

APPENDIX C - PROJECT DATA
#24-086

Vibracore Data

Longboat Pass Geotechnical Summary - 29 DEC 2015, OAI
Longboat Pass 2014 Vibracores, CB&I CPE
Longboat Pass 2010 Vibracores, WOLF WPC
Longboat Pass 2007 Vibracores, CPE

Post-Construction Beach Berm Samples (Sand dredged from Longboat Pass)

2016
2021

Current USACE channel survey data can be found here:

<http://www.saj.usace.army.mil/Missions/CivilWorks/Navigation/HydroSurveys.aspx>

Please note that the vertical datums used in the USACE surveys are different from those used in the Construction Plans. Tables of tidal datums are provided in the Construction Plans.

MEMORANDUM

Date: 29 December 2015

To: Juan Florensa – Town of Longboat Key, FL
James Linkogle – Town of Longboat Key, FL

From: Albert E. Browder, Ph.D., P.E.
Senior Engineer *AEBS*

Cc: Krista J. Egan, E.I. – Olsen Associates, Inc.

Re: Longboat Pass Borrow Area Sediments



The attached geotechnical summary describes the characteristics of the sediment within Longboat Pass. This document was prepared in conjunction with the plans and specifications for the Longboat Pass Ebb Shoal Dredging and Beach Nourishment Project scheduled for 2016.

Thank you.

**Longboat Pass, FL
Ebb Shoal Channel Dredging
and Beach Nourishment**

**Longboat Key, FL
R-43.5 to R-50.5**

Geotechnical Summary

December 2015

Manatee County, FL

Report Submitted to:
The Town of Longboat Key

Report Submitted by:
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1.0 INTRODUCTION

This report summarizes the sediment characteristics expected to be encountered during the excavation of the ebb shoal portion of the Longboat Pass channel between Anna Maria Island and Longboat Key in Manatee County, FL. This information is provided in support of the development of construction plans and specifications for the proposed beach nourishment of the north end of Longboat Key via the dredging of Longboat Pass. The report supplements previous geotechnical information provided by the permitting agent, CB&I/CP&E, during the permitting process. Eleven sediment Vibracores within or in close proximity to the Longboat Pass channel borrow area were acquired over the period of 2007 to 2014. The geotechnical analysis of CB&I (2014) considers five of these Vibracores. The analyses herein a) consider an additional dataset collected by Athena Technologies, Inc., in 2010, and b) discuss the impacts of the permit modification 0298107-006-JN issued on 5 August 2015.

2.0 PROJECT DESCRIPTION

The purpose of the presently proposed project is to renourish portions of the northern end of the Longboat Key Gulf of Mexico shoreline, nominally between FDEP R-monuments R-43.5 and R-50.5 (North Shore Road to Gulfside Road). The project borrow area lies within the same footprint as the ebb shoal portion of the Federal navigation channel through Longboat Pass. The proposed project is the first excavation and nourishment of a 15-yr program to periodically dredge the ebb shoal portion of the channel and provide beach compatible sediment to the shorelines of both Longboat Key and Anna Maria Island, south and north of the channel, respectively¹. The Joint Coastal Permit #0298107-004, issued in March 2015, is jointly held by Manatee County and the Town of Longboat Key for this purpose.

In August 2015, the FDEP Joint Coastal Permit was modified to clarify the maximum excavation depth of -15.6 ft NAVD88 (JCP #0298107-006-JN). Prior to the permit modification, -13.6 ft NAVD88 was the maximum allowable excavation depth. With an allowable final finished channel elevation of -15.6 ft, the actual yield from the initial excavation is expected to be between 172,400 and 238,600 cy of sand, all which will be placed entirely along the shoreline of Longboat Key. As of this writing, the first nourishment event under this permit will place dredged material within two segments on the Longboat Key shoreline: between DEP survey monuments R-44.7 and R-45.5, in the vicinity of and south of the Longbeach seawall, and between R-48 and R-50.5, along Gulfside Road (**Figure 2.1**).

¹ The Joint Coastal Permit likewise notes the secondary benefits of navigation through the ebb shoal portion of the Longboat Pass channel.

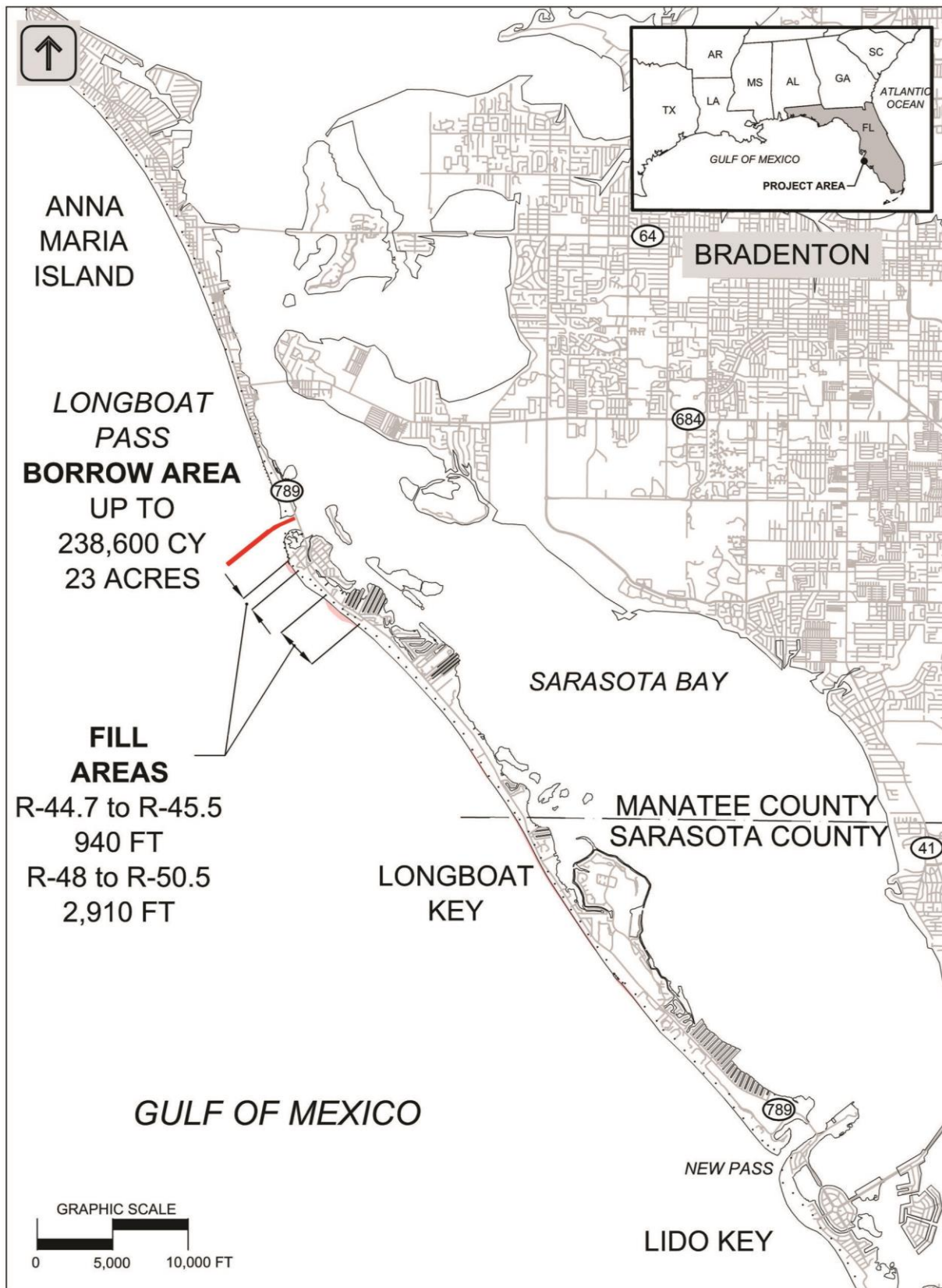


Figure 2.1: The Longboat Pass borrow area and the fill segments on the north end of Longboat Key, FL.

3.0 BORROW AREA LOCATION AND SEDIMENTS

3.1 Borrow Area Location

Figure 2.1 displays the vicinity of the project, including the Longboat Pass borrow area and the two proposed fill segments on the shoreline of Longboat Key. **Figure 3.1** shows the borrow area in greater detail and includes the Vibracore locations from the 2007, 2010, and 2014 geotechnical investigations. Several other borings were taken as a part of these investigations, but only those nearest to the borrow area are included in **Figure 3.1**.

3.2 Vibracores in the Borrow Area Composite

The borrow area composite computed by (CB&I/CP&E, 2014) included five Vibracores: AMVC-07-10, AMVC-07-11, AMVC-07-15, LBVC-14-01, and LBVC-14-02. The composite was developed using a depth of -13.6 ft NAVD88. Herein the borrow area composite was re-calculated following the permit modification 0298107-006-JN to include the additional material between -13.6 ft NAVD88 and the maximum excavation depth of -15.6 ft NAVD88. With a maximum excavation depth of -15.6 ft NAVD88, material can also be obtained from farther offshore within the limits of the permitted borrow area. As such, an additional Vibracore, AMVC-07-09 was included in the calculation of a new borrow area composite.

Figure 3.1 includes an additional set of Vibracores collected by Athena Technologies, Inc., and analyzed by Wolf WPC Engineering, Environmental, & Construction Services in 2010. This additional dataset was evaluated for confirmation of the sediment characteristics shown in the 2007 and 2014 data, although it was not used in the computation of the borrow area composite because the level of sampling was insufficient.

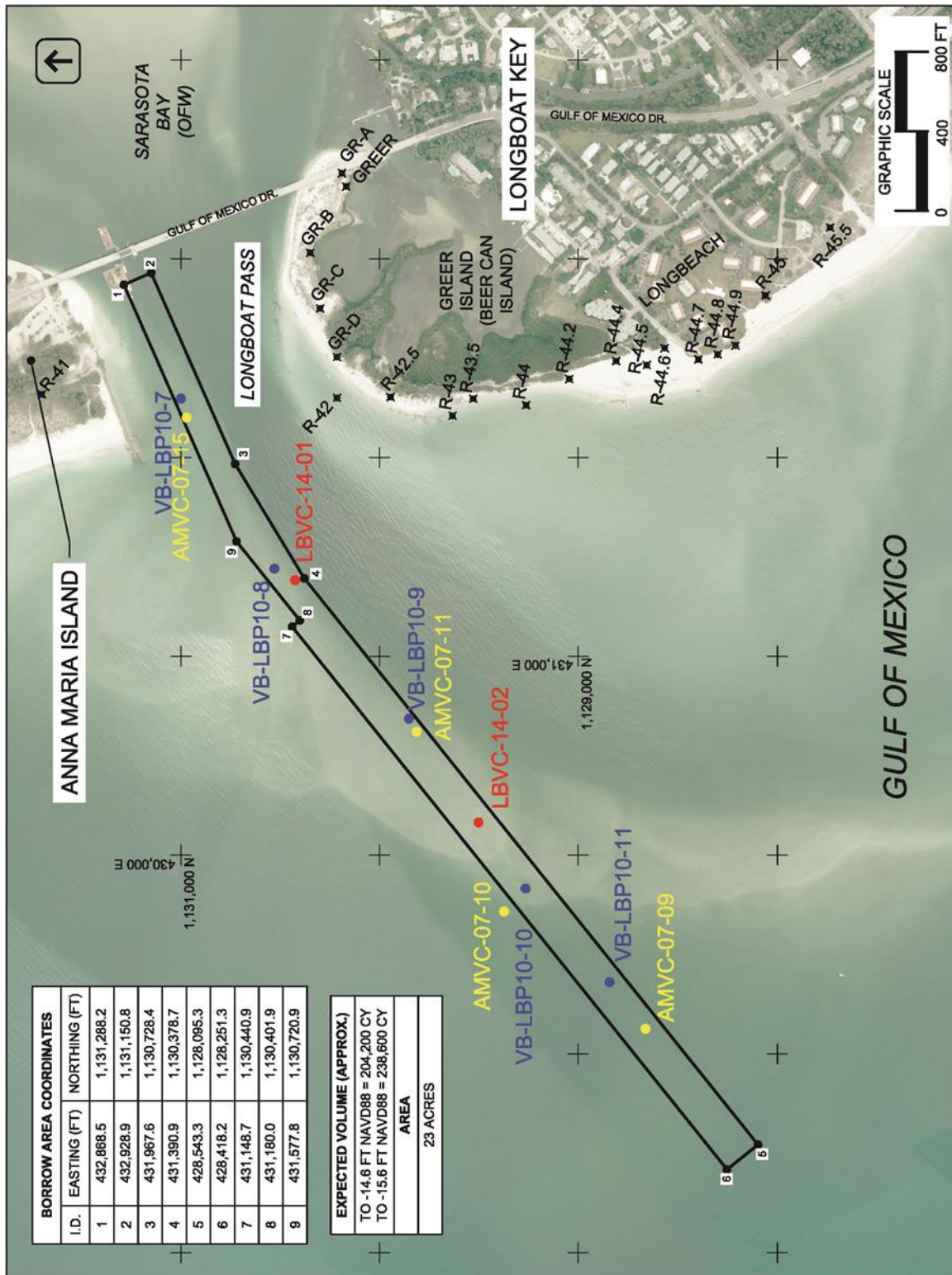
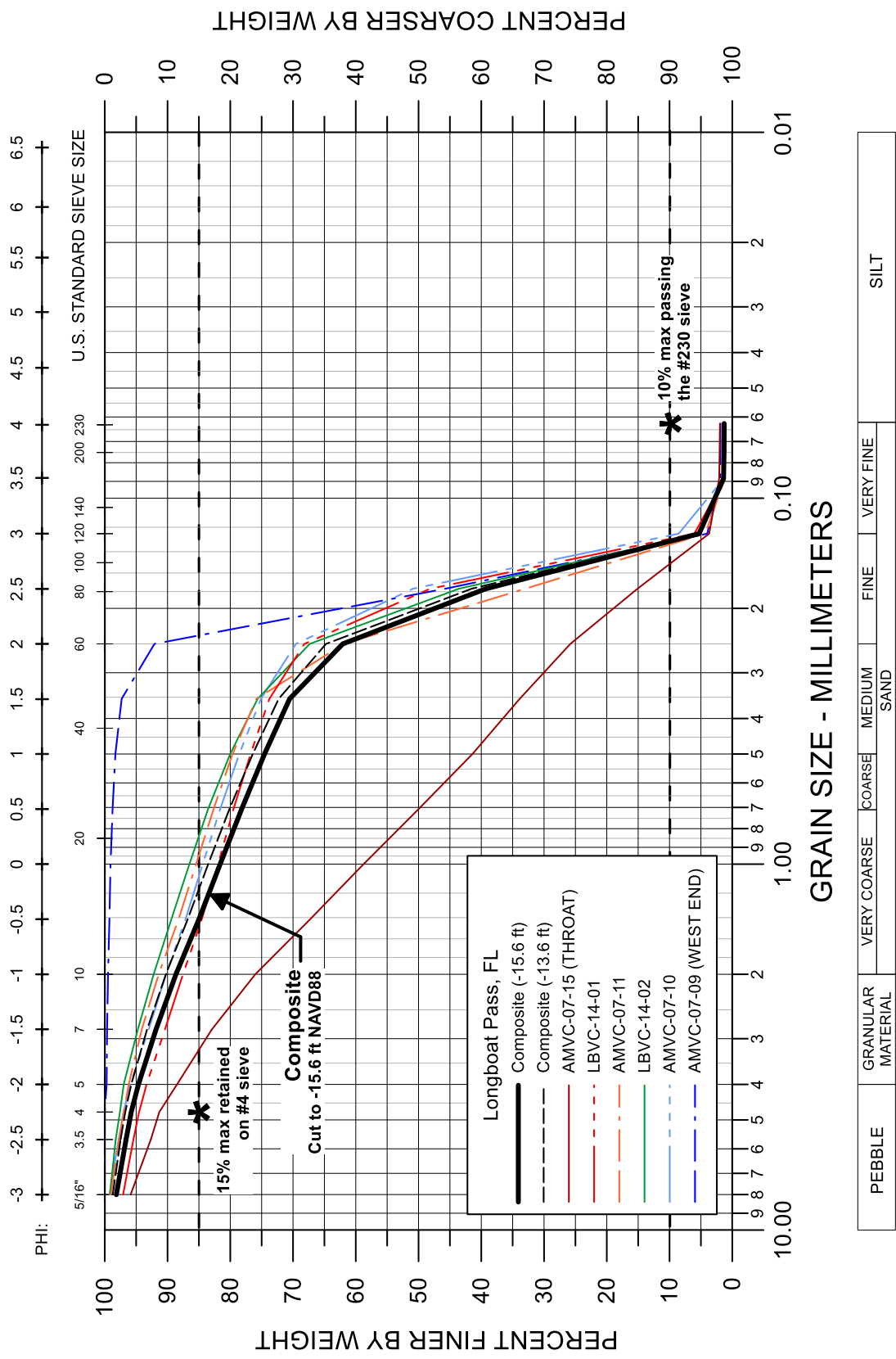


Figure 3.1: Vibracores taken between 2007 and 2014 within the Longboat Pass borrow area.

3.3 Effect of JCP #0298107-006-JN

Figure 3.2 displays the borrow area composite to the former maximum depth of -13.6 ft NAVD88 (black solid line) as determined by OAI, the borrow area composite to -15.6 ft NAVD88 (black dashed line), and the composites of the six individual Vibracores that make up the total borrow area composite to -15.6 ft NAVD88. The asterisks indicate the grain size requirements of the Sediment QA/QC Plan. As indicated by **Figure 3.2**, the additional two feet of material from -13.6 ft to -15.6 ft NAVD88 caused the grain size curve of the borrow area composite to shift toward coarser sediments, although the composite remains well within the limits of the Sediment QA/QC Plan. The mean sediment diameter of the borrow area composite increased from 0.32 mm to 0.35 mm and the median increased from 0.20 mm to 0.21 mm as the composite depth increased from -13.6 ft to -15.6 ft NAVD88. The sorting value, which indicates the range of sediment sizes, also increased, meaning that the content of shell fragments (coarse material) and fine sediments increased.

Similar to the total borrow area composite, each individual Vibracore composite generally followed the trend of increasing coarse material and increasing range of sediment sizes as the depth of the composite was increased by two feet. As shown in **Figure 3.2**, all of the individual Vibracore composites are well within the limits of fine and coarse material, as prescribed by the Plan. The majority of the Vibracore composites have a grain size distribution that is similar to the overall borrow area composite. However, **Figure 3.2** displays two outliers -- the very coarse, shelly material found in AMVC-07-15, at the throat of the inlet, and the fine sediment located in deeper water at the end of the authorized navigation channel, represented by AMVC-07-09. These outliers represent 14 and 5 percent, respectively, of the total volume expected from Longboat Pass when dredged to the maximum depth of -15.6 ft NAVD88.



PEBBLE	GRANULAR MATERIAL			SAND			SILT
	VERY COARSE	COARSE	MEDIUM	FINE	VERY FINE		

Figure 3.2: Grain size distributions of the Vibracore composites and the overall borrow area composite computed to -15.6 ft NAVD88 are shown for Longboat Pass, FL. The composite curve computed to -13.6 ft NAVD88 is likewise plotted for comparison.

3.4 Sediment Grain Size and Color Analysis

Table 3.1 displays the sieve analysis, mean diameter (\bar{x}), sorting (σ_ϕ), median diameter, percent carbonate, percent retained on the #4 sieve (percent coarse material), and Munsell color value of each individual Vibracore composite as well as the overall borrow area composite (Comp, last column). The composites shown in **Table 3.1** were computed to -15.6 ft NAVD88, the maximum dredge depth. The overall composite was developed by estimating the percentage of the total fill volume that each Vibracore composite would represent (**Table 3.1**).

The throat of the inlet contains the coarsest material within the permitted borrow area. Vibracores in this area include AMVC-07-15 and VB-LBP10-7. As mentioned previously, the 2010 dataset is limited in the level of sampling and thus can only be discussed qualitatively and used for confirmation of the material found in the 2007 and 2014 Vibracores. The composite of Vibracore AMVC-07-15 has a mean diameter of 0.79 mm, over two times the mean diameter of the total borrow area composite. A sorting value of 1.79ϕ indicates shell fragments of various sizes. Although the composite of AMVC-07-15 meets the requirements of the Sediment QA/QC Plan, Vibracore VB-LBP10-7, just northeast of AMVC-07-15, contains samples with 17% and 18% coarse material (retained on the #4 sieve), which is over the 15% allowed by the Plan. AMVC-07-15 and VB-LBP10-7 contain some darker material that has an in-situ Munsell color value of 6. The material dredged from the throat of the inlet may provide greater longevity as a result of its relatively coarse composition; however, its shell content and color may require blending with the existing beach sediments to assure compliance with the QA/QC Plan. The composite of AMVC-07-15 represents 14% of the material within the borrow area.

To the southwest (offshore), VB-LBP-10-8 and LBVC-14-01 (**Figure 3.2**) suggest that the material in this area is mostly fine-grained quartz sand with some medium to coarse sand-sized shell that has an in-situ Munsell color value of 7 or lighter. The composite of Vibracore LBVC-14-01 has a mean diameter of 0.32 mm and 5.46% coarse material (retained on the #4 sieve). The sorting value of 1.75ϕ indicates a wide range of grain sizes, from silty sand to large shell fragments. This Vibracore composite represents 28% of the material within the borrow area.

Farther southwest, Vibracores AMVC-07-11 and VB-LBP10-9 indicate the presence of sand and some sand-sized shell and shell hash pockets. The mean sediment diameter of the composite AMVC-07-11 is 0.31 mm. Generally, the percent of coarse material decreases as the distance from the dynamic inlet throat increases. This trend continues with AMVC-07-11, which has 3.01% coarse material, less than the composites of AMVC-07-15 and LBVC-14-01 that are located in the more dynamic portion of the inlet. AMVC-07-11 suggests a lens of darker material between -12.6 ft and -13.5 ft NAVD88, with an in-situ Munsell color value of 6. However, the majority of the material appears to have a Munsell color value of 7 or lighter. The

composite of Vibracore AMVC-07-11 represents 25% of the volume available in the borrow area.

Vibracore LBVC-14-02 is located southwest of AMVC-07-11 and VB-LBP10-9, on the ebb shoal crest. The composite of LBVC-14-02 has a mean sediment diameter of 0.29 mm and an in-situ Munsell color value of 7 or lighter. The Vibracore composite indicates 24.5% carbonate (shell), although most of the material is sand-sized, as only 2.43% is retained on the #4 sieve. LBVC-14-02 represents 17% of the volume available in the borrow area.

Farther offshore but still on the ebb shoal crest, Vibracore VB-LBP10-10 indicates mostly quartz sand with an in-situ Munsell color value of 8. Photographs of the Vibracore show a layer of darker material that could potentially be disturbed by a cutterhead dredge between -15.8 ft and -17.5 ft NAVD88. The neighboring Vibracore AMVC-07-10, lies just outside the limits of the borrow area and suggests the presence of well-graded sand with some shell fragments. The composite of AMVC-07-10 has a mean diameter of 0.29 mm and contains 2.98% coarse material (retained on the #4 sieve). This composite represents 11% of the material in the borrow area.

The final two Vibracores, VB-LBP10-11 and AMVC-07-09 are the farthest offshore and contain the finest material overall. The material in AMVC-07-09 has a Munsell color value of 8 and a mean diameter of 0.19 mm. The low sorting value of 0.52ϕ indicates relatively little variation in grain size. Zero percent of the material in the composite was retained on the #4 sieve. AMVC-07-09 accounts for 5% of the material to be excavated from Longboat Pass.

3.5 Summary

Overall, the channel borrow area sediments at Longboat Pass have a mean diameter of 0.34 to 0.35 mm, generated by a wide range of sediment sizes. The material consists of fine quartz sand with varying percentages of fine gravel- to pebble-sized shell hash and fragments. While the overall percentage of sediments retained on the #4 sieve is 4.2%, individual lenses of shell hash/fragments indicate areas of higher shell content, especially at the landward, throat-end of the channel. Individual lenses of slightly darker material with color values of less than 7 exist throughout the borrow area. The Town should be aware of these discrete pockets of material that may appear in small areas during construction. Some blending may be required during construction.

Table 3.1: Composite grain size data for the individual Vibracores and the overall Longboat Pass borrow area sediments.

Sample No.			← Inlet Throat				Offshore →		Comp
			AMVC-07-15	LBVC-14-01	AMVC-07-11	LBVC-14-02	AMVC-07-10	AMVC-07-09	
Sieve			Percent Passing (% Finer Than)						
Sieve	(Phi)	(mm)							
3/4"	-4.25	19.03	100.00	100.00	100.00	100.00	100.00	100.00	100.00
5/8"	-4.0	16.00	100.00	100.00	100.00	100.00	99.98	100.00	100.00
7/16"	-3.50	11.31	98.85	98.88	99.64	99.76	99.75	100.00	99.37
5/16"	-3.0	8.00	95.88	97.10	99.03	99.19	99.25	100.00	98.17
#3.5	-2.50	5.66	92.65	95.42	97.70	98.26	97.78	100.00	96.61
#4	-2.25	4.76	91.32	94.54	96.99	97.57	97.02	100.00	95.80
#5	-2.0	4.00	88.50	93.34	96.19	96.98	95.91	99.70	94.64
#7	-1.5	2.83	82.94	90.41	94.10	94.73	93.01	99.63	91.83
#10	-1.0	2.00	76.02	87.55	91.40	92.21	90.25	99.49	88.66
#14	-0.5	1.41	67.26	84.54	88.24	89.39	87.14	99.26	85.00
#18	0.0	1.00	58.76	81.93	85.44	86.52	84.39	99.08	81.60
#25	0.5	0.71	50.00	79.50	82.66	83.53	81.63	98.76	78.20
#35	1.0	0.50	41.41	76.77	79.64	80.01	78.56	98.30	74.54
#45	1.5	0.35	33.88	73.76	75.84	75.64	75.11	97.32	70.54
#60	2.0	0.25	25.82	68.19	61.90	67.33	69.55	92.08	62.06
#80	2.5	0.18	15.12	48.15	33.02	43.59	50.91	45.74	39.27
#120	3.0	0.13	3.70	6.03	4.28	5.12	8.55	3.98	5.30
#170	3.5	0.09	2.09	1.24	1.20	1.20	1.34	1.91	1.38
#200	3.75	0.07	2.03	1.16	1.15	1.13	1.24	1.89	1.31
#230	4.00	0.06	1.97	1.14	1.12	1.12	1.21	1.89	1.29
Method of Moments Mean (mm)			0.79	0.32	0.31	0.29	0.29	0.19	0.34
			Folk Method Mean (mm)						0.35
Method of Moments Sorting (phi)			1.79	1.75	1.46	1.44	1.57	0.52	1.65
			Folk Method Sorting (phi)						1.72
Median (mm)			0.71	0.18	0.22	0.19	0.18	0.18	0.21
Percent Carbonate (%)			-	18.1	-	24.5	-	-	-
Percent Retained on the #4 Sieve (%)			8.68	5.46	3.01	2.43	2.98	0.00	4.20
Munsell Color Value			6	7	7	7	7	8	7
Percent of Total Fill Volume (%)			14	28	25	17	11	5	100

References:

(CB&I/CP&E) CBI Coastal Planning & Engineering, Inc., (2014). “*Attachment No.27 – Geotechnical Information, JCP File Number: 0298107-004,*” Report submitted to the Department of Environmental Protection, CBI Coastal Planning & Engineering, Inc., Boca Raton, FL.

WOLF/WPC, Inc. (2011). “*Final Report of Conceptual Geotechnical Data Vibracore Borings GIWW/Vicinity of Longboat Pass,*” Reported submitted to the U.S. Army Corps of Engineers Jacksonville District, WOLF/WPC, Jacksonville, FL.

APPENDIX OVERVIEW

Introduction: These appendices contain the geotechnical data collected during the Longboat Pass Maintenance Dredging Project. In 2014 a total of five (5) vibracores were taken within the investigation area. The vibracore data are provided in the form of vibracore logs, vibracore photographs, granulometric reports, grain size distribution curves/histograms and composite summary tables.

1) Scope of Services

The final scope of services for the Longboat Pass Maintenance Dredging Project is provided in this appendix.

2) 2014 CB&I Vibracore Logs

A total of five (5) vibracores collected by CB&I in 2014 are presented here. Laboratory and descriptive information for each vibracore is presented on the log sheets. Unified Soils Classification terminology is used in the core layer descriptions and key grain size information (mean grain size, fines content and sorting) for each vibracore sample is presented under the *Remarks* column. Multiple layer intervals are sometimes represented by a single sample. The *Sample Number* column is used to identify the specific sample that represents a specific layer.

3) 2014 CB&I Vibracore Photographs

Photographs of the five (5) vibracores collected in 2014 are presented in this appendix.

4) 2014 CB&I Individual Vibracore Granulometric Reports

This appendix contains individual granulometric reports for the vibracore samples collected in 2014.

5) 2014 CB&I Individual Vibracore Grain Size Distribution Curves/Histograms

This appendix contains individual grain size distribution curves/histograms for the vibracore samples collected in 2014.

6) Federal Navigation Channel Composite Summary Tables

A series of summary tables are presented in this appendix. These tables are used to calculate and summarize composite data. Composite statistics were calculated based on the vibracore samples that are representative of the material defined within each area. Composite data provide the average physical characteristics of each borrow area. An average of the representative layers, weighted by effective length, was calculated for each vibracore, producing the vibracore composite. The vibracore composites are averaged and weighted by effective length to calculate the borrow area composite.

Three table types were produced to display this data. The *Composite Summary* table is a summary of key grain size data for all of the composites. The *Composite Data* table shows the composite data for the borrow area and the supporting composite vibracore data used to calculate the borrow area composite. The *Cumulative Percents and Computed Composite Distribution* tables show the weighted average percent retained on all sieves for the individual samples used to create vibracore composites.

7) Federal Navigation Channel Composite Granularmetric Reports

Composite granularmetric reports, corresponding to data presented in the tables in Appendix 6, are included here. Granularmetric reports are presented for the borrow area and each vibracore.

8) Federal Navigation Channel Composite Grain Size Distribution Curves/Histograms Composite grain size distribution curves and histograms, corresponding to the data presented in the Appendix 6 tables are included here. Curves and histograms are presented for the borrow area and each vibracore.

9) Final Design Figures

This appendix contains final channel design figures.

APPENDIX 1
SCOPE OF SERVICES

**ATTACHMENT A
FEE PROPOSAL
LONGBOAT PASS – MAINTENANCE DREDGING
AND BEACH RENOURISHMENT PROJECT
COMPREHENSIVE PERMITTING FOR THE TOWN OF LONGBOAT KEY AND
MANATEE COUNTY AND FINALIZATION OF THE COQUINA BEACH
RENOURISHMENT DESIGN**

**WORK ASSIGNMENT NO. 8
INTRODUCTION**

In 2011, Manatee County and the Town of Longboat Key jointly developed the Longboat Pass Inlet Management Plan Study to establish appropriate management practices for the Pass and the adjacent Gulf shore beaches of northern Longboat Key and southern Anna Maria Island (Coquina Beach).

The main objective of the study was to develop a plan for both maintenance of a navigable channel for Longboat Pass and to identify the most effective method of restoration and preservation of the adjacent beaches on Longboat Key and Anna Maria Island which are influenced by the Pass. Dredging of the Longboat Pass navigation channel identified in the Longboat Pass Inlet Management Plan is proposed along with sediment placement on the adjacent shorelines. The Town of Longboat Key will initially dredge the channel in 2014/2015 with sediment placement on the northern Town of Longboat Key shoreline. The next navigation channel dredging to be conducted under the long-term (15 year) multi-use permits obtained for this project will result in the renourishment of Coquina Beach.

As stipulated by the Florida Department of Environmental Protection (FDEP) in a September 27, 2012 meeting conducted with Manatee County, the permit application will require identification of the proposed fill placement areas on Longboat Key and Anna Maria Island to demonstrate consistency with the 2011 Inlet Management Plan. The proposed navigation channel excavation and the two beach renourishment fill areas will be incorporated into the joint permit application for FDEP and U.S. Army Corps of Engineers (USACE) permits. As stipulated during the meeting, the application will be for a 15-year multiple use permit.

The scope of services includes the following services related to the project permitting and the Coquina Beach renourishment design.

TASK 1: ADMINISTRATION

The Project Manager (PM) will be responsible for project administration with assistance from other staff as appropriate. Administration of the Longboat Pass Maintenance Dredging and Beach Renourishment Project and will include close coordination between the Town of Longboat Key and Manatee County. The PM will provide project progress and status updates, address issues of importance with the County and Town, perform budget review, scheduling, and planning, conduct meetings as needed and other associated management tasks for project permitting.

TASK 2: COQUINA BEACH ENGINEERING DESIGN

The 2011 Longboat Pass Inlet Management Plan Study provides a basis for the final design of the Coquina Beach Project. We will utilize the engineering work resulting from the development of the Inlet Management Plan in our design effort. The engineering design effort will focus on the detailed design of the navigation channel borrow area and for future fill placement design on Coquina Beach. Based on preliminary design results, previously conducted numerical modeling and FDEP review of the design elements of the Inlet Management Plan, the final design of the channel excavation and placement design for Coquina Beach will be developed. It is assumed the previously conducted geotechnical investigation of Longboat Pass will be acceptable to the FDEP and USACE. The geotechnical investigation was conducted as part of previous efforts at Longboat Pass. No additional numerical modeling or additional geotechnical investigation is proposed or anticipated to be required for the channel design or the Coquina Beach Renourishment Project.

TASK 3: INCORPORATION OF THE TOWN OF LONGBOAT KEY BEACH RENOURISHMENT PROJECT INTO THE PERMIT APPLICATION

We will closely coordinate with the Town to obtain the required beach renourishment design information for inclusion in the permit application. The Town of Longboat Key will develop a final beach renourishment design for the northern end of Longboat Key. The Town is expected to provide a fill project plan view, fill cross-sections, berm width, berm elevations, taper zones and other pertinent information to the County. This information will be incorporated into the joint permit application to be prepared and submitted under this work assignment.

TASK 4: FAC 62B-41 AND PROJECT DESIGN SURVEY

The FAC 62B-41 survey is required to be included in the permit application. The FAC 62B-41 survey will address the requirements set forth in Chapter 62B-41.008 of the Florida Statutes for permit applications, as well as accurately map the location of exposed existing structures along the adjacent renourishment project beaches (Anna Maria Island and Longboat Key). Additionally, the survey will be used to complete the project design for Coquina Beach and will be provided to the Town for design of their beach renourishment project. Survey specifications are outlined in paragraph (h) of Chapter 62B-41.008 and include, in part, defining the location of the edge of vegetation, location of mean high water, location of all structures within project areas, and beach profiles spaced every 500' collected within the project areas extending approximately 1000' seaward of the projected construction limit. Profiles will be collected approximately 1000' (laterally) to either side of the project area.

Prior to the start of the survey, a reconnaissance of the survey monuments will be conducted to confirm that the survey control is in place and undisturbed. Real Time Kinematics (RTK) Global Positioning System (GPS) will be used to locate and confirm the survey control for this project. Upon completion of the control reconnaissance survey, beach and nearshore survey will start. The onshore or beach profile portion of the survey will commence at or near the FDEP beach

monument and extended seaward to a point overlapping the nearshore component of the hydrographic survey.

Twenty-four (24) beach and nearshore profiles will be collected at 500 foot intervals from an upland point extending seaward a minimum of 1000' offshore along the Coquina Beach Shoreline from R-34 to R-41+405 and along Longboat Key from R-41 to R-45. The approximate mean high water lines will be located within each survey area. The edge of vegetation will be located throughout the survey areas. All exposed structures positioned seaward of the dune will be located. As previously stated, these surveys will also be used to prepare the final project design for Coquina Beach. Survey results obtained from the survey of Longboat Key will be provided to the Town to assist in the design of their beach renourishment project.

Survey deliverables will consist of five (5) signed and sealed 22" X 34" survey maps compliant with requirements of 62b-41.008(h). Maps will also be provided in digital format. This information will be included in the FDEP permit application.

TASK 5: JOINT PERMITTING

We will develop and submit a Joint Coastal Permit application on behalf of the Town and the County for the dredging of sediment from Longboat Pass with material placement on Longboat Key and Anna Maria Island. We will utilize the engineering and geotechnical work conducted to develop the Longboat Pass Inlet Management Plan to prepare the application. We will respond to one (1) request each for additional information (RAI's) from the FDEP and the USACE addressing the Manatee County portions of the joint permit application. If there are RAI's issued for the Town of Longboat Key segment, we will coordinate with the Town to receive their responses.

As indicated by the FDEP in the September 27, 2012, meeting, the permit application will require identification of all proposed placement areas and illustrate consistency with the Inlet Management Plan Study. These elements will be incorporated into the permit application. As determined during the FDEP meeting, the permit application will be for a 15-year permit and for multiple dredging events.

In order to issue their permit, the USACE must coordinate with U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS). We will seek to expedite the approval process by requesting concurrence from USFWS to apply the programmatic Biological Opinions for nesting sea turtles and piping plovers to this project. This task includes an initial meeting with USACE, submittal of information requested for the permit application, updated environmental information (e.g. sea turtle and shorebird data, hardbottom resource description) to assist with USFWS and NMFS consultation, and continued coordination throughout the permitting process until the permit is issued.

SCHEDULE, ASSUMPTIONS AND SUMMARY

It is anticipated that the initial Longboat Pass Maintenance Dredging Project and Beach Renourishment Project will occur in 2014/2015 with sediment placement on Longboat Key. It is

assumed the Town of Longboat Key will provide information needed in the permit application to detail the Longboat Key beach renourishment project to be constructed from the Longboat Pass sediment.

Other than the physical surveys described in Task 4, no field activities or coastal modeling services are assumed to be required for the Coquina Beach segment, and are not included in this scope of services. This scope of work does not include preparation of a Biological Assessment or Essential Fish Habitat Assessment; if agencies determine one or both of these is needed, a separate proposal will be submitted for this task.

This scope assumes that the existing geotechnical information developed previously for Longboat Pass by Coastal Planning & Engineering, Inc. a CB&I Company, is acceptable to the regulatory agencies and that no additional geotechnical field work will be necessary.

APPENDIX 2
2014 CB&I VIBRACORE LOGS



CB&I
Coastal Planning & Engineering, Inc.
2481 N.W. Boca Raton Blvd.
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Phone # 1 (561) 391-8102

Legend for Geotechnical Data

(SP), (SM), etc. Refers to the Army Corps of Engineers Unified Soils Classification System. Class types are defined primarily by grain size, sorting and percent of material passing the 200 sieve. Classification of materials on the core logs based on visual field examinations are identified on the core logs under the Classification of Materials Description. Classifications based on laboratory sieve analyses are identified on the core logs in the Legend and under Remarks.

Grain Size Terms

Cobble – retained on the 3.0” sieve
Gravel – greater than the #4 sieve and less than the 3.0” sieve
 Coarse: greater than the ¾” sieve and less than the 3.0” sieve
 Fine – greater than the #4 sieve and less than the ¾” sieve
Sand - greater than the #200 sieve and less than the #4 sieve
 Coarse - greater than the #10 sieve and less than the #4 sieve
 Medium - greater than the #40 sieve and less than the #10 sieve
 Fine - greater than the #230 sieve and less than the #40 sieve
Fines – (silt or clay) passing the #230 sieve

Proportional definition of descriptive terms

<u>Descriptive Term</u>	<u>Range of Proportions</u>
Sandy, gravelly, etc.	35 % to 50 %
Some	20 % to 35 %
Little	10 % to 20 %
Trace	1 % to 10 %

Note: Information is after ACOE Atlantic Division Manual # 1110-1-1 titled *Engineering and Design Geotechnical Manual for Surface and Subsurface Investigations*



Legend for Geotechnical Data

GW		Well graded gravels or gravel-sand mixtures, little or no fines	ML		Inorganic silts and very fine sands, rock flour, sandy silts or clayey silts with slight plasticity
GP		Poorly graded gravels or gravel-sand mixtures, w/ little or no fines	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soil, elastic silts
GM		Silty gravels, gravel-sand-silt mixtures	OL		Organic silts and organic silt-clays of low plasticity
GC		Clayey gravels, gravel-sand-clay mixtures	OH		Organic clays of medium to high plasticity, organic silts
SW		Well graded sands or gravelly sands, little or no fines	CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
SP		Poorly graded sands or gravelly sands, little or no fines	CH		Inorganic clays of high plasticity, fat clays
SM		Silty sands, sand-silt mixtures	PT		Peat and other highly organic soils
SC		Clayey sands, sand-clay mixtures	SP-SM		Poorly-graded silty sand
SW-SM		Well-graded silty sand	SM-SC		Silty clayey sand
GW-GM		Well-graded silty gravel	ML-CL		Inorganic silty lean clay
GM-GC		Clayey silty gravel			

Note: Information is after ACOE Atlantic Division Manual # 1110-1-1 titled *Engineering and Design Geotechnical Manual for Surface and Subsurface Investigations*



CB&I
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Boca Raton, Florida 33431
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Legend for Geotechnical Data

The naming convention used by CB&I incorporates key information about the item in the title. The naming format uses the following information:

- **Abbreviated area name (two letters that will be used throughout the project)**
- **Abbreviated data type: jet probe (JP), vibrocore (VC) or surface sample (SS)**
- **Collection year (YY)**
- **Identification number**
- **Sample or composite identification in the case of jet probes or vibrocores. Composite samples are indicated by COMP following the identification number. COMP represents a composite developed to characterize beach compatible material.**

Format examples:

- A) **LBVC-14-01**
B) **LBVC-14-03 S#1**

Example A is vibrocore number 01, collected in the Longboat Pass area in the year 2014.

Example B refers to sample number 1 taken from vibrocore number 03, which was collected in the Longboat Pass area in 2014.

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT 2014 Longboat Pass Maintenance Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION LBVC-14-01			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Athena Technologies, Inc.			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electric <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Palmer McLellan			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 07-10-14 08:00 COMPLETED 07-10-14	
8. TOTAL DEPTH OF BORING 20.0 Ft.			16. ELEVATION TOP OF BORING -7.1 Ft.	
			17. TOTAL RECOVERY FOR BORING 16.2 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR LC	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-7.1	0.0					
-11.1	4.0		SAND, fine grained, quartz, little shell fragments, little shell hash, trace silt, shell frag up to 0.25", light gray (5Y-7/1), (SW).		1	Sample #1, Depth = 2.0' Mean (mm): 0.24, Phi Sorting: 1.12 Fines (230): 1.10% (SW)
-12.9	5.8		SAND, fine grained, quartz, little shell hash, trace silt, (2"x1") shell frag @ 4.1', (1"x3") shell hash pocket @ 5.2', 2.5" shell frag @ 5.4', 2.5" whole shell and 0.75" shell frag @ 4.4', light gray (5Y-7/1), (SW).		2	Sample #2, Depth = 4.6' Mean (mm): 0.21, Phi Sorting: 1.40 Fines (230): 0.96% (SW)
-13.6	6.5		Sandy SHELL HASH, some shell fragments, trace silt, shell frag up to 0.5", 0.25" organic pocket @ 6.1', light gray (2.5Y-7/1), (SW).		3	Sample #3, Depth = 6.1' Mean (mm): 0.90, Phi Sorting: 1.82 Fines (230): 1.53% (SW)
-14.7	7.6		SAND, fine grained, quartz, little shell fragments, little shell hash, trace silt, shell frag up to 0.5", light gray (5Y-7/1), (SW).		2	
-16.4	9.3		Sandy SHELL HASH, some shell fragments, trace silt, shell frag up to 1", (2"x3") sand pocket @ 7.9', 3" sand pocket @ 8.1', 3" whole shell @ 8.9', light gray (2.5Y-7/1), (SW).		5	
-17.9	10.8		SAND, fine grained, quartz, some shell hash, little shell fragments, trace silt, shell frag up to 1", 1" whole shell @ 9.6', 0.5" whole shell @ 9.7', 1.5" whole shell @ 10.2', (1.5"x3") shell hash pocket @ 10.3', light gray (5Y-7/1), (SW).		4	Sample #4, Depth = 9.7' Mean (mm): 0.25, Phi Sorting: 1.35 Fines (230): 1.03% (SW)
-18.8	11.7		SHELL HASH, some sand, trace silt, 2.5" shell frag @ 10.9', light gray (2.5Y-7/1), (SW).		5	Sample #5, Depth = 11.3' Mean (mm): 2.22, Phi Sorting: 1.69 Fines (230): 1.57% (SW)
-21.3	14.2		SAND, fine grained, quartz, little shell hash, trace shell fragments, trace silt, shell frag up to 0.25", silt increases with depth, (3"x3.5") rock frag @ 11.9', gray (5Y-6/1), (SW-SM).		6	Sample #6, Depth = 12.8' Mean (mm): 0.25, Phi Sorting: 1.24 Fines (230): 5.01% (SW-SM)
-23.3	16.2		SAND, some clay, some shell hash, little shell fragments, trace silt, shell frag up to 0.5", shell hash increases with depth, 0.5" whole shell @ 14.8', 1.5" shell frag @ 16.1', gray (5Y-5/1), (SM).			
-27.1	20.0		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS LONGBOAT PASS 2014.GPJ FL DEP ROSS.GDT 8/5/14

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1
1. PROJECT 2014 Longboat Pass Maintenance Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION LBVC-14-02			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Athena Technologies, Inc.			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electric <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Palmer McLellan			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 07-10-14 09:05 COMPLETED 07-10-14	
8. TOTAL DEPTH OF BORING 20.0 Ft.			16. ELEVATION TOP OF BORING -5.4 Ft.	
			17. TOTAL RECOVERY FOR BORING 14.6 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR LC	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-5.4	0.0					
-10.8	5.4		SAND, fine grained, quartz, little shell fragments, little shell hash, trace silt, shell frag up to 0.5", (2) 1" whole shells @ 4.8', 1" whole shell @ 5.4', 2.5" shell hash pocket @ 4.5', 1" shell frag @ 5.3', light gray (5Y-7/1), (SW).		VC1 S#1	
-11.5	6.1		Shelly SAND, fine grained, quartz, trace silt, shell comp is shell frag up to 0.5", 1.25" whole shell @ 5.6', (1"x3") shell hash pocket @ 5.9', light gray (2.5Y-7/1), (SW).		1	Sample #1, Depth = 5.7' Mean (mm): 0.51, Phi Sorting: 1.58 Fines (230): 0.75% (SW)
-12.8	7.4		SAND, fine grained, quartz, trace shell hash, trace silt, (0.5"x3") shell frag pocket @ 7", 1" shell frag @ 7.2', light gray (5Y-7/1), (SP).		2	Sample #2, Depth = 6.5' Mean (mm): 0.17, Phi Sorting: 0.67 Fines (230): 1.17% (SP)
-14.0	8.6		Sandy SHELL HASH, some shell fragments, trace silt, shell frag up to 0.75", light gray (2.5Y-7/1), (SW).		VC1 S#3	
-14.4	9.0		SAND, fine grained, quartz, little shell hash, trace silt, 0.5" shell frag @ 8.8', 1.25" whole shell @ 8.8', light gray (5Y-7/1), (SW).		3	Sample #3, Depth = 8.8' Mean (mm): 0.28, Phi Sorting: 1.26 Fines (230): 1.21% (SW)
-15.0	9.6		Shelly SAND, fine grained, quartz, trace silt, shell comp is shell hash, shell decreases with depth, 1" shell frag @ 9.3', light gray (2.5Y-7/1), (SW).		1	
-16.8	11.4		SAND, fine grained, quartz, trace shell hash, trace silt, 0.75" shell frag @ 10.3', 0.75" whole shell @ 10.4', (0.5"x3") sea urchin pocket @ 10.8', 3.5" shell hash pocket @ 11.1', light gray (5Y-7/1), (SP).		2	
-17.6	12.2		Sandy SHELL HASH, some shell fragments, trace silt, shell frag up to 0.5", 0.5" whole shell @ 12.2', 0.5" sand pockets @ 11.6' and 11.8', light gray (2.5Y-7/1), (SW).		VC1 S#3	
-19.0	13.6		Shelly SAND, fine grained, quartz, trace silt, shell comp is shell hash, 3" shell hash pocket @ 12.2', 1" silty pocket @ 13.2', 2.5" silty pocket @ 13.3', light gray (2.5Y-7/1), (SW).		4	Sample #4, Depth = 12.8' Mean (mm): 0.67, Phi Sorting: 1.95 Fines (230): 0.84% (SW)
-19.7	14.3		Shelly SAND, fine grained, quartz, trace shell fragments, trace silt, shell comp is shell hash, shell frag up to 0.5", 1.25" shell frag @ 14.3', gray (5Y-5/1), (SW).		5	Sample #5, Depth = 13.9' Mean (mm): 0.58, Phi Sorting: 1.76 Fines (230): 3.08% (SW)
-20.0	14.6		SAND, fine grained, quartz, trace shell hash, trace silt, gray (5Y-6/1), (SP).			
-25.4	20.0		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS LONGBOAT PASS 2014.GPJ FL DEP ROSS.GDT 8/5/14

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT 2014 Longboat Pass Maintenance Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION LBVC-14-03			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
LOCATION COORDINATES X = 429,817 Y = 1,128,586			HORIZONTAL NAD 1983	
3. DRILLING AGENCY Athena Technologies, Inc.			VERTICAL NAVD 88	
4. NAME OF DRILLER Palmer McLellan			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			12. TOTAL SAMPLES	
DEG. FROM VERTICAL			DISTURBED	
BEARING			UNDISTURBED (UD)	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			13. TOTAL NUMBER CORE BOXES	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			14. ELEVATION GROUND WATER	
8. TOTAL DEPTH OF BORING 20.0 Ft.			15. DATE BORING STARTED 07-10-14 10:49 COMPLETED 07-10-14	
			16. ELEVATION TOP OF BORING -5.5 Ft.	
			17. TOTAL RECOVERY FOR BORING 20 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR LC	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-5.5	0.0					
-7.8	2.3		SAND, fine grained, quartz, some shell hash, trace shell fragments, trace silt, shell frag up to 0.25", 1" whole shell @ 2.1', light gray (5Y-7/1), (SW).		1	Sample #1, Depth = 1.2' Mean (mm): 0.25, Phi Sorting: 0.93 Fines (230): 1.06% (SW)
-8.5	3.0		Sandy SHELL HASH, little shell fragments, trace silt, shell frag up to 0.5", light gray (2.5Y-7/1), (SW).		VC1 S#3	
-10.1	4.6		SAND, fine grained, quartz, little shell hash, trace shell fragments, trace silt, shell frag up to 0.25", light gray (5Y-7/1), (SP).		6	Sample #6, Depth = 4.0' Mean (mm): 0.19, Phi Sorting: 0.78 Fines (230): 0.93% (SP)
-11.6	6.1		Sandy SHELL HASH, some shell fragments, trace silt, shell frag up to 1", (1.75"x3") sand pocket @ 5.3, 2" sand pocket @ 5.7', light gray (2.5Y-7/1), (SW).		2	Sample #2, Depth = 5.8' Mean (mm): 1.02, Phi Sorting: 2.05 Fines (230): 0.79% (SW)
-12.4	6.9		SAND, fine grained, quartz, trace shell hash, trace silt, 0.75" shell hash pocket @ 6.2', light gray (5Y-7/1), (SP).		VC2 S#2	
-12.8	7.3		Sandy SHELL HASH, little shell fragments, trace silt, shell frag up to 0.5", light gray (2.5Y-7/1), (SW).		VC1 S#3	
-15.9	10.4		SAND, fine grained, quartz, little shell hash, trace shell fragments, trace silt, trace whole shell, shell frag up to 0.5", whole shells up to 0.75", (1.5"x3") shell hash pocket @ 8', 1.5" shell frag pocket @ 9.3', 0.75" shell hash pocket @ 10.2', light gray (5Y-7/1), (SW).		3	Sample #3, Depth = 9.0' Mean (mm): 0.26, Phi Sorting: 1.49 Fines (230): 0.92% (SW)
-18.1	12.6		SAND, fine grained, quartz, trace shell hash, trace silt, 0.5" silt pockets @ 10.5' and 10.6', light gray (5Y-7/1), (SP).		VC2 S#2	
-18.8	13.3		Shelly SAND, fine grained, quartz, little shell fragments, trace silt, shell comp is shell hash, shell frag up to 0.5", light gray (2.5Y-7/1), (SW).		VC2 S#4	
-19.3	13.8		SAND, fine grained, quartz, little shell hash, trace silt, 0.25" clay pocket @ 13.4', gray (5Y-6/1), (SW).		4	Sample #4, Depth = 13.5' Mean (mm): 0.19, Phi Sorting: 1.28 Fines (230): 2.68% (SW)
-19.8	14.3		Shelly SAND, fine grained, quartz, trace silt, shell comp is shell hash, gray (2.5Y-6/1), (SW).		VC2 S#4	
-23.2	17.7		SAND, fine grained, quartz, trace shell fragments, trace shell hash, trace silt, shell frag up to 0.5", (0.75"x3") shell frag pocket @ 15.2', 1.25" rock frag @ 15.2', (1"x3") silty pocket @ 15.5', 0.5" whole shell @ 16.2', 1.5" silty pocket @ 17', gray (5Y-6/1), (SW-SM).		5	Sample #5, Depth = 16.6' Mean (mm): 0.15, Phi Sorting: 0.92 Fines (230): 9.48% (SW-SM)
-24.2	18.7		Shelly SAND, fine grained, quartz, trace shell fragments, trace silt, shell comp is shell hash, shell frag up to 0.5", gray (5Y-5/1), (SW).		VC2 S#5	
-24.7	19.2		SAND, fine grained, quartz, trace shell fragments, trace shell hash, trace silt, shell frag up to 0.5", 1" shell hash pocket @ 19.1', gray (5Y-6/1), (SW-SM).		5	
-25.5	20.0		SAND, fine grained, quartz, some shell fragments, trace silt, shell frag up to 0.75", gray (5Y-6/1), (SW-SM).			
			End of Boring			


FLORIDA DEP ROSS LONGBOAT PASS 2014.GPJ FL DEP ROSS.GDT 8/5/14

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT 2014 Longboat Pass Maintenance Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION LBVC-14-04			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Athena Technologies, Inc.			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electric <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Palmer McLellan			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 07-10-14 12:12 COMPLETED 07-10-14	
8. TOTAL DEPTH OF BORING 12.5 Ft.			16. ELEVATION TOP OF BORING -5.4 Ft.	
			17. TOTAL RECOVERY FOR BORING 12.1 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR LC	



ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-5.4	0.0					
					VC2 S#2	
			SAND, fine grained, quartz, trace shell hash, trace silt, (2"x3") shell hash pocket @ 3.1', (1"x3") shell hash pocket @ 7.1', 0.25" organic pocket @ 9' and 11.1', 1" shell hash pocket @ 4.7', light gray (5Y-7/1), (SP).		1	Sample #1, Depth = 6.0' Mean (mm): 0.17, Phi Sorting: 0.42 Fines (230): 0.95% (SP)
					VC2 S#2	
-17.5	12.1					
-17.9	12.5		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS LONGBOAT PASS 2014.GPJ FL DEP ROSS.GDT 8/5/14

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1
1. PROJECT 2014 Longboat Pass Maintenance Manatee County, FL				9. SIZE AND TYPE OF BIT 3.0 In.
2. BORING DESIGNATION LBVC-14-05		LOCATION COORDINATES X = 429,371 Y = 1,128,156		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY Athena Technologies, Inc.		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER Palmer McLellan				VERTICAL NAVD 88
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	11. MANUFACTURER'S DESIGNATION OF DRILL Electric <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
6. THICKNESS OF OVERBURDEN 0.0 Ft.				12. TOTAL SAMPLES
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				DISTURBED
8. TOTAL DEPTH OF BORING 20.0 Ft.				UNDISTURBED (UD)
				13. TOTAL NUMBER CORE BOXES
				14. ELEVATION GROUND WATER
				15. DATE BORING 07-10-14 11:18
				STARTED 07-10-14
				COMPLETED 07-10-14
				16. ELEVATION TOP OF BORING -10.8 Ft.
				17. TOTAL RECOVERY FOR BORING 19.8 Ft.
				18. SIGNATURE AND TITLE OF INSPECTOR LC

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-10.8	0.0					
-12.3	1.5		SAND, fine grained, quartz, little shell hash, trace silt, light gray (5Y-7/1), (SP).		3	Sample #3, Depth = 0.6' Mean (mm): 0.18, Phi Sorting: 0.75 Fines (230): 0.91% (SP)
			SAND, fine grained, quartz, trace shell fragments, trace shell hash, trace silt, shell frag up to 0.25", (2"x3") shell hash pocket @ 3', 1" whole shell @ 3.6', (1.5"x3") shell hash pocket @ 4.1', 3" shell hash pocket @ 5.9', (0.5"x3") silty pocket @ 8.5', 1.5" whole shell @ 6.1', light gray (5Y-7/1), (SP).		1	Sample #1, Depth = 4.7' Mean (mm): 0.18, Phi Sorting: 0.74 Fines (230): 0.87% (SP)
-21.7	10.9					
-22.5	11.7		Shelly SAND, fine grained, quartz, trace shell fragments, trace silt, shell comp is shell hash, shell frag up to 0.5", gray (5Y-5/1), (SW).		VC2 S#5	
-23.0	12.2		SAND, fine grained, quartz, trace shell hash, trace silt, gray (5Y-6/1), (SW-SM).		VC3 S#5	
-23.6	12.8		SAND, fine grained, quartz, trace shell hash, trace silt, gray (5Y-6/1), (SW-SM).		VC2 S#5	
-24.7	13.9		Shelly SAND, fine grained, quartz, trace shell fragments, trace silt, shell comp is shell hash, shell frag up to 0.5", 2.5" shell frag @ 12.4', (1.5"x3") shell hash pocket @ 12.6', gray (2.5Y-6/1), (SW).		VC1 S#6	
-26.0	15.2		SAND, fine grained, quartz, some organics, little shell hash, trace silt, (1"x3") clayey pocket @ 12.8' & wood frag pocket @ 13.6', dark gray (2.5Y-4/1), (SW-SM).		2	Sample #2, Depth = 14.5' Mean (mm): 0.18, Phi Sorting: 0.90 Fines (230): 3.43% (SW)
-26.8	16.0		SAND, fine grained, quartz, trace shell hash, trace silt, 1" silty pocket @ 14.1', light gray (5Y-7/1), (SW).			
			Shelly SAND, fine grained, quartz, trace silt, shell comp is shell hash, silt in pockets up to 0.75", gray (2.5Y-6/1), (SW).			
-29.2	18.4		SAND, fine grained, quartz, trace shell fragments, trace shell hash, trace silt, (1"x3") shell hash pocket @ 16.5', 3" shell hash pocket at 17.3', light gray (2.5Y-7/1), (SW-SM).			
-29.9	19.1					
-30.6	19.8		SHELL FRAGMENTS, some sand, little shell hash, little silt, shell frag up to 1", gray (5Y-6/1), (SW-SM).			
-30.8	20.0		Clayey SAND, fine grained, quartz, some shell fragments, little shell hash, trace whole shell, shell frag and whole shells up to 1", gray (2.5Y-6/1), (SC). No Recovery.			
			End of Boring			

FLORIDA DEP ROSS LONGBOAT PASS 2014.GPJ FL DEP ROSS.GDT 8/5/14

APPENDIX 3
2014 CB&I VIBRACORE PHOTOGRAPHS



LONGBOAT PASS

LBVC - 14 - 01

0.0 - 2.0



LONGBOAT PASS

LBVC - 14 - 01

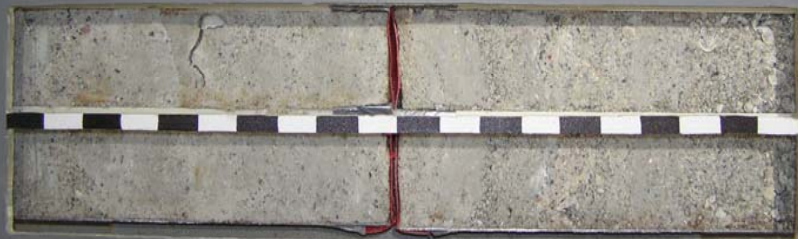
2.0 - 4.0



LONGBOAT PASS

LBVC - 14 - 01

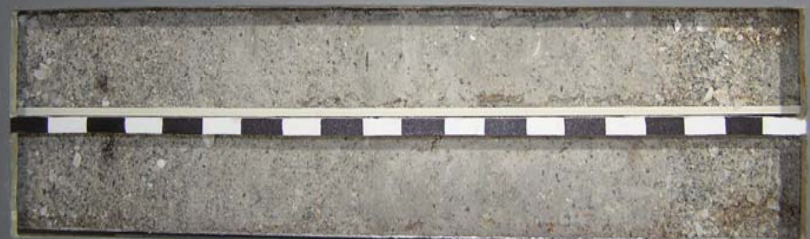
4.0 - 6.0



LONGBOAT PASS

LBVC - 14 - 01

6.0 - 8.0





LONGBOAT PASS

LBVC - 14 - 01

8.0 - 10.0



LONGBOAT PASS

LBVC - 14 - 01

10.0 - 12.0



LONGBOAT PASS

LBVC - 14 - 01

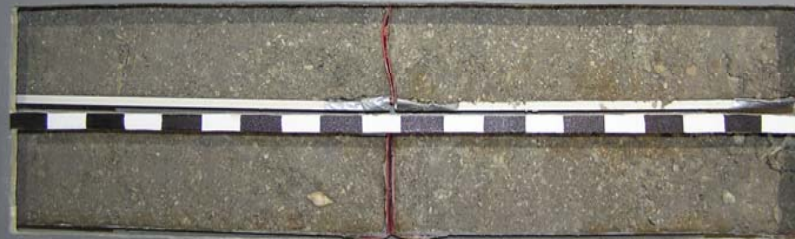
12.0 - 14.0



LONGBOAT PASS

LBVC - 14 - 01

14.0 - 16.0

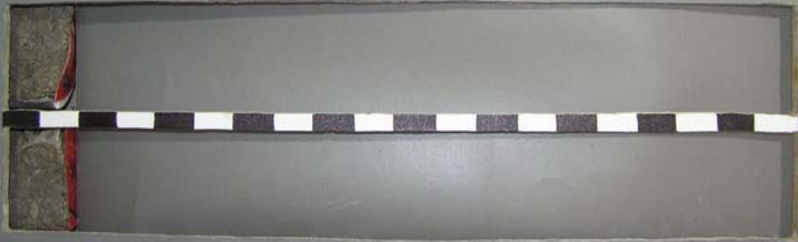




LONGBOAT PASS

LBVC - 14 - 01

16.0 - 16.2





LONGBOAT PASS

LBVC - 14 - 02

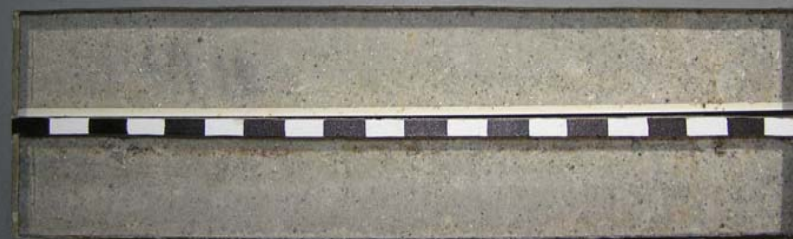
0.0 - 2.0



LONGBOAT PASS

LBVC - 14 - 02

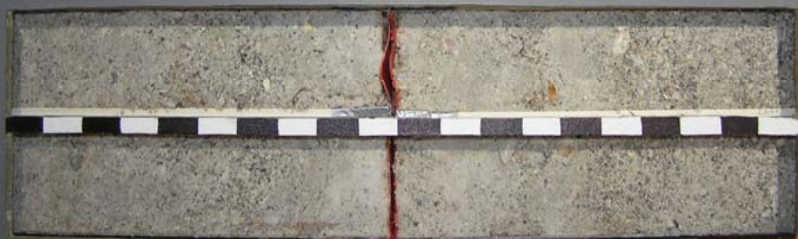
2.0 - 4.0



LONGBOAT PASS

LBVC - 14 - 02

4.0 - 6.0



LONGBOAT PASS

LBVC - 14 - 02

6.0 - 8.0





LONGBOAT PASS

LBVC - 14 - 02

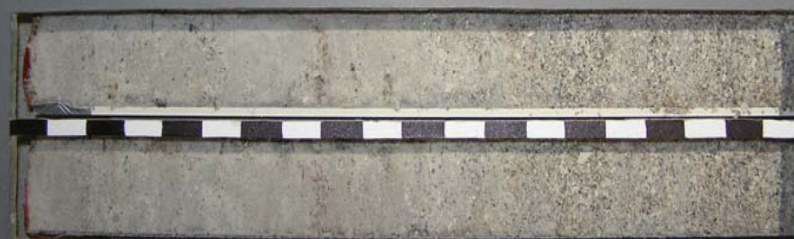
8.0 - 10.0



LONGBOAT PASS

LBVC - 14 - 02

10.0 - 12.0



LONGBOAT PASS

LBVC - 14 - 02

12.0 - 14.0



LONGBOAT PASS

LBVC - 14 - 02

14.0 - 14.6





LONGBOAT PASS

LBVC - 14 - 03

0.0 - 2.0



LONGBOAT PASS

LBVC - 14 - 03

2.0 - 4.0



LONGBOAT PASS

LBVC - 14 - 03

4.0 - 6.0



LONGBOAT PASS

LBVC - 14 - 03

6.0 - 8.0





LONGBOAT PASS

LBVC - 14 - 03

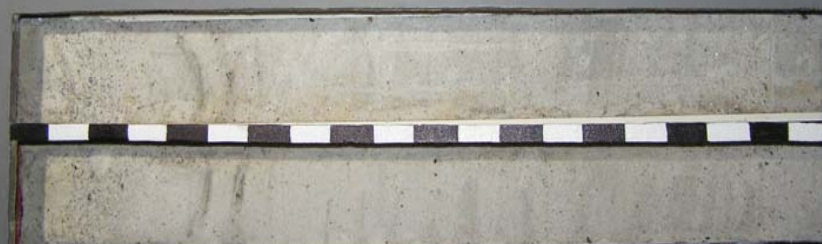
8.0 - 10.0



LONGBOAT PASS

LBVC - 14 - 03

10.0 - 12.0



LONGBOAT PASS

LBVC - 14 - 03

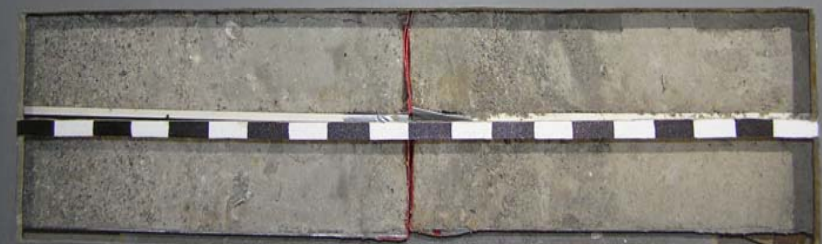
12.0 - 14.0



LONGBOAT PASS

LBVC - 14 - 03

14.0 - 16.0





LONGBOAT PASS

LBVC - 14 - 03

16.0 - 18.0



LONGBOAT PASS

LBVC - 14 - 03

18.0 - 20.0





LONGBOAT PASS

LBVC - 14 - 04

0.0 - 2.0



LONGBOAT PASS

LBVC - 14 - 04

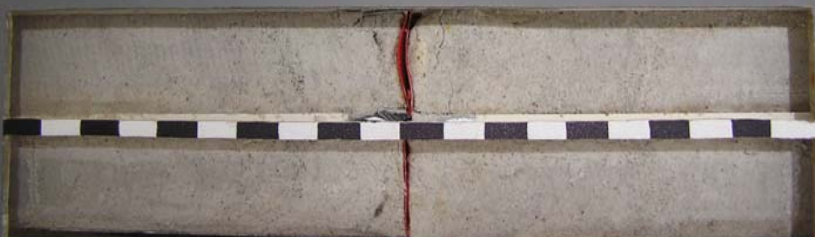
2.0 - 4.0



LONGBOAT PASS

LBVC - 14 - 04

4.0 - 6.0



LONGBOAT PASS

LBVC - 14 - 04

6.0 - 8.0





LONGBOAT PASS

LBVC - 14 - 04

8.0 - 10.0



LONGBOAT PASS

LBVC - 14 - 04

10.0 - 12.0



LONGBOAT PASS

LBVC - 14 - 04

12.0 - 12.1





LONGBOAT PASS

LBVC - 14 - 05

0.0 - 2.0



LONGBOAT PASS

LBVC - 14 - 05

2.0 - 4.0



LONGBOAT PASS

LBVC - 14 - 05

4.0 - 6.0



LONGBOAT PASS

LBVC - 14 - 05

6.0 - 8.0





LONGBOAT PASS

LBVC - 14 - 05

8.0 - 10.0



LONGBOAT PASS

LBVC - 14 - 05

10.0 - 12.0



LONGBOAT PASS

LBVC - 14 - 05

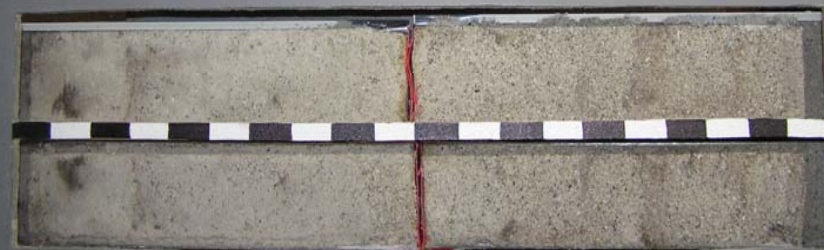
12.0 - 14.0



LONGBOAT PASS

LBVC - 14 - 05

14.0 - 16.0





LONGBOAT PASS

LBVC - 14 - 05

16.0 - 18.0



LONGBOAT PASS

LBVC - 14 - 05

18.0 - 19.8



APPENDIX 4
2014 CB&I INDIVIDUAL VIBRACORE GRANULARMETRIC REPORTS

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-01 #1

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 431,382	Northing (ft): 1,130,426	Coordinate System: Florida State Plane West	Elevation (ft): -9.1 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 94.01	Wash Weight (g): 93.05	Pan Retained (g): 0.00	Sieve Loss (%): 0.07	Fines (%): #200 - 1.11 #230 - 1.10	Organics (%):	Carbonates (%): 18	Shell Hash (%):
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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
7/16"	-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	0.12	0.13	0.12	0.13
4	-2.25	4.76	0.42	0.45	0.54	0.58
5	-2.00	4.00	0.38	0.40	0.92	0.98
7	-1.50	2.83	1.28	1.36	2.20	2.34
10	-1.00	2.00	1.70	1.81	3.90	4.15
14	-0.50	1.41	1.76	1.87	5.66	6.02
18	0.00	1.00	1.66	1.77	7.32	7.79
25	0.50	0.71	1.86	1.98	9.18	9.77
35	1.00	0.50	2.54	2.70	11.72	12.47
45	1.50	0.35	3.27	3.48	14.99	15.95
60	2.00	0.25	7.42	7.89	22.41	23.84
80	2.50	0.18	28.44	30.25	50.85	54.09
120	3.00	0.13	37.76	40.17	88.61	94.26
170	3.50	0.09	4.30	4.57	92.91	98.83
200	3.75	0.07	0.06	0.06	92.97	98.89
230	4.00	0.06	0.01	0.01	92.98	98.90

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.08	2.87	2.76	2.43	2.02	1.50	-0.77
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.08	0.24	1.12	-2.12	7.17	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-01 #2

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 431,382	Northing (ft): 1,130,426	Coordinate System: Florida State Plane West	Elevation (ft): -11.7 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 88.58	Wash Weight (g): 87.72	Pan Retained (g): 0.00	Sieve Loss (%): 0.00	Fines (%): #200 - 0.98 #230 - 0.96	Organics (%):	Carbonates (%): 12	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	2.43	2.74	2.43	2.74
3.5	-2.50	5.66	1.02	1.15	3.45	3.89
4	-2.25	4.76	0.08	0.09	3.53	3.98
5	-2.00	4.00	0.39	0.44	3.92	4.42
7	-1.50	2.83	1.03	1.16	4.95	5.58
10	-1.00	2.00	0.82	0.93	5.77	6.51
14	-0.50	1.41	0.85	0.96	6.62	7.47
18	0.00	1.00	0.62	0.70	7.24	8.17
25	0.50	0.71	0.55	0.62	7.79	8.79
35	1.00	0.50	0.67	0.76	8.46	9.55
45	1.50	0.35	0.84	0.95	9.30	10.50
60	2.00	0.25	1.67	1.89	10.97	12.39
80	2.50	0.18	11.93	13.47	22.90	25.86
120	3.00	0.13	58.08	65.57	80.98	91.43
170	3.50	0.09	6.60	7.45	87.58	98.88
200	3.75	0.07	0.12	0.14	87.70	99.02
230	4.00	0.06	0.02	0.02	87.72	99.04

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.24	2.94	2.87	2.68	2.47	2.13	-1.75
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.25	0.21	1.4	-2.9	10.48	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-01 #3

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 431,382	Northing (ft): 1,130,426	Coordinate System: Florida State Plane West	Elevation (ft): -13.2 NAVD 88
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USCS: SW	Munsell: Wet - 2.5Y-7/1 Dry - 2.5Y-8/1 Washed - 2.5Y-8/1	Comments:
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Dry Weight (g): 105.91	Wash Weight (g): 104.32	Pan Retained (g): 0.03	Sieve Loss (%): 0.00	Fines (%): #200 - 1.56 #230 - 1.53	Organics (%):	Carbonates (%): 67	Shell Hash (%):
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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
7/16"	-3.50	11.31	2.15	2.03	2.15	2.03
5/16"	-3.00	8.00	2.67	2.52	4.82	4.55
3.5	-2.50	5.66	5.17	4.88	9.99	9.43
4	-2.25	4.76	2.80	2.64	12.79	12.07
5	-2.00	4.00	2.22	2.10	15.01	14.17
7	-1.50	2.83	7.96	7.52	22.97	21.69
10	-1.00	2.00	7.57	7.15	30.54	28.84
14	-0.50	1.41	8.48	8.01	39.02	36.85
18	0.00	1.00	8.65	8.17	47.67	45.02
25	0.50	0.71	7.86	7.42	55.53	52.44
35	1.00	0.50	7.98	7.53	63.51	59.97
45	1.50	0.35	8.28	7.82	71.79	67.79
60	2.00	0.25	11.59	10.94	83.38	78.73
80	2.50	0.18	12.16	11.48	95.54	90.21
120	3.00	0.13	8.00	7.55	103.54	97.76
170	3.50	0.09	0.66	0.62	104.20	98.38
200	3.75	0.07	0.06	0.06	104.26	98.44
230	4.00	0.06	0.03	0.03	104.29	98.47

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.82	2.23	1.83	0.34	-1.27	-1.88	-2.95
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.16	0.90	1.82	-0.29	2	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-01 #4

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 431,382	Northing (ft): 1,130,426	Coordinate System: Florida State Plane West	Elevation (ft): -16.8 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 90.07	Wash Weight (g): 89.16	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 1.05 #230 - 1.03	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.16	0.18	0.16	0.18
5/16"	-3.00	8.00	0.31	0.34	0.47	0.52
3.5	-2.50	5.66	1.40	1.55	1.87	2.07
4	-2.25	4.76	0.70	0.78	2.57	2.85
5	-2.00	4.00	0.79	0.88	3.36	3.73
7	-1.50	2.83	1.22	1.35	4.58	5.08
10	-1.00	2.00	1.78	1.98	6.36	7.06
14	-0.50	1.41	1.73	1.92	8.09	8.98
18	0.00	1.00	1.27	1.41	9.36	10.39
25	0.50	0.71	1.13	1.25	10.49	11.64
35	1.00	0.50	1.09	1.21	11.58	12.85
45	1.50	0.35	1.59	1.77	13.17	14.62
60	2.00	0.25	4.62	5.13	17.79	19.75
80	2.50	0.18	29.38	32.62	47.17	52.37
120	3.00	0.13	39.29	43.62	86.46	95.99
170	3.50	0.09	2.63	2.92	89.09	98.91
200	3.75	0.07	0.04	0.04	89.13	98.95
230	4.00	0.06	0.02	0.02	89.15	98.97

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.86	2.76	2.46	2.08	1.63	-1.53
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.01	0.25	1.35	-2.32	7.57	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-01 #5

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 431,382	Northing (ft): 1,130,426	Coordinate System: Florida State Plane West	Elevation (ft): -18.4 NAVD 88
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USCS: SW	Munsell: Wet - 2.5Y-7/1 Dry - 2.5Y-8/1 Washed - 2.5Y-8/1	Comments:
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Dry Weight (g): 101.22	Wash Weight (g): 99.66	Pan Retained (g): 0.02	Sieve Loss (%): 0.00	Fines (%): #200 - 1.62 #230 - 1.57	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	9.12	9.01	9.12	9.01
5/16"	-3.00	8.00	6.12	6.05	15.24	15.06
3.5	-2.50	5.66	7.80	7.71	23.04	22.77
4	-2.25	4.76	4.09	4.04	27.13	26.81
5	-2.00	4.00	6.53	6.45	33.66	33.26
7	-1.50	2.83	12.22	12.07	45.88	45.33
10	-1.00	2.00	10.54	10.41	56.42	55.74
14	-0.50	1.41	10.93	10.80	67.35	66.54
18	0.00	1.00	8.25	8.15	75.60	74.69
25	0.50	0.71	6.48	6.40	82.08	81.09
35	1.00	0.50	5.51	5.44	87.59	86.53
45	1.50	0.35	3.86	3.81	91.45	90.34
60	2.00	0.25	3.06	3.02	94.51	93.36
80	2.50	0.18	2.52	2.49	97.03	95.85
120	3.00	0.13	2.07	2.05	99.10	97.90
170	3.50	0.09	0.43	0.42	99.53	98.32
200	3.75	0.07	0.06	0.06	99.59	98.38
230	4.00	0.06	0.05	0.05	99.64	98.43

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.33	0.77	0.02	-1.28	-2.36	-2.94	-3.83
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	-1.15	2.22	1.69	0.41	2.55	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-01 #6

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 431,382	Northing (ft): 1,130,426	Coordinate System: Florida State Plane West	Elevation (ft): -19.9 NAVD 88
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USCS: SW-SM	Munsell: Wet - 5Y-6/1 Dry - 5Y-7/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 93.42	Wash Weight (g): 88.91	Pan Retained (g): 0.14	Sieve Loss (%): 0.03	Fines (%): #200 - 5.21 #230 - 5.01	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-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	0.07	0.07	0.07	0.07
5	-2.00	4.00	0.13	0.14	0.20	0.21
7	-1.50	2.83	0.95	1.02	1.15	1.23
10	-1.00	2.00	2.31	2.47	3.46	3.70
14	-0.50	1.41	3.34	3.58	6.80	7.28
18	0.00	1.00	3.45	3.69	10.25	10.97
25	0.50	0.71	3.50	3.75	13.75	14.72
35	1.00	0.50	3.69	3.95	17.44	18.67
45	1.50	0.35	2.81	3.01	20.25	21.68
60	2.00	0.25	3.79	4.06	24.04	25.74
80	2.50	0.18	18.04	19.31	42.08	45.05
120	3.00	0.13	41.42	44.34	83.50	89.39
170	3.50	0.09	4.71	5.04	88.21	94.43
200	3.75	0.07	0.34	0.36	88.55	94.79
230	4.00	0.06	0.19	0.20	88.74	94.99

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	2.94	2.84	2.56	1.91	0.66	-0.82
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2	0.25	1.24	-1.49	4.13	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
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2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-02 #1

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 430,164	Northing (ft): 1,129,502	Coordinate System: Florida State Plane West	Elevation (ft): -11.1 NAVD 88
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USCS: SW	Munsell: Wet - 2.5Y-7/1 Dry - 2.5Y-8/1 Washed - 2.5Y-8/1	Comments:
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Dry Weight (g): 97.72	Wash Weight (g): 97.07	Pan Retained (g): 0.00	Sieve Loss (%): 0.08	Fines (%): #200 - 0.75 #230 - 0.75	Organics (%):	Carbonates (%): 47	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	1.75	1.79	1.75	1.79
3.5	-2.50	5.66	2.12	2.17	3.87	3.96
4	-2.25	4.76	0.89	0.91	4.76	4.87
5	-2.00	4.00	0.81	0.83	5.57	5.70
7	-1.50	2.83	4.02	4.11	9.59	9.81
10	-1.00	2.00	4.26	4.36	13.85	14.17
14	-0.50	1.41	5.22	5.34	19.07	19.51
18	0.00	1.00	6.08	6.22	25.15	25.73
25	0.50	0.71	5.90	6.04	31.05	31.77
35	1.00	0.50	7.00	7.16	38.05	38.93
45	1.50	0.35	9.68	9.91	47.73	48.84
60	2.00	0.25	16.69	17.08	64.42	65.92
80	2.50	0.18	19.97	20.44	84.39	86.36
120	3.00	0.13	12.00	12.28	96.39	98.64
170	3.50	0.09	0.58	0.59	96.97	99.23
200	3.75	0.07	0.02	0.02	96.99	99.25
230	4.00	0.06	0.00	0.00	96.99	99.25

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.85	2.44	2.22	1.53	-0.06	-0.83	-2.21
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.98	0.51	1.58	-0.91	2.89	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



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2481 NW Boca Raton Blvd.
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Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-02 #2

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 430,164	Northing (ft): 1,129,502	Coordinate System: Florida State Plane West	Elevation (ft): -11.9 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 99.50	Wash Weight (g): 98.37	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 1.18 #230 - 1.17	Organics (%):	Carbonates (%): 6	Shell Hash (%):
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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
7/16"	-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	0.09	0.09	0.09	0.09
5	-2.00	4.00	0.08	0.08	0.17	0.17
7	-1.50	2.83	0.32	0.32	0.49	0.49
10	-1.00	2.00	0.51	0.51	1.00	1.00
14	-0.50	1.41	0.61	0.61	1.61	1.61
18	0.00	1.00	0.67	0.67	2.28	2.28
25	0.50	0.71	0.69	0.69	2.97	2.97
35	1.00	0.50	0.72	0.72	3.69	3.69
45	1.50	0.35	0.75	0.75	4.44	4.44
60	2.00	0.25	1.25	1.26	5.69	5.70
80	2.50	0.18	13.47	13.54	19.16	19.24
120	3.00	0.13	72.27	72.63	91.43	91.87
170	3.50	0.09	6.80	6.83	98.23	98.70
200	3.75	0.07	0.12	0.12	98.35	98.82
230	4.00	0.06	0.01	0.01	98.36	98.83

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.23	2.95	2.88	2.71	2.54	2.38	1.72
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.57	0.17	0.67	-4.13	22.86	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
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Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-02 #3

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 430,164	Northing (ft): 1,129,502	Coordinate System: Florida State Plane West	Elevation (ft): -14.2 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 96.79	Wash Weight (g): 95.75	Pan Retained (g): 0.01	Sieve Loss (%): 0.11	Fines (%): #200 - 1.22 #230 - 1.21	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	1.04	1.07	1.04	1.07
3.5	-2.50	5.66	0.33	0.34	1.37	1.41
4	-2.25	4.76	0.17	0.18	1.54	1.59
5	-2.00	4.00	0.30	0.31	1.84	1.90
7	-1.50	2.83	1.58	1.63	3.42	3.53
10	-1.00	2.00	1.82	1.88	5.24	5.41
14	-0.50	1.41	2.19	2.26	7.43	7.67
18	0.00	1.00	1.26	1.30	8.69	8.97
25	0.50	0.71	4.23	4.37	12.92	13.34
35	1.00	0.50	3.96	4.09	16.88	17.43
45	1.50	0.35	5.14	5.31	22.02	22.74
60	2.00	0.25	10.57	10.92	32.59	33.66
80	2.50	0.18	30.94	31.97	63.53	65.63
120	3.00	0.13	29.95	30.94	93.48	96.57
170	3.50	0.09	2.09	2.16	95.57	98.73
200	3.75	0.07	0.05	0.05	95.62	98.78
230	4.00	0.06	0.01	0.01	95.63	98.79

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.97	2.80	2.65	2.26	1.60	0.83	-1.11
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.84	0.28	1.26	-1.93	6.62	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
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2481 NW Boca Raton Blvd.
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ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-02 #4

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 430,164	Northing (ft): 1,129,502	Coordinate System: Florida State Plane West	Elevation (ft): -18.2 NAVD 88
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USCS: SW	Munsell: Wet - 2.5Y-7/1 Dry - 2.5Y-8/1 Washed - 2.5Y-8/1	Comments:
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Dry Weight (g): 98.35	Wash Weight (g): 97.58	Pan Retained (g): 0.05	Sieve Loss (%): 0.01	Fines (%): #200 - 0.85 #230 - 0.84	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	2.89	2.94	2.89	2.94
5/16"	-3.00	8.00	3.09	3.14	5.98	6.08
3.5	-2.50	5.66	3.93	4.00	9.91	10.08
4	-2.25	4.76	1.25	1.27	11.16	11.35
5	-2.00	4.00	1.83	1.86	12.99	13.21
7	-1.50	2.83	3.89	3.96	16.88	17.17
10	-1.00	2.00	5.45	5.54	22.33	22.71
14	-0.50	1.41	6.78	6.89	29.11	29.60
18	0.00	1.00	6.46	6.57	35.57	36.17
25	0.50	0.71	6.70	6.81	42.27	42.98
35	1.00	0.50	5.94	6.04	48.21	49.02
45	1.50	0.35	6.17	6.27	54.38	55.29
60	2.00	0.25	8.21	8.35	62.59	63.64
80	2.50	0.18	18.89	19.21	81.48	82.85
120	3.00	0.13	14.80	15.05	96.28	97.90
170	3.50	0.09	1.17	1.19	97.45	99.09
200	3.75	0.07	0.06	0.06	97.51	99.15
230	4.00	0.06	0.01	0.01	97.52	99.16

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.90	2.54	2.30	1.08	-0.83	-1.65	-3.17
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.58	0.67	1.95	-0.62	2.23	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



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2481 NW Boca Raton Blvd.
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Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-02 #5

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 430,164	Northing (ft): 1,129,502	Coordinate System: Florida State Plane West	Elevation (ft): -19.3 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-5/1 Dry - 5Y-7/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 95.97	Wash Weight (g): 93.15	Pan Retained (g): 0.08	Sieve Loss (%): 0.06	Fines (%): #200 - 3.29 #230 - 3.08	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	1.76	1.83	1.76	1.83
3.5	-2.50	5.66	0.74	0.77	2.50	2.60
4	-2.25	4.76	1.20	1.25	3.70	3.85
5	-2.00	4.00	1.13	1.18	4.83	5.03
7	-1.50	2.83	3.46	3.61	8.29	8.64
10	-1.00	2.00	6.50	6.77	14.79	15.41
14	-0.50	1.41	12.12	12.63	26.91	28.04
18	0.00	1.00	11.04	11.50	37.95	39.54
25	0.50	0.71	7.08	7.38	45.03	46.92
35	1.00	0.50	3.86	4.02	48.89	50.94
45	1.50	0.35	3.80	3.96	52.69	54.90
60	2.00	0.25	5.25	5.47	57.94	60.37
80	2.50	0.18	11.08	11.55	69.02	71.92
120	3.00	0.13	18.52	19.30	87.54	91.22
170	3.50	0.09	4.63	4.82	92.17	96.04
200	3.75	0.07	0.64	0.67	92.81	96.71
230	4.00	0.06	0.20	0.21	93.01	96.92

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.39	2.81	2.58	0.88	-0.62	-0.98	-2.01
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.79	0.58	1.76	-0.23	1.9	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



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Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-03 #1

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,817	Northing (ft): 1,128,586	Coordinate System: Florida State Plane West	Elevation (ft): -6.7 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 91.15	Wash Weight (g): 90.23	Pan Retained (g): 0.00	Sieve Loss (%): 0.03	Fines (%): #200 - 1.07 #230 - 1.06	Organics (%):	Carbonates (%): 25	Shell Hash (%):
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.04	0.04	0.04	0.04
7	-1.50	2.83	0.32	0.35	0.36	0.39
10	-1.00	2.00	0.80	0.88	1.16	1.27
14	-0.50	1.41	1.25	1.37	2.41	2.64
18	0.00	1.00	2.05	2.25	4.46	4.89
25	0.50	0.71	3.14	3.44	7.60	8.33
35	1.00	0.50	5.30	5.81	12.90	14.14
45	1.50	0.35	6.58	7.22	19.48	21.36
60	2.00	0.25	10.66	11.70	30.14	33.06
80	2.50	0.18	27.92	30.63	58.06	63.69
120	3.00	0.13	29.70	32.58	87.76	96.27
170	3.50	0.09	2.40	2.63	90.16	98.90
200	3.75	0.07	0.03	0.03	90.19	98.93
230	4.00	0.06	0.01	0.01	90.20	98.94

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.98	2.81	2.67	2.28	1.66	1.13	0.02
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.01	0.25	0.93	-1.52	5.2	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



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Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-03 #6

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,817	Northing (ft): 1,128,586	Coordinate System: Florida State Plane West	Elevation (ft): -9.5 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 98.93	Wash Weight (g): 98.06	Pan Retained (g): 0.01	Sieve Loss (%): 0.03	Fines (%): #200 - 0.94 #230 - 0.93	Organics (%):	Carbonates (%): 11	Shell Hash (%):
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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
7/16"	-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	0.19	0.19	0.19	0.19
4	-2.25	4.76	0.00	0.00	0.19	0.19
5	-2.00	4.00	0.03	0.03	0.22	0.22
7	-1.50	2.83	0.25	0.25	0.47	0.47
10	-1.00	2.00	0.35	0.35	0.82	0.82
14	-0.50	1.41	0.75	0.76	1.57	1.58
18	0.00	1.00	1.36	1.37	2.93	2.95
25	0.50	0.71	1.19	1.20	4.12	4.15
35	1.00	0.50	2.36	2.39	6.48	6.54
45	1.50	0.35	2.09	2.11	8.57	8.65
60	2.00	0.25	5.33	5.39	13.90	14.04
80	2.50	0.18	27.96	28.26	41.86	42.30
120	3.00	0.13	50.41	50.96	92.27	93.26
170	3.50	0.09	5.56	5.62	97.83	98.88
200	3.75	0.07	0.18	0.18	98.01	99.06
230	4.00	0.06	0.01	0.01	98.02	99.07

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.15	2.91	2.82	2.58	2.19	2.03	0.68
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.37	0.19	0.78	-2.75	12.64	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



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Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-03 #2

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,817	Northing (ft): 1,128,586	Coordinate System: Florida State Plane West	Elevation (ft): -11.3 NAVD 88
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USCS: SW	Munsell: Wet - 2.5Y-7/1 Dry - 2.5Y-8/1 Washed - 2.5Y-8/1	Comments:
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Dry Weight (g): 99.90	Wash Weight (g): 99.14	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 0.81 #230 - 0.79	Organics (%):	Carbonates (%): 66	Shell Hash (%):
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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
7/16"	-3.50	11.31	2.52	2.52	2.52	2.52
5/16"	-3.00	8.00	4.35	4.35	6.87	6.87
3.5	-2.50	5.66	4.75	4.75	11.62	11.62
4	-2.25	4.76	3.90	3.90	15.52	15.52
5	-2.00	4.00	4.75	4.75	20.27	20.27
7	-1.50	2.83	8.95	8.96	29.22	29.23
10	-1.00	2.00	9.62	9.63	38.84	38.86
14	-0.50	1.41	8.53	8.54	47.37	47.40
18	0.00	1.00	6.52	6.53	53.89	53.93
25	0.50	0.71	5.22	5.23	59.11	59.16
35	1.00	0.50	4.28	4.28	63.39	63.44
45	1.50	0.35	2.77	2.77	66.16	66.21
60	2.00	0.25	3.86	3.86	70.02	70.07
80	2.50	0.18	13.27	13.28	83.29	83.35
120	3.00	0.13	15.01	15.03	98.30	98.38
170	3.50	0.09	0.78	0.78	99.08	99.16
200	3.75	0.07	0.03	0.03	99.11	99.19
230	4.00	0.06	0.02	0.02	99.13	99.21

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.89	2.52	2.19	-0.30	-1.74	-2.22	-3.21
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	-0.03	1.02	2.05	0.01	1.67	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-03 #3

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,817	Northing (ft): 1,128,586	Coordinate System: Florida State Plane West	Elevation (ft): -14.5 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 94.02	Wash Weight (g): 93.17	Pan Retained (g): 0.00	Sieve Loss (%): 0.00	Fines (%): #200 - 0.95 #230 - 0.92	Organics (%):	Carbonates (%): 19	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.68	0.72	0.68	0.72
5/16"	-3.00	8.00	0.94	1.00	1.62	1.72
3.5	-2.50	5.66	1.45	1.54	3.07	3.26
4	-2.25	4.76	0.66	0.70	3.73	3.96
5	-2.00	4.00	0.80	0.85	4.53	4.81
7	-1.50	2.83	1.15	1.22	5.68	6.03
10	-1.00	2.00	1.60	1.70	7.28	7.73
14	-0.50	1.41	2.04	2.17	9.32	9.90
18	0.00	1.00	2.01	2.14	11.33	12.04
25	0.50	0.71	1.58	1.68	12.91	13.72
35	1.00	0.50	1.54	1.64	14.45	15.36
45	1.50	0.35	1.62	1.72	16.07	17.08
60	2.00	0.25	3.26	3.47	19.33	20.55
80	2.50	0.18	23.42	24.91	42.75	45.46
120	3.00	0.13	48.03	51.08	90.78	96.54
170	3.50	0.09	2.30	2.45	93.08	98.99
200	3.75	0.07	0.06	0.06	93.14	99.05
230	4.00	0.06	0.03	0.03	93.17	99.08

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.98	2.88	2.79	2.54	2.09	1.19	-1.92
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.96	0.26	1.49	-2.2	6.95	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
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ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-03 #4

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,817	Northing (ft): 1,128,586	Coordinate System: Florida State Plane West	Elevation (ft): -19.0 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-6/1 Dry - 5Y-7/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 94.84	Wash Weight (g): 92.45	Pan Retained (g): 0.09	Sieve Loss (%): 0.04	Fines (%): #200 - 2.96 #230 - 2.68	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.26	0.27	0.26	0.27
3.5	-2.50	5.66	0.62	0.65	0.88	0.92
4	-2.25	4.76	0.17	0.18	1.05	1.10
5	-2.00	4.00	0.66	0.70	1.71	1.80
7	-1.50	2.83	1.01	1.06	2.72	2.86
10	-1.00	2.00	1.13	1.19	3.85	4.05
14	-0.50	1.41	1.91	2.01	5.76	6.06
18	0.00	1.00	2.25	2.37	8.01	8.43
25	0.50	0.71	2.10	2.21	10.11	10.64
35	1.00	0.50	1.99	2.10	12.10	12.74
45	1.50	0.35	1.97	2.08	14.07	14.82
60	2.00	0.25	2.24	2.36	16.31	17.18
80	2.50	0.18	4.36	4.60	20.67	21.78
120	3.00	0.13	49.16	51.83	69.83	73.61
170	3.50	0.09	20.55	21.67	90.38	95.28
200	3.75	0.07	1.67	1.76	92.05	97.04
230	4.00	0.06	0.27	0.28	92.32	97.32

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.49	3.24	3.03	2.77	2.53	1.75	-0.76
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.36	0.19	1.28	-2.24	7.49	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
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Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-03 #5

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,817	Northing (ft): 1,128,586	Coordinate System: Florida State Plane West	Elevation (ft): -22.1 NAVD 88
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USCS: SW-SM	Munsell: Wet - 5Y-6/1 Dry - 5Y-7/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 96.83	Wash Weight (g): 88.32	Pan Retained (g): 0.64	Sieve Loss (%): 0.02	Fines (%): #200 - 11.35 #230 - 9.48	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-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	0.20	0.21	0.20	0.21
5	-2.00	4.00	0.08	0.08	0.28	0.29
7	-1.50	2.83	0.10	0.10	0.38	0.39
10	-1.00	2.00	0.38	0.39	0.76	0.78
14	-0.50	1.41	1.00	1.03	1.76	1.81
18	0.00	1.00	1.37	1.41	3.13	3.22
25	0.50	0.71	1.08	1.12	4.21	4.34
35	1.00	0.50	0.85	0.88	5.06	5.22
45	1.50	0.35	0.64	0.66	5.70	5.88
60	2.00	0.25	6.18	6.38	11.88	12.26
80	2.50	0.18	6.22	6.42	18.10	18.68
120	3.00	0.13	29.51	30.48	47.61	49.16
170	3.50	0.09	31.25	32.27	78.86	81.43
200	3.75	0.07	6.99	7.22	85.85	88.65
230	4.00	0.06	1.81	1.87	87.66	90.52

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.59	3.40	3.01	2.60	2.29	0.88
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.73	0.15	0.92	-2.42	10.13	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-04 #1

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,577	Northing (ft): 1,127,616	Coordinate System: Florida State Plane West	Elevation (ft): -11.4 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 95.79	Wash Weight (g): 94.91	Pan Retained (g): 0.00	Sieve Loss (%): 0.01	Fines (%): #200 - 0.96 #230 - 0.95	Organics (%):	Carbonates (%): 4	Shell Hash (%):
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.10	0.10	0.10	0.10
7	-1.50	2.83	0.04	0.04	0.14	0.14
10	-1.00	2.00	0.05	0.05	0.19	0.19
14	-0.50	1.41	0.08	0.08	0.27	0.27
18	0.00	1.00	0.09	0.09	0.36	0.36
25	0.50	0.71	0.19	0.20	0.55	0.56
35	1.00	0.50	0.27	0.28	0.82	0.84
45	1.50	0.35	0.63	0.66	1.45	1.50
60	2.00	0.25	2.58	2.69	4.03	4.19
80	2.50	0.18	24.50	25.58	28.53	29.77
120	3.00	0.13	62.62	65.37	91.15	95.14
170	3.50	0.09	3.67	3.83	94.82	98.97
200	3.75	0.07	0.07	0.07	94.89	99.04
230	4.00	0.06	0.01	0.01	94.90	99.05

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.00	2.91	2.85	2.65	2.41	2.23	2.02
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.58	0.17	0.42	-4.09	36.3	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
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 Boca Raton, FL 33431
 ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-05 #3

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,371	Northing (ft): 1,128,156	Coordinate System: Florida State Plane West	Elevation (ft): -11.4 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 89.32	Wash Weight (g): 88.51	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 0.92 #230 - 0.91	Organics (%):	Carbonates (%): 10	Shell Hash (%):
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.14	0.16	0.14	0.16
7	-1.50	2.83	0.24	0.27	0.38	0.43
10	-1.00	2.00	0.34	0.38	0.72	0.81
14	-0.50	1.41	0.66	0.74	1.38	1.55
18	0.00	1.00	0.88	0.99	2.26	2.54
25	0.50	0.71	1.14	1.28	3.40	3.82
35	1.00	0.50	1.58	1.77	4.98	5.59
45	1.50	0.35	1.82	2.04	6.80	7.63
60	2.00	0.25	4.10	4.59	10.90	12.22
80	2.50	0.18	20.73	23.21	31.63	35.43
120	3.00	0.13	49.61	55.54	81.24	90.97
170	3.50	0.09	7.15	8.00	88.39	98.97
200	3.75	0.07	0.10	0.11	88.49	99.08
230	4.00	0.06	0.01	0.01	88.50	99.09

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.25	2.94	2.86	2.63	2.28	2.08	0.83
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.44	0.18	0.75	-2.82	12.85	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
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ph (561) 391 8102

Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-05 #1

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,371	Northing (ft): 1,128,156	Coordinate System: Florida State Plane West	Elevation (ft): -15.5 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 107.30	Wash Weight (g): 106.40	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 0.88 #230 - 0.87	Organics (%):	Carbonates (%): 7	Shell Hash (%):
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.39	0.36	0.39	0.36
10	-1.00	2.00	1.00	0.93	1.39	1.29
14	-0.50	1.41	0.96	0.89	2.35	2.18
18	0.00	1.00	0.95	0.89	3.30	3.07
25	0.50	0.71	0.96	0.89	4.26	3.96
35	1.00	0.50	0.99	0.92	5.25	4.88
45	1.50	0.35	1.11	1.03	6.36	5.91
60	2.00	0.25	2.95	2.75	9.31	8.66
80	2.50	0.18	30.21	28.15	39.52	36.81
120	3.00	0.13	60.85	56.71	100.37	93.52
170	3.50	0.09	5.91	5.51	106.28	99.03
200	3.75	0.07	0.10	0.09	106.38	99.12
230	4.00	0.06	0.01	0.01	106.39	99.13

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.13	2.92	2.84	2.62	2.29	2.13	1.06
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.44	0.18	0.74	-3.26	15.27	

GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

Granularmetric Report

Depths and elevations based on measured values



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Project Name: 2014 Longboat Pass Maintenance

Sample Name: LBVC-14-05 #2

Analysis Date: 07-24-14

Analyzed By: AA

Easting (ft): 429,371	Northing (ft): 1,128,156	Coordinate System: Florida State Plane West	Elevation (ft): -25.3 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 92.90	Wash Weight (g): 89.79	Pan Retained (g): 0.06	Sieve Loss (%): 0.00	Fines (%): #200 - 3.69 #230 - 3.43	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-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	0.04	0.04	0.04	0.04
4	-2.25	4.76	0.04	0.04	0.08	0.08
5	-2.00	4.00	0.00	0.00	0.08	0.08
7	-1.50	2.83	0.36	0.39	0.44	0.47
10	-1.00	2.00	0.85	0.91	1.29	1.38
14	-0.50	1.41	1.10	1.18	2.39	2.56
18	0.00	1.00	1.21	1.30	3.60	3.86
25	0.50	0.71	1.36	1.46	4.96	5.32
35	1.00	0.50	1.77	1.91	6.73	7.23
45	1.50	0.35	1.82	1.96	8.55	9.19
60	2.00	0.25	3.04	3.27	11.59	12.46
80	2.50	0.18	9.28	9.99	20.87	22.45
120	3.00	0.13	52.99	57.04	73.86	79.49
170	3.50	0.09	14.44	15.54	88.30	95.03
200	3.75	0.07	1.19	1.28	89.49	96.31
230	4.00	0.06	0.24	0.26	89.73	96.57

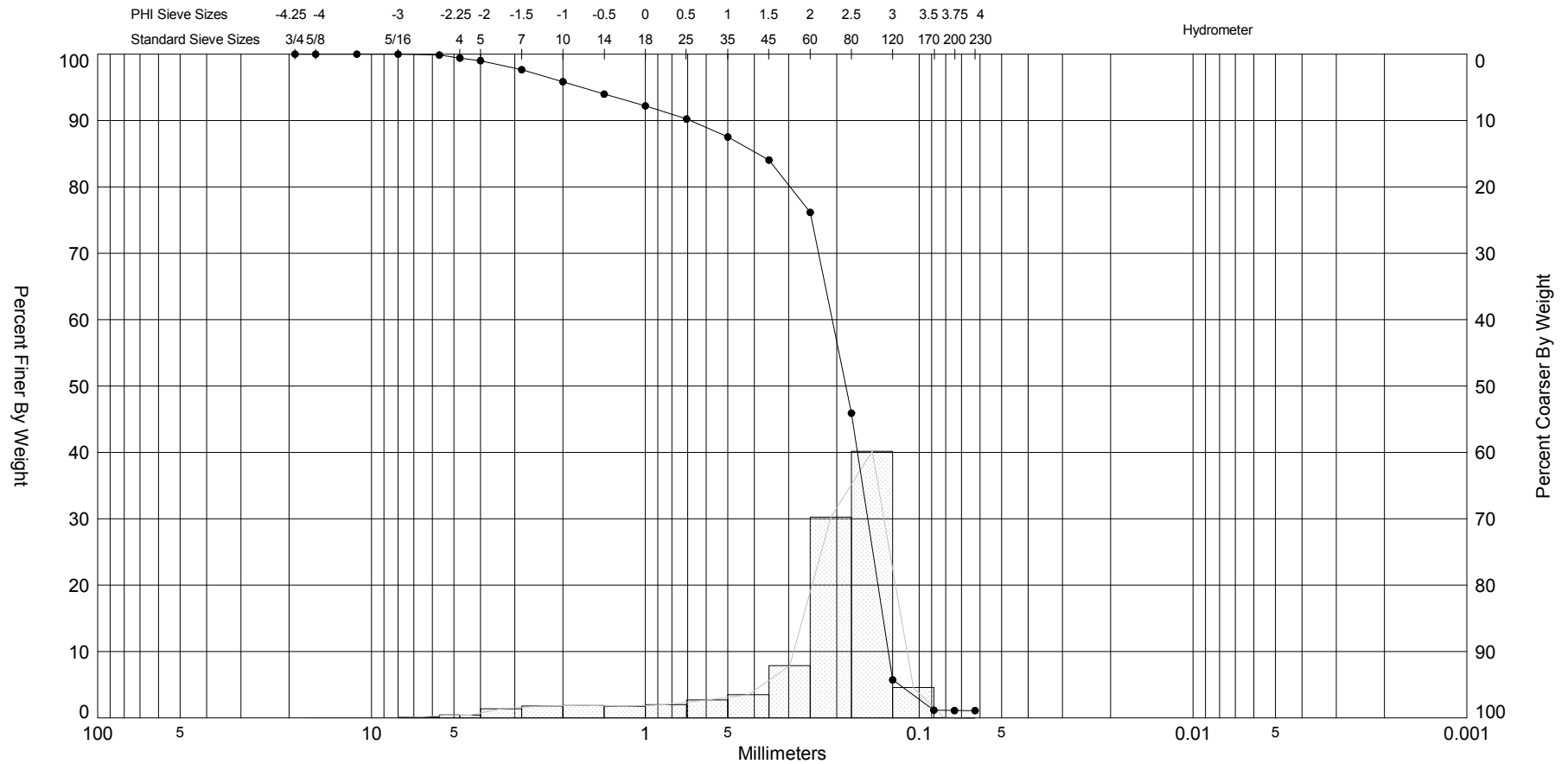
Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.50	3.15	2.96	2.74	2.52	2.18	0.39
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.51	0.18	0.9	-2.6	10.36	


GRANULARMETRIC REPORT LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14

APPENDIX 5
2014 CB&I INDIVIDUAL VIBRACORE GRAIN SIZE DISTRIBUTION
CURVES/HISTOGRAMS

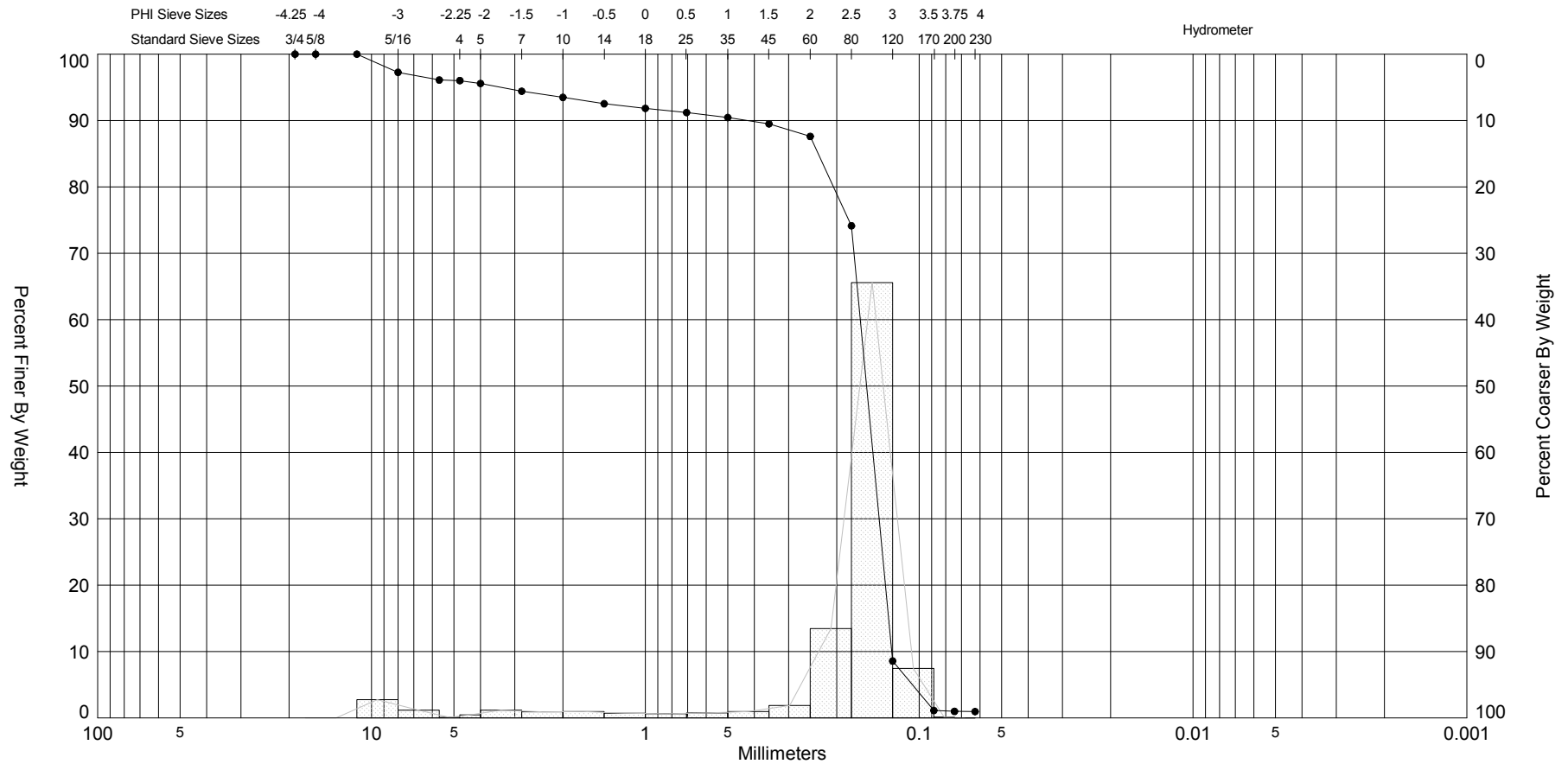
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-01 #1	—●—	-9.1	SW	#200 - 1.11 #230 - 1.10		18	2.43	2.08	-2.12	7.17	1.12	Project Name:	2014 Longboat Pass Maintenance
Comments:											Analysis Date:	07-24-14	
Depths and elevations based on measured values											Analyzed By:	AA	
							CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102					Easting (X, ft):	431,382
							Northing (Y, ft):	1,130,426					
							Horizontal System:	NAD 1983					
							Vertical System:	NAVD 88					

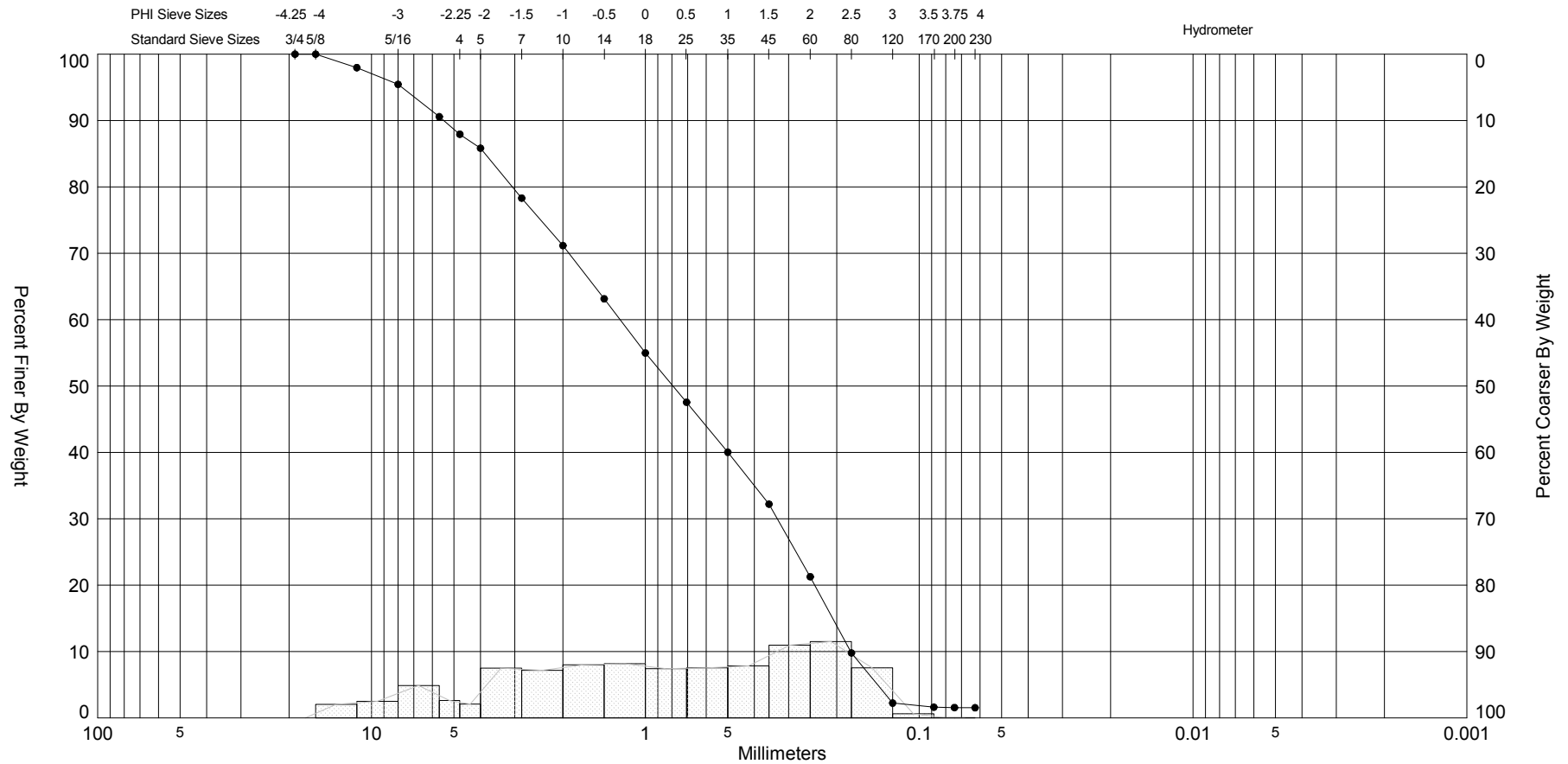
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-01 #2	—●—	-11.7	SW	#200 - 0.98 #230 - 0.96		12	2.68	2.25	-2.9	10.48	1.4	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	431,382
												Northing (Y, ft):	1,130,426
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

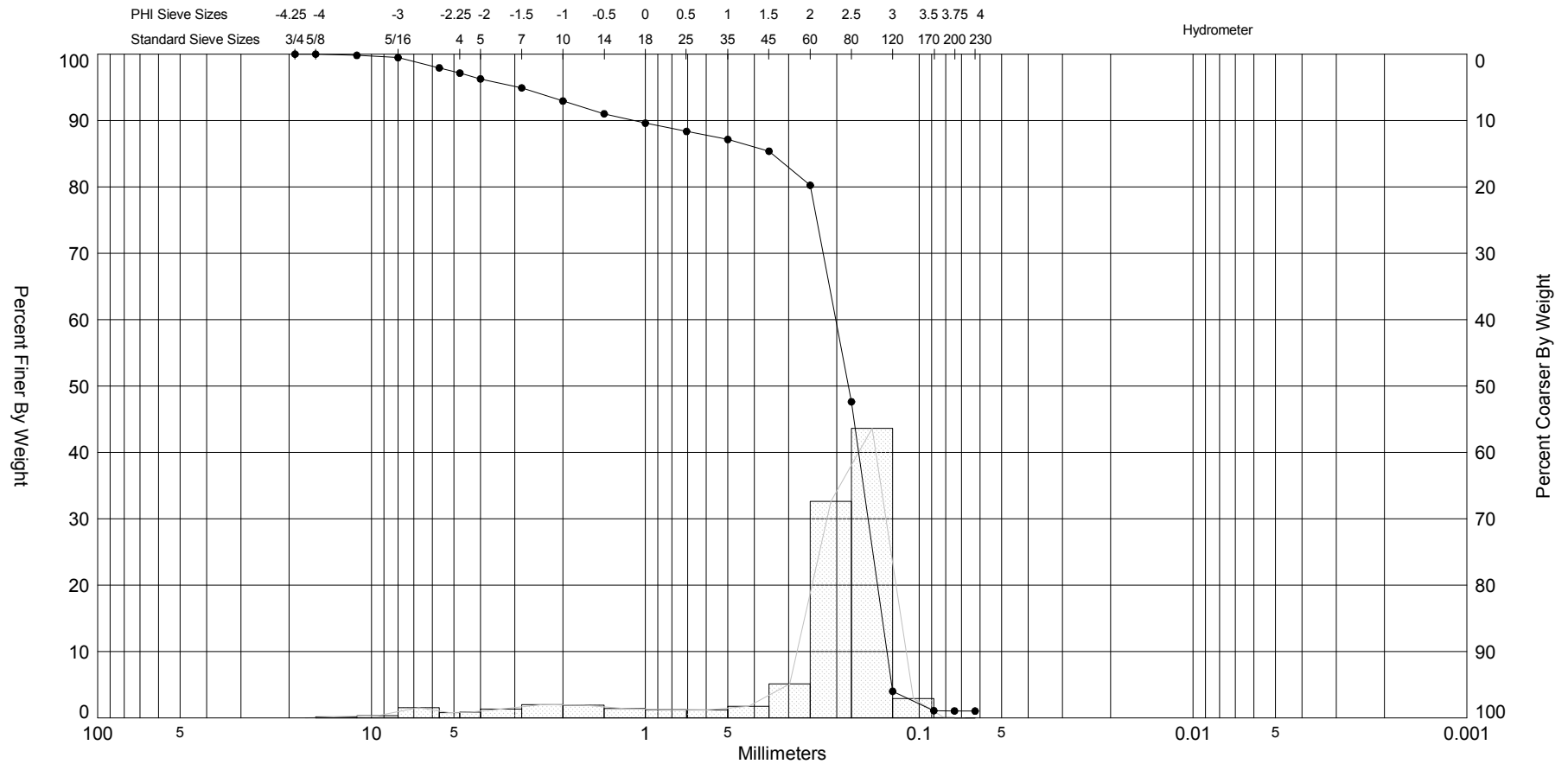
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-01 #3	—●—	-13.2	SW	#200 - 1.56 #230 - 1.53		67	0.34	0.16	-0.29	2	1.82	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	431,382
												Northing (Y, ft):	1,130,426
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

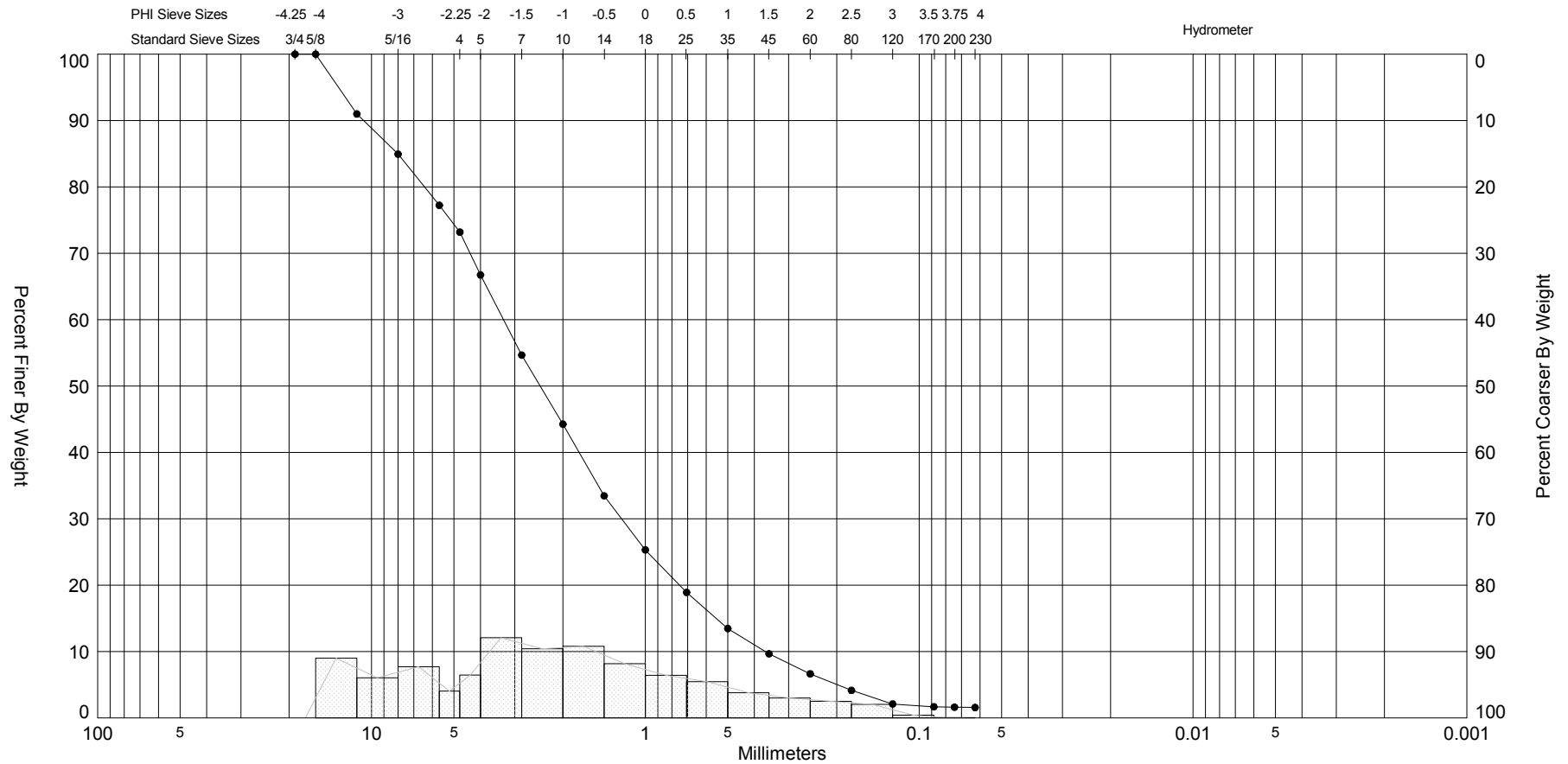
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-01 #4	—●—	-16.8	SW	#200 - 1.05 #230 - 1.03			2.46	2.01	-2.32	7.57	1.35	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	431,382
												Northing (Y, ft):	1,130,426
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

