	2.06	1.71	119.97	99.84
200	3.75	0.07	0.12	0.10	120.09	99.94
230	4.00	0.06	0.02	0.02	120.11	99.96

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.85	2.43	2.24	1.66	0.75	0.22	-0.82

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	1.4	0.38	1.15	-1.06	4.19

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R113.5 TOD
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-6/1 Dry - 2.5Y-7/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
131.80	131.80	0.04	0.26	#200 - 0.32 #230 - 0.31	0.70		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.81	0.61	0.81	0.61
3.5	-2.50	5.66	2.04	1.55	2.85	2.16
4	-2.25	4.76	2.35	1.78	5.20	3.94
5	-2.00	4.00	2.76	2.09	7.96	6.03
7	-1.50	2.83	4.51	3.42	12.47	9.45
10	-1.00	2.00	4.84	3.67	17.31	13.12
14	-0.50	1.41	3.51	2.66	20.82	15.78
18	0.00	1.00	2.74	2.08	23.56	17.86
25	0.50	0.71	3.19	2.42	26.75	20.28
35	1.00	0.50	6.68	5.07	33.43	25.35
45	1.50	0.35	18.90	14.34	52.33	39.69
60	2.00	0.25	36.77	27.90	89.10	67.59
80	2.50	0.18	29.30	22.23	118.40	89.82
120	3.00	0.13	11.92	9.04	130.32	98.86
170	3.50	0.09	1.02	0.77	131.34	99.63
200	3.75	0.07	0.07	0.05	131.41	99.68
230	4.00	0.06	0.01	0.01	131.42	99.69

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.79	2.37	2.17	1.68	0.97	-0.45	-2.12

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	1.21	0.43	1.45	-1.36	3.89

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL.DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R113.5 MB
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW WITH GRAVEL	Wet - 2.5Y-7/1 Dry - 2.5Y-8/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
127.89	127.89	0.25	0.16	#200 - 0.38 #230 - 0.36	1.30		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	6.44	5.04	6.44	5.04
5/8"	-4.00	16.00	0.00	0.00	6.44	5.04
11/16"	-3.50	11.31	3.38	2.64	9.82	7.68
5/16"	-3.00	8.00	5.30	4.14	15.12	11.82
3.5	-2.50	5.66	5.81	4.54	20.93	16.36
4	-2.25	4.76	3.39	2.65	24.32	19.01
5	-2.00	4.00	3.88	3.03	28.20	22.04
7	-1.50	2.83	8.02	6.27	36.22	28.31
10	-1.00	2.00	7.81	6.11	44.03	34.42
14	-0.50	1.41	11.44	8.95	55.47	43.37
18	0.00	1.00	9.97	7.80	65.44	51.17
25	0.50	0.71	10.35	8.09	75.79	59.26
35	1.00	0.50	11.20	8.76	86.99	68.02
45	1.50	0.35	11.14	8.71	98.13	76.73
60	2.00	0.25	10.18	7.96	108.31	84.69
80	2.50	0.18	10.42	8.15	118.73	92.84
120	3.00	0.13	6.52	5.10	125.25	97.94
170	3.50	0.09	1.95	1.52	127.20	99.46
200	3.75	0.07	0.21	0.16	127.41	99.62
230	4.00	0.06	0.03	0.02	127.44	99.64

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.71	1.96	1.40	-0.07	-1.76	-2.54	

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	-0.27	1.21	1.8	0.15	2.11

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R113.5 MHW
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-6/1 Dry - 2.5Y-7/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
122.74	122.74	0.00	0.25	#200 - 0.26 #230 - 0.25	1.10		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.31	0.25	0.31	0.25
3.5	-2.50	5.66	1.18	0.96	1.49	1.21
4	-2.25	4.76	0.67	0.55	2.16	1.76
5	-2.00	4.00	0.71	0.58	2.87	2.34
7	-1.50	2.83	2.48	2.02	5.35	4.36
10	-1.00	2.00	3.23	2.63	8.58	6.99
14	-0.50	1.41	6.33	5.16	14.91	12.15
18	0.00	1.00	11.40	9.29	26.31	21.44
25	0.50	0.71	15.95	12.99	42.26	34.43
35	1.00	0.50	19.27	15.70	61.53	50.13
45	1.50	0.35	21.04	17.14	82.57	67.27
60	2.00	0.25	20.13	16.40	102.70	83.67
80	2.50	0.18	11.86	9.66	114.56	93.33
120	3.00	0.13	6.28	5.12	120.84	98.45
170	3.50	0.09	1.47	1.20	122.31	99.65
200	3.75	0.07	0.11	0.09	122.42	99.74
230	4.00	0.06	0.01	0.01	122.43	99.75

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.66	2.02	1.74	1.00	0.14	-0.29	-1.38