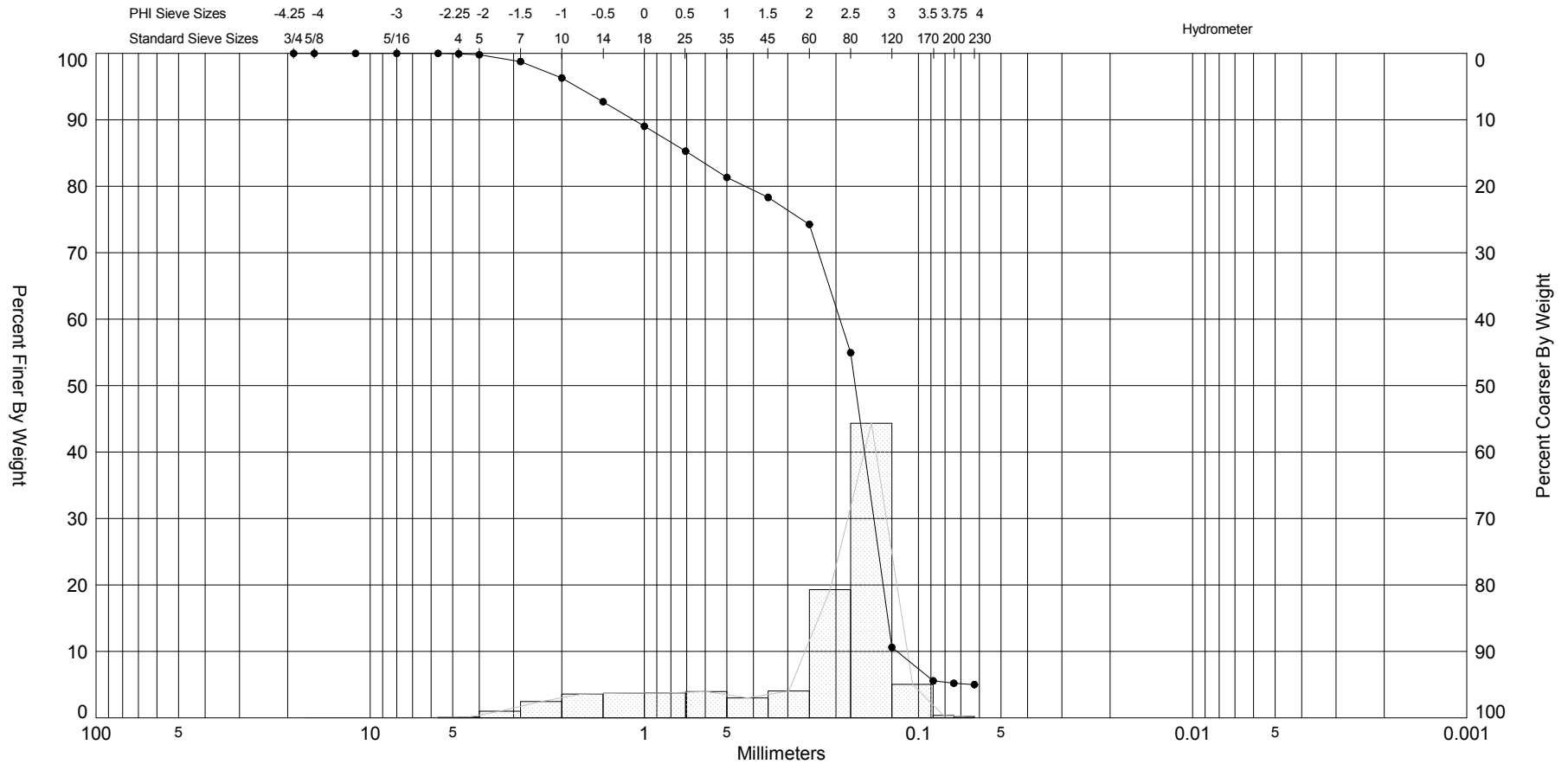
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-01 #5	—●—	-18.4	SW	#200 - 1.62 #230 - 1.57				-1.15	0.41	2.55	1.69	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
							CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102					Easting (X, ft):	431,382
												Northing (Y, ft):	1,130,426
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

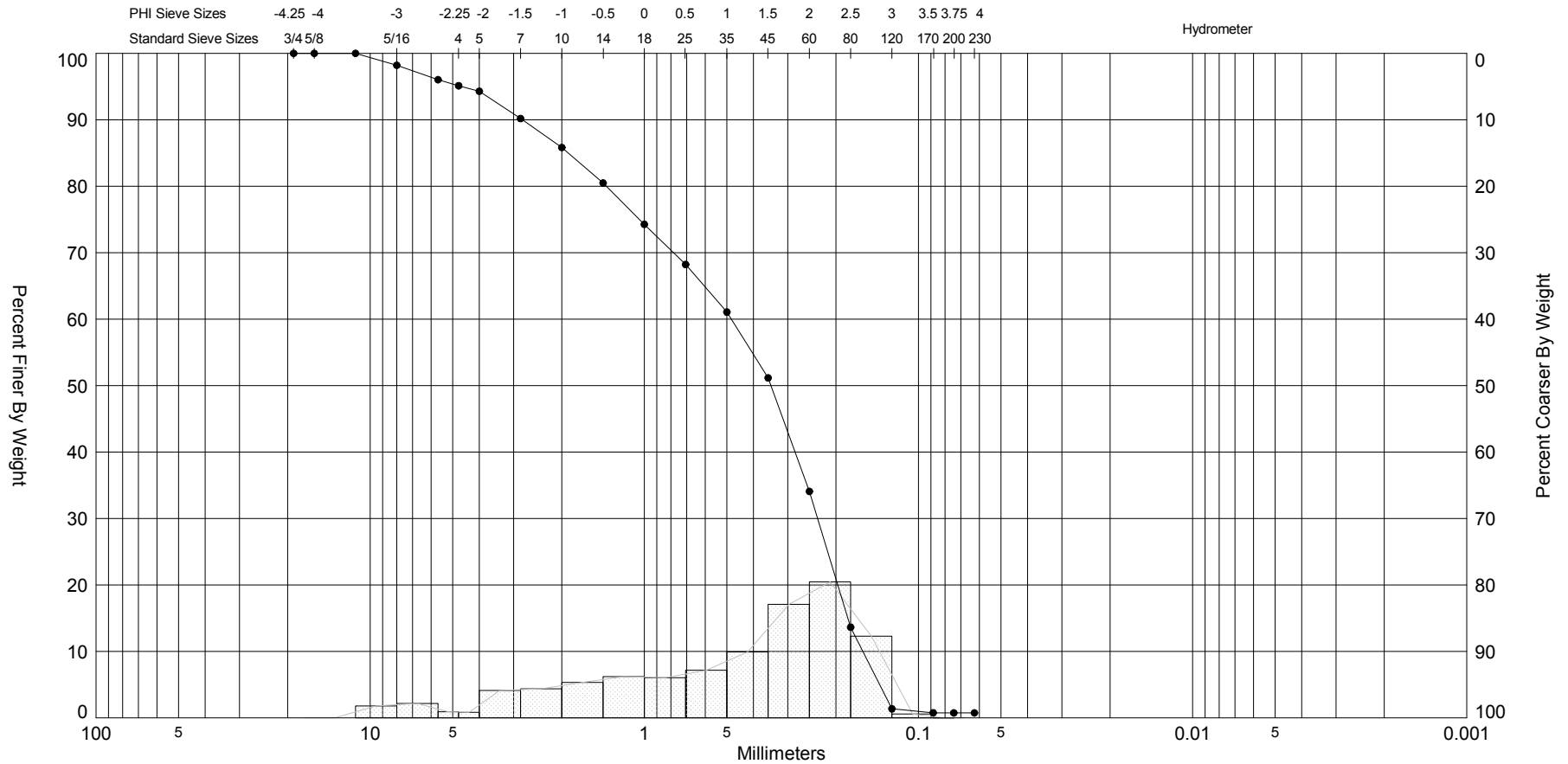
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-01 #6	—●—	-19.9	SW-SM	#200 - 5.21 #230 - 5.01			2.56	2	-1.49	4.13	1.24	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
							CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102					Easting (X, ft):	431,382
												Northing (Y, ft):	1,130,426
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

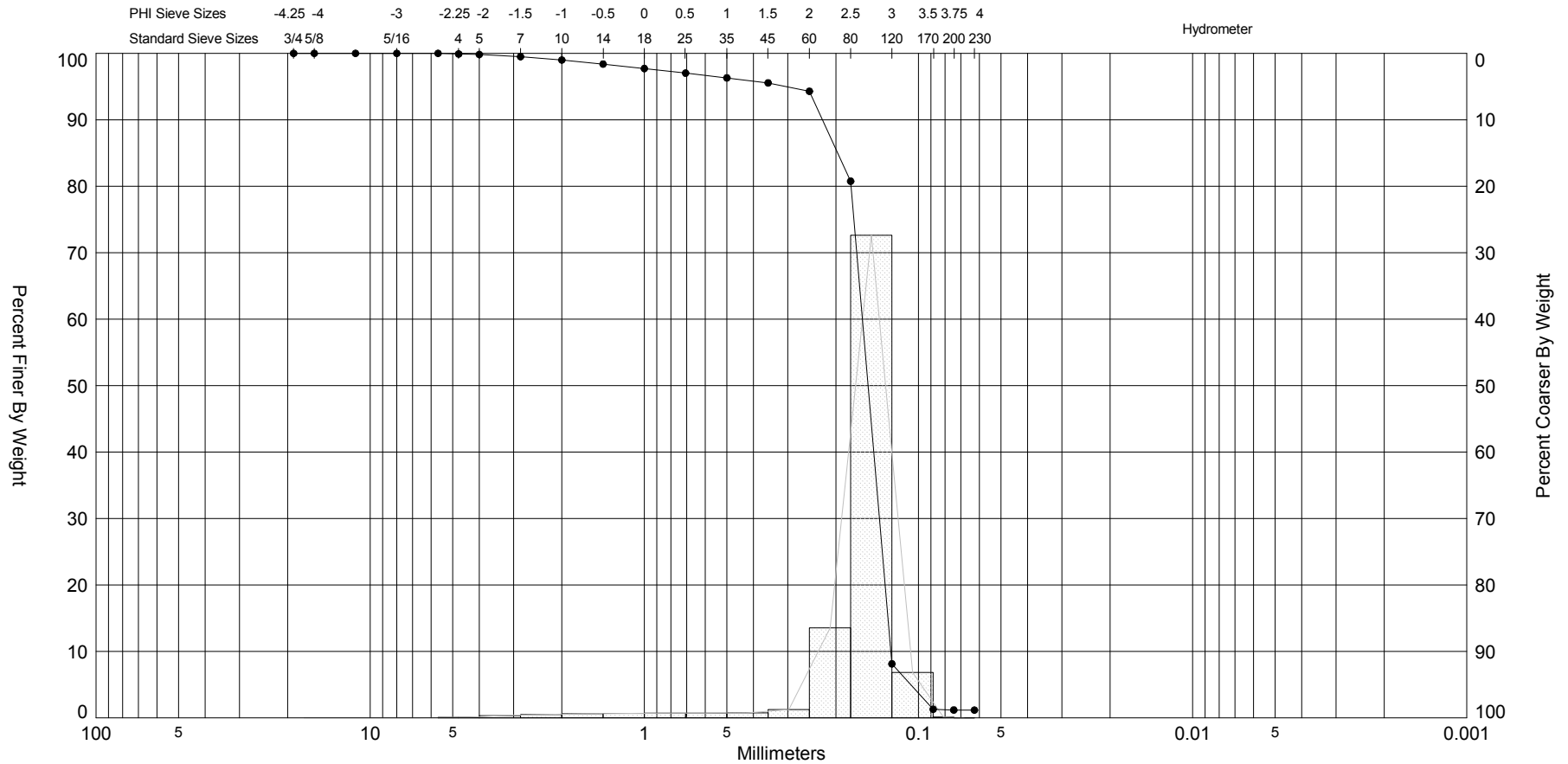
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-02 #1	—●—	-11.1	SW	#200 - 0.75 #230 - 0.75		47	1.53	0.98	-0.91	2.89	1.58	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
						CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102						Easting (X, ft):	430,164
												Northing (Y, ft):	1,129,502
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

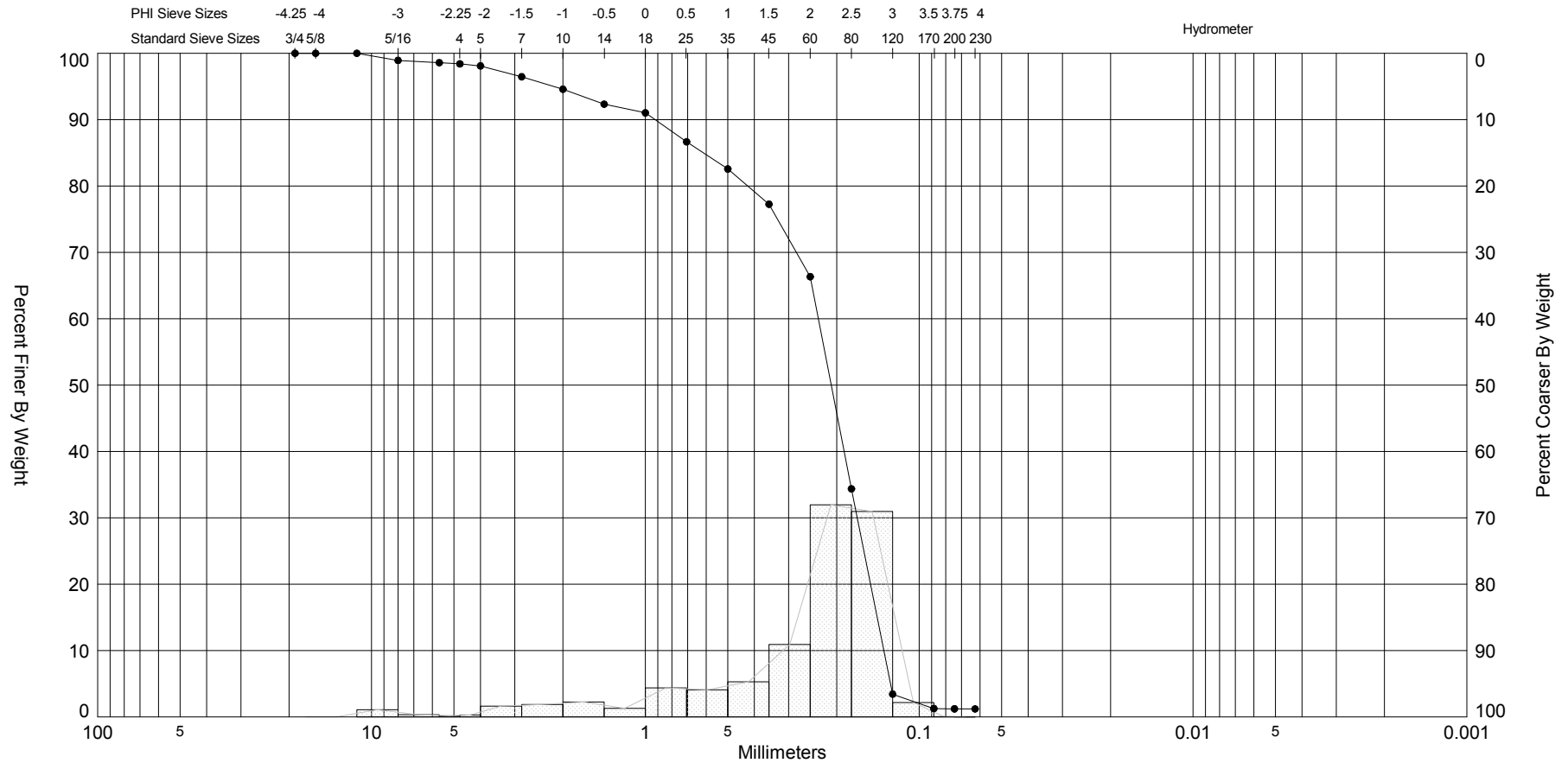
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-02 #2	—●—	-11.9	SP	#200 - 1.18 #230 - 1.17		6	2.71	2.57	-4.13	22.86	0.67	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	430,164
												Northing (Y, ft):	1,129,502
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

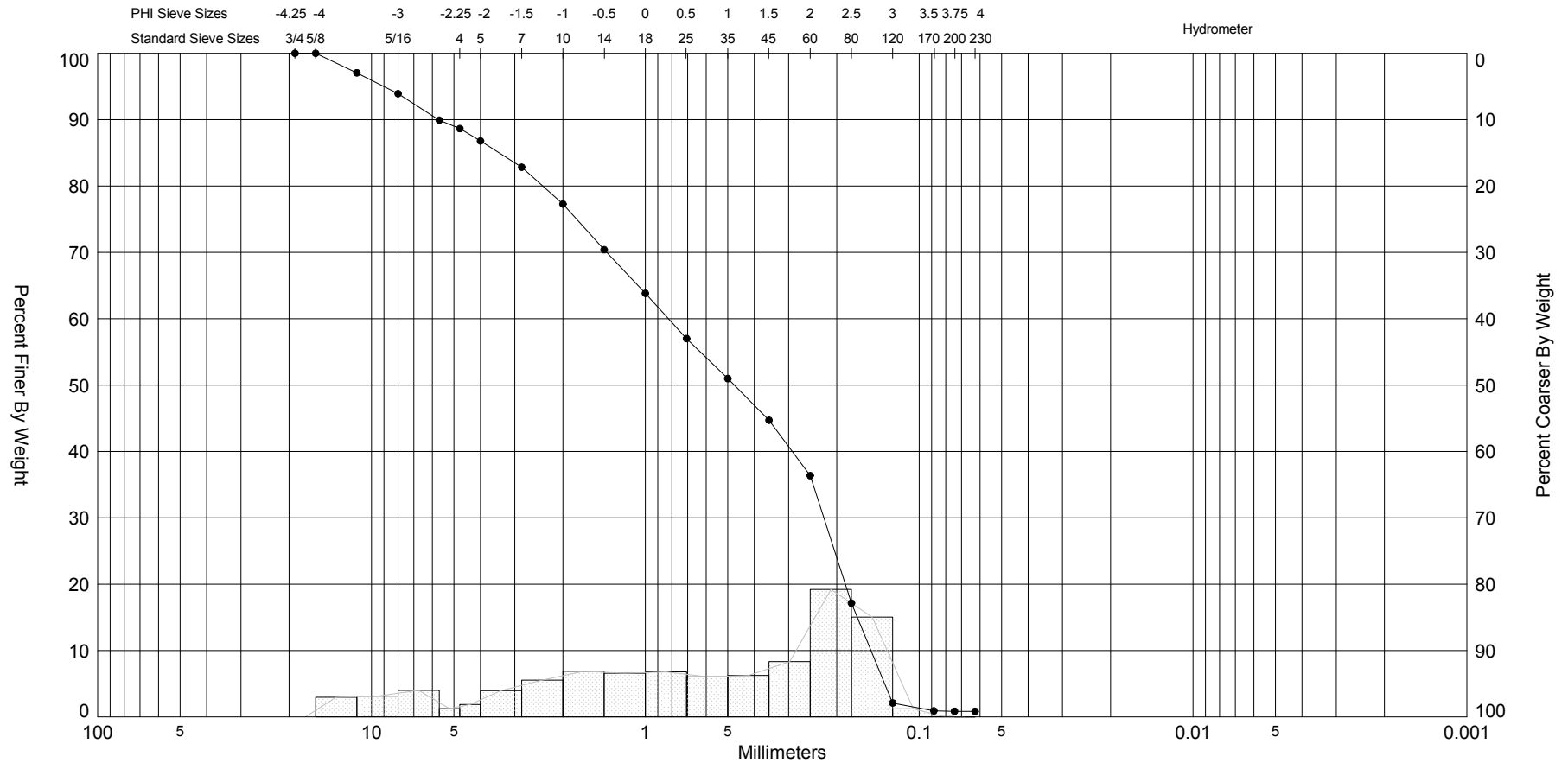
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-02 #3	—●—	-14.2	SW	#200 - 1.22 #230 - 1.21			2.26	1.84	-1.93	6.62	1.26	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
						CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102						Easting (X, ft):	430,164
												Northing (Y, ft):	1,129,502
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

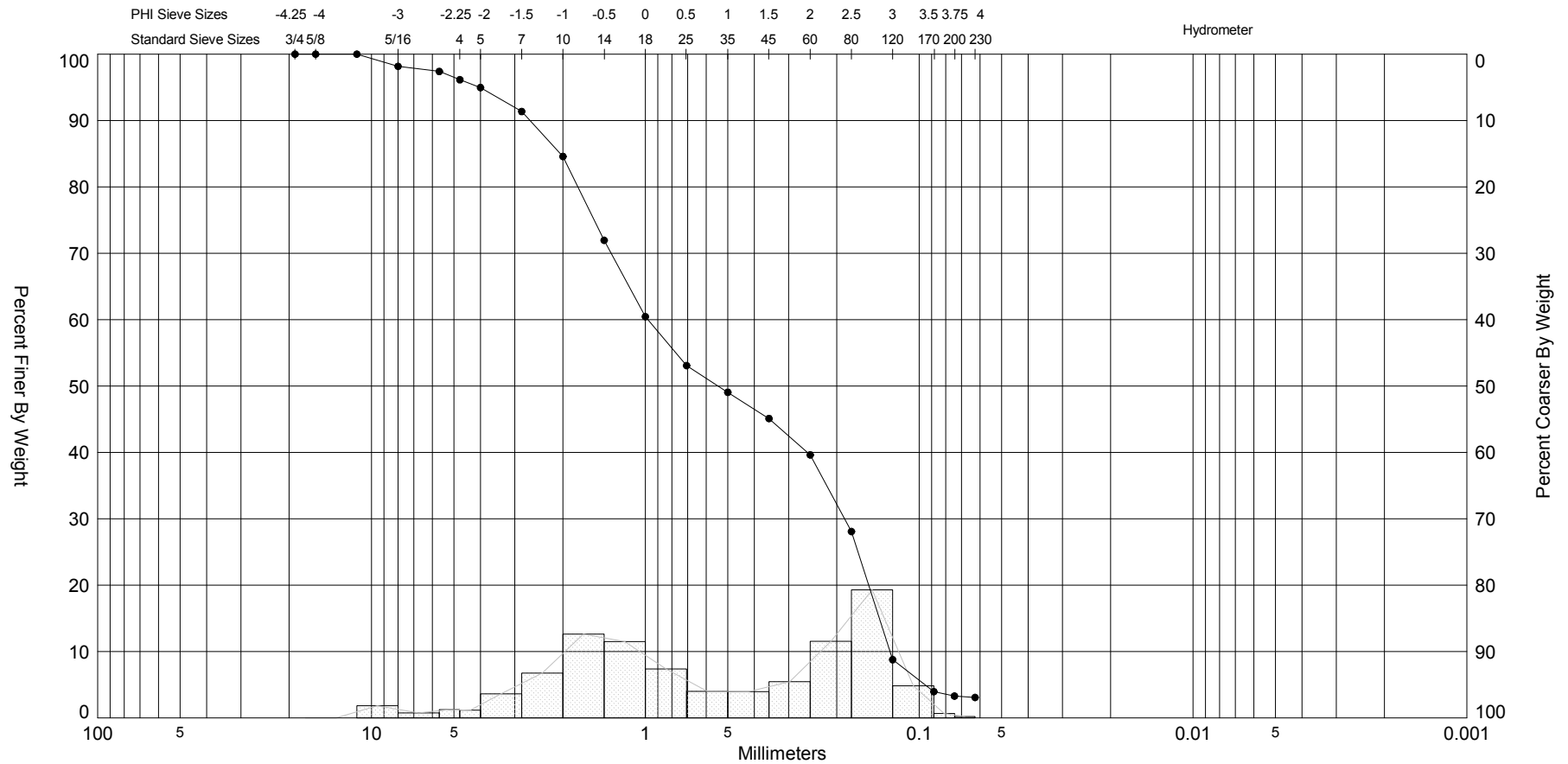
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-02 #4	—●—	-18.2	SW	#200 - 0.85 #230 - 0.84			1.08	0.58	-0.62	2.23	1.95	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
						CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102						Easting (X, ft):	430,164
												Northing (Y, ft):	1,129,502
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

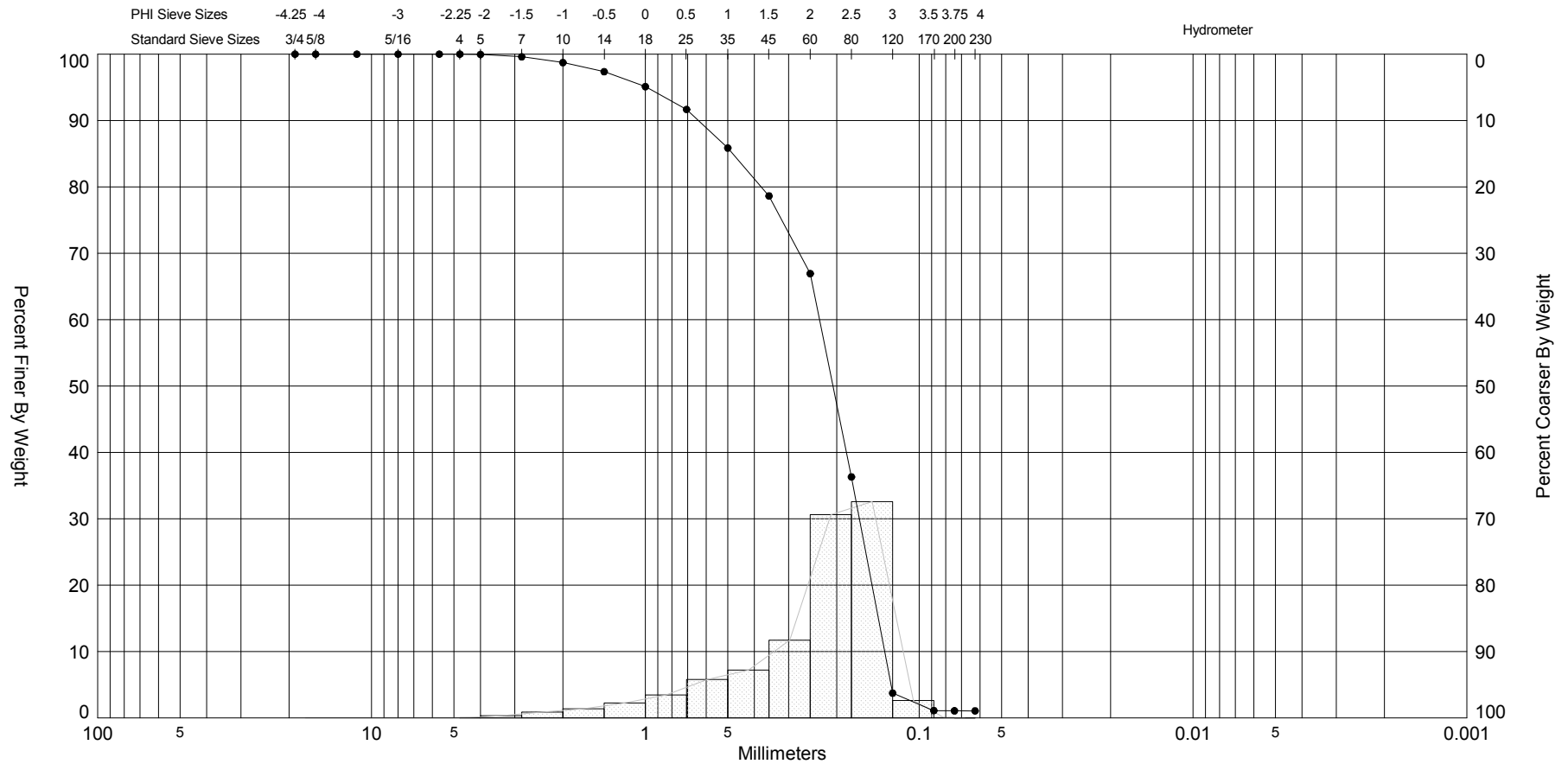
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

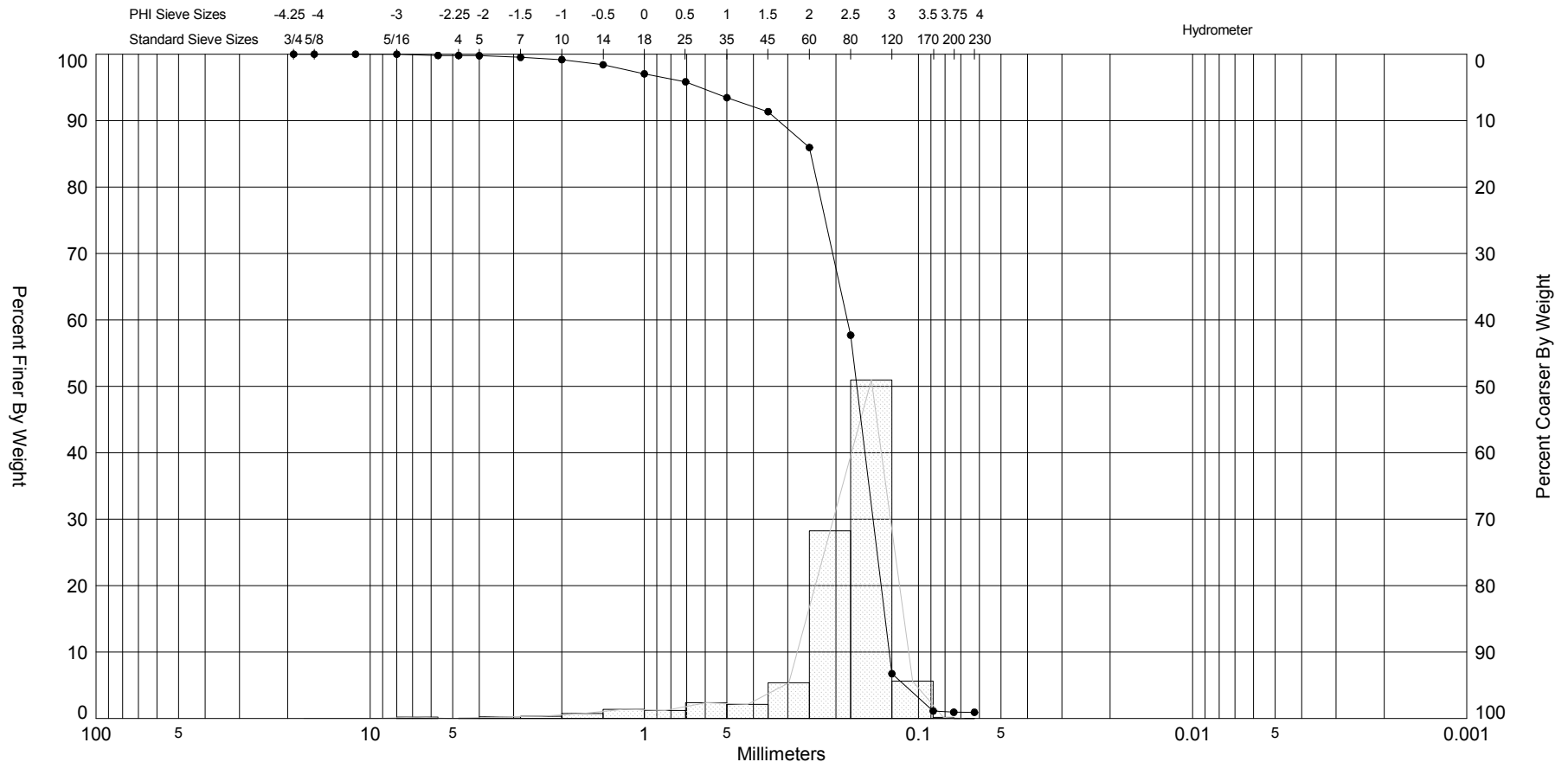
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-02 #5	—●—	-19.3	SW	#200 - 3.29 #230 - 3.08			0.88	0.79	-0.23	1.9	1.76	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	430,164
												Northing (Y, ft):	1,129,502
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
												CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102	

SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

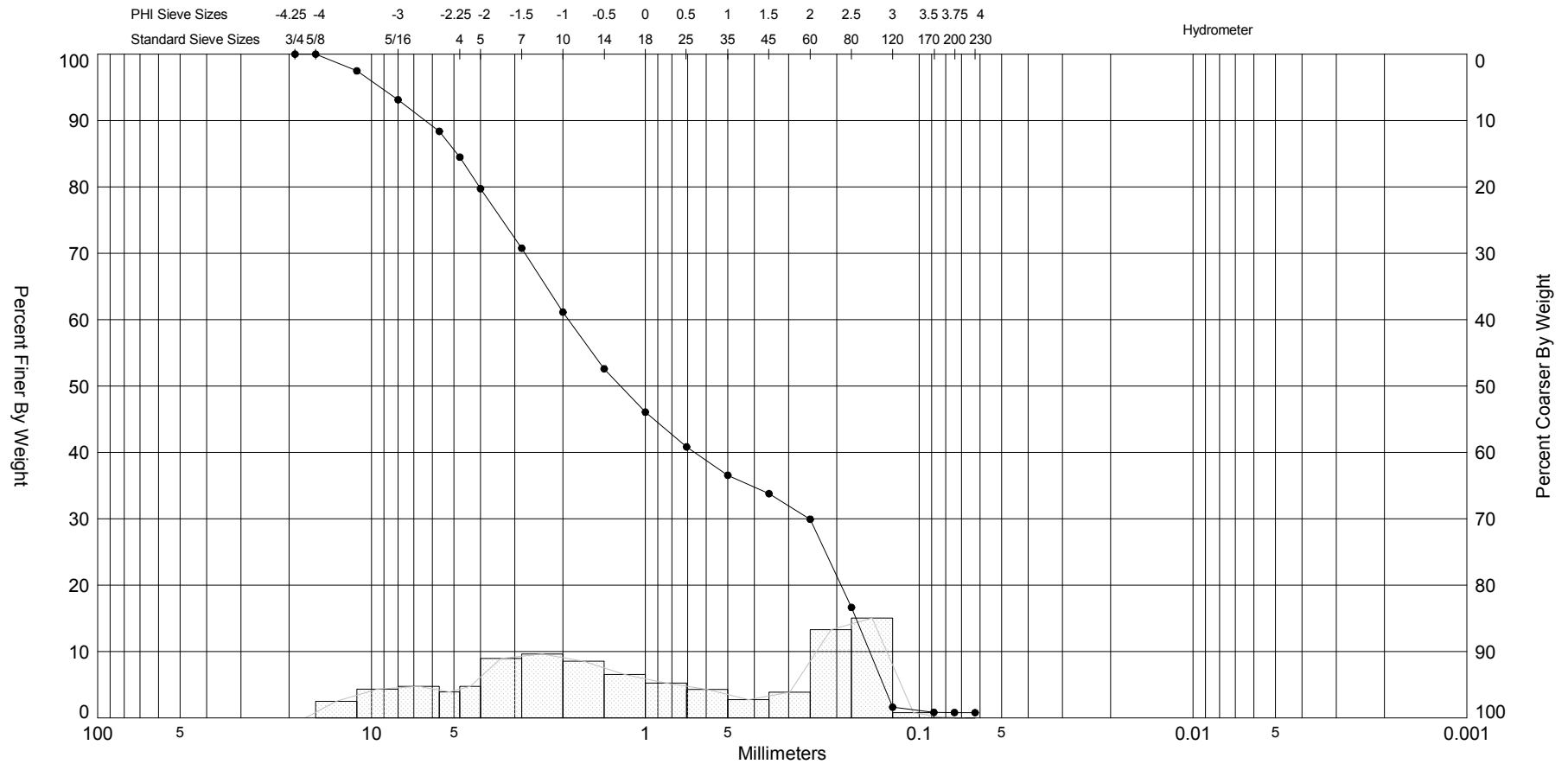
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-03 #1	—●—	-6.7	SW	#200 - 1.07 #230 - 1.06		25	2.28	2.01	-1.52	5.2	0.93	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	429,817
												Northing (Y, ft):	1,128,586
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-03 #6	—●—	-9.5	SP	#200 - 0.94 #230 - 0.93		11	2.58	2.37	-2.75	12.64	0.78	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	429,817
												Northing (Y, ft):	1,128,586
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

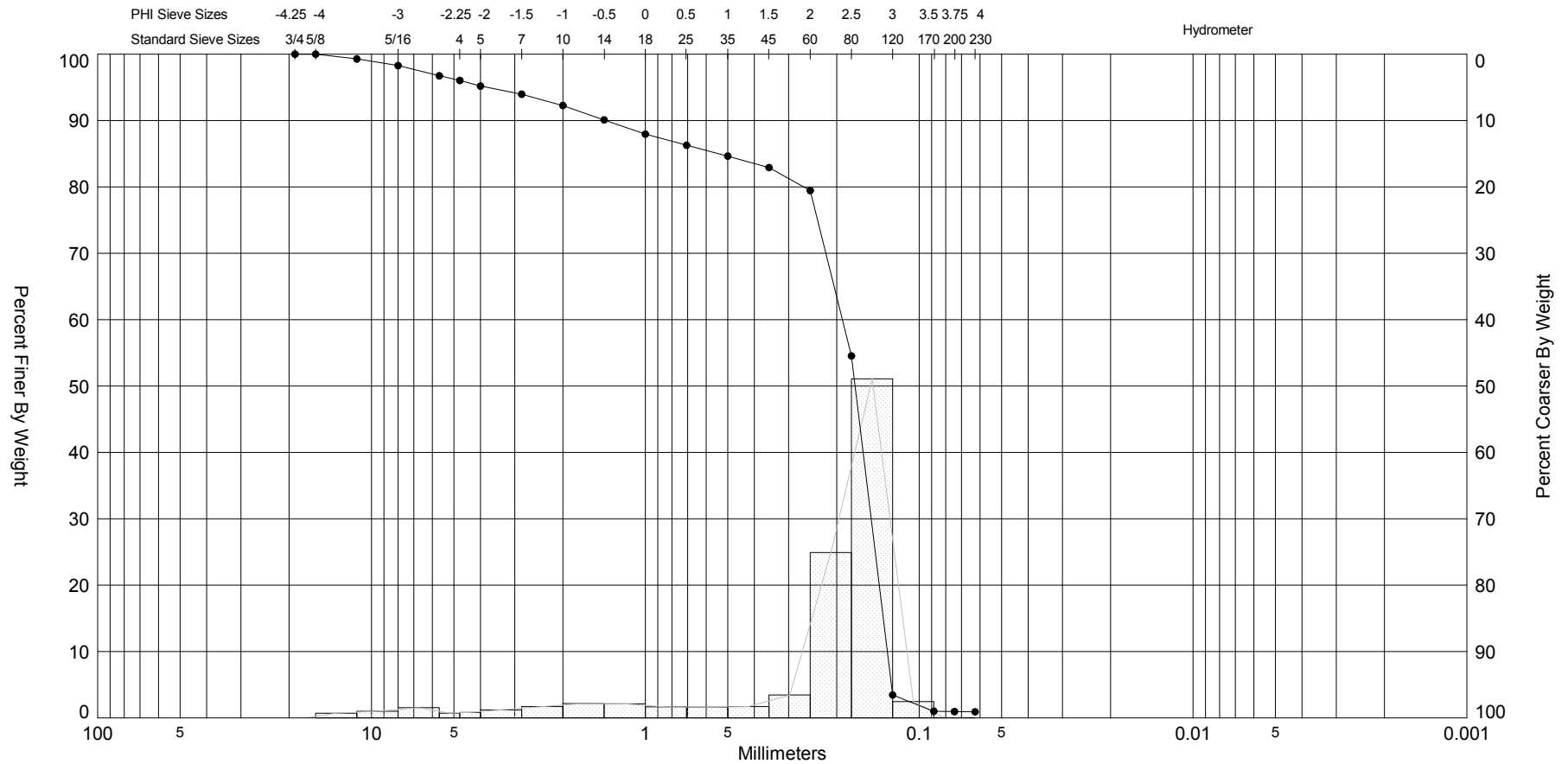
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-03 #2	—●—	-11.3	SW	#200 - 0.81 #230 - 0.79		66		-0.03	0.01	1.67	2.05	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	429,817
												Northing (Y, ft):	1,128,586
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

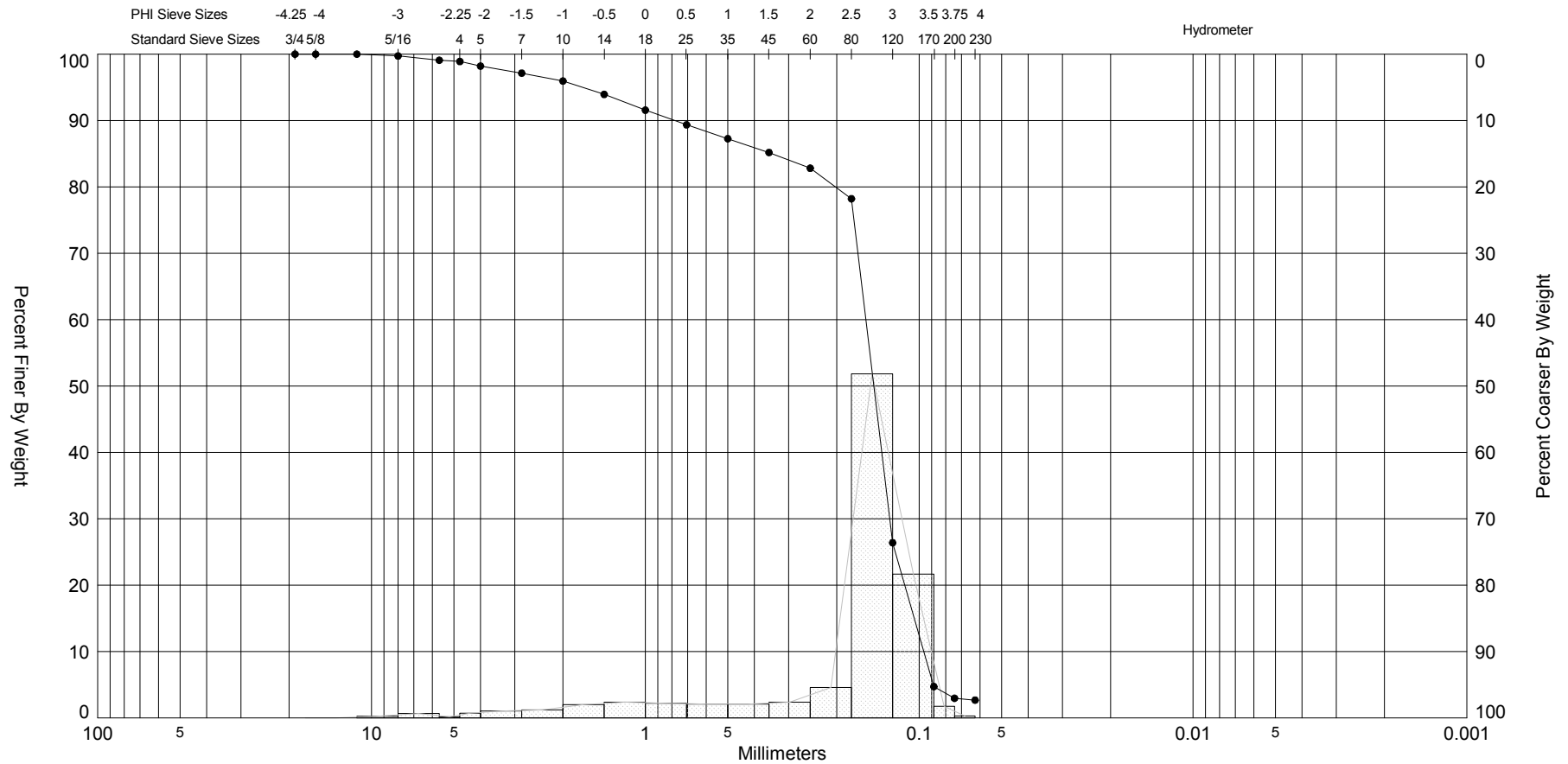
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-03 #3	—●—	-14.5	SW	#200 - 0.95 #230 - 0.92		19	2.54	1.96	-2.2	6.95	1.49	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	429,817
												Northing (Y, ft):	1,128,586
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

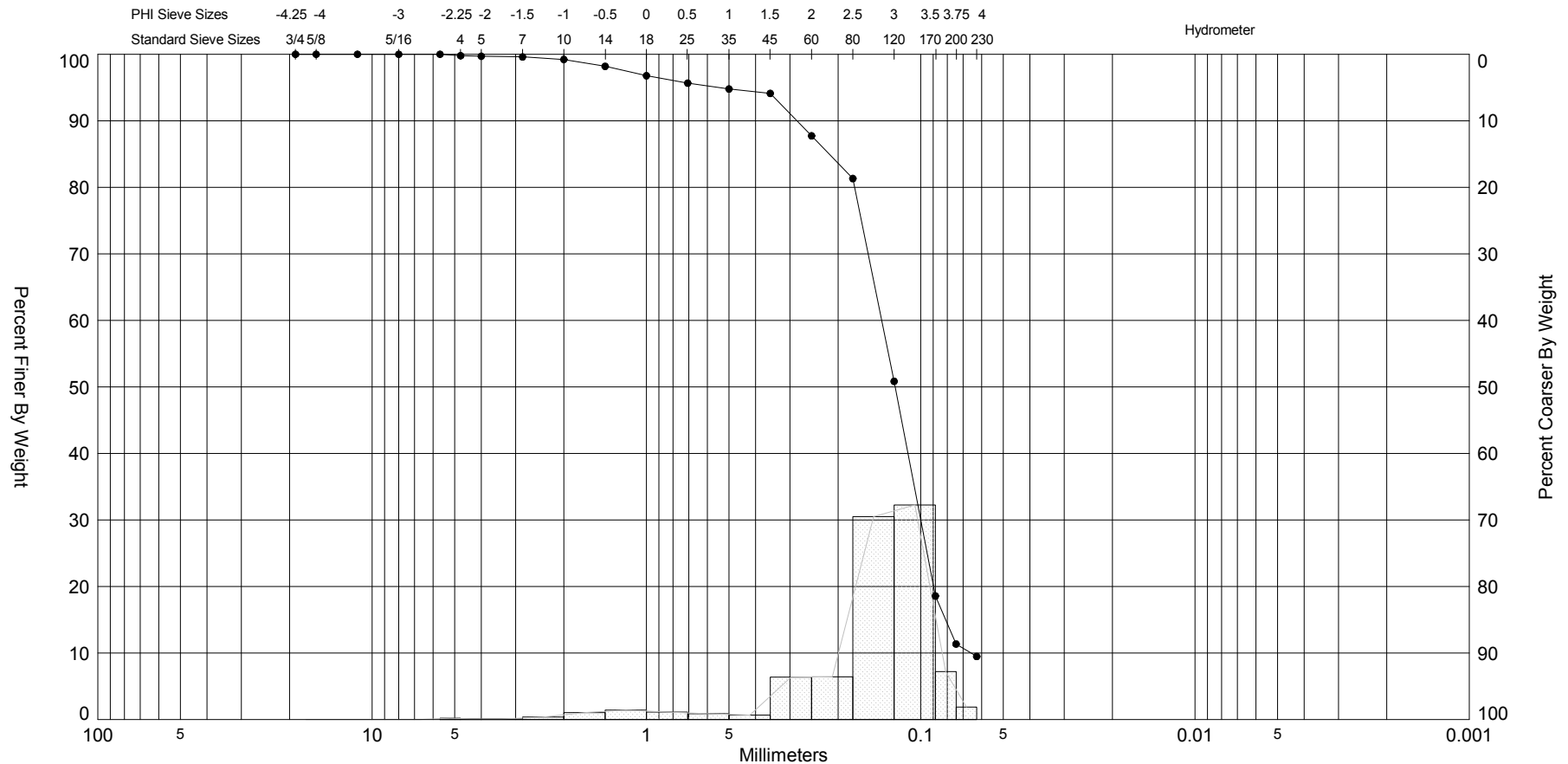
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-03 #4	—●—	-19.0	SW	#200 - 2.96 #230 - 2.68			2.77	2.36	-2.24	7.49	1.28	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	429,817
												Northing (Y, ft):	1,128,586
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

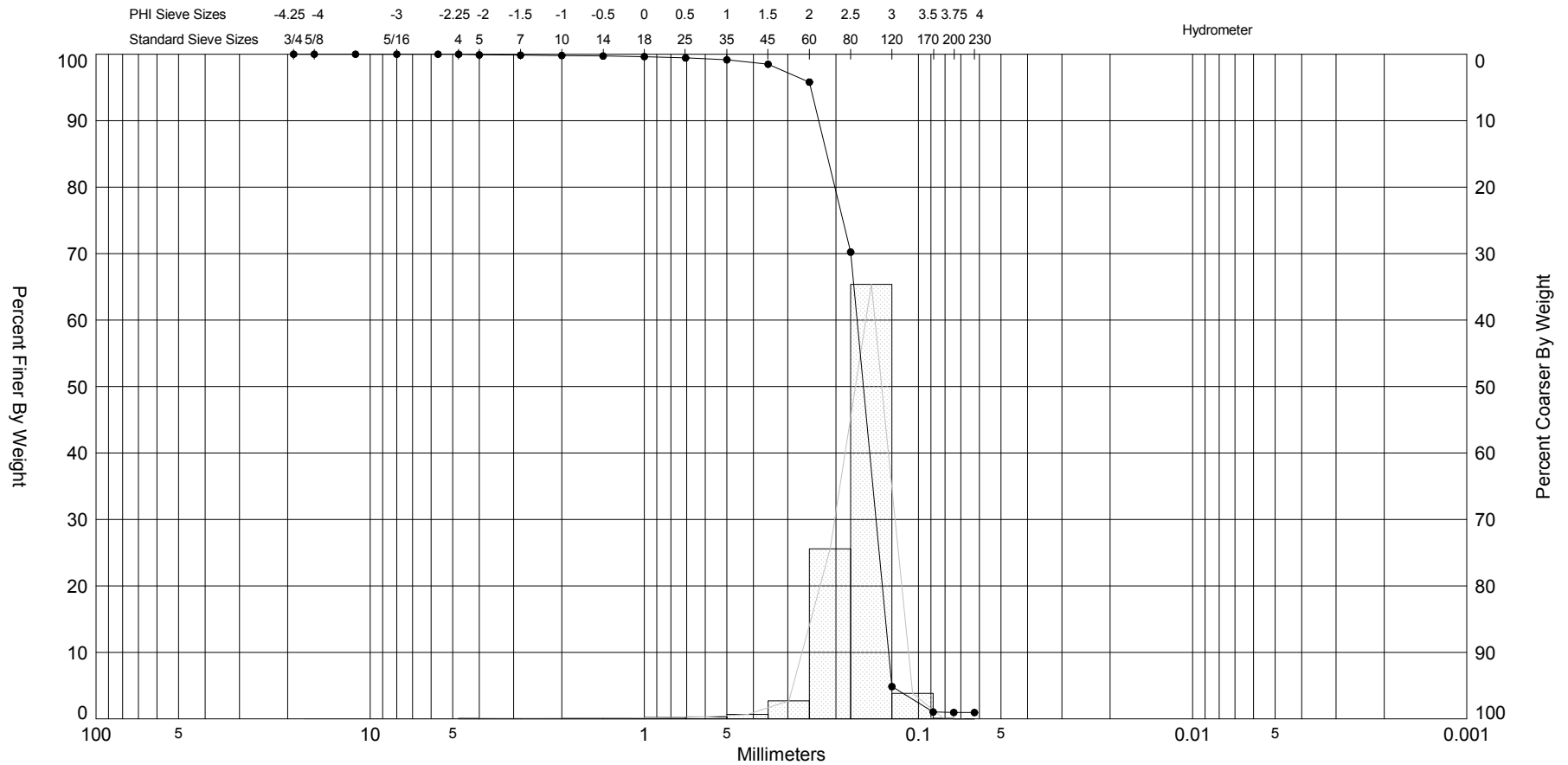
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-03 #5	—•—	-22.1	SW-SM	#200 - 11.35 #230 - 9.48			3.01	2.73	-2.42	10.13	0.92	Project Name:	2014 Longboat Pass Maintenance
Comments:											Analysis Date:	07-24-14	
Depths and elevations based on measured values											Analyzed By:	AA	
							CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102					Easting (X, ft):	429,817
												Northing (Y, ft):	1,128,586
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

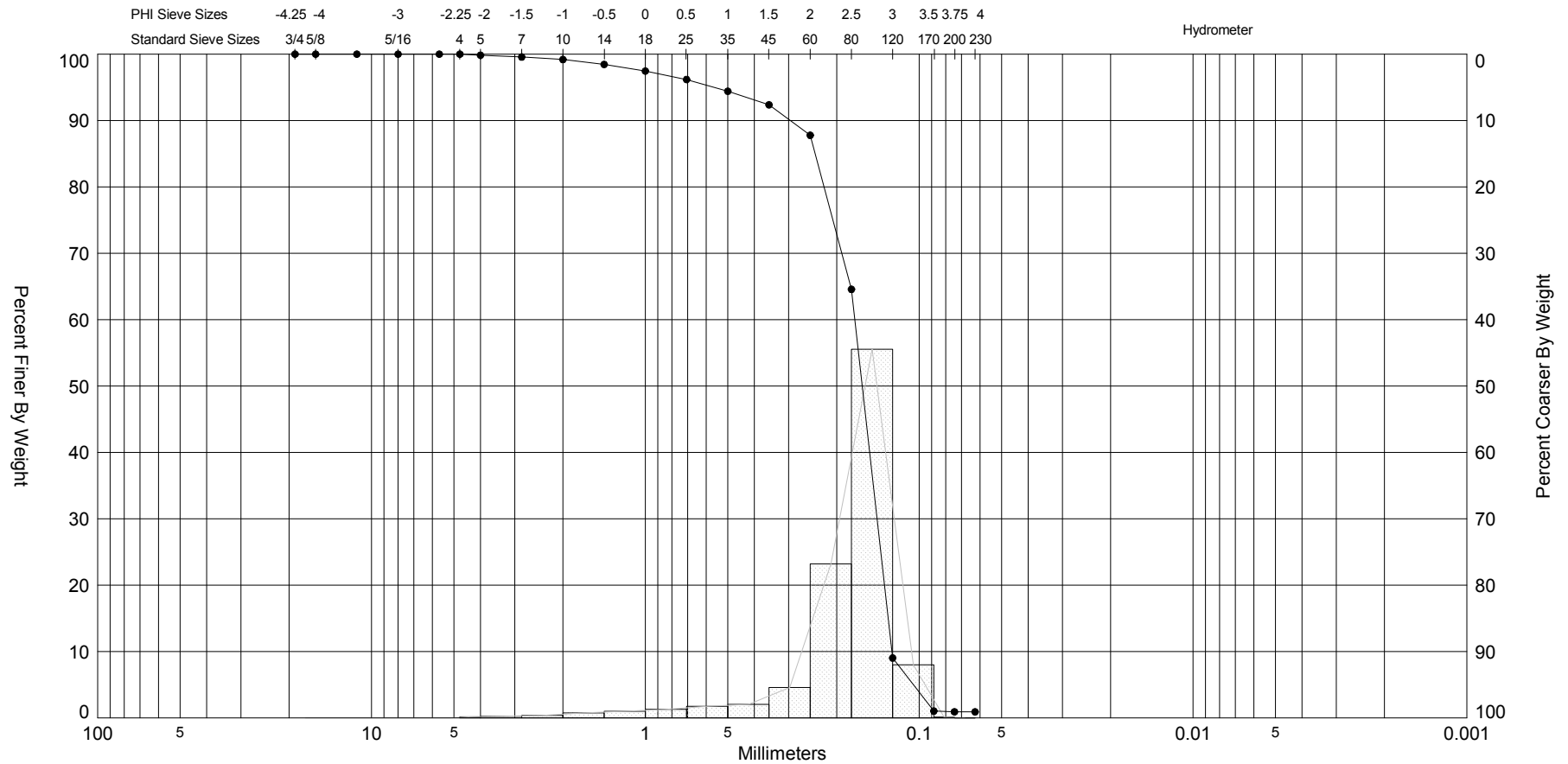
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-04 #1	—●—	-11.4	SP	#200 - 0.96 #230 - 0.95		4	2.65	2.58	-4.09	36.3	0.42	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
						CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102						Easting (X, ft):	429,577
												Northing (Y, ft):	1,127,616
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

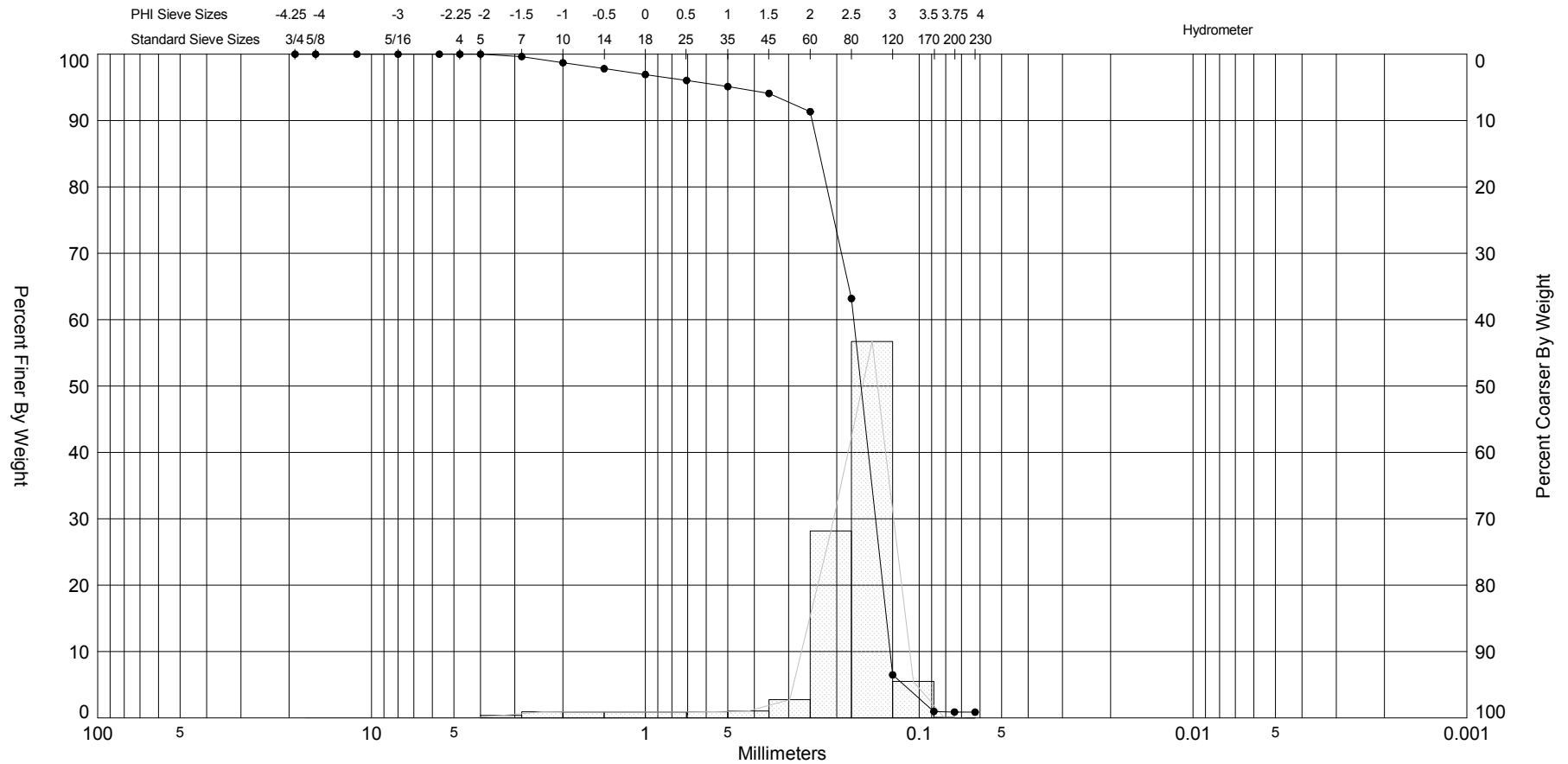
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-05 #3	—●—	-11.4	SP	#200 - 0.92 #230 - 0.91		10	2.63	2.44	-2.82	12.85	0.75	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
						CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102						Easting (X, ft):	429,371
												Northing (Y, ft):	1,128,156
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

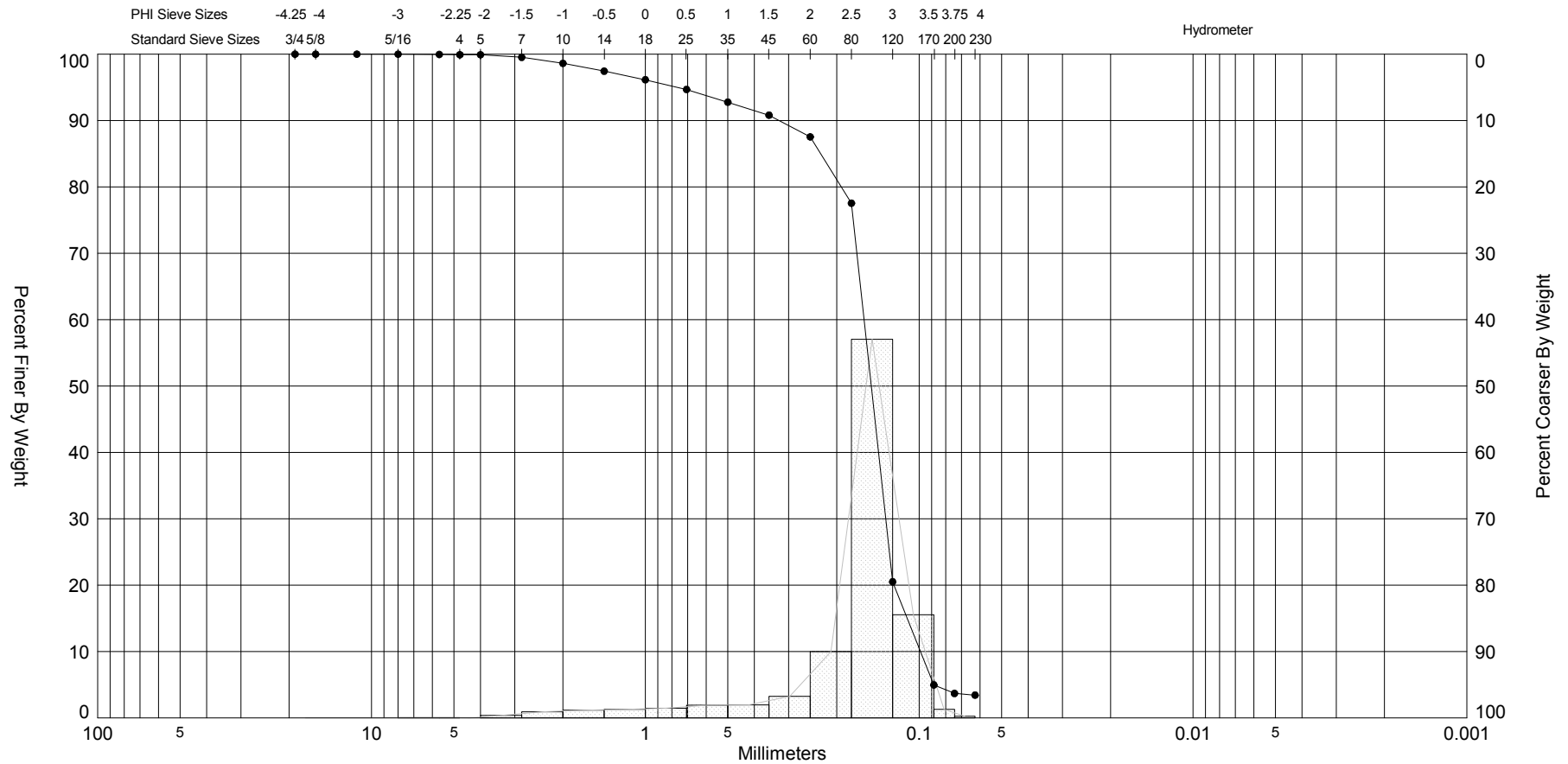
SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-05 #1	—●—	-15.5	SP	#200 - 0.88 #230 - 0.87		7	2.62	2.44	-3.26	15.27	0.74	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	429,371
												Northing (Y, ft):	1,128,156
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

SIEVE ANALYSIS LONG BOAT PASS 2014.GPJ JPBRAZIL.GDT 8/4/14



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-05 #2	—●—	-25.3	SW	#200 - 3.69 #230 - 3.43			2.74	2.51	-2.6	10.36	0.9	Project Name:	2014 Longboat Pass Maintenance
Comments:												Analysis Date:	07-24-14
Depths and elevations based on measured values												Analyzed By:	AA
												Easting (X, ft):	429,371
												Northing (Y, ft):	1,128,156
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102													

APPENDIX 6
FEDERAL NAVIGATION CHANNEL COMPOSITE
SUMMARY TABLES

**COMPOSITE SUMMARY TABLE
LONGBOAT PASS MAINTENANCE DREDGING PROJECT**

VIBRACORE I. D.	EFFECTIVE LENGTH (FT)	PHI MEDIAN	MEDIAN (mm)	MEAN (mm)	PHI MEAN	PHI SORTING	% SILT	% CARBONATE	WET MUNSELL COLOR
LBVC-14-01 Composite	6.2	2.50	0.18	0.27	1.91	1.45	1.11	22	7
LBVC-14-02 Composite	8.2	2.40	0.19	0.27	1.88	1.38	1.12	23	7
LBVC-14-03 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
LBVC-14-04 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
LBVC-14-05 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-01 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-03 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-04 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-05 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-06 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-07 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-08 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-09 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES- MATERIAL IS BELOW DESIGN CUT
AMVC-07-10 Composite	2.3	2.24	0.21	0.38	1.40	1.77	1.24	ND	7
AMVC-07-11 Composite	6.4	2.32	0.20	0.30	1.76	1.45	1.12	ND	7
AMVC-07-12 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-13 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-14 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-15 Composite	2.9	0.51	0.70	0.78	0.35	1.79	1.97	ND	6
AMVC-07-17 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-18 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-19 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
AMVC-07-20 Composite									VIBRACORE NOT USED IN CHANNEL COMPOSITES
CHANNEL COMPOSITE	26.0	2.31	0.20	0.32	1.65	1.57	1.22	23	7

**COMPOSITE DATA TABLE
LONGBOAT PASS MAINTENANCE DREDGING PROJECT**

VIBRACORE I. D.	EFFECTIVE LENGTH (FT)	PHI MEDIAN	MEDIAN (mm)	MEAN (mm)	PHI MEAN	PHI SORTING	% SILT	% CARBONATE	WET MUNSELL COLOR	PHI SIZES																PAN				
										-4.25	-4.0	-3.50	-3.0	-2.50	-2.25	-2.0	-1.5	-1.0	-0.5	0.0	0.5	1.0	1.5	2.0	2.5		3.0	3.5	3.75	4.0
LBVC-14-01 Composite	6.2	2.50	0.18	0.27	1.91	1.45	1.11	22	7	0.00	0.00	0.23	1.31	2.27	2.86	3.47	5.47	7.62	9.92	12.10	14.30	16.99	20.22	26.71	49.97	93.83	98.79	98.88	98.89	99.96
LBVC-14-02 Composite	8.2	2.40	0.19	0.27	1.88	1.38	1.12	23	7	0.00	0.00	0.20	0.60	1.34	1.99	2.54	4.57	6.91	9.48	12.08	14.73	17.97	21.99	29.91	54.84	94.60	98.80	98.87	98.88	99.95
LBVC-14-03 Composite																														
LBVC-14-04 Composite																														
LBVC-14-05 Composite																														
AMVC-07-01 Composite																														
AMVC-07-03 Composite																														
AMVC-07-04 Composite																														
AMVC-07-05 Composite																														
AMVC-07-06 Composite																														
AMVC-07-07 Composite																														
AMVC-07-08 Composite																														
AMVC-07-09 Composite																														
AMVC-07-10 Composite	2.3	2.24	0.21	0.38	1.40	1.77	1.24	ND	7	0.00	0.00	0.37	1.04	3.43	4.54	6.35	10.85	14.88	19.38	23.26	26.87	30.66	34.61	40.70	59.79	93.68	98.68	98.74	98.76	99.93
AMVC-07-11 Composite	6.4	2.32	0.20	0.30	1.76	1.45	1.12	ND	7	0.00	0.00	0.29	0.79	1.82	2.53	3.24	5.29	8.07	11.34	14.24	17.24	20.52	24.37	32.93	59.43	94.91	98.79	98.85	98.88	99.90
AMVC-07-12 Composite																														
AMVC-07-13 Composite																														
AMVC-07-14 Composite																														
AMVC-07-15 Composite	2.9	0.51	0.70	0.78	0.35	1.79	1.97	ND	6	0.00	0.00	1.15	4.11	7.33	8.65	11.47	17.01	23.92	32.67	41.16	49.91	58.50	66.02	74.10	84.83	96.30	97.91	97.97	98.03	99.89
AMVC-07-17 Composite																														
AMVC-07-18 Composite																														
AMVC-07-19 Composite																														
AMVC-07-20 Composite																														
CHANNEL COMPOSITE	26.0	2.31	0.20	0.32	1.65	1.57	1.22	23	7	0.00	0.00	0.35	1.24	2.53	3.30	4.27	6.91	9.97	13.51	16.85	20.25	24.01	28.18	35.77	58.59	94.60	98.69	98.75	98.78	99.93

APPENDIX 7
FEDERAL NAVIGATION CHANNEL COMPOSITE
GRANULARMETRIC REPORTS

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: Longboat Pass Channel Composite

Sample Name: LBVC-14-01 COMP

Analysis Date: 10-03-14

Analyzed By: KM

Easting (ft): 431,382	Northing (ft): 1,130,426	Coordinate System: Florida State Plane West	Elevation (ft):
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USCS: SW	Munsell:	Comments: COMPOSITE
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Dry Weight (g): 100.00	Wash Weight (g): 100.00	Pan Retained (g): 1.07	Sieve Loss (%): 0.04	Fines (%): #200 - 1.12 #230 - 1.11	Organics (%):	Carbonates (%): 22	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.23	0.23	0.23	0.23
5/16"	-3.00	8.00	1.08	1.08	1.31	1.31
3.5	-2.50	5.66	0.96	0.96	2.27	2.27
4	-2.25	4.76	0.59	0.59	2.86	2.86
5	-2.00	4.00	0.61	0.61	3.47	3.47
7	-1.50	2.83	2.00	2.00	5.47	5.47
10	-1.00	2.00	2.15	2.15	7.62	7.62
14	-0.50	1.41	2.30	2.30	9.92	9.92
18	0.00	1.00	2.18	2.18	12.10	12.10
25	0.50	0.71	2.20	2.20	14.30	14.30
35	1.00	0.50	2.69	2.69	16.99	16.99
45	1.50	0.35	3.23	3.23	20.22	20.22
60	2.00	0.25	6.49	6.49	26.71	26.71
80	2.50	0.18	23.26	23.26	49.97	49.97
120	3.00	0.13	43.86	43.86	93.83	93.83
170	3.50	0.09	4.96	4.96	98.79	98.79
200	3.75	0.07	0.09	0.09	98.88	98.88
230	4.00	0.06	0.01	0.01	98.89	98.89

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.12	2.89	2.79	2.50	1.87	0.82	-1.62
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.91	0.27	1.45	-1.95	6.07	

GRANULARMETRIC REPORT LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI_FINAL.GPJ_JPBRAZIL_GDT 10/3/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: Longboat Pass Channel Composite

Sample Name: LBVC-14-02 COMP

Analysis Date: 10-03-14

Analyzed By: KM

Easting (ft): 430,164	Northing (ft): 1,129,502	Coordinate System: Florida State Plane West	Elevation (ft):
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USCS: SW	Munsell:	Comments: COMPOSITE
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Dry Weight (g): 100.00	Wash Weight (g): 100.00	Pan Retained (g): 1.07	Sieve Loss (%): 0.05	Fines (%): #200 - 1.13 #230 - 1.12	Organics (%):	Carbonates (%): 23	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.20	0.20	0.20	0.20
5/16"	-3.00	8.00	0.40	0.40	0.60	0.60
3.5	-2.50	5.66	0.74	0.74	1.34	1.34
4	-2.25	4.76	0.65	0.65	1.99	1.99
5	-2.00	4.00	0.55	0.55	2.54	2.54
7	-1.50	2.83	2.03	2.03	4.57	4.57
10	-1.00	2.00	2.34	2.34	6.91	6.91
14	-0.50	1.41	2.57	2.57	9.48	9.48
18	0.00	1.00	2.60	2.60	12.08	12.08
25	0.50	0.71	2.65	2.65	14.73	14.73
35	1.00	0.50	3.24	3.24	17.97	17.97
45	1.50	0.35	4.02	4.02	21.99	21.99
60	2.00	0.25	7.92	7.92	29.91	29.91
80	2.50	0.18	24.93	24.93	54.84	54.84
120	3.00	0.13	39.76	39.76	94.60	94.60
170	3.50	0.09	4.20	4.20	98.80	98.80
200	3.75	0.07	0.07	0.07	98.87	98.87
230	4.00	0.06	0.01	0.01	98.88	98.88

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.05	2.87	2.75	2.40	1.69	0.70	-1.41
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.88	0.27	1.38	-1.81	5.6	

GRANULARMETRIC REPORT LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI_FINAL.GPJ_JPBRAZIL_GDT 10/3/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: Longboat Pass Channel Composite

Sample Name: AMVC-07-10 COMP

Analysis Date: 10-03-14

Analyzed By: KM

Easting (ft): 429,717	Northing (ft): 1,129,373	Coordinate System: Florida State Plane West	Elevation (ft):
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USCS: SW	Munsell:	Comments: COMPOSITE
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Dry Weight (g): 100.00	Wash Weight (g): 100.00	Pan Retained (g): 1.17	Sieve Loss (%): 0.07	Fines (%): #200 - 1.26 #230 - 1.24	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.37	0.37	0.37	0.37
5/16"	-3.00	8.00	0.67	0.67	1.04	1.04
3.5	-2.50	5.66	2.39	2.39	3.43	3.43
4	-2.25	4.76	1.11	1.11	4.54	4.54
5	-2.00	4.00	1.81	1.81	6.35	6.35
7	-1.50	2.83	4.50	4.50	10.85	10.85
10	-1.00	2.00	4.03	4.03	14.88	14.88
14	-0.50	1.41	4.50	4.50	19.38	19.38
18	0.00	1.00	3.88	3.88	23.26	23.26
25	0.50	0.71	3.61	3.61	26.87	26.87
35	1.00	0.50	3.79	3.79	30.66	30.66
45	1.50	0.35	3.95	3.95	34.61	34.61
60	2.00	0.25	6.09	6.09	40.70	40.70
80	2.50	0.18	19.09	19.09	59.79	59.79
120	3.00	0.13	33.89	33.89	93.68	93.68
170	3.50	0.09	5.00	5.00	98.68	98.68
200	3.75	0.07	0.06	0.06	98.74	98.74
230	4.00	0.06	0.02	0.02	98.76	98.76

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.13	2.86	2.72	2.24	0.24	-0.88	-2.19
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	1.4	0.38	1.77	-1.07	2.85	

GRANULARMETRIC REPORT LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI_FINAL.GPJ_JPBRAZIL_GDT 10/3/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: Longboat Pass Channel Composite

Sample Name: AMVC-07-11 COMP

Analysis Date: 10-03-14

Analyzed By: KM

Easting (ft): 430,620	Northing (ft): 1,129,814	Coordinate System: Florida State Plane West	Elevation (ft):
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USCS: SW	Munsell:	Comments: COMPOSITE
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Dry Weight (g): 100.00	Wash Weight (g): 100.00	Pan Retained (g): 1.02	Sieve Loss (%): 0.10	Fines (%): #200 - 1.15 #230 - 1.12	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.29	0.29	0.29	0.29
5/16"	-3.00	8.00	0.50	0.50	0.79	0.79
3.5	-2.50	5.66	1.03	1.03	1.82	1.82
4	-2.25	4.76	0.71	0.71	2.53	2.53
5	-2.00	4.00	0.71	0.71	3.24	3.24
7	-1.50	2.83	2.05	2.05	5.29	5.29
10	-1.00	2.00	2.78	2.78	8.07	8.07
14	-0.50	1.41	3.27	3.27	11.34	11.34
18	0.00	1.00	2.90	2.90	14.24	14.24
25	0.50	0.71	3.00	3.00	17.24	17.24
35	1.00	0.50	3.28	3.28	20.52	20.52
45	1.50	0.35	3.85	3.85	24.37	24.37
60	2.00	0.25	8.56	8.56	32.93	32.93
80	2.50	0.18	26.50	26.50	59.43	59.43
120	3.00	0.13	35.48	35.48	94.91	94.91
170	3.50	0.09	3.88	3.88	98.79	98.79
200	3.75	0.07	0.06	0.06	98.85	98.85
230	4.00	0.06	0.03	0.03	98.88	98.88

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.01	2.85	2.72	2.32	1.54	0.29	-1.57
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.76	0.30	1.45	-1.65	4.91	

GRANULARMETRIC REPORT LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI_FINAL.GPJ_JPBRAZIL_GDT 10/3/14

Granularmetric Report

Depths and elevations based on measured values



CB&I
Coastal Planning & Engineering, Inc.
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391 8102

Project Name: Longboat Pass Channel Composite

Sample Name: AMVC-07-15 COMP

Analysis Date: 10-03-14

Analyzed By: KM

Easting (ft): 432,201	Northing (ft): 1,130,972	Coordinate System: Florida State Plane West	Elevation (ft):
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USCS: SW	Munsell:	Comments: COMPOSITE
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Dry Weight (g): 100.00	Wash Weight (g): 100.00	Pan Retained (g): 1.86	Sieve Loss (%): 0.11	Fines (%): #200 - 2.03 #230 - 1.97	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	1.15	1.15	1.15	1.15
5/16"	-3.00	8.00	2.96	2.96	4.11	4.11
3.5	-2.50	5.66	3.22	3.22	7.33	7.33
4	-2.25	4.76	1.32	1.32	8.65	8.65
5	-2.00	4.00	2.82	2.82	11.47	11.47
7	-1.50	2.83	5.54	5.54	17.01	17.01
10	-1.00	2.00	6.91	6.91	23.92	23.92
14	-0.50	1.41	8.75	8.75	32.67	32.67
18	0.00	1.00	8.49	8.49	41.16	41.16
25	0.50	0.71	8.75	8.75	49.91	49.91
35	1.00	0.50	8.59	8.59	58.50	58.50
45	1.50	0.35	7.52	7.52	66.02	66.02
60	2.00	0.25	8.08	8.08	74.10	74.10
80	2.50	0.18	10.73	10.73	84.83	84.83
120	3.00	0.13	11.47	11.47	96.30	96.30
170	3.50	0.09	1.61	1.61	97.91	97.91
200	3.75	0.07	0.06	0.06	97.97	97.97
230	4.00	0.06	0.06	0.06	98.03	98.03

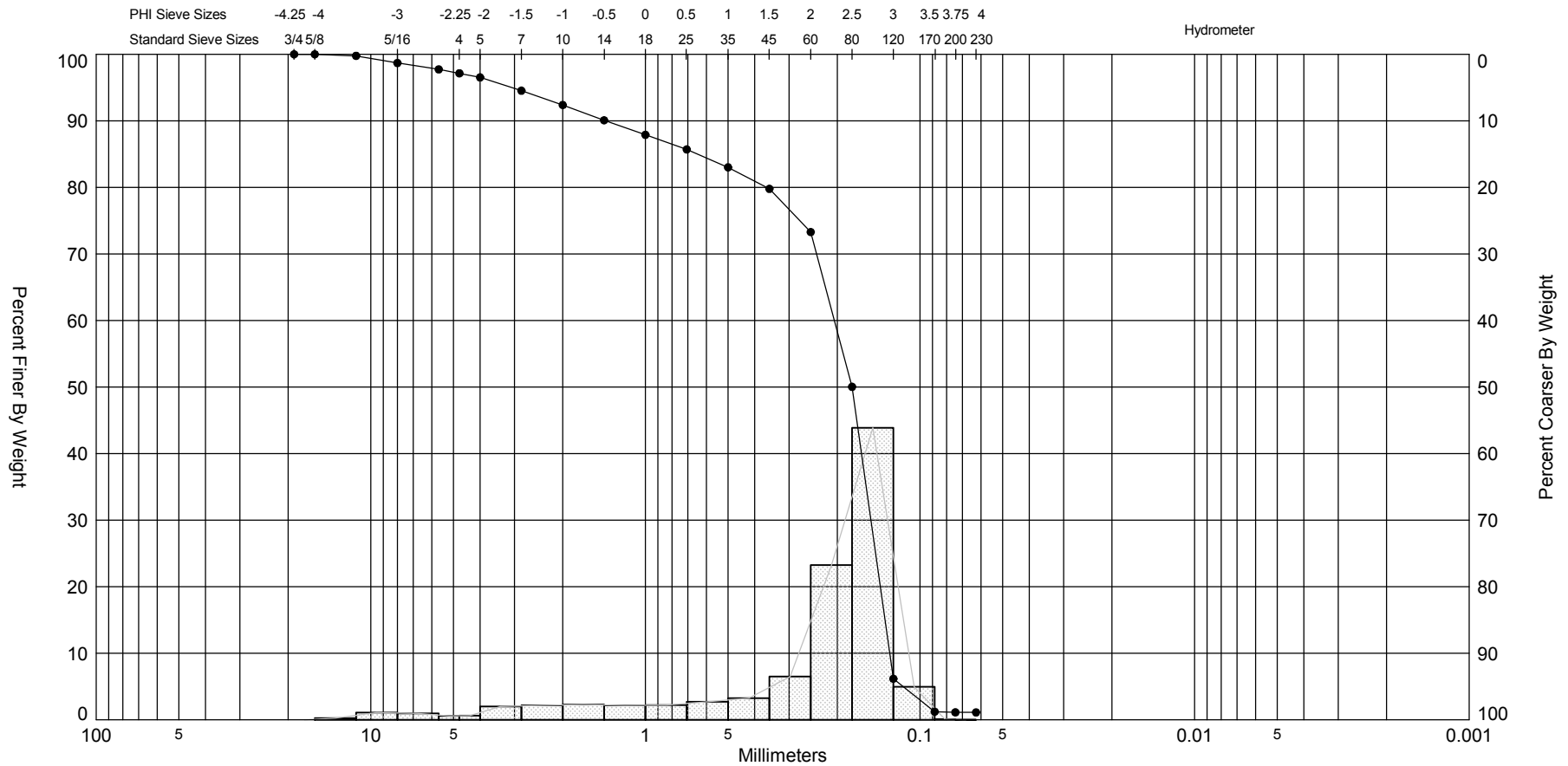
Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.94	2.46	2.04	0.51	-0.94	-1.59	-2.86
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.35	0.78	1.79	-0.31	2.13	


GRANULARMETRIC REPORT LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI_FINAL.GPJ_JPBRAZIL_GDT 10/3/14

APPENDIX 8
FEDERAL NAVIGATION CHANNEL COMPOSITE GRAIN SIZE DISTRIBUTION
CURVES/HISTOGRAMS

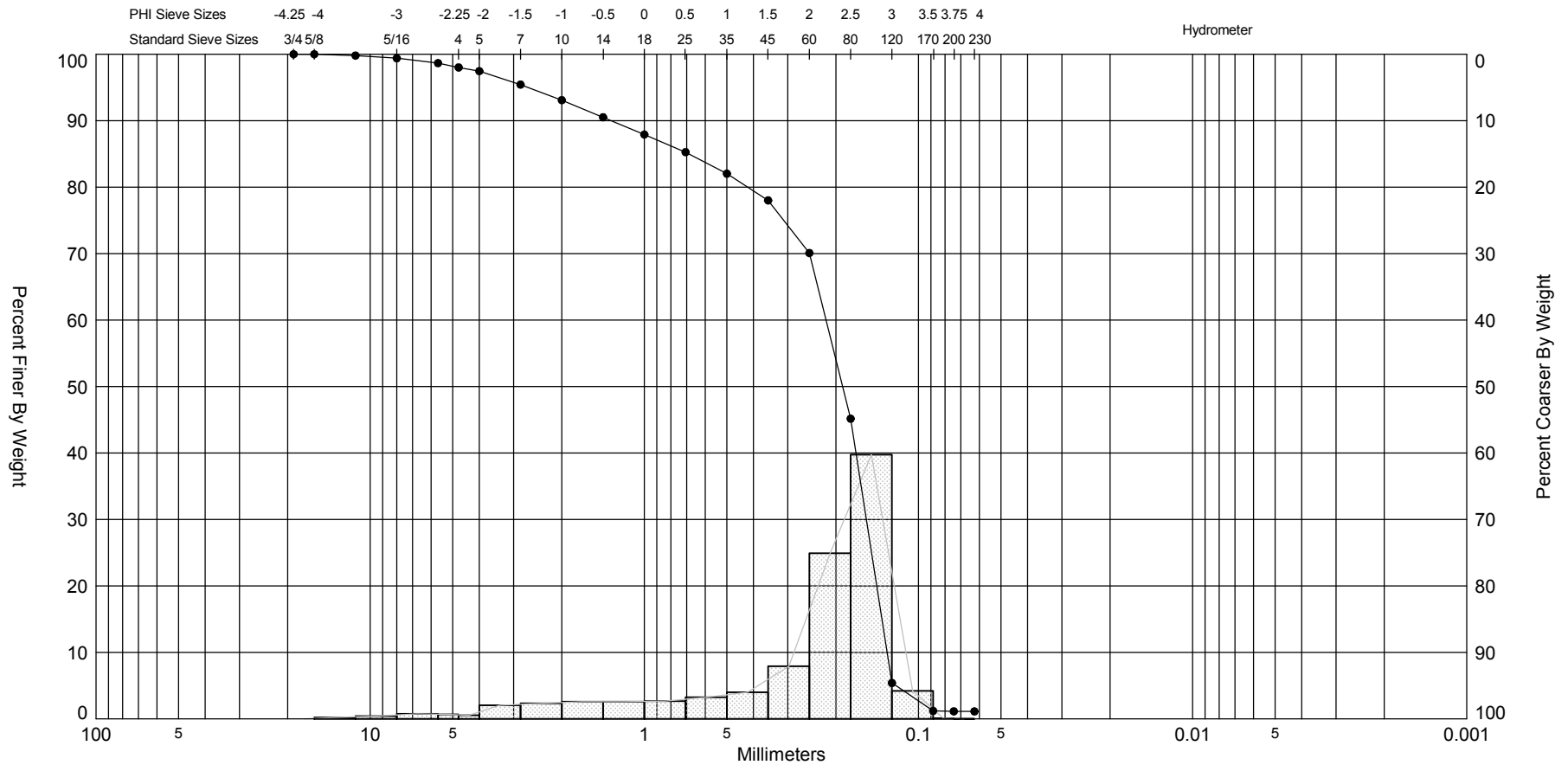
SIEVE ANALYSIS LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI1_FINAL.GPJ_JPBRAZIL.GDT 10/3/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-01 COMP	—●—		SW	#200 - 1.12 #230 - 1.11		22	2.5	1.91	-1.95	6.07	1.45	Project Name:	Longboat Pass Channel Composite
Comments: COMPOSITE											Analysis Date:	10-03-14	
Depths and elevations based on measured values											Analyzed By:	KM	
							CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102					Easting (X, ft):	431,382
												Northing (Y, ft):	1,130,426
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

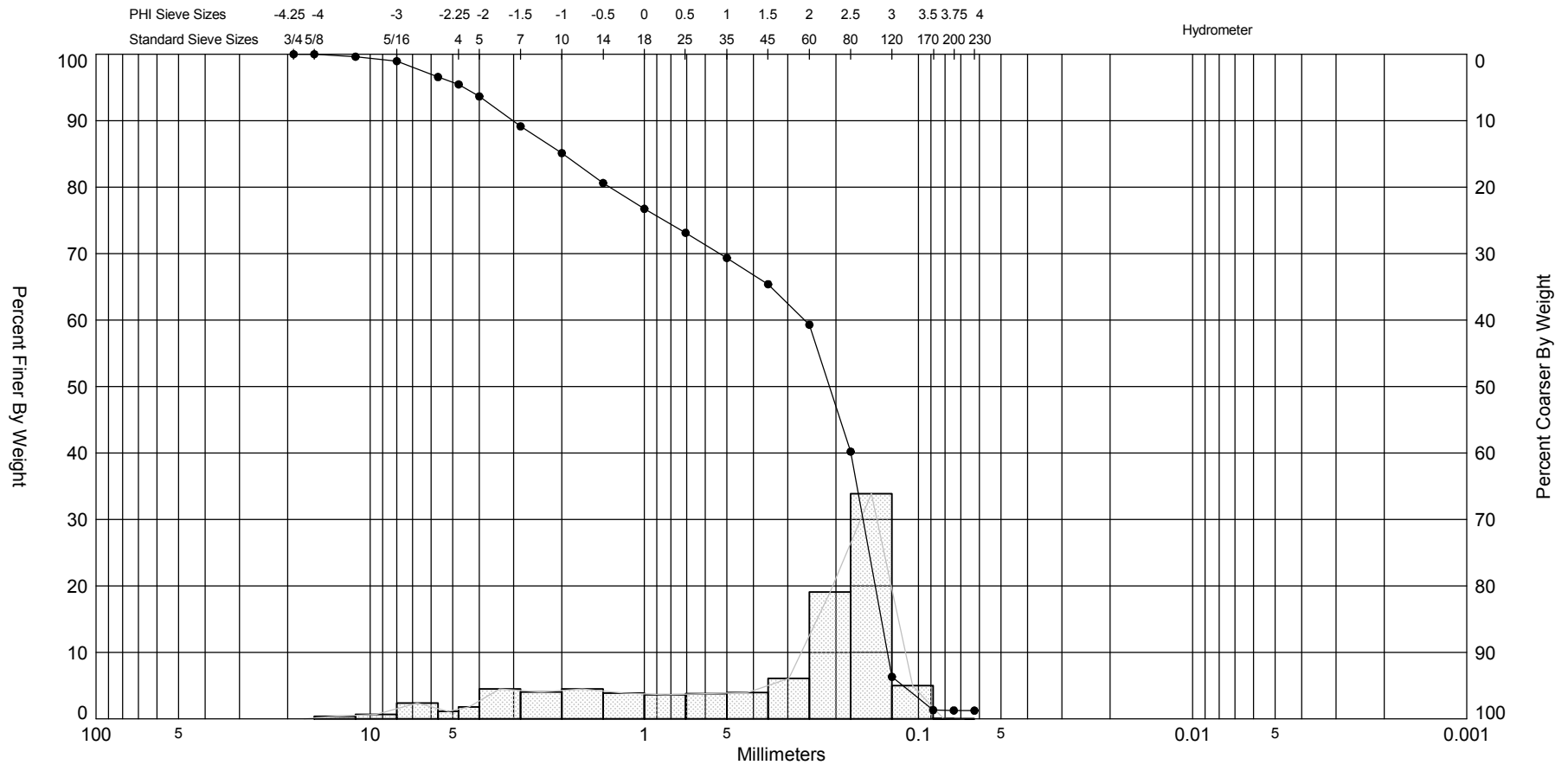
SIEVE ANALYSIS LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI1_FINAL.GPJ_JPBRAZIL.GDT 10/3/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
LBVC-14-02 COMP	—●—		SW	#200 - 1.13 #230 - 1.12		23	2.4	1.88	-1.81	5.6	1.38	Project Name:	Longboat Pass Channel Composite
Comments: COMPOSITE												Analysis Date:	10-03-14
Depths and elevations based on measured values												Analyzed By:	KM
						CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102						Easting (X, ft):	430,164
												Northing (Y, ft):	1,129,502
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

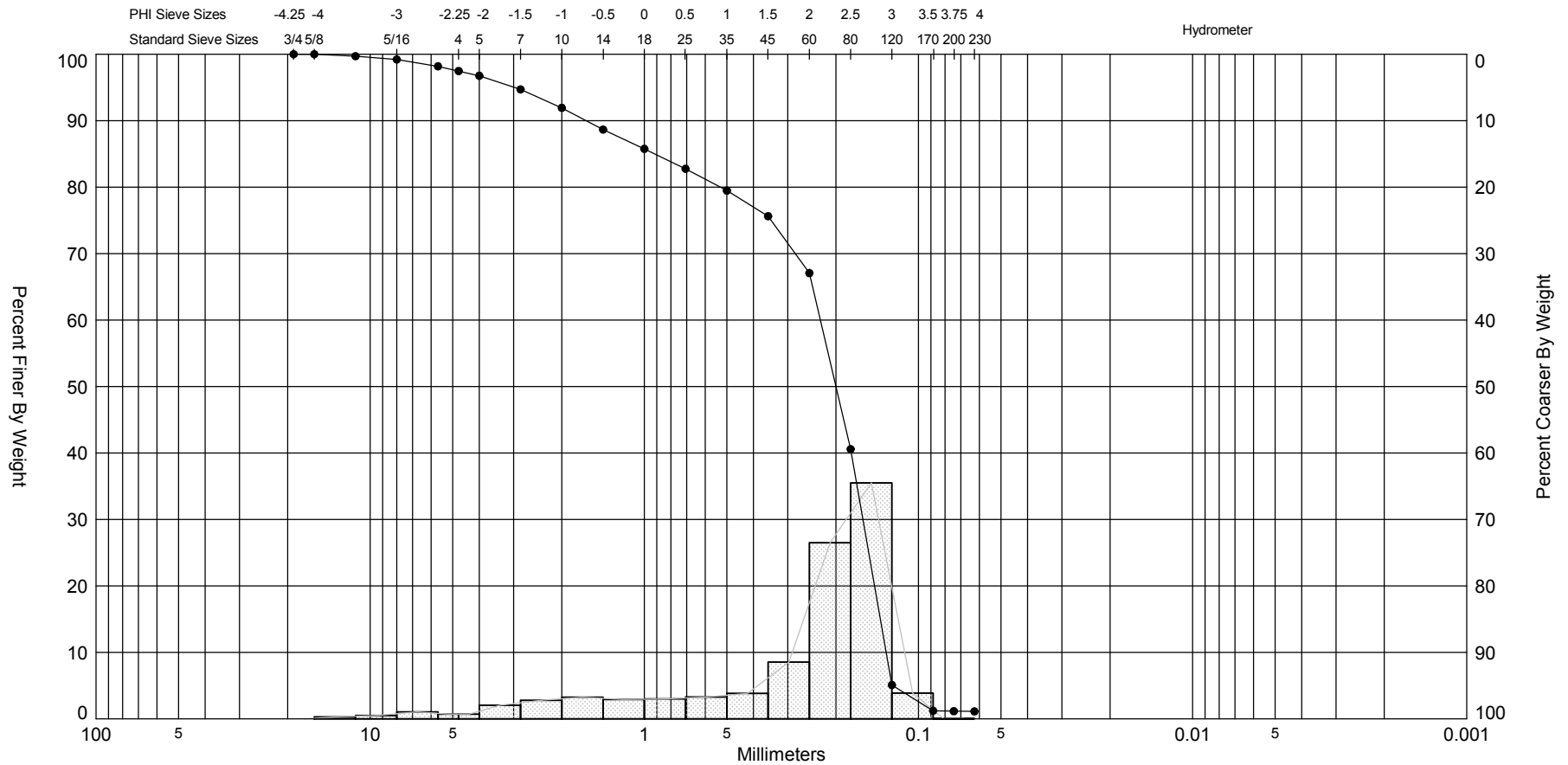
SIEVE ANALYSIS LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI1_FINAL.GPJ_JPBRAZIL.GDT 10/3/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-10 COMP	—●—		SW	#200 - 1.26 #230 - 1.24			2.24	1.4	-1.07	2.85	1.77	Project Name:	Longboat Pass Channel Composite
Comments: COMPOSITE												Analysis Date:	10-03-14
Depths and elevations based on measured values												Analyzed By:	KM
						CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102						Easting (X, ft):	429,717
												Northing (Y, ft):	1,129,373
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

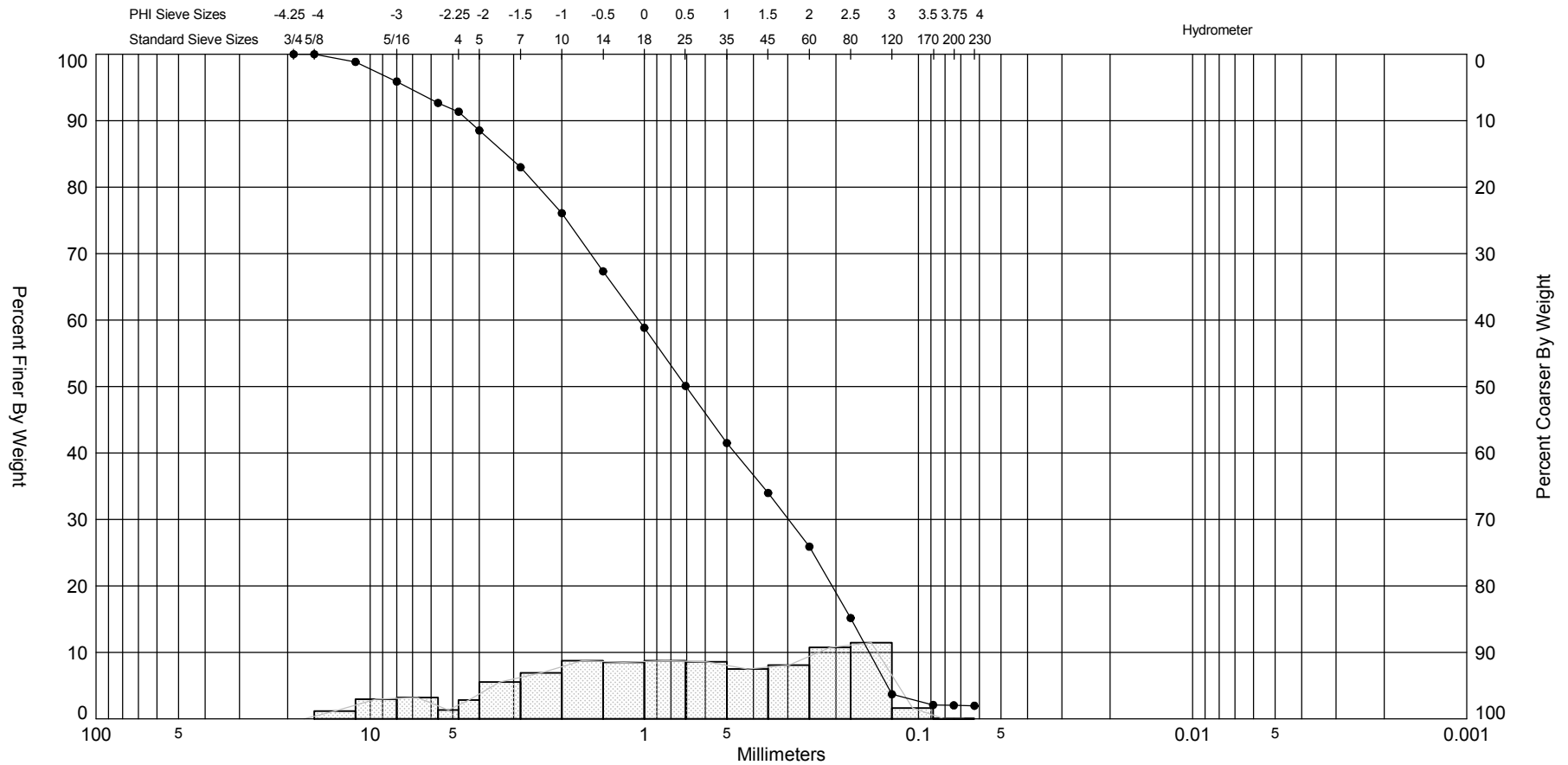
SIEVE ANALYSIS LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI1_FINAL.GPJ_JPBRAZIL.GDT 10/3/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-11 COMP	—●—		SW	#200 - 1.15 #230 - 1.12			2.32	1.76	-1.65	4.91	1.45	Project Name:	Longboat Pass Channel Composite
Comments: COMPOSITE											Analysis Date:	10-03-14	
Depths and elevations based on measured values											Analyzed By:	KM	
						CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102						Easting (X, ft):	430,620
												Northing (Y, ft):	1,129,814
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

SIEVE ANALYSIS LONGBOAT_PASS_CHANNEL_COMPOSITE_100214_RAI1_FINAL.GPJ_JPBRAZIL.GDT 10/3/14



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-15 COMP	—●—		SW	#200 - 2.03 #230 - 1.97			0.51	0.35	-0.31	2.13	1.79	Project Name:	Longboat Pass Channel Composite
Comments: COMPOSITE												Analysis Date:	10-03-14
Depths and elevations based on measured values												Analyzed By:	KM
						CB&I Coastal Planning & Engineering, Inc. 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391 8102						Easting (X, ft):	432,201
												Northing (Y, ft):	1,130,972
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

**Final Report of Conceptual Geotechnical Data
Vibracore Borings GIWW/Vicinity of Longboat Pass
Contract W912EP-05-D-0009
Manatee County, Florida
WOLF/WPC Project No. EQ105037**

- Prepared For -

**U.S. Army Corps of Engineers
Jacksonville District
701 San Marco Boulevard, 3 East
Jacksonville, Florida 32207**

- Prepared By -

**WOLF/WPC
3047-4 St. Johns Bluff Road South
Jacksonville, Florida 32246**

March 11, 2011

Ms. Barbara Nist
U.S. Army Corps of Engineers
701 San Marco Boulevard, 3 East
Jacksonville, Florida 32207

Final Geotechnical Data Report
Vibracore Borings GIWW/Vicinity of Longboat Pass
Contract W912EP-05-D-0009
Volusia County, Florida
WOLF/WPC Project No. EQ105037
USACE Task Order No. 139

Dear Ms. Nist:

WOLF/WPC has performed the field and laboratory geotechnical services for the Vibracore Borings in the Vicinity of Longboat Pass, Manatee County, Florida. This conceptual report presents our understanding of the project, outlines our exploratory procedures, and presents the field and laboratory data obtained for the project.

We have enjoyed assisting you on this project and look forward to serving as your geotechnical consultant on the remainder of this project and on future projects. If you have any questions concerning this report, please contact us.

Respectfully Submitted,
WOLF/WPC



Robert M. Cords, P.E.
Senior Geotechnical Engineer
Registered, Florida No. 71863

Distribution: U.S. Army Corps of Engineers (3)
File (1)

TABLE OF CONTENTS

SECTION/SUBJECT	PAGE NUMBER
1.0 Investigation Scope.....	1
2.0 Investigation Purpose.....	1
3.0 Field Exploration.....	1
3.1 General.....	1
3.2 Vibracore Borings.....	4
4.0 Laboratory Testing.....	5
5.0 Subsurface Materials Encountered.....	6

APPENDICES

APPENDIX A

- Site Location Map
- Field Exploration Plan

APPENDIX B

- Drilling Logs for Vibracore Borings

APPENDIX C

- Photographs

APPENDIX D

- Table: Visual % Shell and Fines
- Laboratory Testing Results

SECTION 1.0 – INVESTIGATION SCOPE

The scope of services for this investigation was provided in the scope of work (SOW) dated June 14, 2010, and was performed under the existing contract W912EP-05-D-0009. The requested field scope of services for this investigation included performing twenty-seven (27) Vibracore borings. The laboratory testing scope of services consisted of index property tests, including grain-size sieve analyses, visual shell, and carbonate content testing.

The project site is shown on the Site Location Map and Field Exploration Plan in Appendix A of this report. The proposed depth of the Vibracore borings was 10 feet below the mud line or to refusal, whichever was most shallow. Laboratory testing was assigned by the U.S. Army Corps of Engineers (USACE) following review of preliminary field drilling logs and soil samples.

SECTION 2.0 – INVESTIGATION PURPOSE

The offshore part of the Longboat Pass Entrance Channel, Manatee County will be relocated to the south, into an area less prone to shoaling. Sediment samples were collected via vibracoring from the new offshore channel location to provide geotechnical data. In addition, vibracore borings were performed for regular scheduled maintenance in the inner part of the Longboat Pass Channel and at the Gulf Intracoastal Waterway (GIWW) Cut M-4, Cut M-5, Cut M-7, Cut M-12, Cut M-14, Cut SC2, and Cut SC3. The area of investigation includes Longboat Pass and locations along the Gulf Intracoastal Water Way from Longboat Key, extending to slightly north of Cow and Calf Key. The top-of-hole elevations were between -3.93 feet and -10.51 feet Mean Lower Low Water (MLLW) during the time of our exploration.

SECTION 3.0 – FIELD EXPLORATION

3.1 General

The field exploration conducted for this investigation included performing twenty-seven (27) Vibracore borings at locations specified by the U.S. Army Corps of Engineers (USACE). Exploration point coordinates (Northings and Eastings) were provided by USACE. The exploration points were initially laid out using differential GPS equipment on the work vessel following conversion of the coordinates from State Plane Coordinates to Latitude and Longitudes using the conversion program CORPSCON.

The locations of selected borings were adjusted by the Corps of Engineers technical representative to account for site conditions at the time of our exploration. In addition, two borings (VB-LBP10-4 & VB-LBP10-5) were removed from the scope of work since they were located outside the proposed dredge area, and one boring (VB-GIWWM5-10-5) was added to the scope to provide additional needed data. The surveyed position of the test locations were determined using Global Positioning System (GPS) Real Time Kinematics (RTK) methods. The equipment used included an EPOCH 35 GPS receiver and a TDS NOMAD data collector. The horizontal coordinates were recorded in State Plane coordinates (Florida West) NAD83, and the elevations were recorded in MLLW. The top-of-hole elevation was measured by obtaining the boat deck elevation with the RTK GPS equipment and then measuring the distance from the boat deck to the top-of-hole using an 8-pound mushroom anchor attached to 100-pound test monofilament line. The distance from the boat deck to top-of-hole was then subtracted from the boat deck elevation to obtain the top-of-hole elevation. The following tables summarize the exploration locations, depths, and show the calculation of the bottom elevation:

Table 3.1-Summary of Exploration Point Locations and Depths

POINT NAME	NORTHING COORDINATE LOCATION	EASTING COORDINATE LOCATION	EXPLORATION DEPTH / FEET	DATE PERFORMED
VB-LBP10-1	1133135.8	433879.1	9	10/13/2010
VB-LBP10-2	1132503.2	433714.4	10	10/13/2010
VB-LBP10-3	1131461.6	433500.7	11.5	10/13/2010
*VB-LBP10-4	1129511.0	430845.7	Not Sampled	10/11/2010
*VB-LBP10-5	1129253.5	430744.0	Not Sampled	10/11/2010
VB-LBP10-6	1129086.4	430533.7	10.2	10/11/2010
VB-LBP10-7	1131001.1	432296.6	12.5	10/12/2010
VB-LBP10-8	1130530.5	431440.6	10.5	10/11/2010
VB-LBP10-9	1129853.3	430686.0	10	10/11/2010
VB-LBP10-10	1129265.6	429831.8	12.2	10/11/2010
VB-LBP10-11	1128842.7	429360.7	10.75	10/11/2010
VB-GIWWM4-10-1	1122895.8	443578.7	13	10/11/2010
VB-GIWWM4-10-2	1122321.6	444243.3	10.5	10/11/2010
VB-GIWWM4-10-3	1121795.6	444898.4	10.5	10/11/2010
VB-GIWWM5-10-1	1128225.9	437588.2	11.8	10/11/2010
VB-GIWWM5-10-2	1129249.7	437120.5	11.7	10/11/2010
VB-GIWWM5-10-3	1131343.7	436263.0	11.7	10/12/2010
VB-GIWWM5-10-4	1131881.7	436081.6	11	10/12/2010
**VB-GIWWM5-10-5	1128600.4	437298.5	11	10/13/2010
VB-GIWWM7-10-1	1143388.0	430765.7	11.4	10/12/2010
VB-GIWWM7-10-2	1144164.5	430586.7	11	10/12/2010
VB-GIWWM7-10-3	1145657.0	430161.4	11	10/12/2010
VB-GIWWM12-10-1	1158205.5	430825.0	11.5	10/12/2010
VB-GIWWM13-10-1	1161030.8	429178.3	11	10/12/2010
VB-GIWWM14-10-1	1162955.5	428548.3	11	10/12/2010
VB-GIWWSC2-10-1	1200802.4	438079.5	11.3	10/12/2010
VB-GIWWSC2-10-2	1201399.2	437876.3	12.2	10/12/2010
VB-GIWWSC3-10-1	1221023.6	434901.1	10.5	10/12/2010
VB-GIWWSC3-10-2	1209816.9	435301.6	11	10/12/2010

*Sediment elevation below -12 feet MLLW at time of exploration, boring location removed from project scope

**Boring location added to original project scope

Table 3.2-Summary of Top of Hole Elevations

BORING DESIGNATION	MEASURED WATER DEPTH (FT)	MEASURED BOAT DECK TO BOTTOM (FT)	SURVEYED DECK ELEVATION (NAVD 88) (FT)	BOTTOM ELEVATION NAVD 88 (FT)	BOTTOM ELEVATION MLLW (FT)
VB-LBP10-1	8.2	10.6	1.41	-9.19	-7.70
VB-LBP10-2	7.4	9.8	1.22	-8.58	-7.09
VB-LBP10-3	9.9	12.3	1.03	-11.27	-9.78
VB-LBP10-4	12.8	15.2	1.4	-13.80	-12.31
VB-LBP10-5	11.3	13.7	1.4	-12.30	-10.81
VB-LBP10-6	10.9	13.2	1.2	-12.00	-10.51
VB-LBP10-7	9.7	12.1	2.07	-10.03	-8.54
VB-LBP10-8	6.5	8.9	1.8	-7.10	-5.61
VB-LBP10-9	6.0	8.4	1.6	-6.80	-5.31
VB-LBP10-10	5.5	7.8	0.8	-7.00	-5.51
VB-LBP10-11	8.0	10.4	0.93	-9.47	-7.98
VB-GIWWM4-10-1	8.2	10.6	1.92	-8.68	-7.19
VB-GIWWM4-10-2	7.9	10.3	1.78	-8.52	-7.03
VB-GIWWM4-10-3	8.0	10.4	1.66	-8.74	-7.25
VB-GIWWM5-10-1	9.1	11.5	2.26	-9.24	-7.75
VB-GIWWM5-10-2	8.5	10.9	2.31	-8.59	-7.10
VB-GIWWM5-10-3	10.2	12.6	2.19	-10.41	-8.92
VB-GIWWM5-10-4	8.5	10.9	2.27	-8.63	-7.14
VB-GIWWM5-10-5	4.5	6.9	1.48	-5.42	-3.93
VB-GIWWM7-10-1	5.9	8.3	1.86	-6.44	-4.95
VB-GIWWM7-10-2	10.2	12.6	1.75	-10.85	-9.36
VB-GIWWM7-10-3	10.5	12.9	1.69	-11.21	-9.72
VB-GIWWM12-10-1	6.2	8.6	1.68	-6.92	-5.43
VB-GIWWM13-10-1	10.0	12.4	1.5	-10.90	-9.41
VB-GIWWM14-10-1	5.7	8.1	1.5	-6.60	-5.11
VB-GIWWSC2-10-1	7.8	10.2	1.24	-8.96	-7.47
VB-GIWWSC2-10-2	5.7	8.1	1.24	-6.86	-5.37
VB-GIWWSC3-10-1	9.7	12.1	1.64	-10.46	-8.97
VB-GIWWSC3-10-2	7.2	9.6	1.3	-8.30	-6.81

3.2 Vibracore Borings

The vibracore borings were performed by Athena Technologies on October 11, 12, and 13, 2010. Water depths ranged from 4.5 to 12.8 feet at the time of our exploration. The vibracore borings were performed with the Athena Technologies work vessel Artemis. The Artemis is a 30-foot long aluminum catamaran hull and drafts 1.5 to 2.5 feet of water.

The vibracore samples were collected by locating the vessel over the test location and setting a three-point anchor system to maintain position.

Once in position, the sample was obtained by vibrating a 3.5-inch diameter, thin-walled, metal tube into the bottom sediments to a depth of 10 feet or slightly greater or until refusal was met, whichever was most shallow, and then extracting the tube and sample using a winch. The metal tube was not fitted with a core catcher. Instead, a check valve was located at the top of the tube to provide a slight vacuum during sample extraction.

Each sample was retained within the sampling tube. While on the vessel, each sample tube was measured and cut into sealed sections of up five linear feet. After recording the depth of penetration and the recovery, the sample tubes were labeled and stored for later transport to our laboratory facility in Jacksonville, Florida.

A sample recovery of 85 percent or greater was obtained at each test location. The Vibracore Boring Drilling Logs and photographs are presented in Appendix B and C respectively, of this report.

SECTION 4.0 – LABORATORY TESTING

Following review of the preliminary field logs, USACE assigned several laboratory tests on samples obtained from the vibracore operation. The laboratory testing conducted for this exploration included the following:

- 44 Sieve Analysis Tests
- 44 Visual Shell Tests
- 7 Special Carbonates Tests
- 7 Resieves (Post Special Carbonate Test)

A summary of the laboratory testing and index property testing are presented in Appendix D, Table 1 of this report. The gradation curves are provided in Appendix D after Table 1. The special carbonate test results are presented in the CO₃ % column on the gradation curve sheets. The visual shell test results are presented in the CO₃ % column on the gradation curve sheets and are presented as a number followed by the letters (est). Per FDEP's request, this contract was set-up to provide the special assignment Non-ASTM carbonate analysis. seven (7) sediments samples were sieved and subject to the Non-ASTM carbonate analysis. Residual

material from these samples was re-sieved to examine the grain size distribution of the material remaining after the carbonates had been removed by the test procedure.

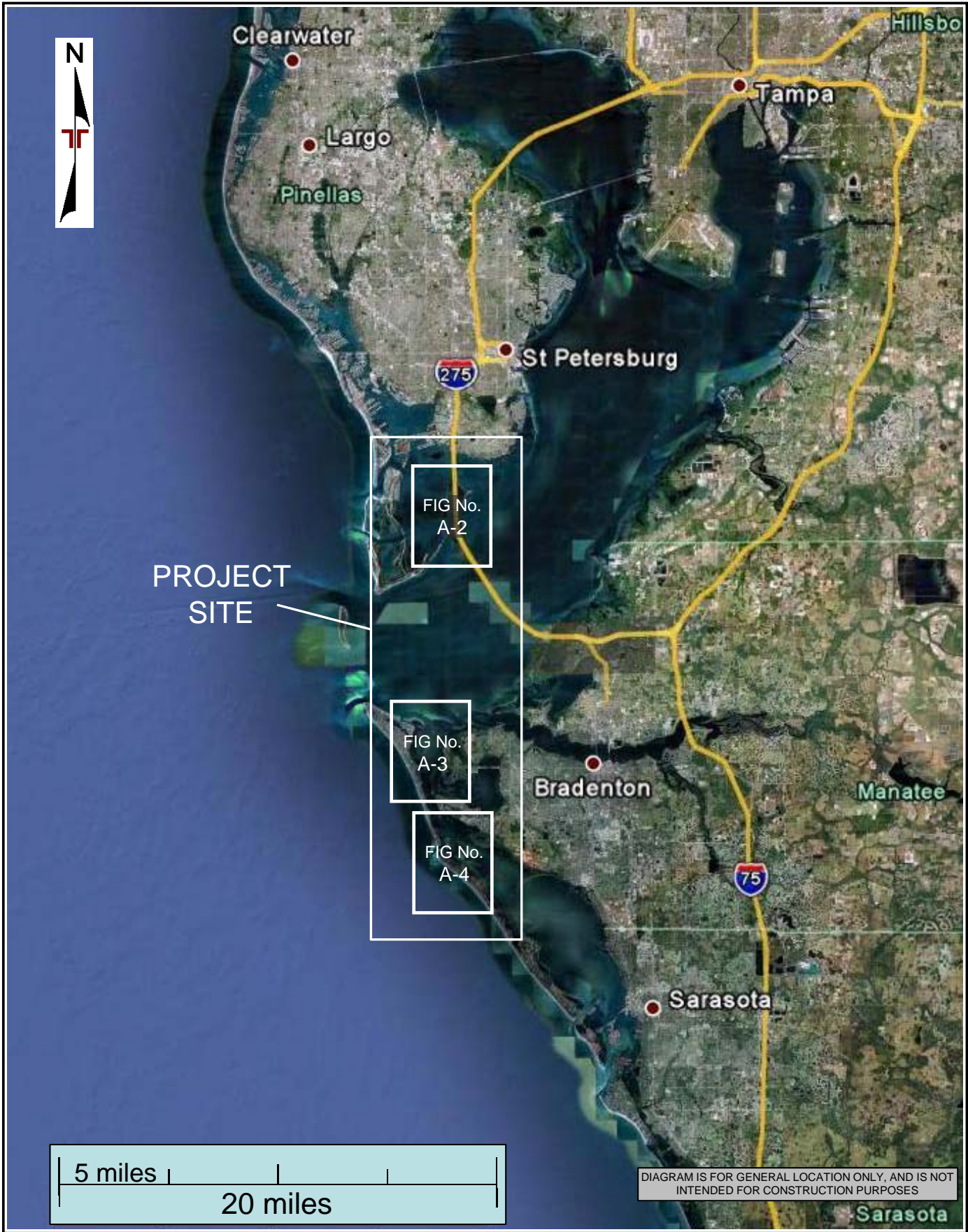
SECTION 5.0 – SUBSURFACE MATERIALS ENCOUNTERED

The encountered soils were classified using the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. The water depth ranged from 4.5 to 12.8 feet at the test locations. Below the mud line, the vibracores generally encountered fine and medium quartz sand with trace to some sand-sized shell (SP), sand with silt (SP-SM), and silty sand (SM). In addition, minor zones of highly weathered or decomposed limestone, clay or sandy clay were also encountered. The vibracore borings performed in and around Longboat Pass encountered mostly clean sands (SP) and the borings performed along the Intracoastal Waterway generally encountered clean sands (SP) with lesser amounts of sand with silt (SP-SM) and silty fine sand (SM). One boring, VB-LBP10-1 encountered refusal on possible limestone at a depth of 9 feet below the mud line. This possible limestone layer is located well below the anticipated dredge depth of -9 feet MLLW.

APPENDICES

APPENDIX A

- **Site Location Map**
- **Field Exploration Plan**







VB-GIWWM14-10-1

VB-GIWWM13-10-1

VB-GIWWM12-10-1

School Key

Palm Dr

Anna Maria Island

Manatee Ave

Holmes Beach

E Bay Dr
Gulf Dr N

Perico Island

VB-GIWWM7-10-3

VB-GIWWM7-10-2

VB-GIWWM7-10-1

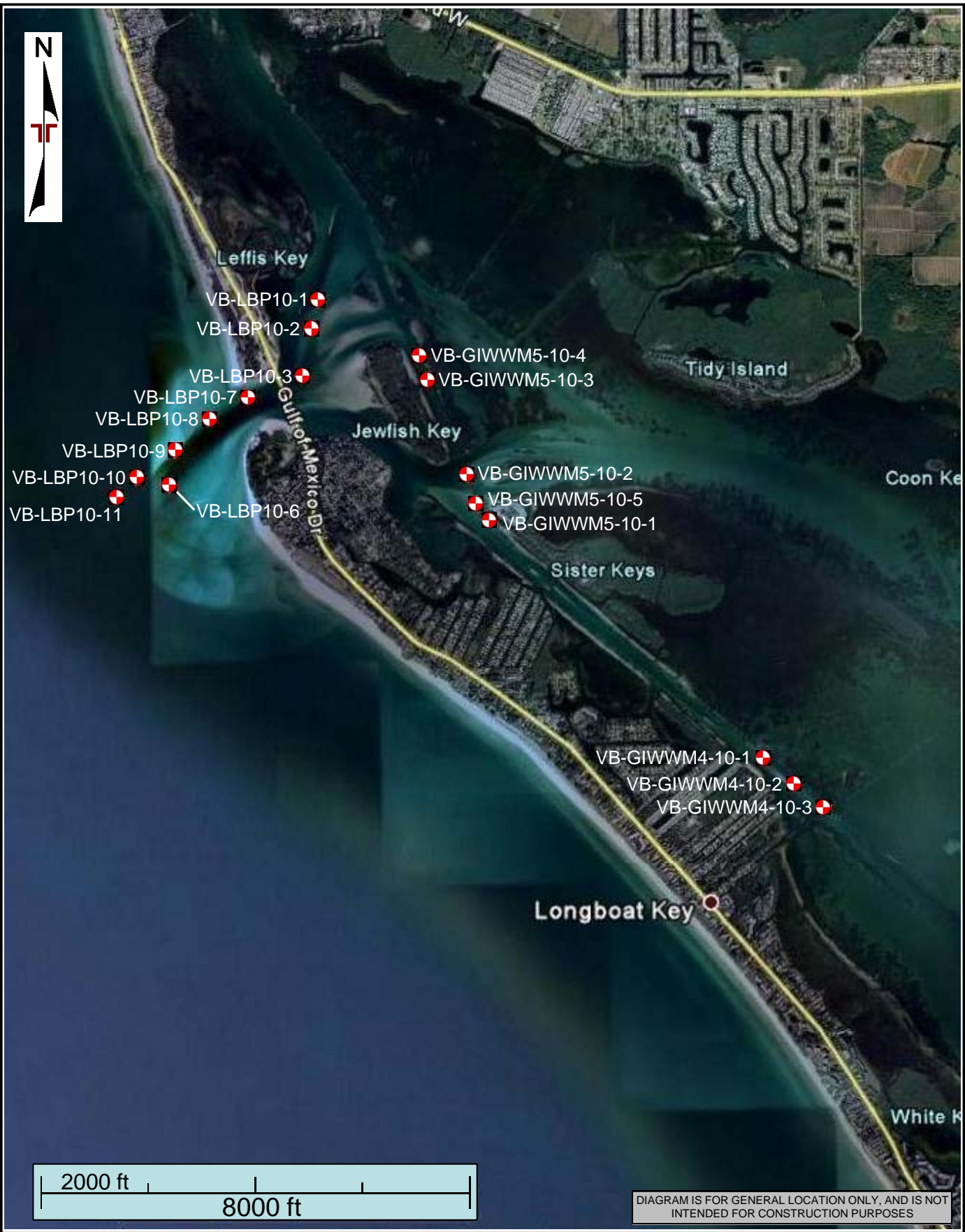
Bradenton Beach

Cortez

2000 ft

8000 ft

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES



APPENDIX B

- **Drilling Logs for Vibracore Borings**

Boring Designation VB-LBP10-1

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 1 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-LBP10-1		LOCATION COORDINATES X = 433,879 Y = 1,133,136		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL	<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 2
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
7. DEPTH DRILLED INTO ROCK N/A			15. DATE BORING		STARTED 10-13-10
8. TOTAL DEPTH OF BORING 9.0 Ft.			16. ELEVATION TOP OF BORING -7.7 Ft.		COMPLETED 10-13-10
			17. TOTAL RECOVERY FOR BORING 88 %		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-7.7	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace medium-grained sand-sized shell, 10YR 8/1 white (SP)	100			-7.7 Vibracore		0
					1		-10.2 Vibracore		
			At El. -12.2 Ft., mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, trace fine gravel-sized shell	73	2		-12.7 Vibracore		5
-15.6	7.9								
-16.7	9.0	N/R					-16.7		
			BORING TERMINATED IN REFUSAL						
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						10
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION						
			1 2.5/3.0 SP*						
			2 5.0/5.5 SP*						
			*Lab visual classification based on gradation curve. No Atterberg limits.						15

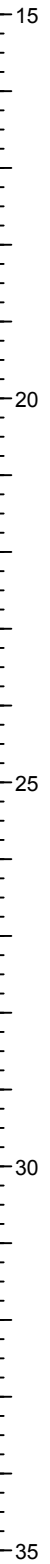
Boring Designation VB-LBP10-2

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-LBP10-2		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED 3 UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED 10-13-10 COMPLETED 10-13-10		
8. TOTAL DEPTH OF BORING 10.0 Ft.		16. ELEVATION TOP OF BORING -7.1 Ft.		
		17. TOTAL RECOVERY FOR BORING 93 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE REC.	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-7.1	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace medium-grained sand-sized shell, trace silt, 10YR 8/1 white (SP)	100			-7.1 Vibracore		0
				100	1-Post		-9.6 -9.6 Vibracore		
				100			Vibracore		
					2		-12.1 Vibracore		5
				86					
-16.4	9.3								
-17.1	10.0	NR					-17.1		10
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION						

			1 2.5/3.0 SP*						
			1-Post 2.5/3.0 SP*						
			2 5.0/5.5 SP*						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 433,714 Y = 1,132,503			ELEVATION TOP OF BORING -7.1 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						

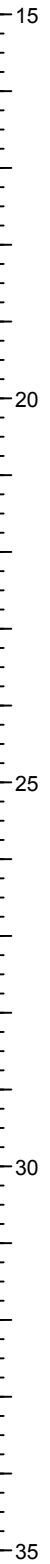


Boring Designation VB-LBP10-3

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-LBP10-3		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED: 1 UNDISTURBED (UD): 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED: 10-13-10 COMPLETED: 10-13-10		
8. TOTAL DEPTH OF BORING 11.5 Ft.		16. ELEVATION TOP OF BORING -9.8 Ft.		
		17. TOTAL RECOVERY FOR BORING 85 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-9.8	0.0		SAND, poorly-graded, some medium to coarse-grained sand-sized shell, some fine-grained sand-sized quartz, little fine to coarse gravel-sized shell up to 1", trace silt, 10YR 8/1 white (SP)	100			-9.8		
						1		-11.3	
				83			Vibracore		
-19.6	9.8								
		NR							
-21.3	11.5						-21.3		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District			SHEET 2 OF 2 SHEETS			
PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW			
LOCATION COORDINATES X = 433,501 Y = 1,131,462			ELEVATION TOP OF BORING -9.8 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			1 1.5/2.0 SP* *Lab visual classification based on gradation curve. No Atterberg limits.						



Boring Designation VB-LBP10-6

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-LBP10-6		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED 1 UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED 10-11-10 COMPLETED 10-11-10		
8. TOTAL DEPTH OF BORING 10.2 Ft.		16. ELEVATION TOP OF BORING -10.5 Ft.		
		17. TOTAL RECOVERY FOR BORING 86 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

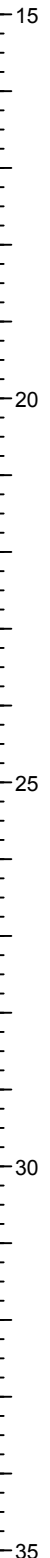
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-10.5	0.0		SAND, poorly-graded, mostly medium to coarse-grained sand-sized shell, some fine gravel-sized shell, few fine-grained sand-sized quartz, 10YR 6/1 gray (SP)	100			-10.5 Vibracore		0
-13.0	2.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fine gravel-sized shell, 10YR 8/1 white (SP)		1		-12.0		
-15.4	4.9		SAND, poorly-graded, mostly fine to coarse-grained sand-sized shell, some fine-grained sand-sized quartz, 10YR 6/1 gray (SP)	84			Vibracore		5
-18.3	7.8		SAND, clayey, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, little clay, few fine gravel-sized shell up to 1/2", 10YR 5/1 gray (SC)						
-19.3	8.8								
-20.7	10.2	N/R					-20.7		10
NOTES:									
1. Soils are field visually classified in accordance with the Unified Soils Classification System.									
2. Laboratory Testing Results									
SAMPLE ID			SAMPLE DEPTH			LABORATORY CLASSIFICATION			
-----			-----			-----			
1			1.5/2.0			SP*			
*Lab visual classification based on gradation curve. No Atterberg limits.									

Boring Designation VB-LBP10-7

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-LBP10-7		LOCATION COORDINATES X = 432,297 Y = 1,131,001		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 3
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 12.5 Ft.			15. DATE BORING		STARTED 10-12-10
			16. ELEVATION TOP OF BORING -8.5 Ft.		COMPLETED 10-12-10
			17. TOTAL RECOVERY FOR BORING 86 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-8.5	0.0		SAND, poorly-graded, mostly medium to coarse-grained sand-sized shell, little fine gravel-sized shell up to 3/4", few fine-grained sand-sized quartz, 10YR 6/1 gray (SP)	100			-8.5 Vibracore		0
					1		-10.5 Vibracore		
			At El. -12.0 Ft., little fine-grained sand-sized quartz, trace silt	100	2-Post	2	-12.5 -12.5 Vibracore		
				79			Vibracore		5
-19.2	10.7								10
		NIP							
-21.0	12.5						-21.0		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS				
			PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW		
LOCATION COORDINATES X = 432,297 Y = 1,131,001			ELEVATION TOP OF BORING -8.5 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION						
			1	2.0/2.5	SW*						
			2	4.0/4.5	SW*						
			2-Post	4.0/4.5	SP*						
			*Lab visual classification based on gradation curve. No Atterberg limits.								



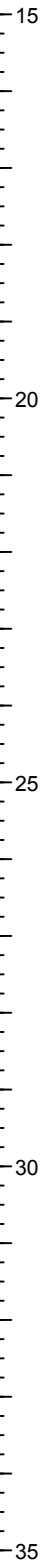
Boring Designation VB-LBP10-8

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-LBP10-8		LOCATION COORDINATES X = 431,441 Y = 1,130,530		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 2
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL		BEARING
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD) 0
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 10.5 Ft.			15. DATE BORING		STARTED 10-11-10
			16. ELEVATION TOP OF BORING -5.6 Ft.		COMPLETED 10-11-10
			17. TOTAL RECOVERY FOR BORING 89 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-5.6	0.0	[Dotted pattern]	SAND, poorly-graded, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, few fine gravel-sized shell, 10YR 7/1 light gray (SP)	100			-5.6		0
					1			-8.6	
-10.6	5.0	[Vertical lines]	SAND, silty, some fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, little silt, few fine gravel-sized shell, 10YR 7/1 light gray (SM)	100			Vibracore		5
					2			-11.6	
-14.9	9.3	NR		73			Vibracore		
								-16.1	
-16.1	10.5								
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION						

			1 3.0/3.5 SP*						
			2 6.0/6.5 SM*						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 431,441 Y = 1,130,530			ELEVATION TOP OF BORING -5.6 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						

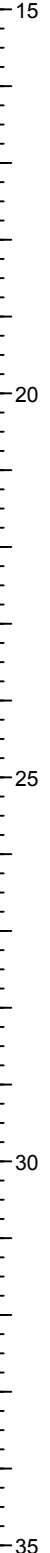


Boring Designation VB-LBP10-9

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-LBP10-9		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED: 2 UNDISTURBED (UD): 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED: 10-11-10 COMPLETED: 10-11-10		
8. TOTAL DEPTH OF BORING 10.0 Ft.		16. ELEVATION TOP OF BORING -5.3 Ft.		
		17. TOTAL RECOVERY FOR BORING 94 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE										
-5.3	0.0						-5.3												
-6.3	1.0	[Symbol]	SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, 10YR 8/1 white (SP)	100			Vibracore												
-8.3	3.0		SAND, poorly-graded, mostly fine to coarse-grained sand-sized shell, some fine-grained sand-sized quartz, 10YR 7/1 light gray (SP)																
-9.3	4.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell (SP)	100	1		Vibracore		5										
-11.3	6.0		SAND, poorly-graded, mostly fine to coarse-grained sand-sized shell, some fine-grained sand-sized quartz (SP)																
-13.6	8.3	[Symbol]	SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, trace silt (SP)	83			Vibracore												
-14.7	9.4		SAND, poorly-graded, mostly fine to coarse-grained sand-sized shell, some fine-grained sand-sized quartz (SP)																
-15.3	10.0	NR					-15.3		10										
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results <table border="1"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.5/4.0</td> <td>SP*</td> </tr> <tr> <td>2</td> <td>6.5/7.0</td> <td>SP*</td> </tr> </tbody> </table> *Lab visual classification based on gradation	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	3.5/4.0	SP*	2	6.5/7.0	SP*							
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																	
1	3.5/4.0	SP*																	
2	6.5/7.0	SP*																	

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 430,686 Y = 1,129,853			ELEVATION TOP OF BORING -5.3 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			curve. No Atterberg limits.						

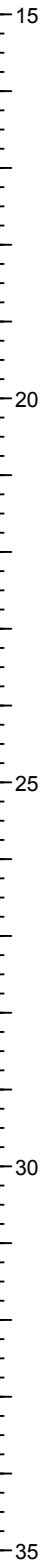


Boring Designation VB-LBP10-10

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore	
2. BORING DESIGNATION VB-LBP10-10		LOCATION COORDINATES X = 429,832 Y = 1,129,266		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		HORIZONTAL NAD83
4. NAME OF DRILLER Athena Technologies, Inc.			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A		12. TOTAL SAMPLES		DISTURBED 4
7. DEPTH DRILLED INTO ROCK N/A		13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD) 0
8. TOTAL DEPTH OF BORING 12.2 Ft.		14. ELEVATION GROUND WATER		15. DATE BORING 10-11-10
		16. ELEVATION TOP OF BORING -5.5 Ft.		COMPLETED 10-11-10
		17. TOTAL RECOVERY FOR BORING 86 %		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-5.5	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, 10YR 8/1 white (SP)				-5.5		
-7.5	2.0		SAND, poorly-graded, mostly medium to coarse-grained sand-sized shell, some fine-grained sand-sized quartz, few fine gravel-sized shell (SP)	100			Vibracore		
-11.0	5.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell (SP)		1		-8.5		
-16.0	10.5		At El. -13.3 Ft., few medium to coarse-grained sand-sized shell, trace silt	100	2-Post		-11.5		
-17.7	12.2	NR		100	2		-11.5		
				100			Vibracore		
					3		-14.5		
				47			Vibracore		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results				-17.7		

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS				
			PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW		
LOCATION COORDINATES X = 429,832 Y = 1,129,266			ELEVATION TOP OF BORING -5.5 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION						
			1	3.0/3.5	SP*						
			2	6.0/6.5	SP*						
			2-Post	6.0/6.5	SP*						
			3	9.0/9.5	SP*						
			*Lab visual classification based on gradation curve. No Atterberg limits.								

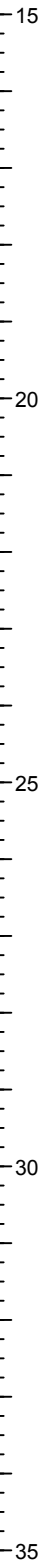


Boring Designation VB-LBP10-11

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-LBP10-11		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED: 2 UNDISTURBED (UD): 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED: 10-11-10 COMPLETED: 10-11-10		
8. TOTAL DEPTH OF BORING 10.8 Ft.		16. ELEVATION TOP OF BORING -8.0 Ft.		
		17. TOTAL RECOVERY FOR BORING 100 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-8.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, trace silt, 10YR 8/1 white (SP)	100			-8.0 Vibracore		0
					1		-10.0 Vibracore		
			At El. -12.0 Ft., some medium to coarse-grained sand-sized shell, some fine-grained sand-sized quartz, few fine to coarse gravel-sized shell		2		-13.0 Vibracore		5
-18.7	10.8			99			-18.7 Vibracore		10
NOTES:									
1. Soils are field visually classified in accordance with the Unified Soils Classification System.									
2. Laboratory Testing Results									
SAMPLE ID			SAMPLE DEPTH			LABORATORY CLASSIFICATION			
1			2.0/2.5			SP*			
2			5.0/5.5			SP*			

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW
LOCATION COORDINATES X = 429,361 Y = 1,128,843			ELEVATION TOP OF BORING -8.0 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						



Boring Designation VB-GIWWW4-10-1

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW4-10-1		LOCATION COORDINATES X = 443,579 Y = 1,122,896		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 1
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 13.0 Ft.			15. DATE BORING		STARTED 10-11-10
			16. ELEVATION TOP OF BORING -7.2 Ft.		COMPLETED 10-11-10
			17. TOTAL RECOVERY FOR BORING 89 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-7.2	0.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, few silt, trace fine gravel-sized shell up to 1/2", 10YR 7/1 light gray (SP-SM) At El. -7.6 Ft., little fine to coarse-grained sand-sized shell, 10YR 4/1 dark gray	100			Vibracore		
			At El. -11.8 Ft., 10YR 5/1 gray		1				
-13.7	6.5		SAND, silty, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, little silt, few fine to coarse gravel-sized shell up to 1", 10YR 7/1 light gray (SM)	88			Vibracore		
-18.8	11.6								
-20.2	13.0	NR							
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.						

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District			SHEET 2 OF 2 SHEETS									
PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW									
LOCATION COORDINATES X = 443,579 Y = 1,122,896			ELEVATION TOP OF BORING -7.2 Ft.												
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE						
			2. Laboratory Testing Results <table border="1"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>1.5/2.0</td> <td>SP-SM*</td> </tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	1.5/2.0	SP-SM*						
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION													
1	1.5/2.0	SP-SM*													

15

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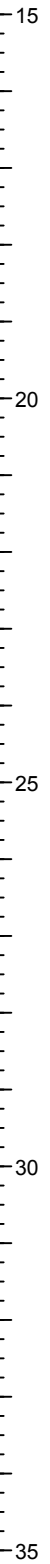
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DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW4-10-2		LOCATION COORDINATES X = 444,243 Y = 1,122,322		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 2
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
7. DEPTH DRILLED INTO ROCK N/A			15. DATE BORING		STARTED 10-12-10
8. TOTAL DEPTH OF BORING 10.5 Ft.			16. ELEVATION TOP OF BORING -7.0 Ft.		COMPLETED 10-12-10
			17. TOTAL RECOVERY FOR BORING 93 %		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-7.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace medium-grained sand-sized shell, trace silt, 10YR 7/1 light gray (SP)	100			-7.0 Vibracore		0
			At El. -9.3 Ft., little medium to coarse-grained sand-sized shell, little fine gravel-sized shell, trace silt, 10YR 4/1 dark gray	100	1		-8.5 Vibracore		
					2		-10.5		5
-13.1	6.1		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, 10YR 5/1 gray (SP-SM)	90			Vibracore		
-15.0	8.0		SAND, silty, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, few fine gravel-sized shell, few silt, 10YR 7/1 light gray (SM)						
-16.8	9.8								
-17.5	10.5	NIP					-17.5		10
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION						
			----- 1 1.5/2.0 SP*						
			2 3.5/4.0 SP*						

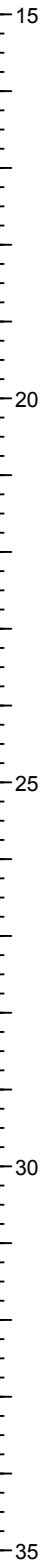
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 444,243 Y = 1,122,322			ELEVATION TOP OF BORING -7.0 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW4-10-3		LOCATION COORDINATES X = 444,898 Y = 1,121,796		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 1
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
7. DEPTH DRILLED INTO ROCK N/A			15. DATE BORING		STARTED 10-12-10
8. TOTAL DEPTH OF BORING 10.5 Ft.			16. ELEVATION TOP OF BORING -7.3 Ft.		COMPLETED 10-12-10
			17. TOTAL RECOVERY FOR BORING 93 %		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-7.3	0.0		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, some fine to coarse-grained sand-sized shell, few silt, 10YR 7/1 light gray (SP-SM) At El. -8.2 Ft., mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, few fine gravel-sized shell up to 1/2", 10YR 5/1 gray	100			-7.3 Vibracore		0
			At El. -13.6 Ft., trace sand to gravel-sized shell up to 1/2", 10YR 4/1 dark gray	92	1		-9.3 Vibracore		5
-15.8	8.5		SAND, silty, mostly fine to medium-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, little silt, few fine gravel-sized shell up to 1/2", 10YR 7/1 light gray (SM)						10
-17.1	9.8								
-17.8	10.5	N/R					-17.8		
NOTES:									
1. Soils are field visually classified in accordance with the Unified Soils Classification System.									
2. Laboratory Testing Results									
SAMPLE ID			SAMPLE DEPTH			LABORATORY CLASSIFICATION			
1			2.0/2.5			SP-SM*			
*Lab visual classification based on gradation									

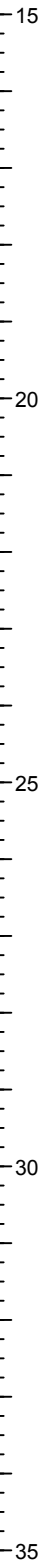
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 444,898 Y = 1,121,796			ELEVATION TOP OF BORING -7.3 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW5-10-1		LOCATION COORDINATES X = 437,588 Y = 1,128,226		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 1
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
7. DEPTH DRILLED INTO ROCK N/A			15. DATE BORING		STARTED 10-11-10
8. TOTAL DEPTH OF BORING 11.8 Ft.			16. ELEVATION TOP OF BORING -7.8 Ft.		COMPLETED 10-11-10
			17. TOTAL RECOVERY FOR BORING 87 %		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-7.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace fine-grained sand-sized shell, 10YR 7/1 light gray (SP)	100			-7.8 Vibracore		
			At El. -11.8 Ft., 10YR 6/1 gray		1		-9.8		
			At El. -14.0 Ft., little fine to coarse-grained sand-sized shell	85			Vibracore		
-15.8	8.0		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, few silt, 10YR 6/1 gray (SP-SM)						
-18.1	10.3								
-19.6	11.8	NR					-19.6		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results SAMPLE SAMPLE LABORATORY						

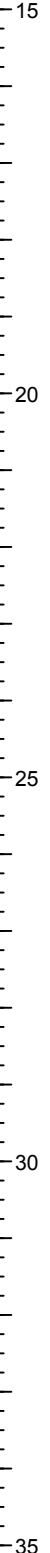
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS				
			PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW		
LOCATION COORDINATES X = 437,588 Y = 1,128,226			ELEVATION TOP OF BORING -7.8 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			ID	DEPTH	CLASSIFICATION						
			1	2.0/2.5	SP*						
			*Lab visual classification based on gradation curve. No Atterberg limits.								



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW5-10-2		LOCATION COORDINATES X = 437,120 Y = 1,129,250		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 2 UNDISTURBED (UD) 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL		BEARING
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
7. DEPTH DRILLED INTO ROCK N/A			15. DATE BORING		STARTED 10-11-10 COMPLETED 10-11-10
8. TOTAL DEPTH OF BORING 11.7 Ft.			16. ELEVATION TOP OF BORING -7.1 Ft.		17. TOTAL RECOVERY FOR BORING 89 %
18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer					

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE	
-7.1	0.0	[Dotted pattern]	SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace fine-grained sand-sized shell, 10YR 7/1 light gray (SP)	100			-7.1		0	
					1			-8.6		
					100			-11.1		5
				83						
-16.9	9.8	NR	SAND, poorly-graded, mostly fine to coarse-grained sand-sized shell, some fine to medium-grained sand-sized quartz, 10YR 6/1 gray (SP)						10	
-17.5	10.4									
-18.8	11.7						-18.8			
NOTES:										
1. Soils are field visually classified in accordance with the Unified Soils Classification System.										
2. Laboratory Testing Results										
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION								

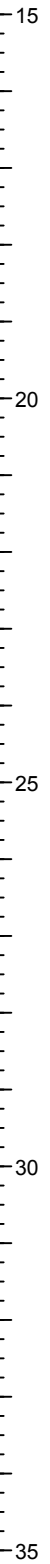
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District			SHEET 2 OF 2 SHEETS			
PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW			
LOCATION COORDINATES X = 437,120 Y = 1,129,250			ELEVATION TOP OF BORING -7.1 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			1 1.5/2.0 SP* 2 4.0/4.5 SP* *Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW5-10-3		LOCATION COORDINATES X = 436,263 Y = 1,131,344		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 2
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 11.7 Ft.			15. DATE BORING		STARTED 10-12-10
			16. ELEVATION TOP OF BORING -8.9 Ft.		COMPLETED 10-12-10
			17. TOTAL RECOVERY FOR BORING 89 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-8.9	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace fine-grained sand-sized shell, 10YR 7/1 light gray (SP)	100			-8.9 Vibracore		0
				100	-Post 1		-10.9 -10.9 Vibracore		
			At El. -13.2 Ft., 3" Limestone fragment						5
-15.5	6.6		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, few silt, 10YR 6/1 gray (SP-SM)	87			Vibracore		
-19.3	10.4								10
-20.6	11.7	NR					-20.6		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				

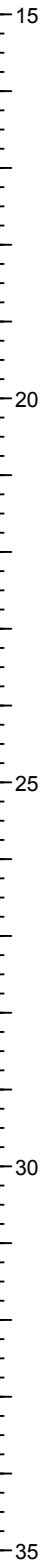
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW
LOCATION COORDINATES X = 436,263 Y = 1,131,344			ELEVATION TOP OF BORING -8.9 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			1 2.0/2.5 SP* 1-Post 2.0/2.5 SP* *Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW5-10-4		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED: 2 UNDISTURBED (UD): 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED: 10-12-10 COMPLETED: 10-12-10		
8. TOTAL DEPTH OF BORING 11.0 Ft.		16. ELEVATION TOP OF BORING -7.1 Ft.		
		17. TOTAL RECOVERY FOR BORING 88 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-7.1	0.0						-7.1		
-8.1	1.0	Highly Weathered	SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, few silt, few fine gravel-sized shell, 10YR 4/1 dark gray (SP-SM)	100	1		-7.6		
			LIMESTONE, highly weathered, 10YR 5/1 gray	100					
-10.0	2.9		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, trace silt, trace fine gravel-sized shell, 10YR 6/1 gray (SP)		2		-10.1		
-16.8	9.7			84					
-18.1	11.0	NIP					-18.1		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			1	0.5/1.0	SP-SM*				

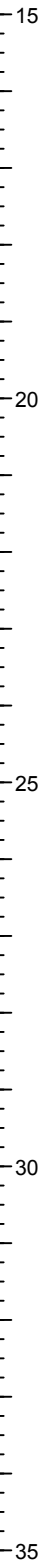
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 436,082 Y = 1,131,882			ELEVATION TOP OF BORING -7.1 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			2 3.0/3.5 SP* *Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW5-10-5		LOCATION COORDINATES X = 437,298 Y = 1,128,600		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 2
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL		BEARING
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD) 0
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 11.0 Ft.			15. DATE BORING		STARTED 10-13-10
			16. ELEVATION TOP OF BORING -3.9 Ft.		COMPLETED 10-13-10
			17. TOTAL RECOVERY FOR BORING 89 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-3.9	0.0						-3.9		
-5.4	1.5		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to coarse-grained sand-sized shell, trace silt, 10YR 6/1 gray (SP)	100			Vibracore		
-8.4	4.5		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, 10YR 6/1 gray (SP-SM)	100	1		Vibracore		
-9.9	6.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, little fine gravel-sized shell up to 1/2", trace silt, 10YR 5/1 gray (SP)	80	2		Vibracore		
-13.7	9.8		SAND, silty, mostly fine to medium-grained sand-sized quartz, little sand to gravel-sized shell up to 1/2", little silt, 10YR 5/1 gray (SM)				Vibracore		
-14.9	11.0	NR					-14.9		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			1	2.5/3.0	SP-SM*				

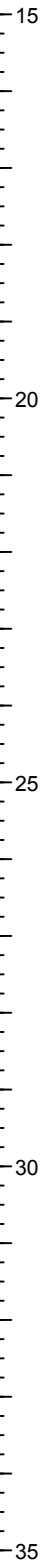
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 437,298 Y = 1,128,600			ELEVATION TOP OF BORING -3.9 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			2 5.0/5.5 SP* *Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW7-10-1		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED: 3 UNDISTURBED (UD): 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED: 10-12-10 COMPLETED: 10-12-10		
8. TOTAL DEPTH OF BORING 11.4 Ft.		16. ELEVATION TOP OF BORING -5.0 Ft.		
		17. TOTAL RECOVERY FOR BORING 92 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE						
-5.0	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, some fine to coarse-grained sand-sized shell, 10YR 7/1 light gray (SP)	100			Vibracore								
			At El. -6.5 Ft., little medium-grained sand-sized shell, trace silt	100	-Post 1		Vibracore								
			At El. -8.5 Ft., trace fine to medium-grained sand-sized shell	100			Vibracore								
			At El. -12.2 Ft., 3" layer of 10yr 6/1 gray (SM)	88	2		Vibracore								
-13.5	8.5		SAND, silty, mostly fine-grained sand-sized quartz, some silt, 10YR 5/1 gray (SM)												
-15.5	10.5														
-16.4	11.4	N/R													
NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results <table border="1"> <tr> <td>SAMPLE ID</td> <td>SAMPLE DEPTH</td> <td>LABORATORY CLASSIFICATION</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>										SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION			
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION													

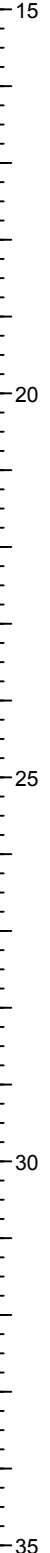
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District			SHEET 2 OF 2 SHEETS					
PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW					
LOCATION COORDINATES X = 430,766 Y = 1,143,388			ELEVATION TOP OF BORING -5.0 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			1	2.0/2.5	SP*						
			1-Post	2.0/2.5	SP*						
			2	4.0/4.5	SP*						
			*Lab visual classification based on gradation curve. No Atterberg limits.								



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW7-10-2		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED 1 UNDISTURBED (UD) 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED 10-12-10 COMPLETED 10-12-10		
8. TOTAL DEPTH OF BORING 11.0 Ft.		16. ELEVATION TOP OF BORING -9.4 Ft.		
		17. TOTAL RECOVERY FOR BORING 89 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-9.4	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace fine-grained sand-sized shell, 10YR 6/1 gray (SP)	100	1		-9.4 Vibracore		0
-12.3	2.9		SAND, silty, mostly fine-grained sand-sized quartz, some silt, few fine to medium-grained sand-sized shell, 10YR 5/1 gray (SM)	89			Vibracore		5
-15.7	6.3		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, 10YR 7/1 light gray (SP-SM)						
-19.2	9.8								
-20.4	11.0	NR					-20.4		10
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION						
			1 0.5/1.0 SP*						

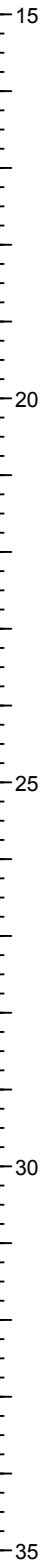
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 430,587 Y = 1,144,165			ELEVATION TOP OF BORING -9.4 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW7-10-3		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED: 1 UNDISTURBED (UD): 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED: 10-12-10 COMPLETED: 10-12-10		
8. TOTAL DEPTH OF BORING 11.0 Ft.		16. ELEVATION TOP OF BORING -9.7 Ft.		
		17. TOTAL RECOVERY FOR BORING 89 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-9.7	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to medium-grained sand-sized shell, trace silt, 10YR 6/1 gray (SP)	100	1		-9.7 Vibracore		
-12.7	3.0		SAND, silty, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, little silt, few fine gravel-sized shell up to 1/2", 10YR 5/1 gray (SM) At El. -15.2 Ft., few fine to coarse-grained sand-sized shell	89			Vibracore		
-18.2	8.5		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, few silt, 10YR 6/1 gray (SP-SM)						
-19.5	9.8								
-20.7	11.0	NR					-20.7		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			1	0.5/1.0	SP*				

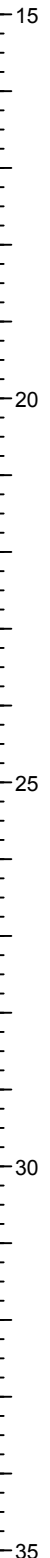
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 430,161 Y = 1,145,657			ELEVATION TOP OF BORING -9.7 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW12-10-1		LOCATION COORDINATES X = 430,825 Y = 1,158,205		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 3
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 11.5 Ft.			15. DATE BORING		STARTED 10-12-10
			16. ELEVATION TOP OF BORING -5.4 Ft.		COMPLETED 10-12-10
			17. TOTAL RECOVERY FOR BORING 96 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-5.4	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fine-grained sand-sized shell, trace silt, 10YR 7/1 light gray (SP)	100			-5.4 Vibracore		0
				100	-Post 1		-7.4 -7.4 Vibracore		
			At El. -8.6 Ft., 1.5" layer of (SM)	100			Vibracore		
-9.2	3.8								
-9.9	4.5		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, few silt, trace fine gravel-sized shell, 10YR 7/1 light gray (SP-SM)		2		-9.4		5
-11.3	5.9		SAND, silty, mostly fine-grained sand-sized quartz, little silt, few fine to medium-grained sand-sized shell, 10YR 4/1 dark gray (SM)						
			SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, some sand to gravel-sized shell up to 3/4", few silt, 10YR 6/1 gray (SP-SM)	93			Vibracore		10
-16.4	11.0								
-16.9	11.5	NR					-16.9		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				

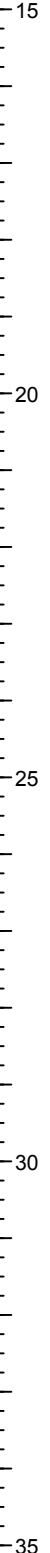
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District			SHEET 2 OF 2 SHEETS			
PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW			
LOCATION COORDINATES X = 430,825 Y = 1,158,205			ELEVATION TOP OF BORING -5.4 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			1 2.0/2.5 SP* 1-Post 2.0/2.5 SP* 2 4.0/4.5 SP-SM* *Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW13-10-1		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED: 1 UNDISTURBED (UD): 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED: 10-12-10 COMPLETED: 10-12-10		
8. TOTAL DEPTH OF BORING 11.0 Ft.		16. ELEVATION TOP OF BORING -9.4 Ft.		
		17. TOTAL RECOVERY FOR BORING 92 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-9.4	0.0						-9.4		
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, trace silt, trace fine gravel-sized shell, 10YR 6/1 gray (SP)	100	1		Vibracore		
-13.4	4.0		SAND, silty, mostly fine to medium-grained sand-sized quartz, some silt, little fine to medium-grained sand-sized shell, 10YR 4/1 dark gray (SM)						
-14.8	5.4		CLAY, fat, high plasticity, soft, little fine to medium-grained sand-sized quartz, 10YR 8/1 white (CH)	91			Vibracore		
-16.4	7.0		SAND, clayey, mostly fine to medium-grained sand-sized quartz, some clay, few medium to coarse-grained sand-sized shell, trace fine gravel-sized shell up to 1/2", 10YR 7/1 light gray (SC)						
-19.5	10.1								
-20.4	11.0	N/R					-20.4		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			1	0.5/1.0	SP*				

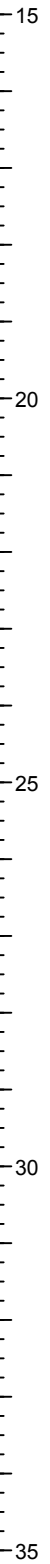
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW
LOCATION COORDINATES X = 429,178 Y = 1,161,031			ELEVATION TOP OF BORING -9.4 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			*Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWW14-10-1		LOCATION COORDINATES X = 428,548 Y = 1,162,955		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 2 UNDISTURBED (UD) 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL		BEARING
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
7. DEPTH DRILLED INTO ROCK N/A			15. DATE BORING		STARTED 10-12-10 COMPLETED 10-12-10
8. TOTAL DEPTH OF BORING 11.0 Ft.			16. ELEVATION TOP OF BORING -5.1 Ft.		17. TOTAL RECOVERY FOR BORING 92 %
18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer					

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-5.1	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace fine to medium-grained sand-sized shell, 10YR 8/1 white (SP)	100			-5.1 Vibracore		0
					1		-7.1 Vibracore		
-9.6	4.5		At El. -8.9 Ft., little medium to coarse-grained sand-sized shell, trace fine gravel-sized shell, trace silt				-9.1		
-11.2	6.1		SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, few silt, 10YR 6/1 gray (SP-SM)						5
			SAND, silty, mostly fine to medium-grained sand-sized quartz, little silt, few medium to coarse-grained sand-sized shell, few fine to coarse gravel-sized shell up to 1-1/2", 10YR 6/1 gray (SM)	87			Vibracore		
-15.2	10.1								10
-16.1	11.0	N/R					-16.1		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION				
			1	2.0/2.5	SP*				

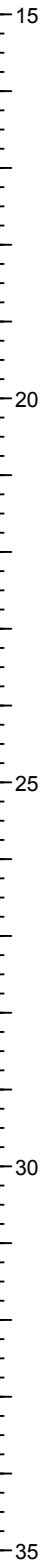
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW
LOCATION COORDINATES X = 428,548 Y = 1,162,955			ELEVATION TOP OF BORING -5.1 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			2 4.0/4.5 SP* *Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass		9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWSC2-10-1		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		
3. DRILLING AGENCY Corps of Engineers - CESAJ		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER		
4. NAME OF DRILLER Athena Technologies, Inc.		12. TOTAL SAMPLES DISTURBED: 1 UNDISTURBED (UD): 0		
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN N/A		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK N/A		15. DATE BORING STARTED: 10-12-10 COMPLETED: 10-12-10		
8. TOTAL DEPTH OF BORING 11.3 Ft.		16. ELEVATION TOP OF BORING -7.5 Ft.		
		17. TOTAL RECOVERY FOR BORING 91 %		
		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-7.5	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, trace silt, 10YR 7/1 light gray (SP)	100			-7.5 Vibracore		0
					1		-9.0		
-12.8	5.3		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few fine to coarse-grained sand-sized shell, few silt, 10YR 6/1 gray (SP-SM)	90			Vibracore		5
-17.8	10.3								10
-18.8	11.3	NIR					-18.8		
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION -----						15

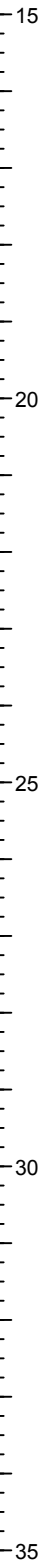
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 438,080 Y = 1,200,802			ELEVATION TOP OF BORING -7.5 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
			1 1.5/2.0 SP* *Lab visual classification based on gradation curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWSC2-10-2		LOCATION COORDINATES X = 437,876 Y = 1,201,399		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 3
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 12.2 Ft.			15. DATE BORING		STARTED 10-12-10
			16. ELEVATION TOP OF BORING -5.4 Ft.		COMPLETED 10-12-10
			17. TOTAL RECOVERY FOR BORING 100 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-5.4	0.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, trace silt, 10YR 8/1 white (SP)	100			-5.4 Vibracore		0
				100	-Post 1		-7.4 -7.4 Vibracore		
			At El. -8.9 Ft., mostly fine-grained sand-sized quartz, trace silt, trace medium-grained sand-sized shell	100			Vibracore		
					2		-9.4		5
-12.6	7.2		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, 10YR 7/1 light gray (SP-SM)	100			Vibracore		
-13.5	8.1		SAND, silty, mostly fine-grained sand-sized quartz, little silt, 10YR 5/1 gray (SM)						
-17.6	12.2						-17.6		10
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						15

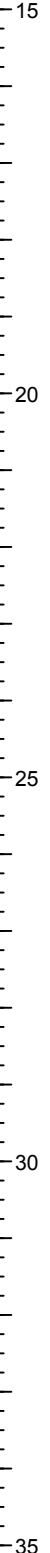
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS				
			PROJECT Vibracore Borings GIWW/Vicinity of			COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW		
LOCATION COORDINATES X = 437,876 Y = 1,201,399			ELEVATION TOP OF BORING -5.4 Ft.								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS			% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION						
			1	2.0/2.5	SP*						
			1-Post	2.0/2.5	SP*						
			2	4.0/4.5	SP*						
			*Lab visual classification based on gradation curve. No Atterberg limits.								



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District		SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore		
2. BORING DESIGNATION VB-GIWWSC3-10-1		LOCATION COORDINATES X = 434,901 Y = 1,221,024		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Athena Technologies, Inc.			12. TOTAL SAMPLES		DISTURBED 1
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 10.5 Ft.			15. DATE BORING		STARTED 10-12-10
			16. ELEVATION TOP OF BORING -9.0 Ft.		COMPLETED 10-12-10
			17. TOTAL RECOVERY FOR BORING 93 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-9.0	0.0						-9.0		
			SAND, poorly-graded, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, trace fine gravel-sized shell, trace silt, 10YR 6/1 gray (SP) At El. -10.0 Ft., few fine to coarse-grained sand-sized shell, 10YR 7/1 light gray	100	1		Vibracore		0
				93			Vibracore		5
-16.8	7.8		SAND, poorly-graded, mostly fine to coarse-grained sand-sized shell, some fine to medium-grained sand-sized quartz, 10YR 6/1 gray (SP)						
-18.8	9.8								
-19.5	10.5	NIP					-19.5		10
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION						
			----- 1 0.5/1.0 SP*						
			*Lab visual classification based on gradation						

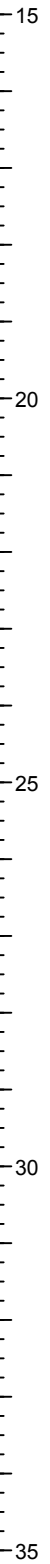
DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 434,901 Y = 1,221,024			ELEVATION TOP OF BORING -9.0 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			curve. No Atterberg limits.						



DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2 SHEETS
1. PROJECT Vibracore Borings GIWW/Vicinity of Longboat Pass			9. SIZE AND TYPE OF BIT 3.5" Vibracore	
2. BORING DESIGNATION VB-GIWWSC3-10-2		LOCATION COORDINATES X = 435,302 Y = 1,209,817		10. COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)
3. DRILLING AGENCY Corps of Engineers - CESAJ		CONTRACTOR FILE NO.		HORIZONTAL NAD83
4. NAME OF DRILLER Athena Technologies, Inc.			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A		12. TOTAL SAMPLES		DISTURBED 2
7. DEPTH DRILLED INTO ROCK N/A		13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
8. TOTAL DEPTH OF BORING 11.0 Ft.		15. DATE BORING		STARTED 10-12-10
		16. ELEVATION TOP OF BORING -6.8 Ft.		COMPLETED 10-12-10
		17. TOTAL RECOVERY FOR BORING 89 %		18. SIGNATURE AND TITLE OF INSPECTOR Daniel G. Blaydes, Geotechnical Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-6.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace medium-grained sand-sized shell, 10YR 6/1 gray (SP)	100			-6.8		
					1		Vibracore		
-9.1	2.3		SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace medium to coarse-grained sand-sized shell, 10YR 5/1 gray (SP-SM)	100			-7.8		
					2		Vibracore		
-11.6	4.8		LIMESTONE, decomposed, 10YR 5/1 gray				-9.8		
-12.4	5.6								5
			SAND, silty, mostly fine-grained sand-sized quartz, little silt, little fine to coarse-grained sand-sized shell, 10YR 4/1 dark gray (SM)	85					
-16.6	9.8								
-17.8	11.0	NR							10
			NOTES: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. Laboratory Testing Results						
			SAMPLE ID SAMPLE DEPTH LABORATORY CLASSIFICATION						
			----- 1 1.0/1.5 SP*						15

DRILLING LOG (Cont. Sheet)			INSTALLATION Jacksonville District				SHEET 2 OF 2 SHEETS		
			PROJECT Vibracore Borings GIWW/Vicinity of		COORDINATE SYSTEM/DATUM State Plane, FLW (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 435,302 Y = 1,209,817			ELEVATION TOP OF BORING -6.8 Ft.						
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE
			2 3.0/3.5 SP-SM* *Lab visual classification based on gradation curve. No Atterberg limits.						



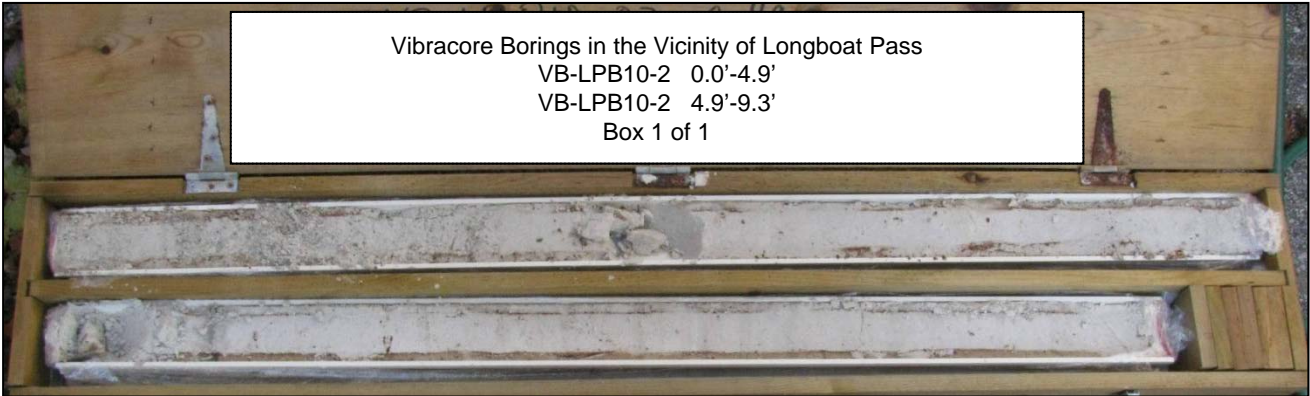
APPENDIX C

- **Photographs**



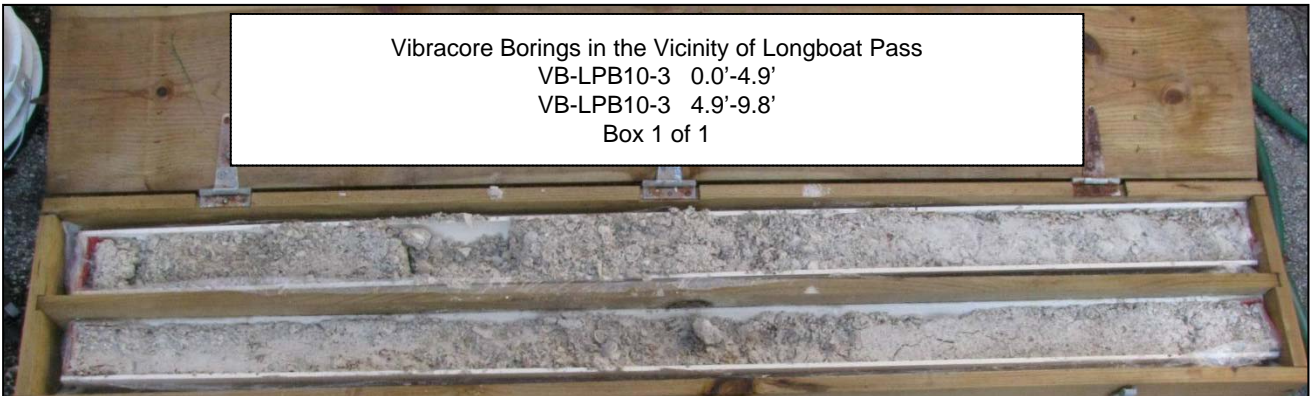
Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-1 0.0'-4.9'
VB-LPB10-1 4.9'-7.9'
Box 1 of 1

VB-LBP10-1



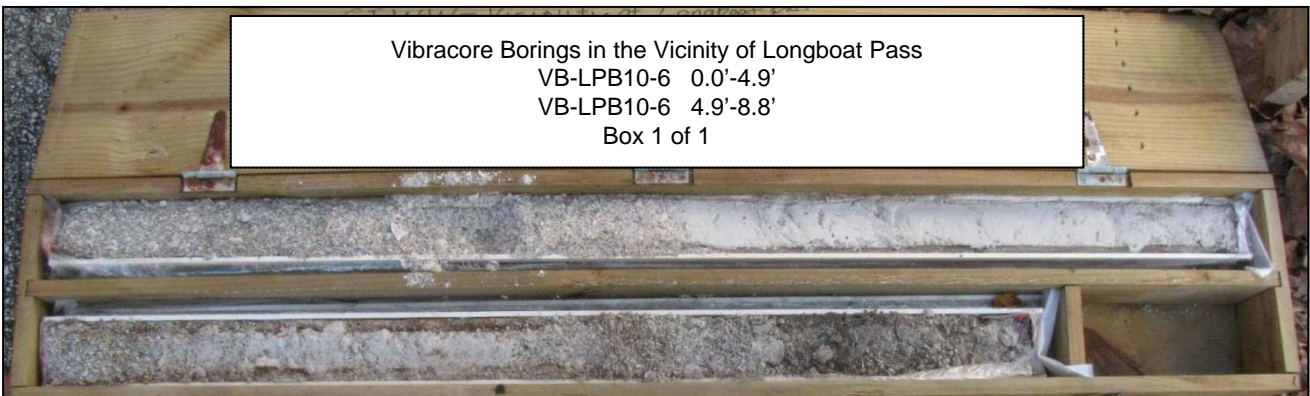
Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-2 0.0'-4.9'
VB-LPB10-2 4.9'-9.3'
Box 1 of 1

VB-LBP10-2



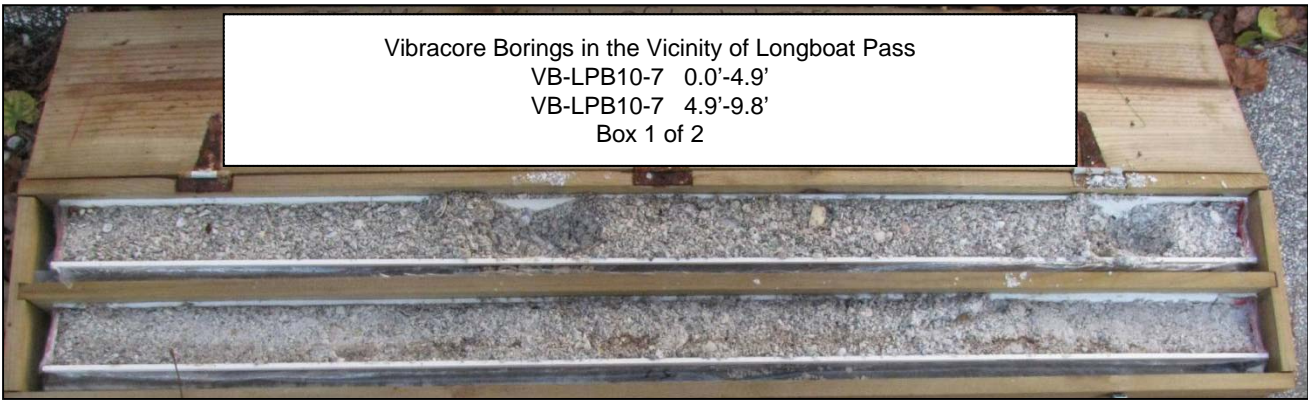
Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-3 0.0'-4.9'
VB-LPB10-3 4.9'-9.8'
Box 1 of 1

VB-LBP10-3



Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-6 0.0'-4.9'
VB-LPB10-6 4.9'-8.8'
Box 1 of 1

VB-LBP10-6



Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-7 0.0'-4.9'
VB-LPB10-7 4.9'-9.8'
Box 1 of 2

VB-LBP10-7



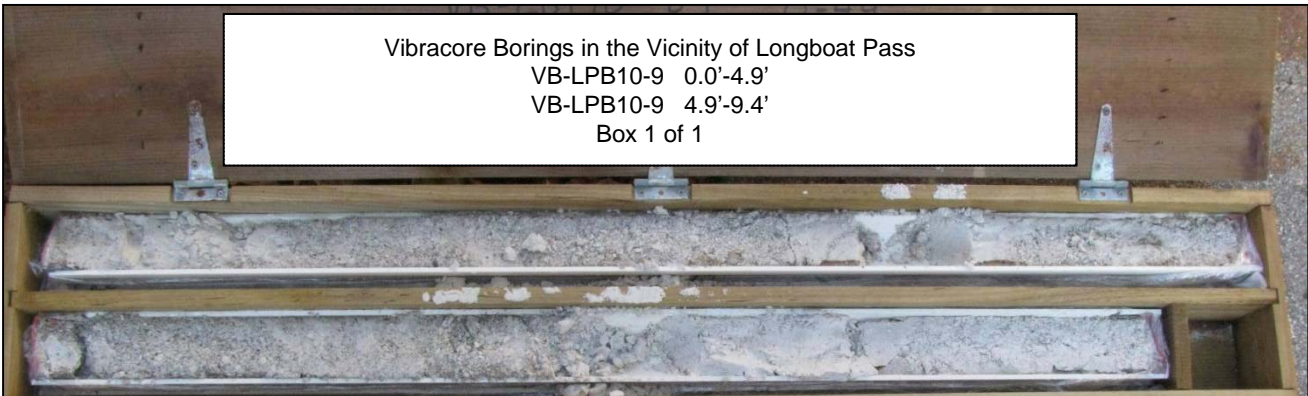
Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-7 9.8'-10.7'
Box 2 of 2

VB-LBP10-7



Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-8 0.0'-4.9'
VB-LPB10-8 4.9'-9.3'
Box 1 of 1

VB-LBP10-8



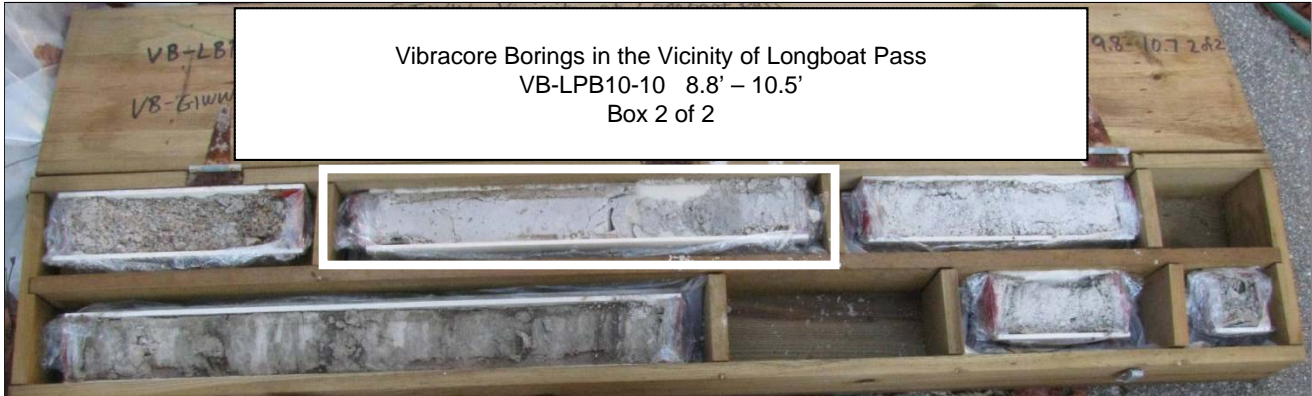
Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-9 0.0'-4.9'
VB-LPB10-9 4.9'-9.4'
Box 1 of 1

VB-LBP10-9



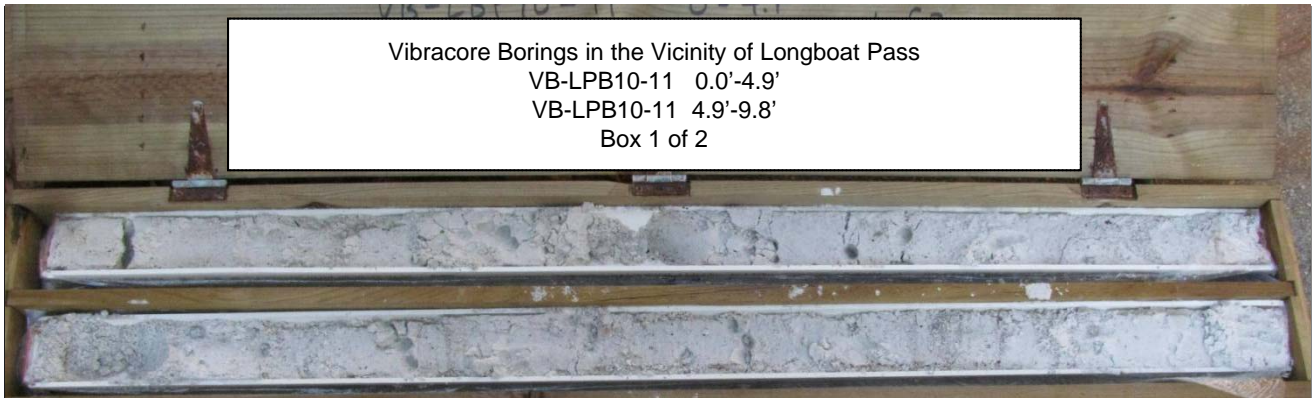
Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-10 0.0'-4.9'
VB-LPB10-10 4.9'-8.8'
Box 1 of 2

VB-LBP10-10



Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-10 8.8' - 10.5'
Box 2 of 2

VB-LBP10-10



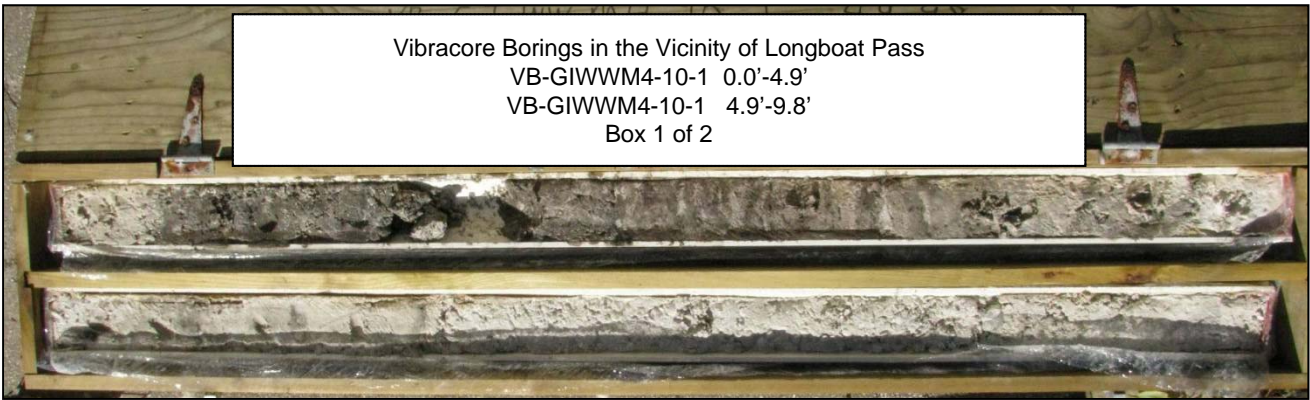
Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-11 0.0'-4.9'
VB-LPB10-11 4.9'-9.8'
Box 1 of 2

VB-LBP10-11



Vibracore Borings in the Vicinity of Longboat Pass
VB-LPB10-11 9.8' - 10.75'
Box 2 of 2

VB-LBP10-11



Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM4-10-1 0.0'-4.9'
 VB-GIWWM4-10-1 4.9'-9.8'
 Box 1 of 2

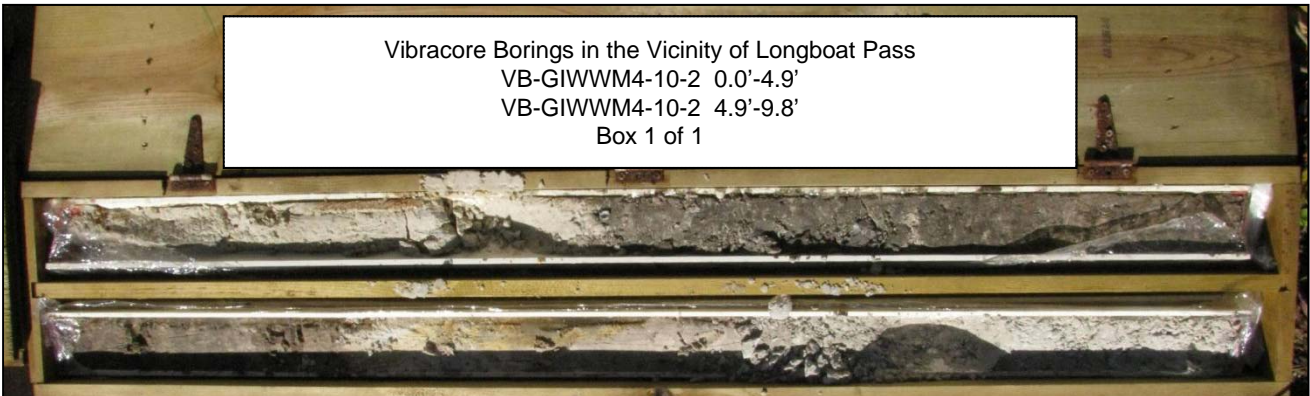
VB-GIWWM4-10-1



Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM4-10-1 9.8' - 11.6'
 Box 2 of 2

8-10.5
 3-10-1
 of 2

VB-GIWWM4-10-1



Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM4-10-2 0.0'-4.9'
 VB-GIWWM4-10-2 4.9'-9.8'
 Box 1 of 1

VB-GIWWM4-10-2



Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM4-10-3 0.0'-4.9'
 VB-GIWWM4-10-3 4.9'-9.8'
 Box 1 of 1

VB-GIWWM4-10-3



Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM5-10-1 0.0'-4.9'
 VB-GIWWM5-10-1 4.9'-9.8'
 Box 1 of 2

VB-GIWWM5-10-1



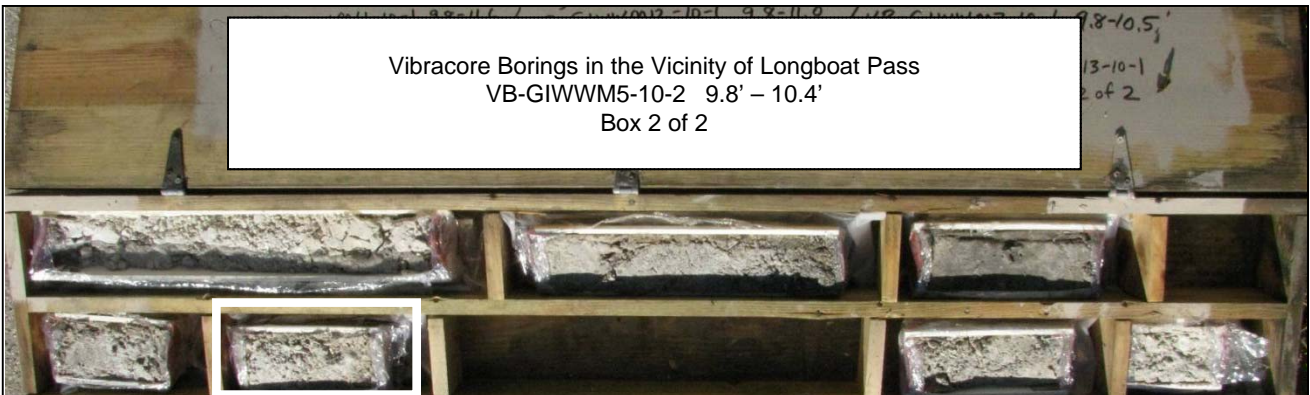
Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM5-10-1 9.8' - 10.3
 Box 2 of 2

VB-GIWWM5-10-1



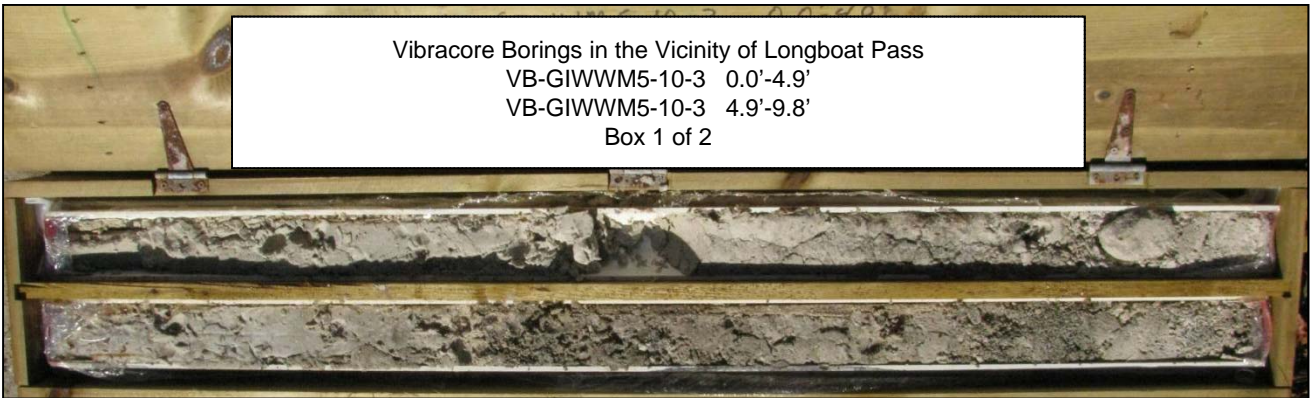
Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM5-10-2 0.0'-4.9'
 VB-GIWWM5-10-2 4.9'-9.8'
 Box 1 of 2

VB-GIWWM5-10-2



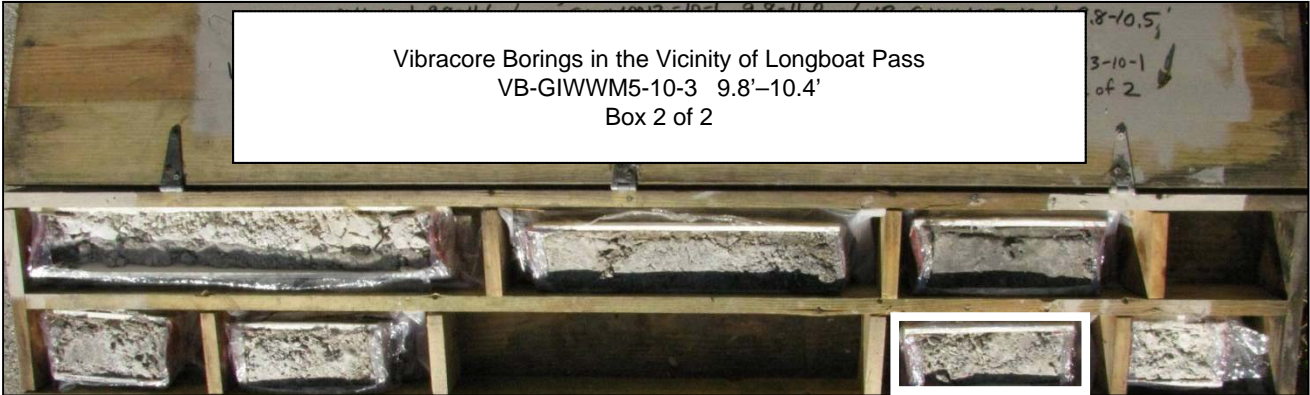
Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM5-10-2 9.8' - 10.4'
 Box 2 of 2

VB-GIWWM5-10-2



Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWW5-10-3 0.0'-4.9'
VB-GIWWW5-10-3 4.9'-9.8'
Box 1 of 2

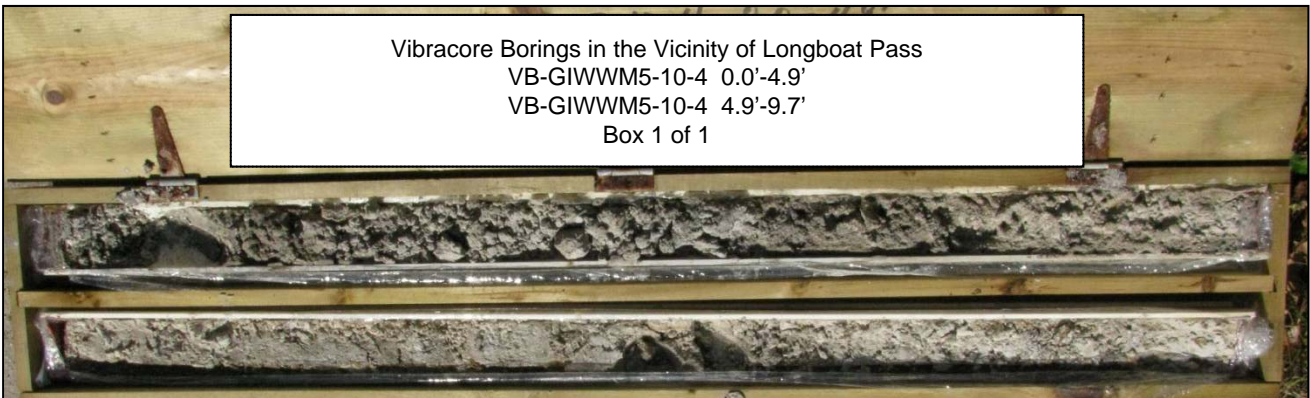
VB-GIWWW5-10-3



Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWW5-10-3 9.8'-10.4'
Box 2 of 2

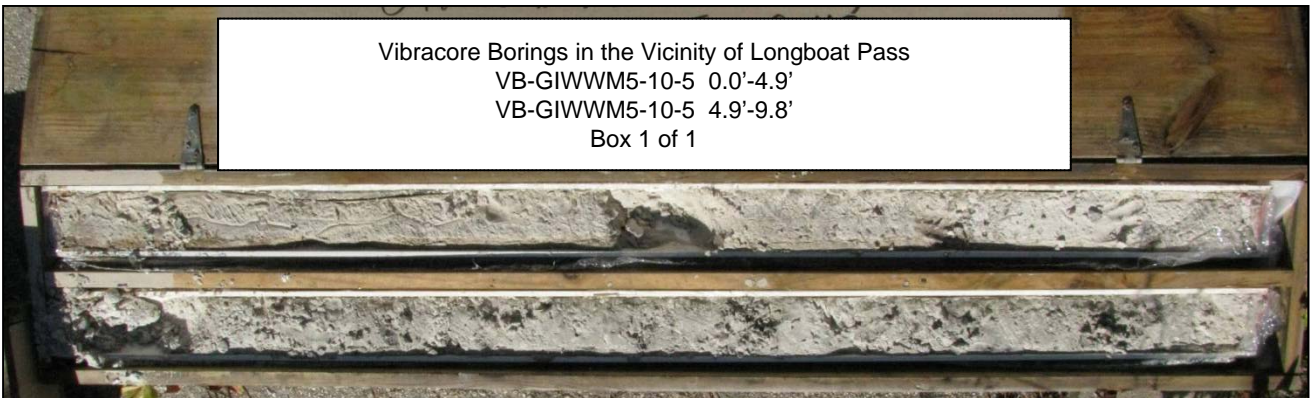
8-10.5'
3-10-1
of 2

VB-GIWWW5-10-3



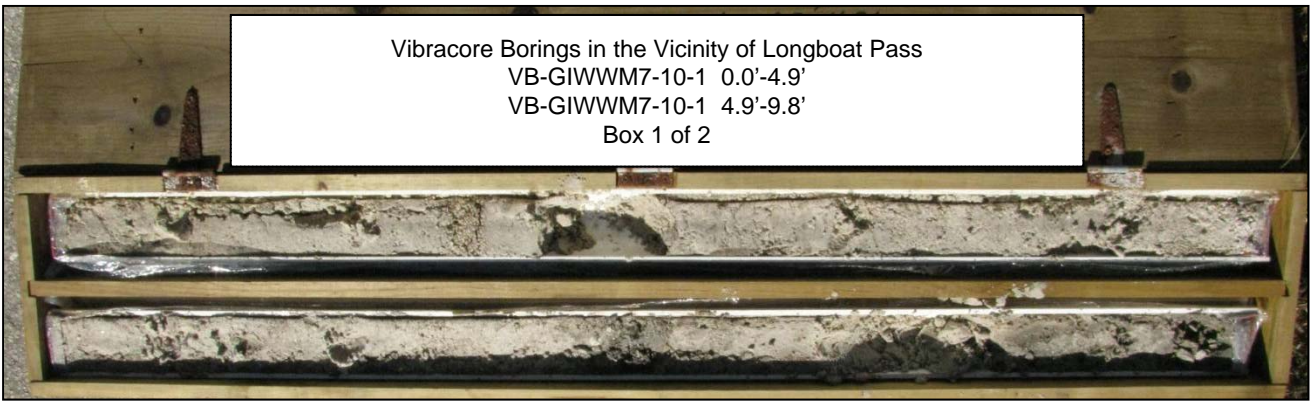
Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWW5-10-4 0.0'-4.9'
VB-GIWWW5-10-4 4.9'-9.7'
Box 1 of 1

VB-GIWWW5-10-4



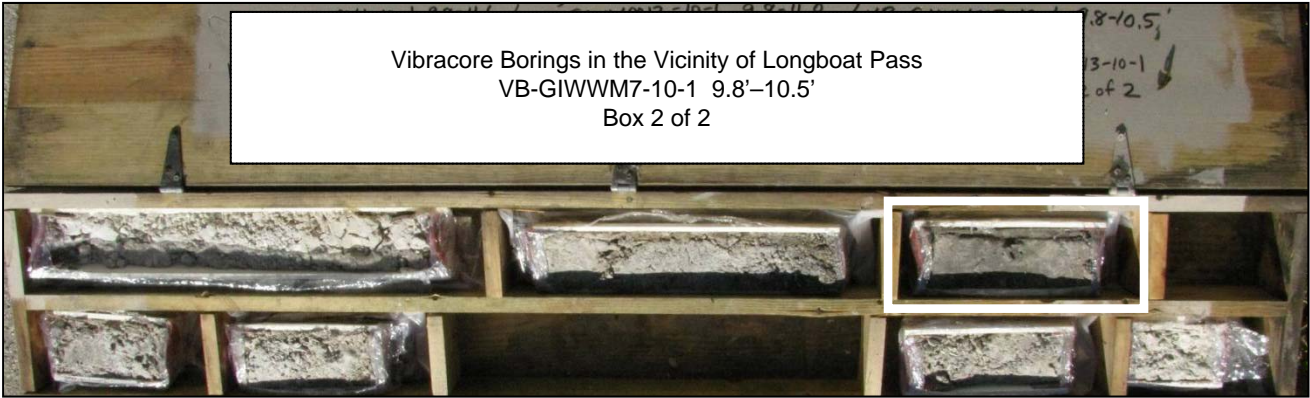
Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWW5-10-5 0.0'-4.9'
VB-GIWWW5-10-5 4.9'-9.8'
Box 1 of 1

VB-GIWWW5-10-5



Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWM7-10-1 0.0'-4.9'
VB-GIWWM7-10-1 4.9'-9.8'
Box 1 of 2

VB-GIWWM7-10-1



Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWM7-10-1 9.8'-10.5'
Box 2 of 2

8-10.5'
3-10-1
of 2

VB-GIWWM7-10-1



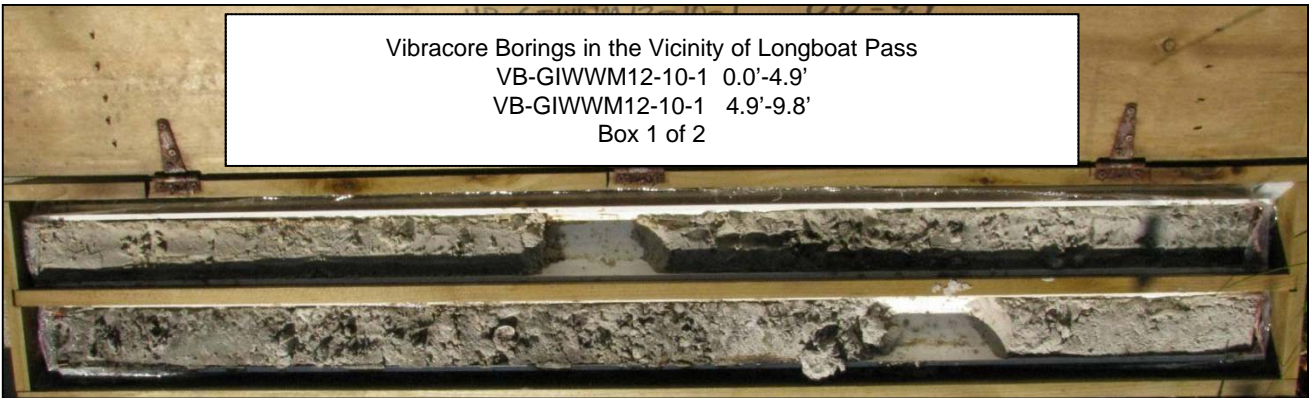
Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWM7-10-2 0.0'-4.9'
VB-GIWWM7-10-2 4.9'-9.4'
Box 1 of 1

VB-GIWWM7-10-2



Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWM7-10-3 0.0'-4.9'
VB-GIWWM7-10-3 4.9'-9.8'
Box 1 of 1

VB-GIWWM7-10-3



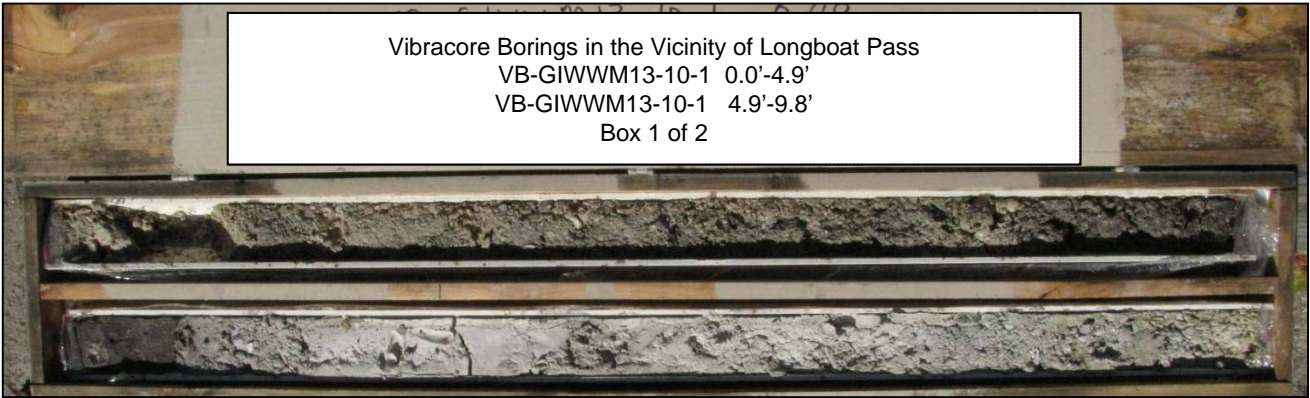
Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM12-10-1 0.0'-4.9'
 VB-GIWWM12-10-1 4.9'-9.8'
 Box 1 of 2

VB-GIWWM12-10-1



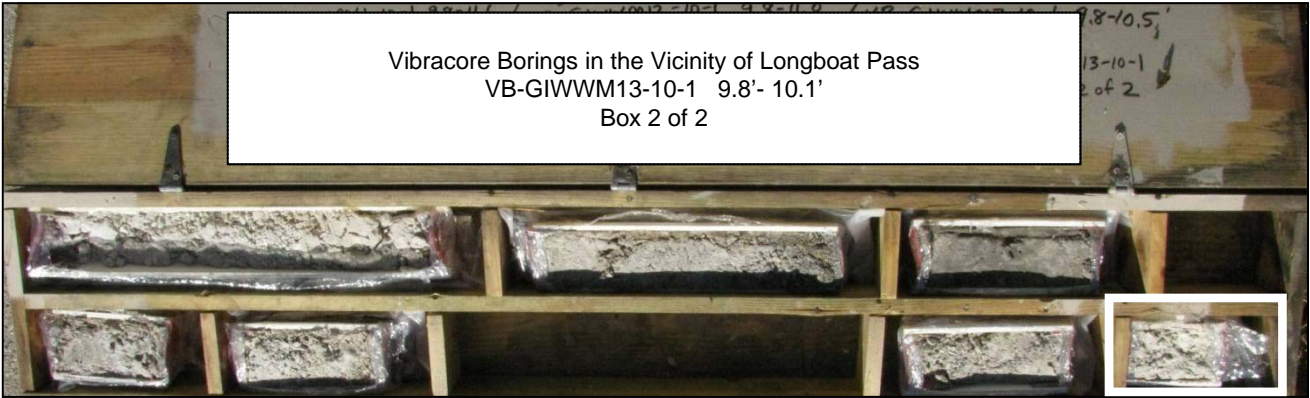
Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM12-10-1 9.8' - 11.0'
 Box 2 of 2

VB-GIWWM12-10-1



Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM13-10-1 0.0'-4.9'
 VB-GIWWM13-10-1 4.9'-9.8'
 Box 1 of 2

VB-GIWWM13-10-1



Vibracore Borings in the Vicinity of Longboat Pass
 VB-GIWWM13-10-1 9.8'- 10.1'
 Box 2 of 2

VB-GIWWM13-10-1



Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWM14-10-1 0.0'-4.9'
VB-GIWWM14-10-1 4.9'-9.8'
Box 1 of 2

VB-GIWWM14-10-1



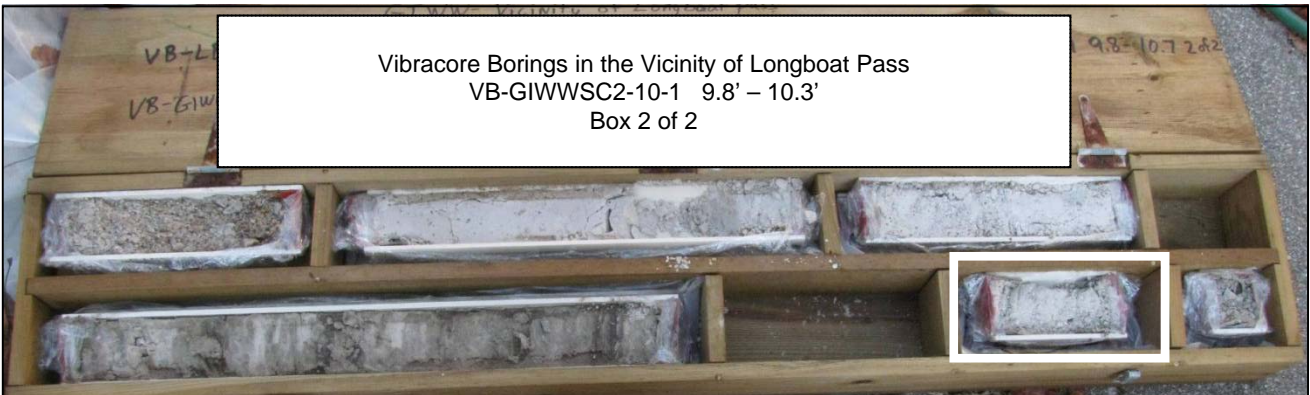
Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWM14-10-1 9.8' - 10.1'
Box 2 of 2

VB-GIWWM14-10-1



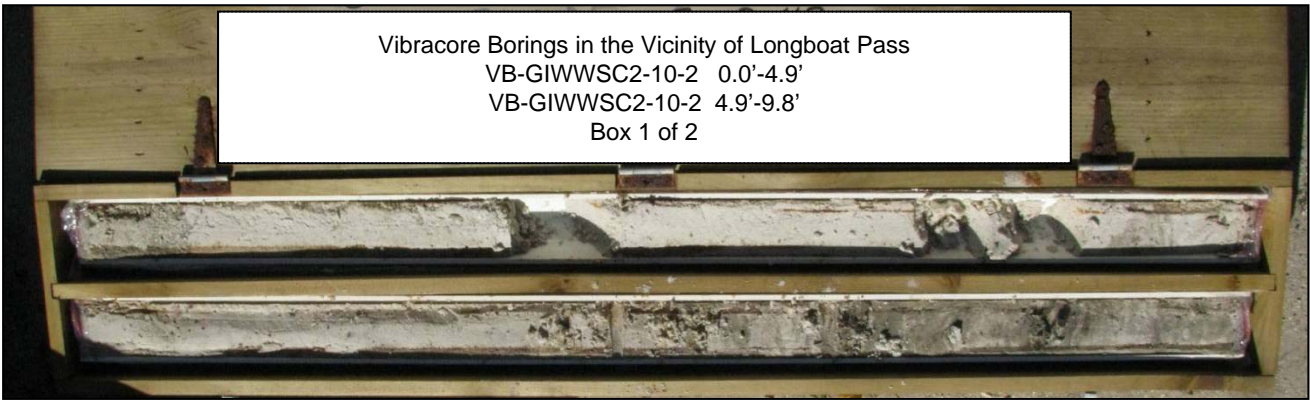
Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWSC2-10-1 0.0'-4.9'
VB-GIWWSC2-10-1 4.9'-9.8'
Box 1 of 2

VB-GIWWSC2-10-1



Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWSC2-10-1 9.8' - 10.3'
Box 2 of 2

VB-GIWWSC2-10-1



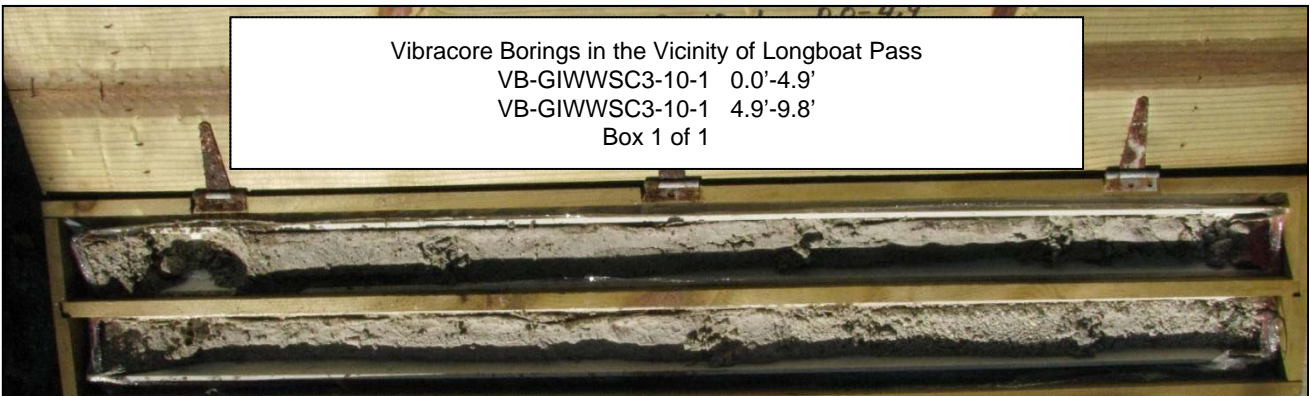
Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWSC2-10-2 0.0'-4.9'
VB-GIWWSC2-10-2 4.9'-9.8'
Box 1 of 2

VB-GIWWSC2-10-2



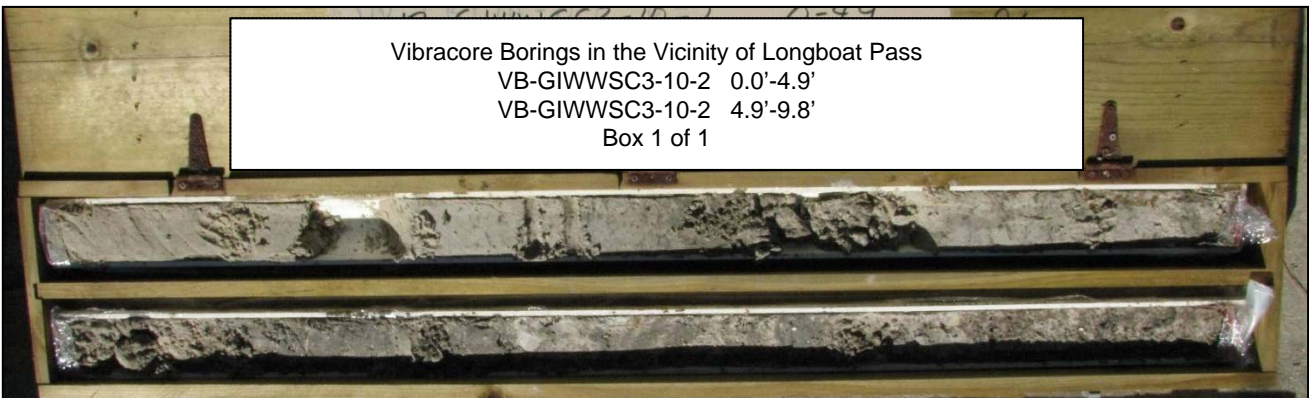
Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWSC2-10-2 9.8'-12.2'
Box 2 of 2

VB-GIWWSC2-10-2



Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWSC3-10-1 0.0'-4.9'
VB-GIWWSC3-10-1 4.9'-9.8'
Box 1 of 1

VB-GIWWSC3-10-1



Vibracore Borings in the Vicinity of Longboat Pass
VB-GIWWSC3-10-2 0.0'-4.9'
VB-GIWWSC3-10-2 4.9'-9.8'
Box 1 of 1

VB-GIWWSC3-10-2

APPENDIX D

- **Table 1: Visual % Shell and Fines**
- **Laboratory Test Results**

Vibracore Borings in the Vicinity of Longboat Pass

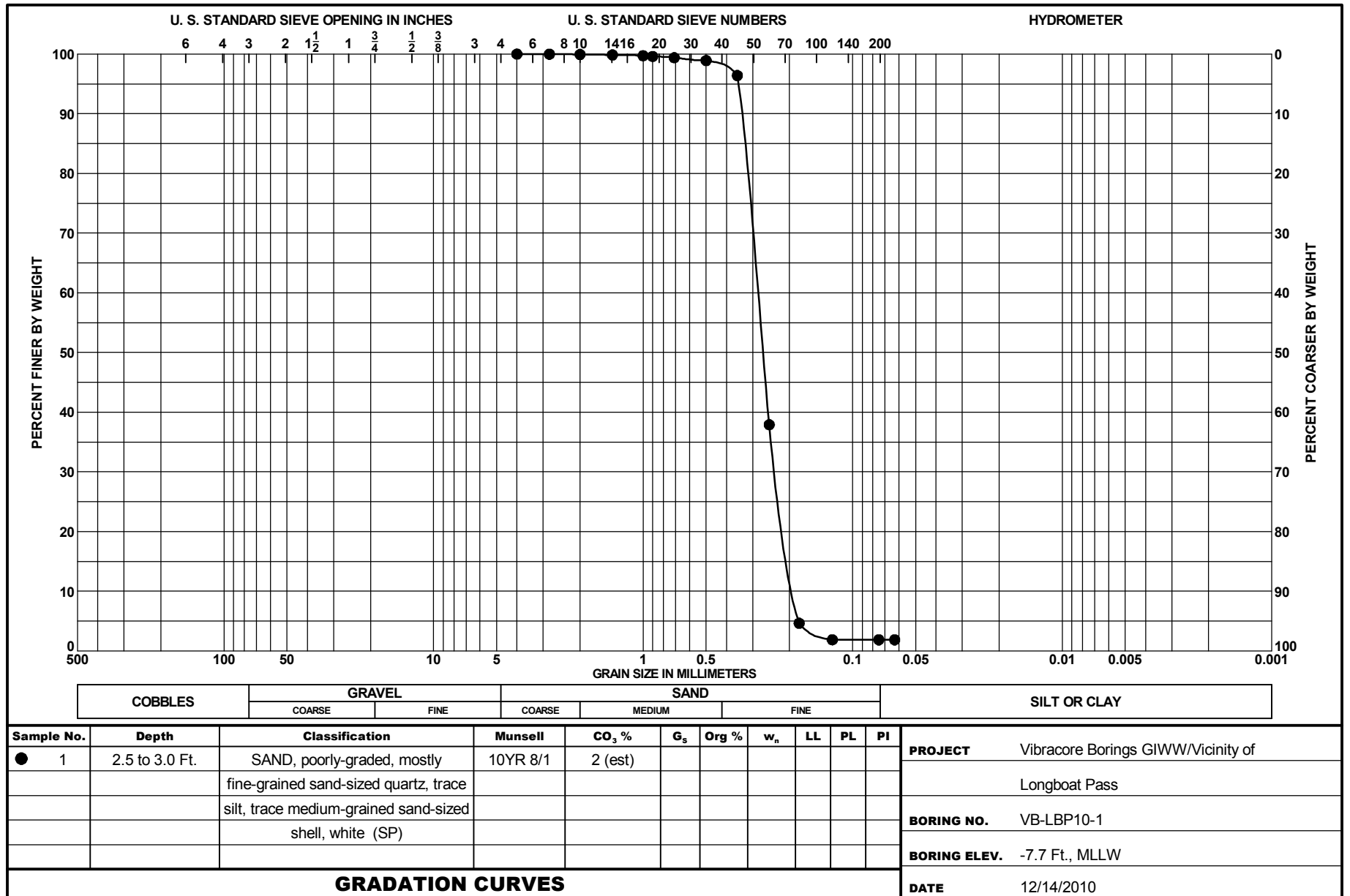
Visual % Shell, Percent Carbonate, and Fines

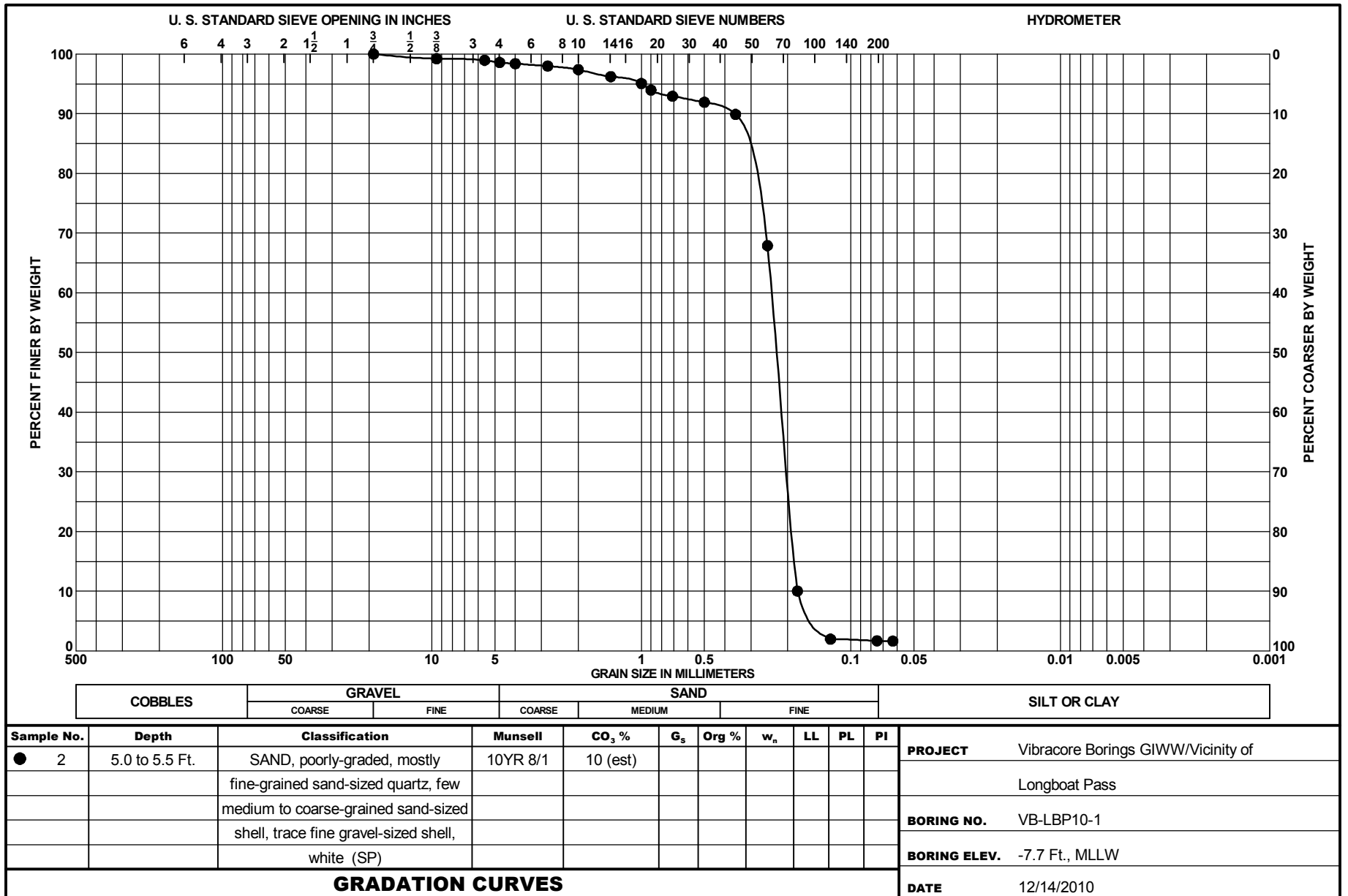
Boring Designation	Sample #	Sample Depth (feet)	Visual % Shell (estimated)	Percent Carbonate	% Fines Passing 200 Sieve (pre and post burn)	
					Pre	Post
VB-LBP10-1	1	2.5-3.0	2		1.87	
VB-LBP10-1	2	5.0-5.5	10		1.69	
VB-LBP10-2	1	2.5-3.0	2	2.5	1.05	
VB-LBP10-2	1-Post	2.5-3.0				0.14
VB-LBP10-2	2	5.0-5.5	3		1.04	
VB-LBP10-3	1	1.5-2.0	56		3.08	
VB-LBP10-6	1	1.5-2.0	83		0.50	
VB-LBP10-7	1	2.0-2.5	76		0.85	
VB-LBP10-7	2	4.0-4.5	73	74.7	1.03	
VB-LBP10-7	2-Post	4.0-4.5				0.08
VB-LBP10-8	1	3.0-3.5	43		0.78	
VB-LBP10-8	2	6.0-6.5	38		15.91	
VB-LBP10-9	1	3.5-4.0	10		0.03	
VB-LBP10-9	2	6.5-7.0	11		2.13	
VB-LBP10-10	1	3.0-3.5	58		0.70	
VB-LBP10-10	2	6.0-6.5	18	16.9	0.26	
VB-LBP10-10	2-Post	6.0-6.5				0.08
VB-LBP10-10	3	9.0-9.5	10		1.65	
VB-LBP10-11	1	2.0-2.5	9		1.98	
VB-LBP10-11	2	5.0-5.5	14		0.81	

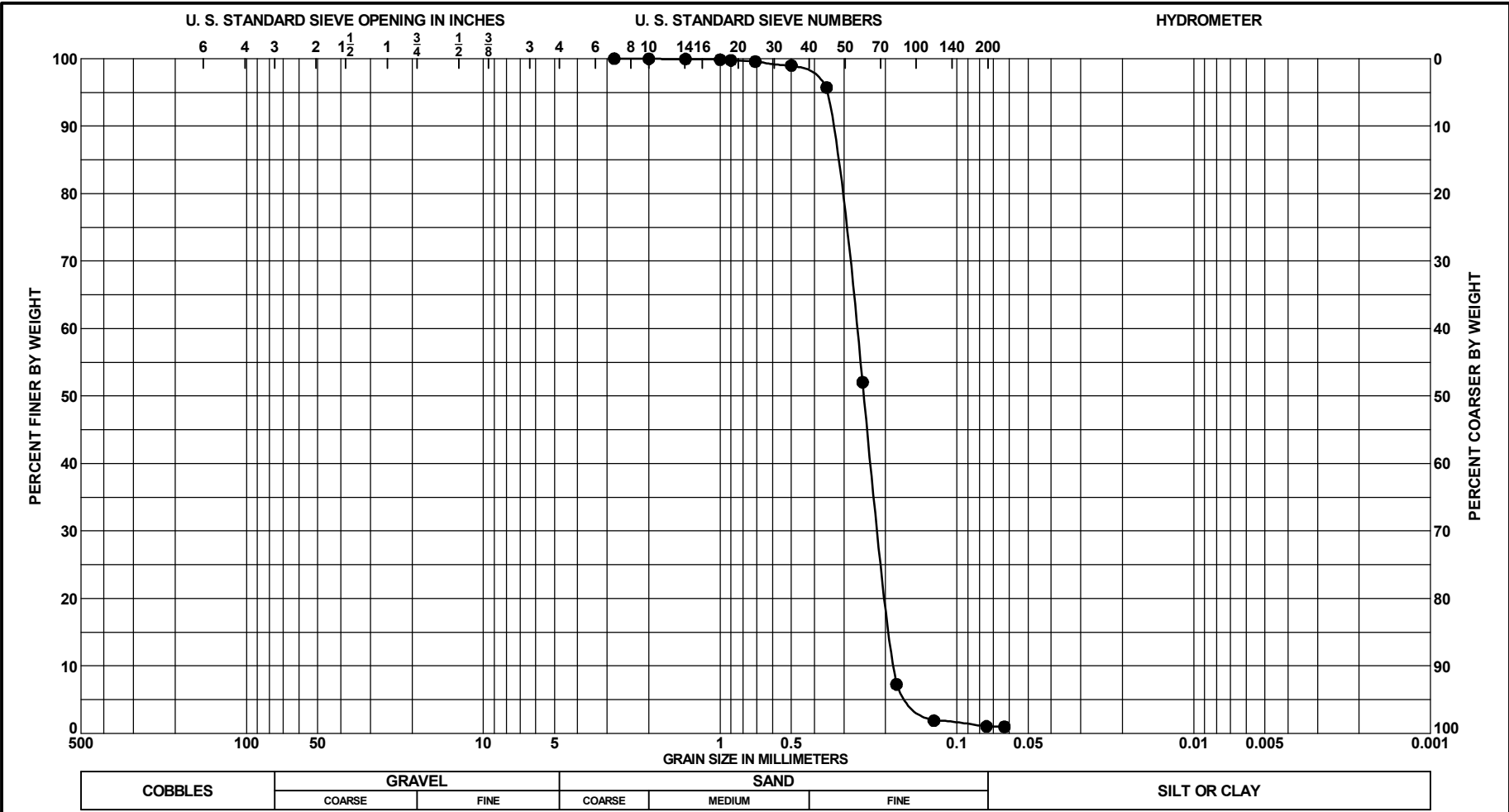
Vibracore Borings in the Vicinity of Longboat Pass

Visual % Shell, Percent Carbonate, and Fines

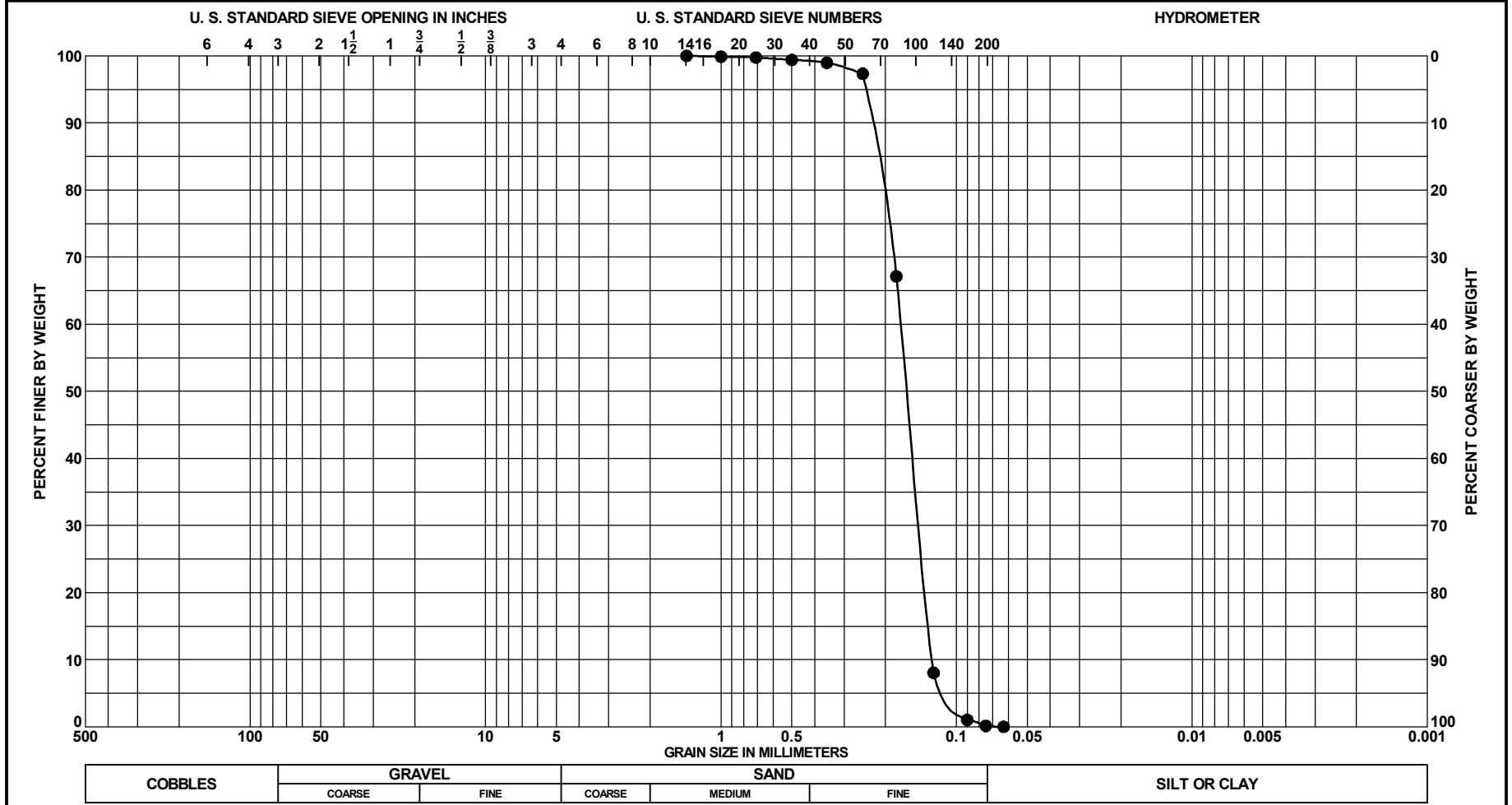
Boring Designation	Sample #	Sample Depth (feet)	Visual % Shell (estimated)	Percent Carbonate	% Fines Passing 200 Sieve (pre and post burn)	
					Pre	Post
VB-GIWWW4-10-1	1	1.5-2.0	14		7.19	
VB-GIWWW4-10-2	1	1.5-2.0	3		1.24	
VB-GIWWW4-10-2	2	3.5-4.0	40		4.59	
VB-GIWWW4-10-3	1	1.5-2.0	24		11.17	
VB-GIWWW5-10-1	1	2.0-2.5	2		3.62	
VB-GIWWW5-10-2	1	1.5-2.0	2			
VB-GIWWW5-10-2	2	4.0-4.5	2		1.73	
VB-GIWWW5-10-3	1	2.0-2.5	3	2.1	1.59	
VB-GIWWW5-10-3	1-Post	2.0-2.5				0.05
VB-GIWWW5-10-4	1	0.5-1.0	31		7.74	
VB-GIWWW5-10-4	2	3.0-3.5	10		4.11	
VB-GIWWW5-10-5	1	2.5-3.0	1		5.79	
VB-GIWWW5-10-5	2	5.0-5.5	31		2.35	
VB-GIWWW7-10-1	1	2.0-2.5	18	14.8	2.10	
VB-GIWWW7-10-1	1-Post	2.0-2.5				0.03
VB-GIWWW7-10-1	2	4.0-4.5	3		3.95	
VB-GIWWW7-10-2	1	0.5-1.0	2		2.86	
VB-GIWWW7-10-3	1	0.5-1.0	5		4.54	
VB-GIWWW12-10-1	1	2.0-2.5	3	2.9	1.77	
VB-GIWWW12-10-1	1-Post	2.0-2.5				0.03
VB-GIWWW12-10-1	2	4.0-4.5	11		8.22	
VB-GIWWW13-10-1	1	0.5-1.0	22		1.96	
VB-GIWWW14-10-1	1	2.0-2.5	2		1.99	
VB-GIWWW14-10-1	2	4.0-4.5	18		1.69	
VB-GIWWWSC2-10-1	1	1.5-2.0	5		2.06	
VB-GIWWWSC2-10-2	1	2.0-2.5	18	15.1	1.16	
VB-GIWWWSC2-10-2	1-Post	2.0-2.5				0.4
VB-GIWWWSC2-10-2	2	4.0-4.5	2		1.65	
VB-GIWWWSC3-10-1	1	0.5-1.0	36		1.35	
VB-GIWWWSC3-10-2	1	1.0-1.5	4		0.27	
VB-GIWWWSC3-10-2	2	3.0-3.5	4		5.69	



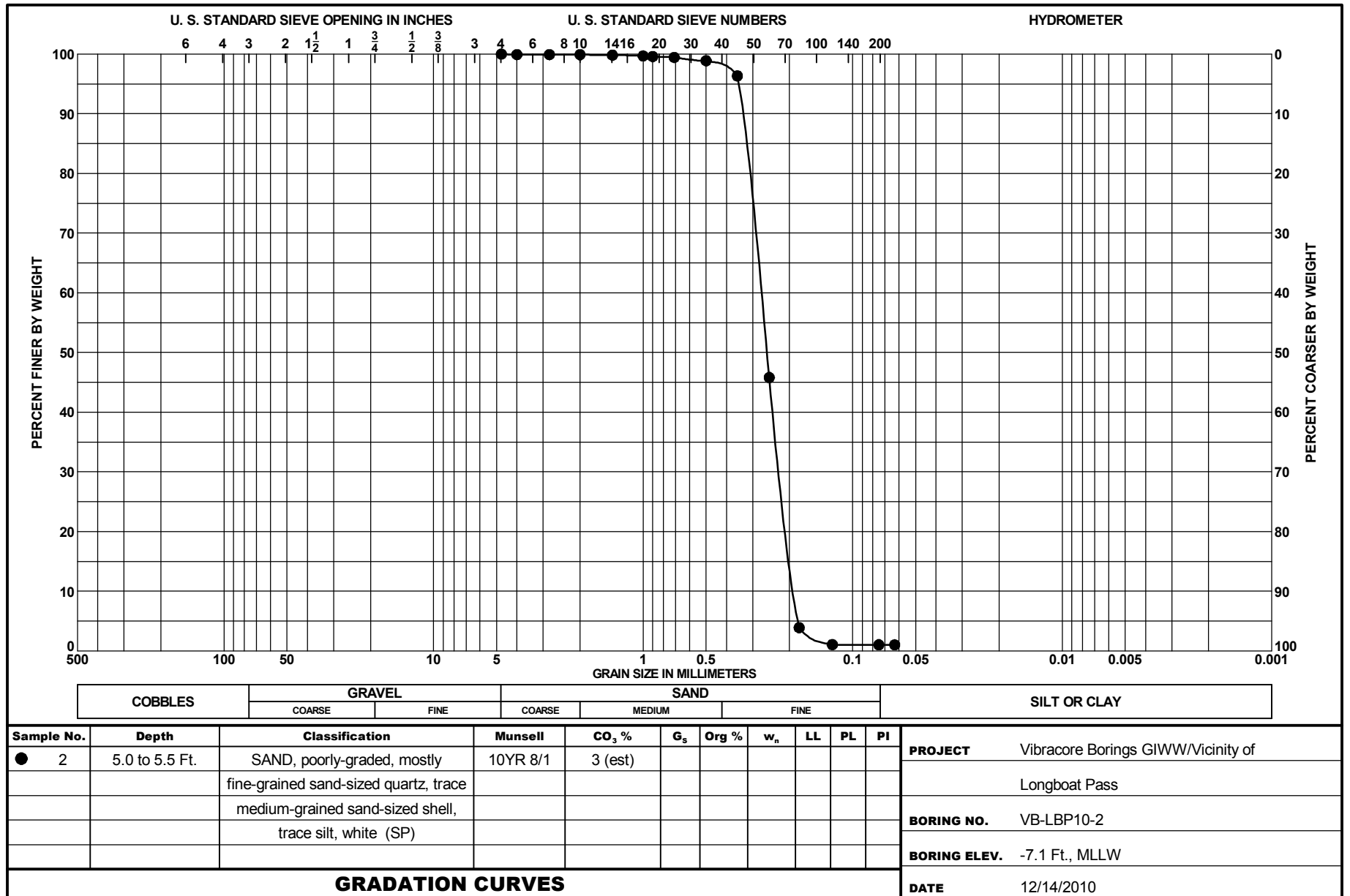


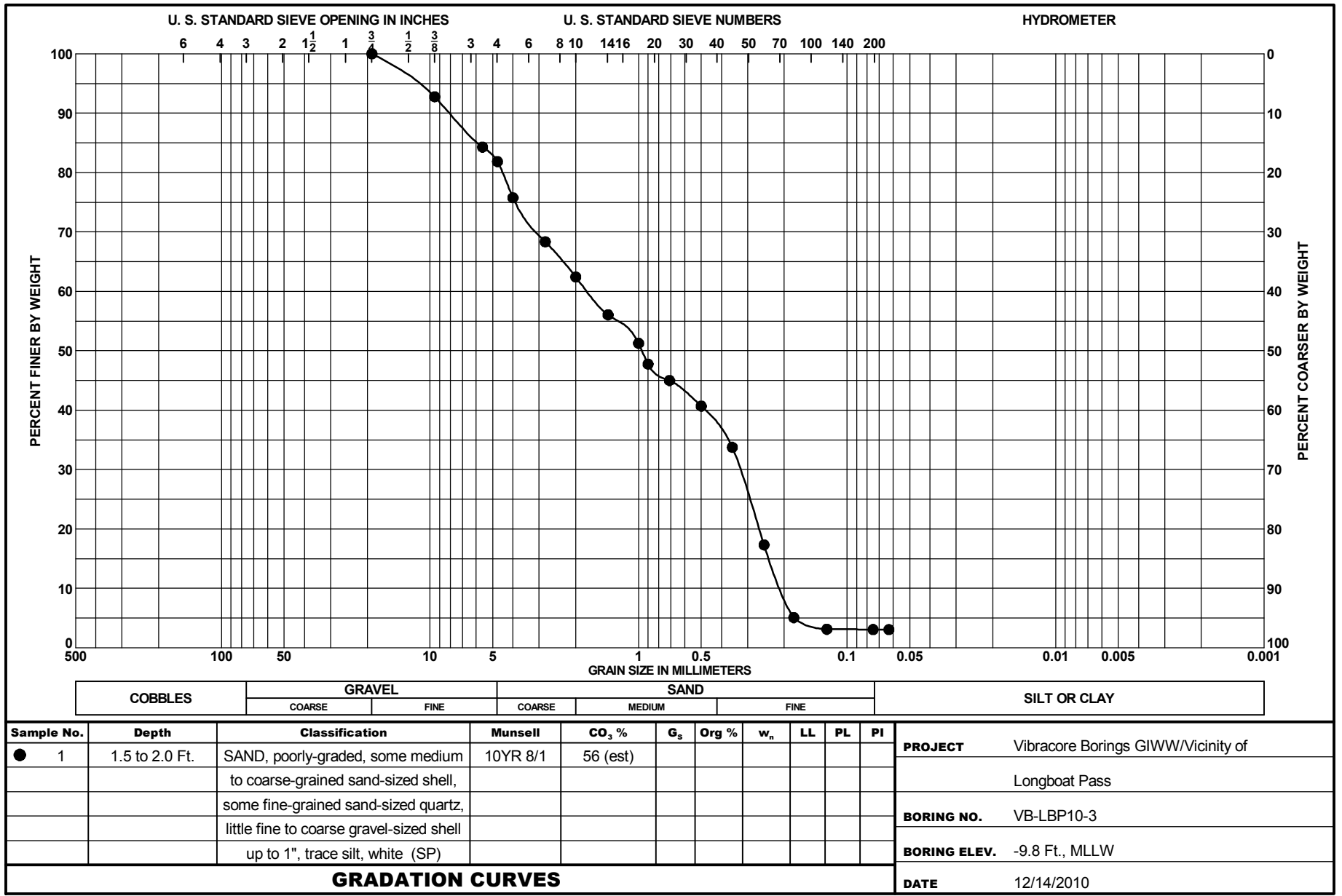


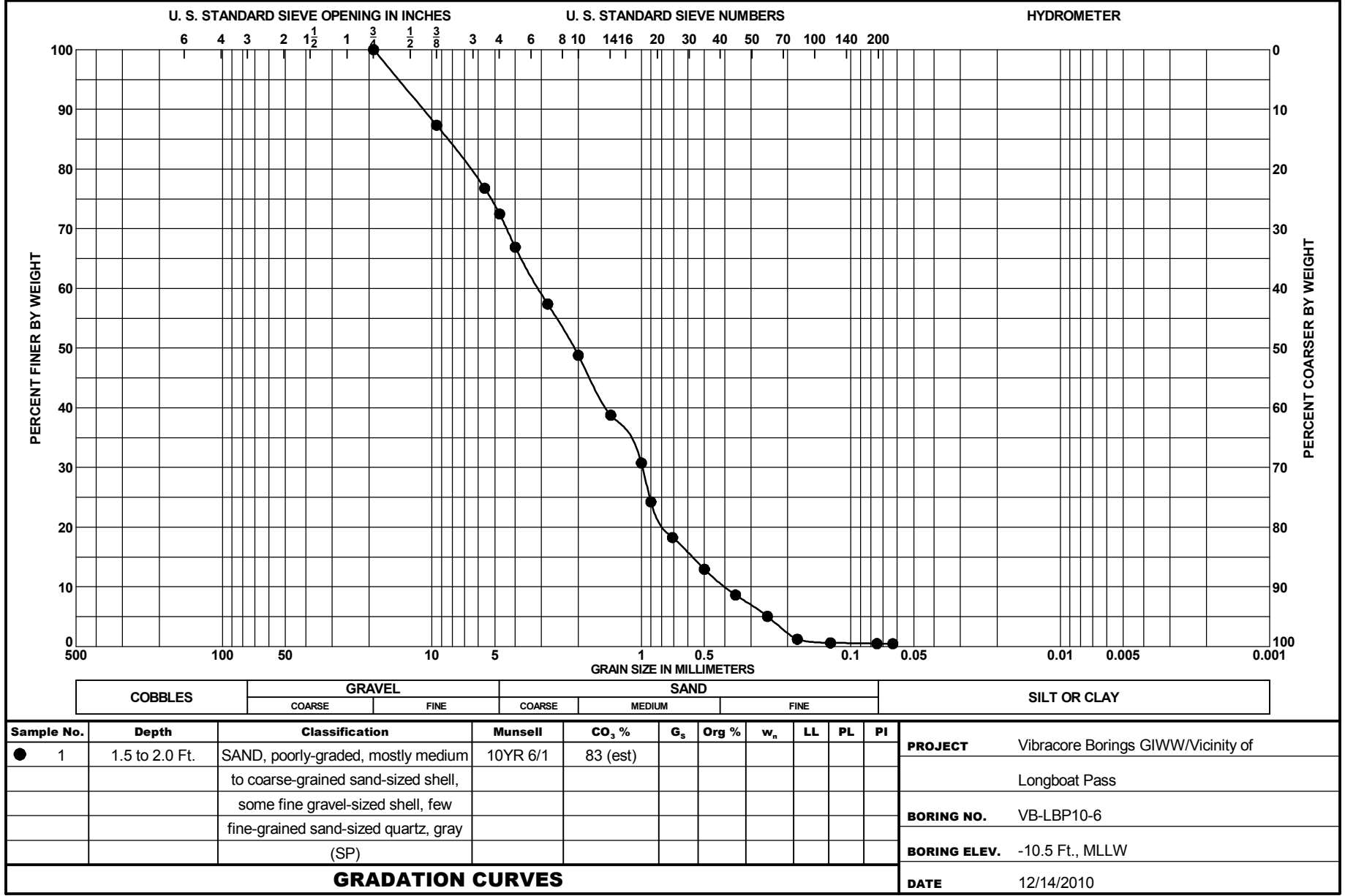
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 1	2.5 to 3.0 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace medium-grained sand-sized shell, trace silt, white (SP)	10YR 8/1	3/2 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-LBP10-2
											BORING ELEV. -7.1 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010