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	0.86	0.55	1.2	-0.61	3.39

Granularmetric Report

Depths and elevations based on measured values

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R114 TOD
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-6/1 Dry - 2.5Y-7/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
133.19	133.19	0.01	0.24	#200 - 0.25 #230 - 0.23	1.00		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	3.60	2.70	3.60	2.70
5/16"	-3.00	8.00	1.52	1.14	5.12	3.84
3.5	-2.50	5.66	1.16	0.87	6.28	4.71
4	-2.25	4.76	0.93	0.70	7.21	5.41
5	-2.00	4.00	0.09	0.07	7.30	5.48
7	-1.50	2.83	0.24	0.18	7.54	5.66
10	-1.00	2.00	0.26	0.20	7.80	5.86
14	-0.50	1.41	0.43	0.32	8.23	6.18
18	0.00	1.00	1.14	0.86	9.37	7.04
25	0.50	0.71	3.59	2.70	12.96	9.74
35	1.00	0.50	12.75	9.57	25.71	19.31
45	1.50	0.35	33.43	25.10	59.14	44.41
60	2.00	0.25	43.85	32.92	102.99	77.33
80	2.50	0.18	24.41	18.33	127.40	95.66
120	3.00	0.13	4.95	3.72	132.35	99.38
170	3.50	0.09	0.49	0.37	132.84	99.75
200	3.75	0.07	0.00	0.00	132.84	99.75
230	4.00	0.06	0.02	0.02	132.86	99.77

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.48	2.18	1.96	1.58	1.11	0.83	-2.40

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	1.31	0.40	1.27	-2.62	10.33

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R114 MB
Analysis Date: 11-09-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-6/1 Dry - 2.5Y-7/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
123.65	123.65	0.01	0.10	#200 - 0.12 #230 - 0.10	0.80		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	3.16	2.56	3.16	2.56
3.5	-2.50	5.66	1.85	1.50	5.01	4.06
4	-2.25	4.76	1.75	1.42	6.76	5.48
5	-2.00	4.00	1.67	1.35	8.43	6.83
7	-1.50	2.83	4.03	3.26	12.46	10.09
10	-1.00	2.00	2.92	2.36	15.38	12.45
14	-0.50	1.41	2.85	2.30	18.23	14.75
18	0.00	1.00	2.67	2.16	20.90	16.91
25	0.50	0.71	4.19	3.39	25.09	20.30
35	1.00	0.50	12.28	9.93	37.37	30.23
45	1.50	0.35	22.73	18.38	60.10	48.61
60	2.00	0.25	28.53	23.07	88.63	71.68
80	2.50	0.18	22.89	18.51	111.52	90.19
120	3.00	0.13	10.47	8.47	121.99	98.66
170	3.50	0.09	1.43	1.16	123.42	99.82
200	3.75	0.07	0.08	0.06	123.50	99.88
230	4.00	0.06	0.02	0.02	123.52	99.90

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.78	2.33	2.09	1.53	0.74	-0.21	-2.33

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	1.11	0.46	1.48	-1.38	4.26

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09

Granularmetric Report

Depths and elevations based on measured values

COASTAL TECH
Coastal Geology & Sediments Laboratory

715 North Drive Suite E
Melbourne, Florida 32934
Phone 321-751-1135 x 206
Fax

Project Name: Blind Pass Beach Fill Monitoring
Sample Name: BP R114 MHW
Analysis Date: 11-19-09
Analyzed By: LA

Easting (ft):	Northing (ft):	Coordinate System:	Elevation (ft):

USCS:	Munsell:	Comments:
SW	Wet - 2.5Y-6/1 Dry - 2.5Y-7/1	

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
117.10	117.10	0.00	0.02	#200 - 0.03 #230 - 0.03	0.60		

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.11	0.09	0.11	0.09
5	-2.00	4.00	0.35	0.30	0.46	0.39
7	-1.50	2.83	1.48	1.26	1.94	1.65
10	-1.00	2.00	2.23	1.90	4.17	3.55
14	-0.50	1.41	3.48	2.97	7.65	6.52
18	0.00	1.00	3.14	2.68	10.79	9.20
25	0.50	0.71	3.95	3.37	14.74	12.57
35	1.00	0.50	7.12	6.08	21.86	18.65
45	1.50	0.35	16.23	13.86	38.09	32.51
60	2.00	0.25	28.31	24.18	66.40	56.69
80	2.50	0.18	33.72	28.80	100.12	85.49
120	3.00	0.13	14.25	12.17	114.37	97.66
170	3.50	0.09	2.58	2.20	116.95	99.86
200	3.75	0.07	0.13	0.11	117.08	99.97
230	4.00	0.06	0.00	0.00	117.08	99.97

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.89	2.47	2.32	1.86	1.23	0.78	-0.76

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	1.63	0.32	1.04	-1.35	4.79

GRANULARMETRIC REPORT 2009-11-19 BLIND PASS CONSTRUCTION.GPJ FL DEP ROSS.GDT 12/02/09