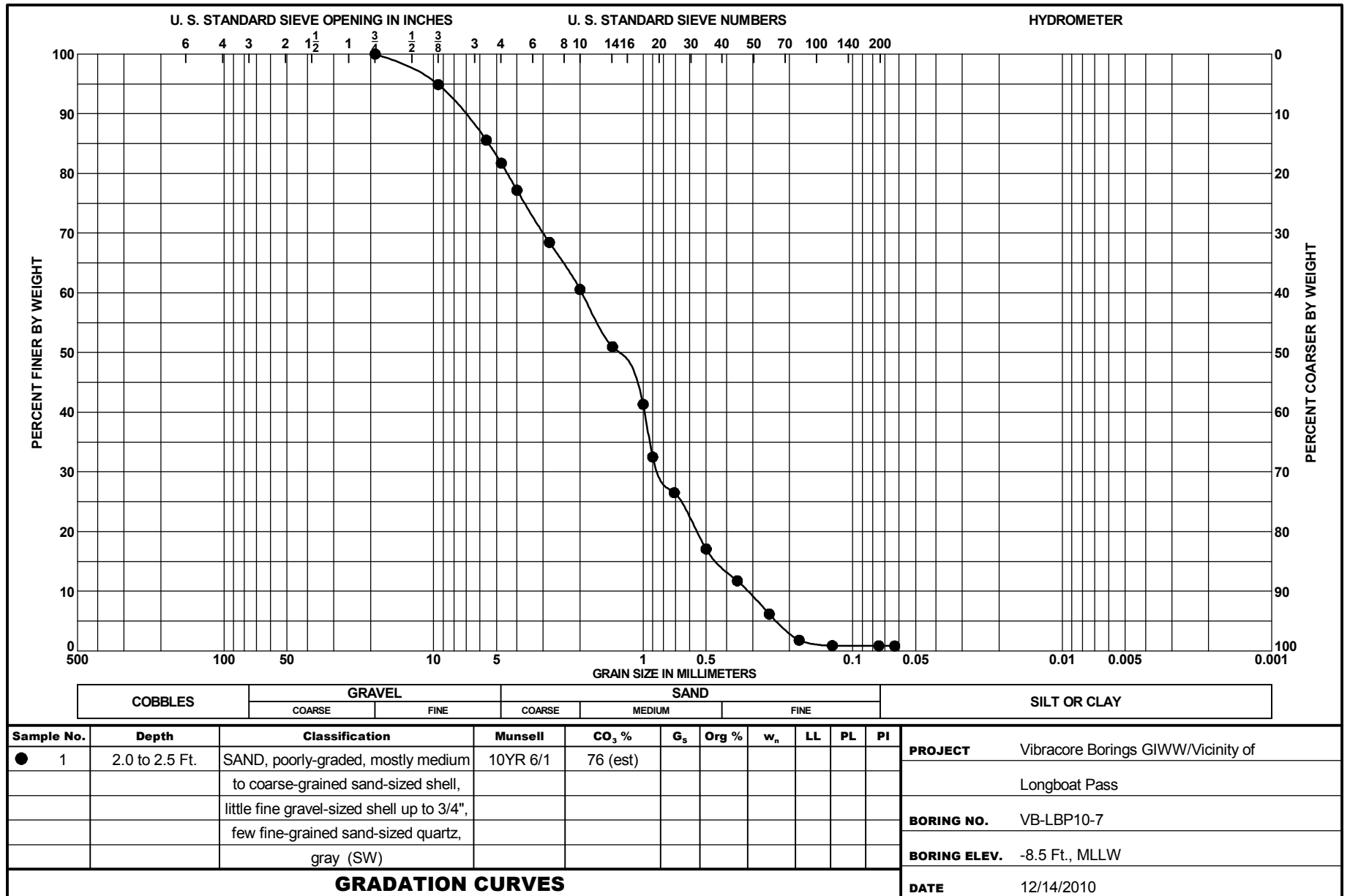


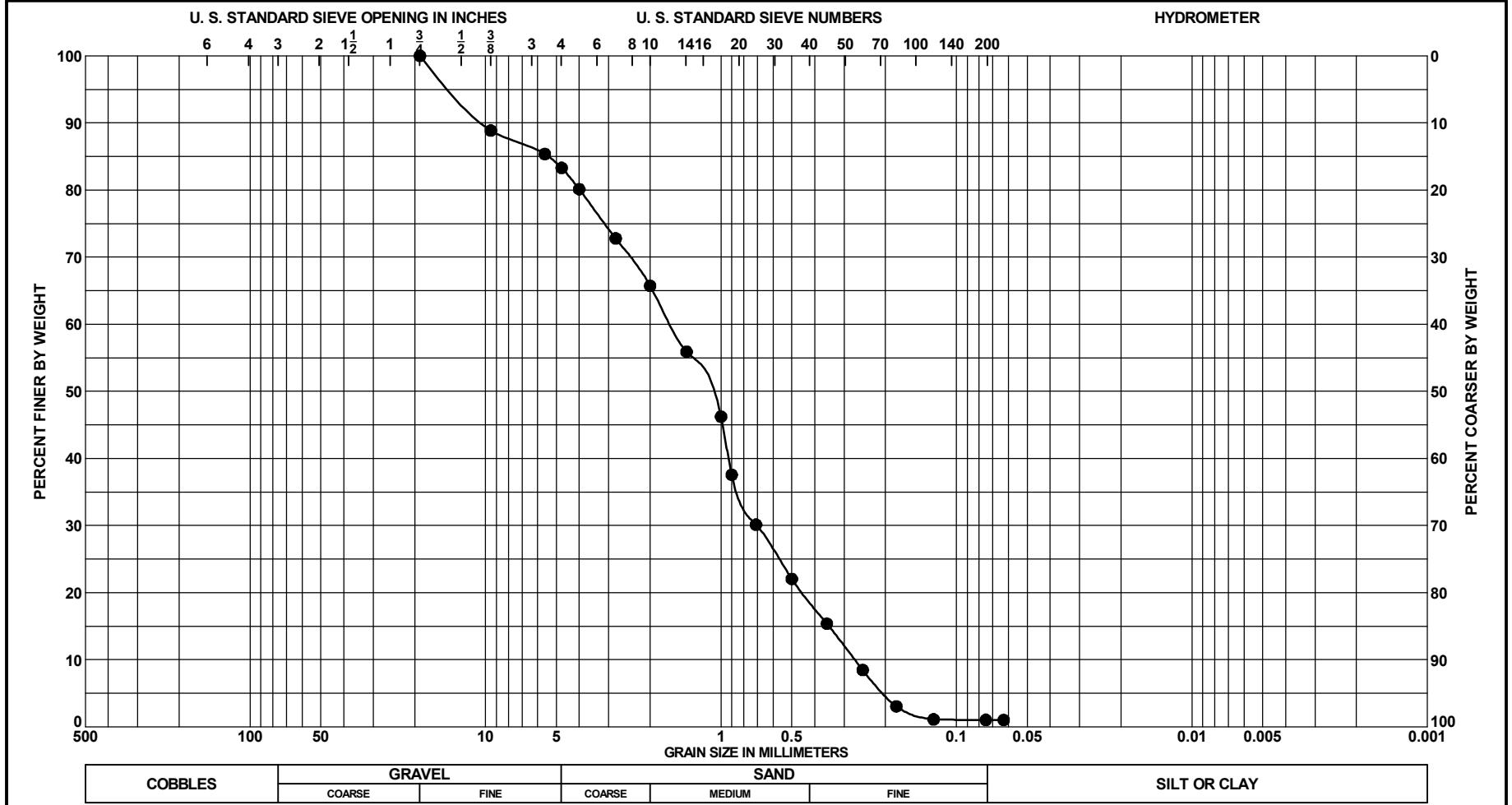
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	GRADATION CURVES	
											PROJECT	DATE
● 1-Post	2.5 to 3.0 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, white (SP)	10YR 8/1								PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO.	VB-LBP10-2
											BORING ELEV.	-7.1 Ft., MLLW
											DATE	12/15/2010





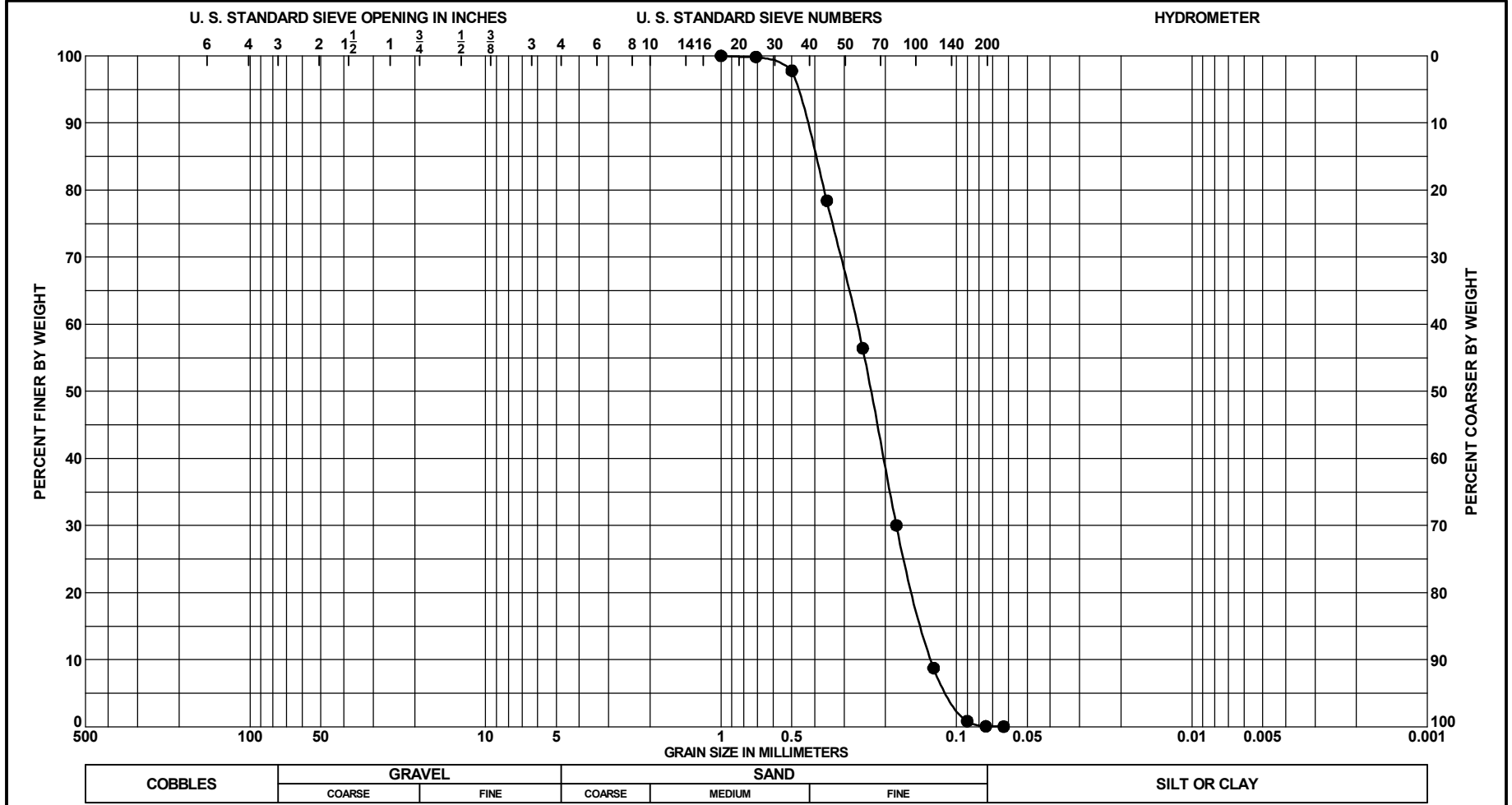




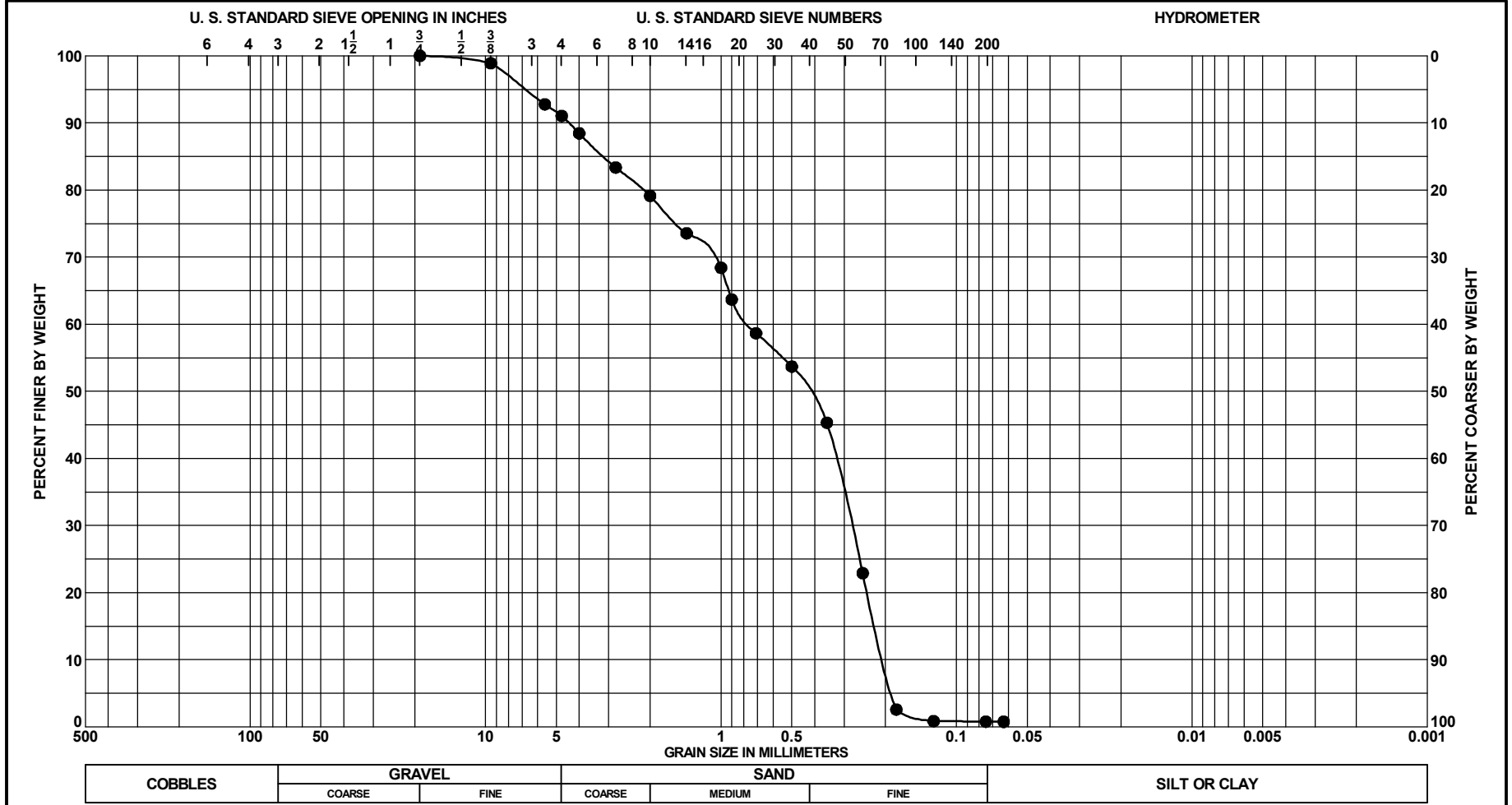


Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 2	4.0 to 4.5 Ft.	SAND, poorly-graded, mostly medium to coarse-grained sand-sized shell, little fine gravel-sized shell up to 3/4", little fine-grained sand-sized quartz, trace silt, gray (SW)	10YR 6/1	75/73 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-LBP10-7
											BORING ELEV. -8.5 Ft., MLLW
											DATE 12/14/2010

GRADATION CURVES

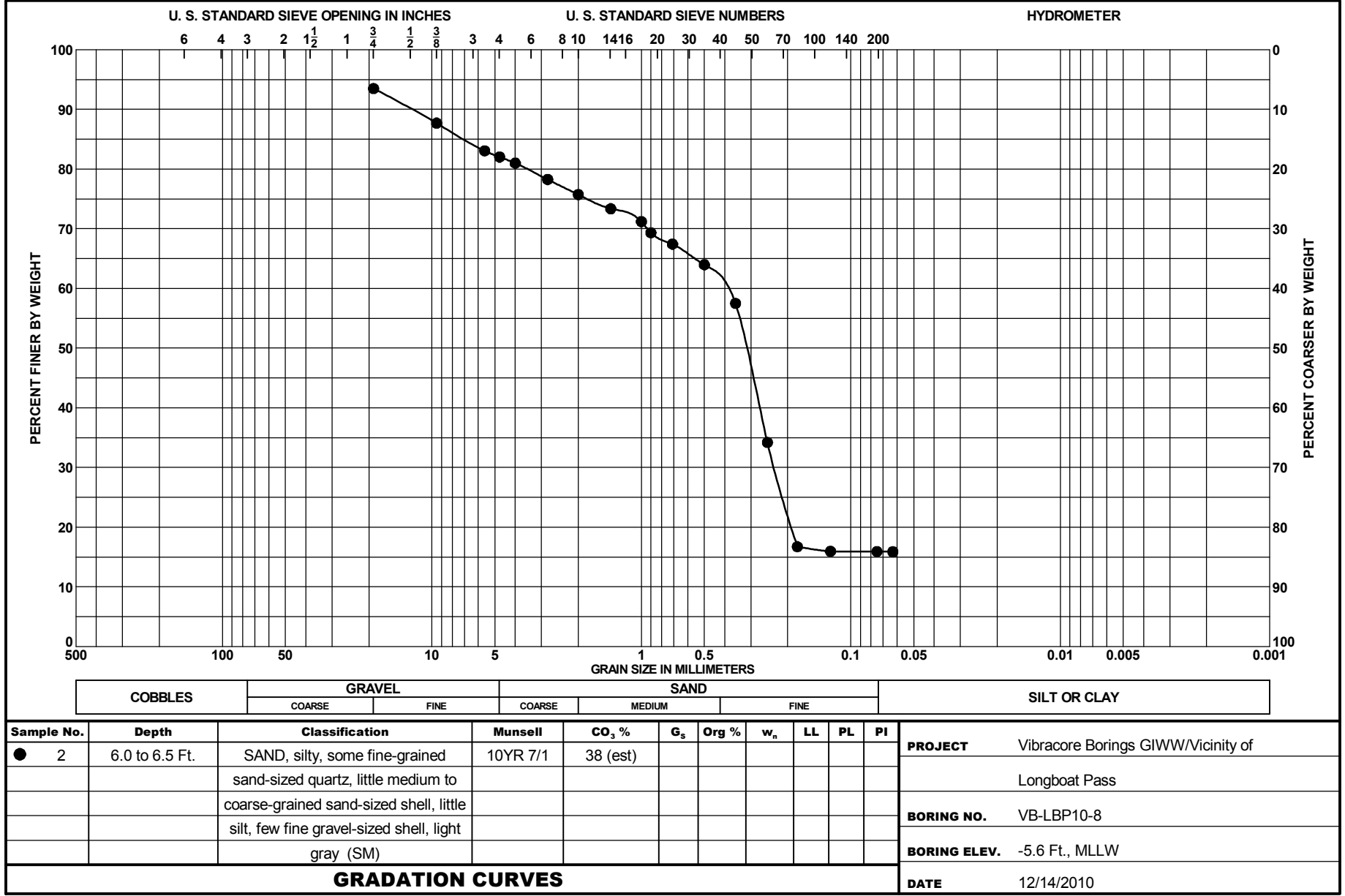


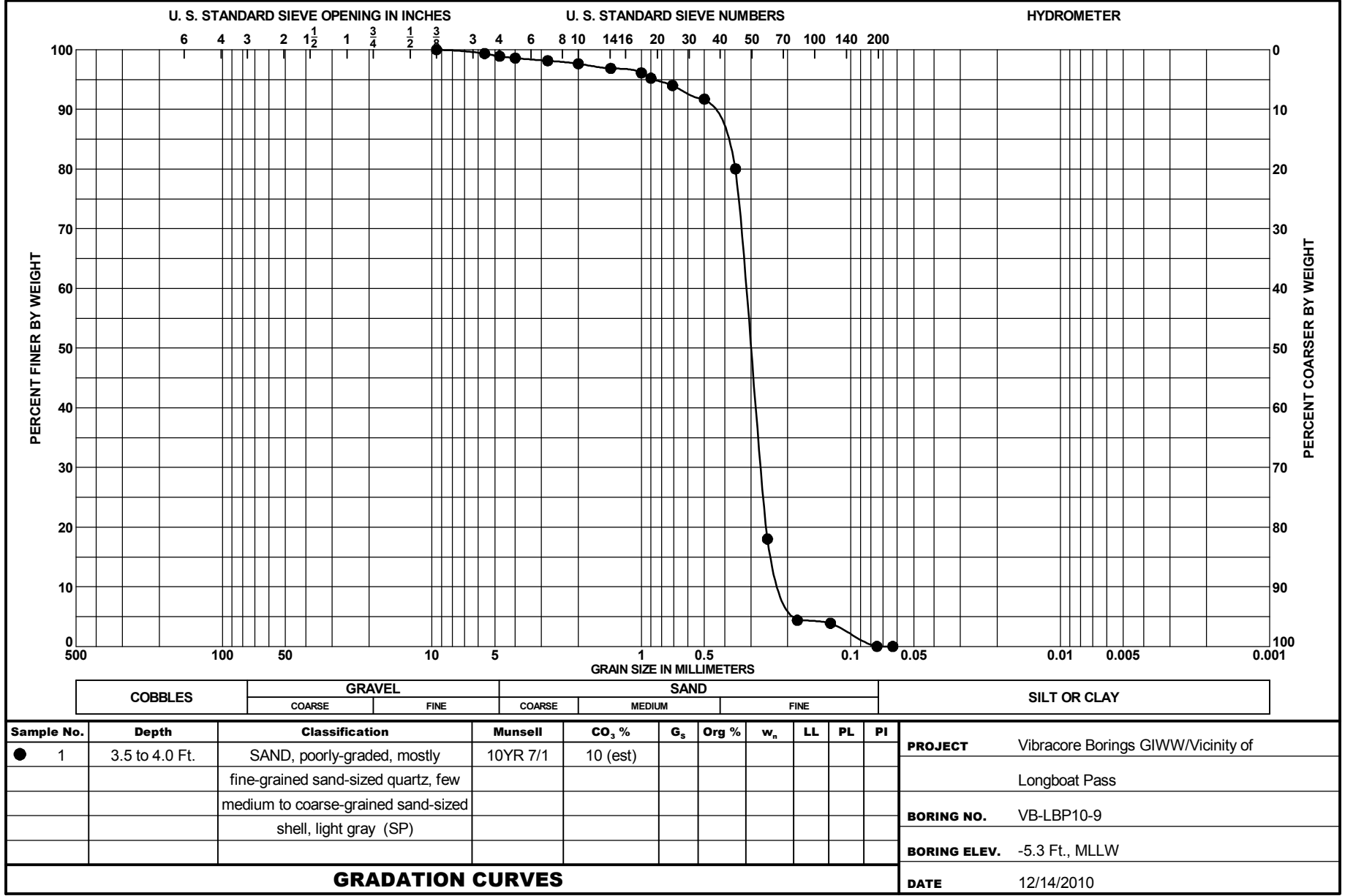
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	GRADATION CURVES	
											PROJECT	DATE
● 2-Post	4.0 to 4.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized quartz, gray (SP)	10YR 6/1								PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO.	VB-LBP10-7
											BORING ELEV.	-8.5 Ft., MLLW
											DATE	12/15/2010



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 1	3.0 to 3.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, few fine gravel-sized shell, light gray (SP)	10YR 7/1	43 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-LBP10-8
											BORING ELEV. -5.6 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010



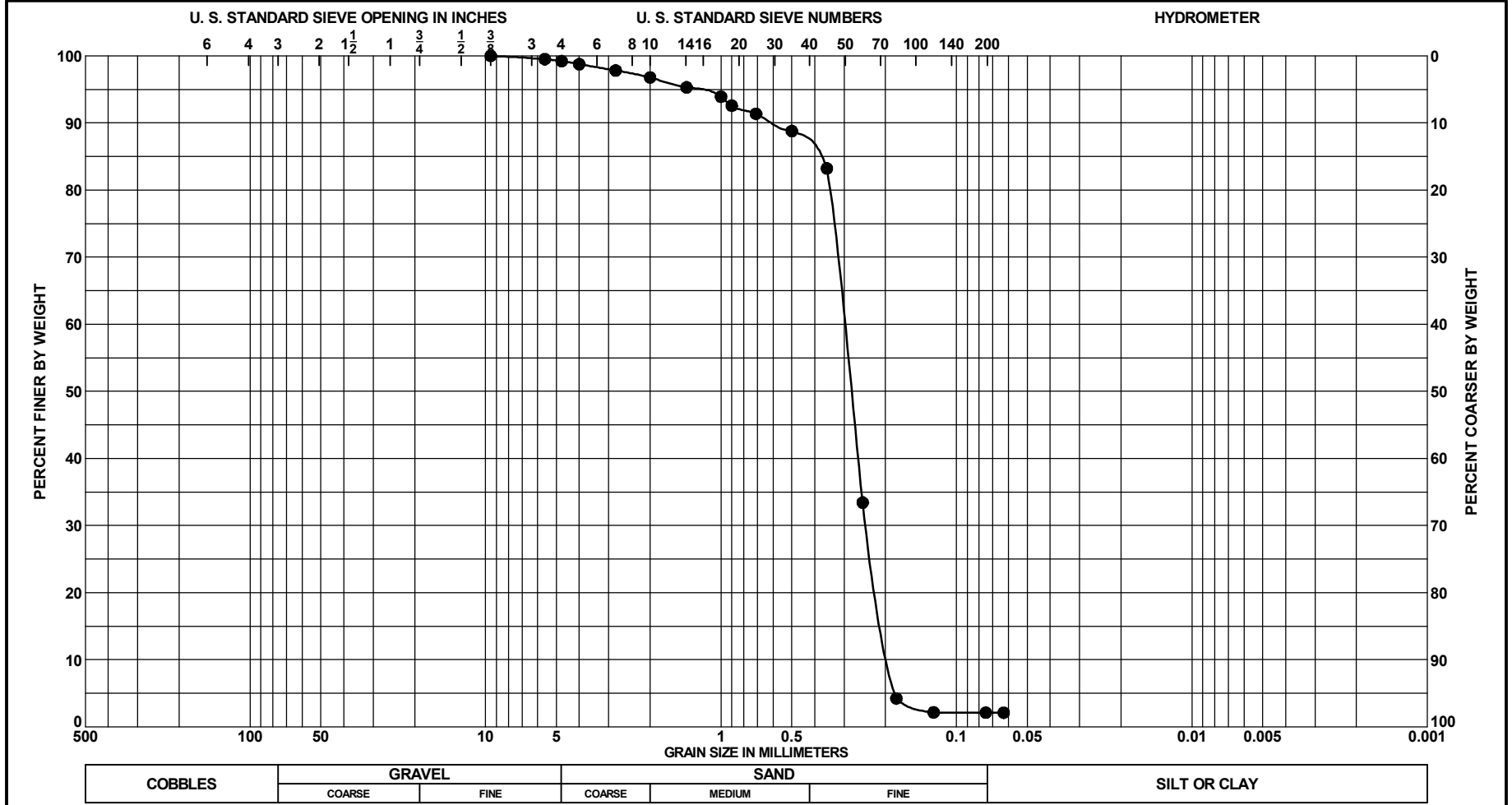


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

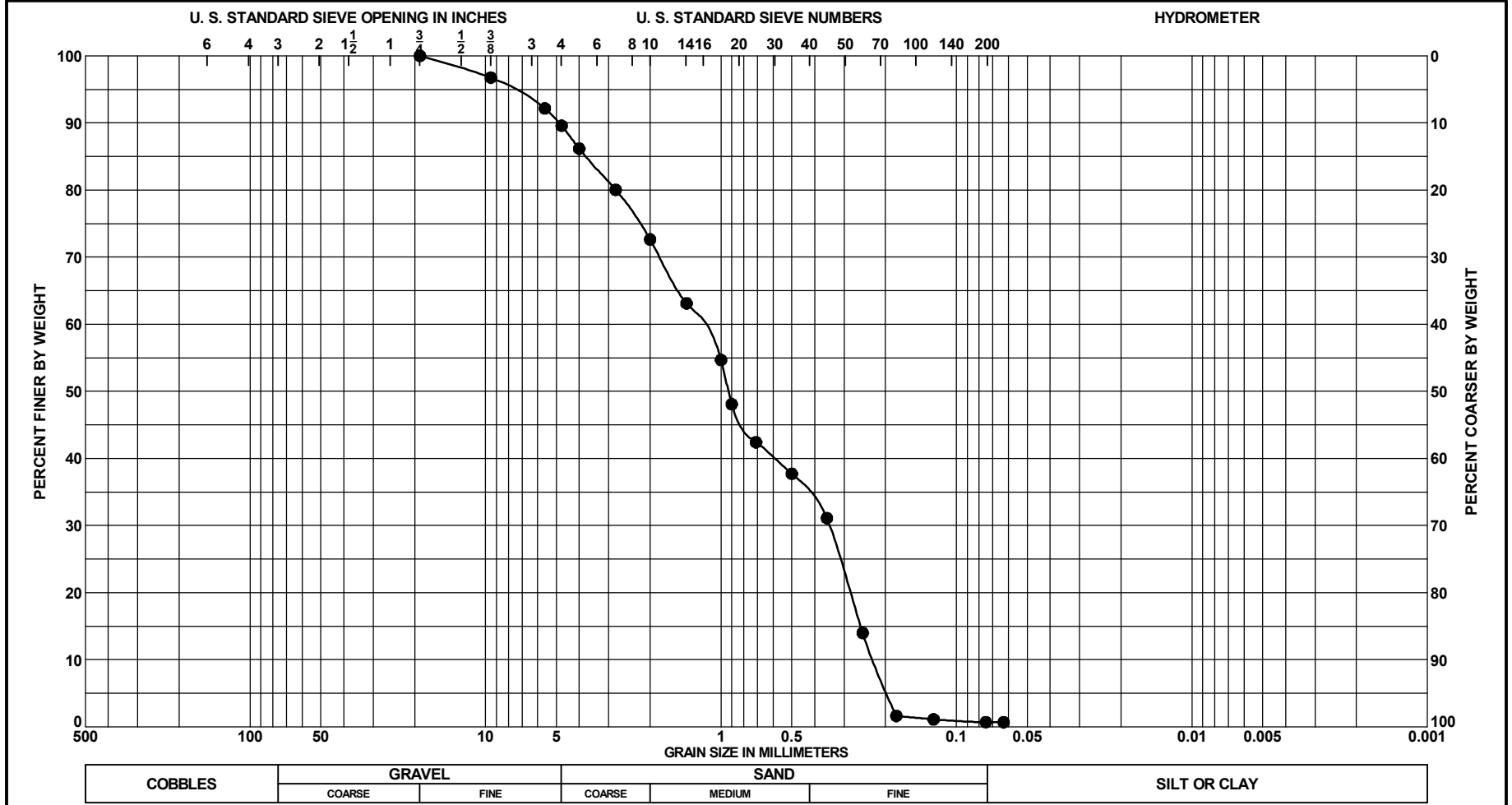
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI
● 1	3.5 to 4.0 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, light gray (SP)	10YR 7/1	10 (est)						

PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
BORING NO.	VB-LBP10-9
BORING ELEV.	-5.3 Ft., MLLW
DATE	12/14/2010

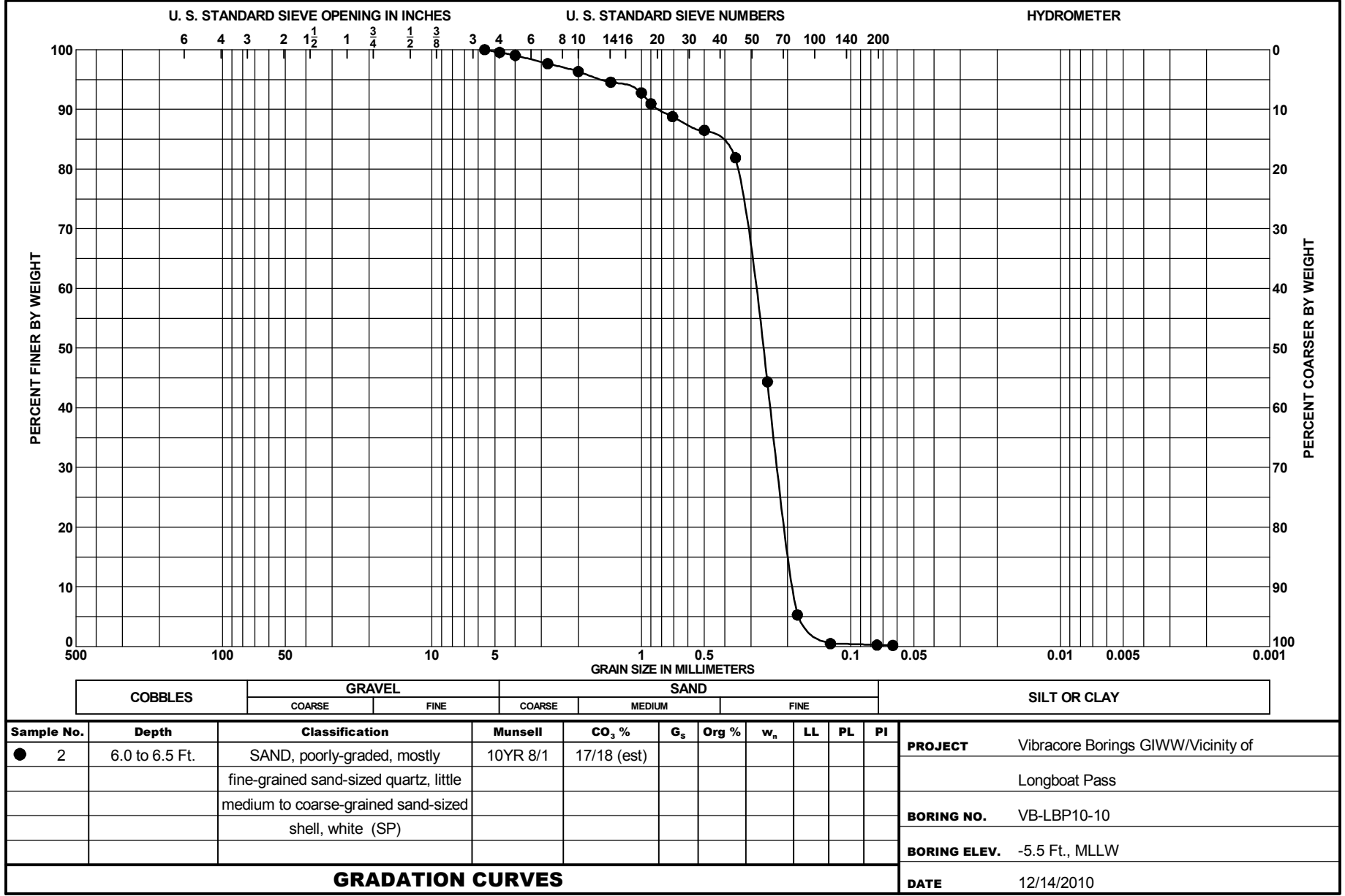
GRADATION CURVES

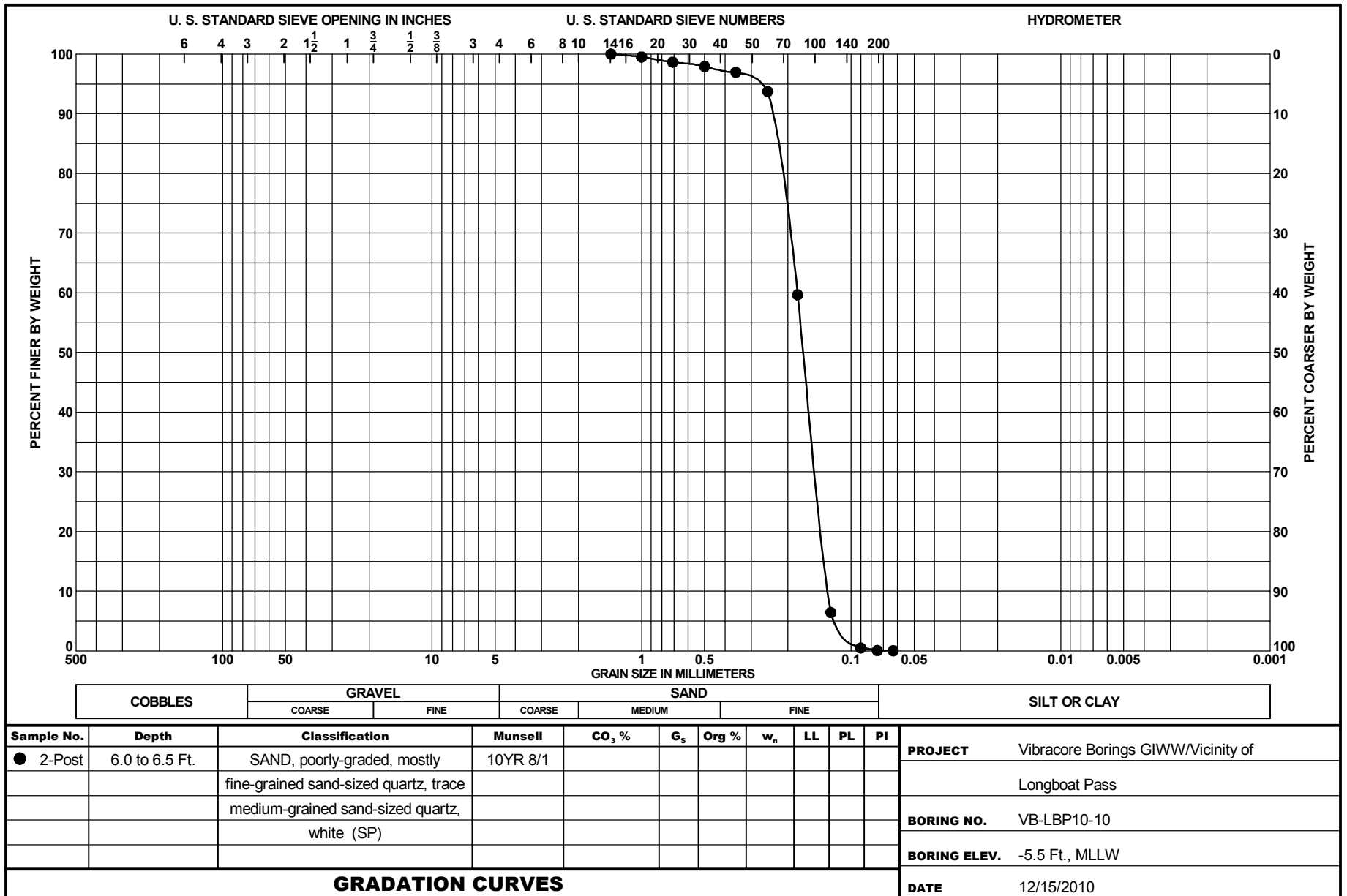


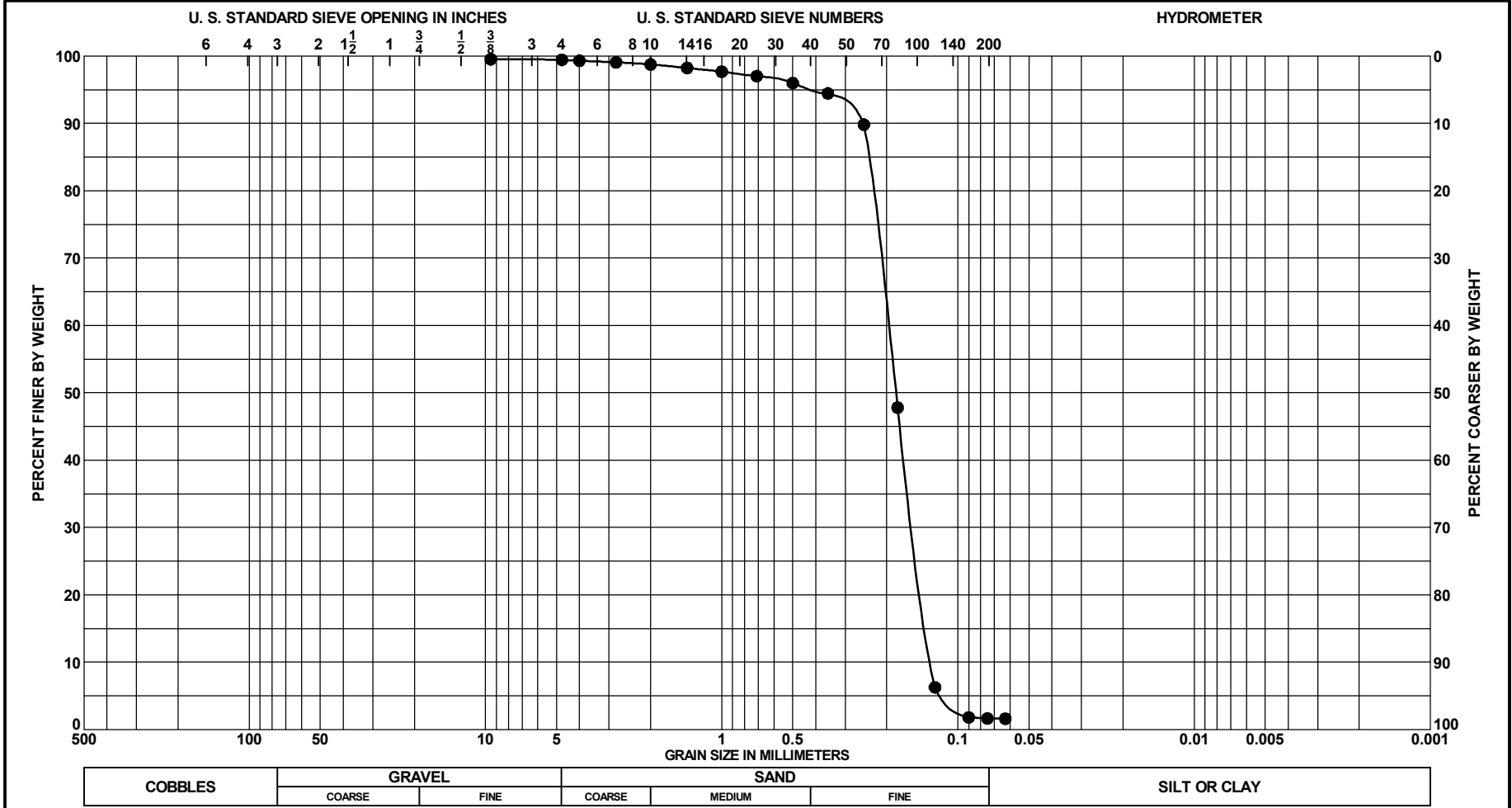
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	SOIL CLASSIFICATION	
											COBBLES	SILT OR CLAY
● 2	6.5 to 7.0 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, trace silt, light gray (SP)	10YR 7/1	11 (est)								
GRADATION CURVES											PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO.	VB-LBP10-9
											BORING ELEV.	-5.3 Ft., MLLW
											DATE	12/14/2010



Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	SOIL CLASSIFICATION	
											COBBLES	SILT OR CLAY
● 1	3.0 to 3.5 Ft.	SAND, poorly-graded, mostly medium to coarse-grained sand-sized shell, some fine-grained sand-sized quartz, few fine gravel-sized shell, white (SP)	10YR 8/1	58 (est)								
GRADATION CURVES											PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO.	VB-LBP10-10
											BORING ELEV.	-5.5 Ft., MLLW
											DATE	12/14/2010

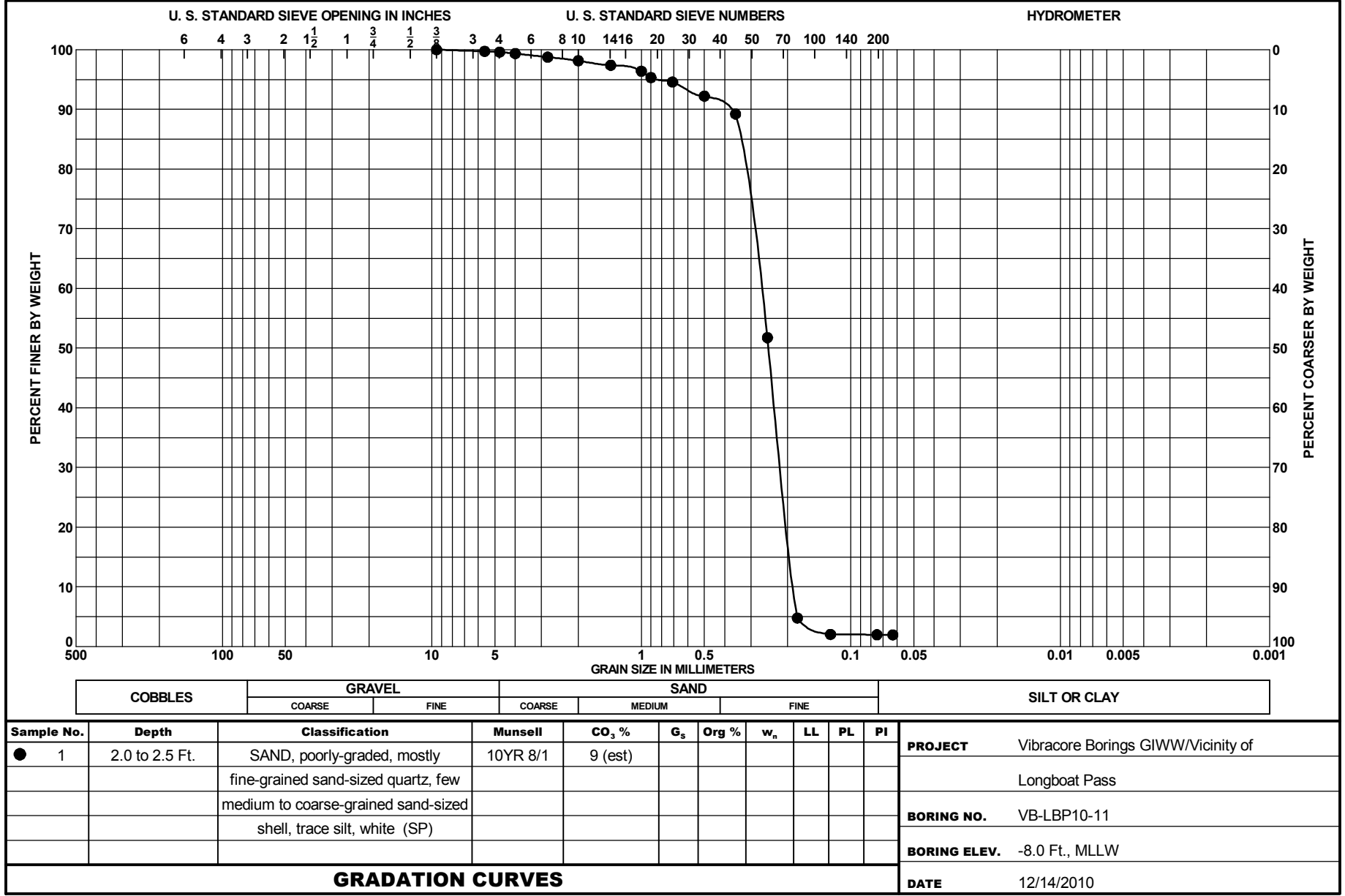


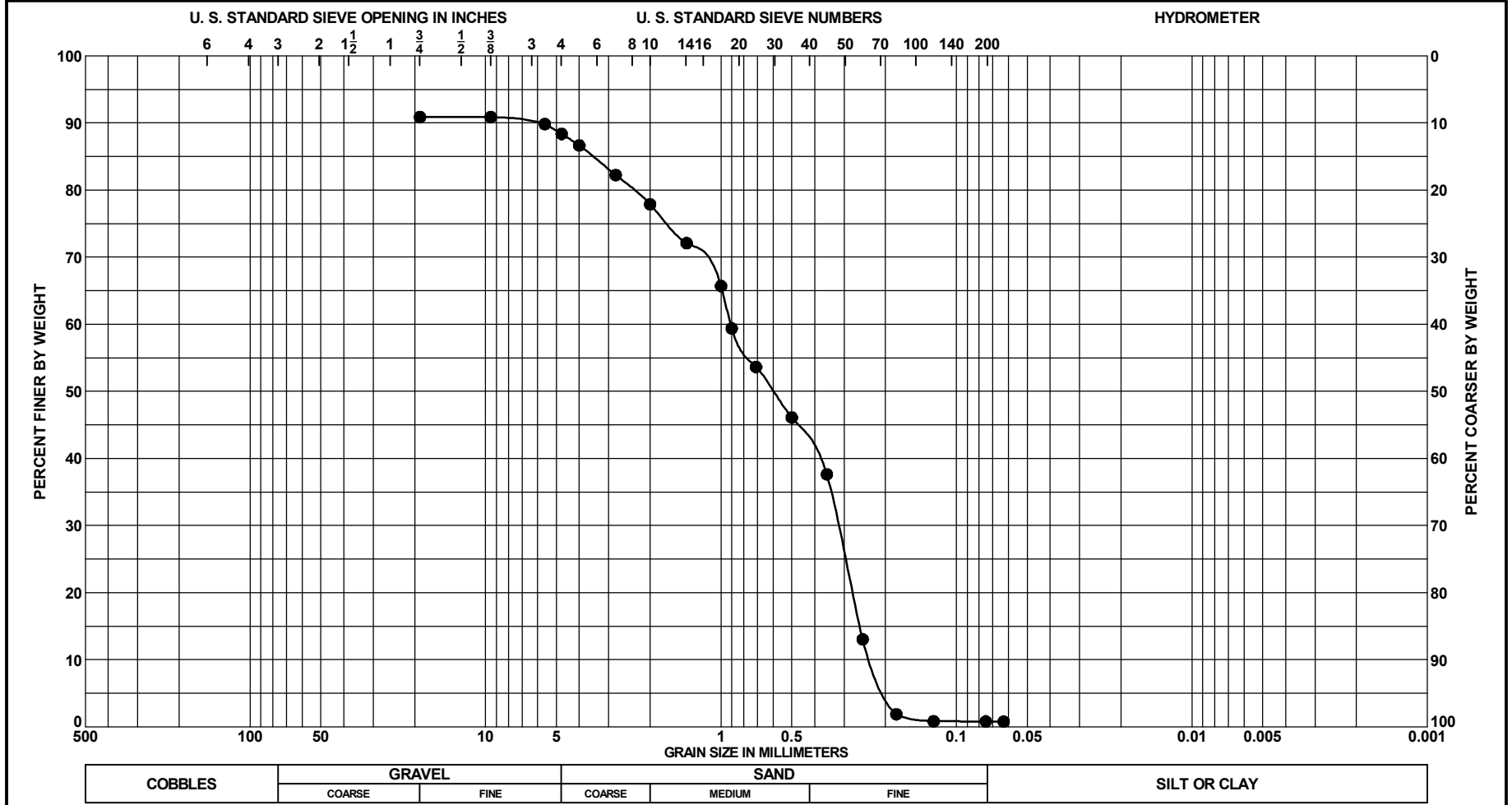




Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
3	9.0 to 9.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, trace silt, white (SP)	10YR 8/1	10 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-LBP10-10
											BORING ELEV. -5.5 Ft., MLLW
GRADATION CURVES											DATE

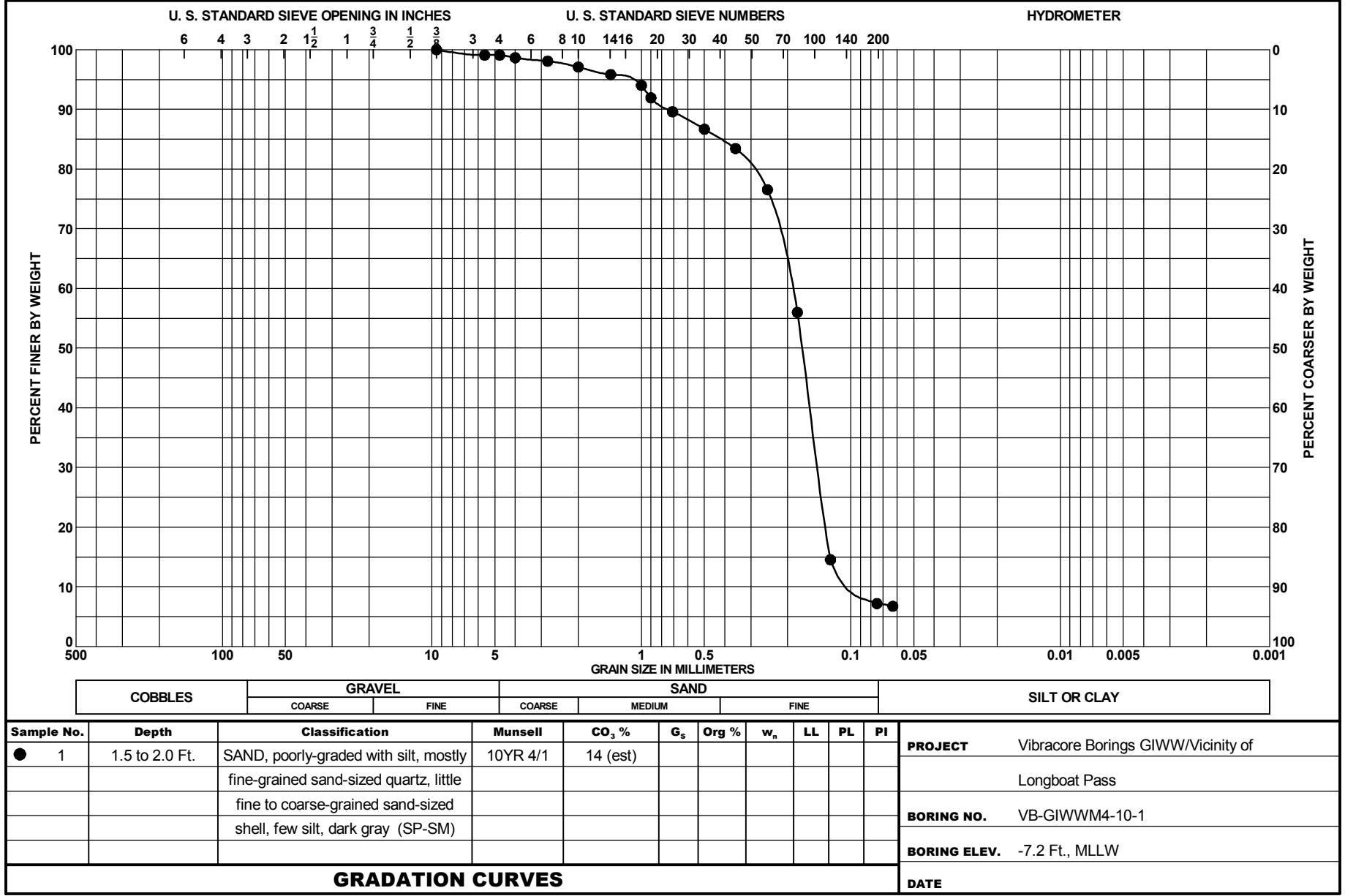
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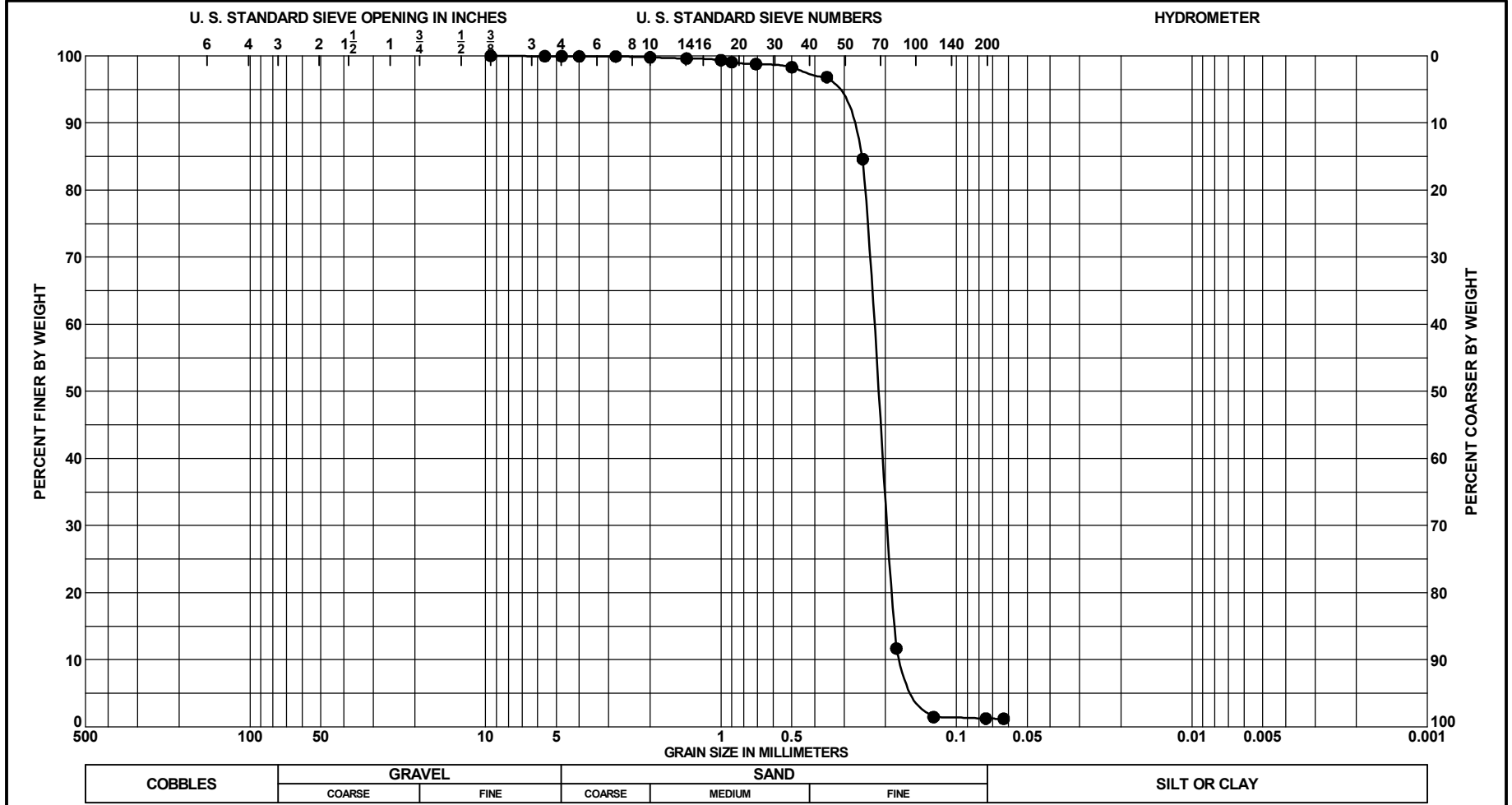




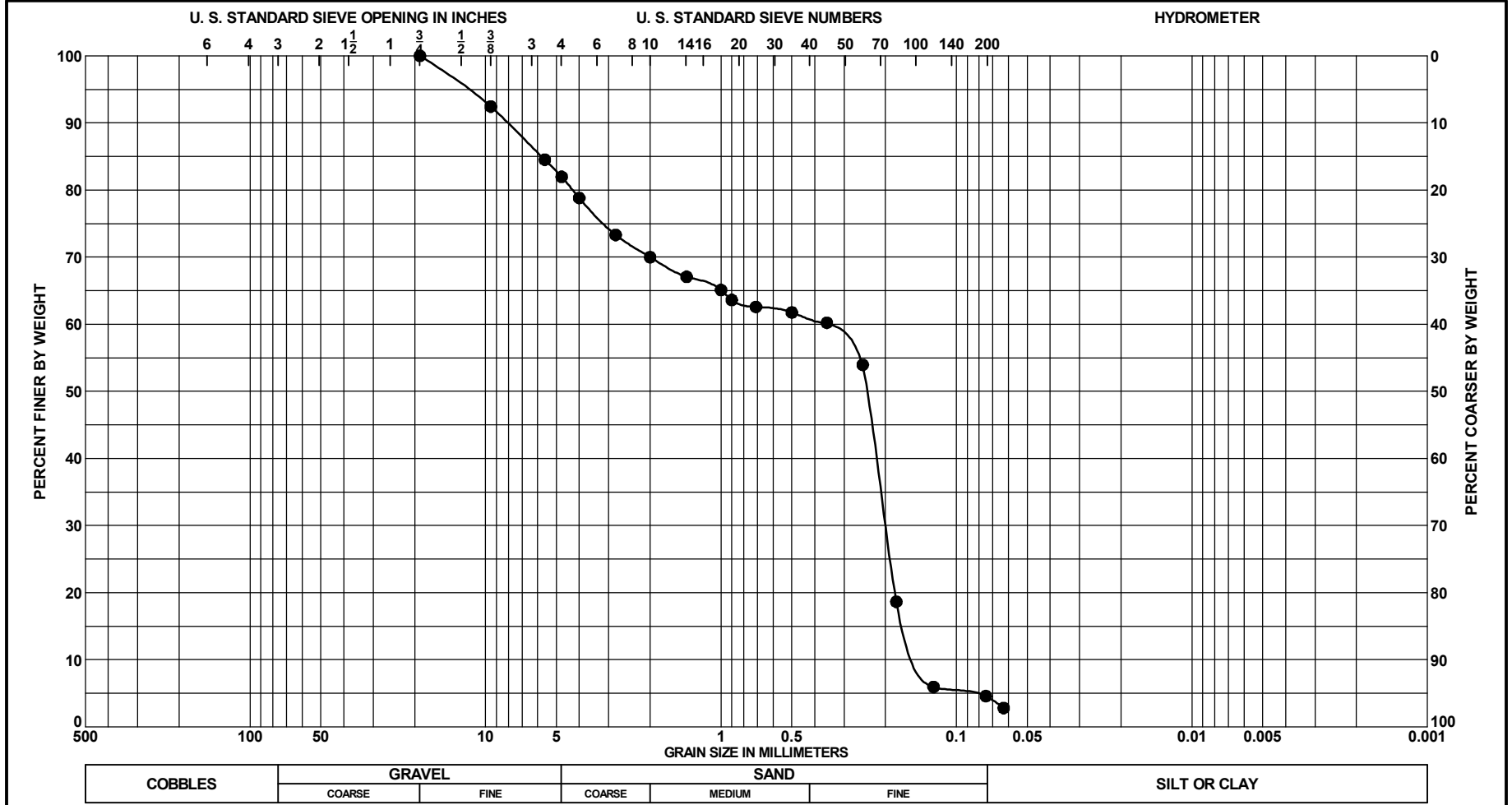
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 2	5.0 to 5.5 Ft.	SAND, poorly-graded, some medium to coarse-grained sand-sized shell, some fine-grained sand-sized quartz, few fine to coarse gravel-sized shell, white (SP)	10YR 8/1	54 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-LBP10-11
											BORING ELEV. -8.0 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010



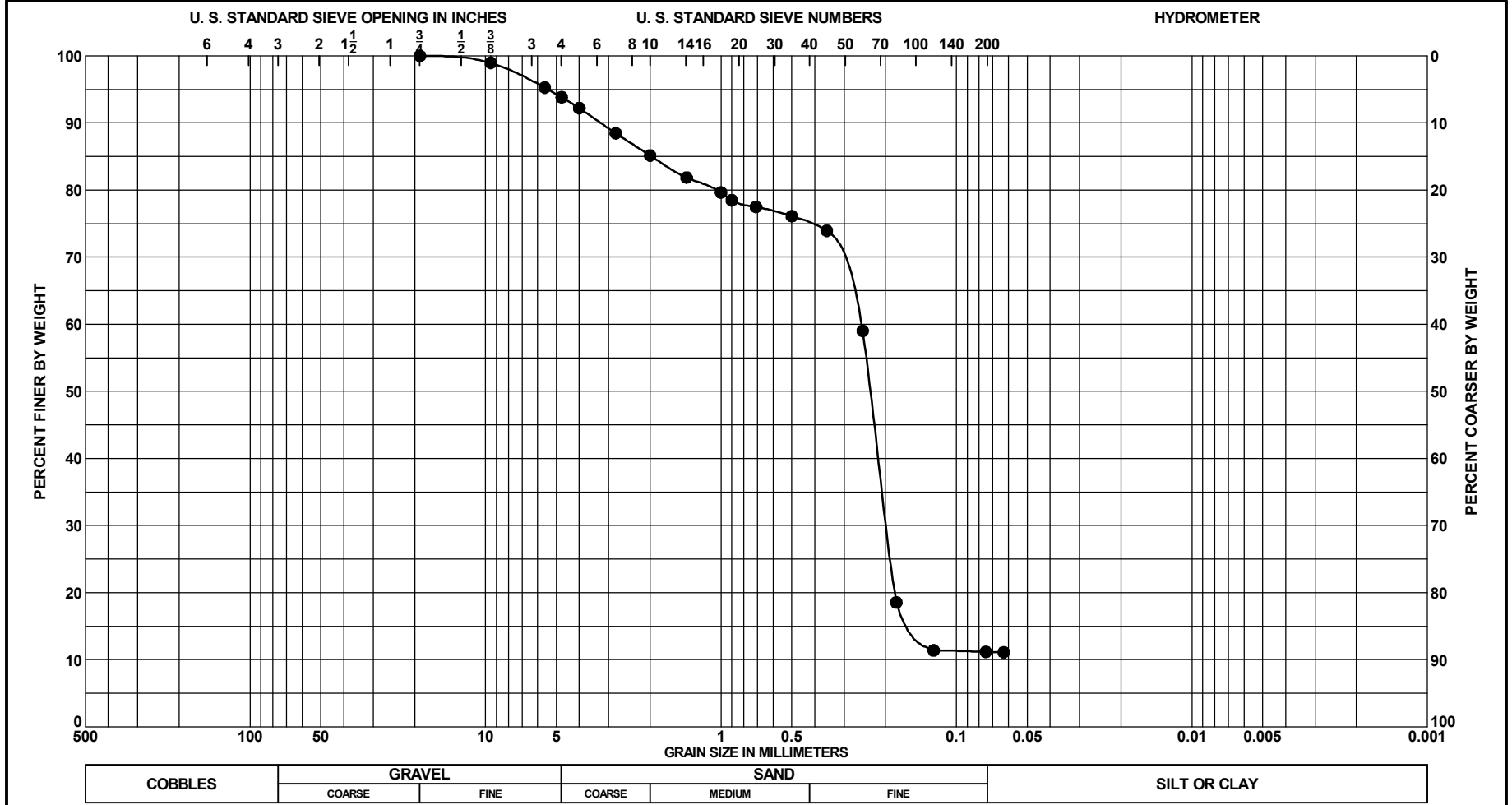


Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 1	1.5 to 2.0 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace medium-grained sand-sized shell, trace silt, light gray (SP)	10YR 7/1	3 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWWM4-10-2
											BORING ELEV. -7.0 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010

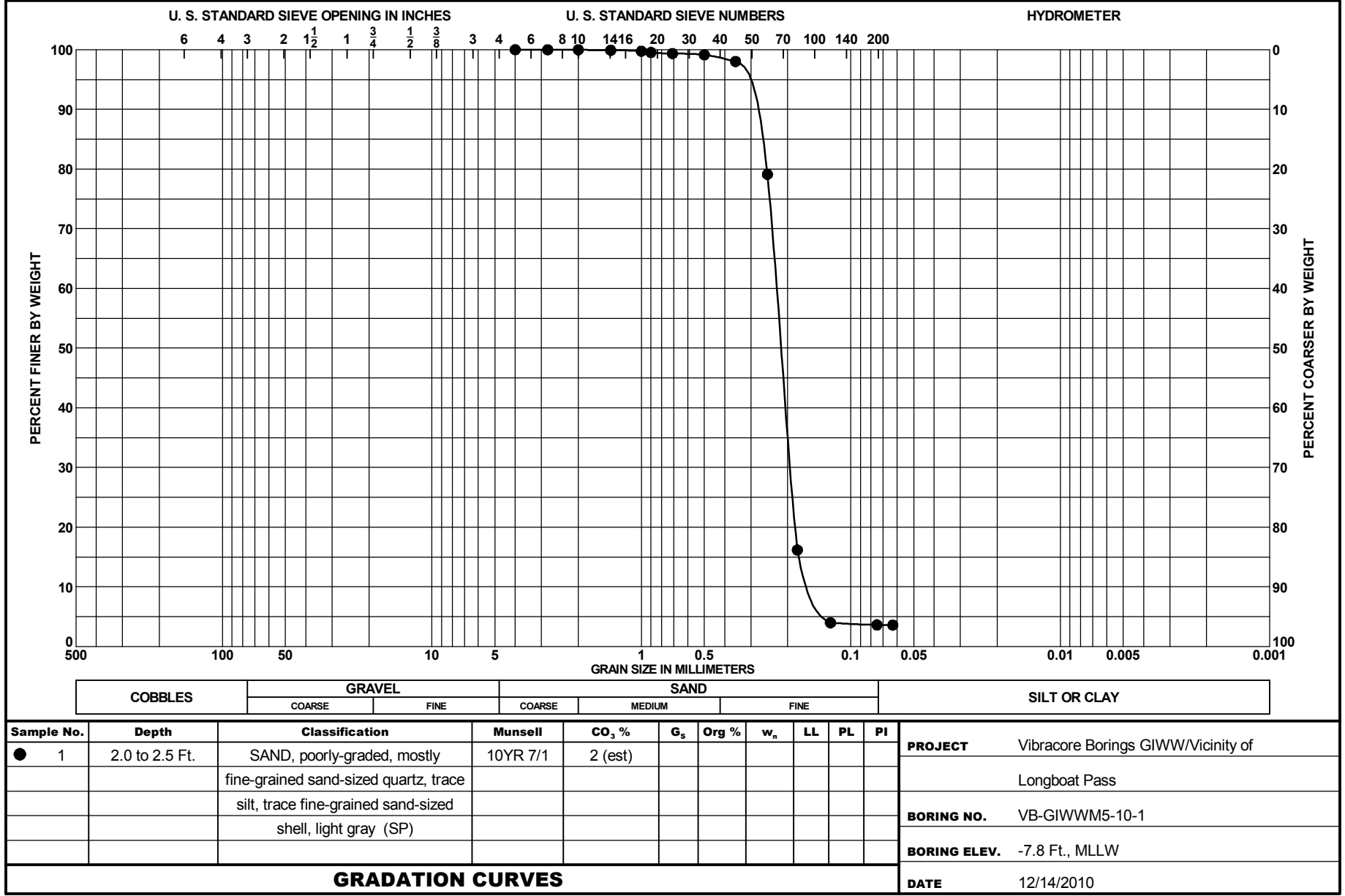


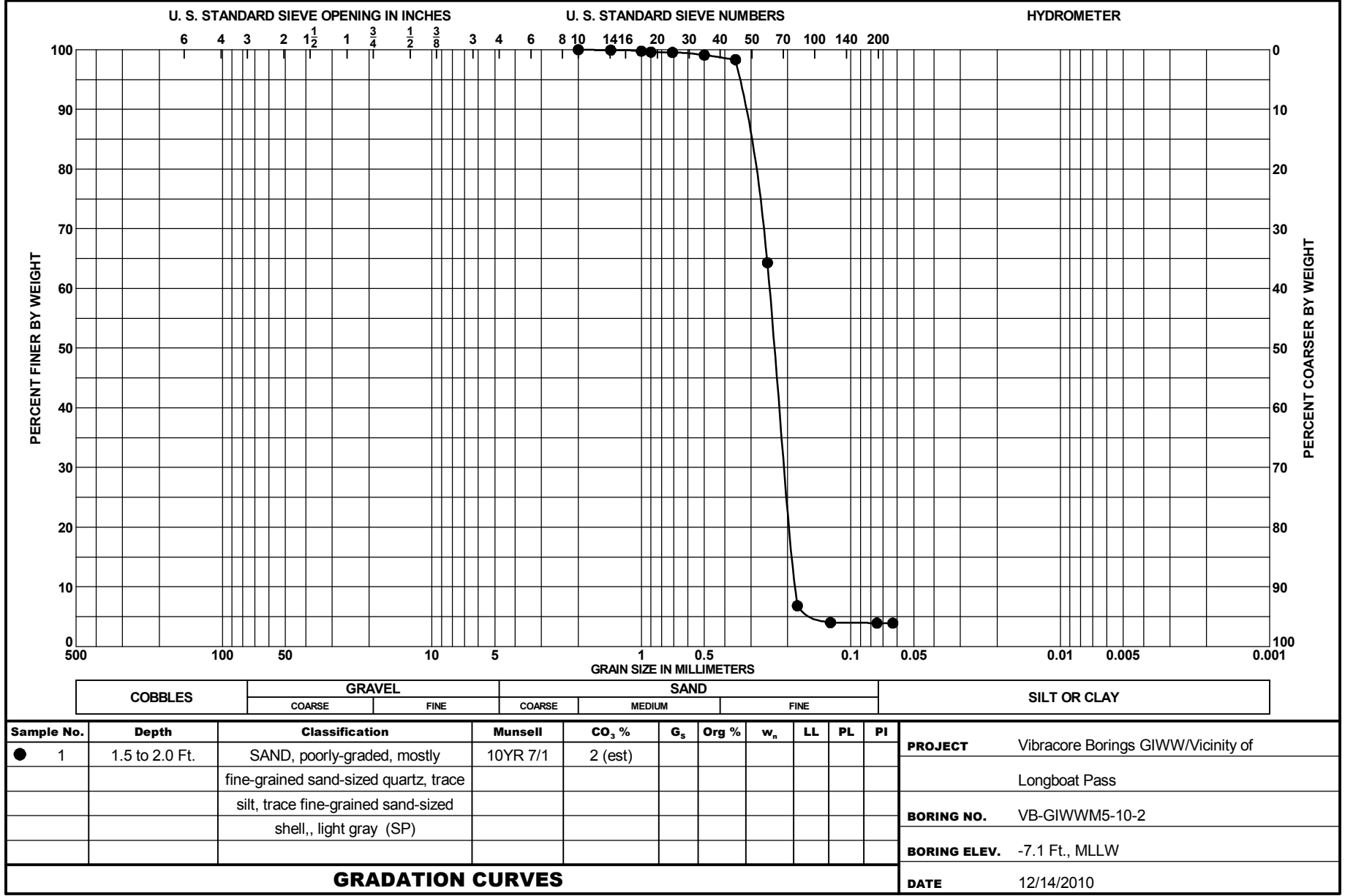
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

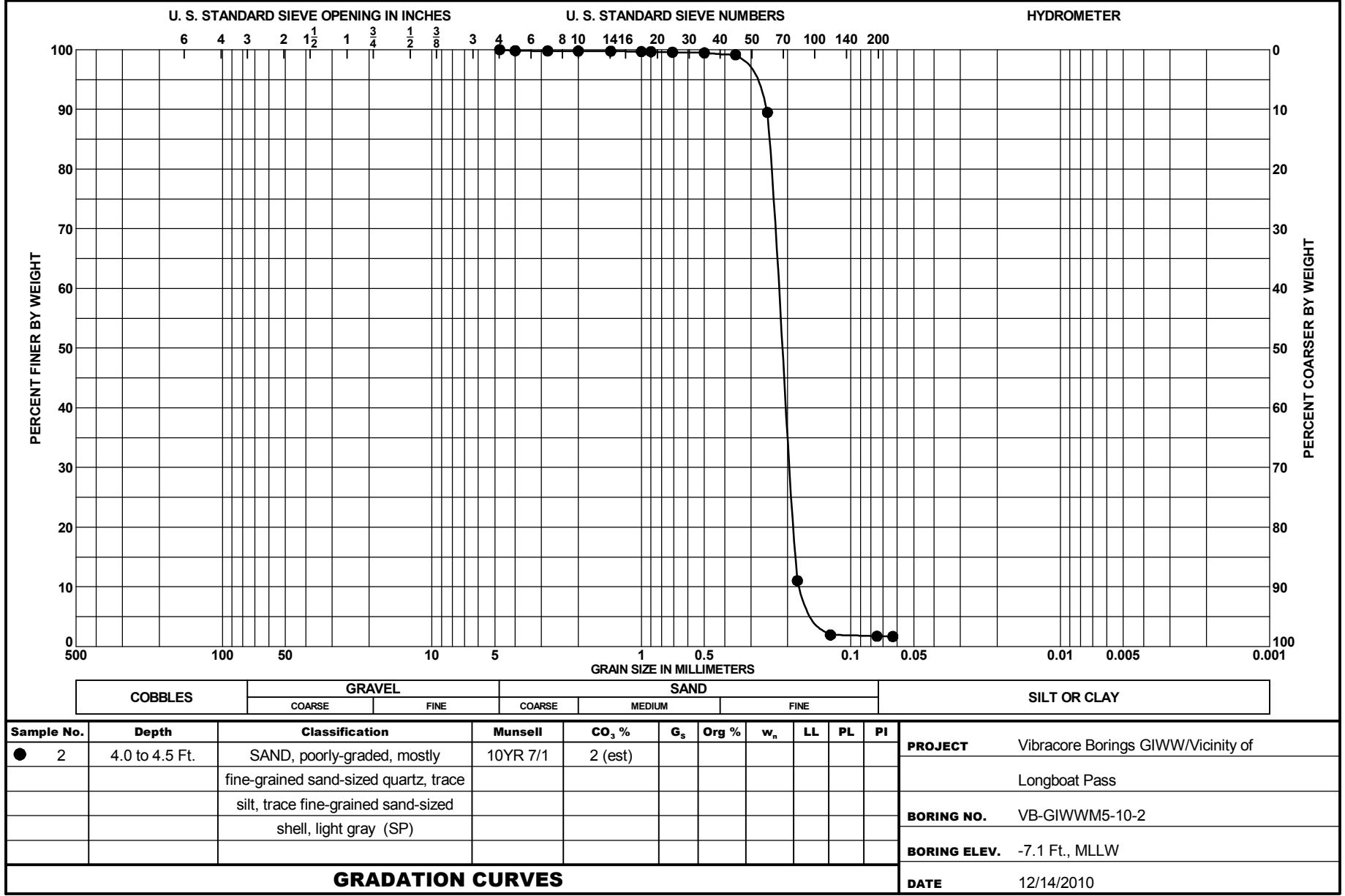
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 2	3.5 to 4.0 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, little fine gravel-sized shell, dark gray (SP)	10YR 4/1	40 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWWM4-10-2
											BORING ELEV. -7.0 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010



Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT	
											COARSE	FINE
● 1	2.0 to 2.5 Ft.	SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, few fine gravel-sized shell up to 1/2", few silt, gray (SP-SM)	10YR 5/1	24 (est)								Vibracore Borings GIWW/Vicinity of Longboat Pass
												BORING NO. VB-GIWW4-10-3
												BORING ELEV. -7.3 Ft., MLLW
GRADATION CURVES												DATE 12/14/2010

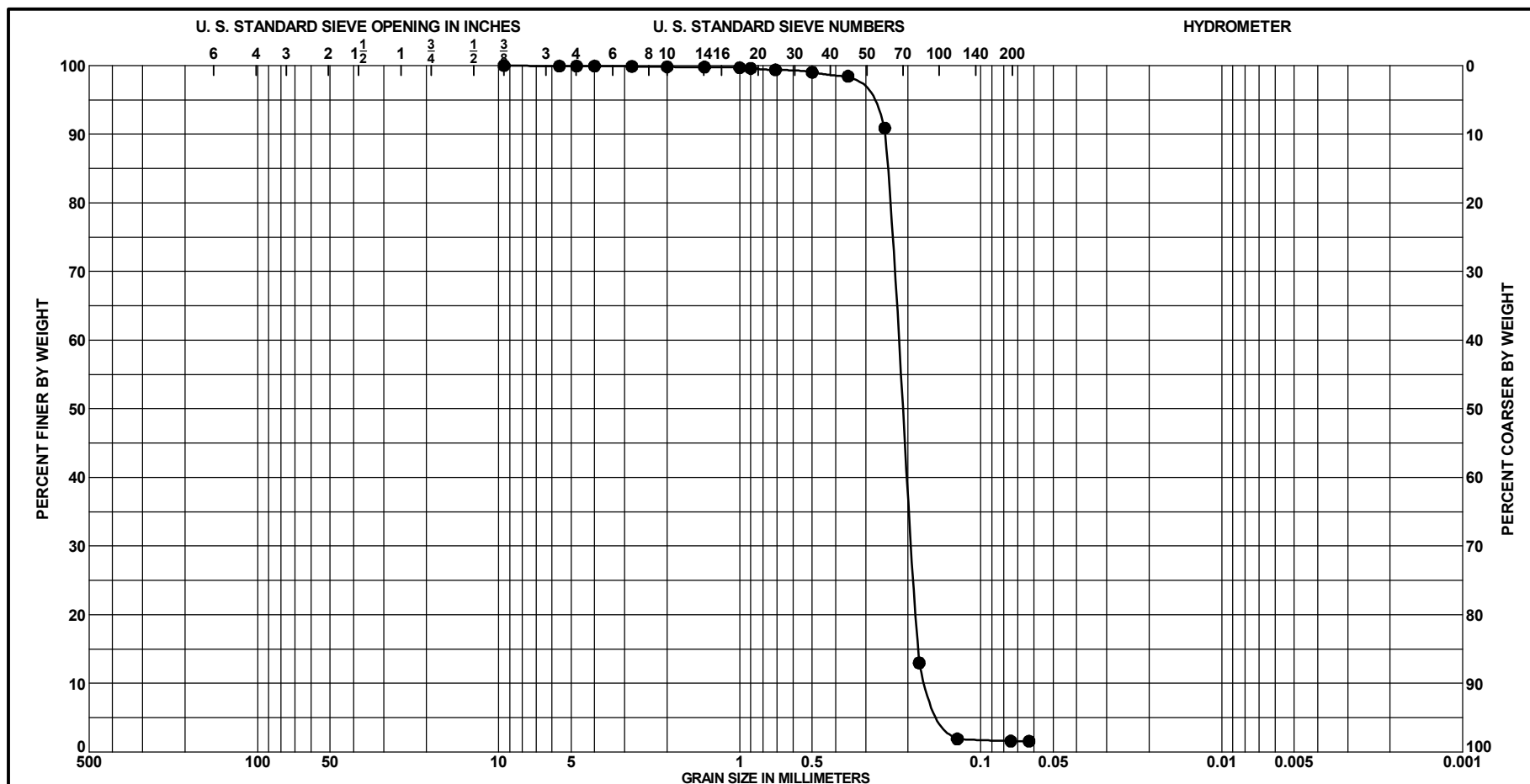






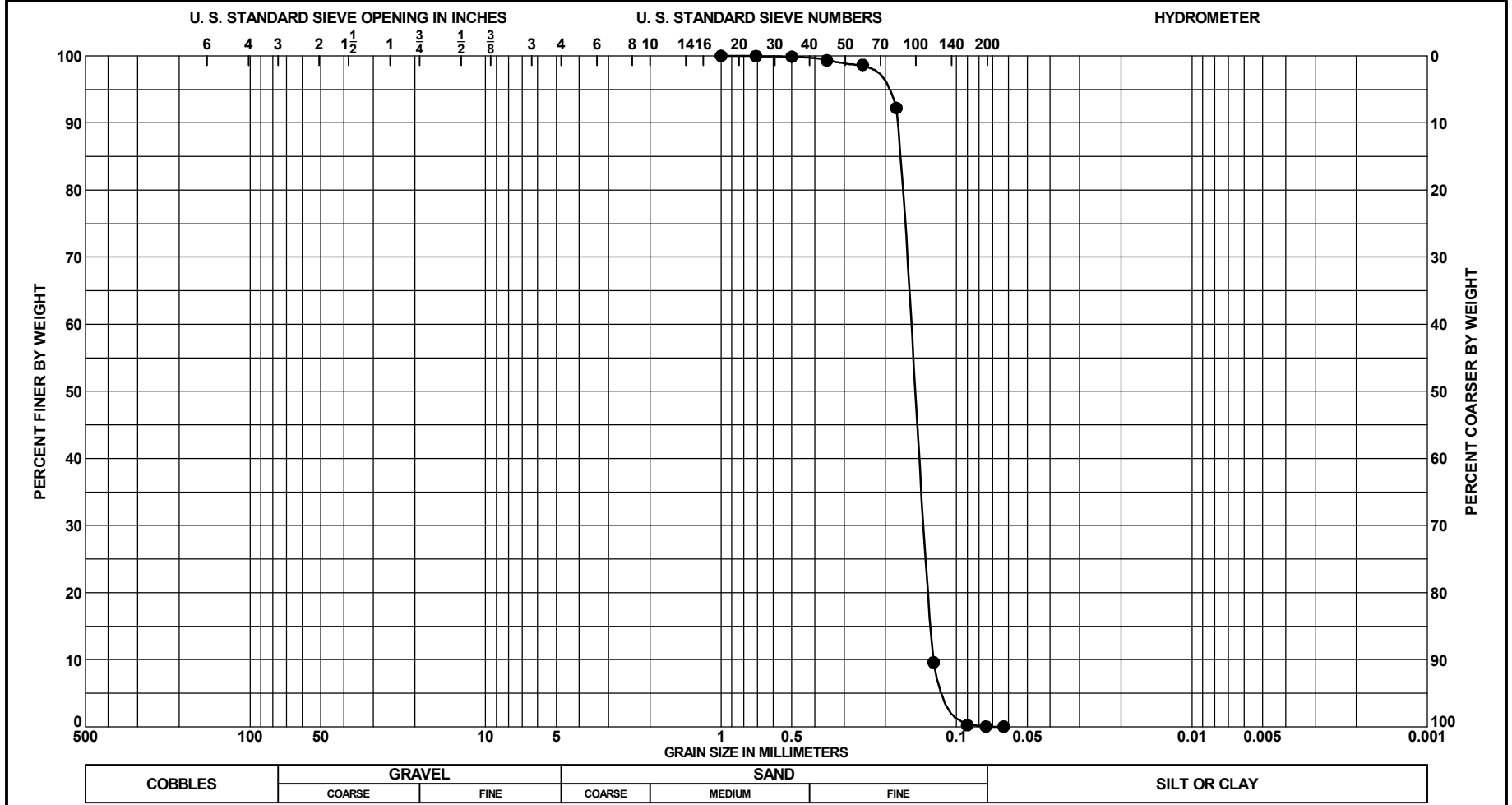
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 2	4.0 to 4.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace fine-grained sand-sized shell, light gray (SP)	10YR 7/1	2 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWWM5-10-2
											BORING ELEV. -7.1 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010



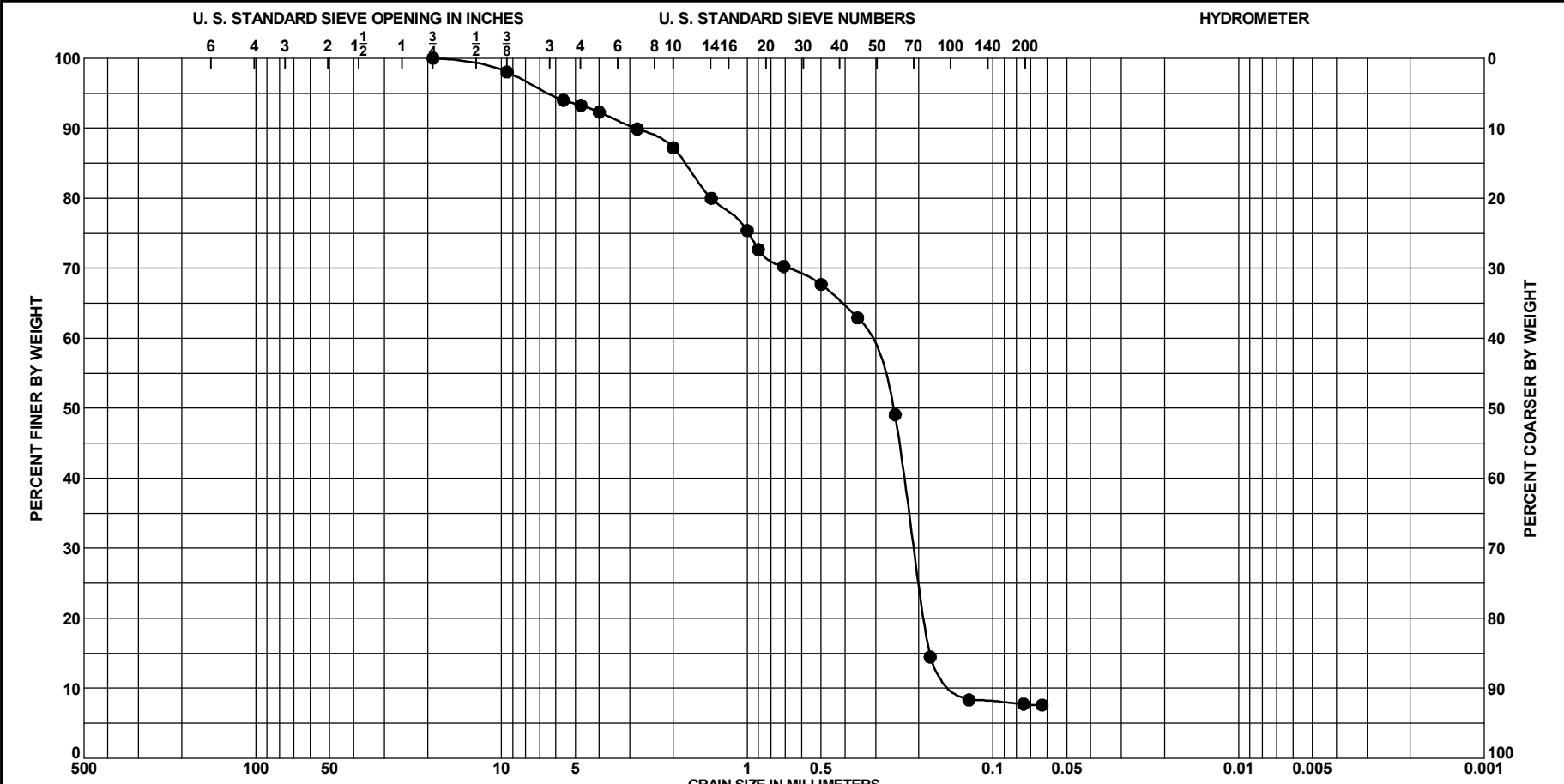
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 1	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace fine-grained sand-sized shell, light gray (SP)	10YR 7/1	2/3 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWWM5-10-3
											BORING ELEV. -8.9 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010



Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 1-Post	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, light gray (SP)	10YR 7/1								Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWWM5-10-3
											BORING ELEV. -8.9 Ft., MLLW
											DATE 12/15/2010

GRADATION CURVES

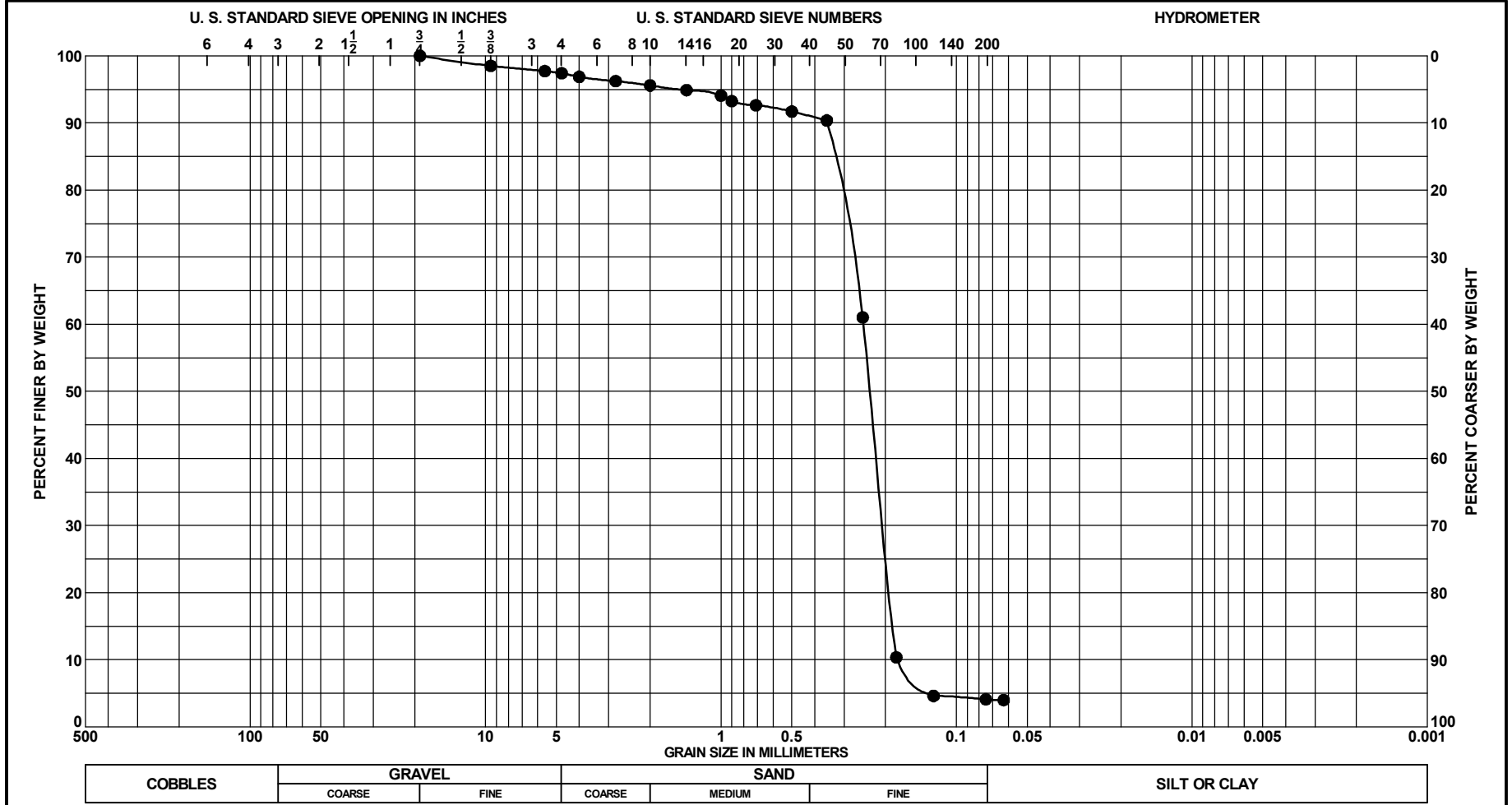


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

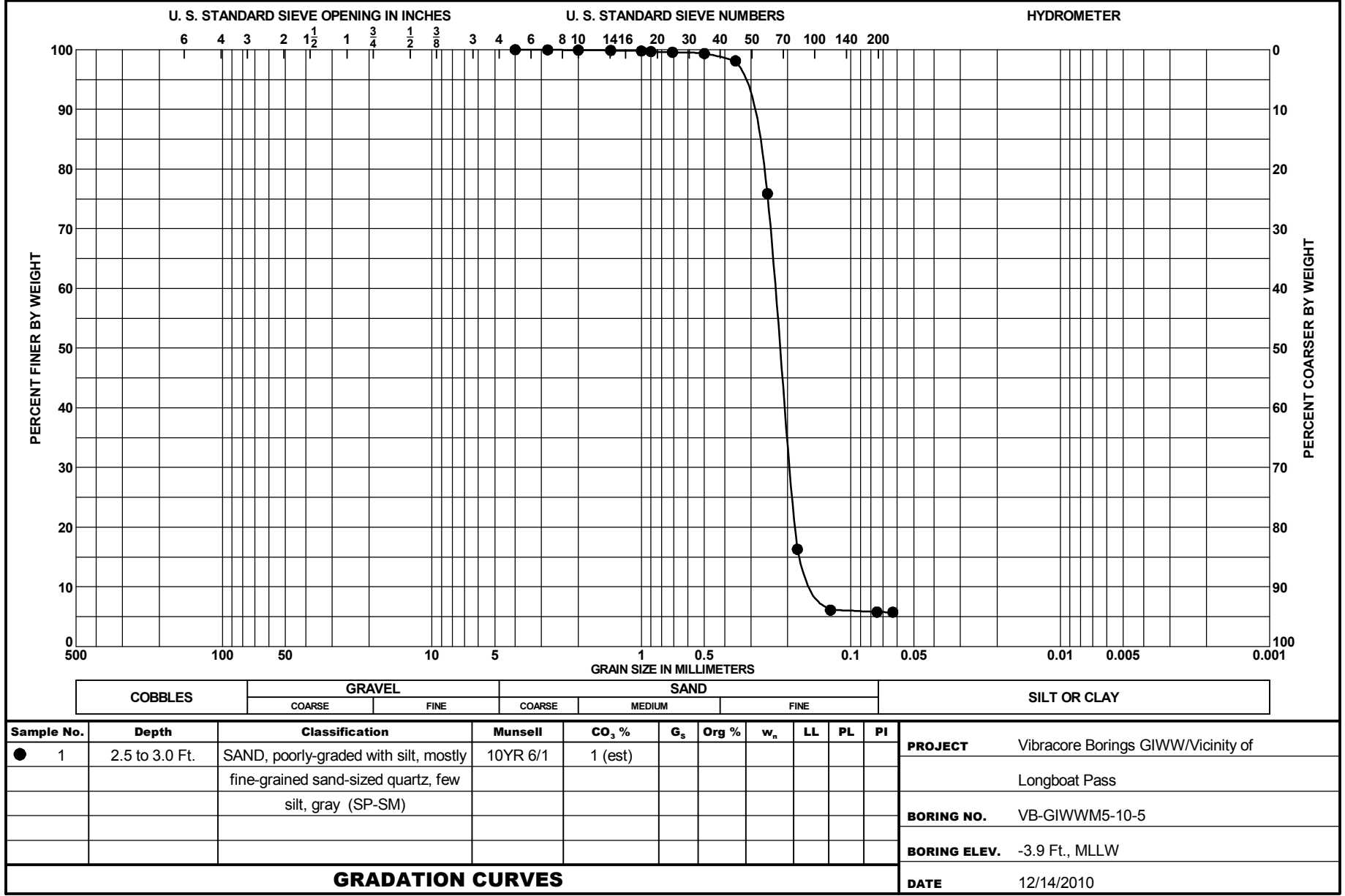
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI
● 1	0.5 to 1.0 Ft.	SAND, poorly-graded with silt, mostly fine to medium-grained sand-sized quartz, some medium to coarse-grained sand-sized shell, few silt, few fine gravel-sized shell, dark gray	10YR 4/1	31 (est)						

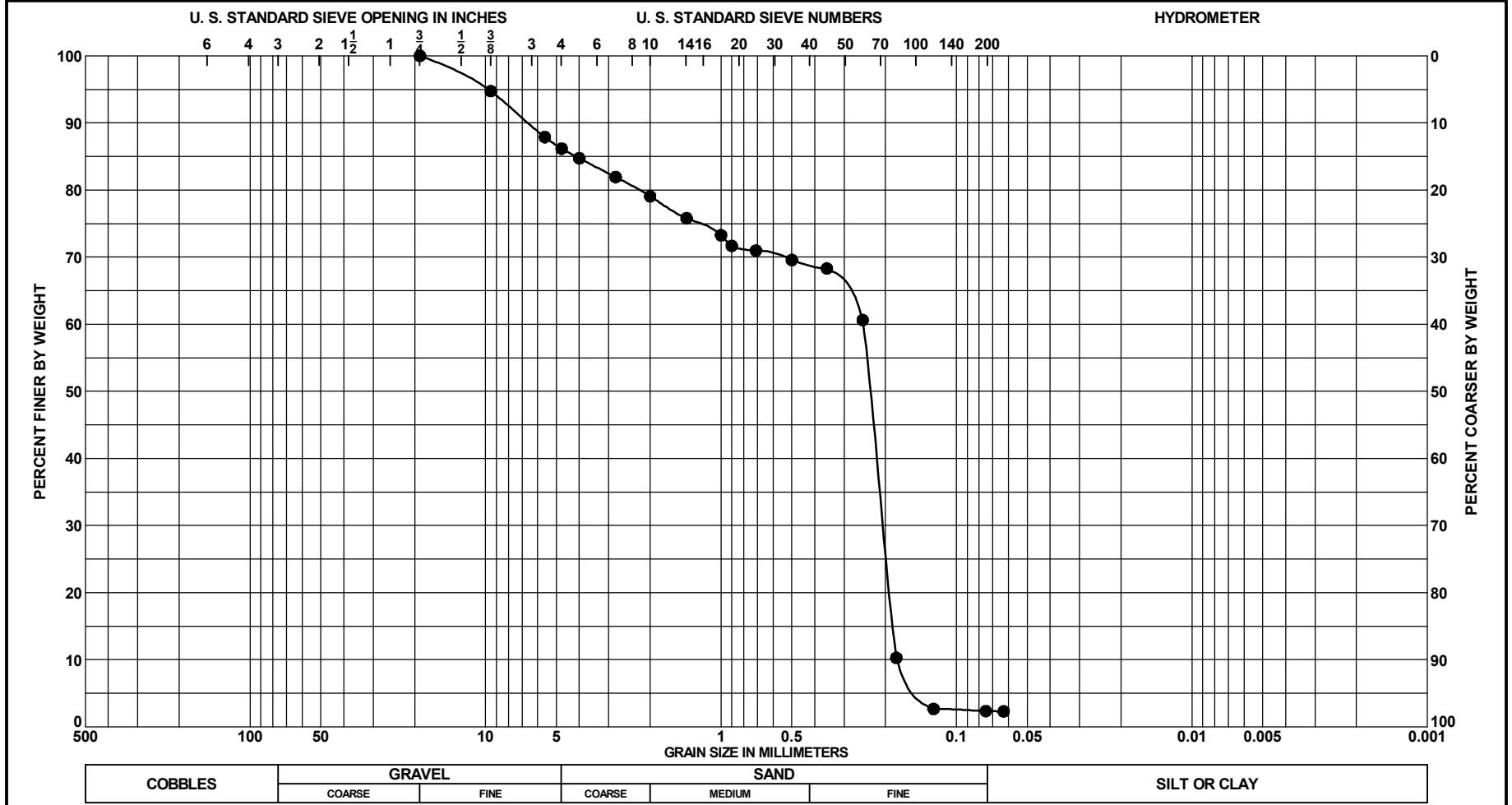
PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
BORING NO.	VB-GIWWM5-10-4
BORING ELEV.	-7.1 Ft., MLLW
DATE	12/14/2010

gray **GRADATION CURVES**

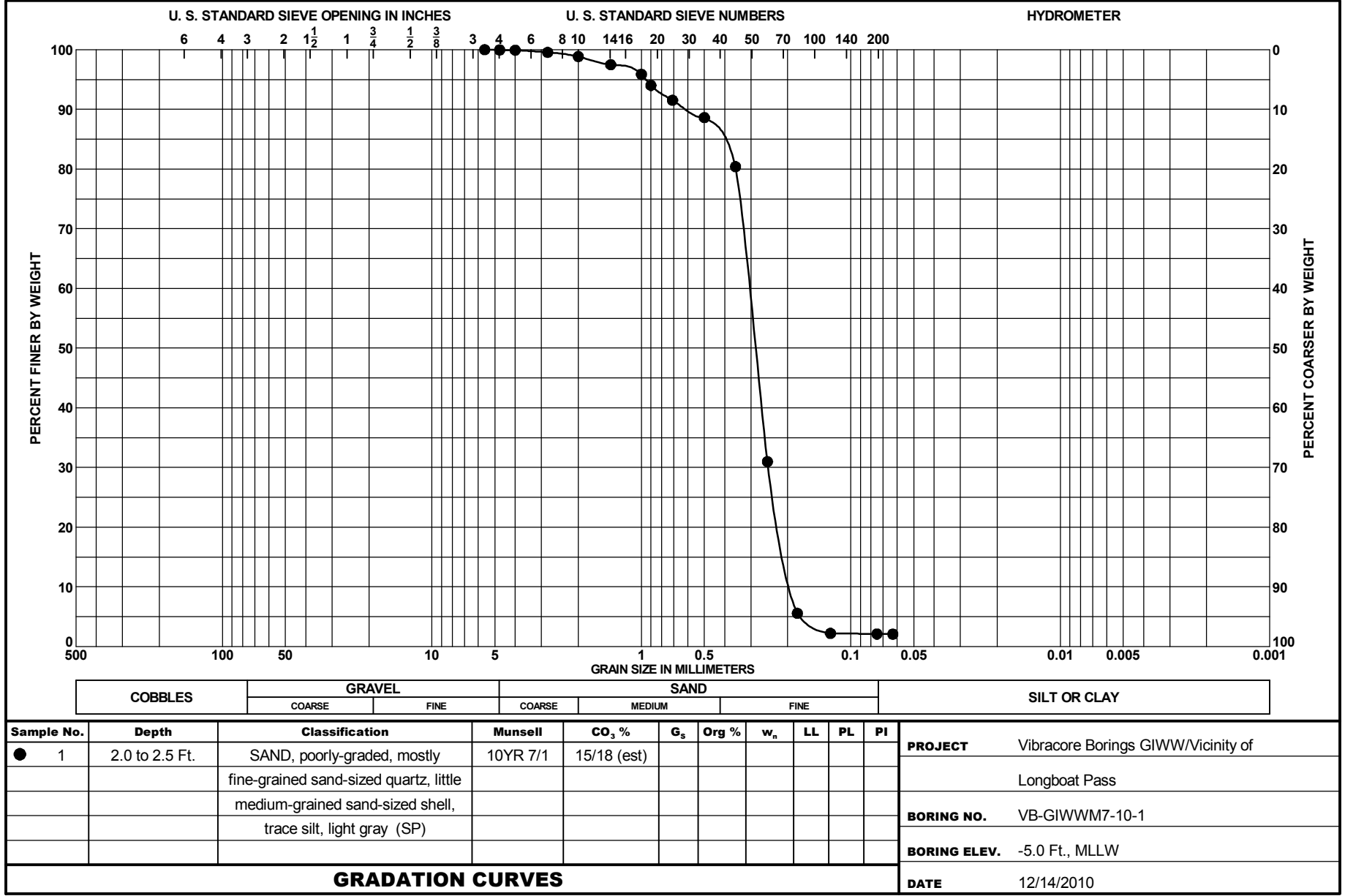


Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	SOIL CLASSIFICATION	
											COBBLES	SILT OR CLAY
● 2	3.0 to 3.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, trace silt, trace fine gravel-sized shell, gray (SP)	10YR 6/1	10 (est)								
GRADATION CURVES											PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO.	VB-GIWW5-10-4
											BORING ELEV.	-7.1 Ft., MLLW
											DATE	12/14/2010



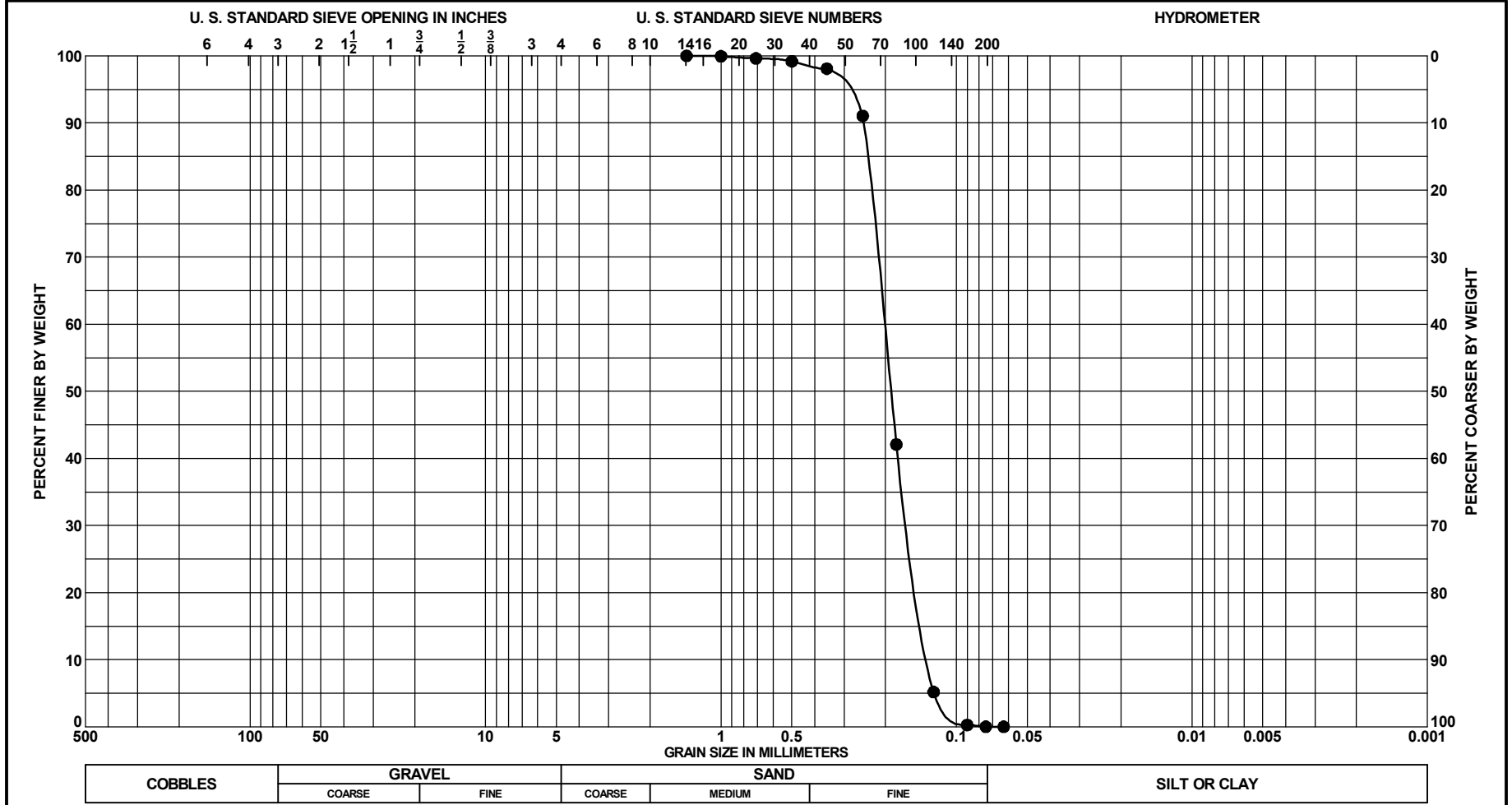


Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 2	5.0 to 5.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, little fine gravel-sized shell up to 1/2", trace silt,	10YR 5/1	31 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWWM5-10-5
											BORING ELEV. -3.9 Ft., MLLW
											DATE 12/14/2010

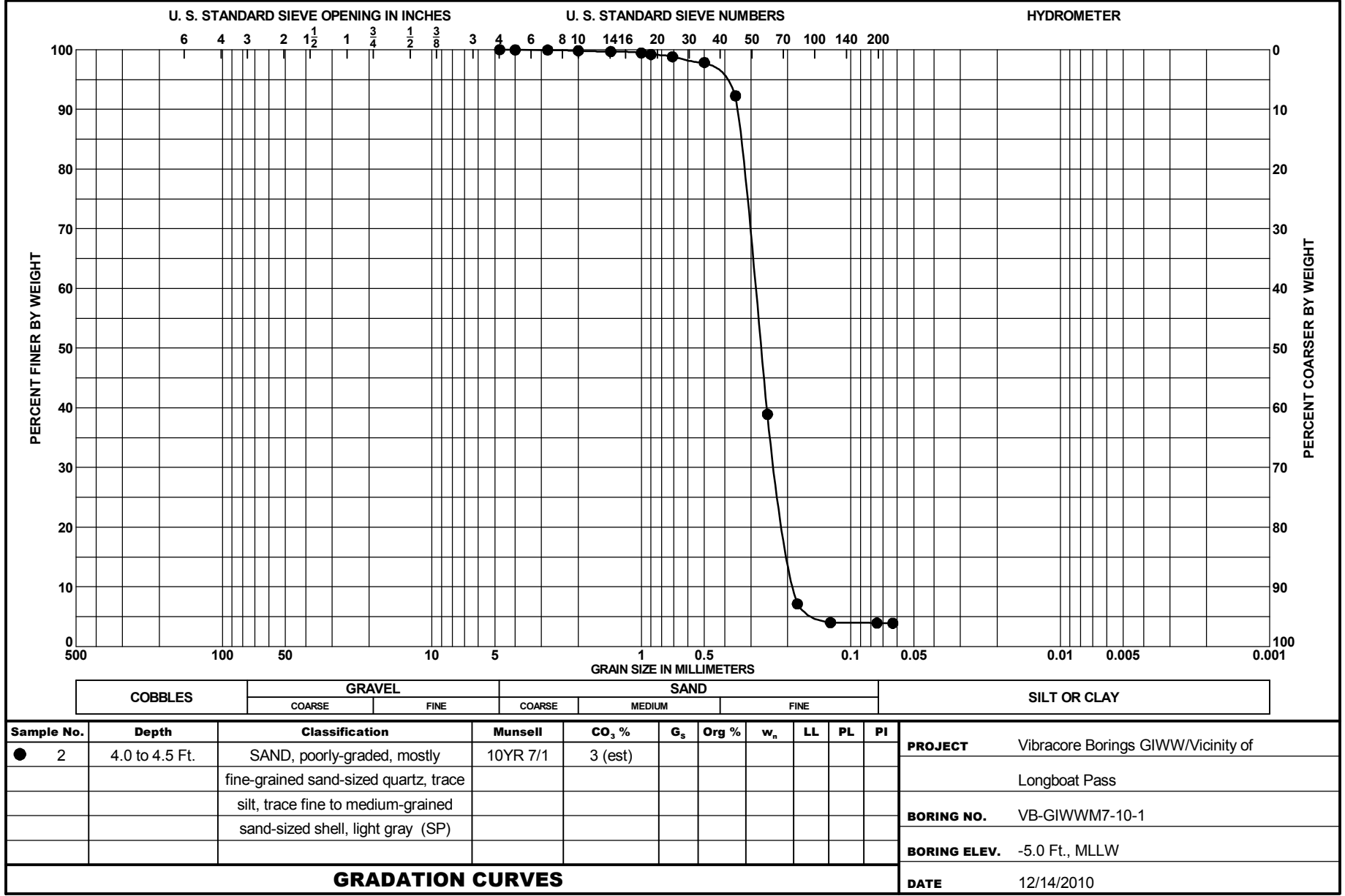


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 1	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium-grained sand-sized shell, trace silt, light gray (SP)	10YR 7/1	15/18 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWWM7-10-1
											BORING ELEV. -5.0 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010

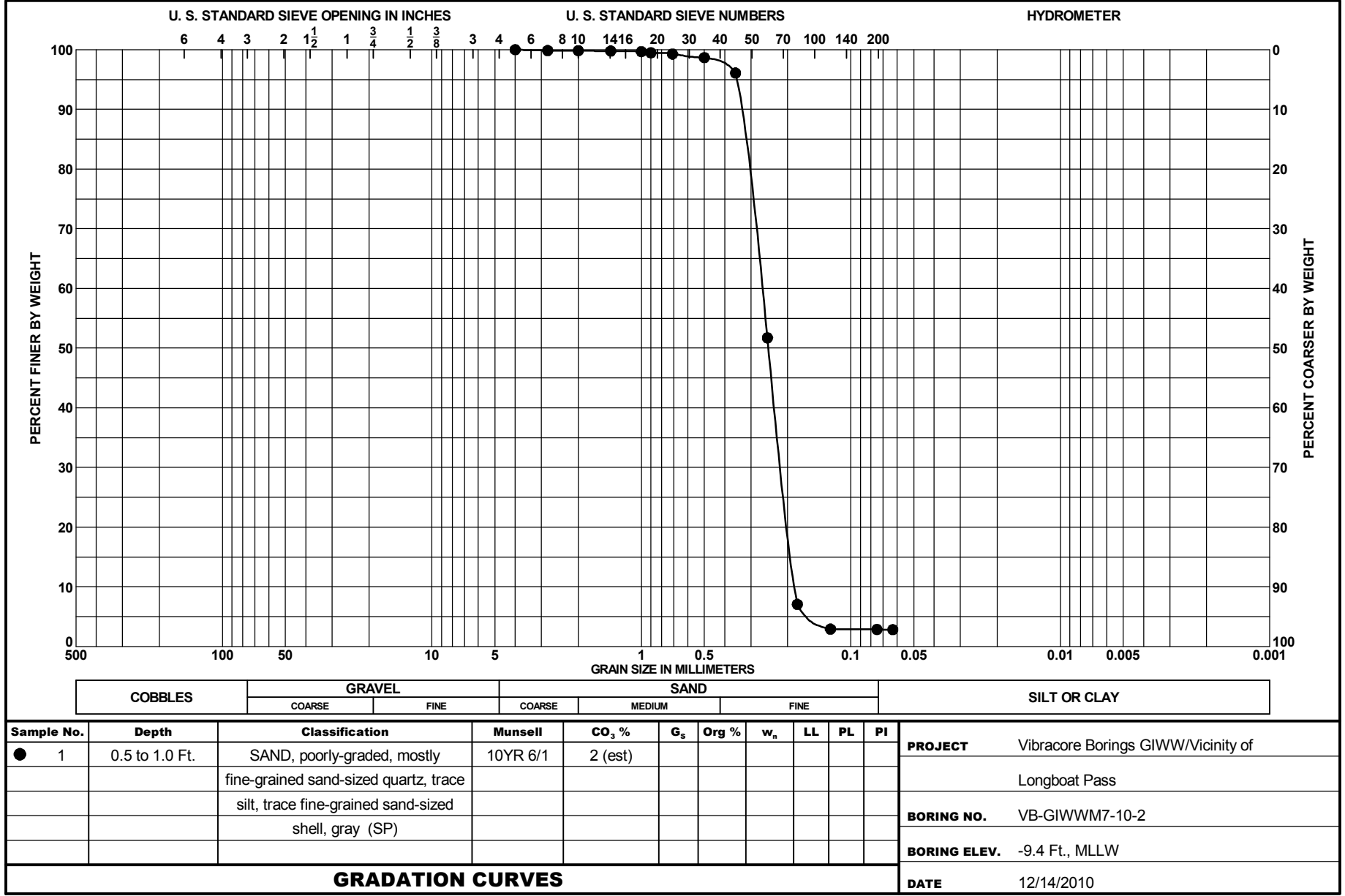


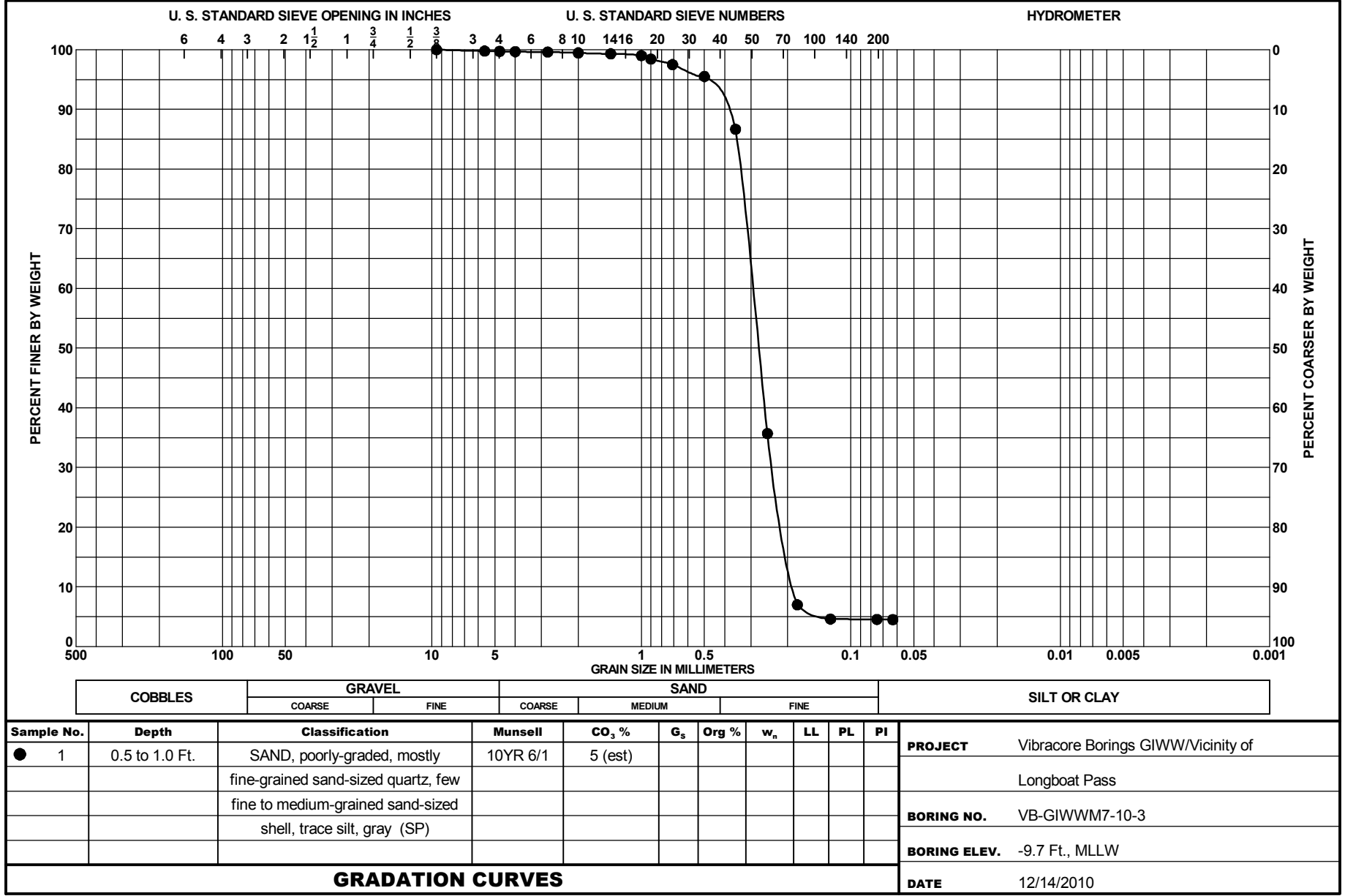
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	SOIL CLASSIFICATION	
											COARSE	FINE
● 1-Post	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, light gray (SP)	10YR 7/1									
GRADATION CURVES											PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO.	VB-GIWW7-10-1
											BORING ELEV.	-5.0 Ft., MLLW
											DATE	12/15/2010

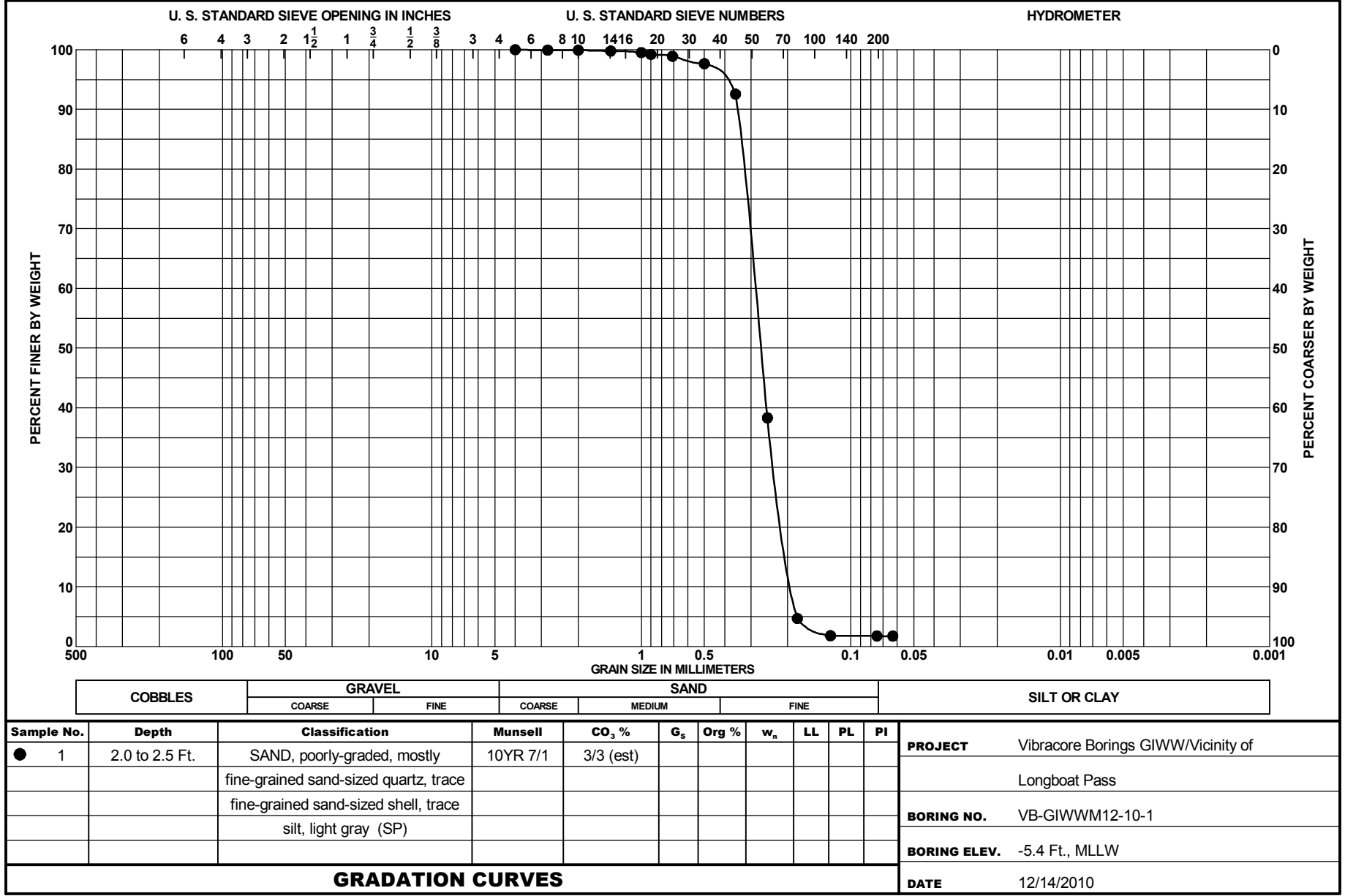


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 2	4.0 to 4.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace fine to medium-grained sand-sized shell, light gray (SP)	10YR 7/1	3 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWWM7-10-1
											BORING ELEV. -5.0 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010





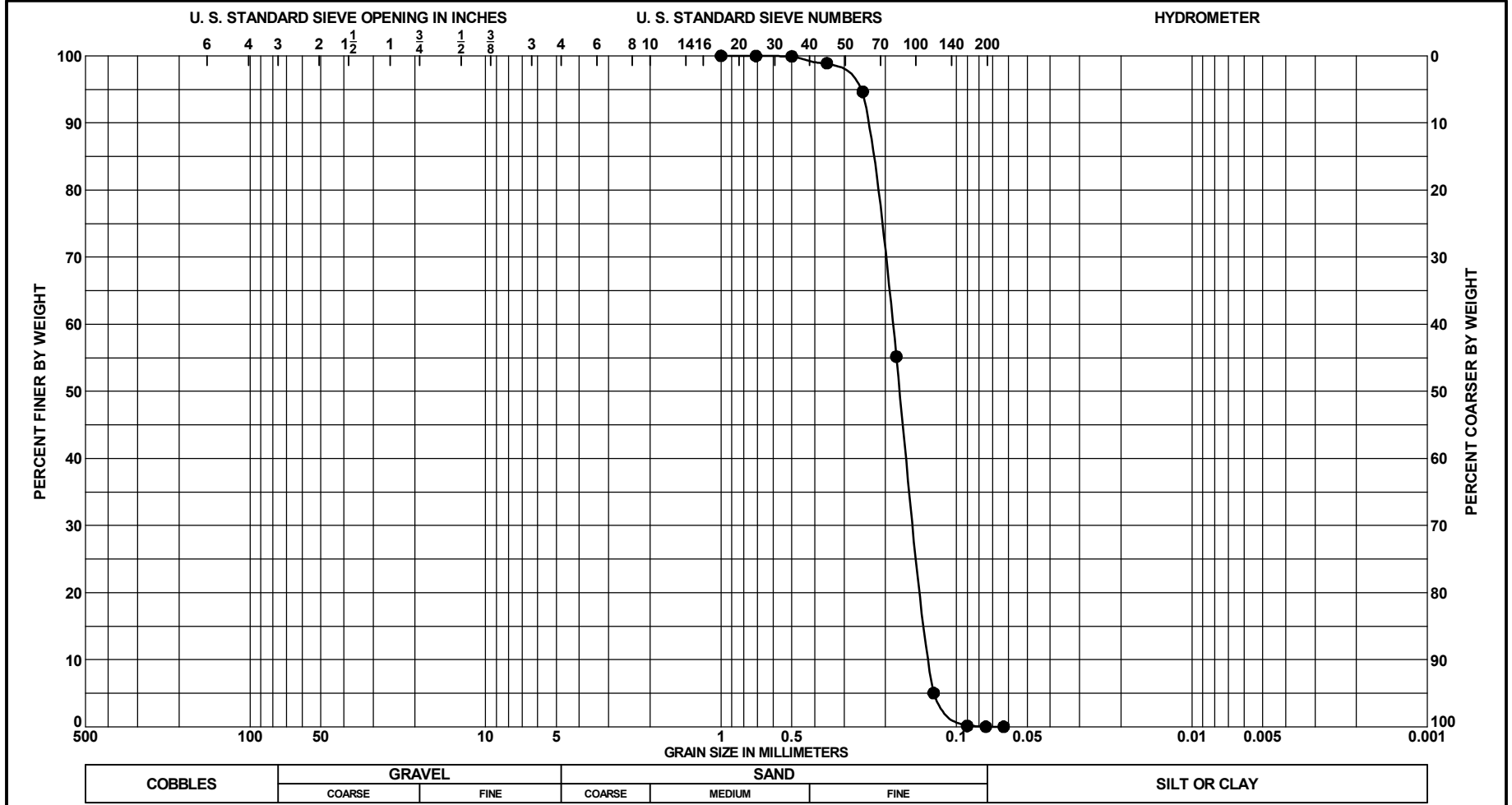


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

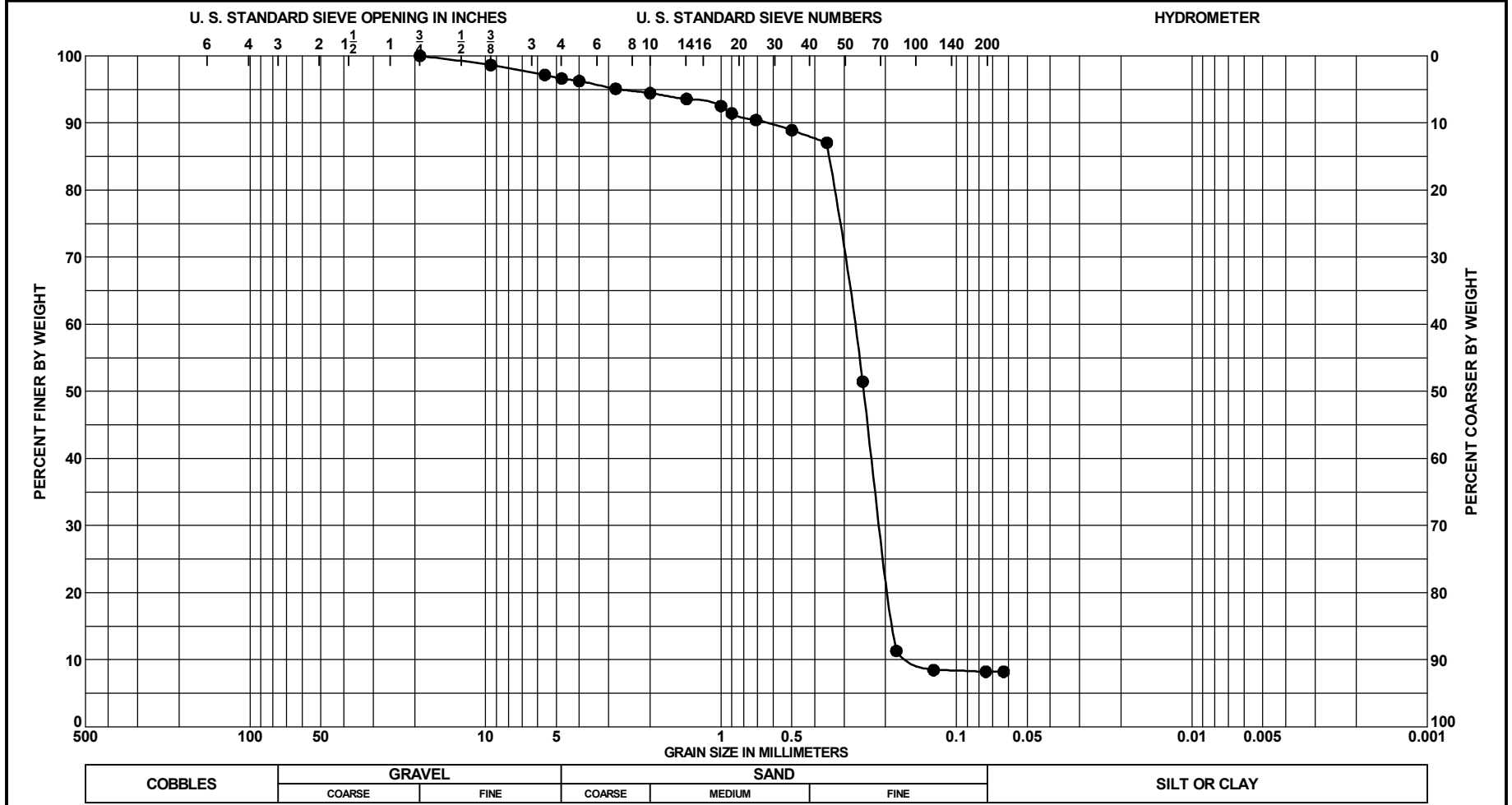
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI
● 1	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace fine-grained sand-sized shell, trace silt, light gray (SP)	10YR 7/1	3/3 (est)						

PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
BORING NO.	VB-GIWW12-10-1
BORING ELEV.	-5.4 Ft., MLLW
DATE	12/14/2010

GRADATION CURVES

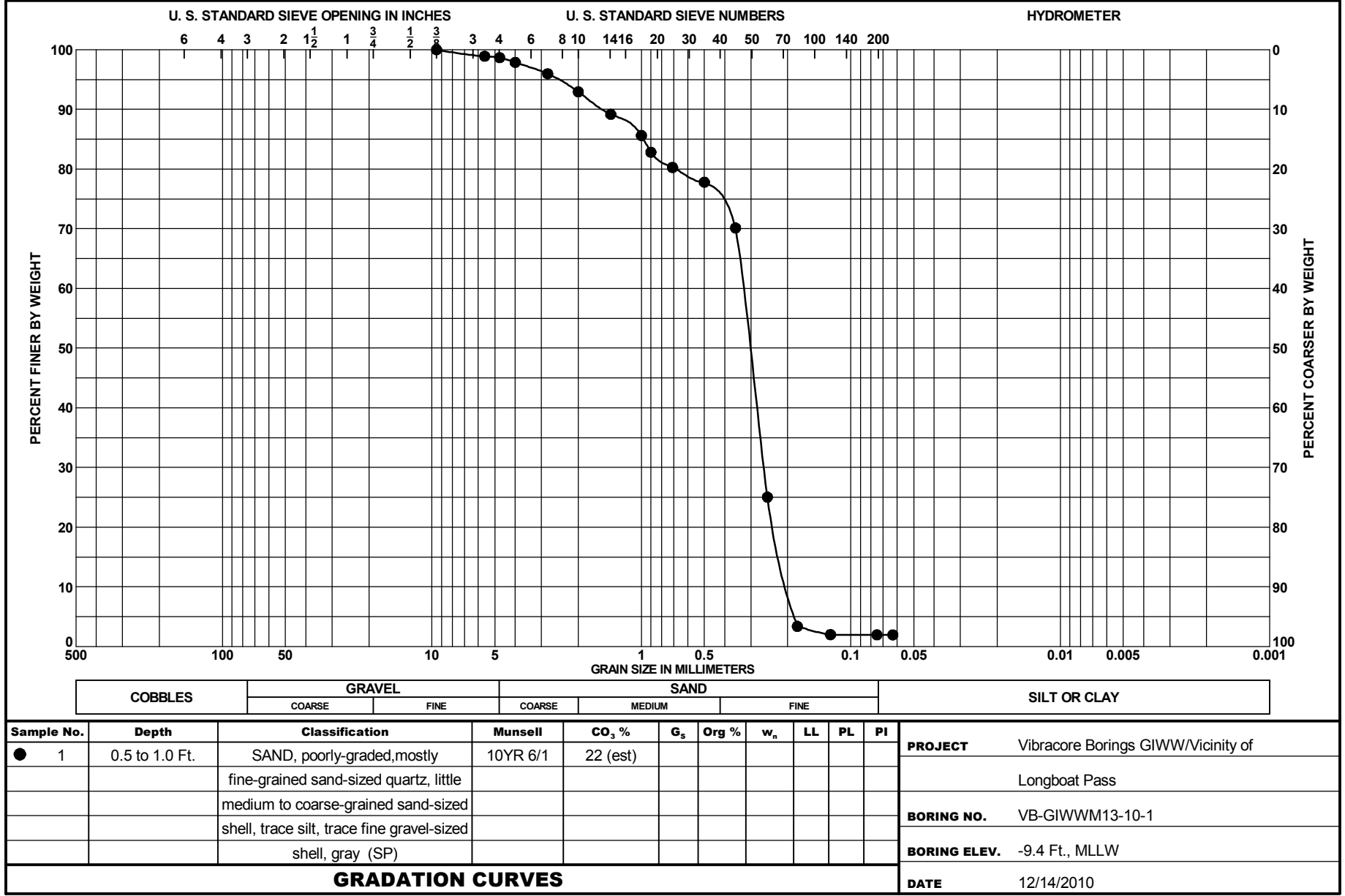


		GRAVEL		SAND							SILT OR CLAY				
		COARSE	FINE	COARSE	MEDIUM	FINE									
Sample No.	Depth	Classification				Munsell	CO₃ %	G_s	Org %	w_n	LL	PL	PI	PROJECT	Vibracore Borings GIWW/Vicinity of
● 1-Post	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, light gray (SP)				10YR 7/1									Longboat Pass
														BORING NO.	VB-GIWW12-10-1
														BORING ELEV.	-5.4 Ft., MLLW
GRADATION CURVES													DATE	12/15/2010	



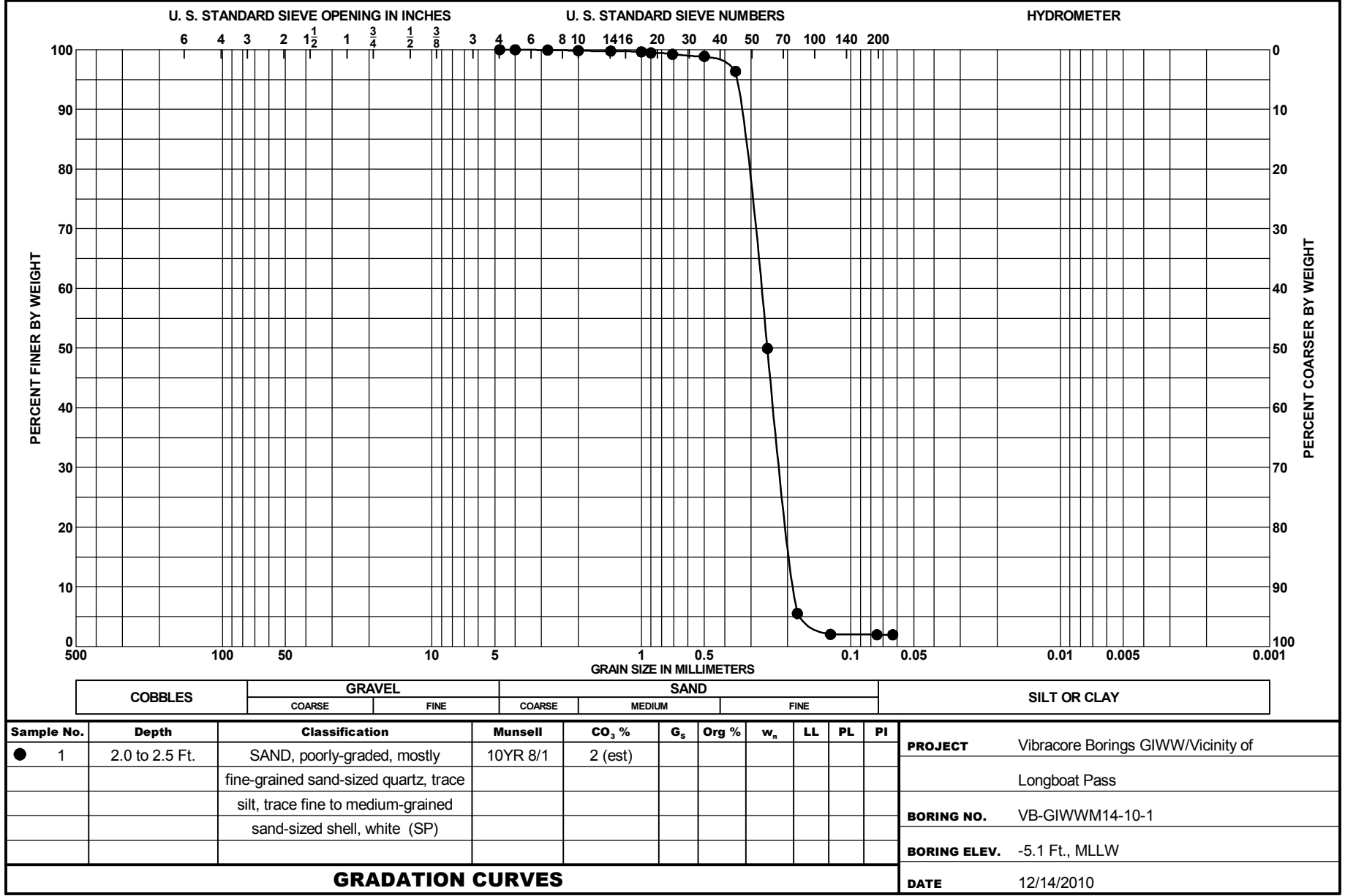
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 2	4.0 to 4.5 Ft.	SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few medium to coarse-grained sand-sized shell, few silt, trace fine gravel-sized shell, light gray (SP-SM)	10YR 7/1	11 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWW12-10-1
											BORING ELEV. -5.4 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010



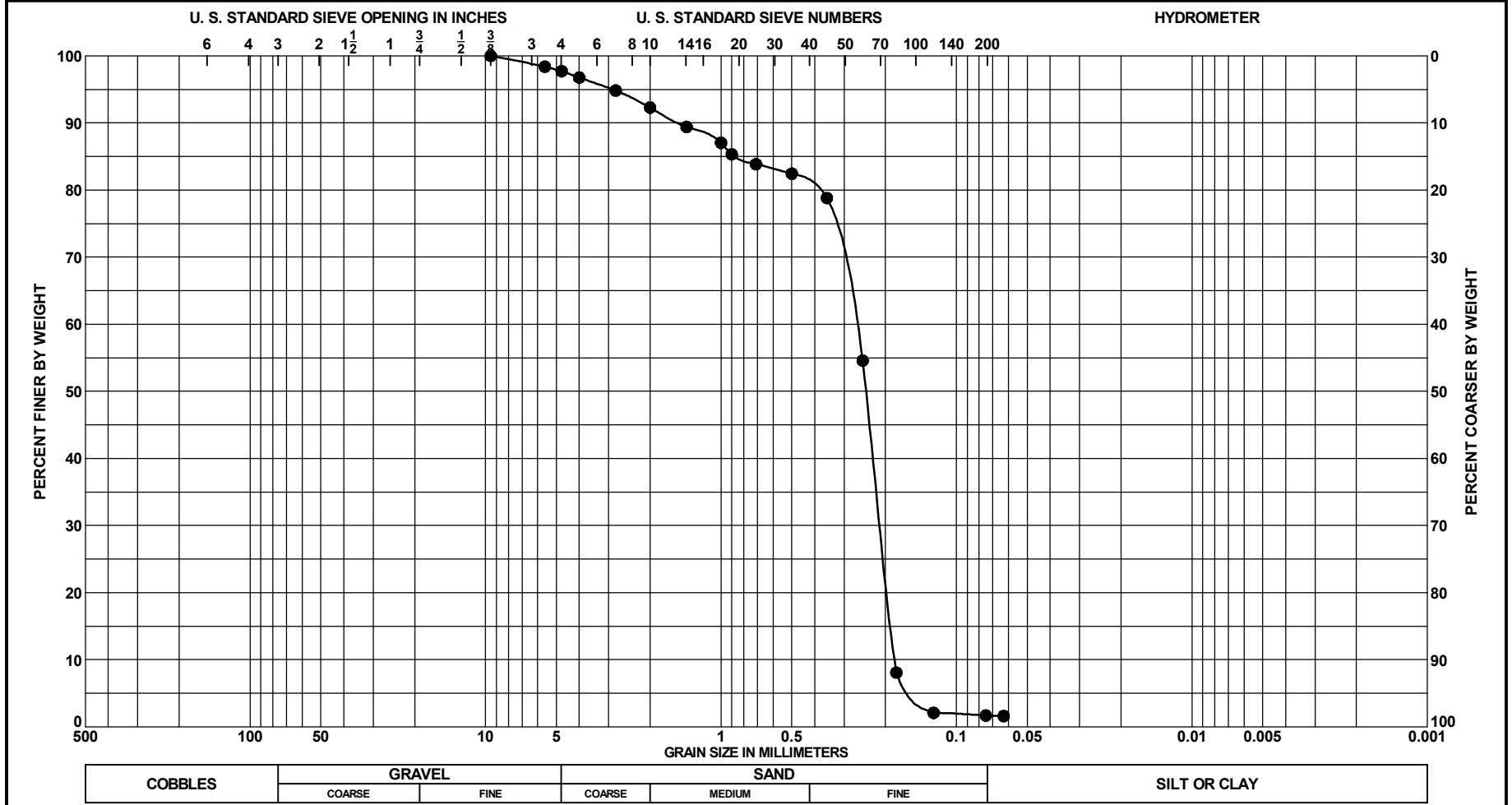
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 1	0.5 to 1.0 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, trace silt, trace fine gravel-sized shell, gray (SP)	10YR 6/1	22 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWW13-10-1
											BORING ELEV. -9.4 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010



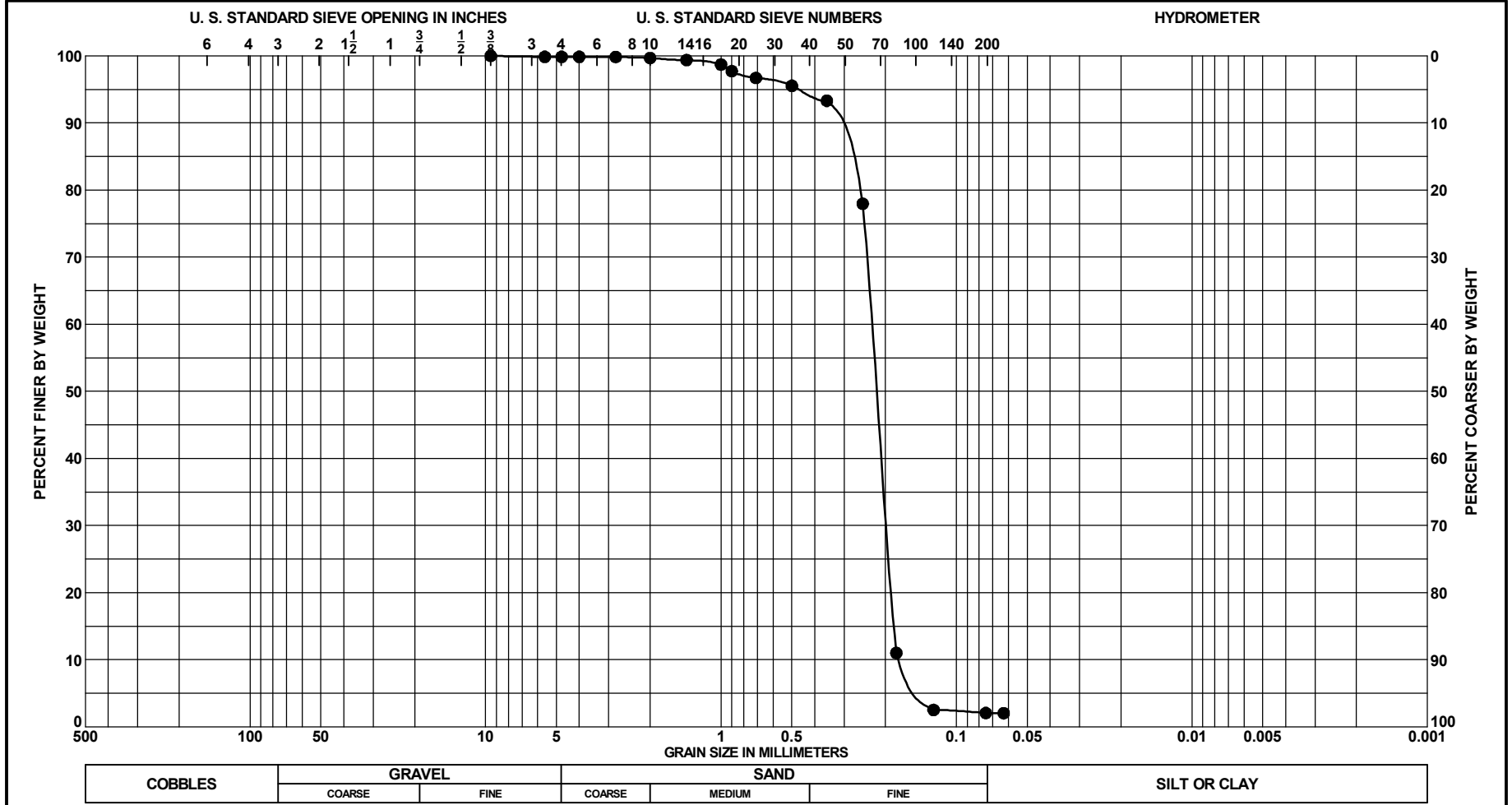
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 1	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace silt, trace fine to medium-grained sand-sized shell, white (SP)	10YR 8/1	2 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWW14-10-1
											BORING ELEV. -5.1 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010

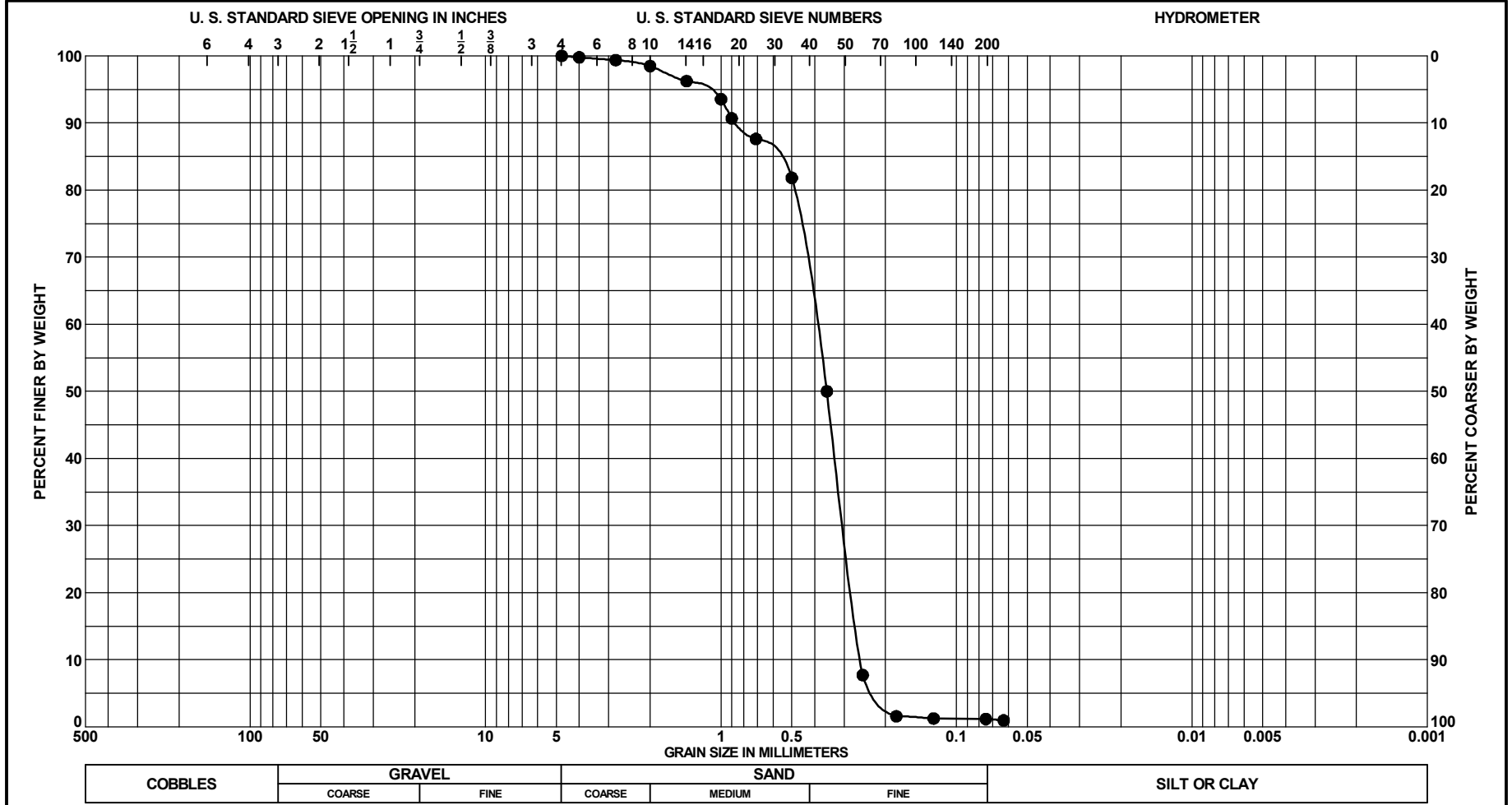


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

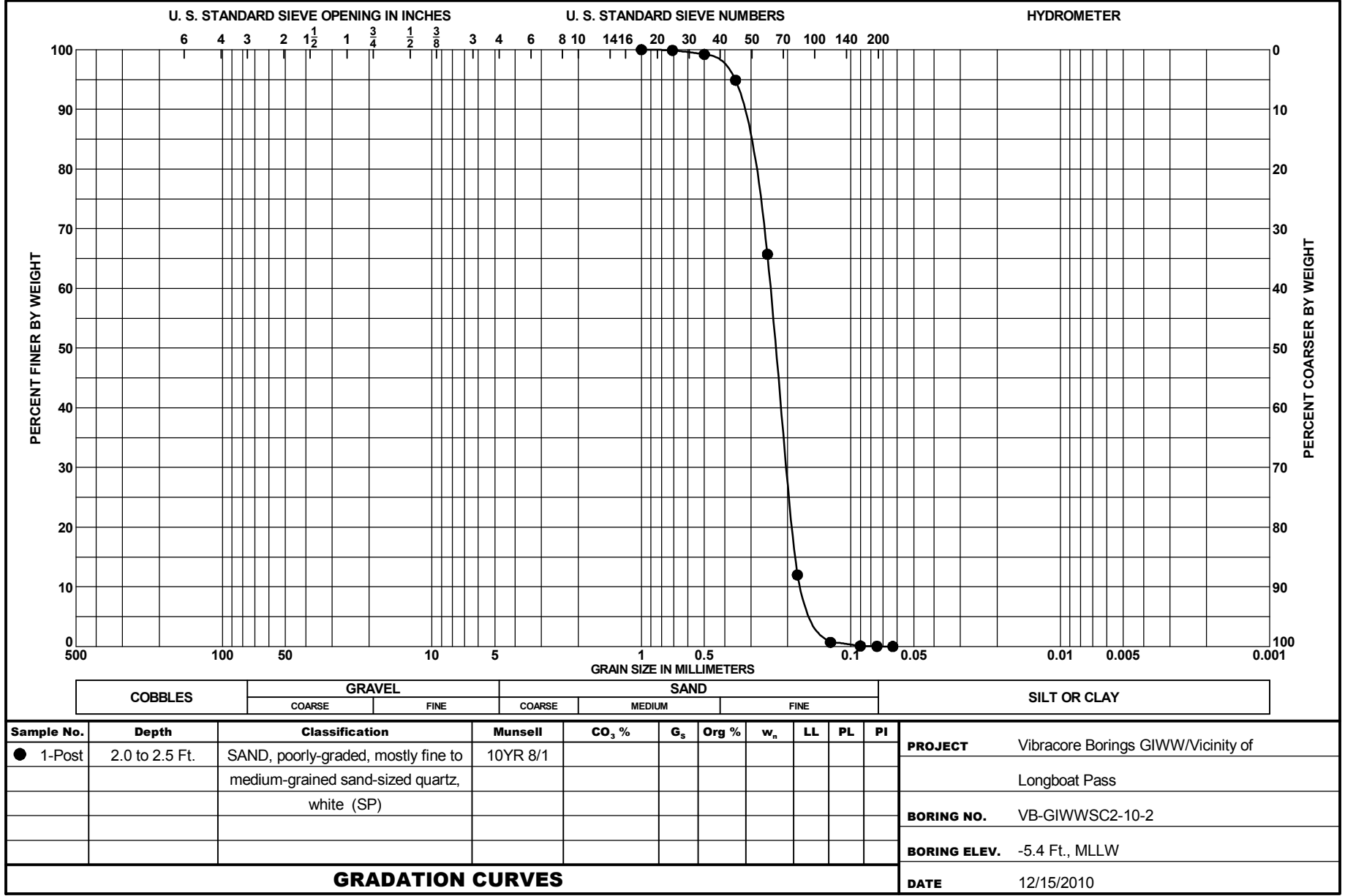
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 2	4.0 to 4.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, little medium to coarse-grained sand-sized shell, trace fine gravel-sized shell, trace silt, white (SP)	10YR 8/1	18 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWW14-10-1
											BORING ELEV. -5.1 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010



Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	SOIL CLASSIFICATION	
											COARSE	FINE
● 1	1.5 to 2.0 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, few medium-grained sand-sized shell, trace silt, light gray (SP)	10YR 7/1	5 (est)								
GRADATION CURVES											PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO.	VB-GIWWSC2-10-1
											BORING ELEV.	-7.5 Ft., MLLW
											DATE	12/14/2010



Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	SOIL CLASSIFICATION	
											COBBLES	SILT OR CLAY
● 1	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little fine to coarse-grained sand-sized shell, trace silt, white (SP)	10YR 8/1	15/18 (est)								
GRADATION CURVES											PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO.	VB-GIWWSC2-10-2
											BORING ELEV.	-5.4 Ft., MLLW
											DATE	12/14/2010

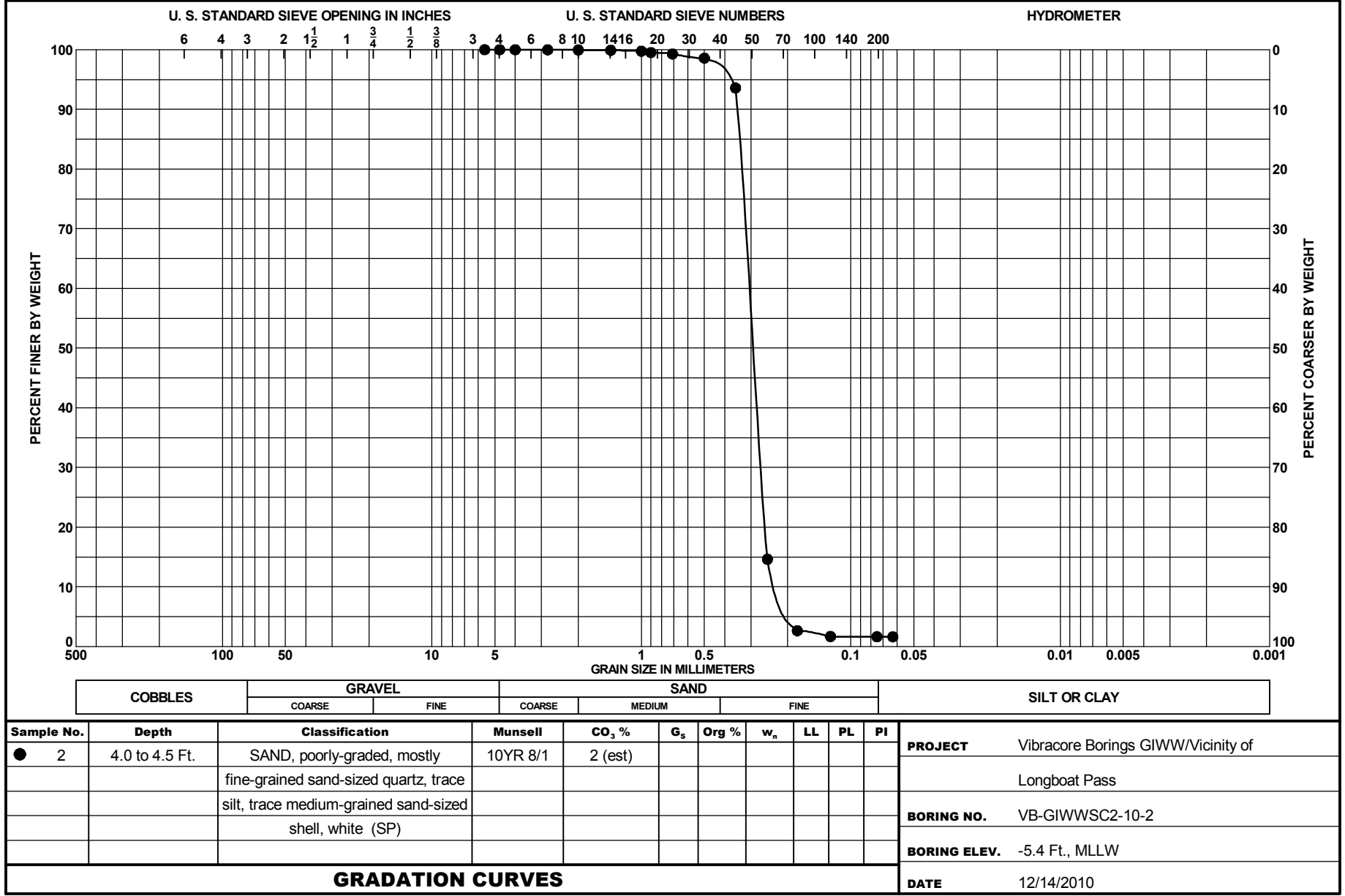


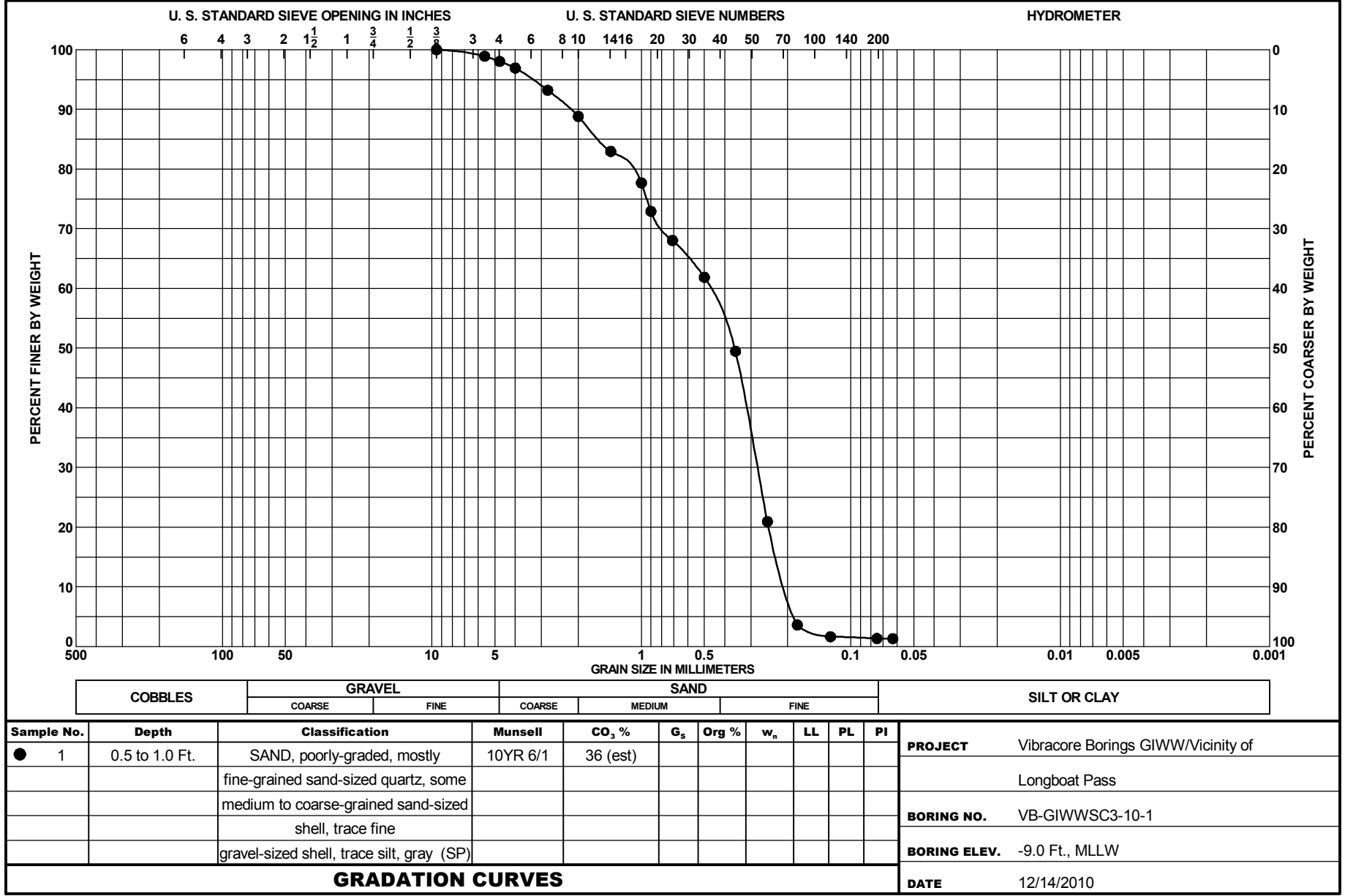
COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

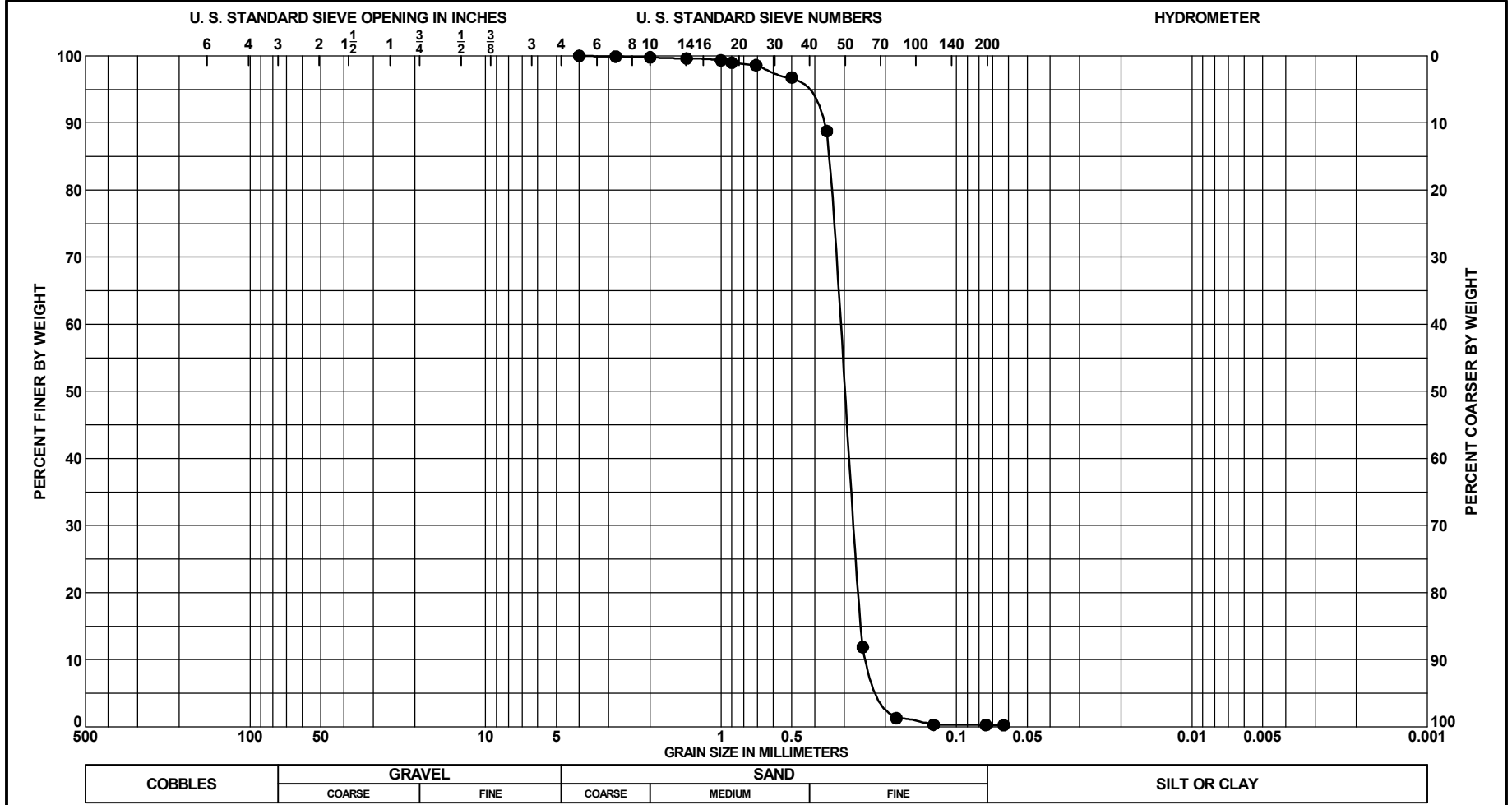
Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI
● 1-Post	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, white (SP)	10YR 8/1							

PROJECT	Vibracore Borings GIWW/Vicinity of Longboat Pass
BORING NO.	VB-GIWWSC2-10-2
BORING ELEV.	-5.4 Ft., MLLW
DATE	12/15/2010

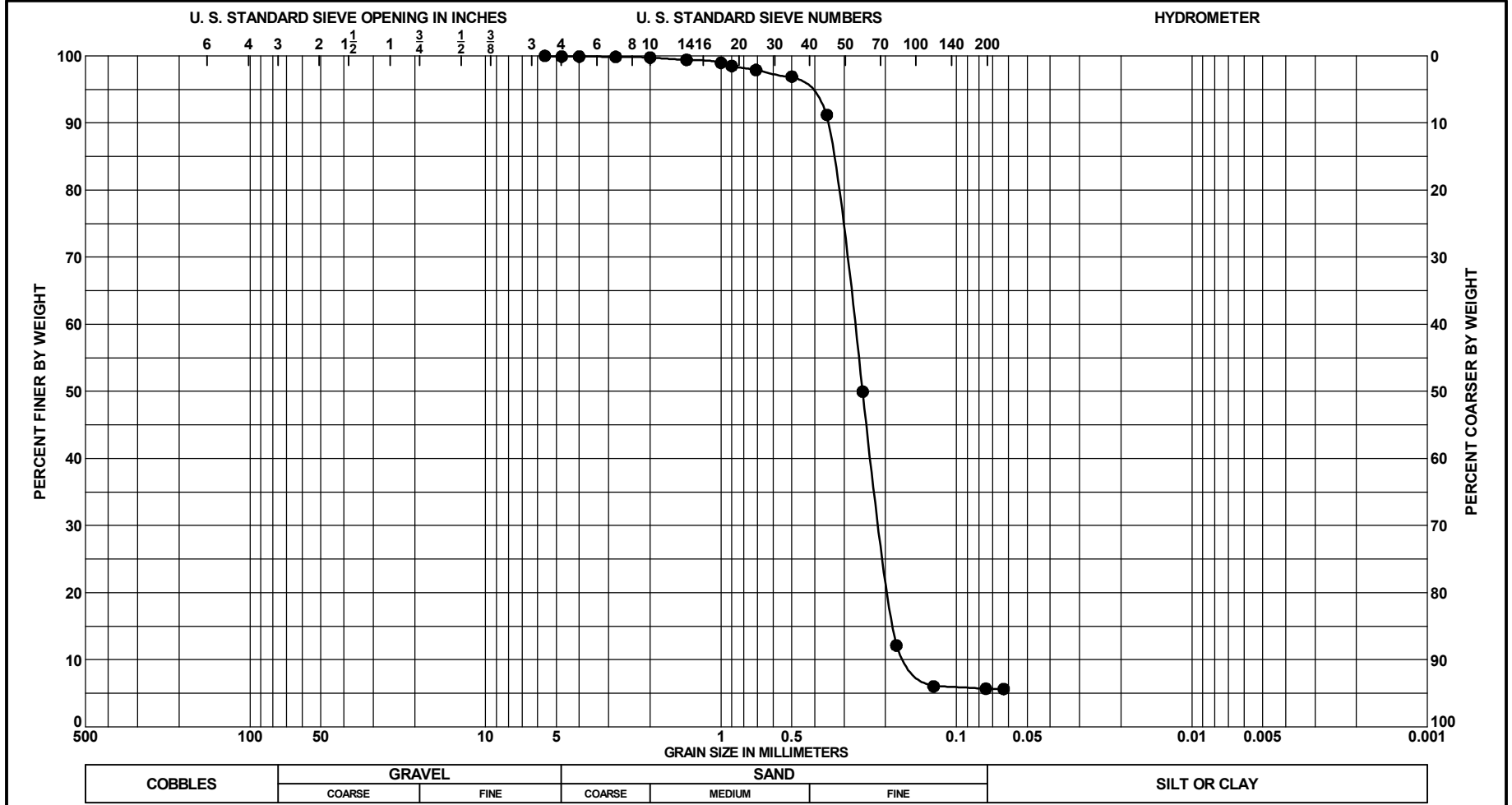
GRADATION CURVES







Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	GRADATION CURVES	
											PROJECT	DATE
● 1	1.0 to 1.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace medium-grained sand-sized shell, gray (SP)	10YR 6/1	4 (est)							PROJECT: Vibracore Borings GIWW/Vicinity of Longboat Pass BORING NO.: VB-GIWWSC3-10-2 BORING ELEV.: -6.8 Ft., MLLW DATE: 12/14/2010	



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Depth	Classification	Munsell	CO ₃ %	G _s	Org %	w _n	LL	PL	PI	PROJECT
● 2	3.0 to 3.5 Ft.	SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, trace medium to coarse-grained sand-sized shell, gray (SP-SM)	10YR 5/1	4 (est)							Vibracore Borings GIWW/Vicinity of Longboat Pass
											BORING NO. VB-GIWWSC3-10-2
											BORING ELEV. -6.8 Ft., MLLW
GRADATION CURVES											DATE 12/14/2010

APPENDIX OVERVIEW

Introduction: These appendices contain data for the Longboat Pass Maintenance Dredging Project. In 2007, a total of twenty (20) vibracores were collected offshore of Anna Maria Island and Longboat Pass for the 2007 Coquina Beach Nourishment Project on Anna Maria Island. The vibracore data are provided in the form of vibracore logs, vibracore photographs, granulometric reports, grain size distribution curves/histograms and composite summary tables.

1) Scope of Services

The final scope of services for the Longboat Pass Maintenance Dredging Project is provided in this appendix.

2) 2007 CPE Vibracore Logs

A total of twenty (20) vibracores collected by Coastal Planning & Engineering, Inc. in 2007 are presented in this appendix. Laboratory and descriptive information for each vibracore is presented on the log sheets. Unified Soils Classification terminology is used in the core layer descriptions and key grain size information (mean grain size, fines content and sorting) for each vibracore sample is presented under the *Remarks* column. Multiple layer intervals are sometimes represented by a single sample. The *Sample Number* column is used to identify the specific sample that represents a specific layer.

3) 2007 CPE Individual Vibracore Granulometric Reports

This appendix contains individual granulometric reports for each of the 62 vibracore samples.

4) 2007 CPE Individual Vibracore Grain Size Distribution Curves/Histograms

This appendix contains individual grain size distribution curves/histograms for each of the 62 vibracore samples.

5) 2007 CPE Vibracore Photographs

Photographs of the twenty (20) vibracores collected in 2007 are presented in this appendix.

6) Alt. 6F-4 Channel Composite Summary Tables

A series of summary tables are presented in this appendix. These tables are used to calculate and summarize composite data. Composite statistics were calculated based on the vibracore samples that are representative of the material defined within each area. Composite data provide the average physical characteristics of the channel. An average of the representative layers, weighted by effective length, was calculated for each vibracore, producing the vibracore

composite. The vibracore composites are averaged and weighted by effective length to calculate the channel composite.

Three table types were produced to display this data. The *Composite Summary* table is a summary of key grain size data for all of the composites. The *Composite Data* table shows the composite data for the channel and the supporting composite vibracore data used to calculate the channel composite. The *Cumulative Percents and Computed Distribution* tables show the weighted average percent retained on all sieves for the individual samples used to create vibracore composites.

7) Alt. 6F-4 Channel Composite Granularmetric Reports

Composite granularmetric reports, corresponding to data presented in the tables in Appendix 6, are included here. Granularmetric reports are presented for the channel and each vibracore.

8) Alt. 6F-4 Channel Composite Grain Size Distribution Curves/Histograms

Composite grain size distribution curves and histograms, corresponding to the data presented in the Appendix 6 tables, are included here. Curves and histograms are presented for the channel and each vibracore.

9) Final Design Figures

This appendix contains final channel design figures.

APPENDIX 2

2007 CPE VIBRACORE LOGS



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Boca Raton, Florida 33431
Phone # 1-561-391-8102*

Legend for Geotechnical Data

(SP), (SM), etc. Refers to the Army Corps of Engineers Unified Soils Classification System. Class types are defined primarily by grain size, sorting and percent of material passing the 200 sieve. Classification of materials on the core logs is initially based on visual field examinations and are identified on the core logs under the Classification of Materials Description. Final classifications are based on laboratory sieve analyses and are identified on the core logs in the Legend and under Remarks.

Silty, shelly, etc. The indicated sediment type is present. The estimated percentage indicated by the Unified Soil Classification System descriptive terms selected to describe the sediment.

Definition of descriptive terms		Grain size terms
Clean	Free of silt or clay	Cobbles – above 3”
Very	To a high degree	Gravel – 3” sieve to # 4 sieve
Slightly	To a small degree	Coarse – 3” sieve to ¾” sieve
Isolated	Limited occurrence	Fine – ¾” sieve to # 4 sieve
Occasional	Infrequently present	Sand – # 4 sieve to # 200 sieve
Tight	Dense compacted	Coarse - # 4 sieve to # 10 sieve
		Medium - # 10 sieve to # 40 sieve
		Fine - # 40 sieve to # 200 sieve
		Fine – (silt or clay) < # 200 sieve

Proportional definition of descriptive terms

<u>Descriptive Term</u>	<u>Range of Proportions</u>
Sandy, gravelly, etc.	35 % to 50 %
Some	20 % to 35 %
Little	10 % to 20 %
Trace	1 % to 10 %
Coarse to fine	All sizes
Coarse to medium	10 % fine
Medium to fine	10 % coarse
Coarse	10 % medium and fine
Medium	10 % coarse and fine
Fine	10 % coarse and medium

Note: Information is after ACOE Atlantic Division Manual # 1110-1-1 titled *Engineering and Design Geotechnical Manual for Surface and Subsurface Investigations*



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Legend for Geotechnical Data

GW		Well graded gravels or gravel-sand mixtures, little or no fines	ML		Inorganic silts and very fine sands, rock flour, sandy silts or clayey silts with slight plasticity
GP		Poorly graded gravels or gravel-sand mixtures, w/ little or no fines	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soil, elastic silts
GM		Silty gravels, gravel-sand-silt mixtures	OL		Organic silts and organic silt-clays of low plasticity
GC		Clayey gravels, gravel-sand-clay mixtures	OH		Organic clays of medium to high plasticity, organic silts
SW		Well graded sands or gravelly sands, little or no fines	CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
SP		Poorly graded sands or gravelly sands, little or no fines	CH		Inorganic clays of high plasticity, fat clays
SM		Silty sands, sand-silt mixtures	PT		Peat and other highly organic soils
SC		Clayey sands, sand-clay mixtures	SP-SM		Poorly-graded silty sand
SW-SM		Well-graded silty sand	SM-SC		Silty clayey sand
GW-GM		Well-graded silty gravel	ML-CL		Inorganic silty lean clay
GM-GC		Clayey silty gravel			

Note: Information is after ACOE Atlantic Division Manual # 1110-1-1 titled *Engineering and Design Geotechnical Manual for Surface and Subsurface Investigations*



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Legend for Geotechnical Data

The naming convention used by Coastal Planning and Engineering incorporates key information about the item in the title. The naming format uses the following information:

- Abbreviated area name (two letters that will be used throughout the project)
- Abbreviated data type: jet probe (JP), vibracore (VC) or surface sample (SS)
- Collection year (yy)
- Identification number
- Sample identification in the case of jet probes or vibracores
- Composite samples are indicated by COMP or SOBC following the identification number. COMP represents a composite developed to characterize beach compatible material. SOBC represents a composite developed to characterize sandy overburden material to be used in marsh design.

Format examples:

A) AMVC-07-05

B) AMVC-07-08 S#2

Example A is a vibracore number 5, collected in the Anna Maria Island area in the year 2007.

Example B refers to sample number 2 taken from vibracore number 8, which was collected in the Anna Maria Island area in 2007.

No specific format is followed for area name abbreviations, however, the name of the area is always given in the appendix title page where the data is presented.

Note: Information is after ACOE Atlantic Division Manual # 1110-1-1 titled *Engineering and Design Geotechnical Manual for Surface and Subsurface Investigations*

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-01			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL Electronic Vibracore	
4. NAME OF DRILLER Gregg Brooks			<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			12. TOTAL SAMPLES DISTURBED: _____ UNDISTURBED (UD): _____	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			13. TOTAL NUMBER CORE BOXES	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			14. ELEVATION GROUND WATER	
8. TOTAL DEPTH OF BORING 18.8 Ft.			15. DATE BORING STARTED: 02-20-07 09:26 COMPLETED: 02-20-07 09:27	
			16. ELEVATION TOP OF BORING -8.0 Ft.	
			17. TOTAL RECOVERY FOR BORING 14.8 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-8.0	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-9.1	1.1		SAND, fine grained, little shell hash, trace shell fragments, trace silt, silt distributed in lamina; shell fragments up to 0.5", light gray (5Y-7/2), (SW).		1	Sample #1, Depth = 0.6' Mean (mm): 0.33, Phi Sorting: 1.38 Shell Hash: 3%, Fines (230): 1.74% (SW)
-10.0	2.0		SAND, fine grained, trace shell hash, trace silt, silt distributed in lamina; mottled gray (5Y-6/1) and, light gray (5Y-7/2), (SP).		2	Sample #2, Depth = 1.5' Mean (mm): 0.17, Phi Sorting: 0.68 Shell Hash: 0%, Fines (230): 2.33% (SP)
-13.0	5.0		SAND, fine grained, little shell hash, trace shell fragments, trace silt, silt distributed in lamina; shell fragments up to 0.5", light gray (5Y-7/2), (SW).		1	
-15.2	7.2		SAND, fine grained, little shell hash, trace silt, silt distributed in lamina; 1.0" wood layer @ 6.9'; 0.5" wood pocket @ 7.1', light gray (5Y-7/2), (SW).		3	Sample #3, Depth = 6.1' Mean (mm): 0.30, Phi Sorting: 1.27 Shell Hash: 2%, Fines (230): 1.88% (SW)
-16.5	8.5		SAND, fine grained, trace shell hash, trace silt, silt distributed in lamina, light gray (5Y-7/2), (SP).		2	
-18.6	10.6		SAND, fine grained, little clay, little silt, (2.0"x 1.0") shell fragment @ 10.5'; (1.25"x 1.25") whole shell @ 10.3'; (0.75"x 0.75") whole shell @ 10.6', gray (5Y-5/1), (SM-SC).			
-22.4	14.4		CLAY, trace shell hash, (0.75"x 0.75") whole shells @ 10.9' and 12.4'; (1.25"x 1.25") whole shells @ 11.4' and 12.4', dark gray (5Y-4/1), (SC).			
-22.8	14.8		SAND, fine grained, trace shell hash, trace silt, silt distributed in lamina, light gray (5Y-7/2), (SP).			
-26.8	18.8		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-02			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
LOCATION COORDINATES X = 431,070 Y = 1,142,410			HORIZONTAL NAD 1983 VERTICAL NAVD 88	
3. DRILLING AGENCY Eckerd College		CONTRACTOR FILE NO.		
11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER				
12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD)				
4. NAME OF DRILLER Gregg Brooks				
13. TOTAL NUMBER CORE BOXES				
14. ELEVATION GROUND WATER				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		BEARING
15. DATE BORING STARTED COMPLETED 02-20-07 10:04 02-20-07 10:05				
6. THICKNESS OF OVERBURDEN 0.0 Ft.		16. ELEVATION TOP OF BORING -20.2 Ft.		
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		17. TOTAL RECOVERY FOR BORING 10.1 Ft.		
8. TOTAL DEPTH OF BORING 10.6 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR JF		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-20.2	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-21.1	0.9		SAND, fine grained, little clay, little silt, trace shell hash, clay content increases with depth, olive gray (5Y-4/2), (SM-SC).			
-23.9	3.7		CLAY, trace shell fragments, trace shell hash, shell fragments up to (1.0"x 1.0"), very dark greenish gray (10Y-3/1), (SC).			
-25.3	5.1		SAND, fine grained, little shell fragments, trace clay, trace shell hash, trace silt, shell fragment layers from 3.7' to 3.9' and 4.8' to 5.1'; (1.75"x 1.75") shell fragment @ 5.0', light brownish gray (2.5Y-6/2), (GW).			
-30.3	10.1		SAND, fine grained, little organics, trace clay, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina, shell fragments up to 0.5"; some organic lamina from 6.5'-6.8', grayish brown (2.5Y-5/2), (SM).			
-30.8	10.6		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-03			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-20-07 11:17 COMPLETED 02-20-07 11:20	
8. TOTAL DEPTH OF BORING 19.1 Ft.			16. ELEVATION TOP OF BORING -7.0 Ft.	
			17. TOTAL RECOVERY FOR BORING 16.5 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS	
-7.0	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.	
			SAND, fine grained, trace shell hash, trace silt, silt distributed in lamina; little shell hash from 10.9' to 11.4' and 13.3' to 13.5'; 1.0" clay pocket @ 1.6'; (1.0"x 0.25") wood fragment @ 7.5'; (0.75"x 0.75") shell fragments @ 12.8' and 13.4' (3), white (5Y-8/1), (SP).		1	Sample #1, Depth = 4.0' Mean (mm): 0.16, Phi Sorting: 0.32 Shell Hash: 0%, Fines (230): 1.14% (SP)	
						2	Sample #2, Depth = 8.0' Mean (mm): 0.15, Phi Sorting: 0.33 Shell Hash: 0%, Fines (230): 1.21% (SP)
						3	Sample #3, Depth = 12.0' Mean (mm): 0.20, Phi Sorting: 0.64 Shell Hash: 1%, Fines (230): 1.35% (SP)
-20.5	13.5						
-23.5	16.5		SAND, fine grained, some clay, little shell hash, little silt, trace shell fragments, shell fragments up to 0.5"; (1.25"x 0.75") whole shells @ 13.5' and 15.7', olive gray (5Y-5/2), (SM-SC).				
-26.1	19.1		No Recovery.				
			End of Boring				

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
			10. COORDINATE SYSTEM/DATUM HORIZONTAL VERTICAL Florida State Plane West NAD 1983 NAVD 88	
2. BORING DESIGNATION AMVC-07-04		LOCATION COORDINATES X = 433,879 Y = 1,133,137		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER
3. DRILLING AGENCY Eckerd College		CONTRACTOR FILE NO.		
4. NAME OF DRILLER Gregg Brooks				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	
6. THICKNESS OF OVERBURDEN 0.0 Ft.		12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD)		
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		13. TOTAL NUMBER CORE BOXES		
8. TOTAL DEPTH OF BORING 10.2 Ft.		14. ELEVATION GROUND WATER		
		15. DATE BORING	STARTED	COMPLETED
			02-20-07 12:31	02-20-07 12:37
		16. ELEVATION TOP OF BORING -11.7 Ft.		
		17. TOTAL RECOVERY FOR BORING 8.6 Ft.		
18. SIGNATURE AND TITLE OF INSPECTOR JF				

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-11.7	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
		•••••	SAND, fine grained, trace organics, trace shell hash, trace silt, 1.0" some shell hash layer @ 5.3'; (4.5"x 0.5") wood fragment @ 0.5'; silt distributed in lamina; little rock fragments up to (1.25"x 1.0") from 7.3' to 7.6'; trace shell fragments up to (1.25"x 1.25") from 7.3' to 7.6'; (1.0"x 1.0") whole shell @ 7.8', white (5Y-8/1), (SP).		1	Sample #1, Depth = 3.0' Mean (mm): 0.17, Phi Sorting: 0.41 Shell Hash: 0%, Fines (230): 1.17% (SP)
						2
-20.3	8.6					
-21.9	10.2		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-05			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
LOCATION COORDINATES X = 437,029 Y = 1,128,780			HORIZONTAL NAD 1983 VERTICAL NAVD 88	
3. DRILLING AGENCY Eckerd College		CONTRACTOR FILE NO.		
11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER				
12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD)				
4. NAME OF DRILLER Gregg Brooks				
13. TOTAL NUMBER CORE BOXES				
14. ELEVATION GROUND WATER				
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		BEARING
15. DATE BORING STARTED COMPLETED 02-20-07 13:44 02-20-07 13:45				
6. THICKNESS OF OVERBURDEN 0.0 Ft.		16. ELEVATION TOP OF BORING -4.7 Ft.		
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		17. TOTAL RECOVERY FOR BORING 15 Ft.		
8. TOTAL DEPTH OF BORING 19.0 Ft.		18. SIGNATURE AND TITLE OF INSPECTOR JF		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-4.7	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-7.0	2.3		SAND, fine grained, trace organics, trace shell hash, trace silt, organics less than 1%; (0.75"x 0.5") bone fragment @ 0.8'; mottled light gray (2.5Y-7/2) and, light gray (5Y-7/1), (SP).		1	Sample #1, Depth = 1.1' Mean (mm): 0.15, Phi Sorting: 0.39 Shell Hash: 0%, Fines (230): 1.39% (SP)
-8.1	3.4		Sandy SHELL FRAGMENTS, trace silt, shell fragments up to (1.0"x 1.0"); 0.5" clay pocket @ 2.7', light gray (2.5Y-7/1), (GW).		2	Sample #2, Depth = 2.9' Mean (mm): 0.59, Phi Sorting: 2.34 Shell Hash: 24%, Fines (230): 2.63% (SW)
-8.5	3.8		SAND, fine grained, trace shell hash, trace silt, light olive gray (5Y-6/2), (SP).		3	Sample #3, Depth = 3.6' Mean (mm): 0.13, Phi Sorting: 0.32 Shell Hash: 0%, Fines (230): 3.41% (SP)
-15.7	11.0		SAND, fine grained, trace shell hash, trace silt, silt distributed in lamina. (0.75"x 0.75") shell fragments @ 3.9' and 4.5'; (1.5"x 1.0") shell fragment @ 6.9'; light gray (2.5Y-7/2) grading to, white (5Y-8/1), (SP).		4	Sample #4, Depth = 7.5' Mean (mm): 0.13, Phi Sorting: 0.30 Shell Hash: 0%, Fines (230): 1.59% (SP)
-16.8	12.1		SAND, fine grained, little clay, little silt, trace shell hash, (3) (1.0"x 0.75") shell fragments @ 11.5', olive gray (5Y-4/2), (SM-SC).			
-17.6	12.9		SAND, fine grained, some silt, trace shell hash, olive gray (5Y-4/2), (SM).			
-19.7	15.0		Shelly SAND, trace silt, shell fragments up to (1.5"x 0.75"), gray (2.5Y-5/1), (GW).			
-23.7	19.0		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-06			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-20-07 14:18 COMPLETED 02-20-07 14:23	
8. TOTAL DEPTH OF BORING 18.8 Ft.			16. ELEVATION TOP OF BORING -7.0 Ft.	
			17. TOTAL RECOVERY FOR BORING 15.7 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-7.0	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-10.6	3.6	•••••	SAND, fine grained, trace organics, trace shell hash, trace silt, organics less than 1%, silt distributed in lamina, (1.0"x 1.0") shell fragments @ 0.1' and 3.4' (2); (2.0"x 1.0") shell fragment @ 3.4'; mottled light gray (2.5Y-7/2) and, light gray (5Y-7/1), (SP).		1	Sample #1, Depth = 1.8' Mean (mm): 0.15, Phi Sorting: 0.40 Shell Hash: 0%, Fines (230): 1.29% (SP)
-11.0	4.0	•••••	SAND, fine grained, trace silt, (1.5"x 1.0") shell fragment @ 3.7', light brownish gray (2.5Y-6/2), (SP).		2	Sample #2, Depth = 3.8' Mean (mm): 0.15, Phi Sorting: 0.37 Shell Hash: 0%, Fines (230): 2.99% (SP)
-14.8	7.8	•••••	SAND, fine grained, trace silt, (1.0"x 0.75") whole shells @ 6.7' and 6.9'; 1.0" pocket mottled with little clay @ 6.9'; silt distributed in lamina, light gray (2.5Y-7/2), (SP).		3	Sample #3, Depth = 6.0' Mean (mm): 0.15, Phi Sorting: 0.45 Shell Hash: 0%, Fines (230): 1.99% (SP)
-15.4	8.4	•••••	SAND, fine grained, little clay, little silt, olive gray (5Y-5/2), (SM-SC).			
-15.9	8.9	•••••	SAND, fine grained, little silt, trace clay, trace shell hash, light olive gray (5Y-6/2), (SM).			
-16.5	9.5	•••••	SAND, fine grained, little shell fragments, little silt, trace shell hash, shell fragments up to (1.25"x 0.75"), light olive gray (5Y-6/2), (SW-SM).			
-22.7	15.7	•••••	SAND, fine grained, little clay, little shell fragments, trace shell hash, trace silt, (1.0"x 1.0") shell fragments @ 9.7', 10.7', 12.0', 12.2', 12.5' and 13.5'; (2.5"x 1.5") shell fragment @ 10.8'; (1.75"x 1.0") shell fragment @ 13.5', (3.0"x 2.0") shell fragment @ 14.5', clay content decreases with depth, light brownish gray (2.5Y-6/2), (SM-SC).			
-25.8	18.8		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-07			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-20-07 15:03 COMPLETED 02-20-07 15:08	
8. TOTAL DEPTH OF BORING 17.2 Ft.			16. ELEVATION TOP OF BORING -11.0 Ft.	
			17. TOTAL RECOVERY FOR BORING 14.7 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-11.0	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-12.4	1.4		SAND, fine grained, little shell fragments, little shell hash, trace silt, shell fragments up to 0.5", (1.0"x 0.5") shell fragments @ 1.9' and 1.2', (1.25"x 1.0") shell fragments @ 1.1' and 1.2', white (5Y-8/1), (SW).		1	Sample #1, Depth = 0.7' Mean (mm): 0.40, Phi Sorting: 1.78 Shell Hash: 11%, Fines (230): 1.35% (SW)
-14.5	3.5		SAND, medium grained, little shell fragments, little shell hash, trace silt, shell fragments up to (1.5"x 1.0"), light gray (5Y-7/2), (SW).		2	Sample #2, Depth = 2.5' Mean (mm): 0.75, Phi Sorting: 2.03 Shell Hash: 22%, Fines (230): 1.08% (SW)
-15.2	4.2		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, little shell hash from 4.0' to 4.1'; shell fragments up to 0.5"; (1.25"x 1.0") shell fragment @ 3.9', white (5Y-8/1), (SW).		3	Sample #3, Depth = 3.8' Mean (mm): 0.25, Phi Sorting: 1.38 Shell Hash: 0%, Fines (230): 1.39% (SW)
-15.7	4.7		SAND, medium grained, little shell fragments, little shell hash, trace silt, shell fragments up to (1.25"x 1.0"), light gray (5Y-7/2), (SW).		2	
-16.1	5.1		SAND, fine grained, little shell hash, trace shell fragments, trace silt, shell fragments up to 0.5", white (5Y-8/1), (SW).		1	
-18.5	7.5		SAND, medium grained, little shell fragments, little shell hash, trace silt, shell fragments up to (1.25"x 1.0"), light gray (5Y-7/2), (SW).		4	Sample #4, Depth = 6.3' Mean (mm): 0.14, Phi Sorting: 0.93 Shell Hash: 2%, Fines (230): 6.76% (SW-SM)
-23.2	12.2		SAND, fine grained, trace clay, trace shell hash, trace silt, silt distributed in lamina; clay distributed in lamina; (1.25"x 0.5") whole shell @ 7.3', olive gray (5Y-5/2), (SW-SM). SAND, fine grained, little clay, little shell fragments, little silt, trace shell hash, shell fragments up to (2.5"x 1.5"), gray (5Y-5/1), (SM-SC).			
-25.7	14.7		CLAY, trace sand, trace shell fragments, trace shell hash, shell fragments up to 0.5"; (2) (1.5"x 1.0") shell fragments @ 12.6'; (3.0"x 2.0") shell fragment @ 12.8', dark gray (5Y-4/1), (SC).			
-28.2	17.2		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-08			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-20-07 16:43 COMPLETED 02-20-07 16:45	
8. TOTAL DEPTH OF BORING 16.9 Ft.			16. ELEVATION TOP OF BORING -5.6 Ft.	
			17. TOTAL RECOVERY FOR BORING 8.5 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-5.6	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-6.9	1.3		SHELL HASH, some shell fragments, little sand, trace silt, shell fragments up to (1.75"x 1.25"); (1.5"x 0.75") rock fragment @ 0.7', light gray (5Y-7/1), (SW).		1	Sample #1, Depth = 0.7' Mean (mm): 1.52, Phi Sorting: 2.07 Shell Hash: 33%, Fines (230): 2.06% (SW)
-7.4	1.8				2	Sample #2, Depth = 1.5'
-8.1	2.5		SAND, medium grained, little shell fragments, little shell hash, trace silt, shell fragments up to (1.25"x 1.0"), white (5Y-8/1), (SW).		1	Mean (mm): 0.48, Phi Sorting: 1.61
-8.6	3.0				2	Shell Hash: 9%, Fines (230): 1.35% (SW)
-10.1	4.5		SHELL HASH, some shell fragments, little sand, trace silt, shell fragments up to (2.25"x 1.5"), light gray (5Y-7/1), (SW).		1	
-11.9	6.3		SAND, medium grained, little shell fragments, little shell hash, trace silt, shell fragments up to (1.5"x 0.75"), white (5Y-8/1), (SW).		3	Sample #3, Depth = 5.4' Mean (mm): 0.75, Phi Sorting: 1.70 Shell Hash: 14%, Fines (230): 2.44% (SW)
-13.1	7.5		SHELL HASH, some shell fragments, little sand, trace silt, shell fragments up to (1.25"x 1.25"), light gray (5Y-7/1), (SW).		4	Sample #4, Depth = 6.9' Mean (mm): 0.44, Phi Sorting: 1.03 Shell Hash: 0%, Fines (230): 1.20% (SW)
-14.1	8.5		SHELL HASH, some sand, little shell fragments, trace silt, shell fragments up to (1.0"x 1.0"), light gray (5Y-7/1), (SW).			
			SAND, medium grained, some shell hash, trace shell fragments, trace silt, shell fragments up to 0.5"; (1.0"x 0.5") shell fragment @ 7.5', white (5Y-8/1), (SW).			
			SAND, fine grained, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; shell fragments up to 0.5", white (5Y-8/1), (SP). No Recovery.			
-22.5	16.9		End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-09			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-21-07 09:14 COMPLETED 02-21-07 09:16	
8. TOTAL DEPTH OF BORING 18.8 Ft.			16. ELEVATION TOP OF BORING -12.7 Ft.	
			17. TOTAL RECOVERY FOR BORING 16.8 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-12.7	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
			SAND, fine grained, trace shell hash, trace silt, 1.0" little shell hash pocket @ 0.7'; little shell hash layer from 2.1' to 2.3'; (1.0"x 1.0") whole shell @ 2.0'; (0.5"x 0.5") shell fragment @ 7.0', white (5Y-8/1), (SP).		1	Sample #1, Depth = 3.0' Mean (mm): 0.19, Phi Sorting: 0.52 Shell Hash: 0%, Fines (230): 1.89% (SP)
					2	Sample #2, Depth = 6.0' Mean (mm): 0.16, Phi Sorting: 0.37 Shell Hash: 0%, Fines (230): 1.25% (SP)
					3	Sample #3, Depth = 9.0' Mean (mm): 0.17, Phi Sorting: 0.52 Shell Hash: 0%, Fines (230): 1.14% (SP)
-23.7	11.0		SAND, medium grained, little shell fragments, little shell hash, trace silt, shell fragments up to (1.5"x 0.75"); shell fragments increase with depth; (3.0"x 2.5") shell fragment @ 11.9', light gray (5Y-7/1), (SW).		4	Sample #4, Depth = 11.6' Mean (mm): 0.55, Phi Sorting: 2.11 Shell Hash: 18%, Fines (230): 0.83% (SW)
-25.2	12.5		SAND, fine grained, trace shell hash, trace silt, silt distributed in lamina; little shell hash from 16.0' to 16.1' and 16.4' to 16.6'; trace shell fragments up to 0.5" from 16.4' to 16.6'; (2.0"x 0.75") wood fragment @ 16.6', light gray (5Y-7/1), (SP).		5	Sample #5, Depth = 13.7' Mean (mm): 0.18, Phi Sorting: 0.57 Shell Hash: 0%, Fines (230): 1.96% (SP)
-29.5	16.8					
-31.5	18.8		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-10			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-21-07 09:55 COMPLETED 02-21-07 09:58	
8. TOTAL DEPTH OF BORING 18.8 Ft.			16. ELEVATION TOP OF BORING -9.2 Ft.	
			17. TOTAL RECOVERY FOR BORING 17 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-9.2	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-12.6	3.4		SAND, fine grained, little shell hash, trace shell fragments, trace silt, shell fragments up to 0.5"; some shell hash from 2.9' to 3.2'; trace whole shell up to (1.0"x 1.0") from 2.8' to 3.3', light gray (5Y-7/1), (SW).		1	Sample #1, Depth = 1.7' Mean (mm): 0.26, Phi Sorting: 1.32 Shell Hash: 4%, Fines (230): 1.20% (SW)
-14.1	4.9		SHELL HASH, little sand, little shell fragments, trace silt, (1.0"x 0.75") whole shell @ 3.9', 4.3' and 4.4'; shell fragments up to (1.0"x 1.0"); (1.0"x 0.75") rock fragment @ 3.5', gray (5Y-6/1), (SW).		2	Sample #2, Depth = 4.2' Mean (mm): 0.64, Phi Sorting: 1.98 Shell Hash: 19%, Fines (230): 1.30% (SW)
-16.0	6.8		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; 1.0" some shell hash pocket @ 5.4'; shell fragments up to 0.5"; (1.5"x 1.0") shell fragment @ 6.8'; (1.0"x 0.75") whole shells @ 5.1', 5.3', 5.4' and 6.0', white (5Y-8/1), (SW).		3	Sample #3, Depth = 6.0' Mean (mm): 0.17, Phi Sorting: 0.87 Shell Hash: 1%, Fines (230): 1.16% (SW)
-21.1	11.9		SAND, fine grained, trace clay, trace shell hash, trace silt, silt distributed in lamina; some shell hash from 11.7' to 11.9'; (0.75"x 0.75") whole shells @ 8.8' and 11.5'; (0.75"x 0.5") shell fragments @ 9.3' and 9.6'; (1.75"x 1.0") shell fragment @ 11.8', light gray (5Y-7/1), (SP).		4	Sample #4, Depth = 9.0' Mean (mm): 0.15, Phi Sorting: 0.42 Shell Hash: 0%, Fines (230): 1.42% (SP)
-22.9	13.7		SAND, fine grained, trace clay, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; 1.0" clay pocket @ 13.7'; shell fragments up to 0.5"; (2) (1.0"x 1.0") whole shells @ 12.5'; (1.0"x 1.0") shell fragment @ 13.5', gray (5Y-6/1), (SW).		5	Sample #5, Depth = 12.8' Mean (mm): 0.17, Phi Sorting: 1.02 Shell Hash: 2%, Fines (230): 3.30% (SW)
-23.1	13.9				4	
-23.5	14.3		SAND, fine grained, trace clay, trace shell hash, trace silt, silt distributed in lamina, light gray (5Y-7/1), (SP).		4	
-26.2	17.0		SHELL HASH, some shell fragments, trace sand, shell fragments up to 0.5"; (1.5"x 1.0") rock fragment @ 14.0'; 1.0" clay pockets @ 14.2' and 14.3', olive gray (5Y-5/2), (SW).			
-28.0	18.8		SAND, fine grained, trace clay, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; some shell hash from 16.6' to 16.8'; shell fragments up to 0.5"; (1.5"x 0.75") shell fragment @ 14.9'; (1.0"x 1.0") whole shell @ 15.1', light gray (5Y-7/1), (SP). No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-11			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-21-07 10:36 COMPLETED 02-21-07 10:39	
8. TOTAL DEPTH OF BORING 18.4 Ft.			16. ELEVATION TOP OF BORING -7.2 Ft.	
			17. TOTAL RECOVERY FOR BORING 11.6 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-7.2	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-11.3	4.1		SAND, fine grained, little shell hash, trace shell fragments, trace silt, shell fragments up to 0.5"; (2.75"x 1.75") shell fragment @ 3.0'; trace organics from 3.3' to 3.5' and @ 3.9'; (1.0"x 0.75") whole shells @ 2.2', 3.5' and 4.1'; increased shell hash from 3.2' to 4.1', light gray (5Y-7/1), (SW).		1	Sample #1, Depth = 2.0' Mean (mm): 0.27, Phi Sorting: 1.22 Shell Hash: 2%, Fines (230): 1.03% (SW)
-12.6	5.4		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, shell fragments up to 0.5"; (1.0"x 0.75") whole shells @ 4.4' and 5.2' (2); 0.5" some hash shell pocket @ 5.2'; mottled gray (5Y-6/1) and, pale yellow (5Y-8/2), (SP).		2	Sample #2, Depth = 4.7' Mean (mm): 0.19, Phi Sorting: 0.85 Shell Hash: 2%, Fines (230): 1.28% (SP)
-13.5	6.3		SHELL HASH, some shell fragments, trace sand, trace silt, shell fragments up to (2.5"x 1.0"); 1.0" sand pocket @ 6.2'; (1.0"x 1.0") rock fragment @ 6.0'; (1.0"x 1.0") whole shells @ 5.6' and 5.9', light olive gray (5Y-6/2), (SW).		3	Sample #3, Depth = 5.8' Mean (mm): 0.87, Phi Sorting: 2.02 Shell Hash: 25%, Fines (230): 1.29% (SW)
-15.0	7.8		SAND, fine grained, trace silt, (2.25"x 1.25") shell fragments @ 7.0' and 7.4'; (1.0"x 1.0") whole shells @ 7.2' and 7.3' (2); mottled gray (5Y-8/1) and, white (5Y-8/1), (SP).		4	Sample #4, Depth = 6.8' Mean (mm): 0.26, Phi Sorting: 0.59 Shell Hash: 1%, Fines (230): 1.08% (SP)
-17.5	10.3		SHELL HASH, some shell fragments, trace sand, trace silt, trace whole shell, shell fragments up to (1.0"x 1.0"); (3.0"x 2.0") shell fragment @ 8.0'; (2.0"x 2.0") shell fragment @ 7.9'; whole shells up to (1.0"x 1.0"), light olive gray (5Y-6/2), (SW).		3	
-18.2	11.0		SAND, fine grained, little shell hash, trace shell fragments, trace silt, shell fragments up to 0.5", light gray (5Y-7/1), (SW).		1	
-18.8	11.6		SHELL HASH, some shell fragments, trace sand, trace silt, shell fragments up to (1.0"x 1.0"); (1.5"x 1.0") shell fragments @ 11.2' and 11.4', light olive gray (5Y-6/2), (SW).		3	
-25.6	18.4		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-12			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-21-07 11:28 COMPLETED 02-21-07 11:31	
8. TOTAL DEPTH OF BORING 18.8 Ft.			16. ELEVATION TOP OF BORING -7.5 Ft.	
			17. TOTAL RECOVERY FOR BORING 13.1 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-7.5	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-12.7	5.2		SAND, fine grained, trace shell fragments, trace silt, shell fragments up to 0.5"; (0.75"x 0.75") shell fragment @ 2.6"; (1.0"x 0.5") shell fragments @ 2.7' and 3.4'; (1.75"x 1.0") shell fragment @ 4.7"; 1.0" some shell hash pocket @ 1.3'; (1.5"x 1.0") rock fragment @ 3.1'; white (5Y-8/1), (SW).		1	Sample #1, Depth = 2.6' Mean (mm): 0.26, Phi Sorting: 1.35 Shell Hash: 5%, Fines (230): 1.05% (SW)
-13.8	6.3		SHELL HASH, some shell fragments, little sand, trace silt, shell fragments up to (1.5"x 1.25"), light gray (5Y-7/1), (SW).		2	Sample #2, Depth = 5.7' Mean (mm): 0.70, Phi Sorting: 1.92 Shell Hash: 19%, Fines (230): 1.40% (SW)
-15.7	8.2		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, some shell hash from 6.7' to 6.9"; (1.0"x 1.0") shell fragments @ 7.3' and 8.1'; (1.25"x 1.25") shell fragments @ 7.8' and 7.9'; (1.5"x 1.25") shell fragments @ 7.4' and 7.5', white (5Y-8/1), (SW).		3	Sample #3, Depth = 7.2' Mean (mm): 0.30, Phi Sorting: 1.24 Shell Hash: 4%, Fines (230): 1.15% (SW)
-16.1	8.6		SHELL HASH, some shell fragments, little sand, trace silt, shell fragments up to (0.75"x 0.5"), light gray (5Y-7/1), (SW).			
-16.6	9.1		SAND, fine grained, trace shell hash, trace silt, silt distributed in lamina, white (5Y-8/1), (SP).			
-20.6	13.1		SHELL FRAGMENTS, some shell hash, little sand, trace silt, shell fragments up to (2.5"x 1.5"); (2.5"x 1.5") rock fragment @ 9.5'; 0.5" clay pockets @ 9.8' and 10.2', light gray (5Y-7/1), (GW).			
			No Recovery.			
-26.3	18.8		End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-13			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
LOCATION COORDINATES X = 430,866 Y = 1,130,639			HORIZONTAL NAD 1983 VERTICAL NAVD 88	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED COMPLETED 02-21-07 12:53 02-21-07 12:56	
8. TOTAL DEPTH OF BORING 18.5 Ft.			16. ELEVATION TOP OF BORING -5.0 Ft.	
			17. TOTAL RECOVERY FOR BORING 15.5 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-5.0	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-5.8	0.8		SAND, fine grained, little shell hash, trace shell fragments, trace silt, shell fragments up to 0.5"; (1.0"x 0.75") shell fragment @ 0.5', white (5Y-8/1), (SW).		2	Sample #1, Depth = 1.4' Mean (mm): 1.69, Phi Sorting: 2.11 Shell Hash: 42%, Fines (230): 0.85% (SW)
-6.9	1.9		SHELL FRAGMENTS, some shell hash, little sand, trace silt, shell fragments up to (1.0"x 1.0"), light gray (5Y-7/2), (GW).		1	Sample #2, Depth = 2.5' Mean (mm): 0.24, Phi Sorting: 1.05 Shell Hash: 2%, Fines (230): 1.06% (SW)
-9.3	4.3		SAND, fine grained, little shell hash, trace shell fragments, trace silt, shell fragments up to 0.5"; little shell fragments up to (1.25"x 1.25") from 2.8' to 3.3'; (2.5"x 1.0") whole shell @ 3.4', white (5Y-8/1), (SW).		2	
-15.2	10.2		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, shell fragments up to 0.5"; (1.0"x 1.0") whole shell @ 5.0'; (1.0"x 0.75") shell fragments @ 5.3' (3) and 5.9'; (1.25"x 0.75") shell fragment @ 8.9'; 0.5" clay pocket @ 9.7', white (5Y-8/1), (SP).		3	Sample #3, Depth = 7.5' Mean (mm): 0.17, Phi Sorting: 0.40 Shell Hash: 0%, Fines (230): 1.01% (SP)
-17.5	12.5		SHELL HASH, some shell fragments, trace silt, shell fragments up to (1.75"x 1.0"); (3.0"x 2.0") shell fragment @ 10.3'; (1.75"x 1.5") shell fragments @ 12.2' and 12.4', light gray (5Y-7/2), (SW).		4	Sample #4, Depth = 11.4' Mean (mm): 1.24, Phi Sorting: 1.72 Shell Hash: 25%, Fines (230): 2.32% (SW)
-18.7	13.7		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, shell fragments up to 0.5"; (1.0"x 0.5") shell fragment @ 12.9', light yellowish brown (2.5Y-6/3), (SP).			
-20.5	15.5		SAND, fine grained, some shell hash, little shell fragments, trace silt, shell fragments up to (1.5"x 1.0"); (2.0"x 2.0") shell fragment @ 14.4'; 0.25" clay pocket from 14.4' to 14.6', light yellowish brown (2.5Y-6/3), (SW).			
-23.5	18.5		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-14			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			HORIZONTAL NAD 1983 VERTICAL NAVD 88	
4. NAME OF DRILLER Gregg Brooks			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			12. TOTAL SAMPLES DISTURBED _____ UNDISTURBED (UD) _____	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			13. TOTAL NUMBER CORE BOXES	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			14. ELEVATION GROUND WATER	
8. TOTAL DEPTH OF BORING 18.8 Ft.			15. DATE BORING STARTED 02-21-07 13:37 COMPLETED 02-21-07 13:41	
			16. ELEVATION TOP OF BORING -6.4 Ft.	
			17. TOTAL RECOVERY FOR BORING 16 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-6.4	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-7.4	1.0		SAND, fine grained, little shell hash, trace shell fragments, trace silt, shell fragments up to 0.5", light gray (5Y-7/2), (SW).		1	Sample #1, Depth = 0.5' Mean (mm): 0.28, Phi Sorting: 1.25 Shell Hash: 3%, Fines (230): 1.05% (SW)
-8.2	1.8		SHELL HASH, some shell fragments, trace sand, trace silt, shell fragments up to (1.0"x 0.75"); (2.75"x 1.25") rock fragment @ 1.5', pale olive (5Y-6/3), (SW).		2	Sample #2, Depth = 1.4' Mean (mm): 1.19, Phi Sorting: 2.00 Shell Hash: 31%, Fines (230): 0.88% (SW)
-11.9	5.5		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, shell hash and shell fragment layer from 2.1' to 2.3'; 1.0" some shell hash pocket from 2.6' to 3.1'; shell fragments up to 0.5"; (1.25"x 0.75") shell fragments @ 2.0', 3.0' and 4.7'; (1.0"x 0.5") shell fragments @ 2.8', 3.4', 4.3' and 4.7', white (5Y-8/1), (SP).		3	Sample #3, Depth = 4.0' Mean (mm): 0.19, Phi Sorting: 0.84 Shell Hash: 1%, Fines (230): 0.83% (SP)
-15.7	9.3		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, shell fragments up to 0.5"; (1.25"x 1.25") rock fragment @ 7.6', white (5Y-8/1), (SW).		4	Sample #4, Depth = 7.0' Mean (mm): 0.26, Phi Sorting: 1.12 Shell Hash: 3%, Fines (230): 2.13% (SW)
-18.0	11.6		SHELL HASH, some shell fragments, trace sand, trace silt, shell fragments up to (1.5"x 1.0"); (2.0"x 1.0") rock fragments @ 10.3' and 10.7'; (1.25"x 1.0") rock fragment @ 11.5', pale olive (5Y-6/3), (SW).		2	
-19.2	12.8		SAND, fine grained, little shell fragments, trace shell hash, trace silt, shell fragments up to (1.5"x 0.75"), light gray (5Y-7/1), (SW).		5	Sample #5, Depth = 12.2' Mean (mm): 0.40, Phi Sorting: 1.83 Shell Hash: 11%, Fines (230): 1.78% (SW)
-22.4	16.0		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina, 0.5" clay pockets @ 12.9', 13.0' and 13.4'; shell fragments up to 0.5"; some shell fragments up to (1.5"x 1.0") from 14.0' to 14.7'; (3.0"x 2.0") whole shells @ 12.8', 14.1' and 14.3'; (1.0"x 1.0") whole shells @ 13.4' and 13.6'; (3.5"x 1.5") rock fragment @ 14.8', olive (5Y-5/3), (SW).			
-25.2	18.8		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-15			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-21-07 15:05 COMPLETED 02-21-07 15:07	
8. TOTAL DEPTH OF BORING 18.4 Ft.			16. ELEVATION TOP OF BORING -10.7 Ft.	
			17. TOTAL RECOVERY FOR BORING 10.6 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-10.7	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-11.3	0.6		SAND, fine grained, little shell hash, trace shell fragments, trace silt, shell fragments up to 0.5", light gray (5Y-7/1), (SW). SHELL HASH, some shell fragments, trace organics, trace sand, trace silt, shell fragments up to (2.5"x 1.25"); (3.5"x 2.5") rock fragment @ 1.6'; (3.0"x 2.0") whole shell @ 2.3', gray (5Y-6/1), (SW).		2	Sample #1, Depth = 2.0' Mean (mm): 0.95, Phi Sorting: 1.77 Shell Hash: 20%, Fines (230): 1.93% (SW)
-15.2	4.5		SAND, fine grained, little shell hash, trace shell fragments, trace silt, shell fragments up to 0.5", light gray (5Y-7/1), (SW). SHELL HASH, some shell fragments, trace sand, trace silt, sand layer from 5.6' to 5.8'; shell fragments up to (1.5"x 1.0"), gray (5Y-6/1), (SW).		2	Sample #2, Depth = 4.9' Mean (mm): 0.37, Phi Sorting: 1.40 Shell Hash: 4%, Fines (230): 2.11% (SW)
-15.9	5.2		SAND, fine grained, trace shell hash, trace silt, shelly layers from 8.1' to 8.3' and 9.1' to 9.3'; (2.5"x 1.5") coral fragment @ 7.9', white (5Y-8/1), (SP).		1	Sample #3, Depth = 8.5' Mean (mm): 0.21, Phi Sorting: 0.74 Shell Hash: 0%, Fines (230): 1.88% (SP)
-18.2	7.5		SHELL HASH, some shell fragments, trace sand, trace silt, shell fragments up to (1.0"x 1.0"); (1.75"x 1.75") whole shell @ 9.6', gray (5Y-6/1), (SW). CLAY, little shell fragments, little shell hash, shell fragments up to (1.0"x 1.0"), dark gray (5Y-4/1), (SC).		3	
-20.3	9.6				1	
-20.6	9.9					
-21.3	10.6					
			No Recovery.			
-29.1	18.4		End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-16			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL DEG. FROM VERTICAL BEARING <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED COMPLETED 02-21-07 16:21 02-21-07 16:24	
8. TOTAL DEPTH OF BORING 18.0 Ft.			16. ELEVATION TOP OF BORING -7.1 Ft.	
			17. TOTAL RECOVERY FOR BORING 9.3 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-7.1	0.0	●●●●●				Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
		●●●●●	SHELL FRAGMENTS, some shell hash, trace sand, trace silt, shell fragments up to (2.5"x 1.5"), light gray (2.5Y-7/1), (GW).			
-15.8	8.7	●●●●●				
-16.4	9.3	●●●●●	SAND, fine grained, some shell hash, trace silt, white (5Y-8/1), (SP).			
		●●●●●	No Recovery.			
-25.1	18.0	●●●●●	End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS				
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.					
			10. COORDINATE SYSTEM/DATUM <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%; text-align: center;">HORIZONTAL</td> <td style="width: 33%; text-align: center;">VERTICAL</td> </tr> <tr> <td style="text-align: center;">Florida State Plane West</td> <td style="text-align: center;">NAD 1983 NAVD 88</td> </tr> </table>		HORIZONTAL	VERTICAL	Florida State Plane West	NAD 1983 NAVD 88
HORIZONTAL	VERTICAL							
Florida State Plane West	NAD 1983 NAVD 88							
2. BORING DESIGNATION AMVC-07-17		LOCATION COORDINATES X = 430,589 Y = 1,144,145		11. MANUFACTURER'S DESIGNATION OF DRILL <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 70%;"><input type="checkbox"/> AUTO HAMMER</td> </tr> <tr> <td><input type="checkbox"/> MANUAL HAMMER</td> </tr> </table>	<input type="checkbox"/> AUTO HAMMER	<input type="checkbox"/> MANUAL HAMMER		
<input type="checkbox"/> AUTO HAMMER								
<input type="checkbox"/> MANUAL HAMMER								
3. DRILLING AGENCY Eckerd College		CONTRACTOR FILE NO.						
4. NAME OF DRILLER Gregg Brooks								
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING					
6. THICKNESS OF OVERBURDEN 0.0 Ft.		12. TOTAL SAMPLES <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">DISTURBED</td> <td style="width: 33%;">UNDISTURBED (UD)</td> </tr> </table>			DISTURBED	UNDISTURBED (UD)		
DISTURBED	UNDISTURBED (UD)							
13. TOTAL NUMBER CORE BOXES								
14. ELEVATION GROUND WATER								
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		15. DATE BORING	STARTED	COMPLETED				
8. TOTAL DEPTH OF BORING 18.8 Ft.		02-22-07 08:58	02-22-07 09:00	16. ELEVATION TOP OF BORING -8.0 Ft.				
17. TOTAL RECOVERY FOR BORING 11.7 Ft.								
18. SIGNATURE AND TITLE OF INSPECTOR JF								

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-8.0	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-9.6	1.6	•••••	SAND, fine grained, trace shell hash, trace silt, silt distributed in lamina; 0.5" clay pockets @ 0.5' and 1.5', light gray (5Y-7/2), (SP).		1	Sample #1, Depth = 0.9' Mean (mm): 0.16, Phi Sorting: 0.45 Shell Hash: 0%, Fines (230): 1.39% (SP)
-12.6	4.6	▨▨▨▨▨	Sandy CLAY, little shell fragments, trace shell hash, shell fragments up to (1.0"x 1.0"), olive gray (5Y-4/2), (SC).			
-19.7	11.7	•••••	SAND, fine grained, little silt, trace clay, trace organics, trace shell hash, silt distributed in lamina; clay distributed in lamina, light gray (5Y-7/2), (SP).			
-26.8	18.8		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-18			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-22-07 09:42 COMPLETED 02-22-07 09:42	
8. TOTAL DEPTH OF BORING 18.8 Ft.			16. ELEVATION TOP OF BORING -4.8 Ft.	
			17. TOTAL RECOVERY FOR BORING 16.5 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-4.8	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-6.2	1.4		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; 0.5" clay pockets @ 0.7', 0.9' and 1.1'; shell fragments up to 0.5", light gray (5Y-7/2), (SP).		1	Sample #1, Depth = 0.7' Mean (mm): 0.20, Phi Sorting: 0.66 Shell Hash: 0%, Fines (230): 1.66% (SP)
-7.4	2.6		SAND, fine grained, little shell hash, trace shell fragments, trace silt, silt distributed in lamina; shell fragments up to 0.5"; (1.0"x 0.75") shell fragments @ 1.5', 1.7' and 2.0', light gray (5Y-7/2), (SW).		2	Sample #2, Depth = 2.0' Mean (mm): 0.35, Phi Sorting: 1.45 Shell Hash: 3%, Fines (230): 1.75% (SW)
-9.1	4.3		SHELL HASH, little shell fragments, trace sand, trace silt, shell fragments up to (1.0"x 0.75"); 0.5" clay pocket @ 4.2', light olive gray (5Y-6/2), (SW).		3	Sample #3, Depth = 3.4' Mean (mm): 1.04, Phi Sorting: 1.66 Shell Hash: 16%, Fines (230): 2.68% (SW)
-10.4	5.6		SAND, fine grained, little shell hash, trace shell fragments, trace silt, silt distributed in lamina; shell fragments up to 0.5", light gray (5Y-7/2), (SW).		2	
			Clayey SAND, fine grained, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; shell fragments up to 0.5"; (1.0"x 1.0") whole shells @ 6.2', 6.5' and 12.5'; (1.0"x 0.75") shell fragments @ 7.7' and 11.4'; (1.75"x 1.0") shell fragment @ 9.2'; some shell fragments up to (2.5"x 1.25") from 14.6' to 15.1', olive gray (5Y-4/2), (SC).			
-21.3	16.5		No Recovery.			
-23.6	18.8		End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-19			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-22-07 10:20 COMPLETED 02-22-07 10:21	
8. TOTAL DEPTH OF BORING 18.8 Ft.			16. ELEVATION TOP OF BORING -5.1 Ft.	
			17. TOTAL RECOVERY FOR BORING 16.8 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-5.1	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-7.0	1.9		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; shell fragments up to 0.5"; mottled gray (5Y-6/1) and, light gray (5Y-7/2), (SW).		1	Sample #1, Depth = 1.0' Mean (mm): 0.23, Phi Sorting: 1.00 Shell Hash: 2%, Fines (230): 1.86% (SW)
-9.7	4.6		SHELL FRAGMENTS, some shell hash, little sand, trace silt, 0.25" organic pocket @ 2.8' shell fragments up to (1.0"x 1.0"), light gray (2.5Y-7/2), (GW).		2	Sample #2, Depth = 3.3' Mean (mm): 0.59, Phi Sorting: 1.89 Shell Hash: 14%, Fines (230): 2.76% (SW)
-10.3	5.2		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; shell fragments up to 0.5", light gray (5Y-7/2), (SW).		1	Sample #3, Depth = 6.4' Mean (mm): 0.17, Phi Sorting: 0.36 Shell Hash: 0%, Fines (230): 2.27% (SP)
-10.8	5.7			2		
-12.1	7.0		SHELL FRAGMENTS, some shell hash, little sand, trace silt, light gray (2.5Y-7/2), (GW).		3	
-18.2	13.1		SAND, fine grained, trace clay, trace shell hash, trace silt, trace wood fragments, silt distributed in lamina; (1.0"x 0.25") wood fragment @ 6.3', light olive gray (5Y-6/2), (SP). SAND, fine grained, some clay, little silt, trace shell hash, 1.0" clay pocket @ 7.1'; (1.25"x 1.0") shell fragments @ 7.7' (3) and 8.8'; (2.0"x 2.0") shell fragments @ 8.0', 8.8', 10.8' and 12.6'; (1.0"x 1.0") shell fragments @ 10.7' (2), 11.2' (2), 11.9' and 12.9', dark gray (5Y-4/1), (SM-SC).			
-21.9	16.8		SAND, fine grained, little clay, little silt, trace organics, trace shell hash, silt distributed in lamina, olive gray (5Y-4/2), (SM-SC).			
-23.9	18.8		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Anna Maria 2007 Sand Search Manatee County, FL			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION AMVC-07-20			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY Eckerd College			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER Electronic Vibracore <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER Gregg Brooks			12. TOTAL SAMPLES <input type="checkbox"/> DISTURBED <input type="checkbox"/> UNDISTURBED (UD)	
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED 02-20-07 11:25 COMPLETED 02-20-07 11:27	
8. TOTAL DEPTH OF BORING 18.8 Ft.			16. ELEVATION TOP OF BORING -4.3 Ft.	
			17. TOTAL RECOVERY FOR BORING 14 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR JF	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-4.3	0.0					Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.
-8.4	4.1		SAND, fine grained, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; shell fragments up to 0.5"; little shell fragments from 2.6' to 2.8'; (1.0"x 1.0") shell fragment @ 3.9', white (5Y-8/1), (SP).		1	Sample #1, Depth = 2.0' Mean (mm): 0.21, Phi Sorting: 0.82 Shell Hash: 1%, Fines (230): 1.15% (SP)
-10.5	6.2		SAND, fine grained, some clay, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; shell fragments up to 0.5"; little shell fragments from 5.1' to 5.4'; (1.0"x 1.0") shell fragments @ 4.8' (2), 5.2' (2) and 5.3' (3), light olive gray (5Y-6/2), (SW).		2	Sample #2, Depth = 5.4' Mean (mm): 0.21, Phi Sorting: 1.10 Shell Hash: 3%, Fines (230): 2.30% (SW)
-11.3	7.0		SHELL HASH, some sand, some shell fragments, trace clay, trace silt, shell fragments up to (1.0"x 1.0"), olive gray (5Y-5/2), (SW).		3	Sample #3, Depth = 6.6' Mean (mm): 0.81, Phi Sorting: 2.05 Shell Hash: 16%, Fines (230): 2.83% (SW)
-16.4	12.1		Clayey SAND, trace shell fragments, trace shell hash, trace silt, silt distributed in lamina; shell fragments up to 0.5"; (1.75"x 1.5") shell fragment @ 8.1', (1.0"x 1.0") whole shells @ 8.1' and 11.4', olive gray (5Y-4/2), (SC).			
-18.3	14.0		SAND, fine grained, little clay, trace shell hash, trace silt, silt distributed in lamina, light yellowish brown (2.5Y-6/3), (SC).			
-23.1	18.8		No Recovery.			
			End of Boring			

FLORIDA DEP ROSS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/30/07

APPENDIX 3

2007 CPE INDIVIDUAL VIBRACORE GRANULARMETRIC REPORTS

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
2481 NW Boca Raton Blvd, Boca Raton
FL 33431
ph (561) 391-8102
fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-01 #1

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 430,831	Northing (ft): 1,143,326	Coordinate System: Florida State Plane West	Elevation (ft): -8.6 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 78.74	Wash Weight (g): 77.43	Pan Retained (g): 0.01	Sieve Loss (%): 0.05	Fines (%): #200 - 1.75 #230 - 1.74	Organics (%):	Carbonates (%):	Shell Hash (%): 3
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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
7/16"	-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	0.33	0.26	0.33
4	-2.25	4.76	0.29	0.37	0.55	0.70
5	-2.00	4.00	0.53	0.67	1.08	1.37
7	-1.50	2.83	1.58	2.01	2.66	3.38
10	-1.00	2.00	3.41	4.33	6.07	7.71
14	-0.50	1.41	3.94	5.00	10.01	12.71
18	0.00	1.00	2.99	3.80	13.00	16.51
25	0.50	0.71	3.35	4.25	16.35	20.76
35	1.00	0.50	3.62	4.60	19.97	25.36
45	1.50	0.35	3.71	4.71	23.68	30.07
60	2.00	0.25	7.22	9.17	30.90	39.24
80	2.50	0.18	22.17	28.16	53.07	67.40
120	3.00	0.13	22.35	28.38	75.42	95.78
170	3.50	0.09	1.90	2.41	77.32	98.19
200	3.75	0.07	0.05	0.06	77.37	98.25
230	4.00	0.06	0.01	0.01	77.38	98.26

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.79	2.63	2.19	0.96	-0.07	-1.31
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	1.62	0.33	1.38	-1.2	3.31	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
 2481 NW Boca Raton Blvd, Boca Raton
 FL 33431
 ph (561) 391-8102
 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-01 #2

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 430,831	Northing (ft): 1,143,326	Coordinate System: Florida State Plane West	Elevation (ft): -9.5 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 78.62	Wash Weight (g): 76.92	Pan Retained (g): 0.01	Sieve Loss (%): 0.17	Fines (%): #200 - 2.42 #230 - 2.33	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.13	0.17	0.13	0.17
5	-2.00	4.00	0.01	0.01	0.14	0.18
7	-1.50	2.83	0.09	0.11	0.23	0.29
10	-1.00	2.00	0.27	0.34	0.50	0.63
14	-0.50	1.41	0.48	0.61	0.98	1.24
18	0.00	1.00	0.46	0.59	1.44	1.83
25	0.50	0.71	0.63	0.80	2.07	2.63
35	1.00	0.50	0.80	1.02	2.87	3.65
45	1.50	0.35	1.05	1.34	3.92	4.99
60	2.00	0.25	2.65	3.37	6.57	8.36
80	2.50	0.18	17.89	22.76	24.46	31.12
120	3.00	0.13	43.52	55.35	67.98	86.47
170	3.50	0.09	8.45	10.75	76.43	97.22
200	3.75	0.07	0.28	0.36	76.71	97.58
230	4.00	0.06	0.07	0.09	76.78	97.67

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.40	2.98	2.90	2.67	2.37	2.17	1.50
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.53	0.17	0.68	-3.22	17.46	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
2481 NW Boca Raton Blvd, Boca Raton
FL 33431
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fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-01 #3

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 430,831	Northing (ft): 1,143,326	Coordinate System: Florida State Plane West	Elevation (ft): -14.1 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 74.80	Wash Weight (g): 73.48	Pan Retained (g): 0.02	Sieve Loss (%): 0.08	Fines (%): #200 - 1.96 #230 - 1.88	Organics (%):	Carbonates (%):	Shell Hash (%): 2
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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
7/16"	-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	0.04	0.05	0.04	0.05
5	-2.00	4.00	0.20	0.27	0.24	0.32
7	-1.50	2.83	0.88	1.18	1.12	1.50
10	-1.00	2.00	2.34	3.13	3.46	4.63
14	-0.50	1.41	3.59	4.80	7.05	9.43
18	0.00	1.00	3.41	4.56	10.46	13.99
25	0.50	0.71	3.69	4.93	14.15	18.92
35	1.00	0.50	3.68	4.92	17.83	23.84
45	1.50	0.35	3.42	4.57	21.25	28.41
60	2.00	0.25	5.80	7.75	27.05	36.16
80	2.50	0.18	20.52	27.43	47.57	63.59
120	3.00	0.13	24.00	32.09	71.57	95.68
170	3.50	0.09	1.70	2.27	73.27	97.95
200	3.75	0.07	0.07	0.09	73.34	98.04
230	4.00	0.06	0.06	0.08	73.40	98.12

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.82	2.68	2.25	1.13	0.20	-0.96
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	1.74	0.30	1.27	-1.2	3.3	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-03 #1

Analysis Date: 03-08-07

Analyzed By: JF

Easting (ft): 433,627	Northing (ft): 1,132,302	Coordinate System: Florida State Plane West	Elevation (ft): -11.0 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 81.94	Wash Weight (g): 81.03	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 1.18 #230 - 1.14	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.01	0.01	0.01	0.01
14	-0.50	1.41	0.02	0.02	0.03	0.03
18	0.00	1.00	0.01	0.01	0.04	0.04
25	0.50	0.71	0.02	0.02	0.06	0.06
35	1.00	0.50	0.02	0.02	0.08	0.08
45	1.50	0.35	0.06	0.07	0.14	0.15
60	2.00	0.25	0.28	0.34	0.42	0.49
80	2.50	0.18	21.77	26.57	22.19	27.06
120	3.00	0.13	50.00	61.02	72.19	88.08
170	3.50	0.09	8.56	10.45	80.75	98.53
200	3.75	0.07	0.24	0.29	80.99	98.82
230	4.00	0.06	0.03	0.04	81.02	98.86

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.33	2.97	2.89	2.69	2.46	2.29	2.08
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.66	0.16	0.32	-0.74	10.64	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-03 #2

Analysis Date: 03-08-07

Analyzed By: JF

Easting (ft): 433,627	Northing (ft): 1,132,302	Coordinate System: Florida State Plane West	Elevation (ft): -15.0 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 77.64	Wash Weight (g): 76.70	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 1.25 #230 - 1.21	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.01	0.01	0.01	0.01
14	-0.50	1.41	0.02	0.03	0.03	0.04
18	0.00	1.00	0.02	0.03	0.05	0.07
25	0.50	0.71	0.02	0.03	0.07	0.10
35	1.00	0.50	0.06	0.08	0.13	0.18
45	1.50	0.35	0.10	0.13	0.23	0.31
60	2.00	0.25	0.49	0.63	0.72	0.94
80	2.50	0.18	16.59	21.37	17.31	22.31
120	3.00	0.13	49.74	64.06	67.05	86.37
170	3.50	0.09	9.37	12.07	76.42	98.44
200	3.75	0.07	0.24	0.31	76.66	98.75
230	4.00	0.06	0.03	0.04	76.69	98.79

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.36	2.98	2.91	2.72	2.52	2.35	2.09
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.69	0.15	0.33	-1.12	12.65	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-03 #3

Analysis Date: 03-08-07

Analyzed By: JF

Easting (ft): 433,627	Northing (ft): 1,132,302	Coordinate System: Florida State Plane West	Elevation (ft): -19.0 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 83.49	Wash Weight (g): 82.37	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 1.36 #230 - 1.35	Organics (%):	Carbonates (%):	Shell Hash (%): 1
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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
7/16"	-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	0.29	0.35	0.29	0.35
5	-2.00	4.00	0.00	0.00	0.29	0.35
7	-1.50	2.83	0.14	0.17	0.43	0.52
10	-1.00	2.00	0.24	0.29	0.67	0.81
14	-0.50	1.41	0.33	0.40	1.00	1.21
18	0.00	1.00	0.34	0.41	1.34	1.62
25	0.50	0.71	0.49	0.59	1.83	2.21
35	1.00	0.50	0.78	0.93	2.61	3.14
45	1.50	0.35	1.94	2.32	4.55	5.46
60	2.00	0.25	7.39	8.85	11.94	14.31
80	2.50	0.18	40.60	48.63	52.54	62.94
120	3.00	0.13	27.28	32.67	79.82	95.61
170	3.50	0.09	2.48	2.97	82.30	98.58
200	3.75	0.07	0.05	0.06	82.35	98.64
230	4.00	0.06	0.01	0.01	82.36	98.65

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.82	2.68	2.37	2.11	2.02	1.40
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.3	0.20	0.64	-3.33	20.58	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-04 #1

Analysis Date: 03-07-07

Analyzed By: JF

Easting (ft): 433,879	Northing (ft): 1,133,137	Coordinate System: Florida State Plane West	Elevation (ft): -14.7 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 88.45	Wash Weight (g): 87.44	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 1.19 #230 - 1.17	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.01	0.01	0.01	0.01
10	-1.00	2.00	0.03	0.03	0.04	0.04
14	-0.50	1.41	0.07	0.08	0.11	0.12
18	0.00	1.00	0.11	0.12	0.22	0.24
25	0.50	0.71	0.21	0.24	0.43	0.48
35	1.00	0.50	0.24	0.27	0.67	0.75
45	1.50	0.35	0.38	0.43	1.05	1.18
60	2.00	0.25	2.01	2.27	3.06	3.45
80	2.50	0.18	29.39	33.23	32.45	36.68
120	3.00	0.13	46.98	53.11	79.43	89.79
170	3.50	0.09	7.65	8.65	87.08	98.44
200	3.75	0.07	0.33	0.37	87.41	98.81
230	4.00	0.06	0.02	0.02	87.43	98.83

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.30	2.95	2.86	2.63	2.32	2.19	2.02
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.58	0.17	0.41	-1.97	15.85	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-04 #2

Analysis Date: 03-07-07

Analyzed By: JF

Easting (ft): 433,879	Northing (ft): 1,133,137	Coordinate System: Florida State Plane West	Elevation (ft): -17.7 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 91.20	Wash Weight (g): 90.21	Pan Retained (g): 0.00	Sieve Loss (%): 0.00	Fines (%): #200 - 1.10 #230 - 1.09	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.00	0.00	0.00	0.00
14	-0.50	1.41	0.05	0.05	0.05	0.05
18	0.00	1.00	0.05	0.05	0.10	0.10
25	0.50	0.71	0.10	0.11	0.20	0.21
35	1.00	0.50	0.18	0.20	0.38	0.41
45	1.50	0.35	0.24	0.26	0.62	0.67
60	2.00	0.25	1.10	1.21	1.72	1.88
80	2.50	0.18	26.54	29.10	28.26	30.98
120	3.00	0.13	53.93	59.13	82.19	90.11
170	3.50	0.09	7.83	8.59	90.02	98.70
200	3.75	0.07	0.18	0.20	90.20	98.90
230	4.00	0.06	0.01	0.01	90.21	98.91

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.28	2.95	2.87	2.66	2.40	2.24	2.05
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.62	0.16	0.35	-1.52	13.18	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-05 #1

Analysis Date: 03-07-07

Analyzed By: JF

Easting (ft): 437,029	Northing (ft): 1,128,780	Coordinate System: Florida State Plane West	Elevation (ft): -5.8 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 84.19	Wash Weight (g): 83.03	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 1.41 #230 - 1.39	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.04	0.05	0.04	0.05
10	-1.00	2.00	0.11	0.13	0.15	0.18
14	-0.50	1.41	0.13	0.15	0.28	0.33
18	0.00	1.00	0.07	0.08	0.35	0.41
25	0.50	0.71	0.08	0.10	0.43	0.51
35	1.00	0.50	0.08	0.10	0.51	0.61
45	1.50	0.35	0.08	0.10	0.59	0.71
60	2.00	0.25	0.23	0.27	0.82	0.98
80	2.50	0.18	11.49	13.65	12.31	14.63
120	3.00	0.13	56.56	67.18	68.87	81.81
170	3.50	0.09	14.07	16.71	82.94	98.52
200	3.75	0.07	0.06	0.07	83.00	98.59
230	4.00	0.06	0.02	0.02	83.02	98.61

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.39	3.07	2.95	2.76	2.58	2.51	2.15
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.74	0.15	0.39	-4.11	40.43	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-05 #2

Analysis Date: 03-07-07

Analyzed By: JF

Easting (ft): 437,029	Northing (ft): 1,128,780	Coordinate System: Florida State Plane West	Elevation (ft): -7.6 NAVD 88
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USCS: SW	Munsell: Wet - 2.5Y-7/1 Dry - 2.5Y-7/1 Washed - 2.5Y-8/1	Comments:
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Dry Weight (g): 83.51	Wash Weight (g): 81.39	Pan Retained (g): 0.04	Sieve Loss (%): 0.05	Fines (%): #200 - 2.77 #230 - 2.63	Organics (%):	Carbonates (%):	Shell Hash (%): 24
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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
7/16"	-3.50	11.31	2.65	3.17	2.65	3.17
5/16"	-3.00	8.00	1.38	1.65	4.03	4.82
3.5	-2.50	5.66	3.63	4.35	7.66	9.17
4	-2.25	4.76	2.04	2.44	9.70	11.61
5	-2.00	4.00	3.52	4.22	13.22	15.83
7	-1.50	2.83	6.69	8.01	19.91	23.84
10	-1.00	2.00	6.87	8.23	26.78	32.07
14	-0.50	1.41	5.07	6.07	31.85	38.14
18	0.00	1.00	2.89	3.46	34.74	41.60
25	0.50	0.71	2.41	2.89	37.15	44.49
35	1.00	0.50	1.40	1.68	38.55	46.17
45	1.50	0.35	0.83	0.99	39.38	47.16
60	2.00	0.25	0.82	0.98	40.20	48.14
80	2.50	0.18	2.83	3.39	43.03	51.53
120	3.00	0.13	25.36	30.37	68.39	81.90
170	3.50	0.09	12.10	14.49	80.49	96.39
200	3.75	0.07	0.70	0.84	81.19	97.23
230	4.00	0.06	0.12	0.14	81.31	97.37

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.45	3.07	2.89	2.27	-1.43	-1.99	-2.98
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.75	0.59	2.34	-0.37	1.55	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
 2481 NW Boca Raton Blvd, Boca Raton
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-05 #3

Analysis Date: 03-07-07

Analyzed By: JF

Easting (ft): 437,029	Northing (ft): 1,128,780	Coordinate System: Florida State Plane West	Elevation (ft): -8.3 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-6/2 Dry - 5Y-6/2 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 78.07	Wash Weight (g): 75.51	Pan Retained (g): 0.07	Sieve Loss (%): 0.04	Fines (%): #200 - 3.70 #230 - 3.41	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.02	0.03	0.02	0.03
10	-1.00	2.00	0.01	0.01	0.03	0.04
14	-0.50	1.41	0.02	0.03	0.05	0.07
18	0.00	1.00	0.02	0.03	0.07	0.10
25	0.50	0.71	0.06	0.08	0.13	0.18
35	1.00	0.50	0.03	0.04	0.16	0.22
45	1.50	0.35	0.07	0.09	0.23	0.31
60	2.00	0.25	0.15	0.19	0.38	0.50
80	2.50	0.18	1.65	2.11	2.03	2.61
120	3.00	0.13	48.81	62.52	50.84	65.13
170	3.50	0.09	22.37	28.65	73.21	93.78
200	3.75	0.07	1.97	2.52	75.18	96.30
230	4.00	0.06	0.23	0.29	75.41	96.59

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.62	3.33	3.17	2.88	2.68	2.61	2.52
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.9	0.13	0.32	-2.02	29.33	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-05 #4

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 437,029	Northing (ft): 1,128,780	Coordinate System: Florida State Plane West	Elevation (ft): -12.2 NAVD 88
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USCS: SP	Munsell: Wet - 2.5Y-7/2 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 75.64	Wash Weight (g): 74.51	Pan Retained (g): 0.03	Sieve Loss (%): 0.08	Fines (%): #200 - 1.70 #230 - 1.59	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.00	0.00	0.00	0.00
14	-0.50	1.41	0.02	0.03	0.02	0.03
18	0.00	1.00	0.02	0.03	0.04	0.06
25	0.50	0.71	0.02	0.03	0.06	0.09
35	1.00	0.50	0.02	0.03	0.08	0.12
45	1.50	0.35	0.02	0.03	0.10	0.15
60	2.00	0.25	0.09	0.12	0.19	0.27
80	2.50	0.18	2.13	2.82	2.32	3.09
120	3.00	0.13	40.38	53.38	42.70	56.47
170	3.50	0.09	30.91	40.86	73.61	97.33
200	3.75	0.07	0.73	0.97	74.34	98.30
230	4.00	0.06	0.08	0.11	74.42	98.41

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.47	3.34	3.23	2.94	2.71	2.62	2.52
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.95	0.13	0.3	-1.2	14.3	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-06 #1

Analysis Date: 03-08-07

Analyzed By: JF

Easting (ft): 436,754	Northing (ft): 1,128,828	Coordinate System: Florida State Plane West	Elevation (ft): -8.8 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 72.70	Wash Weight (g): 71.76	Pan Retained (g): 0.00	Sieve Loss (%): 0.00	Fines (%): #200 - 1.33 #230 - 1.29	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.06	0.08	0.06	0.08
10	-1.00	2.00	0.07	0.10	0.13	0.18
14	-0.50	1.41	0.09	0.12	0.22	0.30
18	0.00	1.00	0.12	0.17	0.34	0.47
25	0.50	0.71	0.08	0.11	0.42	0.58
35	1.00	0.50	0.07	0.10	0.49	0.68
45	1.50	0.35	0.09	0.12	0.58	0.80
60	2.00	0.25	0.24	0.33	0.82	1.13
80	2.50	0.18	8.67	11.93	9.49	13.06
120	3.00	0.13	48.74	67.04	58.23	80.10
170	3.50	0.09	13.26	18.24	71.49	98.34
200	3.75	0.07	0.24	0.33	71.73	98.67
230	4.00	0.06	0.03	0.04	71.76	98.71

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.41	3.11	2.96	2.78	2.59	2.52	2.16
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.76	0.15	0.4	-4.14	39.96	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-06 #2

Analysis Date: 03-08-07

Analyzed By: JF

Easting (ft): 436,754	Northing (ft): 1,128,828	Coordinate System: Florida State Plane West	Elevation (ft): -10.8 NAVD 88
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USCS: SP	Munsell: Wet - 2.5Y-6/2 Dry - 2.5Y-6/1 Washed - 2.5Y-8/1	Comments:
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Dry Weight (g): 78.80	Wash Weight (g): 76.45	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 3.14 #230 - 2.99	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.00	0.00	0.00	0.00
10	-1.00	2.00	0.03	0.04	0.03	0.04
14	-0.50	1.41	0.04	0.05	0.07	0.09
18	0.00	1.00	0.06	0.08	0.13	0.17
25	0.50	0.71	0.08	0.10	0.21	0.27
35	1.00	0.50	0.06	0.08	0.27	0.35
45	1.50	0.35	0.10	0.13	0.37	0.48
60	2.00	0.25	0.25	0.32	0.62	0.80
80	2.50	0.18	17.78	22.56	18.40	23.36
120	3.00	0.13	46.55	59.07	64.95	82.43
170	3.50	0.09	10.75	13.64	75.70	96.07
200	3.75	0.07	0.62	0.79	76.32	96.86
230	4.00	0.06	0.12	0.15	76.44	97.01

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.46	3.06	2.94	2.73	2.51	2.34	2.09
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.7	0.15	0.37	-1.66	17.56	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-06 #3

Analysis Date: 03-08-07

Analyzed By: JF

Easting (ft): 436,754	Northing (ft): 1,128,828	Coordinate System: Florida State Plane West	Elevation (ft): -13.0 NAVD 88
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USCS: SP	Munsell: Wet - 2.5Y-7/2 Dry - 2.5Y-7/1 Washed - 2.5Y-8/1	Comments:
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Dry Weight (g): 79.86	Wash Weight (g): 78.27	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 2.08 #230 - 1.99	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.21	0.26	0.21	0.26
5	-2.00	4.00	0.12	0.15	0.33	0.41
7	-1.50	2.83	0.02	0.03	0.35	0.44
10	-1.00	2.00	0.02	0.03	0.37	0.47
14	-0.50	1.41	0.04	0.05	0.41	0.52
18	0.00	1.00	0.08	0.10	0.49	0.62
25	0.50	0.71	0.04	0.05	0.53	0.67
35	1.00	0.50	0.06	0.08	0.59	0.75
45	1.50	0.35	0.06	0.08	0.65	0.83
60	2.00	0.25	0.15	0.19	0.80	1.02
80	2.50	0.18	4.54	5.68	5.34	6.70
120	3.00	0.13	58.81	73.64	64.15	80.34
170	3.50	0.09	13.40	16.78	77.55	97.12
200	3.75	0.07	0.64	0.80	78.19	97.92
230	4.00	0.06	0.07	0.09	78.26	98.01

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.44	3.11	2.96	2.79	2.62	2.56	2.35
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.78	0.15	0.45	-6.93	75.52	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL_DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-07 #1

Analysis Date: 03-06-07

Analyzed By: JF

Easting (ft): 433,503	Northing (ft): 1,131,479	Coordinate System: Florida State Plane West	Elevation (ft): -11.7 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 88.60	Wash Weight (g): 87.43	Pan Retained (g): 0.02	Sieve Loss (%): 0.00	Fines (%): #200 - 1.41 #230 - 1.35	Organics (%):	Carbonates (%):	Shell Hash (%): 11
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	2.77	3.13	2.77	3.13
3.5	-2.50	5.66	2.19	2.47	4.96	5.60
4	-2.25	4.76	0.77	0.87	5.73	6.47
5	-2.00	4.00	0.50	0.56	6.23	7.03
7	-1.50	2.83	3.75	4.23	9.98	11.26
10	-1.00	2.00	3.52	3.97	13.50	15.23
14	-0.50	1.41	3.47	3.92	16.97	19.15
18	0.00	1.00	2.89	3.26	19.86	22.41
25	0.50	0.71	2.93	3.31	22.79	25.72
35	1.00	0.50	2.99	3.37	25.78	29.09
45	1.50	0.35	3.71	4.19	29.49	33.28
60	2.00	0.25	9.71	10.96	39.20	44.24
80	2.50	0.18	23.42	26.43	62.62	70.67
120	3.00	0.13	19.59	22.11	82.21	92.78
170	3.50	0.09	4.84	5.46	87.05	98.24
200	3.75	0.07	0.31	0.35	87.36	98.59
230	4.00	0.06	0.05	0.06	87.41	98.65

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.20	2.80	2.60	2.11	0.39	-0.90	-2.62
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.33	0.40	1.78	-1.16	3.16	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-07 #2

Analysis Date: 03-06-07

Analyzed By: JF

Easting (ft): 433,503	Northing (ft): 1,131,479	Coordinate System: Florida State Plane West	Elevation (ft): -13.5 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 92.77	Wash Weight (g): 91.79	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 1.11 #230 - 1.08	Organics (%):	Carbonates (%):	Shell Hash (%): 22
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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
7/16"	-3.50	11.31	1.83	1.97	1.83	1.97
5/16"	-3.00	8.00	2.71	2.92	4.54	4.89
3.5	-2.50	5.66	4.75	5.12	9.29	10.01
4	-2.25	4.76	2.17	2.34	11.46	12.35
5	-2.00	4.00	3.57	3.85	15.03	16.20
7	-1.50	2.83	6.59	7.10	21.62	23.30
10	-1.00	2.00	6.35	6.84	27.97	30.14
14	-0.50	1.41	6.35	6.84	34.32	36.98
18	0.00	1.00	4.58	4.94	38.90	41.92
25	0.50	0.71	4.00	4.31	42.90	46.23
35	1.00	0.50	3.80	4.10	46.70	50.33
45	1.50	0.35	4.23	4.56	50.93	54.89
60	2.00	0.25	9.05	9.76	59.98	64.65
80	2.50	0.18	17.43	18.79	77.41	83.44
120	3.00	0.13	11.74	12.65	89.15	96.09
170	3.50	0.09	2.42	2.61	91.57	98.70
200	3.75	0.07	0.18	0.19	91.75	98.89
230	4.00	0.06	0.03	0.03	91.78	98.92

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.96	2.52	2.28	0.96	-1.38	-2.01	-2.99
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.42	0.75	2.03	-0.37	1.77	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-07 #3

Analysis Date: 03-06-07

Analyzed By: JF

Easting (ft): 433,503	Northing (ft): 1,131,479	Coordinate System: Florida State Plane West	Elevation (ft): -14.8 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 90.04	Wash Weight (g): 88.80	Pan Retained (g): 0.01	Sieve Loss (%): 0.01	Fines (%): #200 - 1.45 #230 - 1.39	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-3.50	11.31	0.99	1.10	0.99	1.10
5/16"	-3.00	8.00	0.70	0.78	1.69	1.88
3.5	-2.50	5.66	0.94	1.04	2.63	2.92
4	-2.25	4.76	0.47	0.52	3.10	3.44
5	-2.00	4.00	0.17	0.19	3.27	3.63
7	-1.50	2.83	1.51	1.68	4.78	5.31
10	-1.00	2.00	1.39	1.54	6.17	6.85
14	-0.50	1.41	1.25	1.39	7.42	8.24
18	0.00	1.00	0.95	1.06	8.37	9.30
25	0.50	0.71	1.04	1.16	9.41	10.46
35	1.00	0.50	1.18	1.31	10.59	11.77
45	1.50	0.35	1.76	1.95	12.35	13.72
60	2.00	0.25	5.77	6.41	18.12	20.13
80	2.50	0.18	37.00	41.09	55.12	61.22
120	3.00	0.13	27.23	30.24	82.35	91.46
170	3.50	0.09	6.02	6.69	88.37	98.15
200	3.75	0.07	0.36	0.40	88.73	98.55
230	4.00	0.06	0.05	0.06	88.78	98.61

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.26	2.88	2.73	2.36	2.06	1.68	-1.59
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.99	0.25	1.38	-2.49	8.89	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-07 #4

Analysis Date: 03-07-07

Analyzed By: AU

Easting (ft): 433,503	Northing (ft): 1,131,479	Coordinate System: Florida State Plane West	Elevation (ft): -17.3 NAVD 88
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USCS: SW-SM	Munsell: Wet - 5Y-5/2 Dry - 5Y-6/2 Washed - 5Y-6/2	Comments:
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Dry Weight (g): 90.21	Wash Weight (g): 84.66	Pan Retained (g): 0.46	Sieve Loss (%): 0.10	Fines (%): #200 - 7.27 #230 - 6.76	Organics (%):	Carbonates (%):	Shell Hash (%): 2
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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
7/16"	-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	0.51	0.57	0.51	0.57
4	-2.25	4.76	0.30	0.33	0.81	0.90
5	-2.00	4.00	0.25	0.28	1.06	1.18
7	-1.50	2.83	0.45	0.50	1.51	1.68
10	-1.00	2.00	0.37	0.41	1.88	2.09
14	-0.50	1.41	0.45	0.50	2.33	2.59
18	0.00	1.00	0.30	0.33	2.63	2.92
25	0.50	0.71	0.47	0.52	3.10	3.44
35	1.00	0.50	0.40	0.44	3.50	3.88
45	1.50	0.35	0.45	0.50	3.95	4.38
60	2.00	0.25	0.87	0.96	4.82	5.34
80	2.50	0.18	5.61	6.22	10.43	11.56
120	3.00	0.13	34.83	38.61	45.26	50.17
170	3.50	0.09	35.08	38.89	80.34	89.06
200	3.75	0.07	3.31	3.67	83.65	92.73
230	4.00	0.06	0.46	0.51	84.11	93.24

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.43	3.32	3.00	2.67	2.56	1.82
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.79	0.14	0.93	-3.9	20.34	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-08 #1

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 433,653	Northing (ft): 1,130,845	Coordinate System: Florida State Plane West	Elevation (ft): -6.3 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 97.24	Wash Weight (g): 95.37	Pan Retained (g): 0.02	Sieve Loss (%): 0.10	Fines (%): #200 - 2.12 #230 - 2.06	Organics (%):	Carbonates (%):	Shell Hash (%): 33
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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
7/16"	-3.50	11.31	5.65	5.81	5.65	5.81
5/16"	-3.00	8.00	8.26	8.49	13.91	14.30
3.5	-2.50	5.66	10.13	10.42	24.04	24.72
4	-2.25	4.76	4.21	4.33	28.25	29.05
5	-2.00	4.00	3.05	3.14	31.30	32.19
7	-1.50	2.83	6.85	7.04	38.15	39.23
10	-1.00	2.00	7.04	7.24	45.19	46.47
14	-0.50	1.41	6.85	7.04	52.04	53.51
18	0.00	1.00	5.08	5.22	57.12	58.73
25	0.50	0.71	5.51	5.67	62.63	64.40
35	1.00	0.50	4.69	4.82	67.32	69.22
45	1.50	0.35	4.84	4.98	72.16	74.20
60	2.00	0.25	8.01	8.24	80.17	82.44
80	2.50	0.18	10.13	10.42	90.30	92.86
120	3.00	0.13	4.00	4.11	94.30	96.97
170	3.50	0.09	0.73	0.75	95.03	97.72
200	3.75	0.07	0.16	0.16	95.19	97.88
230	4.00	0.06	0.06	0.06	95.25	97.94

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.76	2.07	1.55	-0.75	-2.48	-2.92	-3.60
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	-0.6	1.52	2.07	0.14	1.69	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-08 #2

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 433,653	Northing (ft): 1,130,845	Coordinate System: Florida State Plane West	Elevation (ft): -7.1 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 94.86	Wash Weight (g): 93.68	Pan Retained (g): 0.00	Sieve Loss (%): 0.09	Fines (%): #200 - 1.36 #230 - 1.35	Organics (%):	Carbonates (%):	Shell Hash (%): 9
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	1.22	1.29	1.22	1.29
3.5	-2.50	5.66	1.10	1.16	2.32	2.45
4	-2.25	4.76	1.56	1.64	3.88	4.09
5	-2.00	4.00	1.31	1.38	5.19	5.47
7	-1.50	2.83	3.97	4.19	9.16	9.66
10	-1.00	2.00	4.52	4.76	13.68	14.42
14	-0.50	1.41	5.91	6.23	19.59	20.65
18	0.00	1.00	4.49	4.73	24.08	25.38
25	0.50	0.71	6.11	6.44	30.19	31.82
35	1.00	0.50	6.08	6.41	36.27	38.23
45	1.50	0.35	6.69	7.05	42.96	45.28
60	2.00	0.25	12.36	13.03	55.32	58.31
80	2.50	0.18	22.69	23.92	78.01	82.23
120	3.00	0.13	13.94	14.70	91.95	96.93
170	3.50	0.09	1.56	1.64	93.51	98.57
200	3.75	0.07	0.07	0.07	93.58	98.64
230	4.00	0.06	0.01	0.01	93.59	98.65

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.93	2.56	2.35	1.68	-0.04	-0.87	-2.09
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	1.06	0.48	1.61	-0.84	2.62	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granulometric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-08 #3

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 433,653	Northing (ft): 1,130,845	Coordinate System: Florida State Plane West	Elevation (ft): -11.0 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 95.13	Wash Weight (g): 92.96	Pan Retained (g): 0.02	Sieve Loss (%): 0.14	Fines (%): #200 - 2.48 #230 - 2.44	Organics (%):	Carbonates (%):	Shell Hash (%): 14
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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
7/16"	-3.50	11.31	1.81	1.90	1.81	1.90
5/16"	-3.00	8.00	1.96	2.06	3.77	3.96
3.5	-2.50	5.66	2.07	2.18	5.84	6.14
4	-2.25	4.76	1.44	1.51	7.28	7.65
5	-2.00	4.00	1.39	1.46	8.67	9.11
7	-1.50	2.83	4.52	4.75	13.19	13.86
10	-1.00	2.00	6.40	6.73	19.59	20.59
14	-0.50	1.41	9.38	9.86	28.97	30.45
18	0.00	1.00	6.13	6.44	35.10	36.89
25	0.50	0.71	9.56	10.05	44.66	46.94
35	1.00	0.50	9.59	10.08	54.25	57.02
45	1.50	0.35	8.93	9.39	63.18	66.41
60	2.00	0.25	9.79	10.29	72.97	76.70
80	2.50	0.18	10.26	10.79	83.23	87.49
120	3.00	0.13	7.97	8.38	91.20	95.87
170	3.50	0.09	1.50	1.58	92.70	97.45
200	3.75	0.07	0.07	0.07	92.77	97.52
230	4.00	0.06	0.04	0.04	92.81	97.56

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.95	2.34	1.92	0.65	-0.78	-1.34	-2.76
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.41	0.75	1.7	-0.45	2.45	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-08 #4

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 433,653	Northing (ft): 1,130,845	Coordinate System: Florida State Plane West	Elevation (ft): -12.5 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 97.08	Wash Weight (g): 95.96	Pan Retained (g): 0.04	Sieve Loss (%): 0.00	Fines (%): #200 - 1.20 #230 - 1.20	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.44	0.45	0.44	0.45
4	-2.25	4.76	0.31	0.32	0.75	0.77
5	-2.00	4.00	0.37	0.38	1.12	1.15
7	-1.50	2.83	1.00	1.03	2.12	2.18
10	-1.00	2.00	1.35	1.39	3.47	3.57
14	-0.50	1.41	2.98	3.07	6.45	6.64
18	0.00	1.00	4.57	4.71	11.02	11.35
25	0.50	0.71	9.30	9.58	20.32	20.93
35	1.00	0.50	13.59	14.00	33.91	34.93
45	1.50	0.35	21.05	21.68	54.96	56.61
60	2.00	0.25	22.59	23.27	77.55	79.88
80	2.50	0.18	11.53	11.88	89.08	91.76
120	3.00	0.13	6.02	6.20	95.10	97.96
170	3.50	0.09	0.78	0.80	95.88	98.76
200	3.75	0.07	0.04	0.04	95.92	98.80
230	4.00	0.06	0.00	0.00	95.92	98.80

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.76	2.17	1.90	1.35	0.65	0.24	-0.77
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	1.19	0.44	1.03	-0.91	4.3	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-09 #1

Analysis Date: 03-06-07

Analyzed By: AU

Easting (ft): 429,126	Northing (ft): 1,128,661	Coordinate System: Florida State Plane West	Elevation (ft): -15.7 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 90.38	Wash Weight (g): 88.75	Pan Retained (g): 0.01	Sieve Loss (%): 0.07	Fines (%): #200 - 1.89 #230 - 1.89	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.27	0.30	0.27	0.30
7	-1.50	2.83	0.06	0.07	0.33	0.37
10	-1.00	2.00	0.13	0.14	0.46	0.51
14	-0.50	1.41	0.21	0.23	0.67	0.74
18	0.00	1.00	0.16	0.18	0.83	0.92
25	0.50	0.71	0.29	0.32	1.12	1.24
35	1.00	0.50	0.42	0.46	1.54	1.70
45	1.50	0.35	0.89	0.98	2.43	2.68
60	2.00	0.25	4.74	5.24	7.17	7.92
80	2.50	0.18	41.88	46.34	49.05	54.26
120	3.00	0.13	37.74	41.76	86.79	96.02
170	3.50	0.09	1.87	2.07	88.66	98.09
200	3.75	0.07	0.02	0.02	88.68	98.11
230	4.00	0.06	0.00	0.00	88.68	98.11

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.86	2.75	2.45	2.18	2.09	1.72
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.4	0.19	0.52	-3.98	29.92	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-09 #2

Analysis Date: 03-06-07

Analyzed By: AU

Easting (ft): 429,126	Northing (ft): 1,128,661	Coordinate System: Florida State Plane West	Elevation (ft): -18.7 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 89.77	Wash Weight (g): 88.64	Pan Retained (g): 0.00	Sieve Loss (%): 0.00	Fines (%): #200 - 1.28 #230 - 1.25	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.06	0.07	0.06	0.07
10	-1.00	2.00	0.05	0.06	0.11	0.13
14	-0.50	1.41	0.07	0.08	0.18	0.21
18	0.00	1.00	0.04	0.04	0.22	0.25
25	0.50	0.71	0.07	0.08	0.29	0.33
35	1.00	0.50	0.07	0.08	0.36	0.41
45	1.50	0.35	0.13	0.14	0.49	0.55
60	2.00	0.25	0.41	0.46	0.90	1.01
80	2.50	0.18	22.87	25.48	23.77	26.49
120	3.00	0.13	55.62	61.96	79.39	88.45
170	3.50	0.09	8.80	9.80	88.19	98.25
200	3.75	0.07	0.42	0.47	88.61	98.72
230	4.00	0.06	0.03	0.03	88.64	98.75

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.33	2.96	2.89	2.69	2.47	2.29	2.08
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.66	0.16	0.37	-2.93	31.72	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-09 #3

Analysis Date: 03-06-07

Analyzed By: AU

Easting (ft): 429,126	Northing (ft): 1,128,661	Coordinate System: Florida State Plane West	Elevation (ft): -21.7 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 95.82	Wash Weight (g): 94.72	Pan Retained (g): 0.00	Sieve Loss (%): 0.01	Fines (%): #200 - 1.15 #230 - 1.14	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.14	0.15	0.14	0.15
10	-1.00	2.00	0.15	0.16	0.29	0.31
14	-0.50	1.41	0.24	0.25	0.53	0.56
18	0.00	1.00	0.30	0.31	0.83	0.87
25	0.50	0.71	0.46	0.48	1.29	1.35
35	1.00	0.50	0.68	0.71	1.97	2.06
45	1.50	0.35	1.04	1.09	3.01	3.15
60	2.00	0.25	3.16	3.30	6.17	6.45
80	2.50	0.18	28.57	29.82	34.74	36.27
120	3.00	0.13	53.34	55.67	88.08	91.94
170	3.50	0.09	6.55	6.84	94.63	98.78
200	3.75	0.07	0.07	0.07	94.70	98.85
230	4.00	0.06	0.01	0.01	94.71	98.86

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.22	2.93	2.85	2.62	2.31	2.16	1.78
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.53	0.17	0.52	-3.23	20.6	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-09 #4

Analysis Date: 03-06-07

Analyzed By: AU

Easting (ft): 429,126	Northing (ft): 1,128,661	Coordinate System: Florida State Plane West	Elevation (ft): -24.3 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 100.85	Wash Weight (g): 100.02	Pan Retained (g): 0.00	Sieve Loss (%): 0.00	Fines (%): #200 - 0.84 #230 - 0.83	Organics (%):	Carbonates (%):	Shell Hash (%): 18
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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
7/16"	-3.50	11.31	1.46	1.45	1.46	1.45
5/16"	-3.00	8.00	3.04	3.01	4.50	4.46
3.5	-2.50	5.66	3.43	3.40	7.93	7.86
4	-2.25	4.76	1.21	1.20	9.14	9.06
5	-2.00	4.00	2.40	2.38	11.54	11.44
7	-1.50	2.83	7.62	7.56	19.16	19.00
10	-1.00	2.00	6.99	6.93	26.15	25.93
14	-0.50	1.41	6.98	6.92	33.13	32.85
18	0.00	1.00	4.36	4.32	37.49	37.17
25	0.50	0.71	3.40	3.37	40.89	40.54
35	1.00	0.50	2.30	2.28	43.19	42.82
45	1.50	0.35	1.98	1.96	45.17	44.78
60	2.00	0.25	3.39	3.36	48.56	48.14
80	2.50	0.18	14.65	14.53	63.21	62.67
120	3.00	0.13	31.27	31.01	94.48	93.68
170	3.50	0.09	5.40	5.35	99.88	99.03
200	3.75	0.07	0.13	0.13	100.01	99.16
230	4.00	0.06	0.01	0.01	100.02	99.17

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.12	2.84	2.70	2.06	-1.07	-1.70	-2.92
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	0.87	0.55	2.11	-0.58	1.85	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-09 #5

Analysis Date: 03-06-07

Analyzed By: AU

Easting (ft): 429,126	Northing (ft): 1,128,661	Coordinate System: Florida State Plane West	Elevation (ft): -26.4 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 91.00	Wash Weight (g): 89.35	Pan Retained (g): 0.03	Sieve Loss (%): 0.10	Fines (%): #200 - 2.07 #230 - 1.96	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.08	0.09	0.08	0.09
10	-1.00	2.00	0.19	0.21	0.27	0.30
14	-0.50	1.41	0.24	0.26	0.51	0.56
18	0.00	1.00	0.34	0.37	0.85	0.93
25	0.50	0.71	0.59	0.65	1.44	1.58
35	1.00	0.50	0.83	0.91	2.27	2.49
45	1.50	0.35	1.14	1.25	3.41	3.74
60	2.00	0.25	2.65	2.91	6.06	6.65
80	2.50	0.18	32.06	35.23	38.12	41.88
120	3.00	0.13	41.07	45.13	79.19	87.01
170	3.50	0.09	9.13	10.03	88.32	97.04
200	3.75	0.07	0.81	0.89	89.13	97.93
230	4.00	0.06	0.10	0.11	89.23	98.04

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.40	2.97	2.87	2.59	2.26	2.13	1.72
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.51	0.18	0.57	-2.53	15.29	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-10 #1

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 429,717	Northing (ft): 1,129,373	Coordinate System: Florida State Plane West	Elevation (ft): -10.9 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 90.89	Wash Weight (g): 89.85	Pan Retained (g): -0.01	Sieve Loss (%): 0.08	Fines (%): #200 - 1.22 #230 - 1.20	Organics (%):	Carbonates (%):	Shell Hash (%): 4
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.30	0.33	0.30	0.33
3.5	-2.50	5.66	0.75	0.83	1.05	1.16
4	-2.25	4.76	0.62	0.68	1.67	1.84
5	-2.00	4.00	0.56	0.62	2.23	2.46
7	-1.50	2.83	1.44	1.58	3.67	4.04
10	-1.00	2.00	1.71	1.88	5.38	5.92
14	-0.50	1.41	1.87	2.06	7.25	7.98
18	0.00	1.00	1.93	2.12	9.18	10.10
25	0.50	0.71	2.43	2.67	11.61	12.77
35	1.00	0.50	3.17	3.49	14.78	16.26
45	1.50	0.35	3.96	4.36	18.74	20.62
60	2.00	0.25	6.67	7.34	25.41	27.96
80	2.50	0.18	20.56	22.62	45.97	50.58
120	3.00	0.13	37.70	41.48	83.67	92.06
170	3.50	0.09	6.04	6.65	89.71	98.71
200	3.75	0.07	0.06	0.07	89.77	98.78
230	4.00	0.06	0.02	0.02	89.79	98.80

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.22	2.90	2.79	2.49	1.80	0.96	-1.24
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.97	0.26	1.32	-1.9	6.09	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-10 #2

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 429,717	Northing (ft): 1,129,373	Coordinate System: Florida State Plane West	Elevation (ft): -13.4 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-6/1 Dry - 5Y-6/1 Washed - 5Y-6/1	Comments:
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Dry Weight (g): 93.00	Wash Weight (g): 91.86	Pan Retained (g): 0.01	Sieve Loss (%): 0.06	Fines (%): #200 - 1.31 #230 - 1.30	Organics (%):	Carbonates (%):	Shell Hash (%): 19
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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
7/16"	-3.50	11.31	0.78	0.84	0.78	0.84
5/16"	-3.00	8.00	1.05	1.13	1.83	1.97
3.5	-2.50	5.66	4.09	4.40	5.92	6.37
4	-2.25	4.76	1.56	1.68	7.48	8.05
5	-2.00	4.00	3.12	3.35	10.60	11.40
7	-1.50	2.83	7.72	8.30	18.32	19.70
10	-1.00	2.00	6.35	6.83	24.67	26.53
14	-0.50	1.41	7.13	7.67	31.80	34.20
18	0.00	1.00	5.74	6.17	37.54	40.37
25	0.50	0.71	4.48	4.82	42.02	45.19
35	1.00	0.50	3.90	4.19	45.92	49.38
45	1.50	0.35	3.18	3.42	49.10	52.80
60	2.00	0.25	4.15	4.46	53.25	57.26
80	2.50	0.18	13.49	14.51	66.74	71.77
120	3.00	0.13	22.34	24.02	89.08	95.79
170	3.50	0.09	2.64	2.84	91.72	98.63
200	3.75	0.07	0.06	0.06	91.78	98.69
230	4.00	0.06	0.01	0.01	91.79	98.70

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.98	2.75	2.57	1.09	-1.11	-1.72	-2.66
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	0.65	0.64	1.98	-0.36	1.71	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-10 #3

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 429,717	Northing (ft): 1,129,373	Coordinate System: Florida State Plane West	Elevation (ft): -15.2 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 93.37	Wash Weight (g): 92.31	Pan Retained (g): 0.01	Sieve Loss (%): 0.01	Fines (%): #200 - 1.20 #230 - 1.16	Organics (%):	Carbonates (%):	Shell Hash (%): 1
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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	0.07	0.07	0.07	0.07
7/16"	-3.50	11.31	0.14	0.15	0.21	0.22
5/16"	-3.00	8.00	0.25	0.27	0.46	0.49
3.5	-2.50	5.66	0.00	0.00	0.46	0.49
4	-2.25	4.76	0.00	0.00	0.46	0.49
5	-2.00	4.00	0.00	0.00	0.46	0.49
7	-1.50	2.83	0.44	0.47	0.90	0.96
10	-1.00	2.00	0.65	0.70	1.55	1.66
14	-0.50	1.41	0.85	0.91	2.40	2.57
18	0.00	1.00	0.71	0.76	3.11	3.33
25	0.50	0.71	0.87	0.93	3.98	4.26
35	1.00	0.50	0.93	1.00	4.91	5.26
45	1.50	0.35	1.29	1.38	6.20	6.64
60	2.00	0.25	2.48	2.66	8.68	9.30
80	2.50	0.18	12.82	13.73	21.50	23.03
120	3.00	0.13	58.55	62.71	80.05	85.74
170	3.50	0.09	11.99	12.84	92.04	98.58
200	3.75	0.07	0.21	0.22	92.25	98.80
230	4.00	0.06	0.04	0.04	92.29	98.84

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.36	2.99	2.91	2.72	2.52	2.24	0.87
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.52	0.17	0.87	-3.75	20.24	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-10 #4

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 429,717	Northing (ft): 1,129,373	Coordinate System: Florida State Plane West	Elevation (ft): -18.2 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 93.13	Wash Weight (g): 91.81	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 1.48 #230 - 1.42	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.10	0.11	0.10	0.11
7	-1.50	2.83	0.03	0.03	0.13	0.14
10	-1.00	2.00	0.13	0.14	0.26	0.28
14	-0.50	1.41	0.10	0.11	0.36	0.39
18	0.00	1.00	0.09	0.10	0.45	0.49
25	0.50	0.71	0.12	0.13	0.57	0.62
35	1.00	0.50	0.11	0.12	0.68	0.74
45	1.50	0.35	0.16	0.17	0.84	0.91
60	2.00	0.25	0.37	0.40	1.21	1.31
80	2.50	0.18	10.87	11.67	12.08	12.98
120	3.00	0.13	63.28	67.95	75.36	80.93
170	3.50	0.09	15.42	16.56	90.78	97.49
200	3.75	0.07	0.96	1.03	91.74	98.52
230	4.00	0.06	0.06	0.06	91.80	98.58

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.42	3.09	2.96	2.77	2.59	2.52	2.16
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.75	0.15	0.42	-4.6	45.96	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL_DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-10 #5

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 429,717	Northing (ft): 1,129,373	Coordinate System: Florida State Plane West	Elevation (ft): -22.0 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-6/1 Dry - 5Y-6/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 93.59	Wash Weight (g): 90.61	Pan Retained (g): 0.10	Sieve Loss (%): 0.00	Fines (%): #200 - 3.89 #230 - 3.30	Organics (%):	Carbonates (%):	Shell Hash (%): 2
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.36	0.38	0.36	0.38
3.5	-2.50	5.66	0.40	0.43	0.76	0.81
4	-2.25	4.76	0.05	0.05	0.81	0.86
5	-2.00	4.00	0.12	0.13	0.93	0.99
7	-1.50	2.83	0.54	0.58	1.47	1.57
10	-1.00	2.00	0.61	0.65	2.08	2.22
14	-0.50	1.41	0.71	0.76	2.79	2.98
18	0.00	1.00	0.65	0.69	3.44	3.67
25	0.50	0.71	0.94	1.00	4.38	4.67
35	1.00	0.50	1.06	1.13	5.44	5.80
45	1.50	0.35	1.25	1.34	6.69	7.14
60	2.00	0.25	4.08	4.36	10.77	11.50
80	2.50	0.18	16.21	17.32	26.98	28.82
120	3.00	0.13	32.60	34.83	59.58	63.65
170	3.50	0.09	26.05	27.83	85.63	91.48
200	3.75	0.07	4.33	4.63	89.96	96.11
230	4.00	0.06	0.55	0.59	90.51	96.70

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.69	3.37	3.20	2.80	2.39	2.13	0.65
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.58	0.17	1.02	-2.94	13.84	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-11 #1

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 430,620	Northing (ft): 1,129,814	Coordinate System: Florida State Plane West	Elevation (ft): -9.2 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 88.63	Wash Weight (g): 87.81	Pan Retained (g): 0.00	Sieve Loss (%): 0.11	Fines (%): #200 - 1.06 #230 - 1.03	Organics (%):	Carbonates (%):	Shell Hash (%): 2
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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
7/16"	-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	0.36	0.41	0.36	0.41
5	-2.00	4.00	0.28	0.32	0.64	0.73
7	-1.50	2.83	1.42	1.60	2.06	2.33
10	-1.00	2.00	2.29	2.58	4.35	4.91
14	-0.50	1.41	2.82	3.18	7.17	8.09
18	0.00	1.00	2.59	2.92	9.76	11.01
25	0.50	0.71	2.87	3.24	12.63	14.25
35	1.00	0.50	3.19	3.60	15.82	17.85
45	1.50	0.35	3.77	4.25	19.59	22.10
60	2.00	0.25	7.77	8.77	27.36	30.87
80	2.50	0.18	24.78	27.96	52.14	58.83
120	3.00	0.13	32.08	36.20	84.22	95.03
170	3.50	0.09	3.41	3.85	87.63	98.88
200	3.75	0.07	0.05	0.06	87.68	98.94
230	4.00	0.06	0.03	0.03	87.71	98.97

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.00	2.85	2.72	2.34	1.67	0.74	-0.99
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	1.91	0.27	1.22	-1.6	4.75	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-11 #2

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 430,620	Northing (ft): 1,129,814	Coordinate System: Florida State Plane West	Elevation (ft): -11.9 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/2 Dry - 5Y-8/2 Washed - 5Y-8/2	Comments:
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Dry Weight (g): 86.17	Wash Weight (g): 85.17	Pan Retained (g): 0.01	Sieve Loss (%): 0.10	Fines (%): #200 - 1.31 #230 - 1.28	Organics (%):	Carbonates (%):	Shell Hash (%): 2
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.21	0.24	0.21	0.24
3.5	-2.50	5.66	0.16	0.19	0.37	0.43
4	-2.25	4.76	0.48	0.56	0.85	0.99
5	-2.00	4.00	0.19	0.22	1.04	1.21
7	-1.50	2.83	0.25	0.29	1.29	1.50
10	-1.00	2.00	0.42	0.49	1.71	1.99
14	-0.50	1.41	0.41	0.48	2.12	2.47
18	0.00	1.00	0.41	0.48	2.53	2.95
25	0.50	0.71	0.56	0.65	3.09	3.60
35	1.00	0.50	0.89	1.03	3.98	4.63
45	1.50	0.35	1.63	1.89	5.61	6.52
60	2.00	0.25	5.26	6.10	10.87	12.62
80	2.50	0.18	25.92	30.08	36.79	42.70
120	3.00	0.13	43.13	50.05	79.92	92.75
170	3.50	0.09	5.03	5.84	84.95	98.59
200	3.75	0.07	0.09	0.10	85.04	98.69
230	4.00	0.06	0.03	0.03	85.07	98.72

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.19	2.91	2.82	2.57	2.21	2.06	1.10
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.37	0.19	0.85	-3.65	19.44	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-11 #3

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 430,620	Northing (ft): 1,129,814	Coordinate System: Florida State Plane West	Elevation (ft): -13.0 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-6/2 Dry - 5Y-7/2 Washed - 5Y-8/2	Comments:
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Dry Weight (g): 90.28	Wash Weight (g): 89.20	Pan Retained (g): 0.01	Sieve Loss (%): 0.08	Fines (%): #200 - 1.32 #230 - 1.29	Organics (%):	Carbonates (%):	Shell Hash (%): 25
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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
7/16"	-3.50	11.31	1.84	2.04	1.84	2.04
5/16"	-3.00	8.00	2.89	3.20	4.73	5.24
3.5	-2.50	5.66	6.36	7.04	11.09	12.28
4	-2.25	4.76	2.16	2.39	13.25	14.67
5	-2.00	4.00	2.93	3.25	16.18	17.92
7	-1.50	2.83	6.20	6.87	22.38	24.79
10	-1.00	2.00	6.52	7.22	28.90	32.01
14	-0.50	1.41	7.27	8.05	36.17	40.06
18	0.00	1.00	5.90	6.54	42.07	46.60
25	0.50	0.71	5.05	5.59	47.12	52.19
35	1.00	0.50	4.78	5.29	51.90	57.48
45	1.50	0.35	4.45	4.93	56.35	62.41
60	2.00	0.25	6.83	7.57	63.18	69.98
80	2.50	0.18	11.23	12.44	74.41	82.42
120	3.00	0.13	13.17	14.59	87.58	97.01
170	3.50	0.09	1.47	1.63	89.05	98.64
200	3.75	0.07	0.04	0.04	89.09	98.68
230	4.00	0.06	0.03	0.03	89.12	98.71

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.93	2.55	2.20	0.30	-1.49	-2.15	-3.04
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.2	0.87	2.02	-0.2	1.74	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-11 #4

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 430,620	Northing (ft): 1,129,814	Coordinate System: Florida State Plane West	Elevation (ft): -14.0 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 85.38	Wash Weight (g): 84.48	Pan Retained (g): 0.00	Sieve Loss (%): 0.01	Fines (%): #200 - 1.08 #230 - 1.08	Organics (%):	Carbonates (%):	Shell Hash (%): 1
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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
7/16"	-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	0.20	0.23	0.20	0.23
4	-2.25	4.76	0.00	0.00	0.20	0.23
5	-2.00	4.00	0.13	0.15	0.33	0.38
7	-1.50	2.83	0.16	0.19	0.49	0.57
10	-1.00	2.00	0.35	0.41	0.84	0.98
14	-0.50	1.41	0.47	0.55	1.31	1.53
18	0.00	1.00	0.63	0.74	1.94	2.27
25	0.50	0.71	0.47	0.55	2.41	2.82
35	1.00	0.50	0.77	0.90	3.18	3.72
45	1.50	0.35	2.64	3.09	5.82	6.81
60	2.00	0.25	35.23	41.26	41.05	48.07
80	2.50	0.18	39.93	46.77	80.98	94.84
120	3.00	0.13	3.46	4.05	84.44	98.89
170	3.50	0.09	0.02	0.02	84.46	98.91
200	3.75	0.07	0.01	0.01	84.47	98.92
230	4.00	0.06	0.00	0.00	84.47	98.92

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.52	2.38	2.29	2.02	1.72	1.61	1.21
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.93	0.26	0.59	-3.68	23.04	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-12 #1

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 430,389	Northing (ft): 1,130,139	Coordinate System: Florida State Plane West	Elevation (ft): -10.1 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 78.27	Wash Weight (g): 77.48	Pan Retained (g): 0.00	Sieve Loss (%): 0.05	Fines (%): #200 - 1.06 #230 - 1.05	Organics (%):	Carbonates (%):	Shell Hash (%): 5
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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
7/16"	-3.50	11.31	0.89	1.14	0.89	1.14
5/16"	-3.00	8.00	0.96	1.23	1.85	2.37
3.5	-2.50	5.66	0.42	0.54	2.27	2.91
4	-2.25	4.76	0.48	0.61	2.75	3.52
5	-2.00	4.00	0.28	0.36	3.03	3.88
7	-1.50	2.83	0.83	1.06	3.86	4.94
10	-1.00	2.00	1.07	1.37	4.93	6.31
14	-0.50	1.41	1.17	1.49	6.10	7.80
18	0.00	1.00	0.83	1.06	6.93	8.86
25	0.50	0.71	1.04	1.33	7.97	10.19
35	1.00	0.50	1.36	1.74	9.33	11.93
45	1.50	0.35	1.88	2.40	11.21	14.33
60	2.00	0.25	5.77	7.37	16.98	21.70
80	2.50	0.18	33.06	42.24	50.04	63.94
120	3.00	0.13	25.86	33.04	75.90	96.98
170	3.50	0.09	1.51	1.93	77.41	98.91
200	3.75	0.07	0.02	0.03	77.43	98.94
230	4.00	0.06	0.01	0.01	77.44	98.95

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.97	2.80	2.67	2.33	2.04	1.61	-1.48
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.95	0.26	1.35	-2.63	9.63	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-12 #2

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 430,389	Northing (ft): 1,130,139	Coordinate System: Florida State Plane West	Elevation (ft): -13.2 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 81.66	Wash Weight (g): 80.56	Pan Retained (g): 0.02	Sieve Loss (%): 0.01	Fines (%): #200 - 1.44 #230 - 1.40	Organics (%):	Carbonates (%):	Shell Hash (%): 19
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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
7/16"	-3.50	11.31	1.70	2.08	1.70	2.08
5/16"	-3.00	8.00	1.00	1.22	2.70	3.30
3.5	-2.50	5.66	4.64	5.68	7.34	8.98
4	-2.25	4.76	1.83	2.24	9.17	11.22
5	-2.00	4.00	2.00	2.45	11.17	13.67
7	-1.50	2.83	4.30	5.27	15.47	18.94
10	-1.00	2.00	4.83	5.91	20.30	24.85
14	-0.50	1.41	5.95	7.29	26.25	32.14
18	0.00	1.00	5.11	6.26	31.36	38.40
25	0.50	0.71	5.04	6.17	36.40	44.57
35	1.00	0.50	4.92	6.02	41.32	50.59
45	1.50	0.35	5.00	6.12	46.32	56.71
60	2.00	0.25	8.05	9.86	54.37	66.57
80	2.50	0.18	12.82	15.70	67.19	82.27
120	3.00	0.13	12.12	14.84	79.31	97.11
170	3.50	0.09	1.13	1.38	80.44	98.49
200	3.75	0.07	0.06	0.07	80.50	98.56
230	4.00	0.06	0.03	0.04	80.53	98.60

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.93	2.56	2.27	0.95	-0.99	-1.78	-2.85
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	0.51	0.70	1.92	-0.47	2	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-12 #3

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 430,389	Northing (ft): 1,130,139	Coordinate System: Florida State Plane West	Elevation (ft): -14.7 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 76.96	Wash Weight (g): 76.18	Pan Retained (g): 0.01	Sieve Loss (%): 0.13	Fines (%): #200 - 1.15 #230 - 1.15	Organics (%):	Carbonates (%):	Shell Hash (%): 4
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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
7/16"	-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	0.59	0.77	0.59	0.77
4	-2.25	4.76	0.31	0.40	0.90	1.17
5	-2.00	4.00	0.44	0.57	1.34	1.74
7	-1.50	2.83	1.86	2.42	3.20	4.16
10	-1.00	2.00	1.55	2.01	4.75	6.17
14	-0.50	1.41	1.79	2.33	6.54	8.50
18	0.00	1.00	1.76	2.29	8.30	10.79
25	0.50	0.71	2.68	3.48	10.98	14.27
35	1.00	0.50	3.69	4.79	14.67	19.06
45	1.50	0.35	5.58	7.25	20.25	26.31
60	2.00	0.25	9.91	12.88	30.16	39.19
80	2.50	0.18	27.42	35.63	57.58	74.82
120	3.00	0.13	17.46	22.69	75.04	97.51
170	3.50	0.09	1.00	1.30	76.04	98.81
200	3.75	0.07	0.03	0.04	76.07	98.85
230	4.00	0.06	0.00	0.00	76.07	98.85

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.94	2.70	2.50	2.15	1.41	0.68	-1.29
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.72	0.30	1.24	-1.68	5.28	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
 2481 NW Boca Raton Blvd, Boca Raton
 FL 33431
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-13 #1

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 430,866	Northing (ft): 1,130,639	Coordinate System: Florida State Plane West	Elevation (ft): -6.4 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/2 Washed - 5Y-7/2	Comments:
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Dry Weight (g): 97.65	Wash Weight (g): 96.95	Pan Retained (g): 0.00	Sieve Loss (%): 0.12	Fines (%): #200 - 0.86 #230 - 0.85	Organics (%):	Carbonates (%):	Shell Hash (%): 42
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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
7/16"	-3.50	11.31	8.08	8.27	8.08	8.27
5/16"	-3.00	8.00	9.52	9.75	17.60	18.02
3.5	-2.50	5.66	8.89	9.10	26.49	27.12
4	-2.25	4.76	2.77	2.84	29.26	29.96
5	-2.00	4.00	4.23	4.33	33.49	34.29
7	-1.50	2.83	9.16	9.38	42.65	43.67
10	-1.00	2.00	6.82	6.98	49.47	50.65
14	-0.50	1.41	7.28	7.46	56.75	58.11
18	0.00	1.00	5.43	5.56	62.18	63.67
25	0.50	0.71	5.35	5.48	67.53	69.15
35	1.00	0.50	4.24	4.34	71.77	73.49
45	1.50	0.35	3.79	3.88	75.56	77.37
60	2.00	0.25	4.48	4.59	80.04	81.96
80	2.50	0.18	9.25	9.47	89.29	91.43
120	3.00	0.13	6.81	6.97	96.10	98.40
170	3.50	0.09	0.69	0.71	96.79	99.11
200	3.75	0.07	0.03	0.03	96.82	99.14
230	4.00	0.06	0.01	0.01	96.83	99.15

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.76	2.11	1.19	-1.05	-2.62	-3.10	-3.80
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	-0.76	1.69	2.11	0.28	1.79	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-13 #2

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 430,866	Northing (ft): 1,130,639	Coordinate System: Florida State Plane West	Elevation (ft): -7.5 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 91.84	Wash Weight (g): 90.87	Pan Retained (g): 0.00	Sieve Loss (%): 0.00	Fines (%): #200 - 1.07 #230 - 1.06	Organics (%):	Carbonates (%):	Shell Hash (%): 2
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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
7/16"	-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	0.58	0.63	0.58	0.63
4	-2.25	4.76	0.41	0.45	0.99	1.08
5	-2.00	4.00	0.26	0.28	1.25	1.36
7	-1.50	2.83	0.88	0.96	2.13	2.32
10	-1.00	2.00	1.30	1.42	3.43	3.74
14	-0.50	1.41	1.51	1.64	4.94	5.38
18	0.00	1.00	1.36	1.48	6.30	6.86
25	0.50	0.71	1.52	1.66	7.82	8.52
35	1.00	0.50	1.77	1.93	9.59	10.45
45	1.50	0.35	2.45	2.67	12.04	13.12
60	2.00	0.25	5.99	6.52	18.03	19.64
80	2.50	0.18	41.20	44.86	59.23	64.50
120	3.00	0.13	29.75	32.39	88.98	96.89
170	3.50	0.09	1.84	2.00	90.82	98.89
200	3.75	0.07	0.04	0.04	90.86	98.93
230	4.00	0.06	0.01	0.01	90.87	98.94

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.97	2.80	2.66	2.34	2.06	1.72	-0.62
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.07	0.24	1.05	-2.54	9.55	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-13 #3

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 430,866	Northing (ft): 1,130,639	Coordinate System: Florida State Plane West	Elevation (ft): -12.5 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 88.55	Wash Weight (g): 87.67	Pan Retained (g): 0.00	Sieve Loss (%): 0.01	Fines (%): #200 - 1.01 #230 - 1.01	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.06	0.07	0.06	0.07
5	-2.00	4.00	0.00	0.00	0.06	0.07
7	-1.50	2.83	0.02	0.02	0.08	0.09
10	-1.00	2.00	0.09	0.10	0.17	0.19
14	-0.50	1.41	0.11	0.12	0.28	0.31
18	0.00	1.00	0.06	0.07	0.34	0.38
25	0.50	0.71	0.08	0.09	0.42	0.47
35	1.00	0.50	0.14	0.16	0.56	0.63
45	1.50	0.35	0.28	0.32	0.84	0.95
60	2.00	0.25	1.33	1.50	2.17	2.45
80	2.50	0.18	28.95	32.69	31.12	35.14
120	3.00	0.13	51.98	58.70	83.10	93.84
170	3.50	0.09	4.55	5.14	87.65	98.98
200	3.75	0.07	0.01	0.01	87.66	98.99
230	4.00	0.06	0.00	0.00	87.66	98.99

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.11	2.92	2.84	2.63	2.34	2.21	2.04
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.57	0.17	0.4	-3.93	39.04	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-13 #4

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 430,866	Northing (ft): 1,130,639	Coordinate System: Florida State Plane West	Elevation (ft): -16.4 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/2 Washed - 5Y-7/2	Comments:
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Dry Weight (g): 99.42	Wash Weight (g): 97.30	Pan Retained (g): 0.03	Sieve Loss (%): 0.16	Fines (%): #200 - 2.34 #230 - 2.32	Organics (%):	Carbonates (%):	Shell Hash (%): 25
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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
7/16"	-3.50	11.31	0.87	0.88	0.87	0.88
5/16"	-3.00	8.00	5.71	5.74	6.58	6.62
3.5	-2.50	5.66	4.96	4.99	11.54	11.61
4	-2.25	4.76	2.82	2.84	14.36	14.45
5	-2.00	4.00	4.63	4.66	18.99	19.11
7	-1.50	2.83	9.17	9.22	28.16	28.33
10	-1.00	2.00	8.42	8.47	36.58	36.80
14	-0.50	1.41	10.02	10.08	46.60	46.88
18	0.00	1.00	7.02	7.06	53.62	53.94
25	0.50	0.71	8.38	8.43	62.00	62.37
35	1.00	0.50	7.73	7.78	69.73	70.15
45	1.50	0.35	9.42	9.47	79.15	79.62
60	2.00	0.25	9.28	9.33	88.43	88.95
80	2.50	0.18	4.94	4.97	93.37	93.92
120	3.00	0.13	3.00	3.02	96.37	96.94
170	3.50	0.09	0.65	0.65	97.02	97.59
200	3.75	0.07	0.07	0.07	97.09	97.66
230	4.00	0.06	0.02	0.02	97.11	97.68

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.68	1.73	1.26	-0.28	-1.68	-2.17	-3.14
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	-0.31	1.24	1.72	-0.02	1.99	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granulometric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-14 #1

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 431,287	Northing (ft): 1,130,625	Coordinate System: Florida State Plane West	Elevation (ft): -6.9 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/2 Dry - 5Y-8/2 Washed - 5Y-8/2	Comments:
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Dry Weight (g): 87.54	Wash Weight (g): 86.73	Pan Retained (g): 0.00	Sieve Loss (%): 0.13	Fines (%): #200 - 1.05 #230 - 1.05	Organics (%):	Carbonates (%):	Shell Hash (%): 3
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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
7/16"	-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	0.22	0.25	0.22	0.25
4	-2.25	4.76	0.05	0.06	0.27	0.31
5	-2.00	4.00	0.46	0.53	0.73	0.84
7	-1.50	2.83	1.62	1.85	2.35	2.69
10	-1.00	2.00	1.51	1.72	3.86	4.41
14	-0.50	1.41	2.53	2.89	6.39	7.30
18	0.00	1.00	2.88	3.29	9.27	10.59
25	0.50	0.71	3.78	4.32	13.05	14.91
35	1.00	0.50	4.72	5.39	17.77	20.30
45	1.50	0.35	6.14	7.01	23.91	27.31
60	2.00	0.25	9.39	10.73	33.30	38.04
80	2.50	0.18	15.03	17.17	48.33	55.21
120	3.00	0.13	33.84	38.66	82.17	93.87
170	3.50	0.09	4.38	5.00	86.55	98.87
200	3.75	0.07	0.07	0.08	86.62	98.95
230	4.00	0.06	0.00	0.00	86.62	98.95

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.11	2.87	2.76	2.35	1.34	0.60	-0.90
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.86	0.28	1.25	-1.4	4.28	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-14 #2

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 431,287	Northing (ft): 1,130,625	Coordinate System: Florida State Plane West	Elevation (ft): -7.8 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-6/3 Dry - 5Y-8/2 Washed - 5Y-8/2	Comments:
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Dry Weight (g): 96.89	Wash Weight (g): 96.14	Pan Retained (g): 0.01	Sieve Loss (%): 0.08	Fines (%): #200 - 0.89 #230 - 0.88	Organics (%):	Carbonates (%):	Shell Hash (%): 31
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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
7/16"	-3.50	11.31	3.70	3.82	3.70	3.82
5/16"	-3.00	8.00	4.63	4.78	8.33	8.60
3.5	-2.50	5.66	8.32	8.59	16.65	17.19
4	-2.25	4.76	2.44	2.52	19.09	19.71
5	-2.00	4.00	3.66	3.78	22.75	23.49
7	-1.50	2.83	7.42	7.66	30.17	31.15
10	-1.00	2.00	7.12	7.35	37.29	38.50
14	-0.50	1.41	8.51	8.78	45.80	47.28
18	0.00	1.00	7.28	7.51	53.08	54.79
25	0.50	0.71	6.58	6.79	59.66	61.58
35	1.00	0.50	6.18	6.38	65.84	67.96
45	1.50	0.35	6.04	6.23	71.88	74.19
60	2.00	0.25	6.36	6.56	78.24	80.75
80	2.50	0.18	6.36	6.56	84.60	87.31
120	3.00	0.13	9.43	9.73	94.03	97.04
170	3.50	0.09	1.96	2.02	95.99	99.06
200	3.75	0.07	0.05	0.05	96.04	99.11
230	4.00	0.06	0.01	0.01	96.05	99.12

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.90	2.25	1.56	-0.32	-1.90	-2.57	-3.38
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	-0.25	1.19	2	0.03	1.85	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-14 #3

Analysis Date: 03-09-07

Analyzed By: AU

Easting (ft): 431,287	Northing (ft): 1,130,625	Coordinate System: Florida State Plane West	Elevation (ft): -10.4 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 86.91	Wash Weight (g): 86.36	Pan Retained (g): 0.01	Sieve Loss (%): 0.21	Fines (%): #200 - 0.86 #230 - 0.83	Organics (%):	Carbonates (%):	Shell Hash (%): 1
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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
7/16"	-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	0.35	0.40	0.35	0.40
4	-2.25	4.76	0.25	0.29	0.60	0.69
5	-2.00	4.00	0.20	0.23	0.80	0.92
7	-1.50	2.83	0.37	0.43	1.17	1.35
10	-1.00	2.00	0.52	0.60	1.69	1.95
14	-0.50	1.41	0.58	0.67	2.27	2.62
18	0.00	1.00	0.50	0.58	2.77	3.20
25	0.50	0.71	0.66	0.76	3.43	3.96
35	1.00	0.50	0.98	1.13	4.41	5.09
45	1.50	0.35	1.63	1.88	6.04	6.97
60	2.00	0.25	4.88	5.62	10.92	12.59
80	2.50	0.18	27.88	32.08	38.80	44.67
120	3.00	0.13	42.23	48.59	81.03	93.26
170	3.50	0.09	5.02	5.78	86.05	99.04
200	3.75	0.07	0.09	0.10	86.14	99.14
230	4.00	0.06	0.03	0.03	86.17	99.17

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.15	2.90	2.81	2.55	2.19	2.05	0.96
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.36	0.19	0.84	-3.4	17.17	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-14 #4

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 431,287	Northing (ft): 1,130,625	Coordinate System: Florida State Plane West	Elevation (ft): -13.4 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 86.59	Wash Weight (g): 84.76	Pan Retained (g): 0.01	Sieve Loss (%): 0.01	Fines (%): #200 - 2.14 #230 - 2.13	Organics (%):	Carbonates (%):	Shell Hash (%): 3
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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
7/16"	-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	0.11	0.13	0.11	0.13
4	-2.25	4.76	0.39	0.45	0.50	0.58
5	-2.00	4.00	0.78	0.90	1.28	1.48
7	-1.50	2.83	1.27	1.47	2.55	2.95
10	-1.00	2.00	1.74	2.01	4.29	4.96
14	-0.50	1.41	1.64	1.89	5.93	6.85
18	0.00	1.00	1.21	1.40	7.14	8.25
25	0.50	0.71	1.54	1.78	8.68	10.03
35	1.00	0.50	2.00	2.31	10.68	12.34
45	1.50	0.35	2.63	3.04	13.31	15.38
60	2.00	0.25	7.74	8.94	21.05	24.32
80	2.50	0.18	38.36	44.30	59.41	68.62
120	3.00	0.13	22.69	26.20	82.10	94.82
170	3.50	0.09	2.56	2.96	84.66	97.78
200	3.75	0.07	0.07	0.08	84.73	97.86
230	4.00	0.06	0.01	0.01	84.74	97.87

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.03	2.79	2.62	2.29	2.01	1.53	-0.99
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.97	0.26	1.12	-2.18	7.39	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-14 #5

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 431,287	Northing (ft): 1,130,625	Coordinate System: Florida State Plane West	Elevation (ft): -18.6 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 89.93	Wash Weight (g): 88.44	Pan Retained (g): 0.02	Sieve Loss (%): 0.10	Fines (%): #200 - 1.91 #230 - 1.78	Organics (%):	Carbonates (%):	Shell Hash (%): 11
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.67	0.75	0.67	0.75
3.5	-2.50	5.66	3.76	4.18	4.43	4.93
4	-2.25	4.76	0.62	0.69	5.05	5.62
5	-2.00	4.00	1.91	2.12	6.96	7.74
7	-1.50	2.83	4.07	4.53	11.03	12.27
10	-1.00	2.00	3.96	4.40	14.99	16.67
14	-0.50	1.41	4.63	5.15	19.62	21.82
18	0.00	1.00	2.80	3.11	22.42	24.93
25	0.50	0.71	2.73	3.04	25.15	27.97
35	1.00	0.50	2.28	2.54	27.43	30.51
45	1.50	0.35	2.21	2.46	29.64	32.97
60	2.00	0.25	4.20	4.67	33.84	37.64
80	2.50	0.18	23.43	26.05	57.27	63.69
120	3.00	0.13	26.83	29.83	84.10	93.52
170	3.50	0.09	4.01	4.46	88.11	97.98
200	3.75	0.07	0.10	0.11	88.21	98.09
230	4.00	0.06	0.12	0.13	88.33	98.22

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.17	2.84	2.69	2.24	0.01	-1.08	-2.47
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	1.34	0.40	1.83	-1.04	2.64	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-15 #1

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 432,201	Northing (ft): 1,130,972	Coordinate System: Florida State Plane West	Elevation (ft): -12.7 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-6/1 Dry - 5Y-6/1 Washed - 5Y-6/1	Comments:
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Dry Weight (g): 89.75	Wash Weight (g): 88.15	Pan Retained (g): 0.01	Sieve Loss (%): 0.13	Fines (%): #200 - 2.00 #230 - 1.93	Organics (%):	Carbonates (%):	Shell Hash (%): 20
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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
7/16"	-3.50	11.31	1.30	1.45	1.30	1.45
5/16"	-3.00	8.00	3.35	3.73	4.65	5.18
3.5	-2.50	5.66	3.50	3.90	8.15	9.08
4	-2.25	4.76	1.41	1.57	9.56	10.65
5	-2.00	4.00	2.98	3.32	12.54	13.97
7	-1.50	2.83	5.78	6.44	18.32	20.41
10	-1.00	2.00	7.01	7.81	25.33	28.22
14	-0.50	1.41	8.73	9.73	34.06	37.95
18	0.00	1.00	8.31	9.26	42.37	47.21
25	0.50	0.71	8.44	9.40	50.81	56.61
35	1.00	0.50	8.13	9.06	58.94	65.67
45	1.50	0.35	6.77	7.54	65.71	73.21
60	2.00	0.25	6.58	7.33	72.29	80.54
80	2.50	0.18	6.97	7.77	79.26	88.31
120	3.00	0.13	7.48	8.33	86.74	96.64
170	3.50	0.09	1.17	1.30	87.91	97.94
200	3.75	0.07	0.05	0.06	87.96	98.00
230	4.00	0.06	0.06	0.07	88.02	98.07

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.90	2.22	1.62	0.15	-1.21	-1.84	-3.02
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.07	0.95	1.77	-0.16	2.14	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granulometric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-15 #2

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 432,201	Northing (ft): 1,130,972	Coordinate System: Florida State Plane West	Elevation (ft): -15.6 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/1 Dry - 5Y-7/1 Washed - 5Y-7/1	Comments:
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Dry Weight (g): 98.49	Wash Weight (g): 96.48	Pan Retained (g): 0.01	Sieve Loss (%): 0.03	Fines (%): #200 - 2.13 #230 - 2.11	Organics (%):	Carbonates (%):	Shell Hash (%): 4
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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
7/16"	-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	0.60	0.61	0.60	0.61
4	-2.25	4.76	0.38	0.39	0.98	1.00
5	-2.00	4.00	0.87	0.88	1.85	1.88
7	-1.50	2.83	2.07	2.10	3.92	3.98
10	-1.00	2.00	3.41	3.46	7.33	7.44
14	-0.50	1.41	4.91	4.99	12.24	12.43
18	0.00	1.00	5.46	5.54	17.70	17.97
25	0.50	0.71	6.16	6.25	23.86	24.22
35	1.00	0.50	6.68	6.78	30.54	31.00
45	1.50	0.35	7.37	7.48	37.91	38.48
60	2.00	0.25	10.76	10.92	48.67	49.40
80	2.50	0.18	21.78	22.11	70.45	71.51
120	3.00	0.13	23.13	23.48	93.58	94.99
170	3.50	0.09	2.77	2.81	96.35	97.80
200	3.75	0.07	0.07	0.07	96.42	97.87
230	4.00	0.06	0.02	0.02	96.44	97.89

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.00	2.77	2.57	2.01	0.56	-0.18	-1.35
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	1.44	0.37	1.4	-0.94	2.93	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-15 #3

Analysis Date: 03-08-07

Analyzed By: AU

Easting (ft): 432,201	Northing (ft): 1,130,972	Coordinate System: Florida State Plane West	Elevation (ft): -19.2 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 92.72	Wash Weight (g): 91.14	Pan Retained (g): 0.02	Sieve Loss (%): 0.16	Fines (%): #200 - 1.89 #230 - 1.88	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.07	0.08	0.07	0.08
5	-2.00	4.00	0.00	0.00	0.07	0.08
7	-1.50	2.83	0.30	0.32	0.37	0.40
10	-1.00	2.00	0.47	0.51	0.84	0.91
14	-0.50	1.41	0.53	0.57	1.37	1.48
18	0.00	1.00	0.74	0.80	2.11	2.28
25	0.50	0.71	1.26	1.36	3.37	3.64
35	1.00	0.50	2.26	2.44	5.63	6.08
45	1.50	0.35	3.81	4.11	9.44	10.19
60	2.00	0.25	11.34	12.23	20.78	22.42
80	2.50	0.18	34.03	36.70	54.81	59.12
120	3.00	0.13	33.08	35.68	87.89	94.80
170	3.50	0.09	3.02	3.26	90.91	98.06
200	3.75	0.07	0.05	0.05	90.96	98.11
230	4.00	0.06	0.01	0.01	90.97	98.12

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.03	2.85	2.72	2.38	2.04	1.74	0.78
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.22	0.21	0.74	-2.29	10.51	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-17 #1

Analysis Date: 03-09-07

Analyzed By: MC

Easting (ft): 430,589	Northing (ft): 1,144,145	Coordinate System: Florida State Plane West	Elevation (ft): -8.9 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/2 Washed - 5Y-7/2	Comments:
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Dry Weight (g): 95.29	Wash Weight (g): 94.00	Pan Retained (g): 0.02	Sieve Loss (%): 0.00	Fines (%): #200 - 1.44 #230 - 1.39	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.02	0.02	0.02	0.02
10	-1.00	2.00	0.06	0.06	0.08	0.08
14	-0.50	1.41	0.10	0.10	0.18	0.18
18	0.00	1.00	0.14	0.15	0.32	0.33
25	0.50	0.71	0.29	0.30	0.61	0.63
35	1.00	0.50	0.49	0.51	1.10	1.14
45	1.50	0.35	0.81	0.85	1.91	1.99
60	2.00	0.25	1.92	2.01	3.83	4.00
80	2.50	0.18	25.63	26.90	29.46	30.90
120	3.00	0.13	54.33	57.02	83.79	87.92
170	3.50	0.09	9.44	9.91	93.23	97.83
200	3.75	0.07	0.70	0.73	93.93	98.56
230	4.00	0.06	0.05	0.05	93.98	98.61

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.36	2.97	2.89	2.67	2.39	2.22	2.02
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.61	0.16	0.45	-2.37	16.98	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-18 #1

Analysis Date: 03-08-07

Analyzed By: MC

Easting (ft): 430,955	Northing (ft): 1,144,486	Coordinate System: Florida State Plane West	Elevation (ft): -5.5 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/2 Washed - 5Y-7/2	Comments:
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Dry Weight (g): 90.41	Wash Weight (g): 88.94	Pan Retained (g): 0.03	Sieve Loss (%): 0.00	Fines (%): #200 - 1.69 #230 - 1.66	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.03	0.03	0.03	0.03
7	-1.50	2.83	0.12	0.13	0.15	0.16
10	-1.00	2.00	0.16	0.18	0.31	0.34
14	-0.50	1.41	0.41	0.45	0.72	0.79
18	0.00	1.00	0.54	0.60	1.26	1.39
25	0.50	0.71	1.25	1.38	2.51	2.77
35	1.00	0.50	1.96	2.17	4.47	4.94
45	1.50	0.35	3.08	3.41	7.55	8.35
60	2.00	0.25	6.46	7.15	14.01	15.50
80	2.50	0.18	33.85	37.44	47.86	52.94
120	3.00	0.13	36.62	40.50	84.48	93.44
170	3.50	0.09	4.24	4.69	88.72	98.13
200	3.75	0.07	0.16	0.18	88.88	98.31
230	4.00	0.06	0.03	0.03	88.91	98.34

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.17	2.88	2.77	2.46	2.13	2.01	1.01
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.33	0.20	0.66	-2.24	10.52	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granulometric Report

Depths and elevations based on measured values



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fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-18 #2

Analysis Date: 03-08-07

Analyzed By: MC

Easting (ft): 430,955	Northing (ft): 1,144,486	Coordinate System: Florida State Plane West	Elevation (ft): -6.8 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/2 Washed - 5Y-7/2	Comments:
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Dry Weight (g): 94.52	Wash Weight (g): 93.02	Pan Retained (g): 0.03	Sieve Loss (%): 0.14	Fines (%): #200 - 1.79 #230 - 1.75	Organics (%):	Carbonates (%):	Shell Hash (%): 3
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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
7/16"	-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	0.24	0.25	0.24	0.25
4	-2.25	4.76	0.40	0.42	0.64	0.67
5	-2.00	4.00	0.69	0.73	1.33	1.40
7	-1.50	2.83	1.95	2.06	3.28	3.46
10	-1.00	2.00	4.30	4.55	7.58	8.01
14	-0.50	1.41	6.66	7.05	14.24	15.06
18	0.00	1.00	4.41	4.67	18.65	19.73
25	0.50	0.71	5.04	5.33	23.69	25.06
35	1.00	0.50	4.42	4.68	28.11	29.74
45	1.50	0.35	4.93	5.22	33.04	34.96
60	2.00	0.25	7.72	8.17	40.76	43.13
80	2.50	0.18	23.04	24.38	63.80	67.51
120	3.00	0.13	25.35	26.82	89.15	94.33
170	3.50	0.09	3.45	3.65	92.60	97.98
200	3.75	0.07	0.22	0.23	92.82	98.21
230	4.00	0.06	0.04	0.04	92.86	98.25

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.09	2.81	2.64	2.14	0.49	-0.40	-1.33
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	1.51	0.35	1.45	-0.94	2.66	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-18 #3

Analysis Date: 03-08-07

Analyzed By: MC

Easting (ft): 430,955	Northing (ft): 1,144,486	Coordinate System: Florida State Plane West	Elevation (ft): -8.2 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-6/2 Dry - 5Y-6/2 Washed - 5Y-6/2	Comments:
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Dry Weight (g): 93.42	Wash Weight (g): 91.08	Pan Retained (g): 0.03	Sieve Loss (%): 0.12	Fines (%): #200 - 2.73 #230 - 2.68	Organics (%):	Carbonates (%):	Shell Hash (%): 16
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	1.00	1.07	1.00	1.07
3.5	-2.50	5.66	2.17	2.32	3.17	3.39
4	-2.25	4.76	1.00	1.07	4.17	4.46
5	-2.00	4.00	2.01	2.15	6.18	6.61
7	-1.50	2.83	9.68	10.36	15.86	16.97
10	-1.00	2.00	16.07	17.20	31.93	34.17
14	-0.50	1.41	15.22	16.29	47.15	50.46
18	0.00	1.00	7.96	8.52	55.11	58.98
25	0.50	0.71	7.24	7.75	62.35	66.73
35	1.00	0.50	4.09	4.38	66.44	71.11
45	1.50	0.35	2.98	3.19	69.42	74.30
60	2.00	0.25	3.02	3.23	72.44	77.53
80	2.50	0.18	7.44	7.96	79.88	85.49
120	3.00	0.13	9.13	9.77	89.01	95.26
170	3.50	0.09	1.73	1.85	90.74	97.11
200	3.75	0.07	0.15	0.16	90.89	97.27
230	4.00	0.06	0.05	0.05	90.94	97.32

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.99	2.41	1.61	-0.51	-1.27	-1.55	-2.19
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	-0.05	1.04	1.66	0.48	2.13	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-19 #1

Analysis Date: 03-07-07

Analyzed By: JF

Easting (ft): 431,156	Northing (ft): 1,144,258	Coordinate System: Florida State Plane West	Elevation (ft): -6.1 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-7/2 Dry - 5Y-7/2 Washed - 5Y-7/2	Comments:
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Dry Weight (g): 83.92	Wash Weight (g): 82.42	Pan Retained (g): 0.01	Sieve Loss (%): 0.06	Fines (%): #200 - 1.90 #230 - 1.86	Organics (%):	Carbonates (%):	Shell Hash (%): 2
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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
7/16"	-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	0.23	0.27	0.23	0.27
4	-2.25	4.76	0.04	0.05	0.27	0.32
5	-2.00	4.00	0.33	0.39	0.60	0.71
7	-1.50	2.83	0.69	0.82	1.29	1.53
10	-1.00	2.00	1.05	1.25	2.34	2.78
14	-0.50	1.41	1.39	1.66	3.73	4.44
18	0.00	1.00	1.27	1.51	5.00	5.95
25	0.50	0.71	1.44	1.72	6.44	7.67
35	1.00	0.50	1.73	2.06	8.17	9.73
45	1.50	0.35	2.83	3.37	11.00	13.10
60	2.00	0.25	6.03	7.19	17.03	20.29
80	2.50	0.18	29.32	34.94	46.35	55.23
120	3.00	0.13	32.34	38.54	78.69	93.77
170	3.50	0.09	3.47	4.13	82.16	97.90
200	3.75	0.07	0.17	0.20	82.33	98.10
230	4.00	0.06	0.03	0.04	82.36	98.14

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.15	2.87	2.76	2.43	2.07	1.70	-0.31
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.15	0.23	1	-2.37	8.97	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-19 #2

Analysis Date: 03-07-07

Analyzed By: JF

Easting (ft): 431,156	Northing (ft): 1,144,258	Coordinate System: Florida State Plane West	Elevation (ft): -8.4 NAVD 88
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USCS: SW	Munsell: Wet - 2.5Y-7/2 Dry - 2.5Y-7/2 Washed - 2.5Y-7/2	Comments:
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Dry Weight (g): 86.43	Wash Weight (g): 84.12	Pan Retained (g): 0.03	Sieve Loss (%): 0.06	Fines (%): #200 - 2.88 #230 - 2.76	Organics (%):	Carbonates (%):	Shell Hash (%): 14
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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
7/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.71	0.82	0.71	0.82
3.5	-2.50	5.66	1.40	1.62	2.11	2.44
4	-2.25	4.76	1.58	1.83	3.69	4.27
5	-2.00	4.00	1.48	1.71	5.17	5.98
7	-1.50	2.83	6.97	8.06	12.14	14.04
10	-1.00	2.00	9.27	10.73	21.41	24.77
14	-0.50	1.41	8.83	10.22	30.24	34.99
18	0.00	1.00	5.10	5.90	35.34	40.89
25	0.50	0.71	3.44	3.98	38.78	44.87
35	1.00	0.50	2.10	2.43	40.88	47.30
45	1.50	0.35	2.10	2.43	42.98	49.73
60	2.00	0.25	3.44	3.98	46.42	53.71
80	2.50	0.18	15.34	17.75	61.76	71.46
120	3.00	0.13	18.82	21.77	80.58	93.23
170	3.50	0.09	3.10	3.59	83.68	96.82
200	3.75	0.07	0.26	0.30	83.94	97.12
230	4.00	0.06	0.10	0.12	84.04	97.24

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.25	2.79	2.58	1.53	-0.99	-1.41	-2.14
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.76	0.59	1.89	-0.27	1.55	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-19 #3

Analysis Date: 03-07-07

Analyzed By: JF

Easting (ft): 431,156	Northing (ft): 1,144,258	Coordinate System: Florida State Plane West	Elevation (ft): -11.5 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-6/2 Dry - 5Y-6/2 Washed - 5Y-7/2	Comments:
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Dry Weight (g): 84.01	Wash Weight (g): 82.12	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 2.31 #230 - 2.27	Organics (%):	Carbonates (%):	Shell Hash (%): 0
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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
7/16"	-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	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.06	0.07	0.06	0.07
10	-1.00	2.00	0.01	0.01	0.07	0.08
14	-0.50	1.41	0.05	0.06	0.12	0.14
18	0.00	1.00	0.07	0.08	0.19	0.22
25	0.50	0.71	0.06	0.07	0.25	0.29
35	1.00	0.50	0.07	0.08	0.32	0.37
45	1.50	0.35	0.10	0.12	0.42	0.49
60	2.00	0.25	0.49	0.58	0.91	1.07
80	2.50	0.18	34.78	41.40	35.69	42.47
120	3.00	0.13	42.00	49.99	77.69	92.46
170	3.50	0.09	4.14	4.93	81.83	97.39
200	3.75	0.07	0.25	0.30	82.08	97.69
230	4.00	0.06	0.03	0.04	82.11	97.73

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.26	2.92	2.83	2.58	2.29	2.18	2.05
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.55	0.17	0.36	-2.37	27.56	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-20 #1

Analysis Date: 03-08-07

Analyzed By: JF

Easting (ft): 430,935	Northing (ft): 1,143,913	Coordinate System: Florida State Plane West	Elevation (ft): -6.3 NAVD 88
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USCS: SP	Munsell: Wet - 5Y-8/1 Dry - 5Y-8/1 Washed - 5Y-8/1	Comments:
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Dry Weight (g): 88.49	Wash Weight (g): 87.50	Pan Retained (g): 0.01	Sieve Loss (%): 0.03	Fines (%): #200 - 1.17 #230 - 1.15	Organics (%):	Carbonates (%):	Shell Hash (%): 1
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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
7/16"	-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	0.13	0.15	0.13	0.15
5	-2.00	4.00	0.06	0.07	0.19	0.22
7	-1.50	2.83	0.33	0.37	0.52	0.59
10	-1.00	2.00	0.75	0.85	1.27	1.44
14	-0.50	1.41	1.30	1.47	2.57	2.91
18	0.00	1.00	1.14	1.29	3.71	4.20
25	0.50	0.71	1.13	1.28	4.84	5.48
35	1.00	0.50	1.04	1.18	5.88	6.66
45	1.50	0.35	1.26	1.42	7.14	8.08
60	2.00	0.25	3.10	3.50	10.24	11.58
80	2.50	0.18	39.79	44.97	50.03	56.55
120	3.00	0.13	33.44	37.79	83.47	94.34
170	3.50	0.09	3.83	4.33	87.30	98.67
200	3.75	0.07	0.14	0.16	87.44	98.83
230	4.00	0.06	0.02	0.02	87.46	98.85

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.08	2.86	2.74	2.43	2.15	2.05	0.31
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.28	0.21	0.82	-2.82	12.13	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



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Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-20 #2

Analysis Date: 03-08-07

Analyzed By: MC

Easting (ft): 430,935	Northing (ft): 1,143,913	Coordinate System: Florida State Plane West	Elevation (ft): -9.7 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-6/2 Dry - 5Y-6/2 Washed - 5Y-6/2	Comments:
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Dry Weight (g): 89.50	Wash Weight (g): 87.64	Pan Retained (g): 0.08	Sieve Loss (%): 0.13	Fines (%): #200 - 2.37 #230 - 2.30	Organics (%):	Carbonates (%):	Shell Hash (%): 3
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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
7/16"	-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	0.10	0.11	0.10	0.11
4	-2.25	4.76	0.64	0.72	0.74	0.83
5	-2.00	4.00	0.93	1.04	1.67	1.87
7	-1.50	2.83	1.20	1.34	2.87	3.21
10	-1.00	2.00	1.41	1.58	4.28	4.79
14	-0.50	1.41	1.37	1.53	5.65	6.32
18	0.00	1.00	0.53	0.59	6.18	6.91
25	0.50	0.71	0.54	0.60	6.72	7.51
35	1.00	0.50	0.45	0.50	7.17	8.01
45	1.50	0.35	0.59	0.66	7.76	8.67
60	2.00	0.25	1.77	1.98	9.53	10.65
80	2.50	0.18	29.08	32.49	38.61	43.14
120	3.00	0.13	44.27	49.46	82.88	92.60
170	3.50	0.09	4.25	4.75	87.13	97.35
200	3.75	0.07	0.25	0.28	87.38	97.63
230	4.00	0.06	0.06	0.07	87.44	97.70

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.25	2.91	2.82	2.57	2.22	2.08	-0.93
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.26	0.21	1.1	-2.86	10.69	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
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 fax (561) 391-9116

Project Name: Anna Maria 2007 Sand Search

Sample Name: AMVC-07-20 #3

Analysis Date: 03-08-07

Analyzed By: MC

Easting (ft): 430,935	Northing (ft): 1,143,913	Coordinate System: Florida State Plane West	Elevation (ft): -10.9 NAVD 88
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USCS: SW	Munsell: Wet - 5Y-5/2 Dry - 5Y-6/2 Washed - 5Y-6/2	Comments:
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Dry Weight (g): 91.31	Wash Weight (g): 89.08	Pan Retained (g): 0.14	Sieve Loss (%): 0.22	Fines (%): #200 - 2.88 #230 - 2.83	Organics (%):	Carbonates (%):	Shell Hash (%): 16
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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
7/16"	-3.50	11.31	2.99	3.27	2.99	3.27
5/16"	-3.00	8.00	2.12	2.32	5.11	5.59
3.5	-2.50	5.66	3.68	4.03	8.79	9.62
4	-2.25	4.76	1.47	1.61	10.26	11.23
5	-2.00	4.00	2.07	2.27	12.33	13.50
7	-1.50	2.83	6.56	7.18	18.89	20.68
10	-1.00	2.00	8.76	9.59	27.65	30.27
14	-0.50	1.41	9.68	10.60	37.33	40.87
18	0.00	1.00	5.43	5.95	42.76	46.82
25	0.50	0.71	4.93	5.40	47.69	52.22
35	1.00	0.50	3.34	3.66	51.03	55.88
45	1.50	0.35	3.13	3.43	54.16	59.31
60	2.00	0.25	4.51	4.94	58.67	64.25
80	2.50	0.18	10.87	11.90	69.54	76.15
120	3.00	0.13	16.48	18.05	86.02	94.20
170	3.50	0.09	2.45	2.68	88.47	96.88
200	3.75	0.07	0.22	0.24	88.69	97.12
230	4.00	0.06	0.05	0.05	88.74	97.17

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

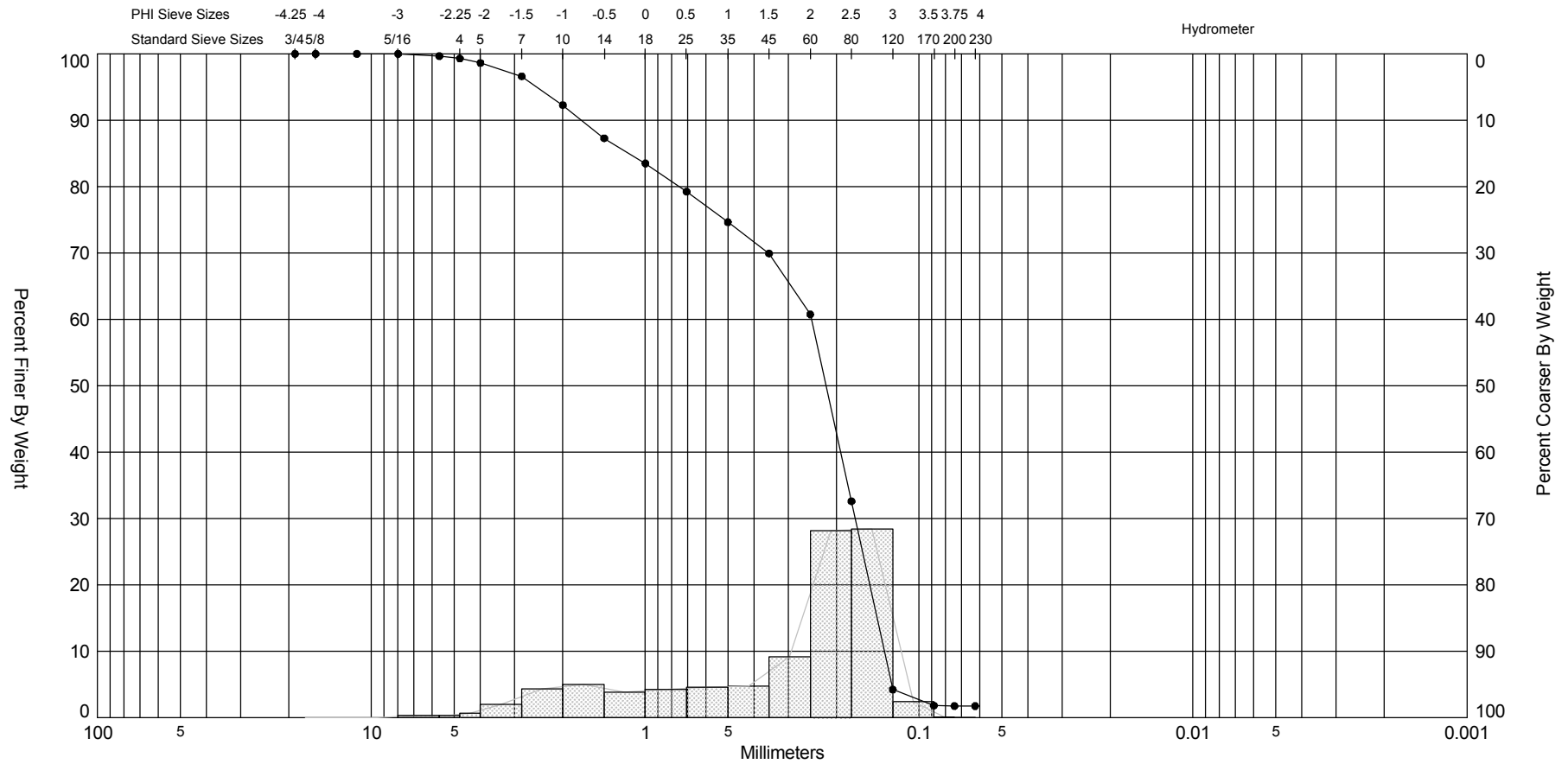
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.15	2.72	2.45	0.29	-1.27	-1.83	-3.13
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.31	0.81	2.05	-0.2	1.79	

GRANULARMETRIC REPORT ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07


APPENDIX 4

2007 CPE INDIVIDUAL VIBRACORE GRAIN SIZE DISTRIBUTION
CURVES/HISTOGRAMS

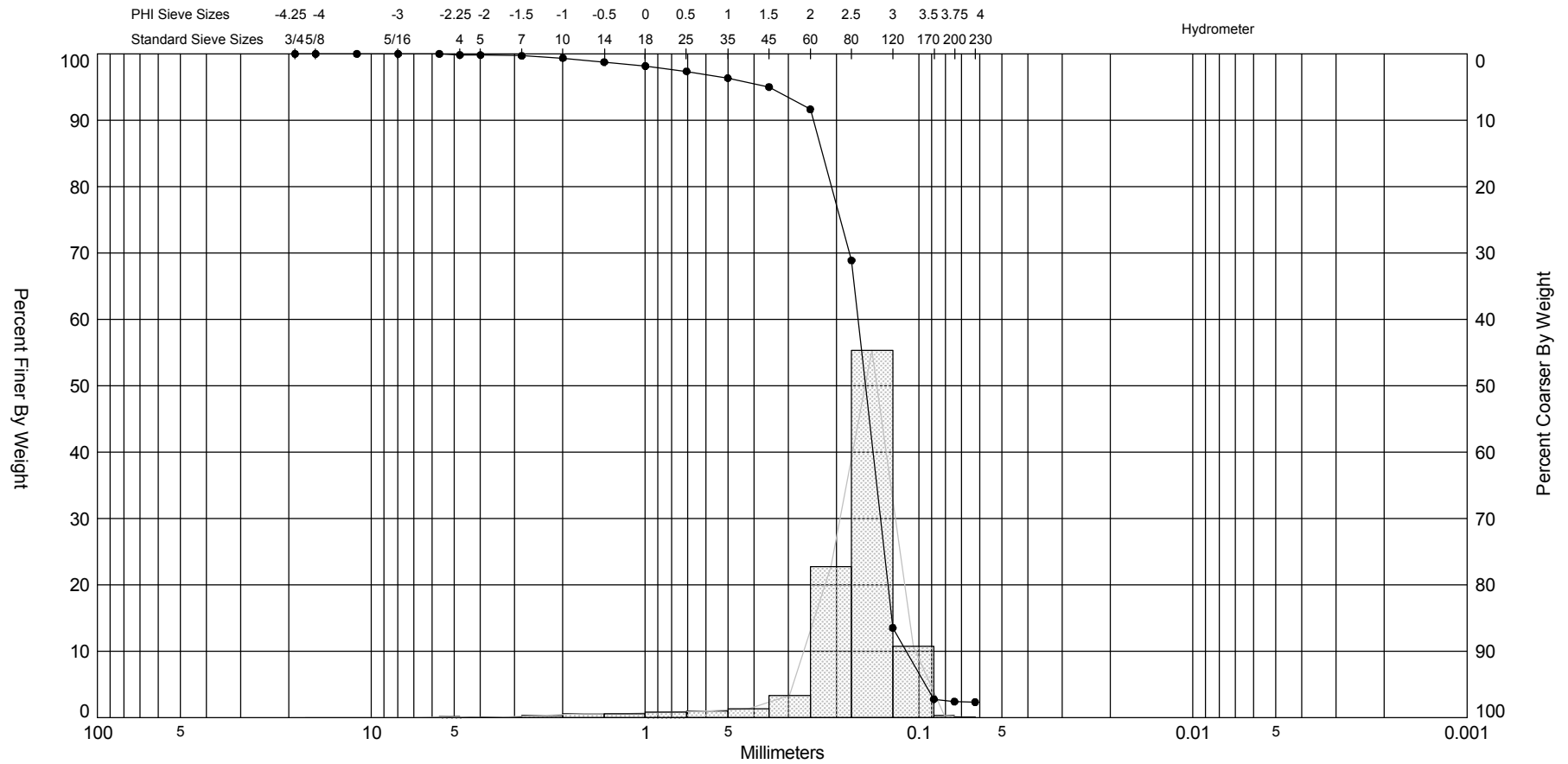
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-01 #1	—●—	-8.6	SW	#200 - 1.75 #230 - 1.74			2.19	1.62	-1.2	3.31	1.38	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,831
												Northing (Y, ft):	1,143,326
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

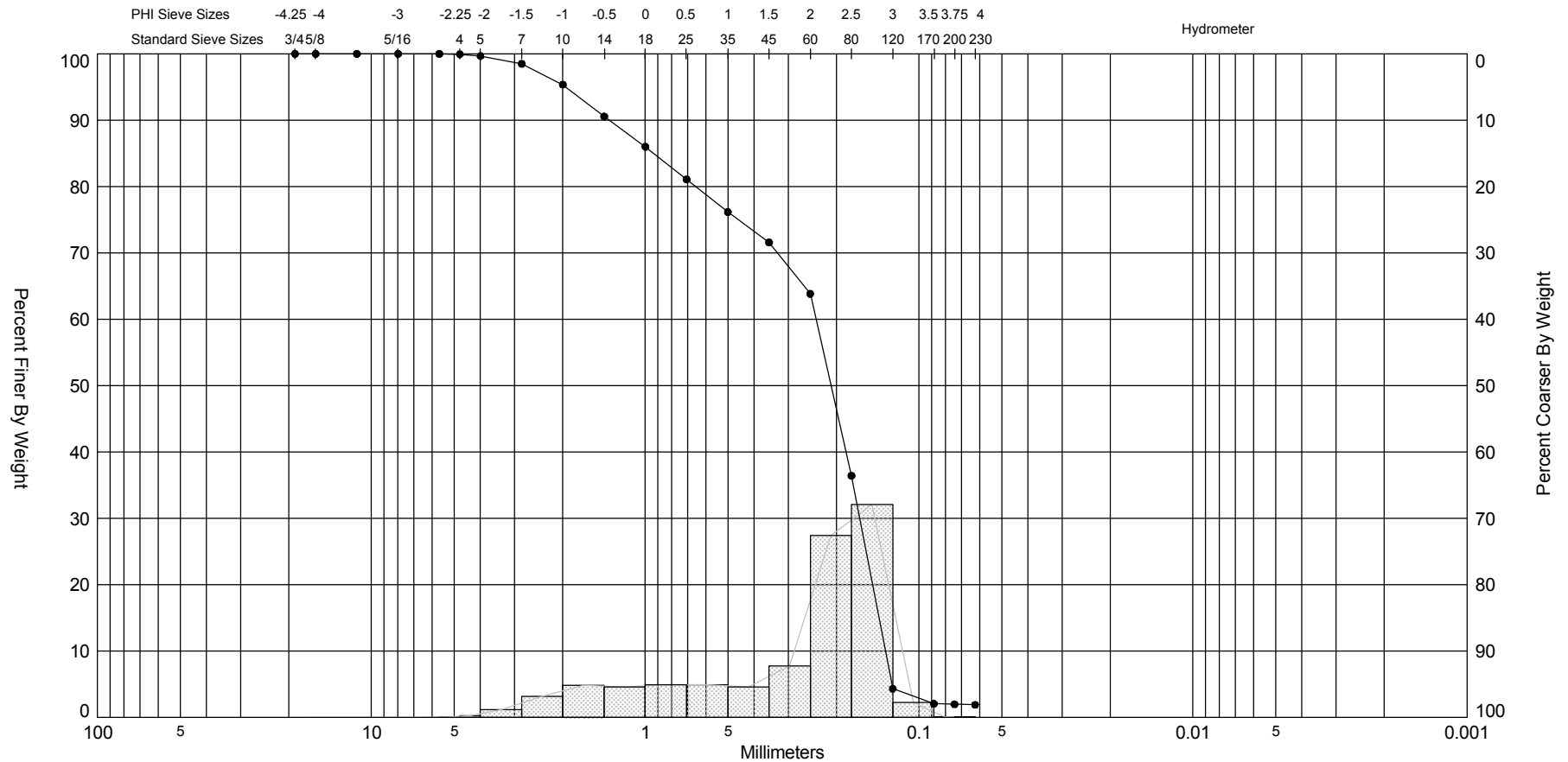
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-01 #2	—●—	-9.5	SP	#200 - 2.42 #230 - 2.33			2.67	2.53	-3.22	17.46	0.68	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,831
												Northing (Y, ft):	1,143,326
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

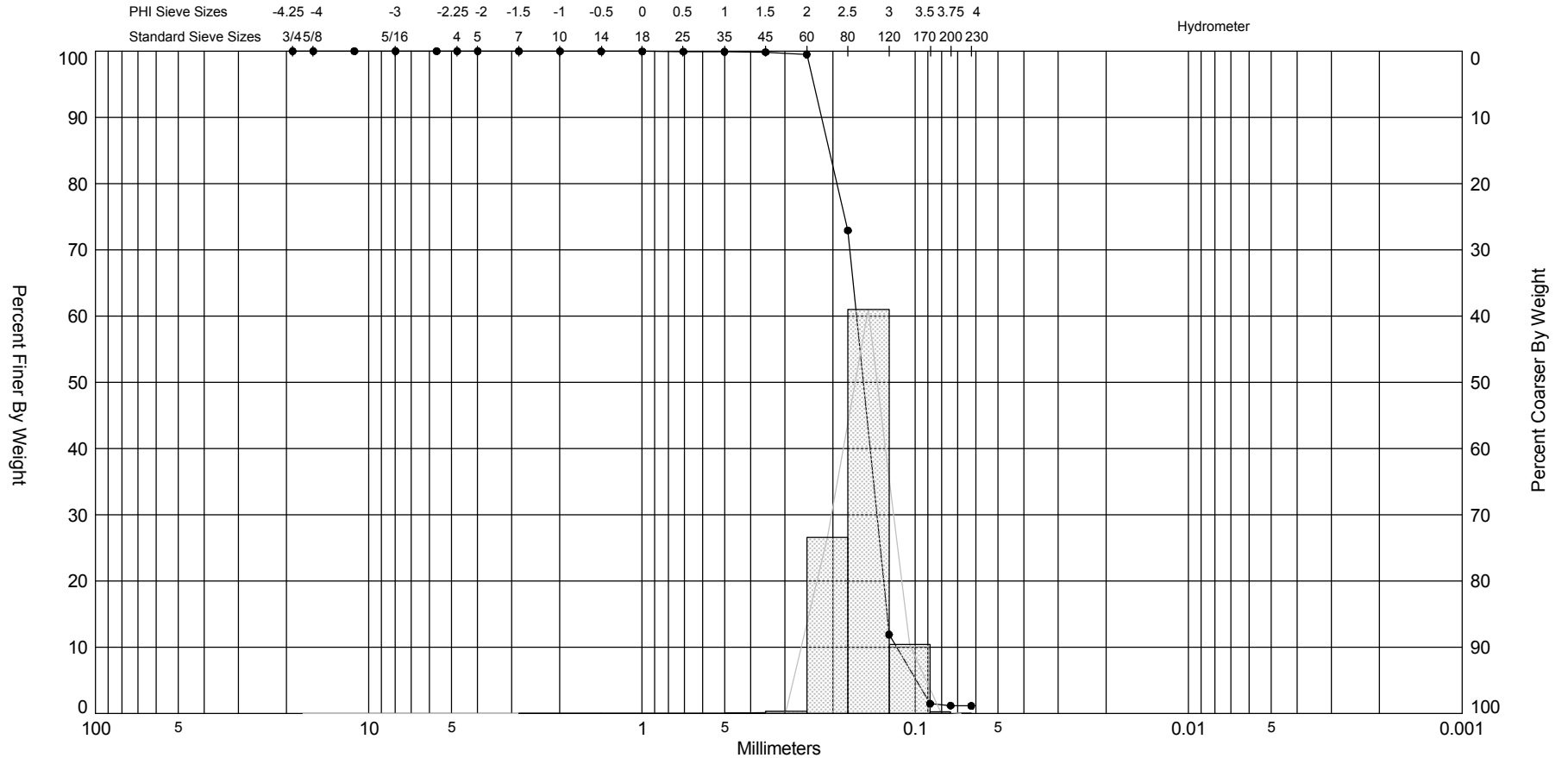
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-01 #3	—●—	-14.1	SW	#200 - 1.96 #230 - 1.88			2.25	1.74	-1.2	3.3	1.27	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,831
												Northing (Y, ft):	1,143,326
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

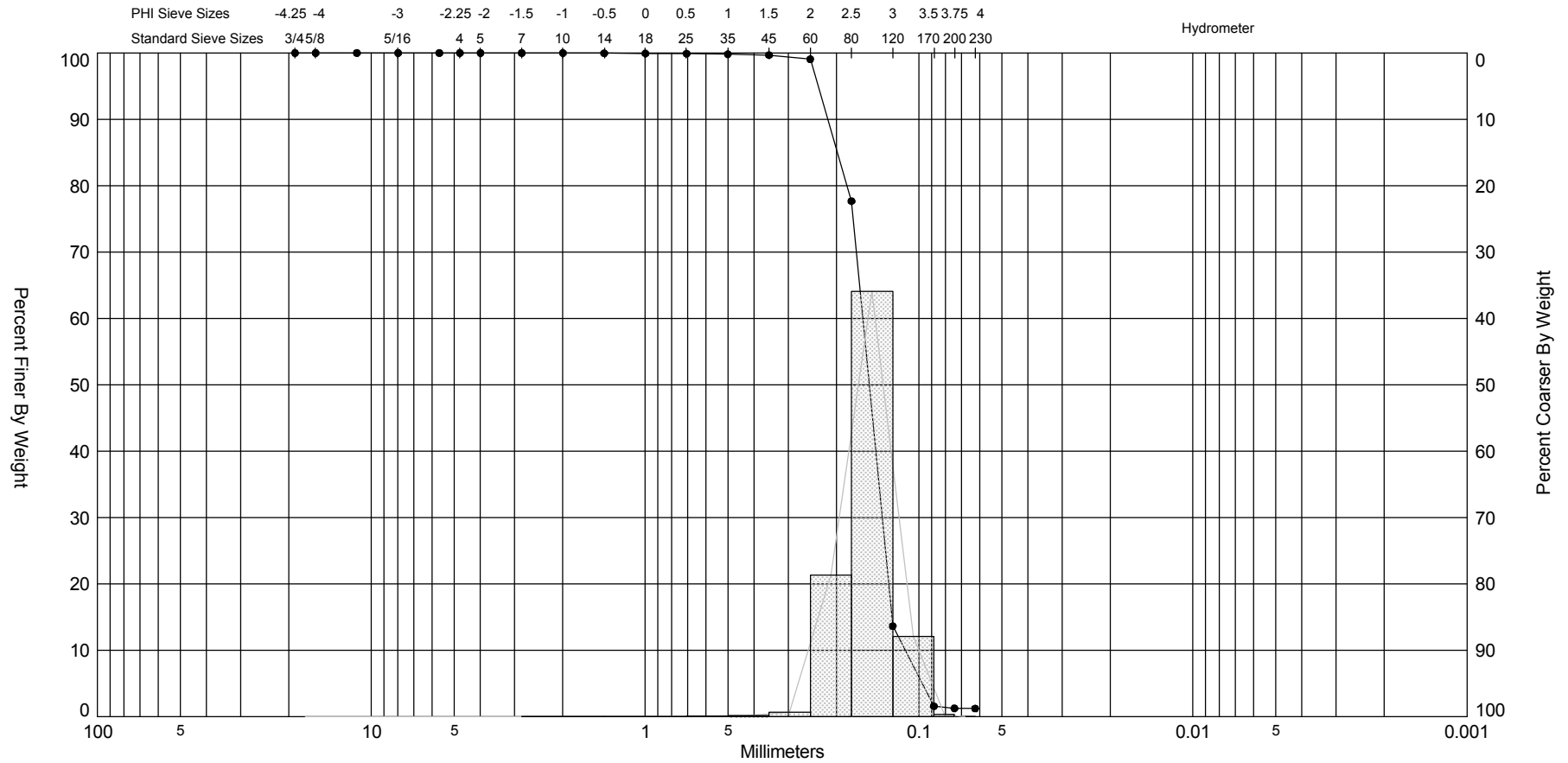
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-03 #1	—●—	-11.0	SP	#200 - 1.18 #230 - 1.14			2.69	2.66	-0.74	10.64	0.32	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	JF
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	433,627
												Northing (Y, ft):	1,132,302
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

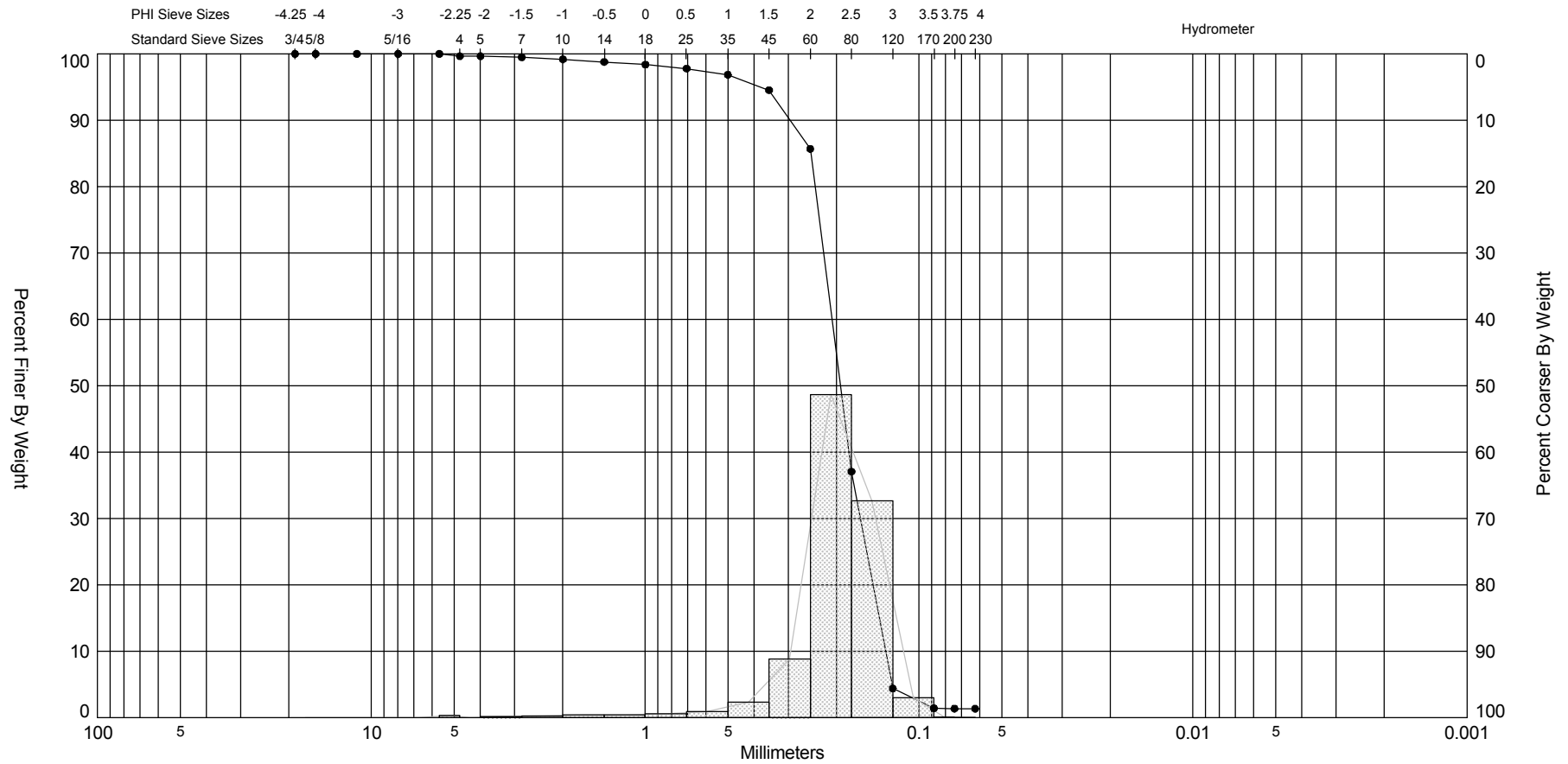
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-03 #2	—●—	-15.0	SP	#200 - 1.25 #230 - 1.21			2.72	2.69	-1.12	12.65	0.33	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	JF
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	433,627
												Northing (Y, ft):	1,132,302
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

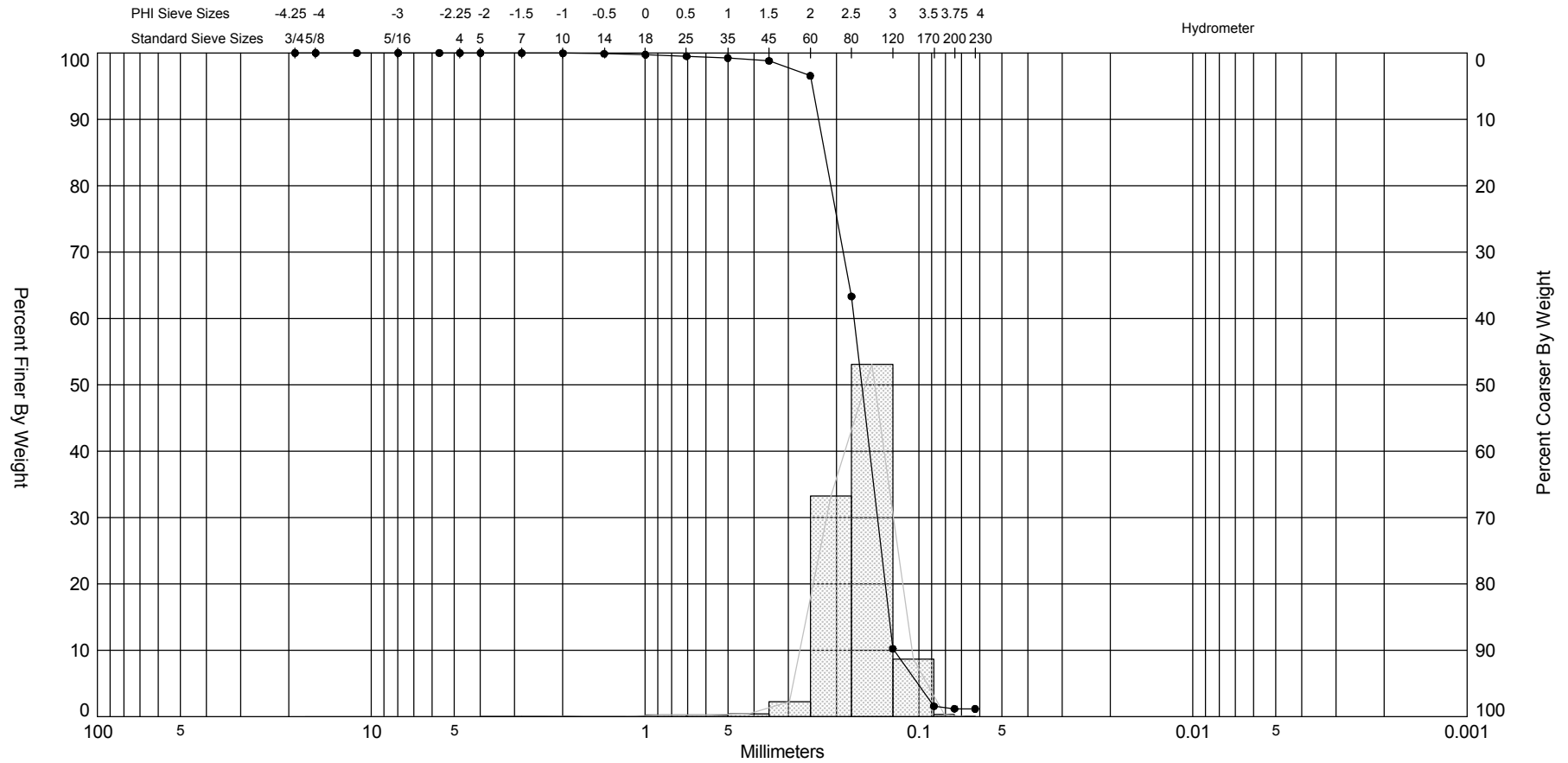
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-03 #3	—●—	-19.0	SP	#200 - 1.36 #230 - 1.35			2.37	2.3	-3.33	20.58	0.64	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	433,627
												Northing (Y, ft):	1,132,302
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

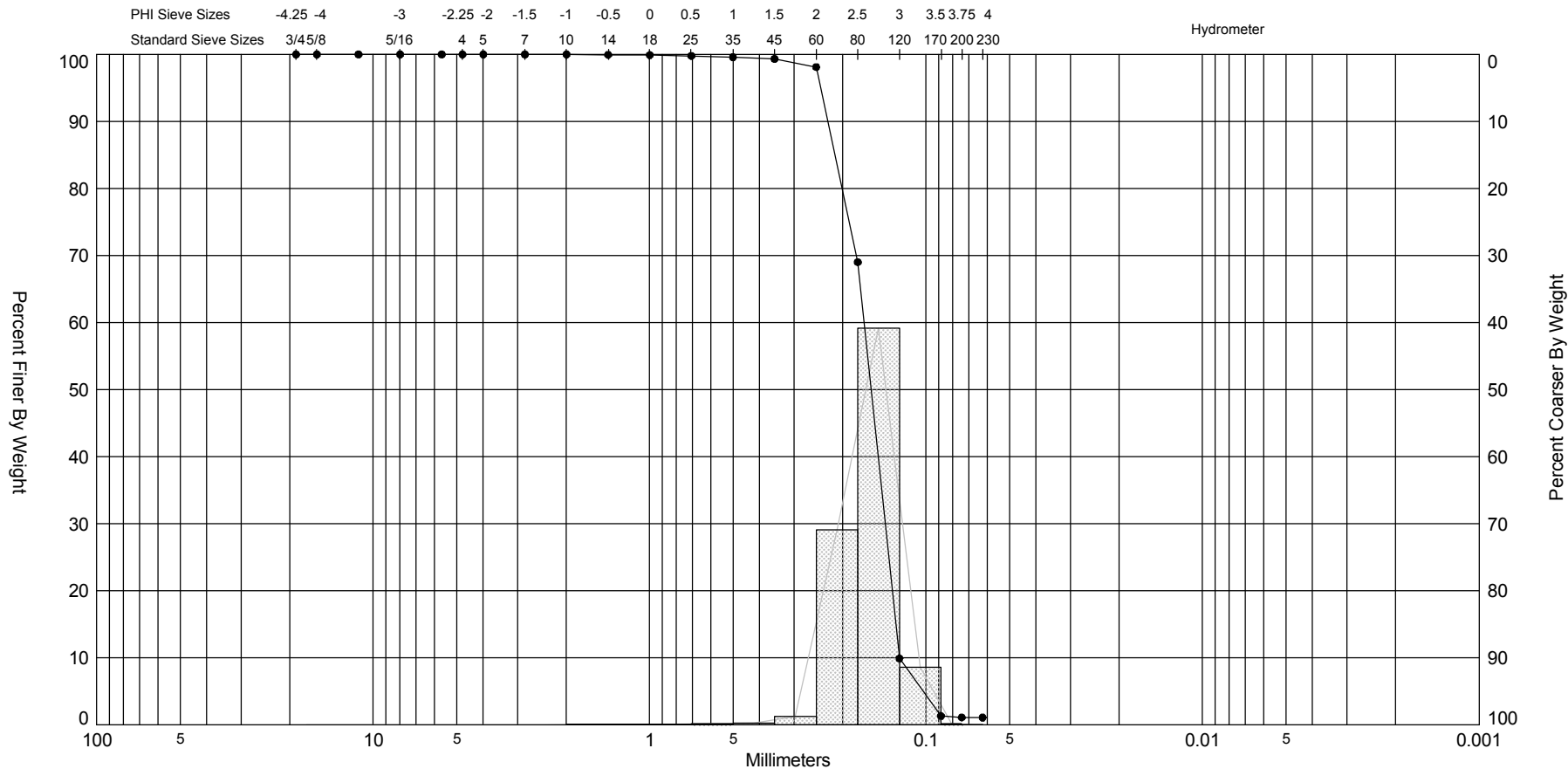
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-04 #1	—●—	-14.7	SP	#200 - 1.19 #230 - 1.17			2.63	2.58	-1.97	15.85	0.41	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-07-07
Depths and elevations based on measured values												Analyzed By:	JF
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	433,879
												Northing (Y, ft):	1,133,137
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

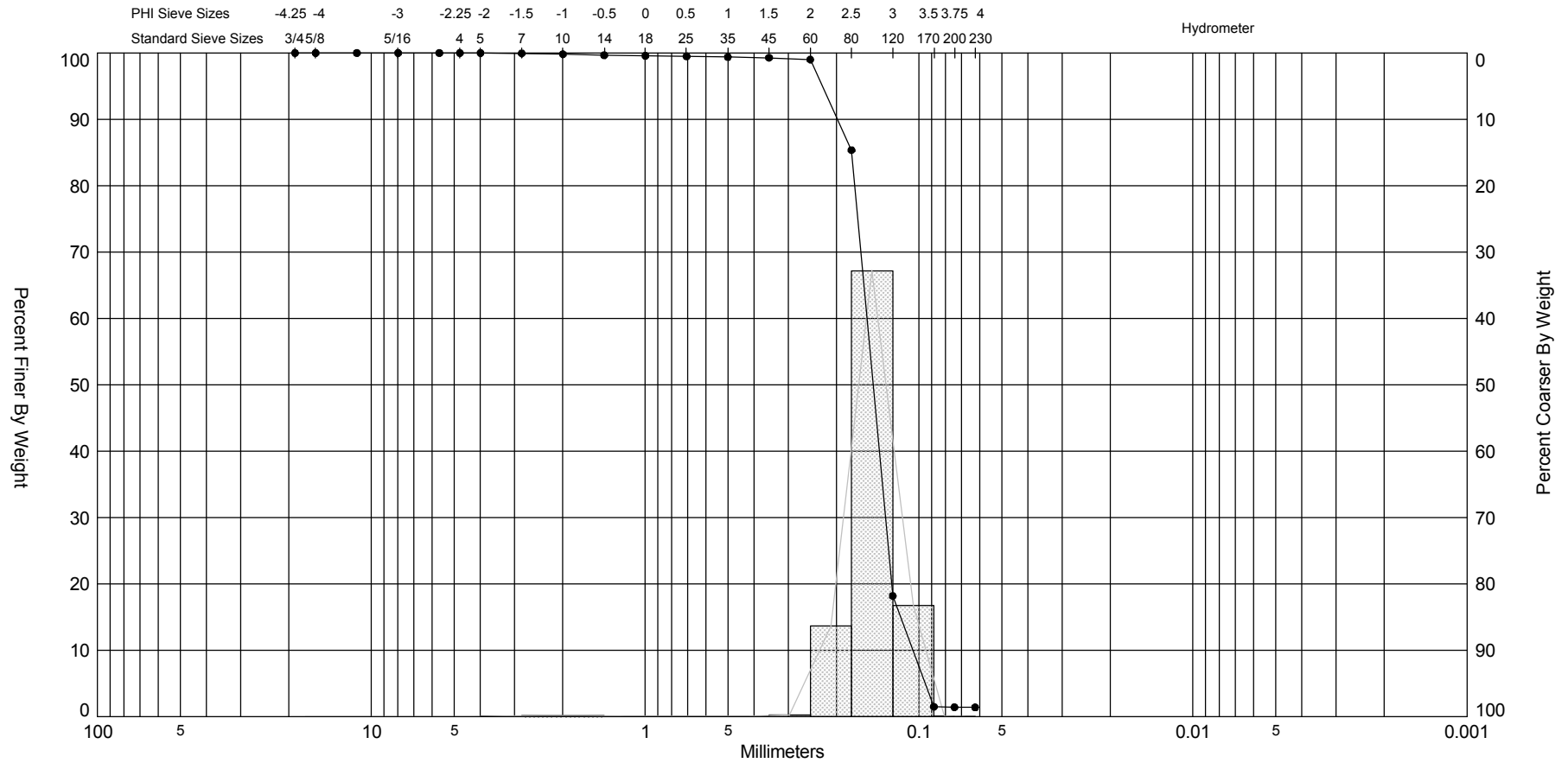
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-04 #2	—●—	-17.7	SP	#200 - 1.10 #230 - 1.09			2.66	2.62	-1.52	13.18	0.35	Project Name:	Anna Maria 2007 Sand Search
Comments:											Analysis Date:	03-07-07	
Depths and elevations based on measured values											Analyzed By:	JF	
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	433,879
												Northing (Y, ft):	1,133,137
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

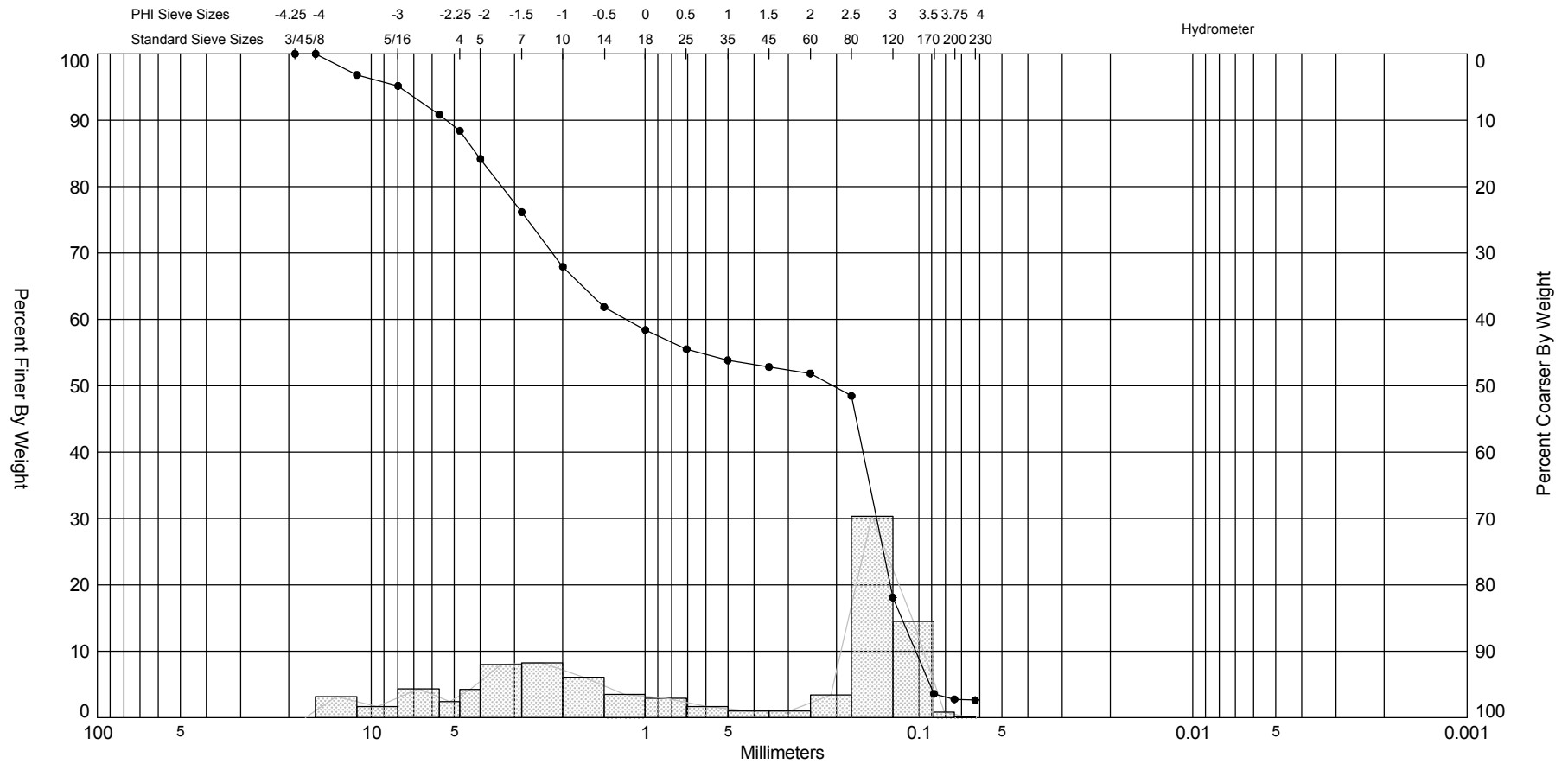
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-05 #1	—●—	-5.8	SP	#200 - 1.41 #230 - 1.39			2.76	2.74	-4.11	40.43	0.39	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-07-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	437,029
												Northing (Y, ft):	1,128,780
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

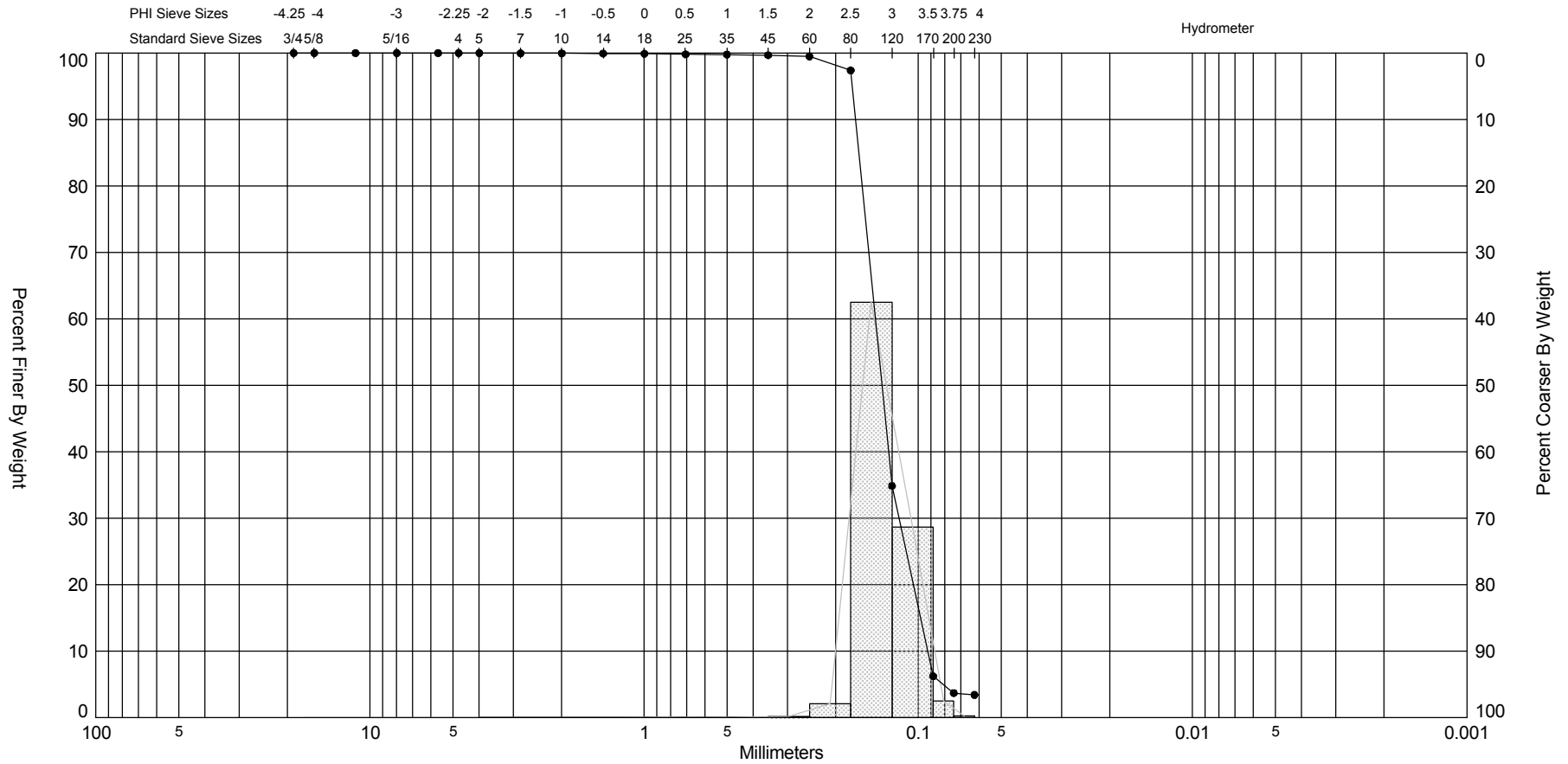
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-05 #2	—●—	-7.6	SW	#200 - 2.77 #230 - 2.63			2.27	0.75	-0.37	1.55	2.34	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-07-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	437,029
												Northing (Y, ft):	1,128,780
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

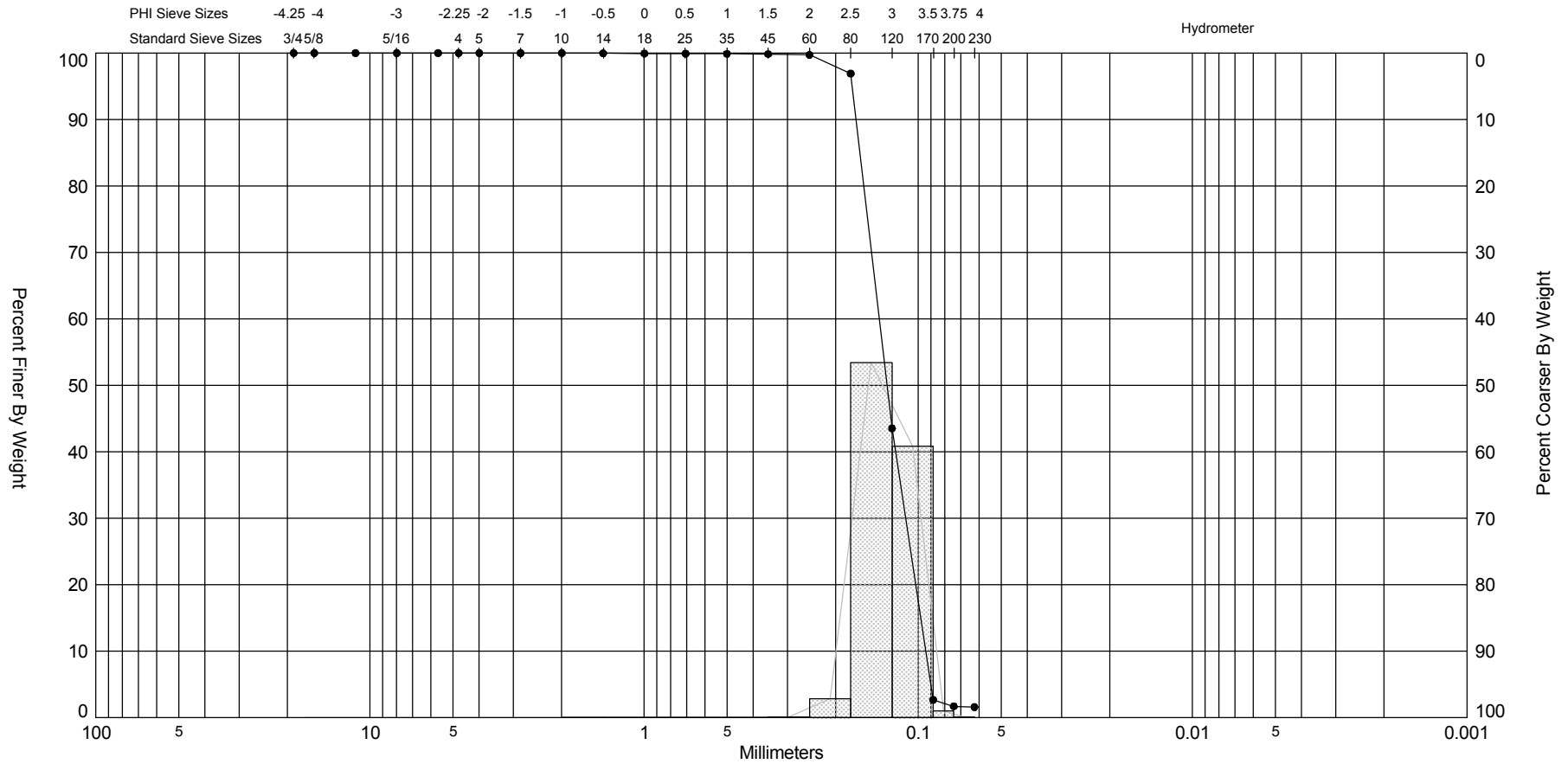
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-05 #3	—●—	-8.3	SP	#200 - 3.70 #230 - 3.41			2.88	2.9	-2.02	29.33	0.32	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-07-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	437,029
												Northing (Y, ft):	1,128,780
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

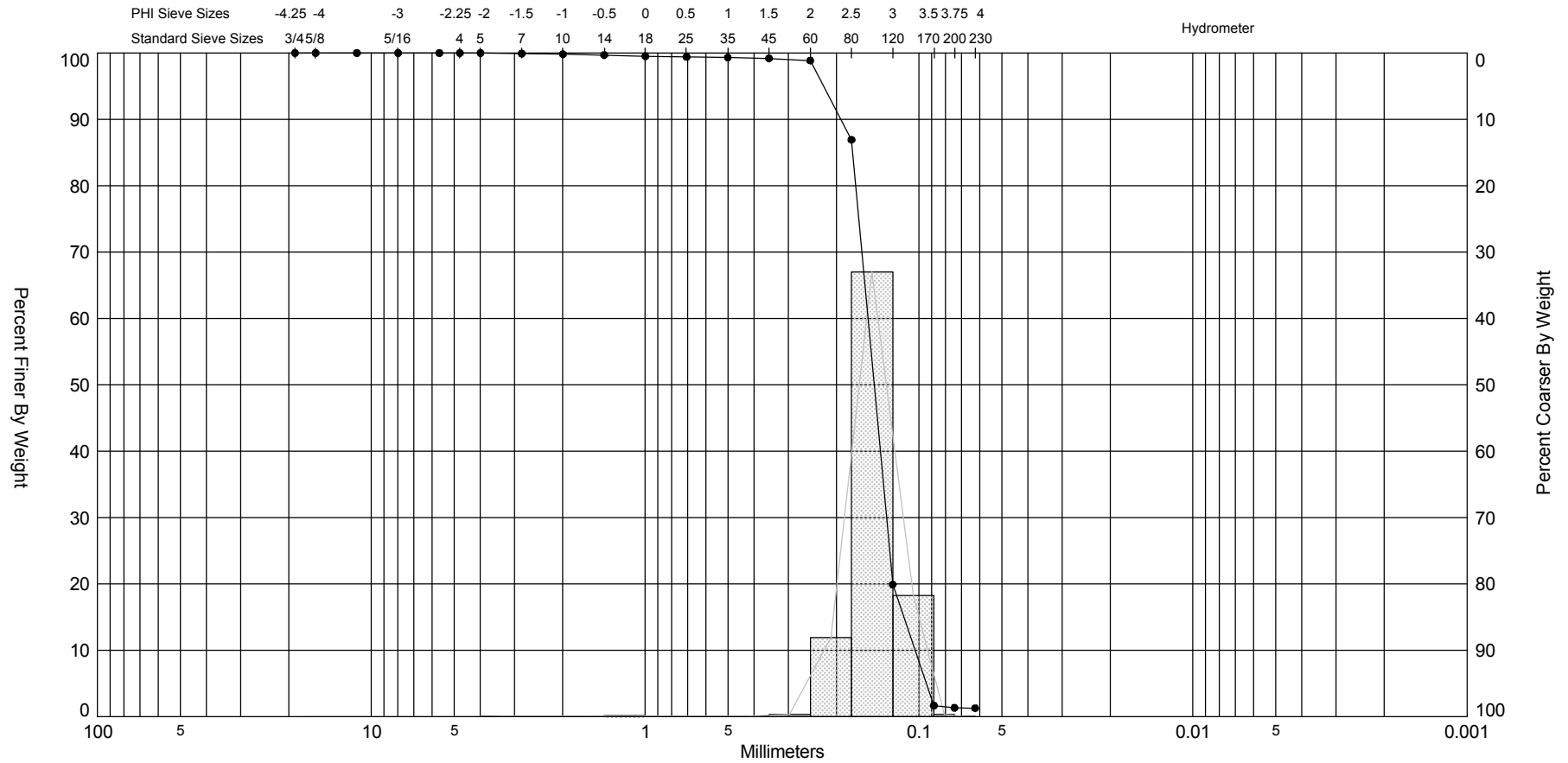
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-05 #4	—●—	-12.2	SP	#200 - 1.70 #230 - 1.59			2.94	2.95	-1.2	14.3	0.3	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	AU
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	437,029
												Northing (Y, ft):	1,128,780
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

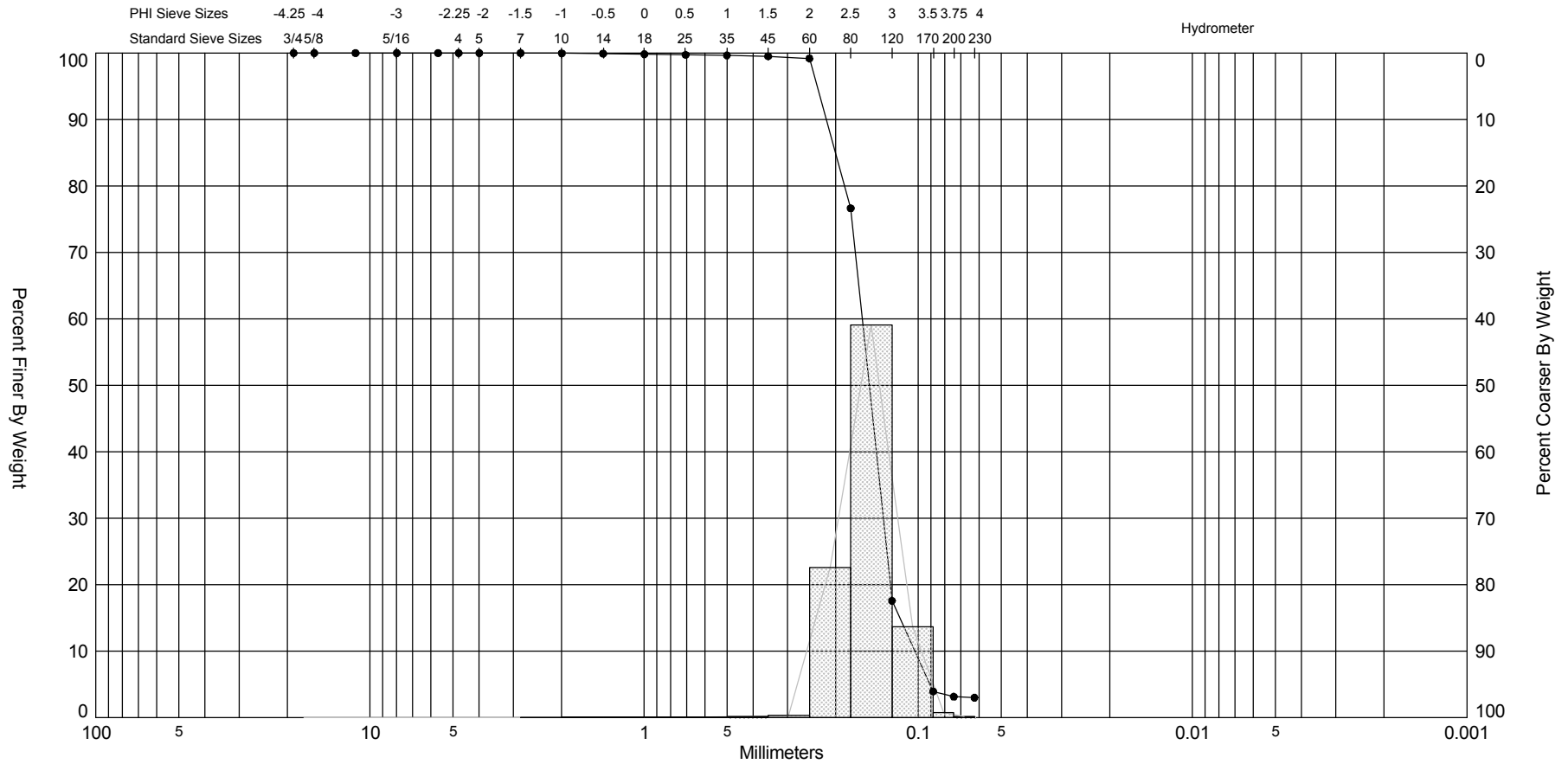
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-06 #1	—●—	-8.8	SP	#200 - 1.33 #230 - 1.29			2.78	2.76	-4.14	39.96	0.4	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	436,754
												Northing (Y, ft):	1,128,828
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

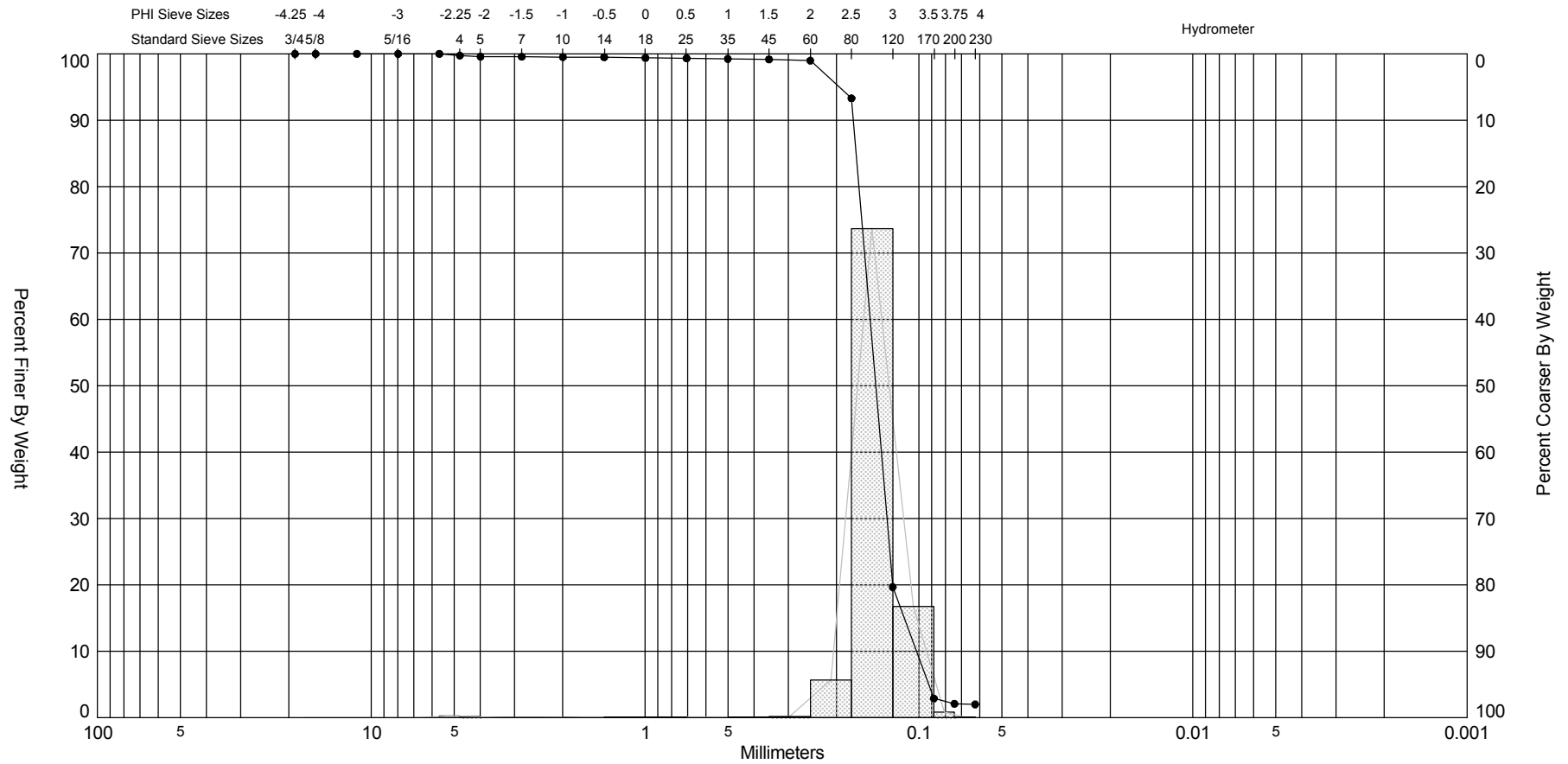
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-06 #2	—●—	-10.8	SP	#200 - 3.14 #230 - 2.99			2.73	2.7	-1.66	17.56	0.37	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	436,754
												Northing (Y, ft):	1,128,828
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

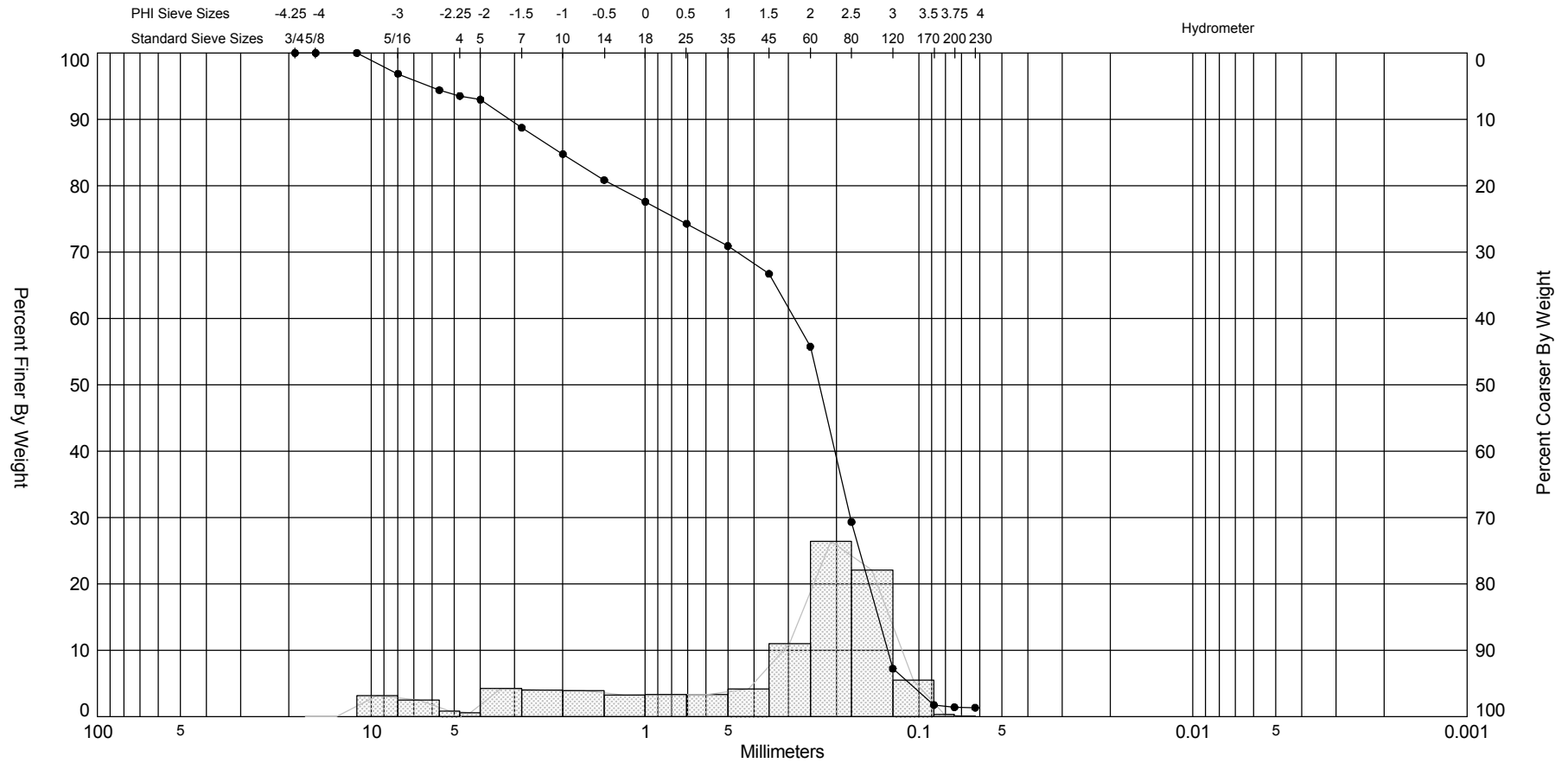
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-06 #3	—●—	-13.0	SP	#200 - 2.08 #230 - 1.99			2.79	2.78	-6.93	75.52	0.45	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	JF
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	436,754
												Northing (Y, ft):	1,128,828
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

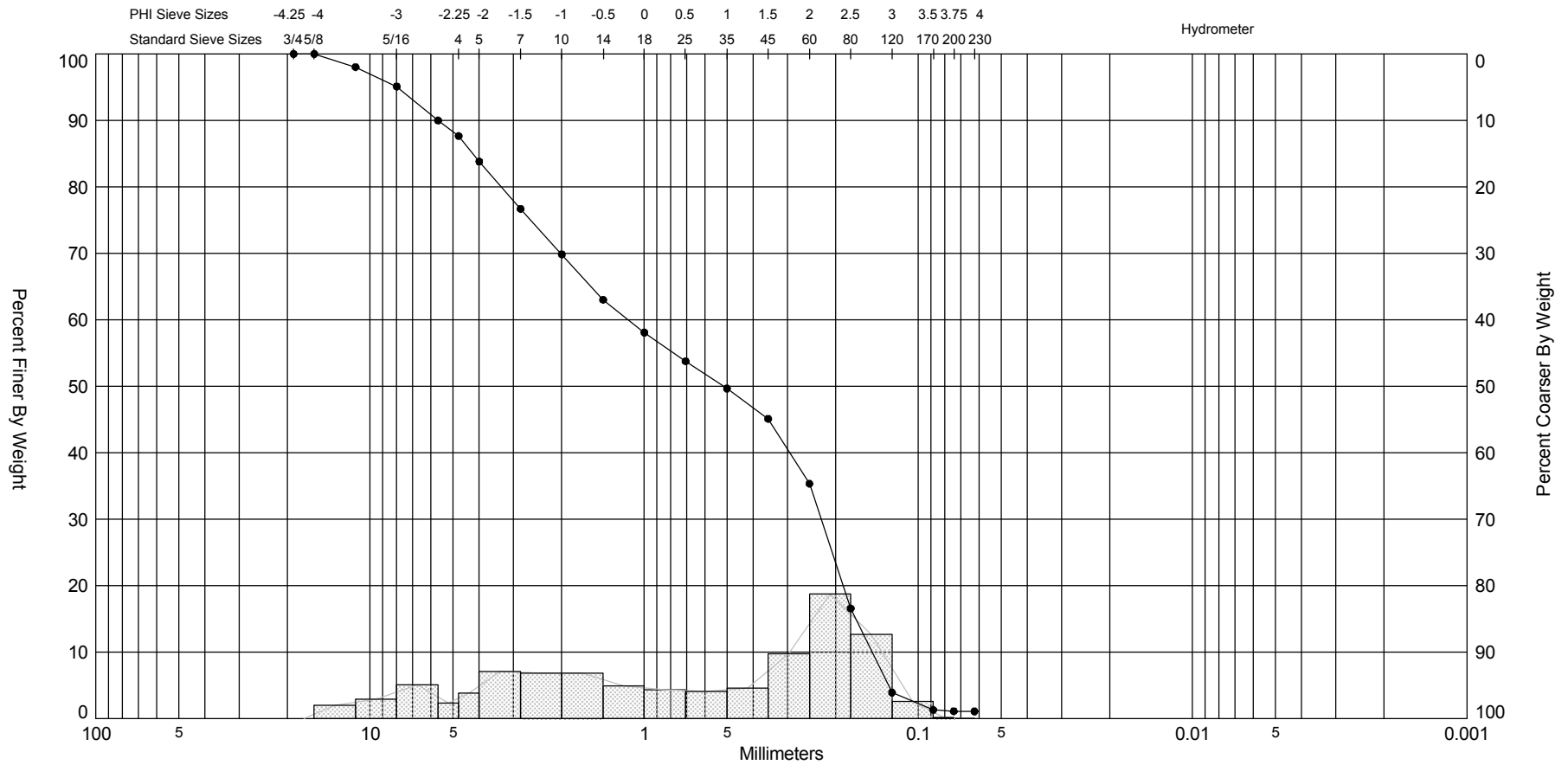
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-07 #1	—●—	-11.7	SW	#200 - 1.41 #230 - 1.35			2.11	1.33	-1.16	3.16	1.78	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-06-07
Depths and elevations based on measured values												Analyzed By:	JF
 Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116												Easting (X, ft):	433,503
												Northing (Y, ft):	1,131,479
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

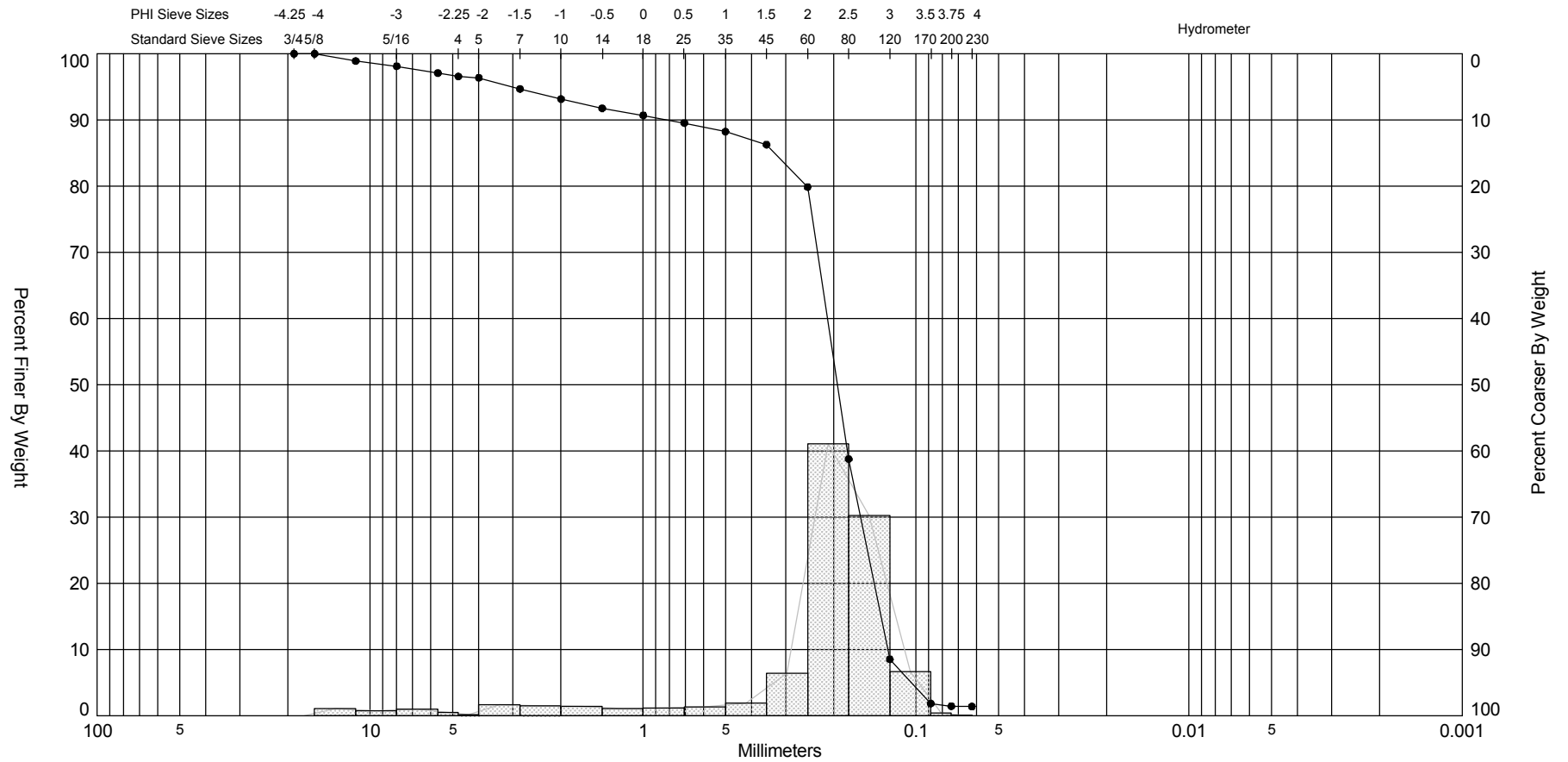
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-07 #2	—●—	-13.5	SW	#200 - 1.11 #230 - 1.08			0.96	0.42	-0.37	1.77	2.03	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-06-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	433,503
												Northing (Y, ft):	1,131,479
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

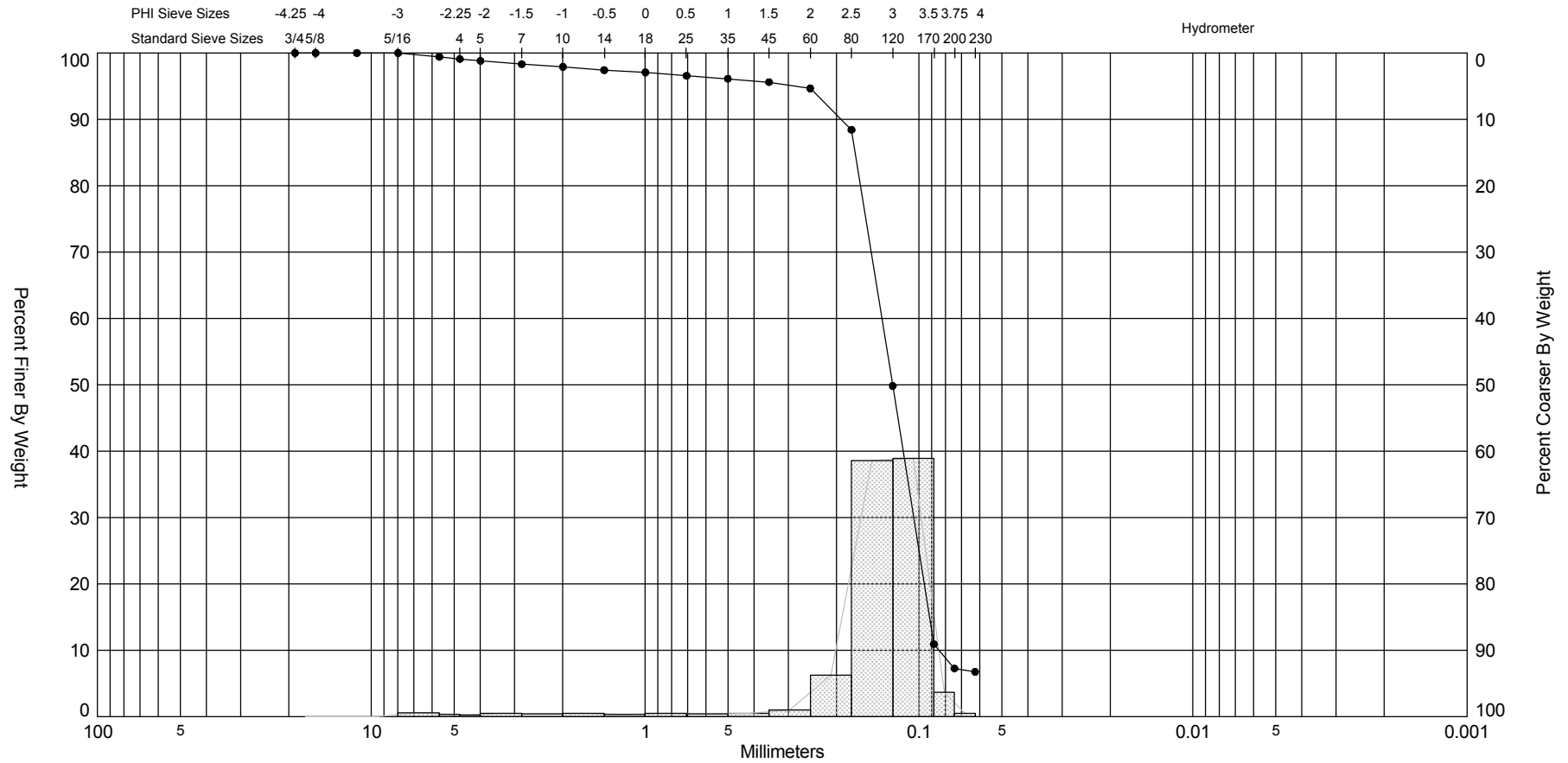
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-07 #3	—●—	-14.8	SW	#200 - 1.45 #230 - 1.39			2.36	1.99	-2.49	8.89	1.38	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-06-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	433,503
												Northing (Y, ft):	1,131,479
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

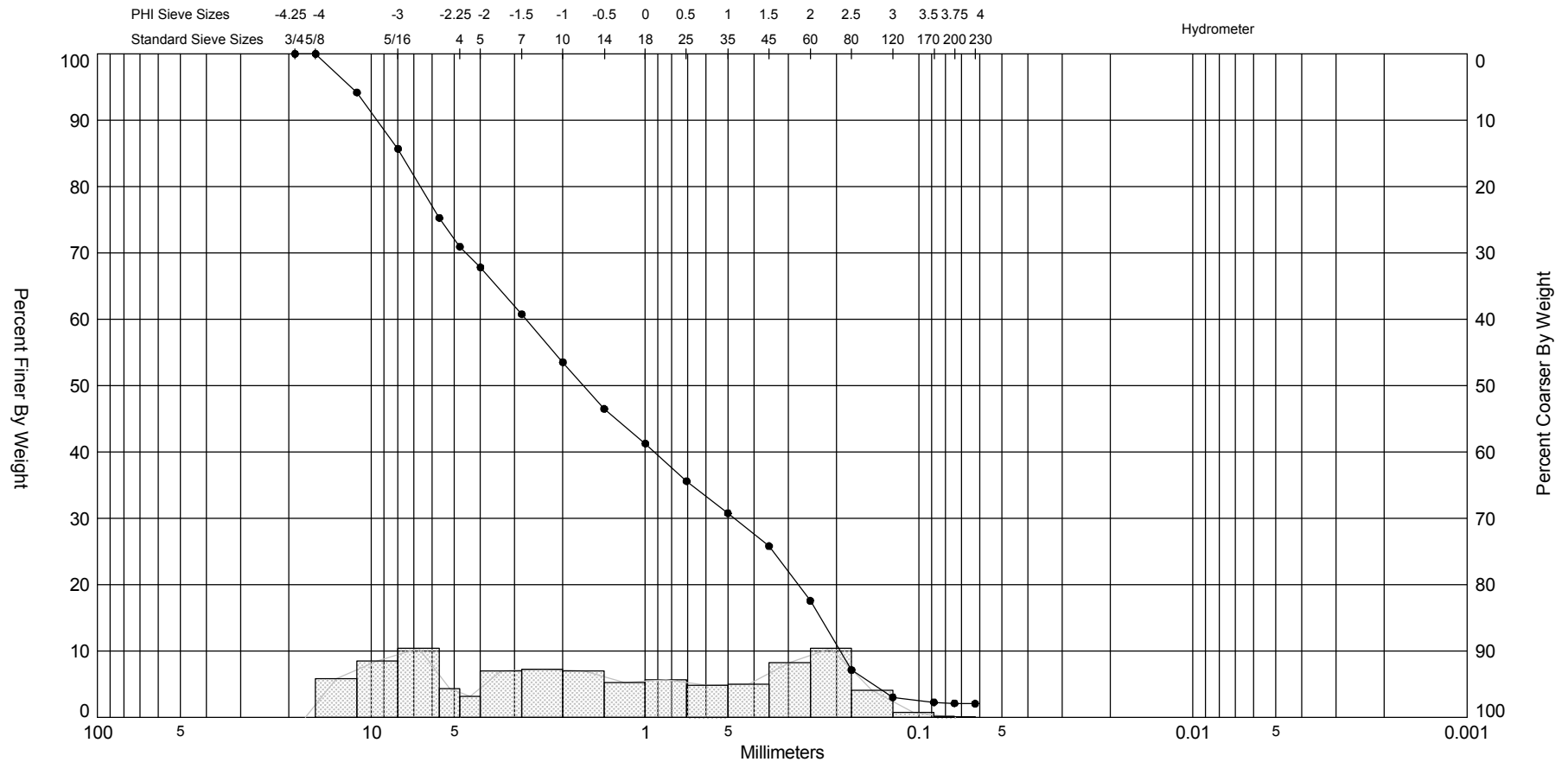
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-07 #4	—●—	-17.3	SW-SM	#200 - 7.27 #230 - 6.76			3	2.79	-3.9	20.34	0.93	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-07-07
Depths and elevations based on measured values												Analyzed By:	AU
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	433,503
												Northing (Y, ft):	1,131,479
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

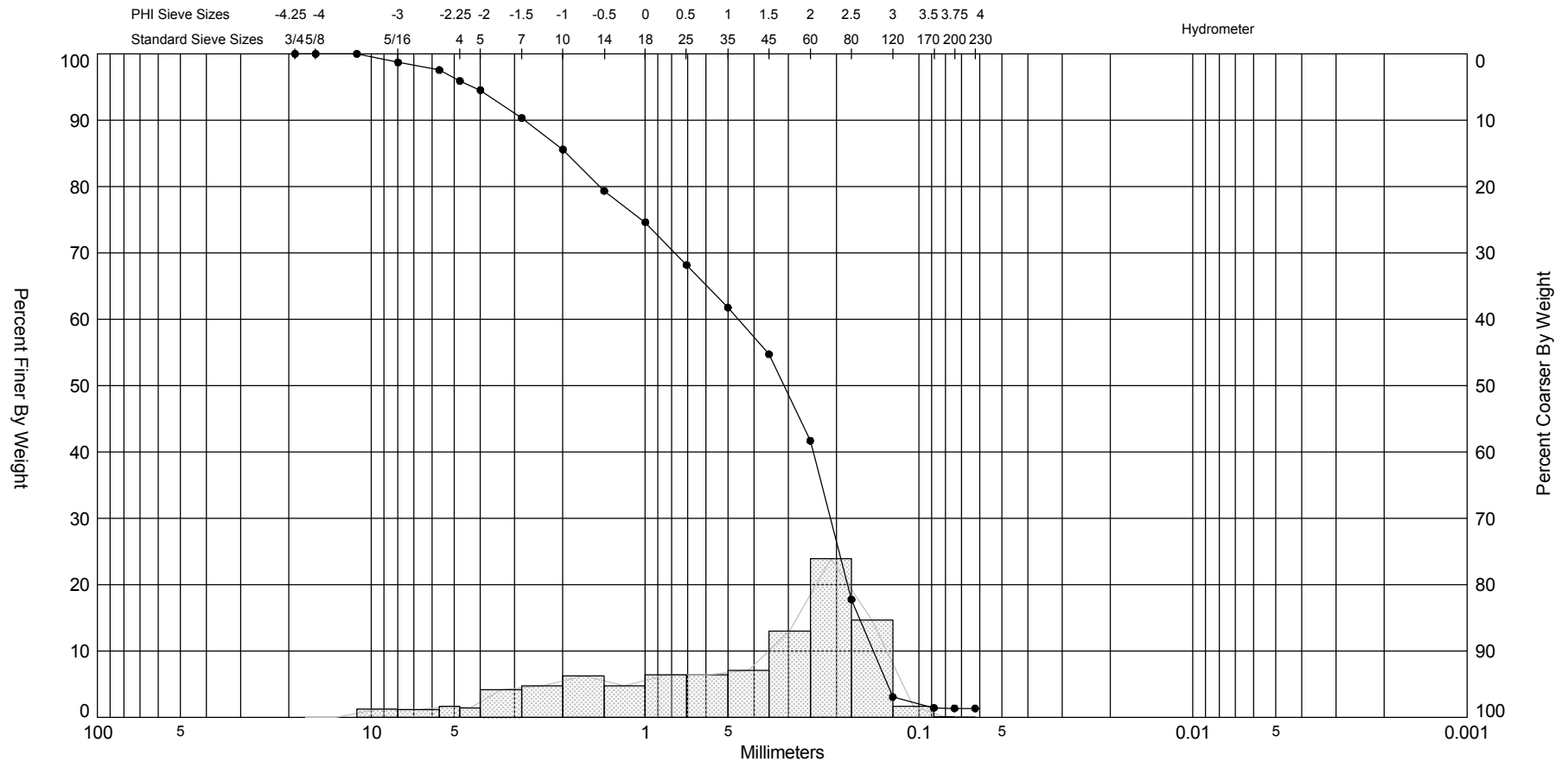
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-08 #1	—●—	-6.3	SW	#200 - 2.12 #230 - 2.06				-0.6	0.14	1.69	2.07	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	433,653
												Northing (Y, ft):	1,130,845
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

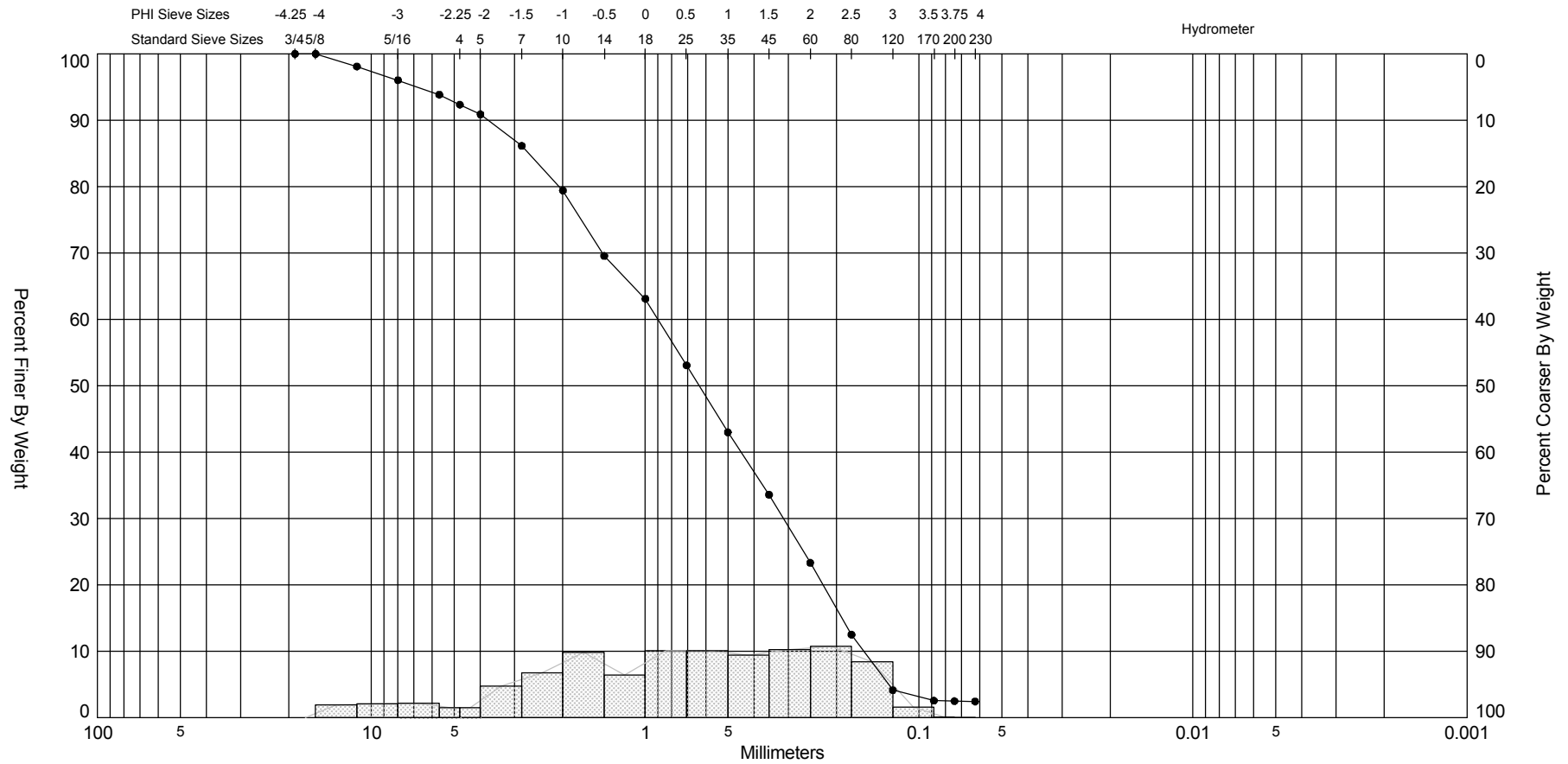
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-08 #2	—●—	-7.1	SW	#200 - 1.36 #230 - 1.35			1.68	1.06	-0.84	2.62	1.61	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	433,653
												Northing (Y, ft):	1,130,845
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

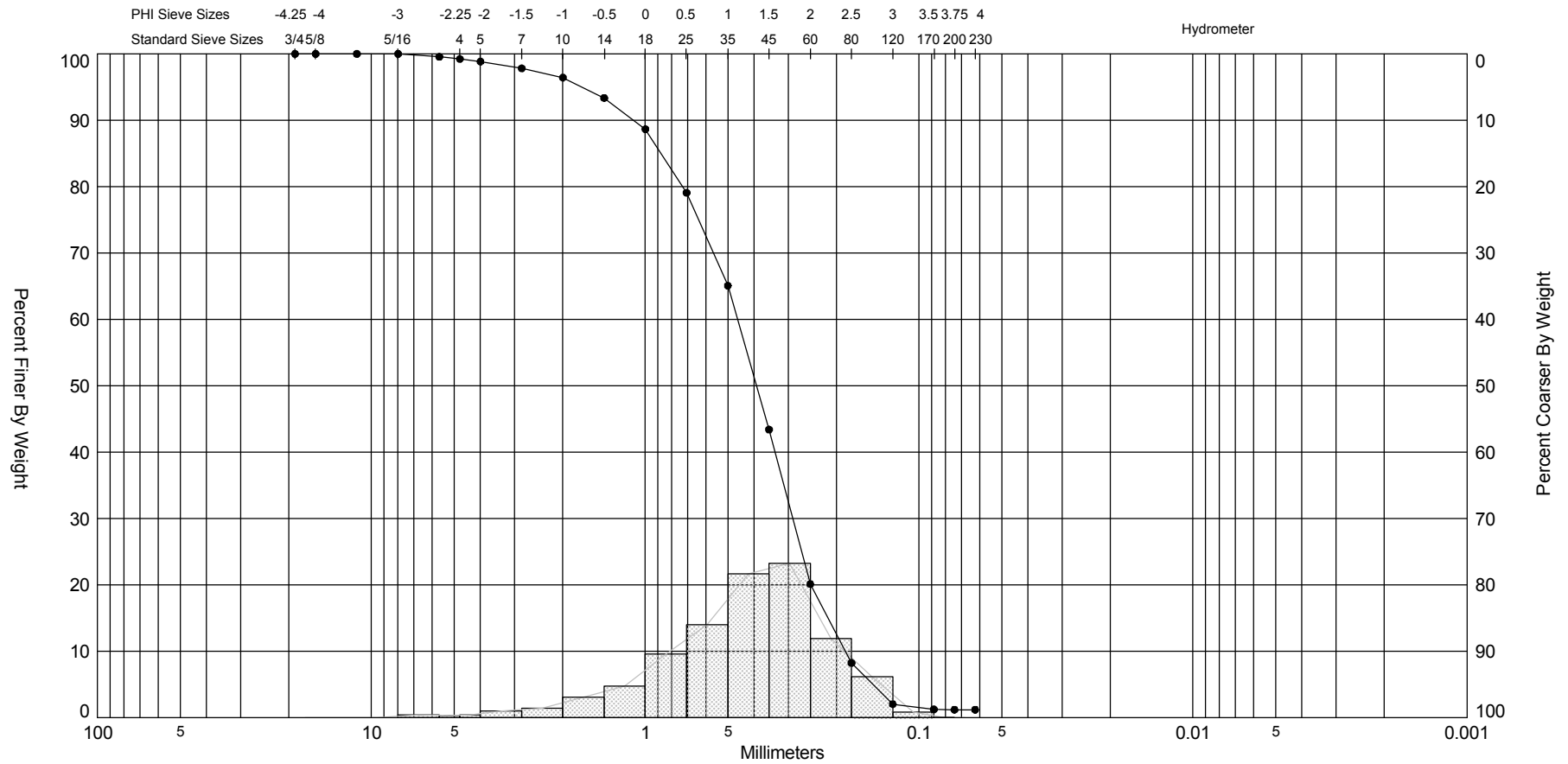
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-08 #3	—●—	-11.0	SW	#200 - 2.48 #230 - 2.44			0.65	0.41	-0.45	2.45	1.7	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	433,653
												Northing (Y, ft):	1,130,845
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

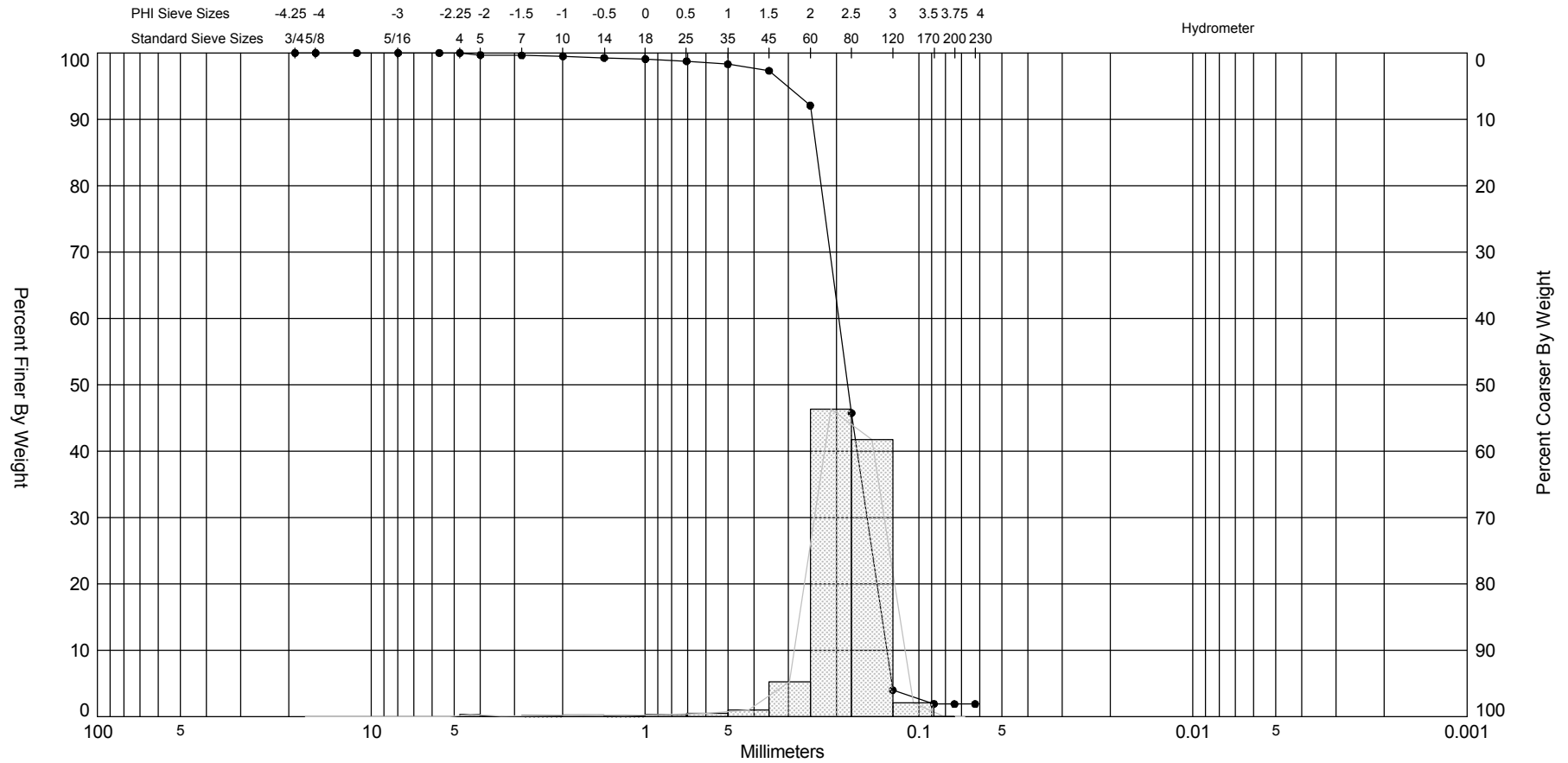
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-08 #4	—●—	-12.5	SW	#200 - 1.20 #230 - 1.20			1.35	1.19	-0.91	4.3	1.03	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	433,653
												Northing (Y, ft):	1,130,845
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

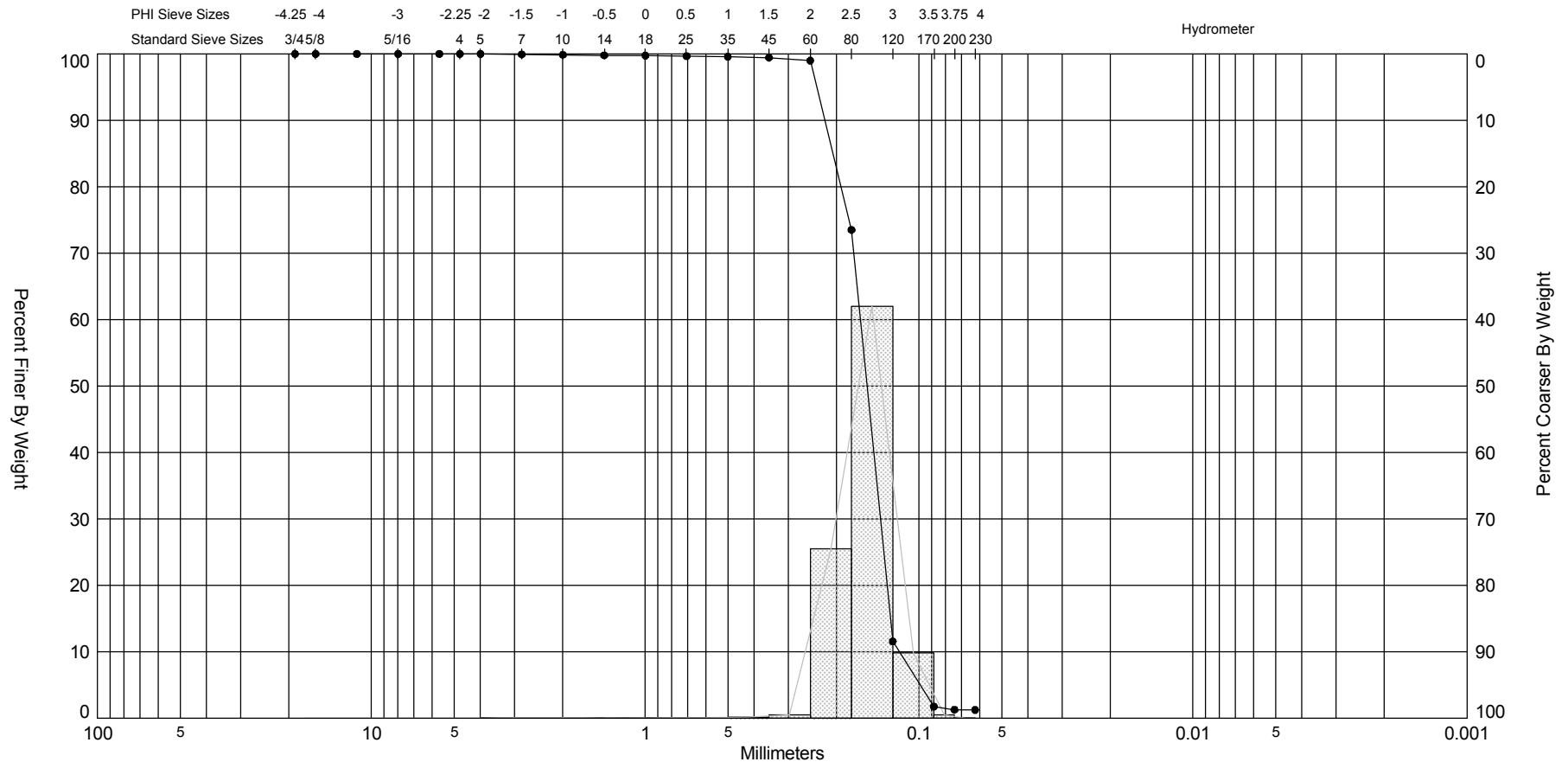
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

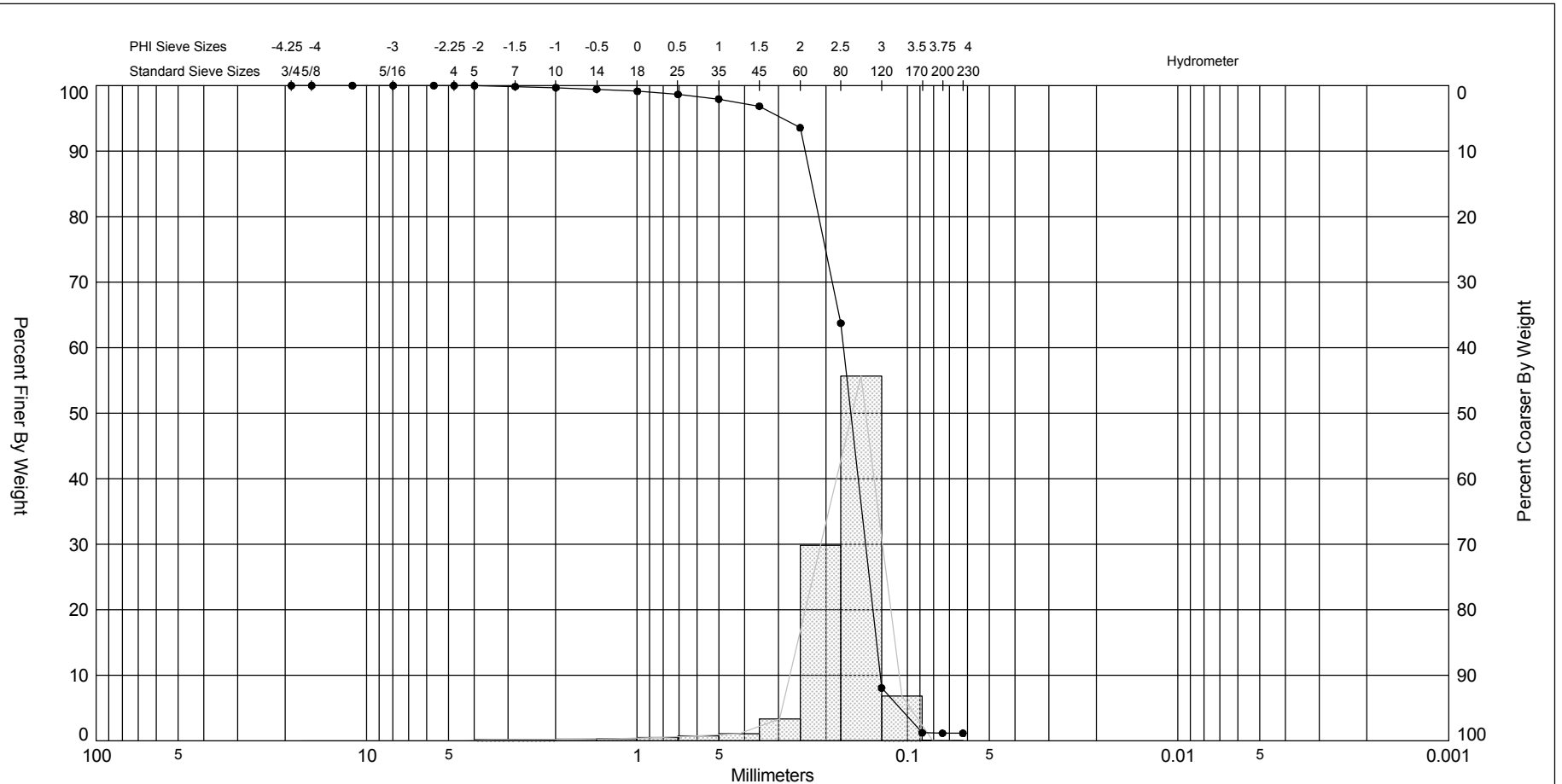
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-09 #1	—●—	-15.7	SP	#200 - 1.89 #230 - 1.89			2.45	2.4	-3.98	29.92	0.52	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-06-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	429,126
												Northing (Y, ft):	1,128,661
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay	
Coarse	Fine	Coarse	Medium	Fine		

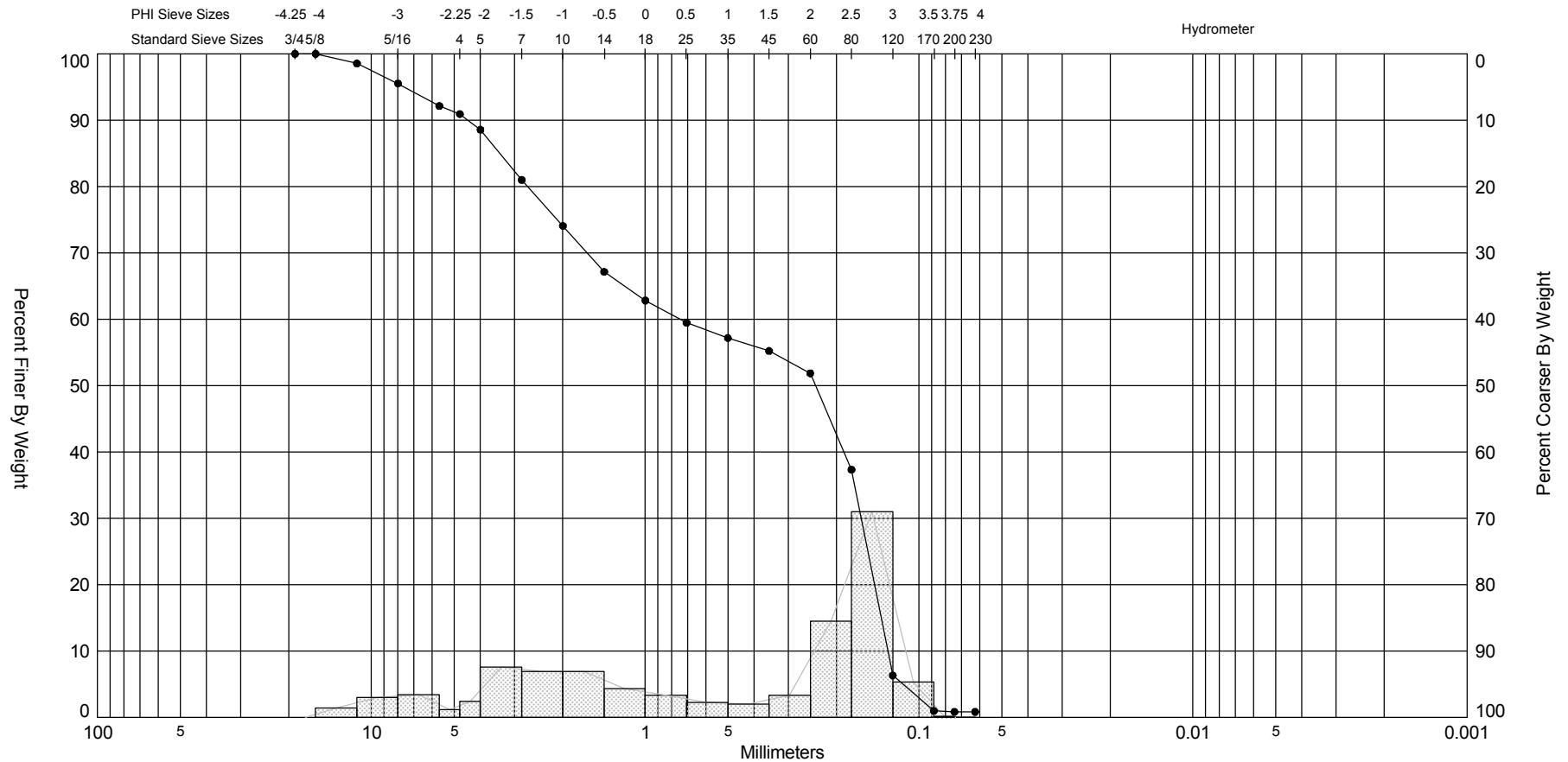
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-09 #2	—●—	-18.7	SP	#200 - 1.28 #230 - 1.25			2.69	2.66	-2.93	31.72	0.37	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-06-07
Depths and elevations based on measured values												Analyzed By:	AU
 <p>Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116</p>												Easting (X, ft):	429,126
												Northing (Y, ft):	1,128,661
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-09 #3	—●—	-21.7	SP	#200 - 1.15 #230 - 1.14			2.62	2.53	-3.23	20.6	0.52	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-06-07
Depths and elevations based on measured values												Analyzed By:	AU
 Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116												Easting (X, ft):	429,126
												Northing (Y, ft):	1,128,661
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

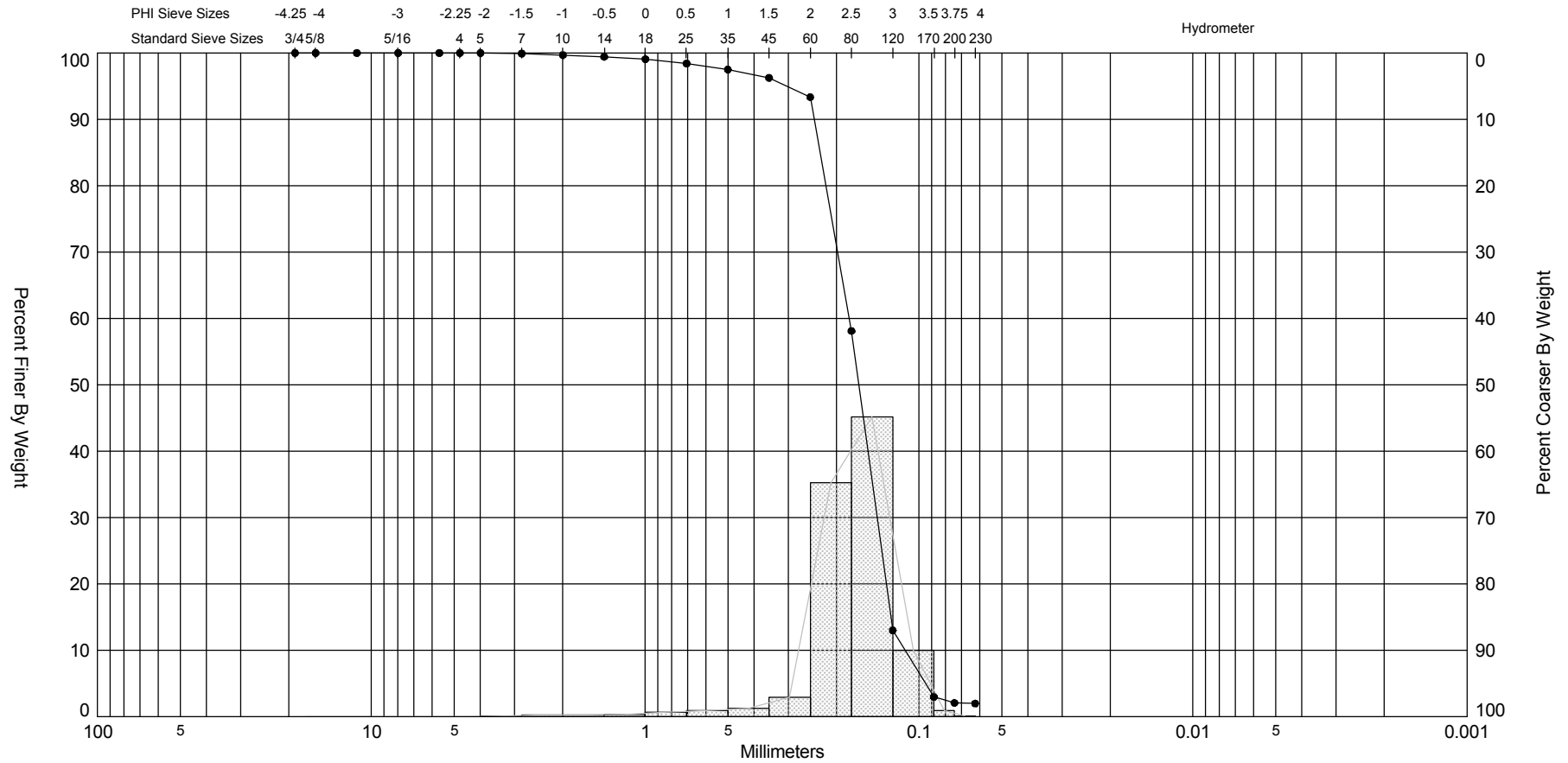
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-09 #4	—●—	-24.3	SW	#200 - 0.84 #230 - 0.83			2.06	0.87	-0.58	1.85	2.11	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-06-07
Depths and elevations based on measured values												Analyzed By:	AU
 <div style="text-align: center;"> <p>Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116</p> </div>												Easting (X, ft):	429,126
												Northing (Y, ft):	1,128,661
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

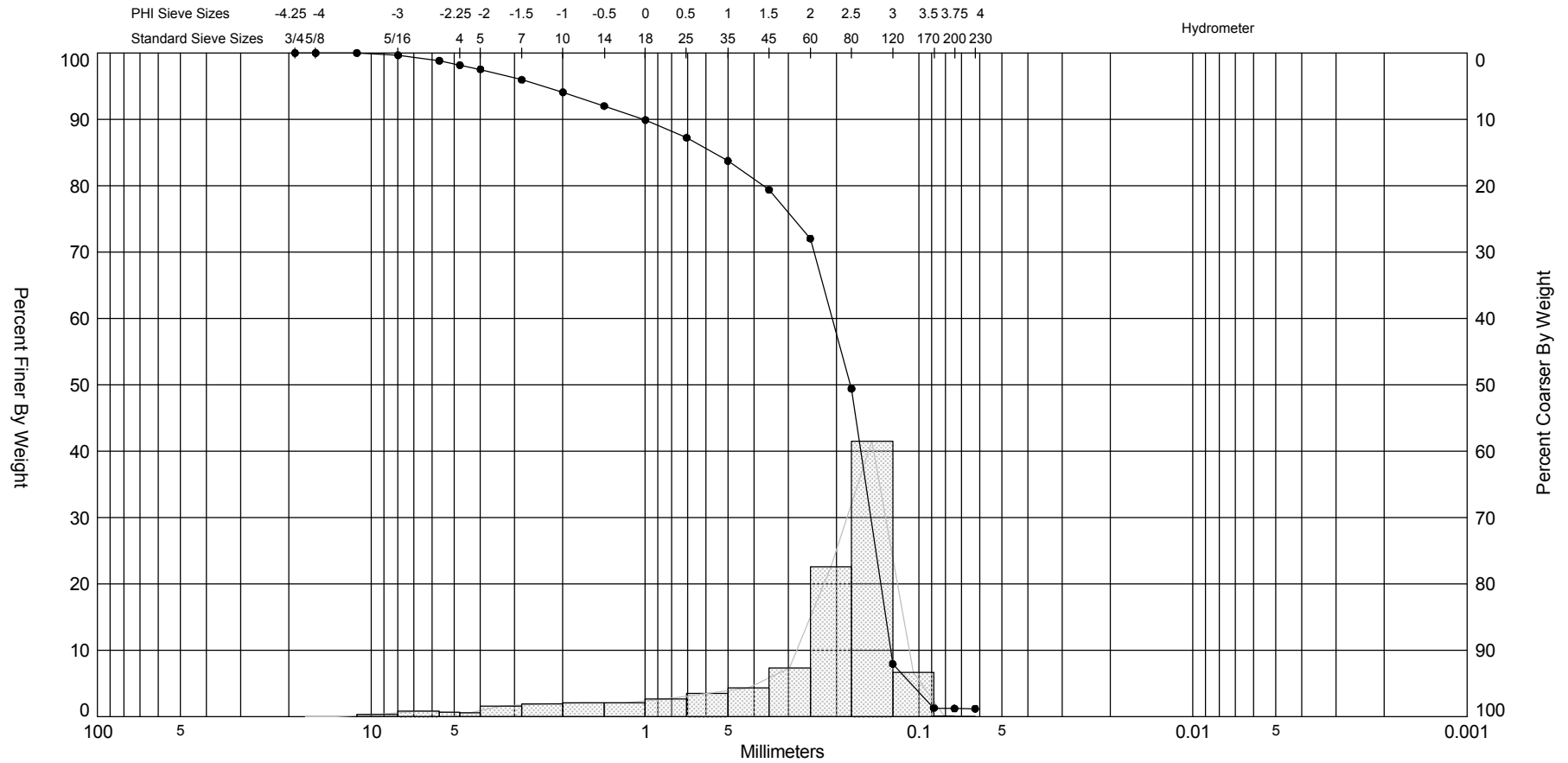
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

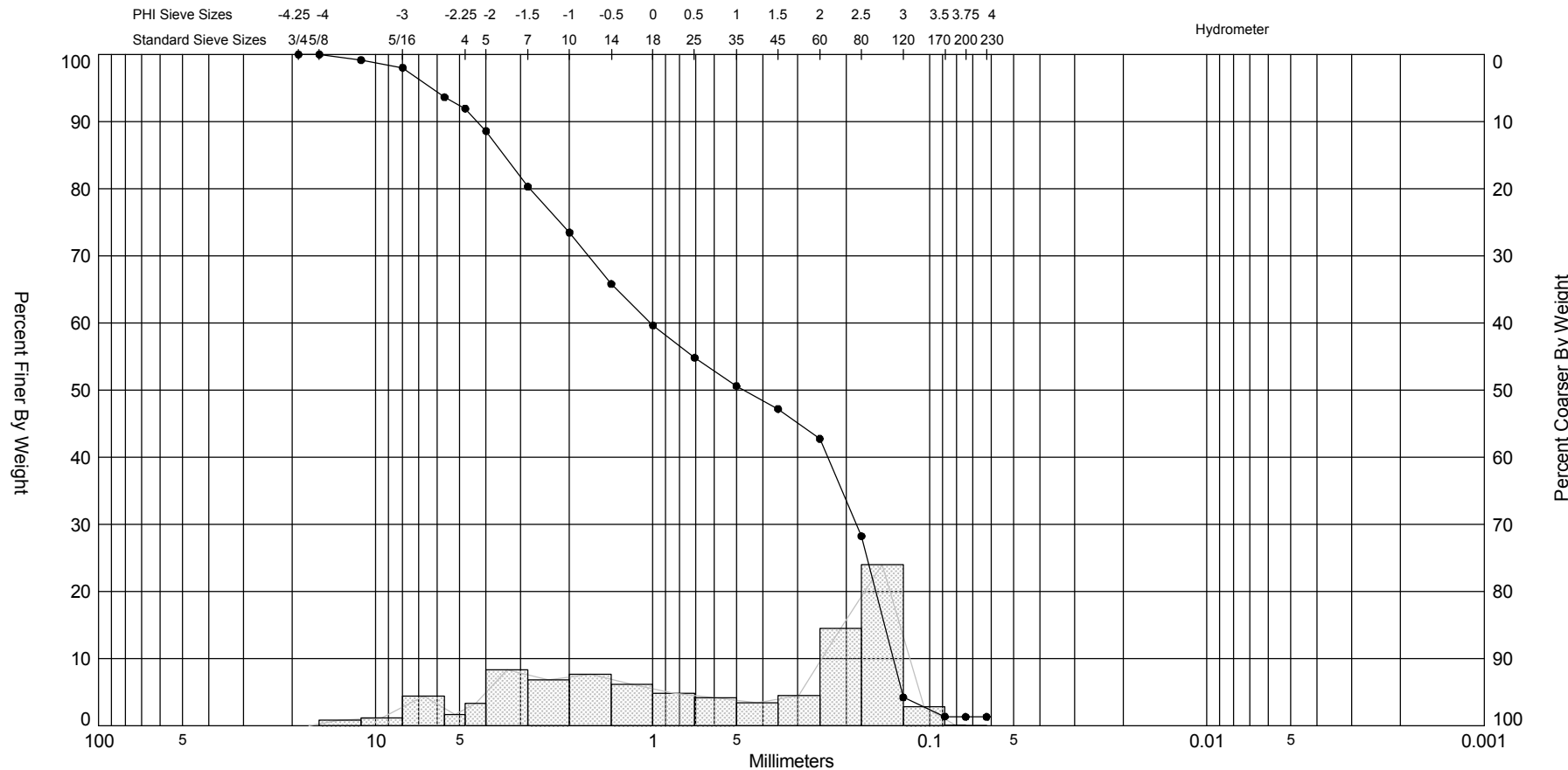
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-09 #5	—●—	-26.4	SP	#200 - 2.07 #230 - 1.96			2.59	2.51	-2.53	15.29	0.57	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-06-07
Depths and elevations based on measured values												Analyzed By:	AU
 Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116												Easting (X, ft):	429,126
												Northing (Y, ft):	1,128,661
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

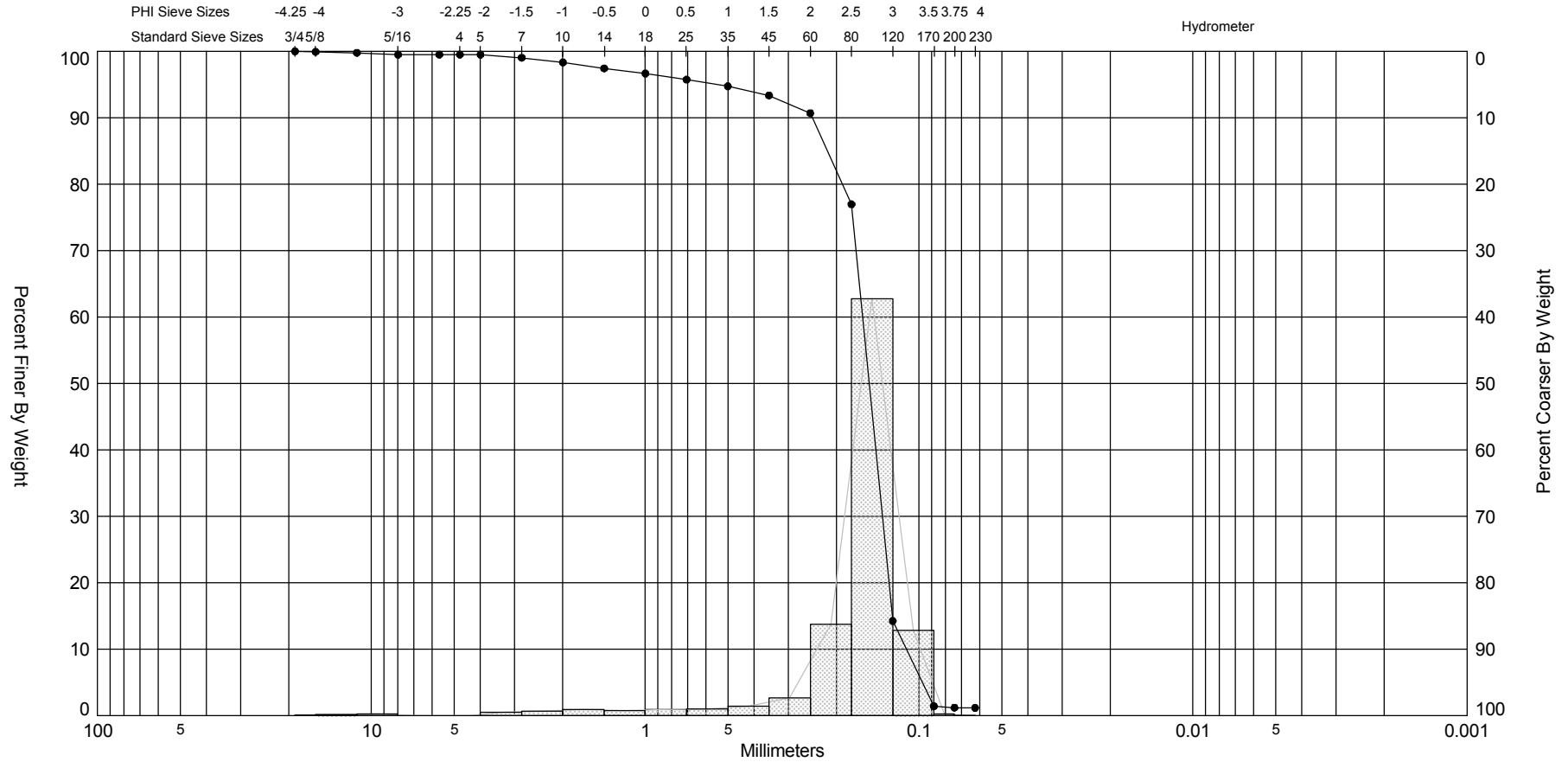
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-10 #1	—●—	-10.9	SW	#200 - 1.22 #230 - 1.20			2.49	1.97	-1.9	6.09	1.32	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
 <div style="text-align: center;"> <p>Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116</p> </div>												Easting (X, ft):	429,717
												Northing (Y, ft):	1,129,373
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-10 #2	—●—	-13.4	SW	#200 - 1.31 #230 - 1.30			1.09	0.65	-0.36	1.71	1.98	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	429,717
												Northing (Y, ft):	1,129,373
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

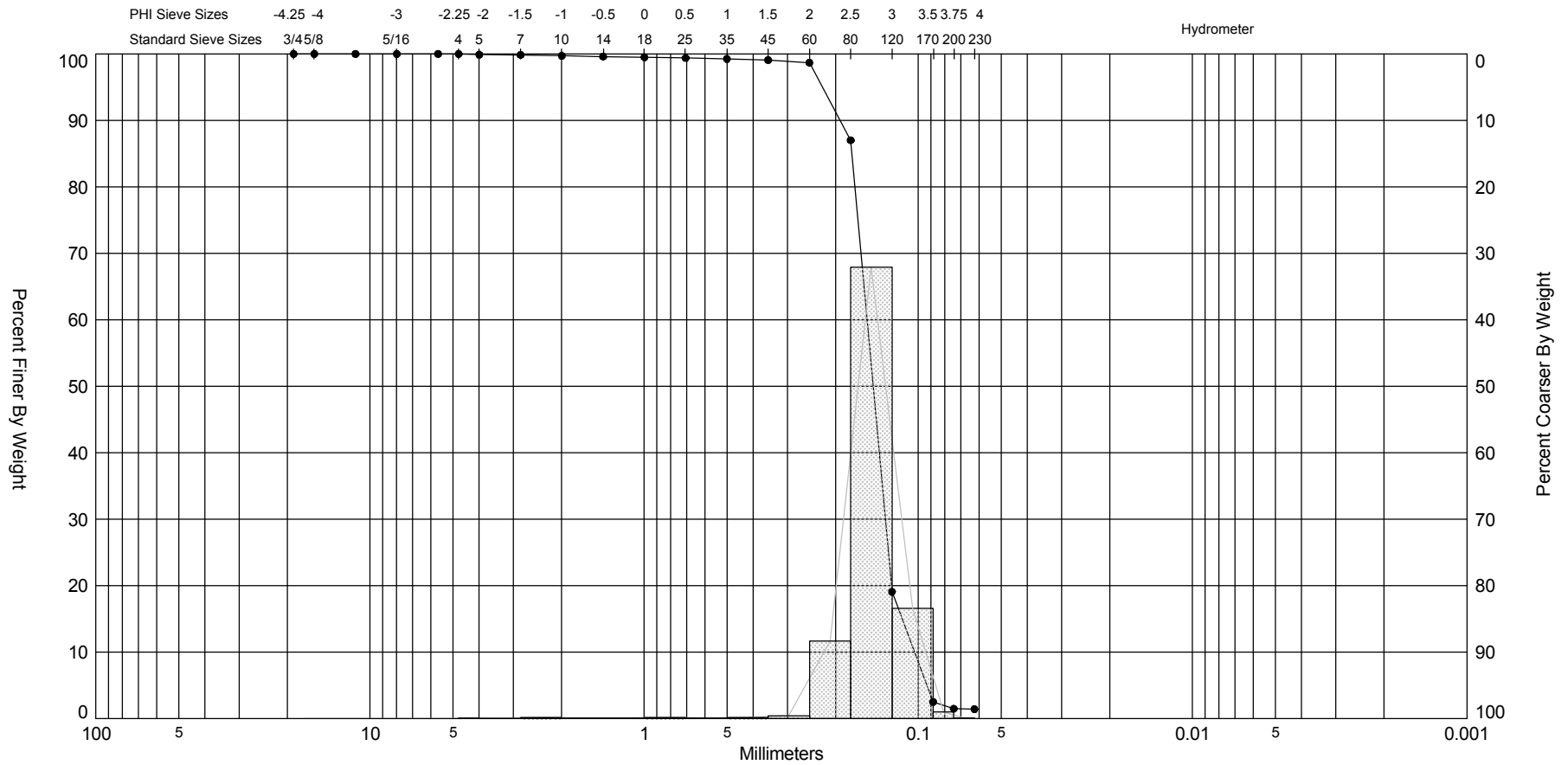
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-10 #3	—●—	-15.2	SW	#200 - 1.20 #230 - 1.16			2.72	2.52	-3.75	20.24	0.87	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	429,717
												Northing (Y, ft):	1,129,373
												Horizontal System:	NAD 1983
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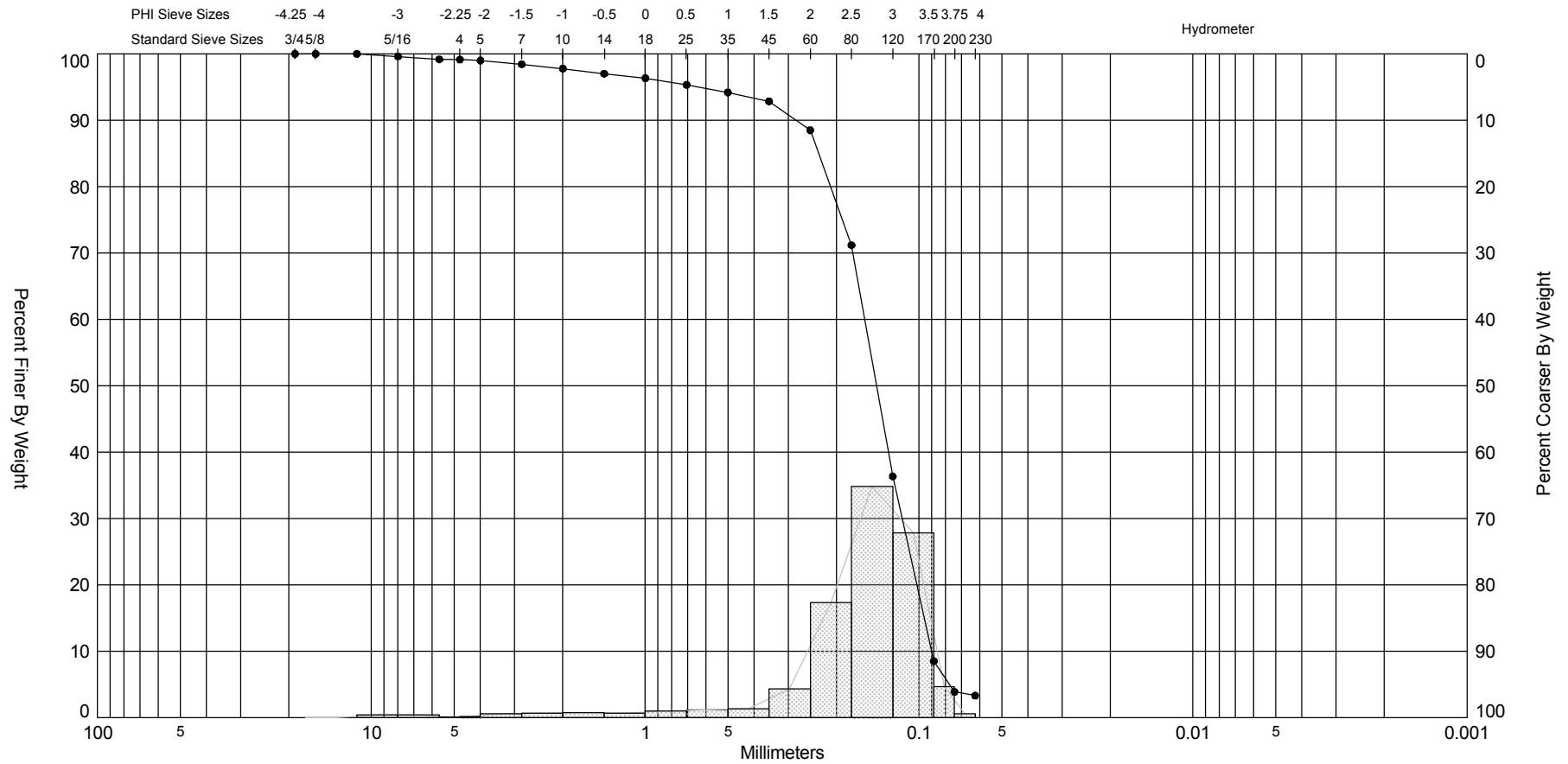
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-10 #4	—●—	-18.2	SP	#200 - 1.48 #230 - 1.42			2.77	2.75	-4.6	45.96	0.42	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	429,717
												Northing (Y, ft):	1,129,373
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

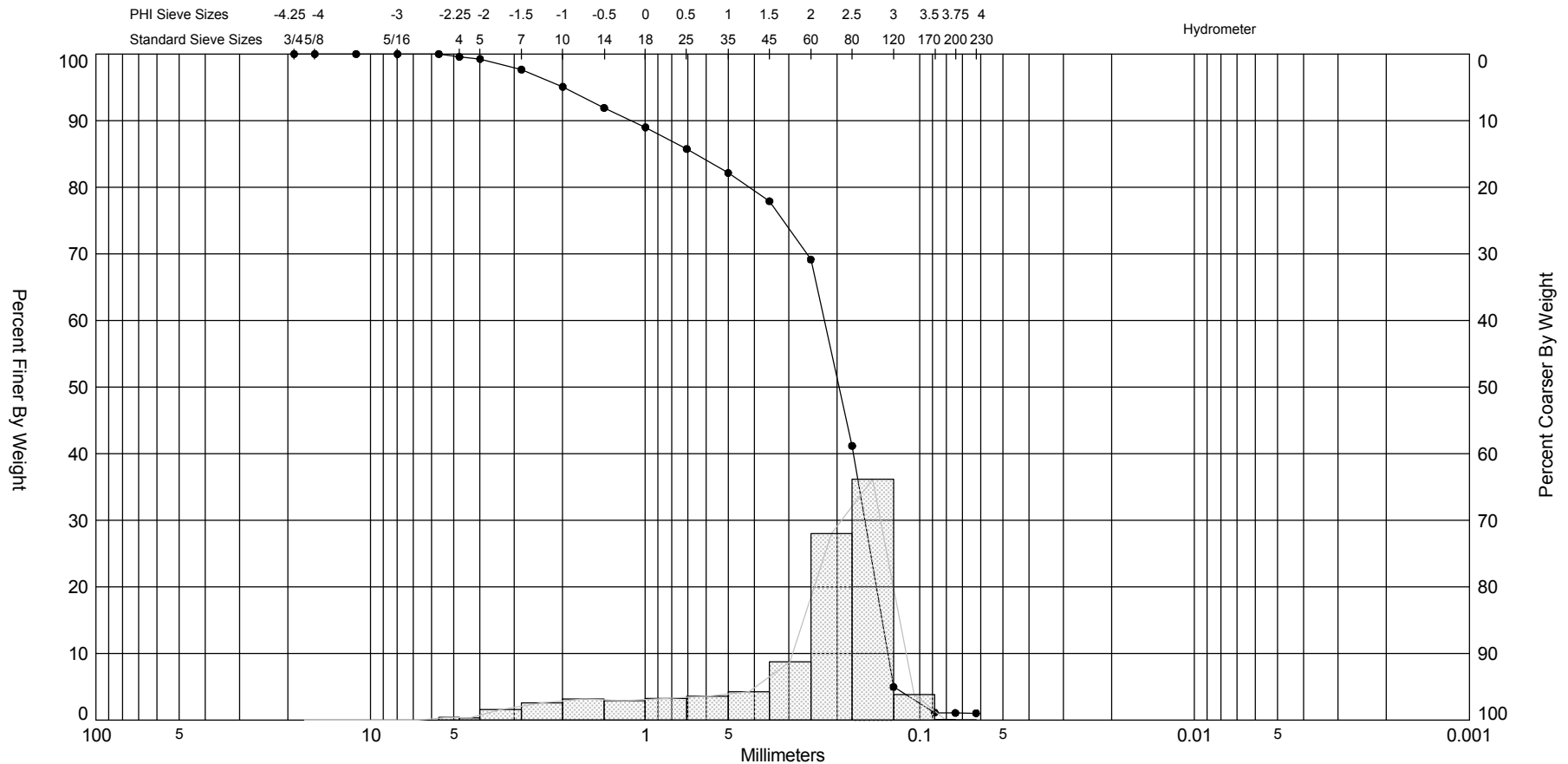
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-10 #5	—●—	-22.0	SW	#200 - 3.89 #230 - 3.30			2.8	2.58	-2.94	13.84	1.02	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	429,717
												Northing (Y, ft):	1,129,373
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

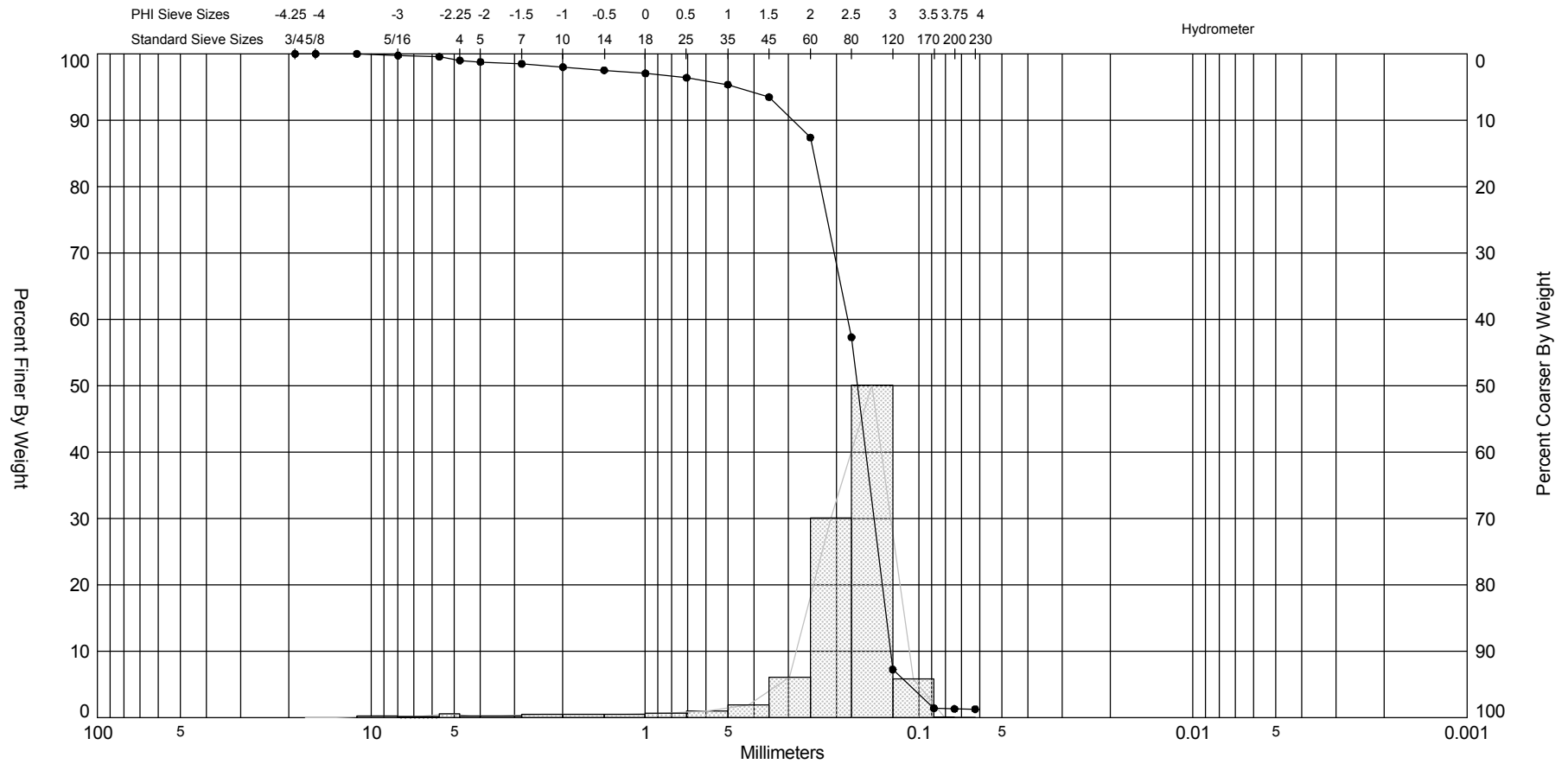
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-11 #1	—●—	-9.2	SW	#200 - 1.06 #230 - 1.03			2.34	1.91	-1.6	4.75	1.22	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,620
												Northing (Y, ft):	1,129,814
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

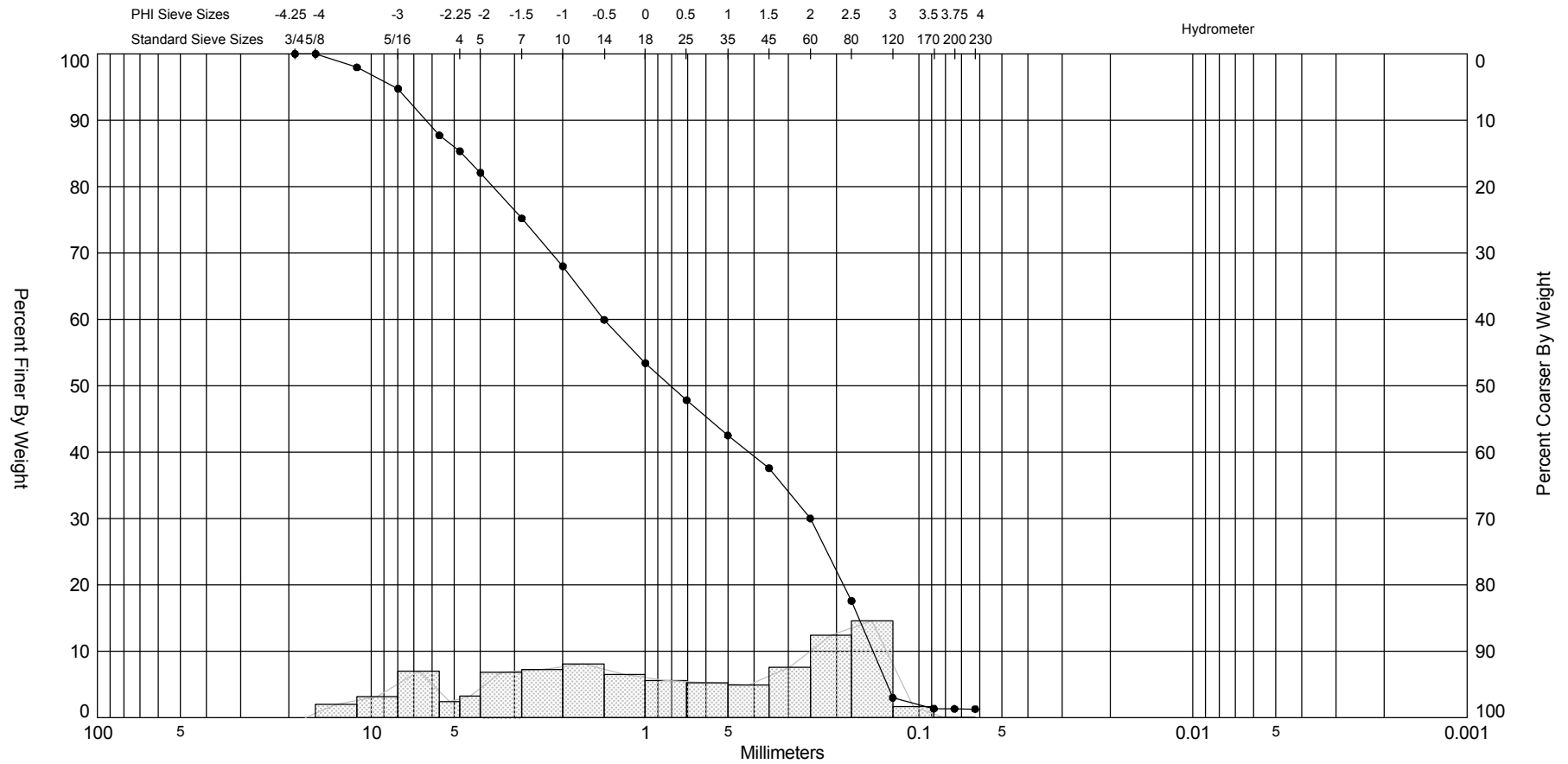
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-11 #2	—●—	-11.9	SP	#200 - 1.31 #230 - 1.28			2.57	2.37	-3.65	19.44	0.85	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,620
												Northing (Y, ft):	1,129,814
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

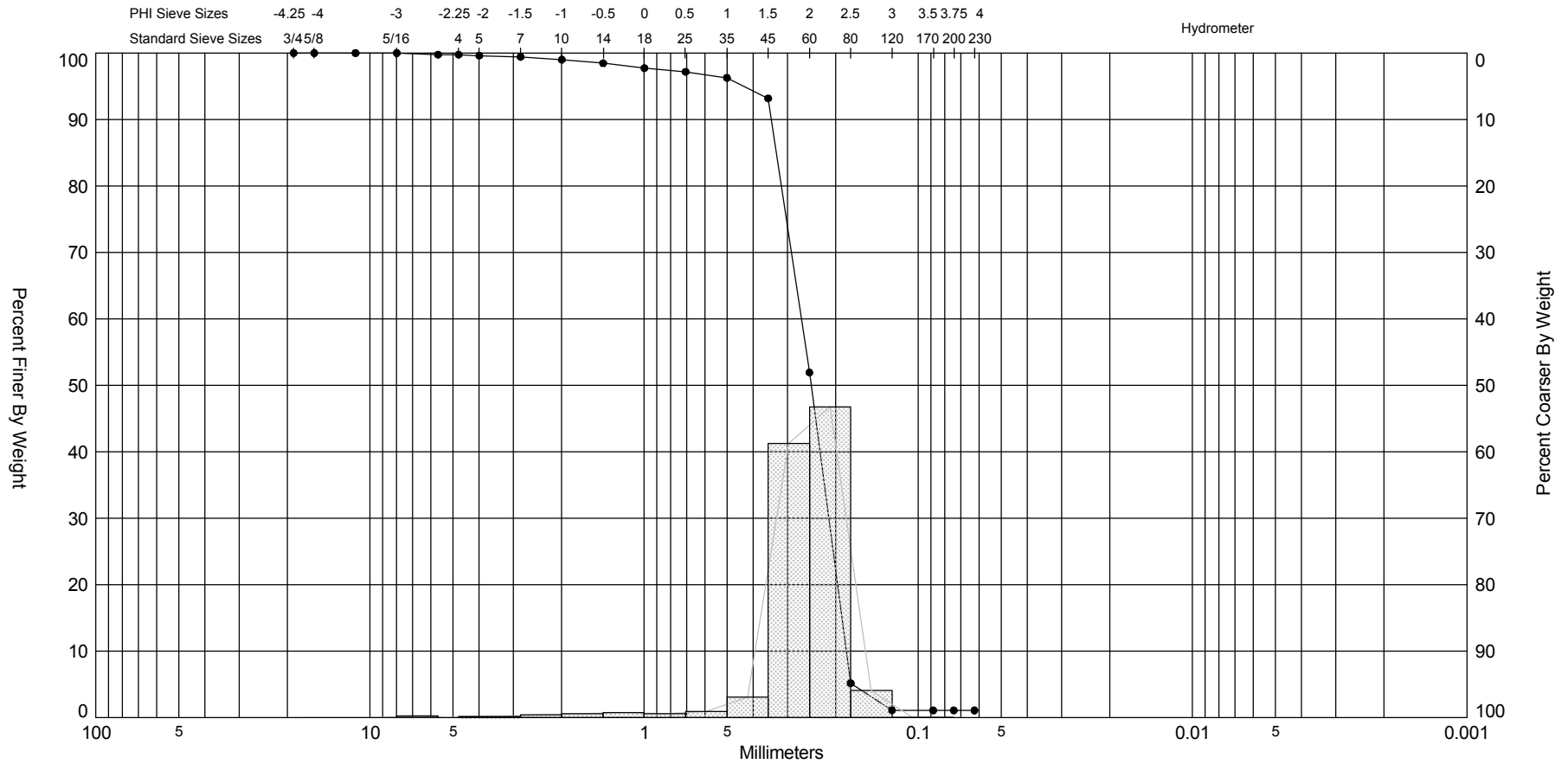
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-11 #3	—●—	-13.0	SW	#200 - 1.32 #230 - 1.29			0.3	0.2	-0.2	1.74	2.02	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
 Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116												Easting (X, ft):	430,620
												Northing (Y, ft):	1,129,814
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

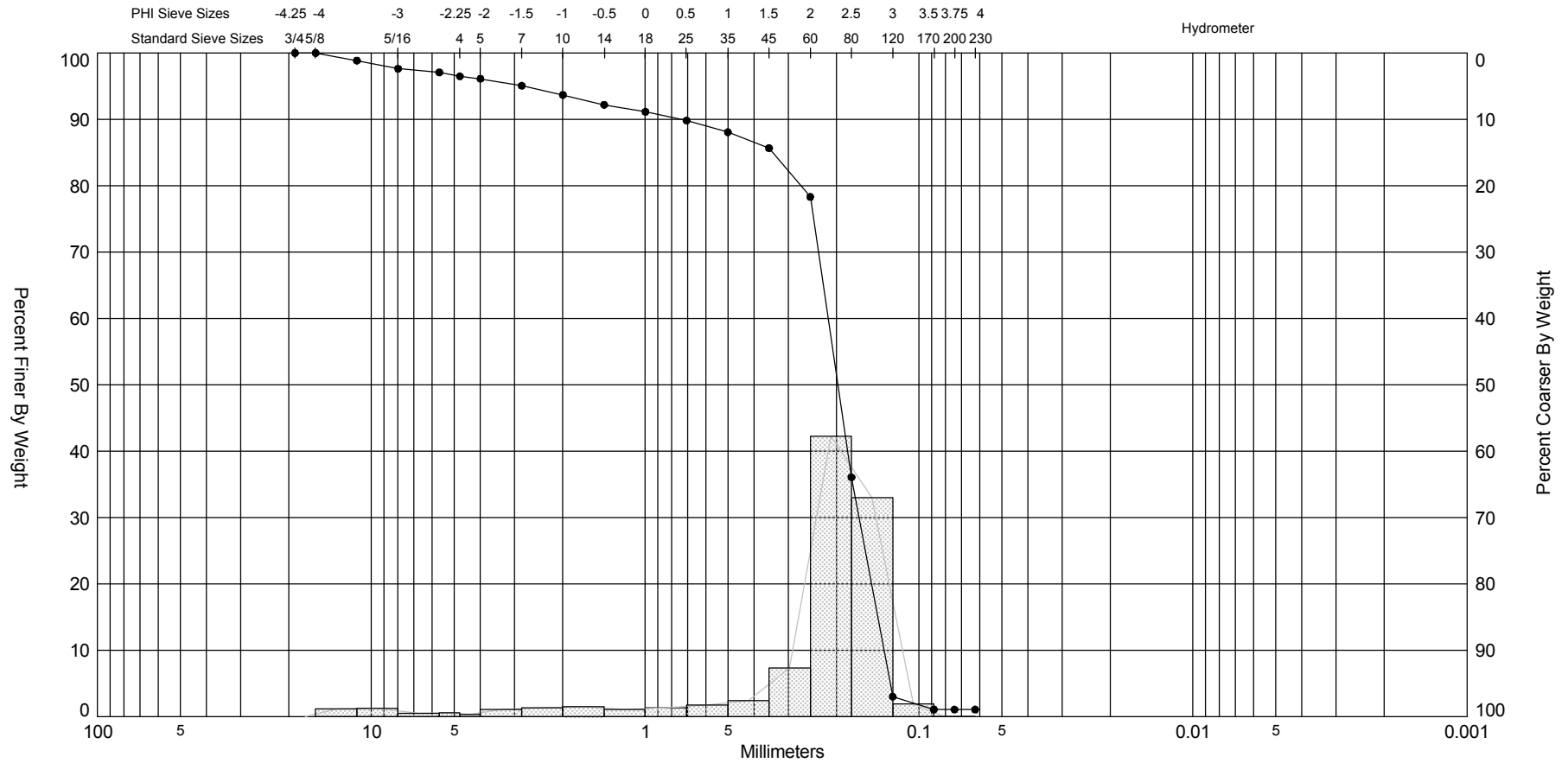
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-11 #4	—●—	-14.0	SP	#200 - 1.08 #230 - 1.08			2.02	1.93	-3.68	23.04	0.59	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	430,620
												Northing (Y, ft):	1,129,814
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

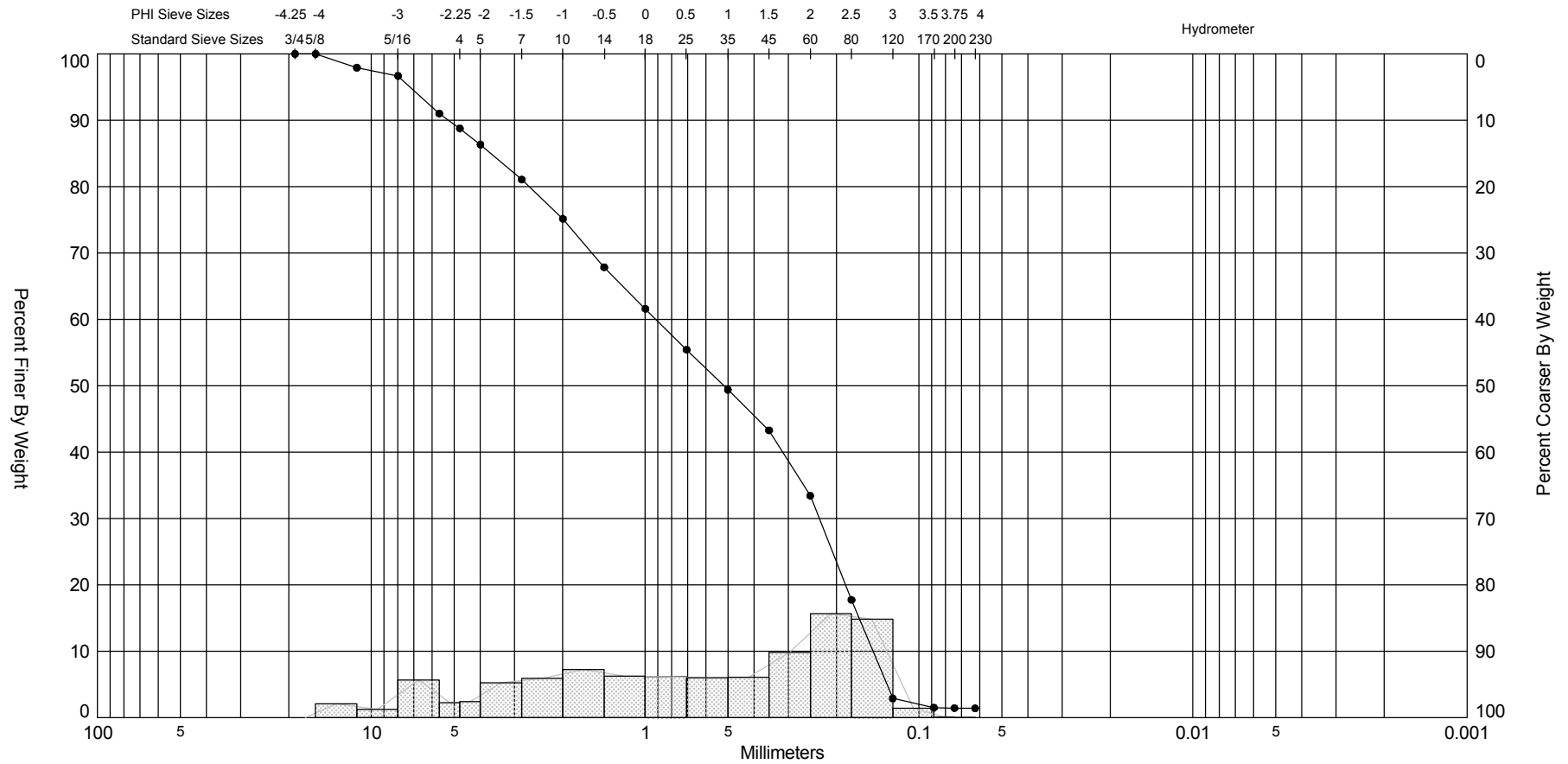
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-12 #1	—●—	-10.1	SW	#200 - 1.06 #230 - 1.05			2.33	1.95	-2.63	9.63	1.35	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,389
												Northing (Y, ft):	1,130,139
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

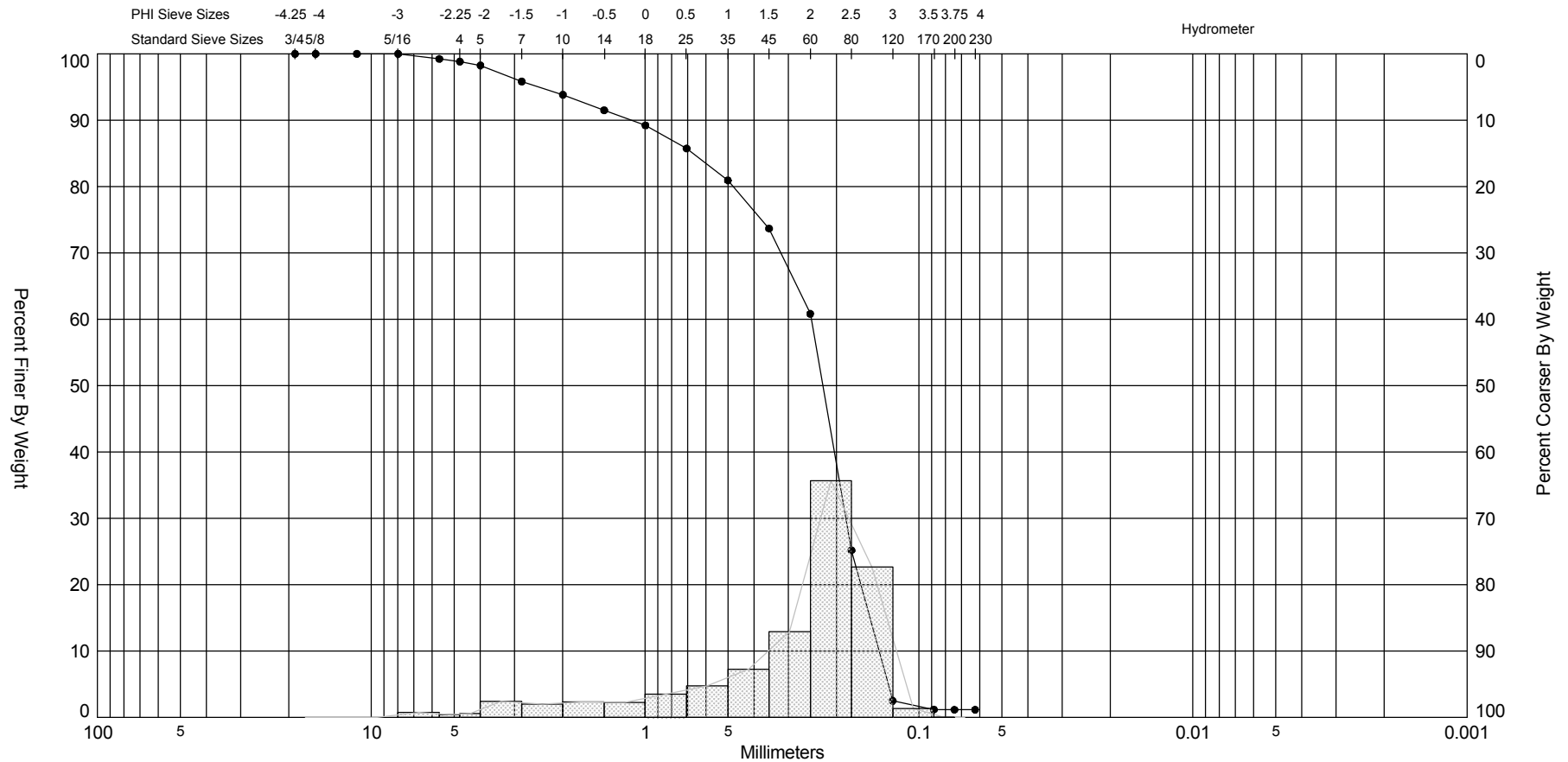
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-12 #2	—●—	-13.2	SW	#200 - 1.44 #230 - 1.40			0.95	0.51	-0.47	2	1.92	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,389
												Northing (Y, ft):	1,130,139
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

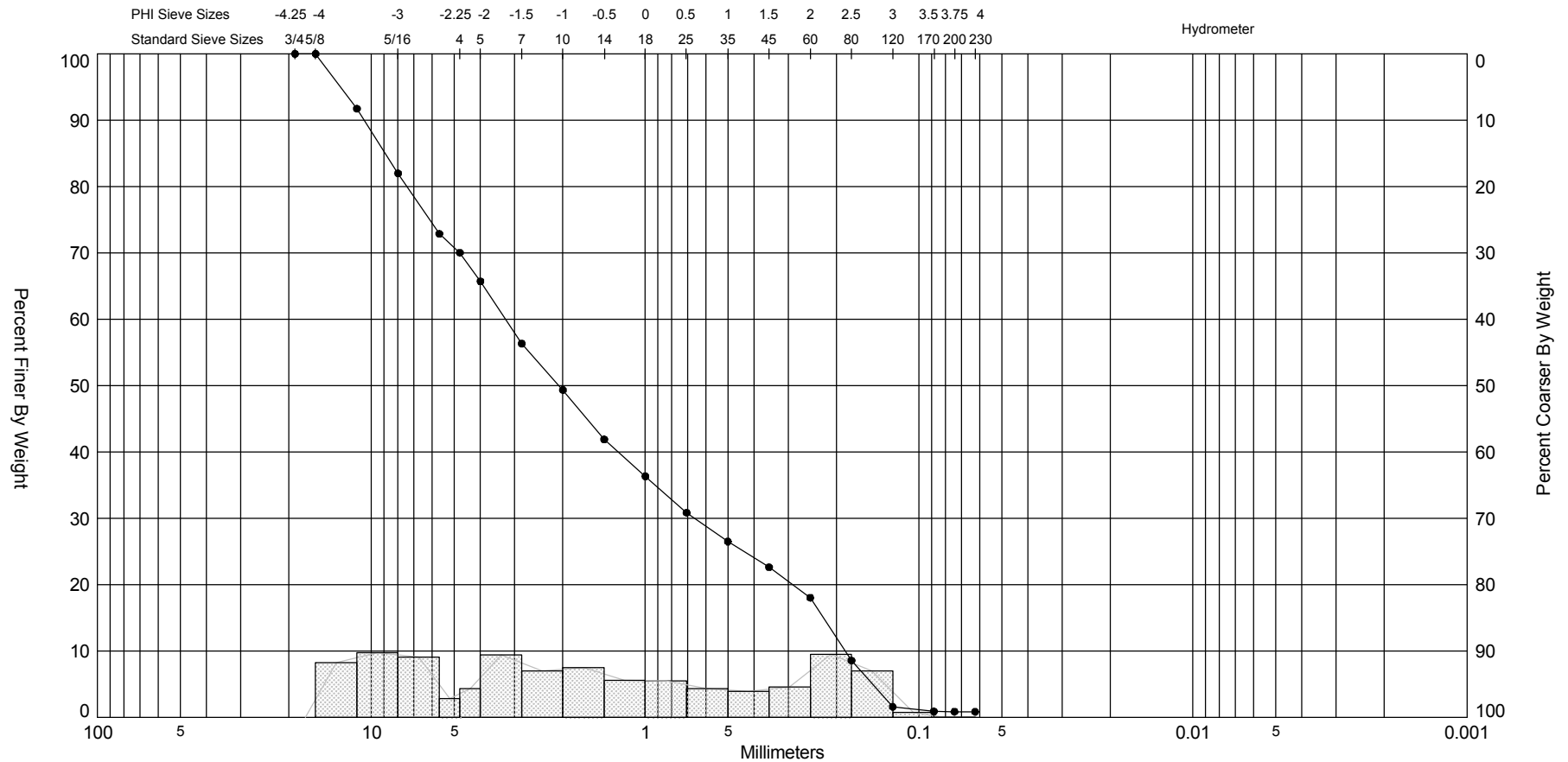
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-12 #3	—●—	-14.7	SW	#200 - 1.15 #230 - 1.15			2.15	1.72	-1.68	5.28	1.24	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	AU
 <div style="text-align: center;"> <p>Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116</p> </div>												Easting (X, ft):	430,389
												Northing (Y, ft):	1,130,139
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

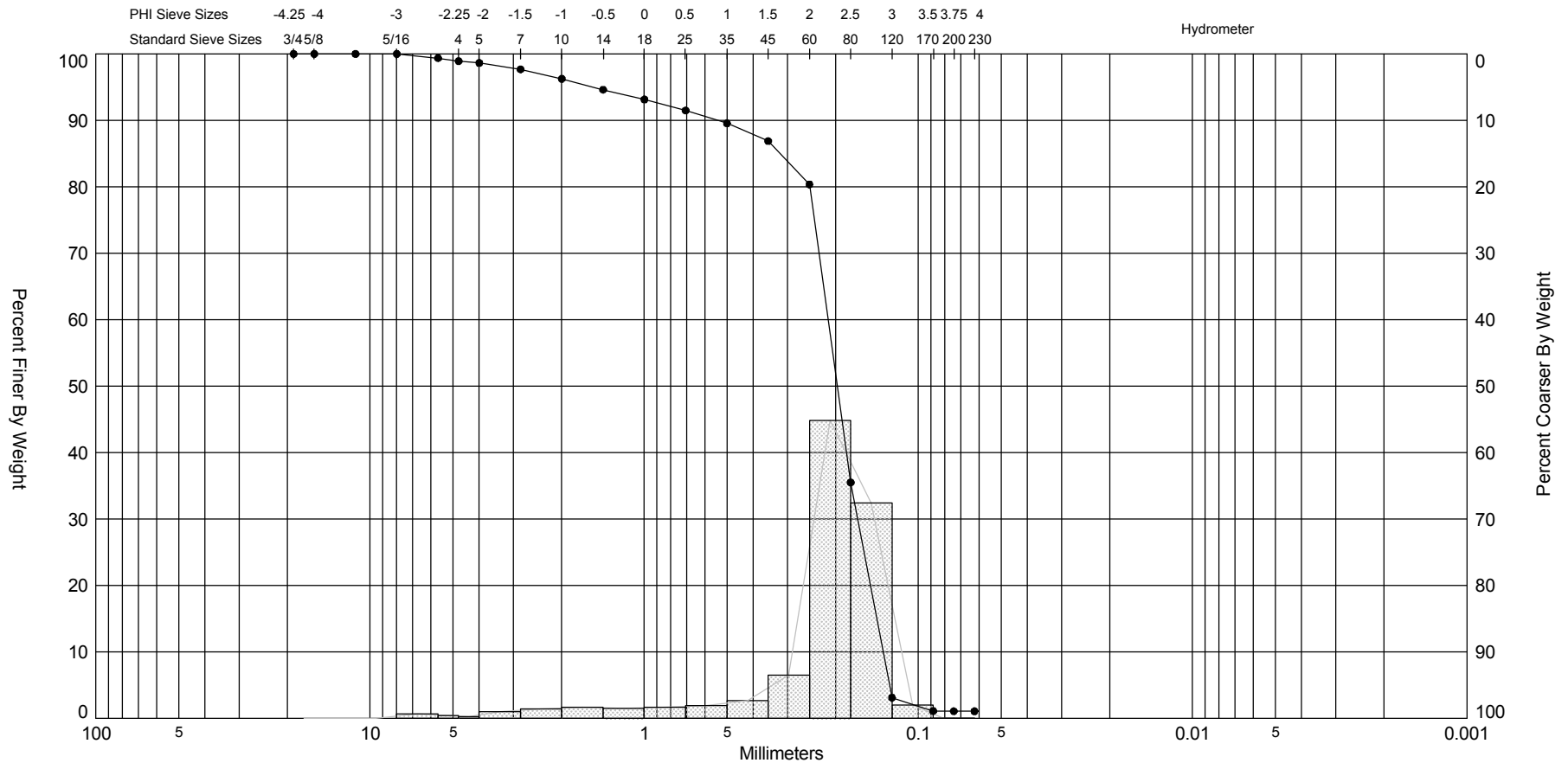
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-13 #1	—●—	-6.4	SW	#200 - 0.86 #230 - 0.85				-0.76	0.28	1.79	2.11	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	430,866
												Northing (Y, ft):	1,130,639
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

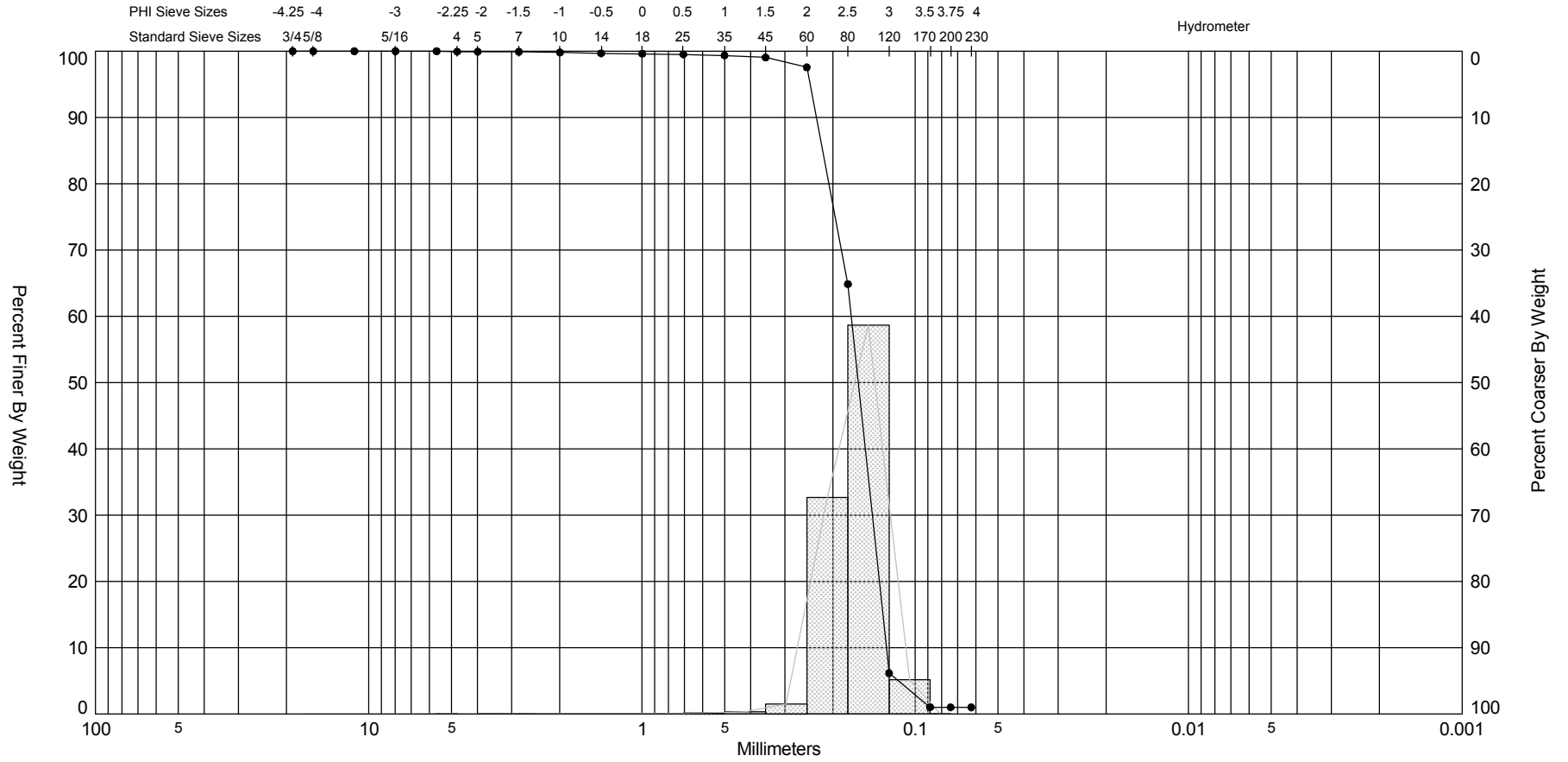
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-13 #2	—●—	-7.5	SW	#200 - 1.07 #230 - 1.06			2.34	2.07	-2.54	9.55	1.05	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
 Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116												Easting (X, ft):	430,866
												Northing (Y, ft):	1,130,639
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

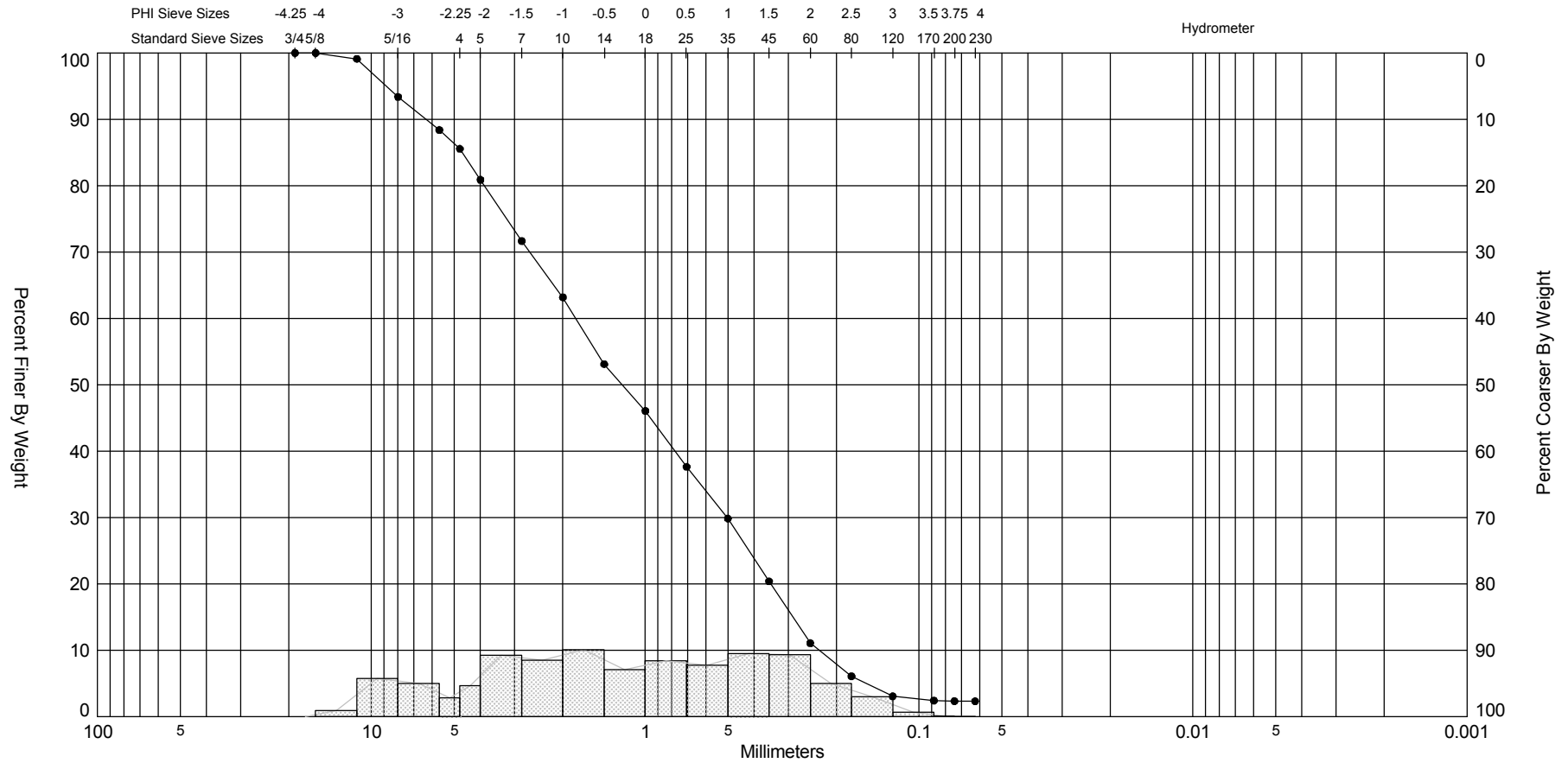
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-13 #3	—●—	-12.5	SP	#200 - 1.01 #230 - 1.01			2.63	2.57	-3.93	39.04	0.4	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,866
												Northing (Y, ft):	1,130,639
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

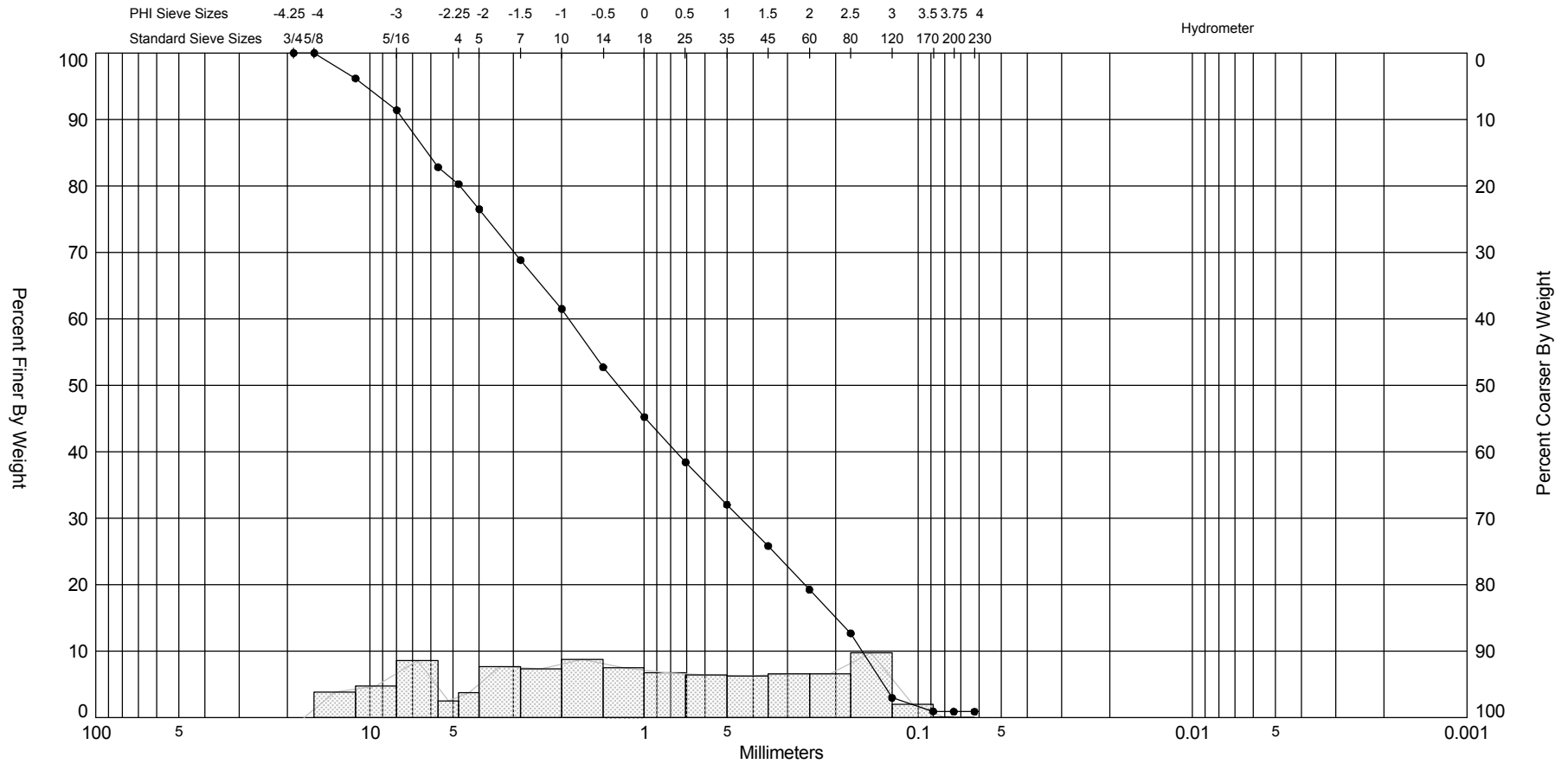
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-13 #4	—●—	-16.4	SW	#200 - 2.34 #230 - 2.32				-0.31	-0.02	1.99	1.72	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
 <div style="text-align: center;"> <p>Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116</p> </div>												Easting (X, ft):	430,866
												Northing (Y, ft):	1,130,639
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

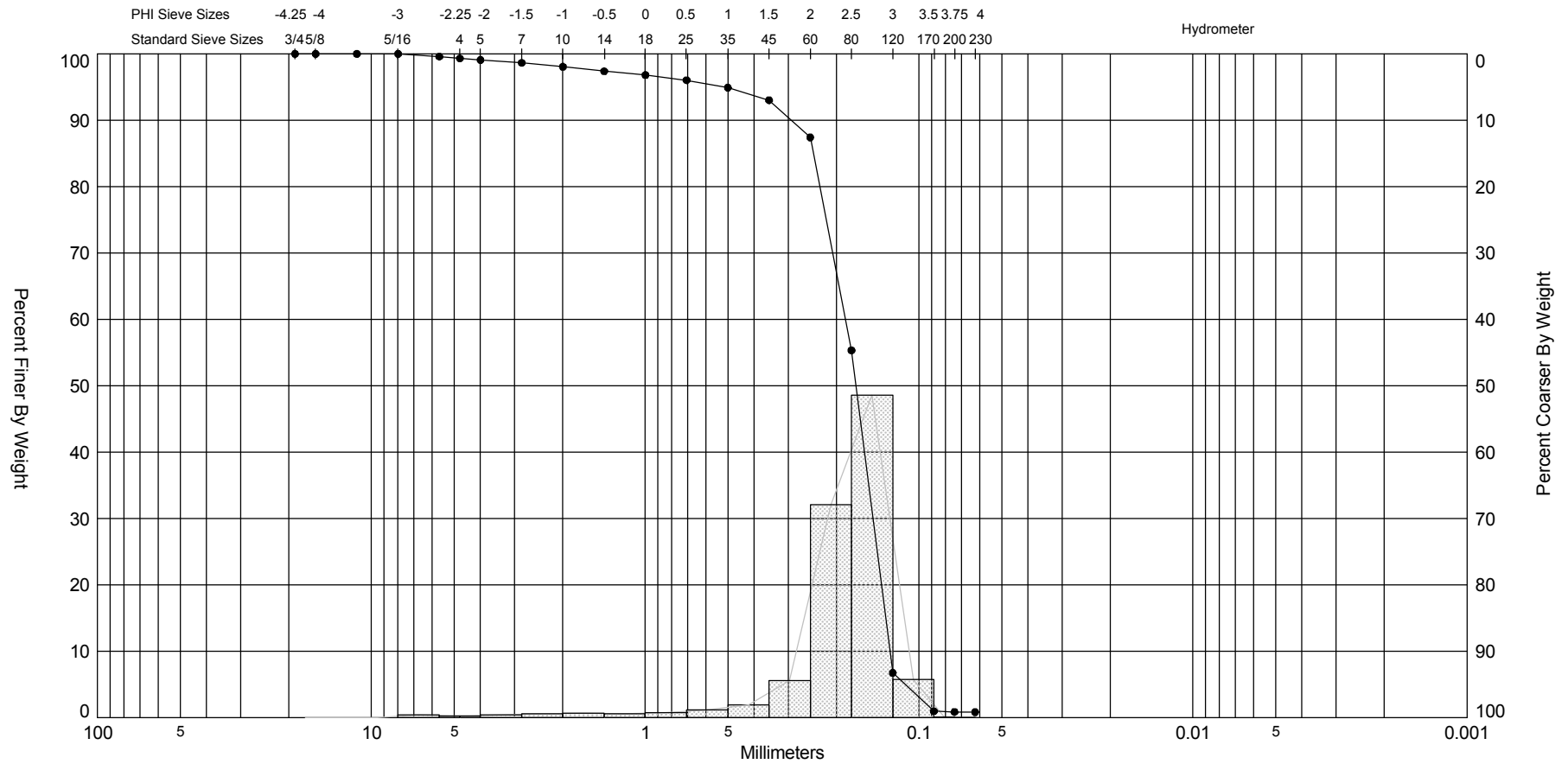
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-14 #2	—●—	-7.8	SW	#200 - 0.89 #230 - 0.88				-0.25	0.03	1.85	2	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	431,287
												Northing (Y, ft):	1,130,625
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

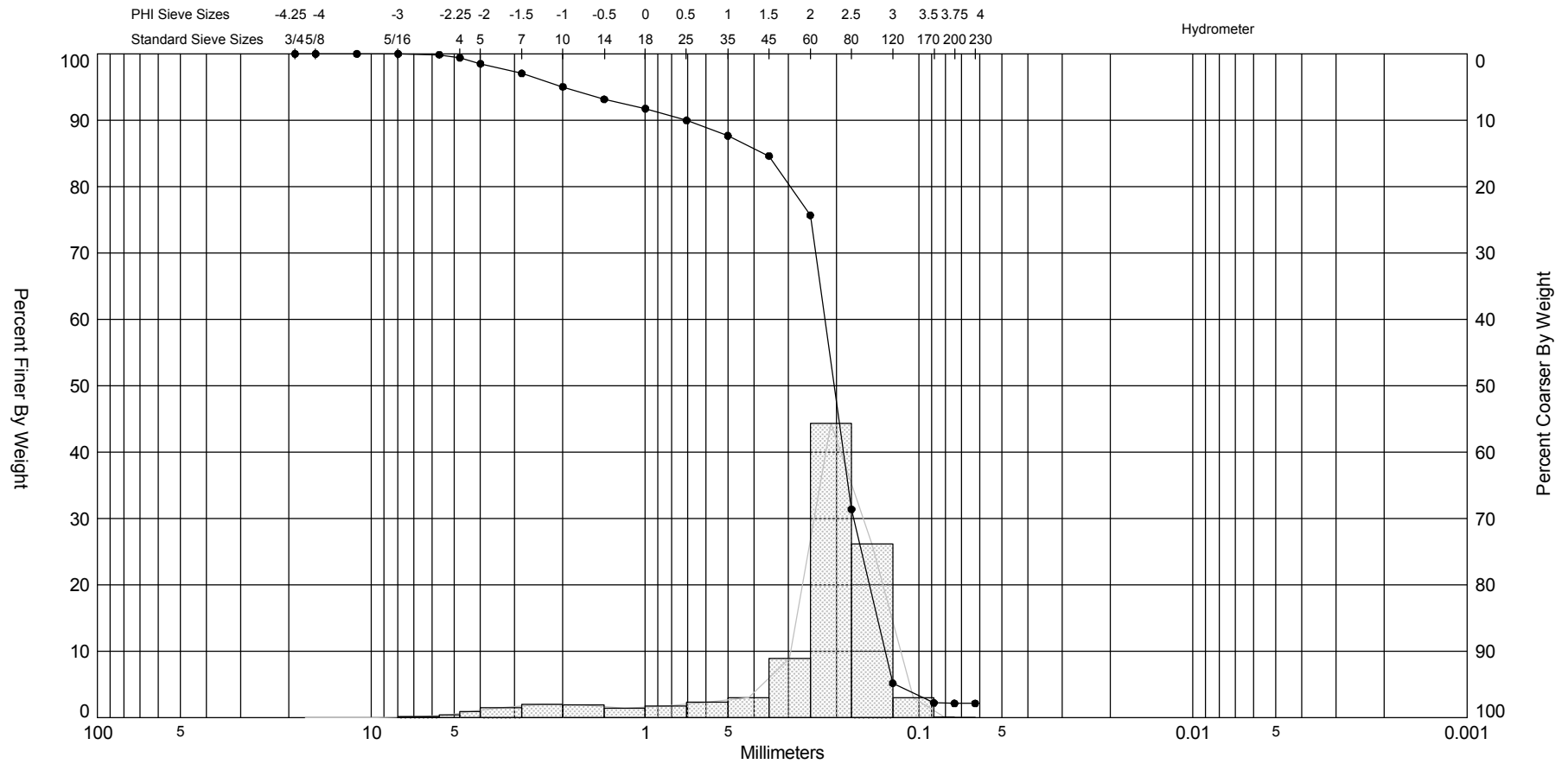
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-14 #3	—●—	-10.4	SP	#200 - 0.86 #230 - 0.83			2.55	2.36	-3.4	17.17	0.84	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	431,287
												Northing (Y, ft):	1,130,625
												Horizontal System:	NAD 1983
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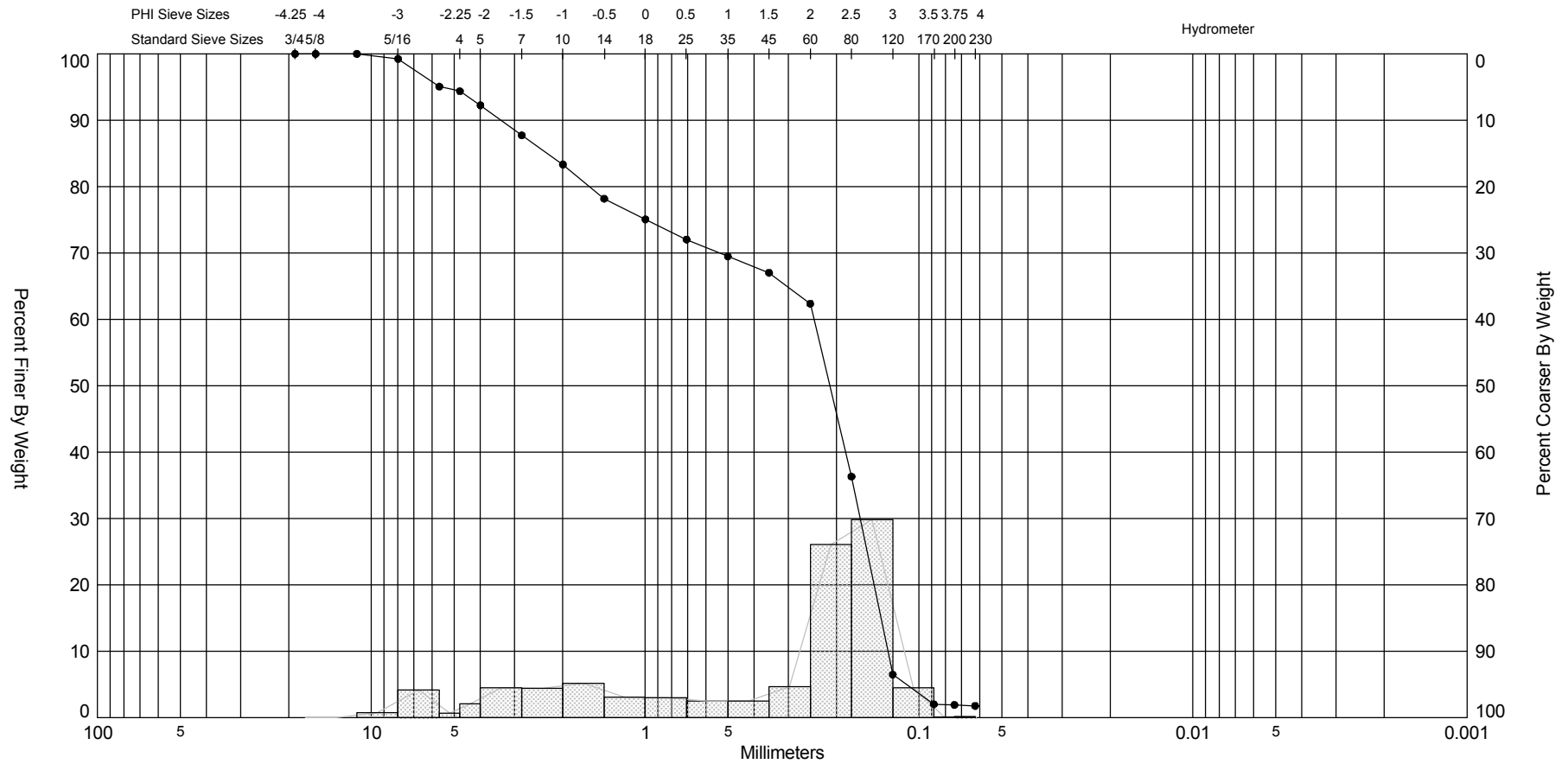
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-14 #4	—●—	-13.4	SW	#200 - 2.14 #230 - 2.13			2.29	1.97	-2.18	7.39	1.12	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	431,287
												Northing (Y, ft):	1,130,625
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

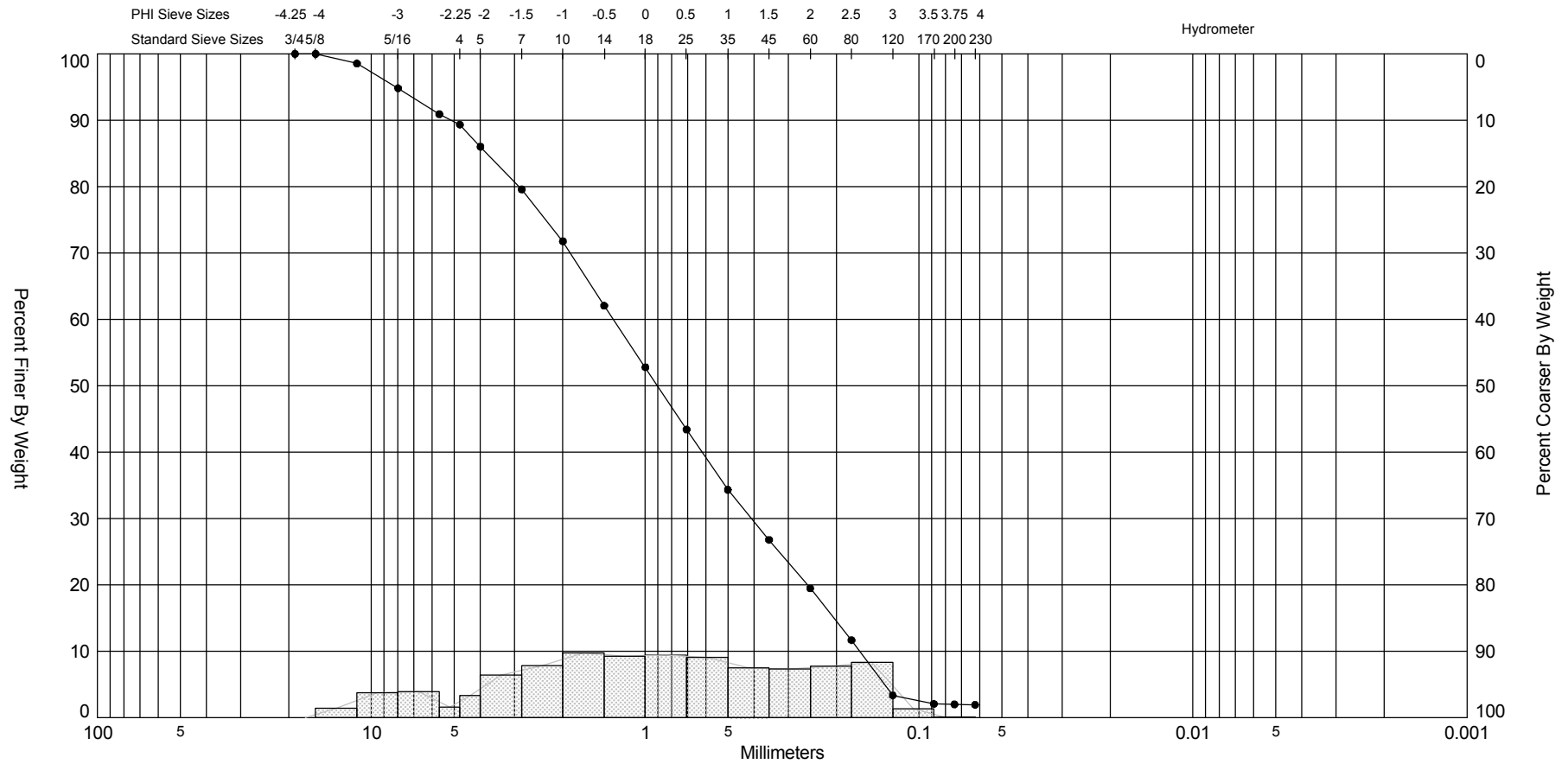
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-14 #5	—●—	-18.6	SW	#200 - 1.91 #230 - 1.78			2.24	1.34	-1.04	2.64	1.83	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	431,287
												Northing (Y, ft):	1,130,625
												Horizontal System:	NAD 1983
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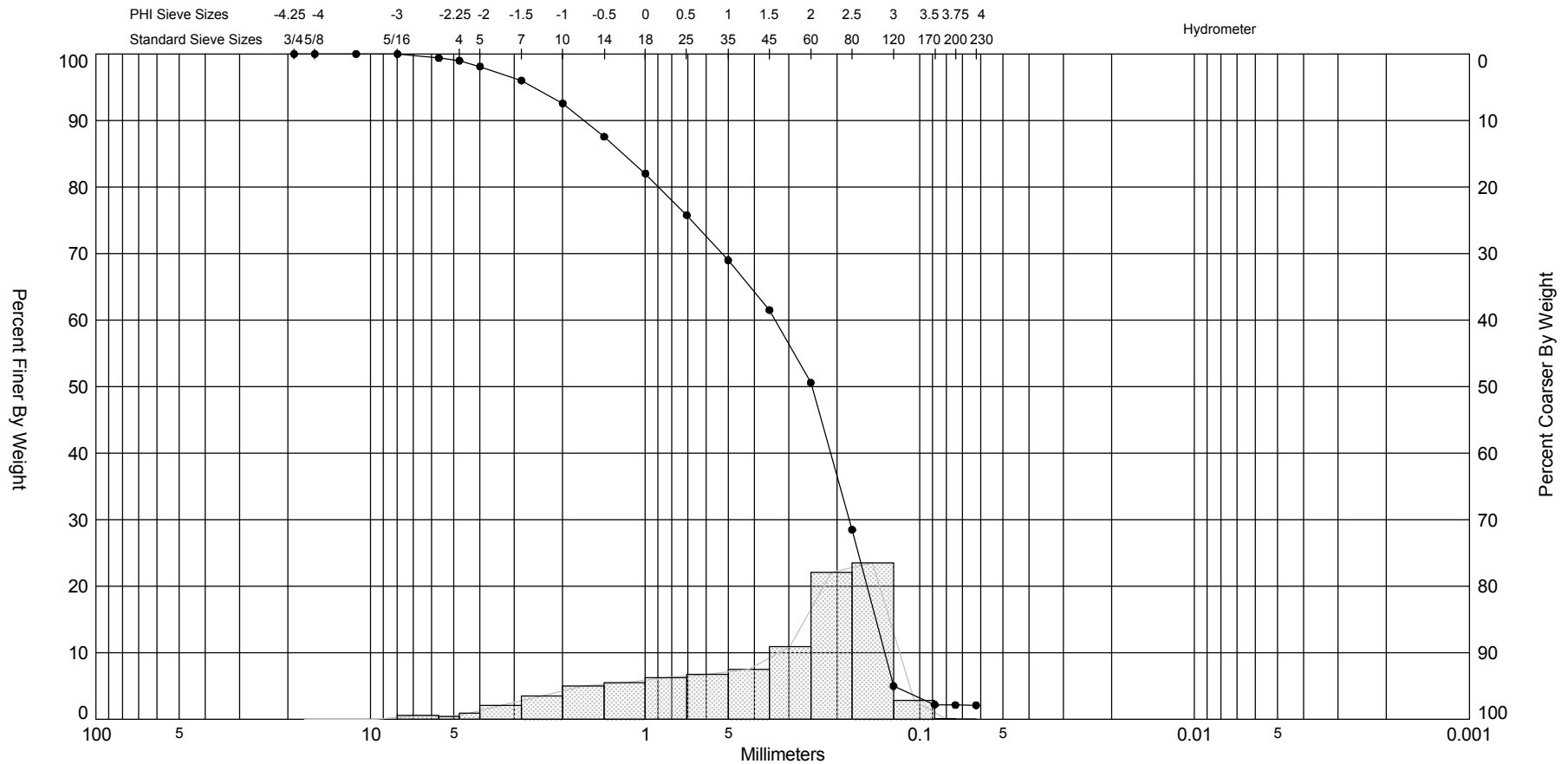
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-15 #1	—●—	-12.7	SW	#200 - 2.00 #230 - 1.93			0.15	0.07	-0.16	2.14	1.77	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	432,201
												Northing (Y, ft):	1,130,972
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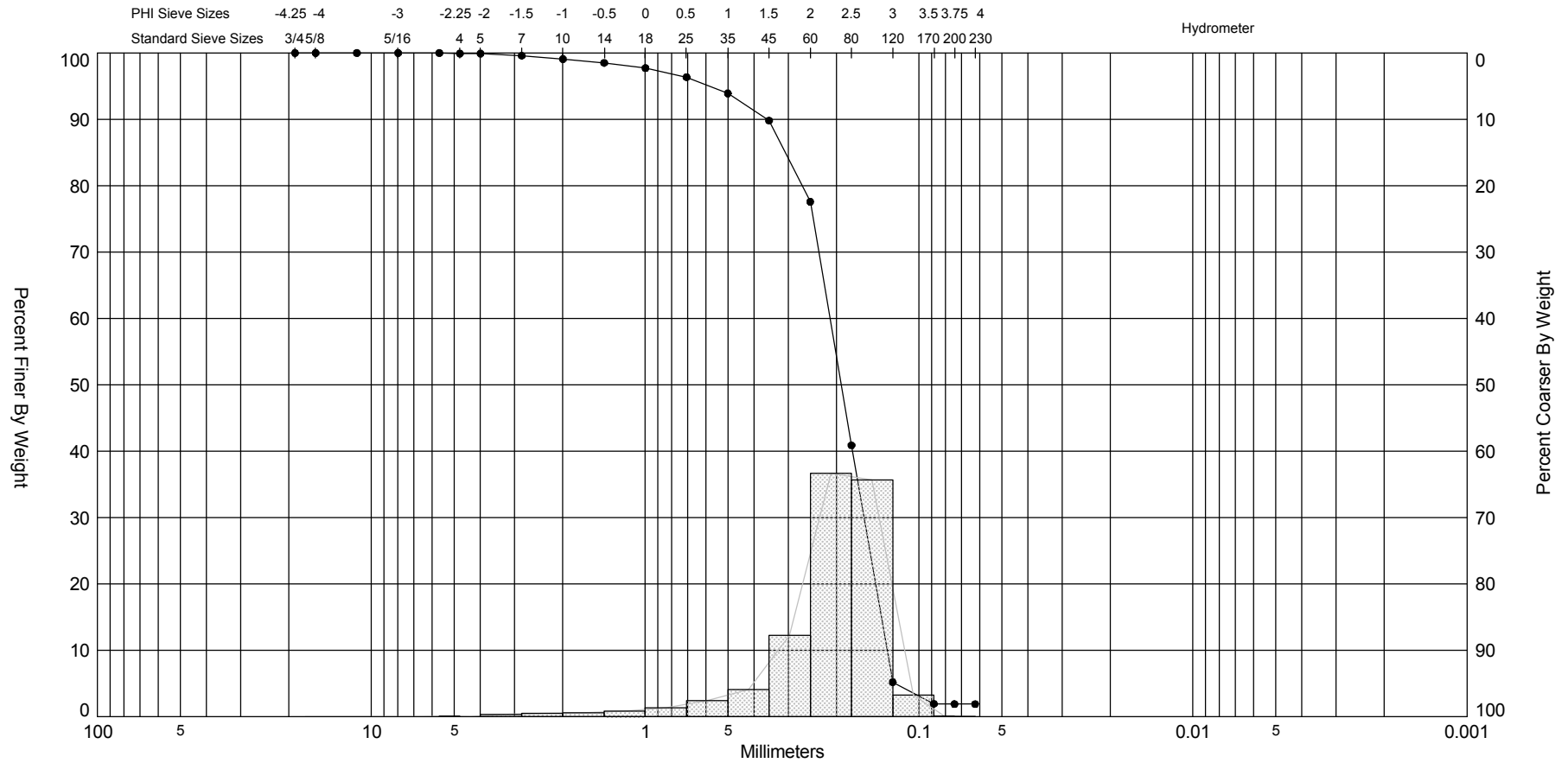
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-15 #2	—●—	-15.6	SW	#200 - 2.13 #230 - 2.11			2.01	1.44	-0.94	2.93	1.4	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	AU
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	432,201
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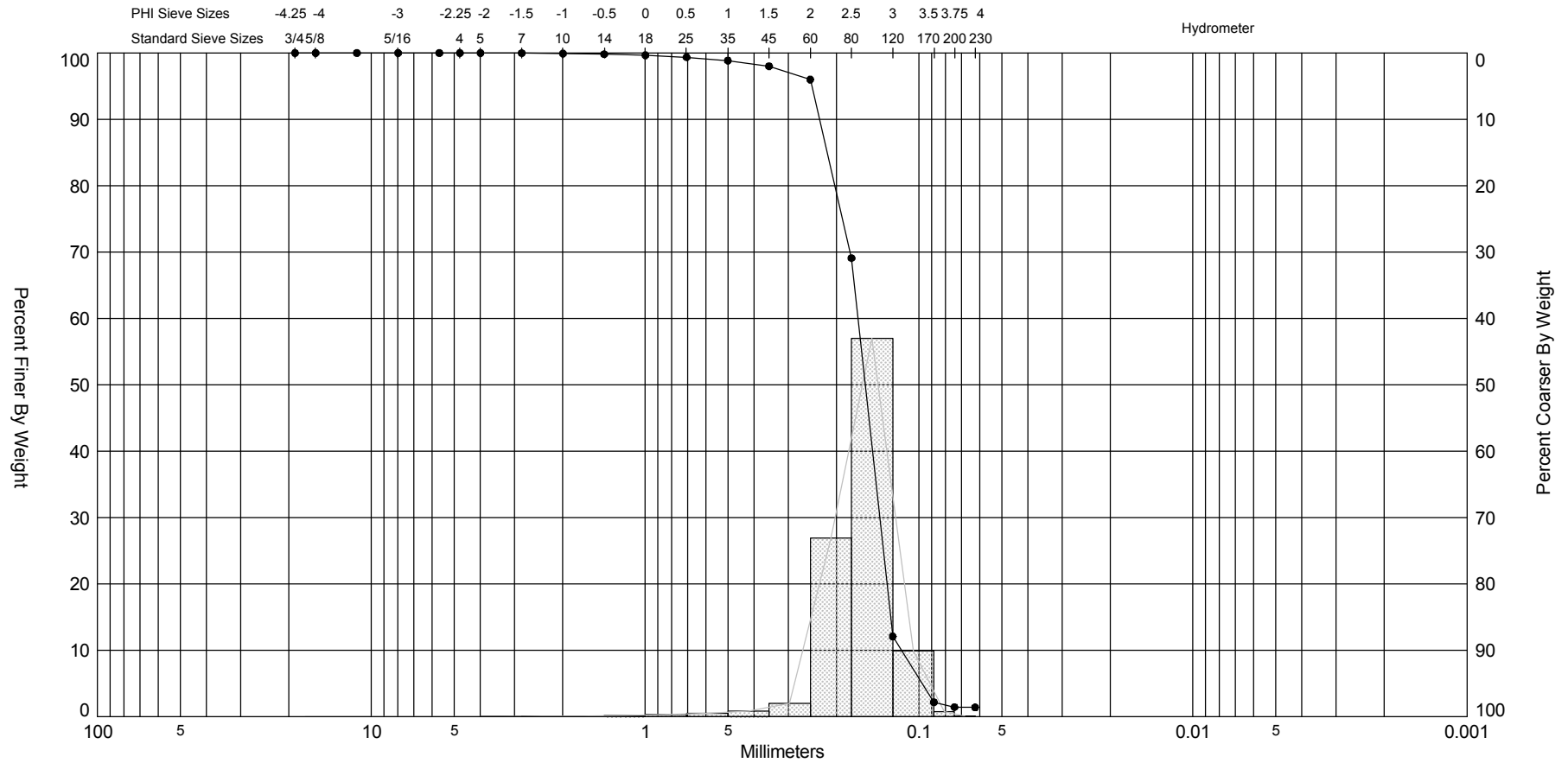
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-15 #3	—●—	-19.2	SP	#200 - 1.89 #230 - 1.88			2.38	2.22	-2.29	10.51	0.74	Project Name:	Anna Maria 2007 Sand Search
Comments:											Analysis Date:	03-08-07	
Depths and elevations based on measured values											Analyzed By:	AU	
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	432,201	
											Northing (Y, ft):	1,130,972	
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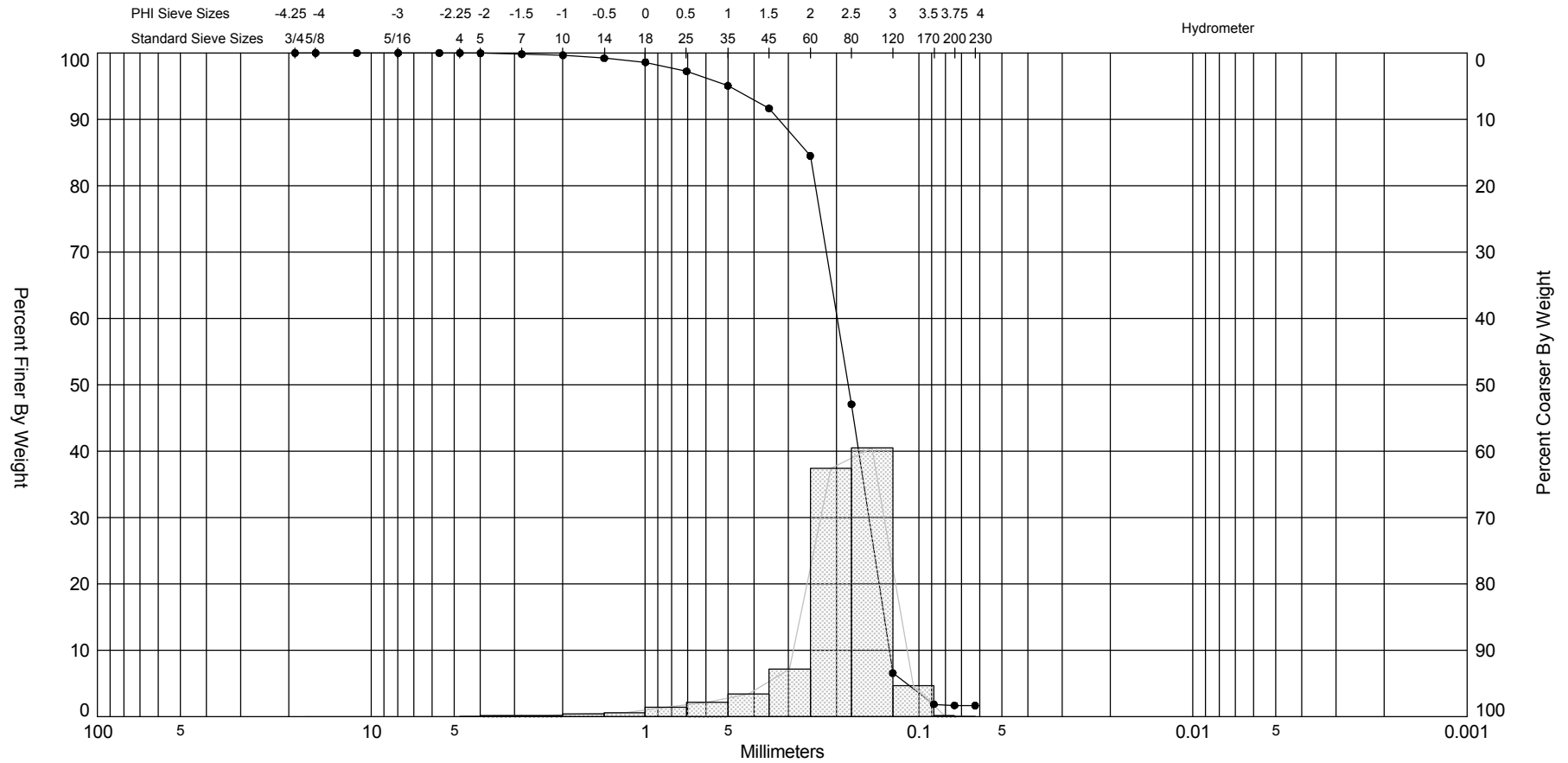
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

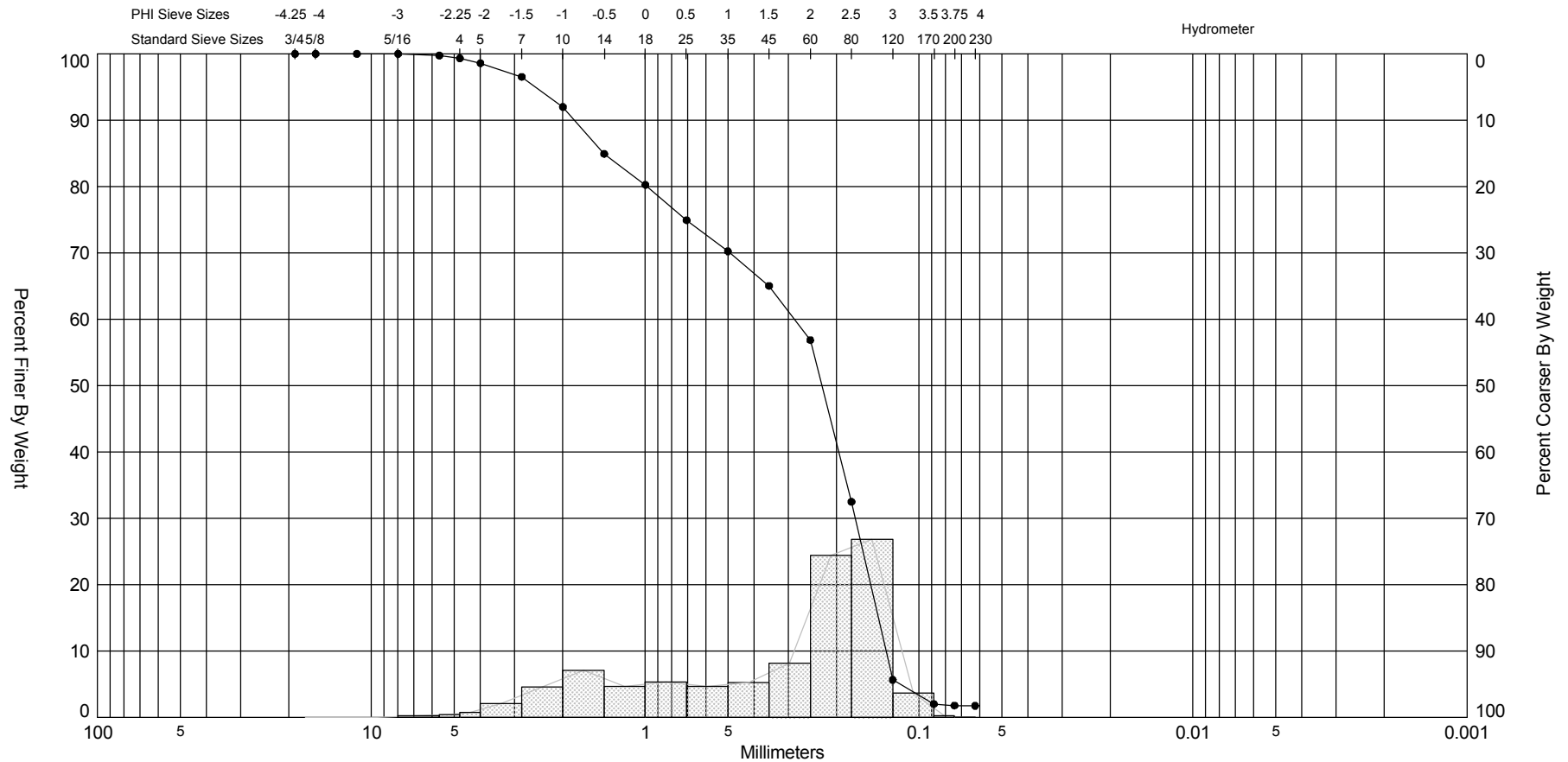
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AMVC-07-17 #1	—●—	-8.9	SP	#200 - 1.44 #230 - 1.39			2.67	2.61	-2.37	16.98	0.45	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-09-07
Depths and elevations based on measured values												Analyzed By:	MC
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	430,589
												Northing (Y, ft):	1,144,145
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

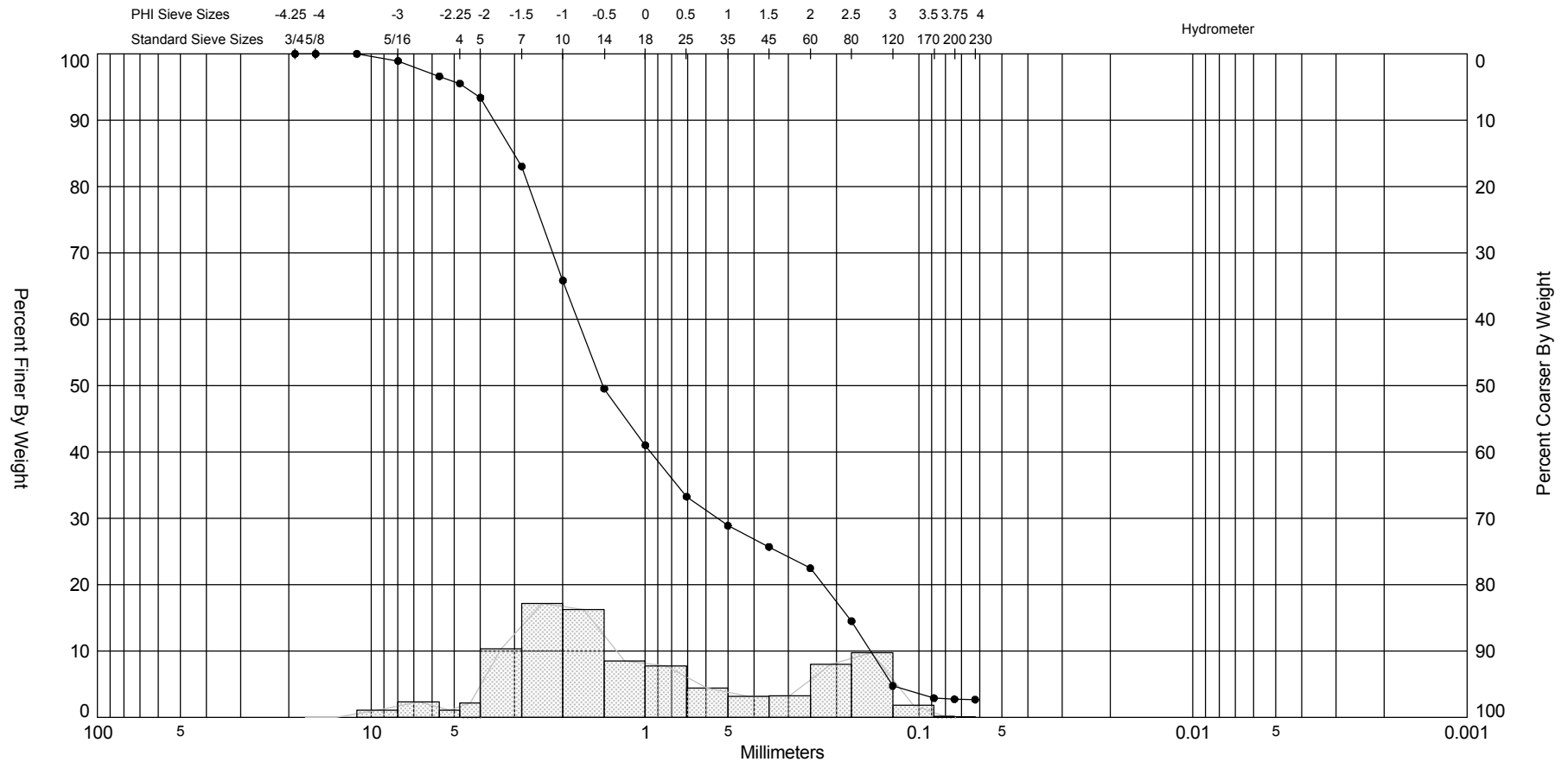
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AMVC-07-18 #1	—●—	-5.5	SP	#200 - 1.69 #230 - 1.66			2.46	2.33	-2.24	10.52	0.66	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	MC
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,955
												Northing (Y, ft):	1,144,486
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-18 #2	—●—	-6.8	SW	#200 - 1.79 #230 - 1.75			2.14	1.51	-0.94	2.66	1.45	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	MC
 Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116							Easting (X, ft):		430,955				
							Northing (Y, ft):		1,144,486				
							Horizontal System:		NAD 1983				
							Vertical System:		NAVD 88				

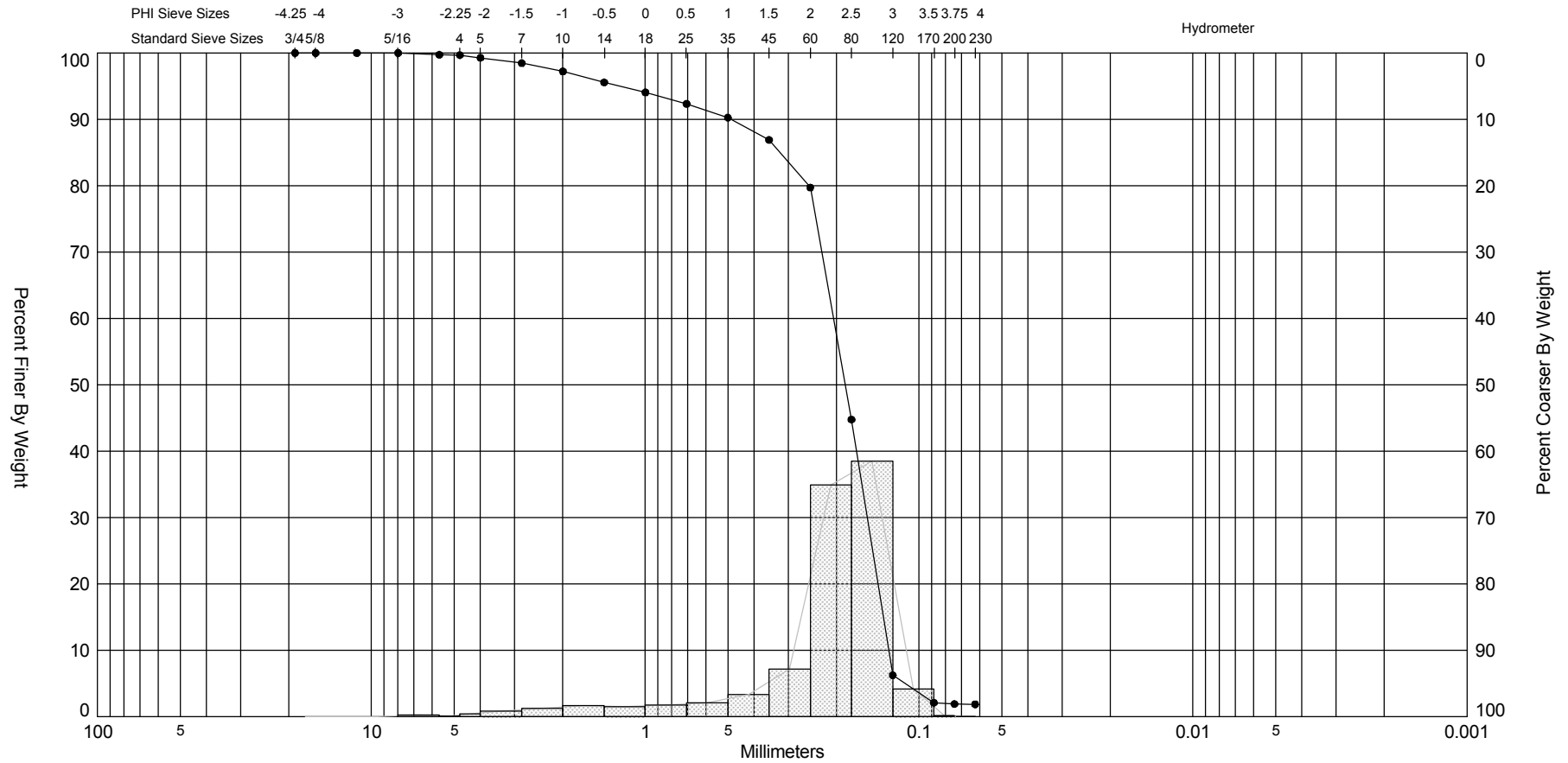
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-18 #3	—●—	-8.2	SW	#200 - 2.73 #230 - 2.68				-0.05	0.48	2.13	1.66	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	MC
 <div style="text-align: center;"> <p>Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116</p> </div>												Easting (X, ft):	430,955
												Northing (Y, ft):	1,144,486
												Horizontal System:	NAD 1983
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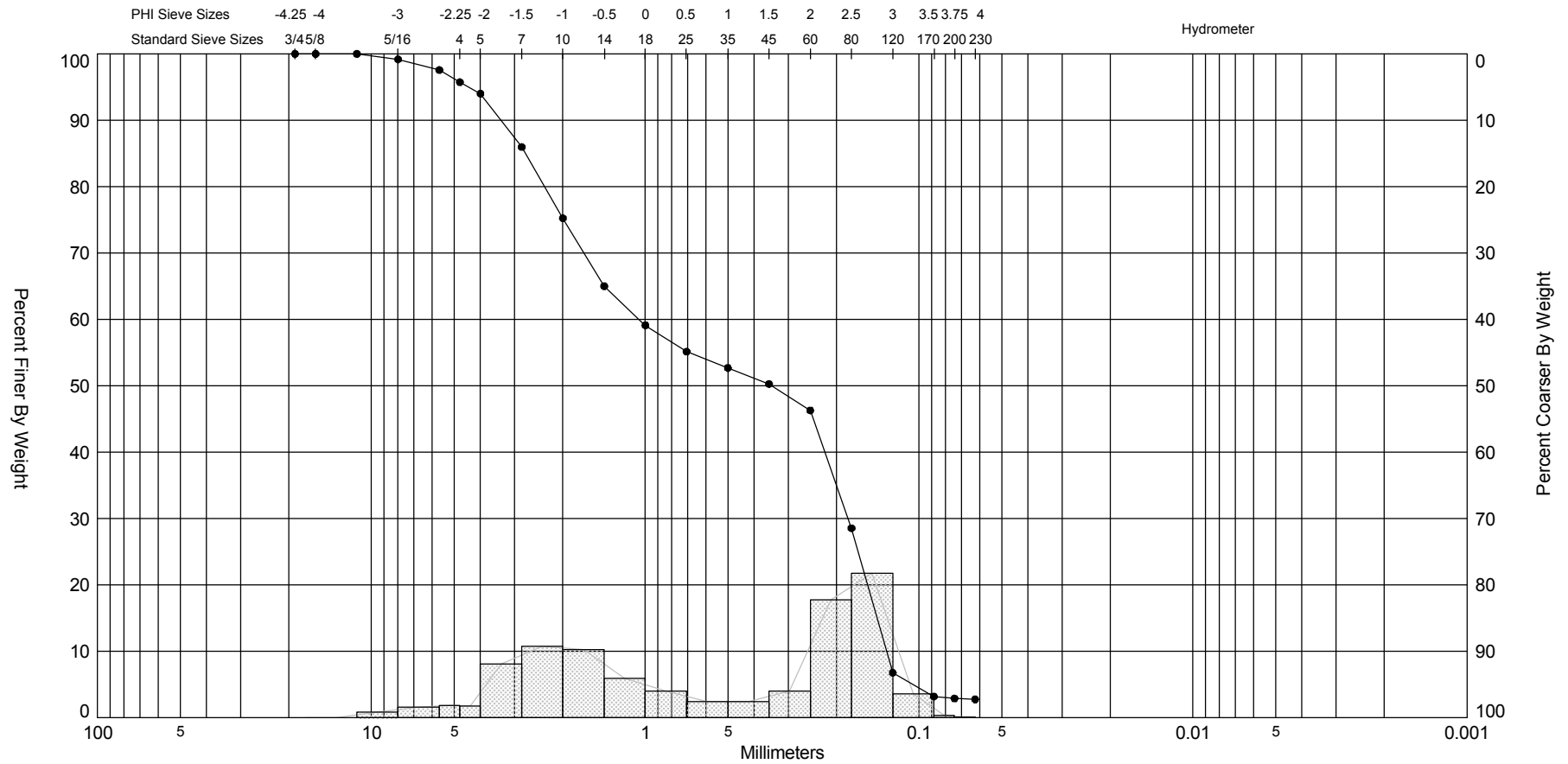
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-19 #1	—●—	-6.1	SW	#200 - 1.90 #230 - 1.86			2.43	2.15	-2.37	8.97	1	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-07-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	431,156
												Northing (Y, ft):	1,144,258
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

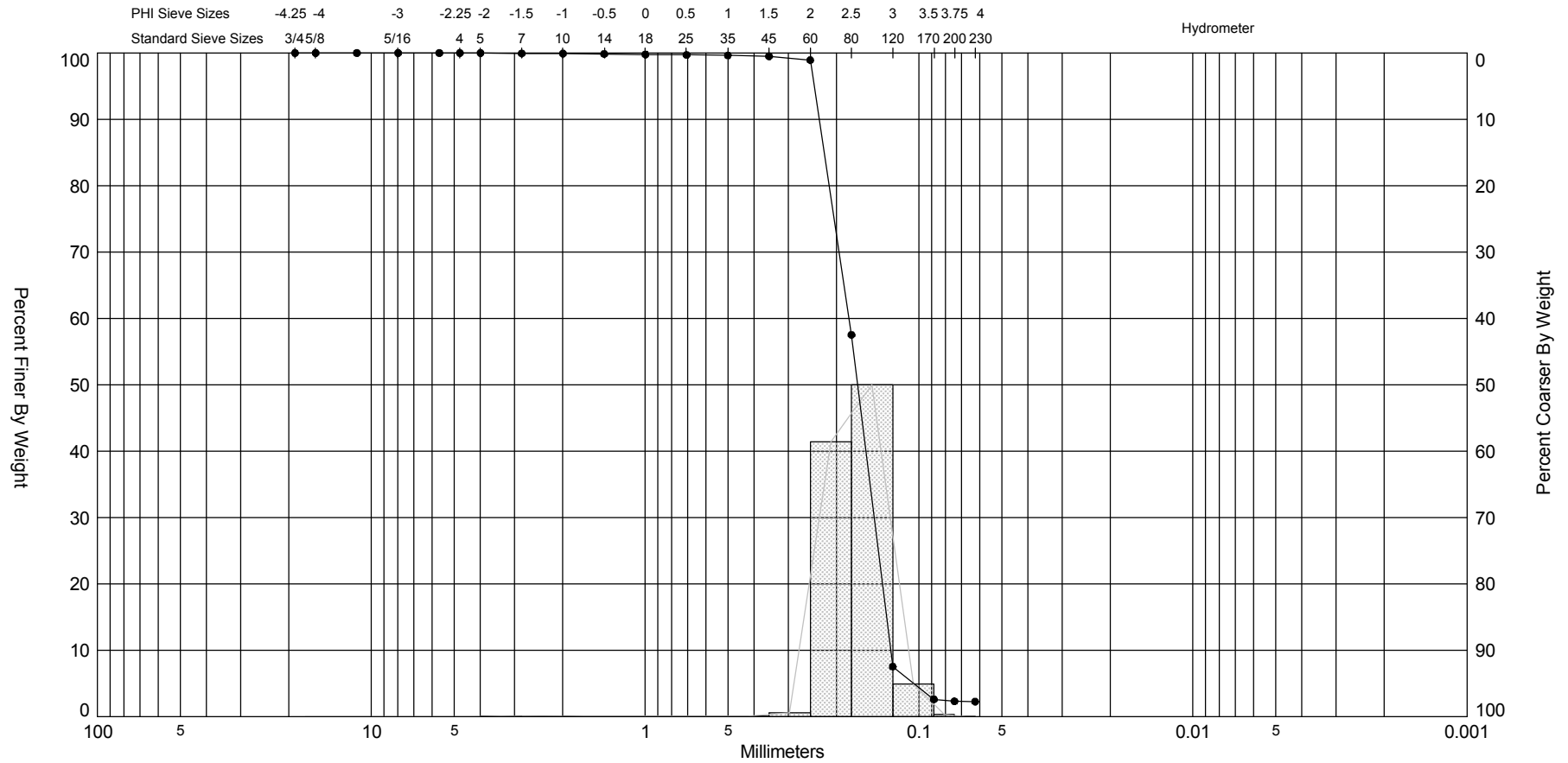
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-19 #2	—●—	-8.4	SW	#200 - 2.88 #230 - 2.76			1.53	0.76	-0.27	1.55	1.89	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-07-07
Depths and elevations based on measured values												Analyzed By:	JF
 Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116												Easting (X, ft):	431,156
												Northing (Y, ft):	1,144,258
												Horizontal System:	NAD 1983
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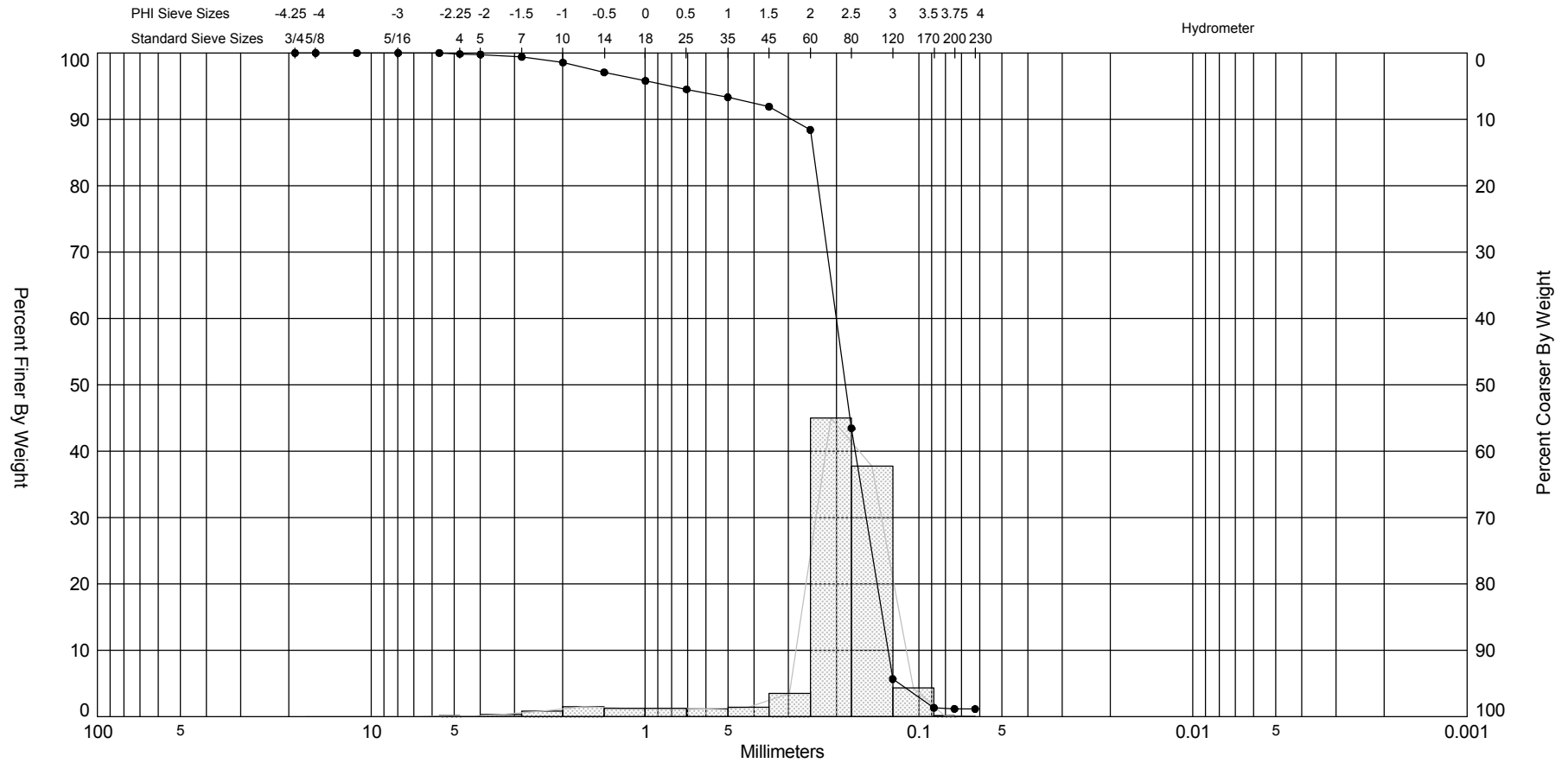
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-19 #3	—●—	-11.5	SP	#200 - 2.31 #230 - 2.27			2.58	2.55	-2.37	27.56	0.36	Project Name:	Anna Maria 2007 Sand Search
Comments:												Analysis Date:	03-07-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	431,156
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												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

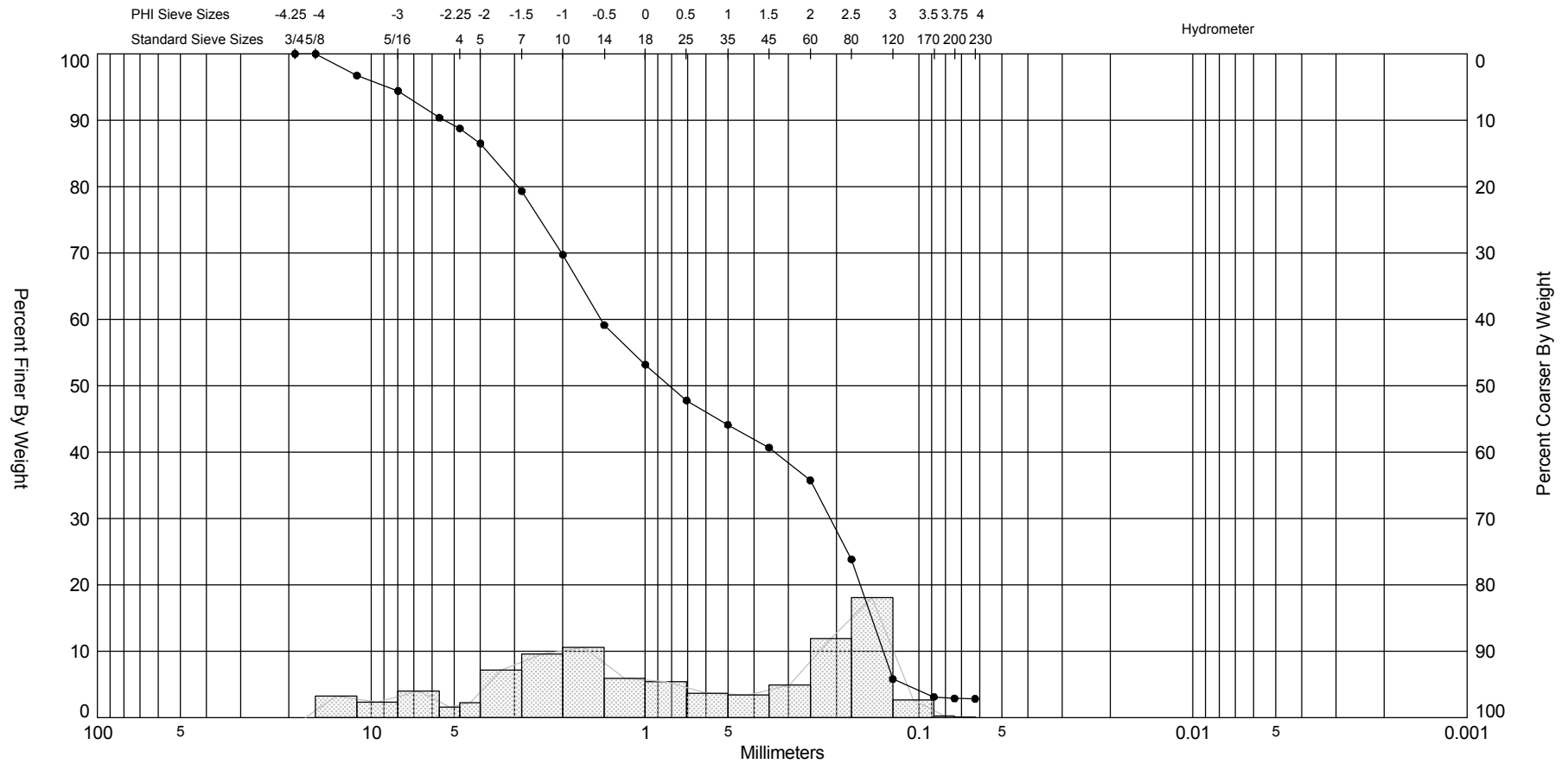
SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
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Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	JF
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,935
												Northing (Y, ft):	1,143,913
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

SIEVE ANALYSIS ANNA MARIA 2007 VIBRACORES.GPJ FL DEP ROSS.GDT 10/26/07



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

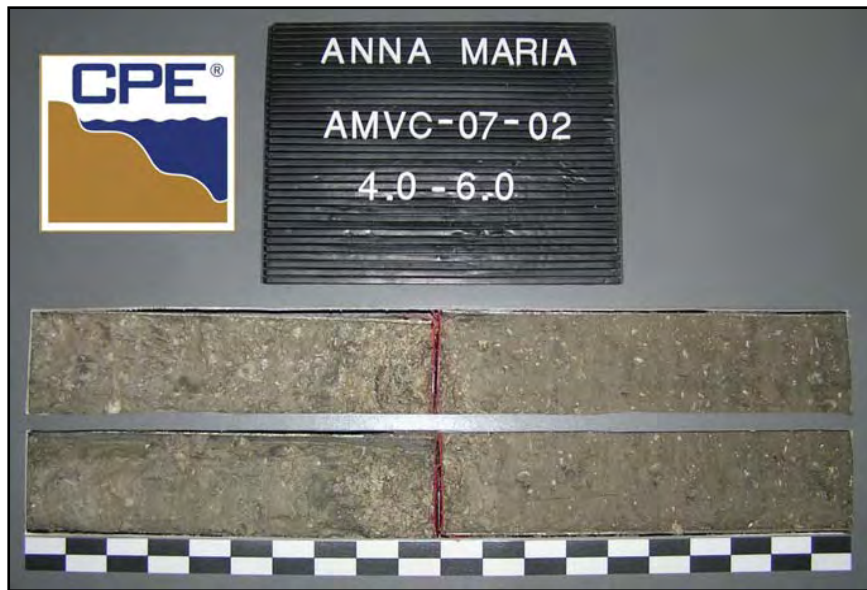
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
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Comments:												Analysis Date:	03-08-07
Depths and elevations based on measured values												Analyzed By:	MC
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	430,935
												Northing (Y, ft):	1,143,913
												Horizontal System:	NAD 1983
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APPENDIX 5

2007 CPE VIBRACORE PHOTOGRAPHS







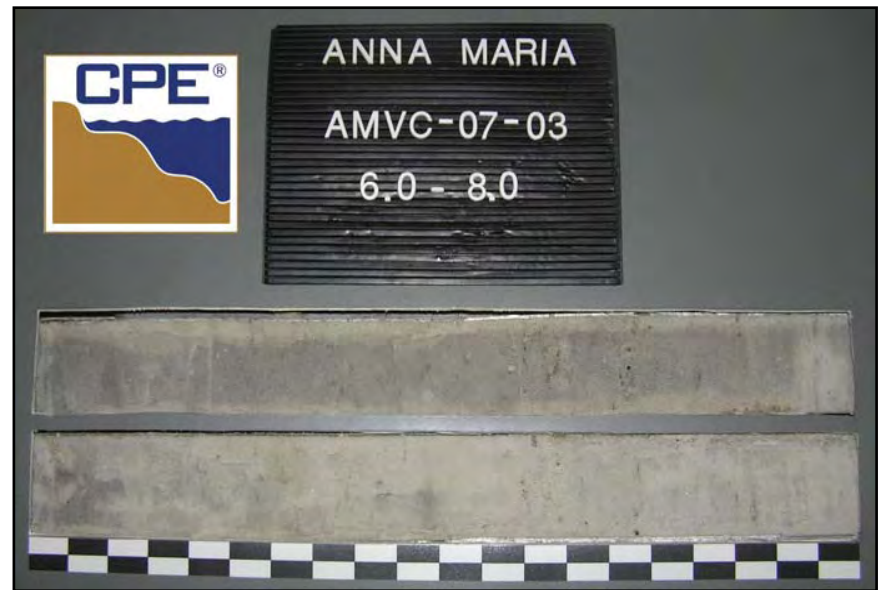
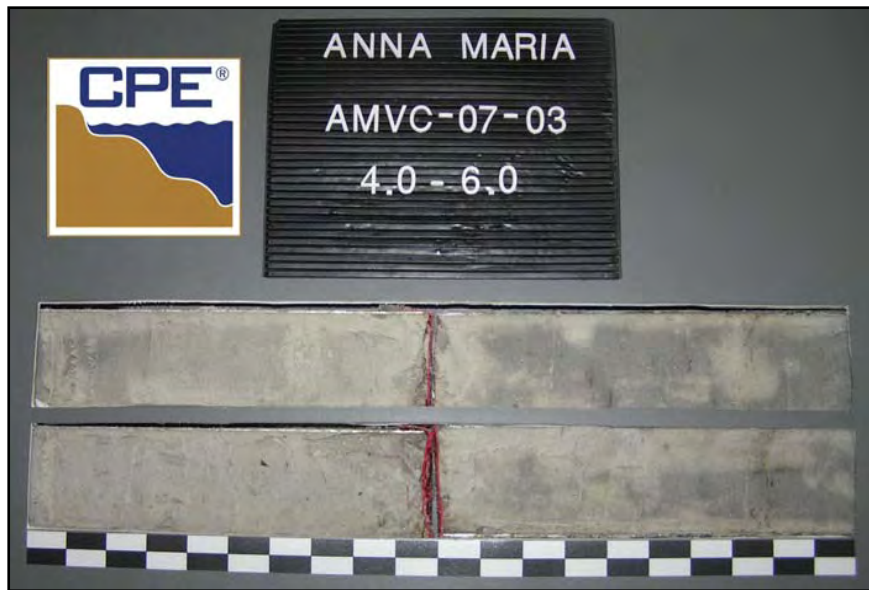
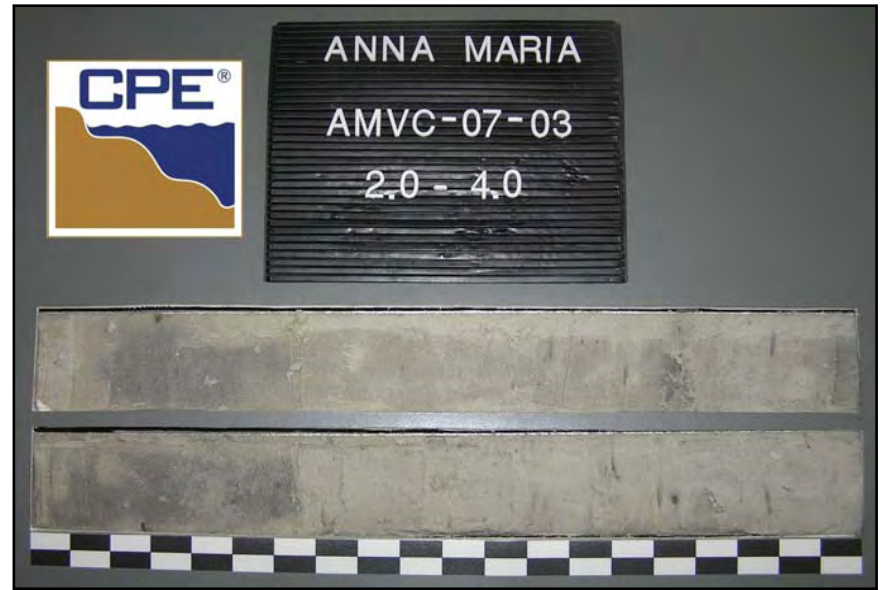


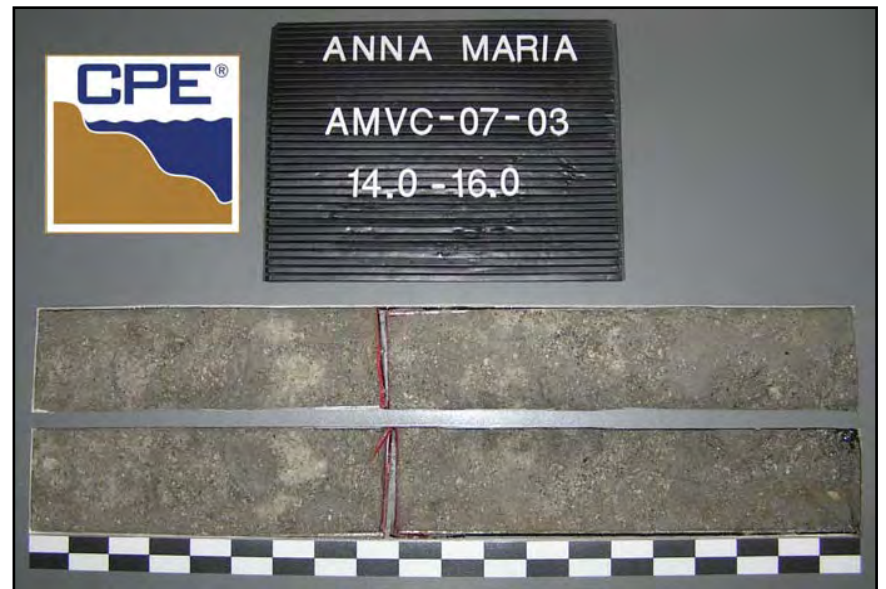
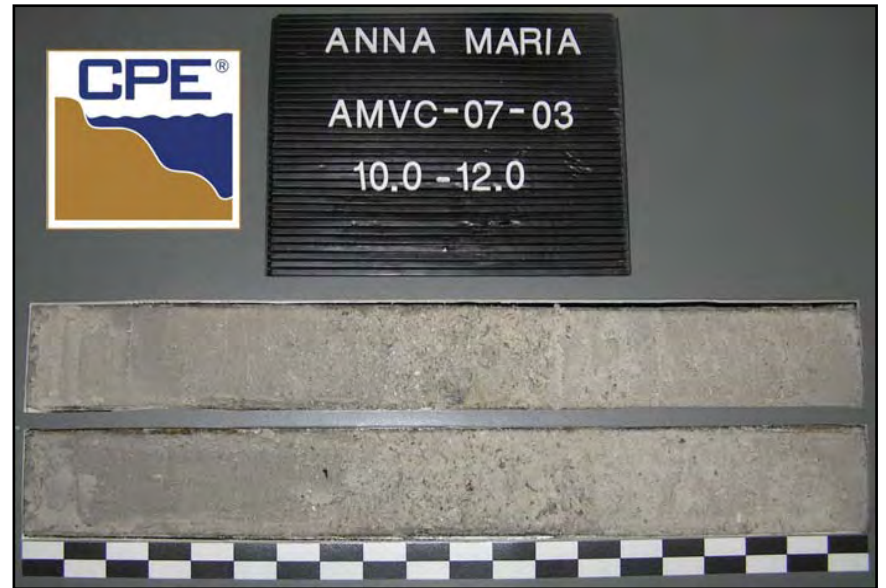
ANNA MARIA

AMVC-07-02

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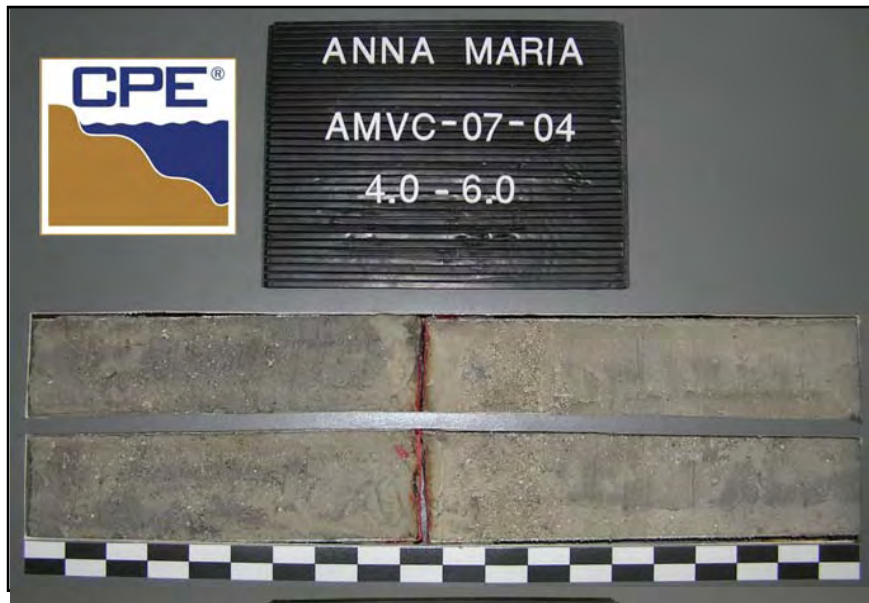


ANNA MARIA

AMVC-07-03

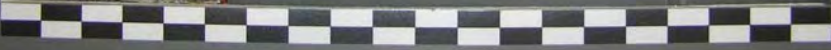
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ANNA MARIA
AMVC-07-04
8.0 - 8.6



















ANNA MARIA
AMVC-07-08
8.0 - 8.5









ANNA MARIA

AMVC-07-09

16.0 - 16.8







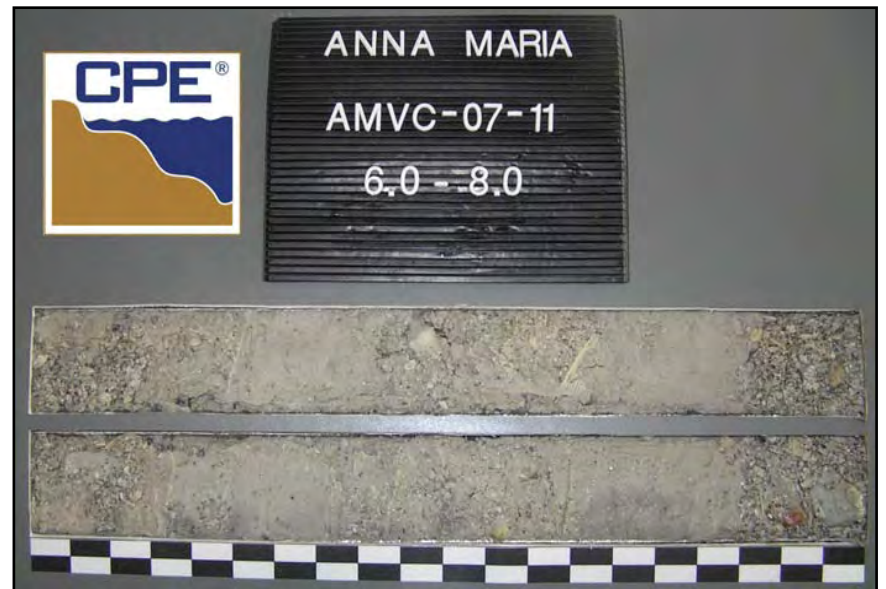


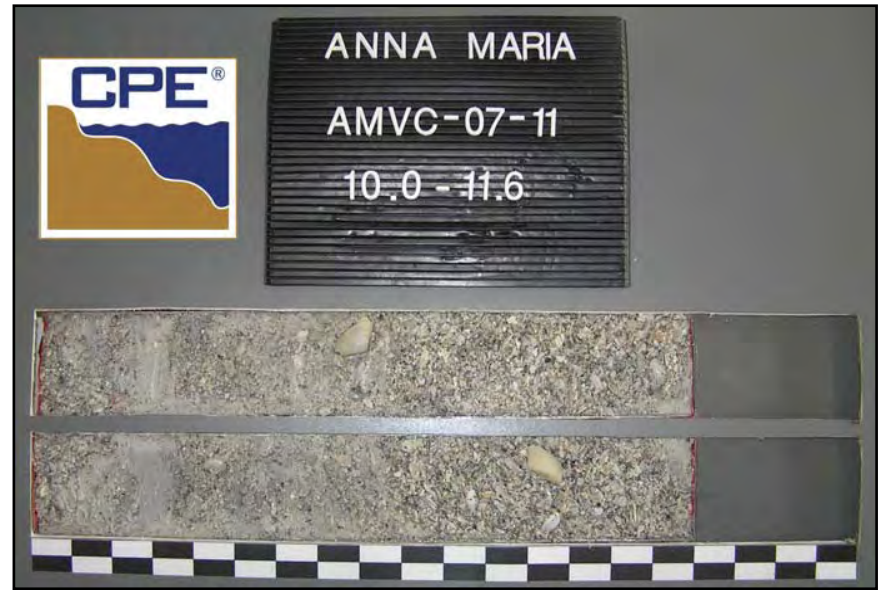
ANNA MARIA

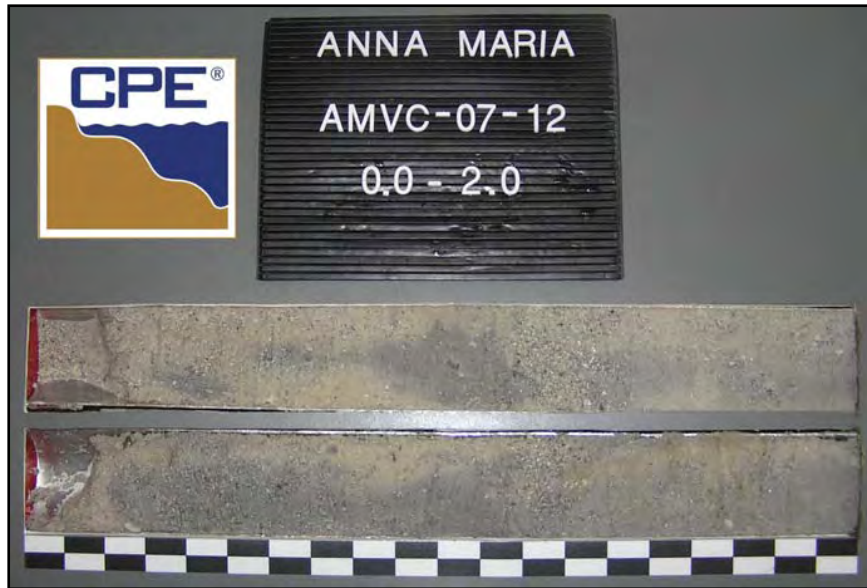
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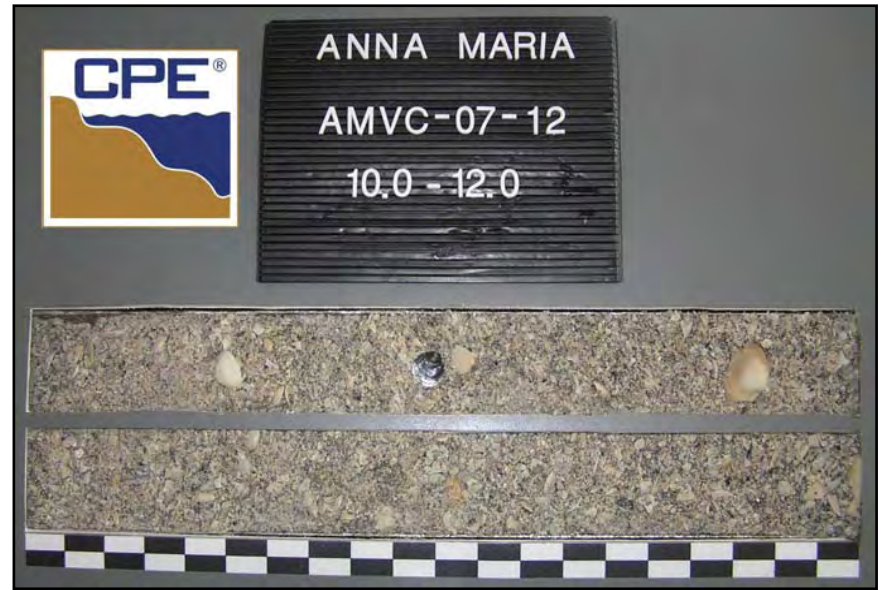
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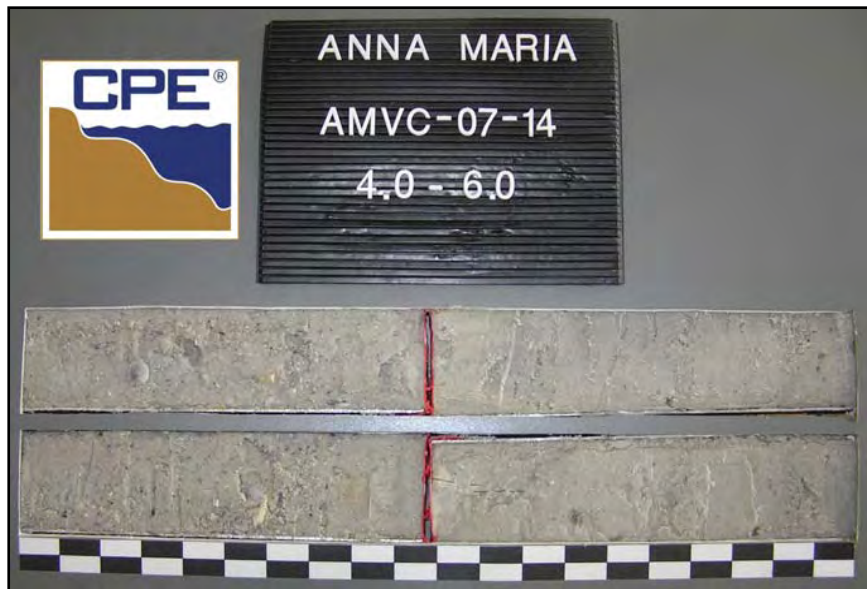




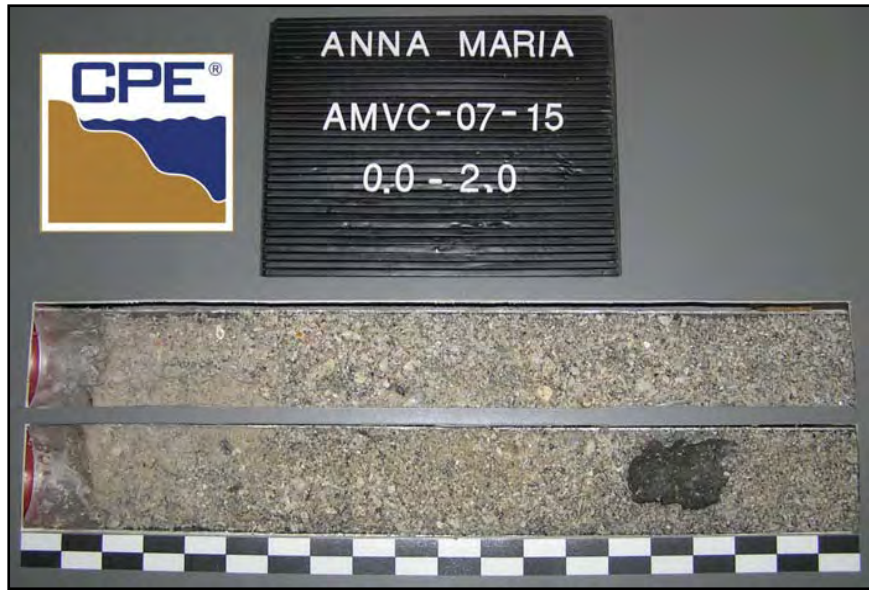




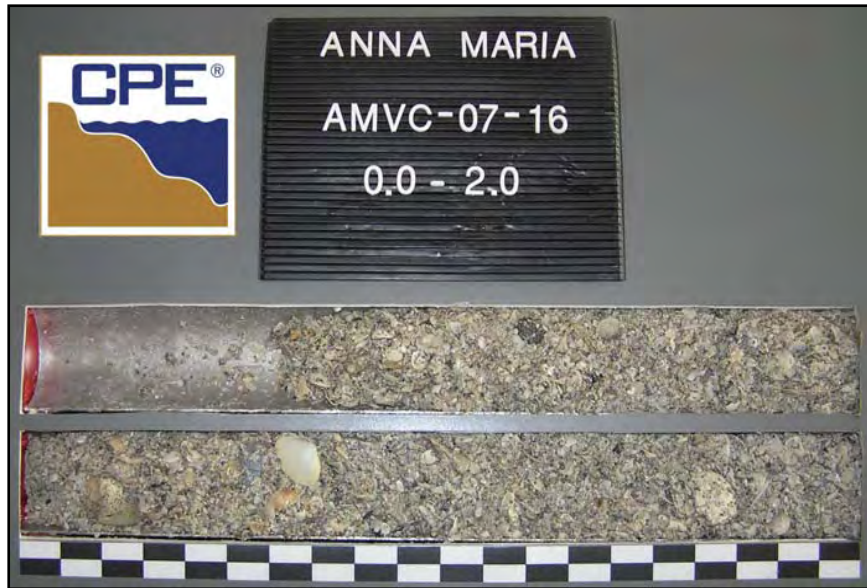














ANNA MARIA

AMVC-07-16

8.0 - 9.3













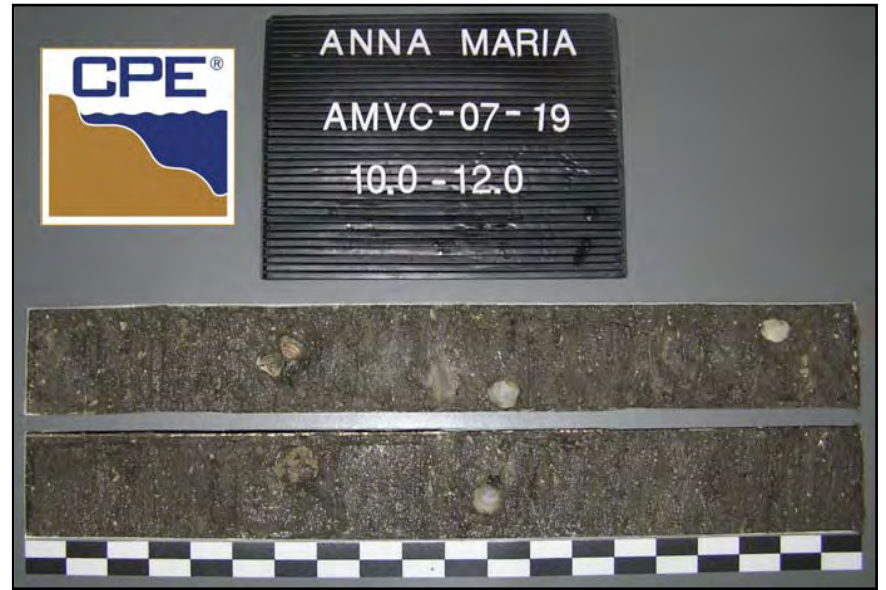
ANNA MARIA

AMVC-07-18

16.0 - 16.5











APPENDIX 6

ALT. 6F-4 CHANNEL COMPOSITE SUMMARY TABLES

**COMPOSITE SUMMARY TABLE
LONGBOAT PASS MAINTENANCE DREDGING PROJECT**

VIBRACORE I. D.	EFFECTIVE LENGTH (FT)	PHI MEDIAN	MEDIAN (mm)	MEAN (mm)	PHI MEAN	PHI SORTING	% SILT	% CARBONATE	WET MUNSELL COLOR
AMVC-07-01 Composite									
AMVC-07-03 Composite									
AMVC-07-04 Composite									
AMVC-07-05 Composite									
AMVC-07-06 Composite									
AMVC-07-07 Composite									
AMVC-07-08 Composite									
AMVC-07-09 Composite									
AMVC-07-10 Composite									
AMVC-07-11 Composite	6.2	2.32	0.20	0.30	1.76	1.46	1.12	ND	7
AMVC-07-12 Composite									
AMVC-07-13 Composite									
AMVC-07-14 Composite									
AMVC-07-15 Composite	2.9	0.51	0.70	0.78	0.35	1.79	1.97	ND	6
AMVC-07-17 Composite									
AMVC-07-18 Composite									
AMVC-07-19 Composite									
AMVC-07-20 Composite									
ALT. 6F-4 CHANNEL	9.1	2.09	0.23	0.40	1.31	1.70	1.39	ND	7

CUMULATIVE PERCENTS AND COMPUTED DISTRIBUTIONS LONGBOAT PASS MAINTENANCE DREDGING PROJECT (1 of 2)

SAMPLE I. D.	ELEVATION (NAVD 88 FT)	EFFECTIVE LENGTH (FT)	PHI MEDIAN	MEDIAN (mm)	MEAN (mm)	PHI MEAN	PHI SORTING	% SILT	% CARBONATE	WET MUNSELL COLOR	PHI SIZES														PAN						
											-4.25	-4.0	-3.50	-3.0	-2.50	-2.25	-2.0	-1.5	-1.0	-0.5	0.0	0.5	1.0	1.5		2.0	2.5	3.0	3.5	3.75	4.00
AMVC-07-01#1	-8.6	0.0	2.19	0.22	0.33	1.62	1.38	1.74		7	0.00	0.00	0.00	0.00	0.33	0.70	1.37	3.38	7.71	12.71	16.51	20.76	25.36	30.07	39.24	67.40	95.78	98.19	98.25	98.26	99.95
AMVC-07-01#2	-9.5	0.0	2.67	0.16	0.17	2.53	0.68	2.33		7	0.00	0.00	0.00	0.00	0.00	0.17	0.18	0.29	0.63	1.24	1.83	2.63	3.65	4.99	8.36	31.12	86.47	97.22	97.58	97.67	99.83
AMVC-07-01#3	-14.1	0.0	2.25	0.21	0.30	1.74	1.27	1.88		7	0.00	0.00	0.00	0.00	0.00	0.05	0.32	1.50	4.63	9.43	13.99	18.92	23.84	28.41	36.16	63.59	95.68	97.95	98.04	98.12	99.92
AMVC-07-01 Composite												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-03#1	-11	0.0	2.69	0.15	0.16	2.66	0.32	1.14		8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.04	0.06	0.08	0.15	0.49	27.06	88.08	98.53	98.82	98.86	100.00
AMVC-07-03#2	-15	0.0	2.72	0.15	0.15	2.69	0.33	1.21		8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.07	0.10	0.18	0.31	0.94	22.31	86.37	98.44	98.75	98.79	100.00
AMVC-07-03#3	-19	0.0	2.37	0.19	0.20	2.30	0.64	1.35		8	0.00	0.00	0.00	0.00	0.00	0.35	0.35	0.52	0.81	1.21	1.62	2.21	3.14	5.46	14.31	62.94	95.61	98.58	98.64	98.65	100.00
AMVC-07-03 Composite												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-04#1	-14.7	0.0	2.63	0.16	0.17	2.58	0.41	1.17		8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.04	0.12	0.24	0.48	0.75	1.18	3.45	36.68	89.79	98.44	98.81	98.83	100.00
AMVC-07-04#2	-17.7	0.0	2.66	0.16	0.16	2.62	0.35	1.09		8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.10	0.21	0.41	0.67	1.88	30.98	90.11	98.70	98.90	98.91	100.00
AMVC-07-04 Composite												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-05#1	-5.8	0.0	2.76	0.15	0.15	2.74	0.39	1.39		7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.18	0.33	0.41	0.51	0.61	0.71	0.98	14.63	81.81	98.52	98.59	98.61	100.00
AMVC-07-05#2	-7.6	0.0	2.27	0.21	0.59	0.75	2.34	2.63		7	0.00	0.00	3.17	4.82	9.17	11.61	15.83	23.84	32.07	38.14	41.60	44.49	46.17	47.16	48.14	51.53	81.90	96.39	97.23	97.37	99.95
AMVC-07-05#3	-8.3	0.0	2.88	0.14	0.13	2.90	0.32	3.41		6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.04	0.07	0.10	0.18	0.22	0.31	0.50	2.61	65.13	93.78	96.30	96.59	99.96
AMVC-07-05#4	-12.2	0.0	2.94	0.13	0.13	2.95	0.30	1.59		7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.06	0.09	0.12	0.15	0.27	3.09	56.47	97.33	98.30	98.41	99.92
AMVC-07-05 Composite												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-06#1	-8.8	0.0	2.78	0.15	0.15	2.76	0.40	1.29		7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.18	0.30	0.47	0.58	0.68	0.80	1.13	13.06	80.10	98.34	98.67	98.71	100.00
AMVC-07-06#2	-10.8	0.0	2.73	0.15	0.15	2.70	0.37	2.99		6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.09	0.17	0.27	0.35	0.48	0.80	23.36	82.43	96.07	96.86	97.01	100.00
AMVC-07-06#3	-13.0	0.0	2.79	0.14	0.15	2.78	0.45	1.99		7	0.00	0.00	0.00	0.00	0.00	0.26	0.41	0.44	0.47	0.52	0.62	0.67	0.75	0.83	1.02	6.70	80.34	97.12	97.92	98.01	100.00
Cut to -11.6 ft NAVD												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-06 Composite												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-07#1	-11.7	0.0	2.11	0.23	0.40	1.33	1.78	1.35		8	0.00	0.00	0.00	3.13	5.60	6.47	7.03	11.26	15.23	19.15	22.41	25.72	29.09	33.28	44.24	70.67	92.78	98.24	98.59	98.65	100.00
AMVC-07-07#2	-13.5	0.0	0.96	0.51	0.75	0.42	2.03	1.08		7	0.00	0.00	1.97	4.89	10.01	12.35	16.20	23.30	30.14	36.98	41.92	46.23	50.33	54.89	64.65	83.44	96.09	98.70	98.89	98.92	100.00
AMVC-07-07#3	-14.8	0.0	2.36	0.19	0.25	1.99	1.38	1.39		8	0.00	0.00	1.10	1.88	2.92	3.44	3.63	5.31	6.85	8.24	9.30	10.46	11.77	13.72	20.13	61.22	91.46	98.15	98.55	98.61	99.99
AMVC-07-07#4	-17.3	0.0	3.00	0.13	0.14	2.79	0.93	6.76		5	0.00	0.00	0.00	0.00	0.57	0.90	1.18	1.68	2.09	2.59	2.92	3.44	3.88	4.38	5.34	11.56	50.17	89.06	92.73	93.24	99.90
Cut to -11.6 ft NAVD												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-07 Composite												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-08#1	-6.3	0.0			1.52	-0.60	2.07	2.06		7	0.00	0.00	5.81	14.30	24.72	29.05	32.19	39.23	46.47	53.51	58.73	64.40	69.22	74.20	82.44	92.86	96.97	97.72	97.88	97.94	99.90
AMVC-07-08#2	-7.1	0.0	1.68	0.31	0.48	1.06	1.61	1.35		8	0.00	0.00	0.00	1.29	2.45	4.09	5.47	9.66	14.42	20.65	25.38	31.82	38.23	45.28	58.31	82.23	96.93	98.57	98.64	98.65	99.91
AMVC-07-08#3	-11	0.0	0.65	0.64	0.75	0.41	1.70	2.44		7	0.00	0.00	1.90	3.96	6.14	7.65	9.11	13.86	20.59	30.45	36.89	46.94	57.02	66.41	76.70	87.49	95.87	97.45	97.52	97.56	99.86
AMVC-07-08#4	-12.5	0.0	1.35	0.39	0.44	1.19	1.03	1.20		8	0.00	0.00	0.00	0.00	0.45	0.77	1.15	2.18	3.57	6.64	11.35	20.93	34.93	56.61	79.88	91.76	97.96	98.76	98.80	98.80	100.00
AMVC-07-08 Composite												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-09#1	-15.7	0.0	2.45	0.18	0.19	2.40	0.52	1.89		8	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.37	0.51	0.74	0.92	1.24	1.70	2.68	7.92	54.26	96.02	98.09	98.11	98.11	99.93
AMVC-07-09#2	-18.7	0.0	2.69	0.15	0.16	2.66	0.37	1.25		8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.13	0.21	0.25	0.33	0.41	0.55	1.01	26.49	88.45	98.25	98.72	98.75	100.00
AMVC-07-09#3	-21.7	0.0	2.62	0.16	0.17	2.53	0.52	1.14		8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.31	0.56	0.87	1.35	2.06	3.15	6.45	36.27	91.94	98.78	98.85	98.86	99.99
AMVC-07-09#4	-24.3	0.0	2.06	0.24	0.55	0.87	2.11	0.83		7	0.00	0.00	1.45	4.46	7.86	9.06	11.44	19.00	25.93	32.85	37.17	40.54	42.82	44.78	48.14	62.67	93.68	99.03	99.16	99.17	100.00
AMVC-07-09#5	-26.4	0.0	2.59	0.17	0.18	2.51	0.57	1.96		7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.30	0.56	0.93	1.58	2.49	3.74	6.65	41.88	87.01	97.04	97.93	98.04	99.90
AMVC-07-09 Composite												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			
AMVC-07-10#1	-10.9	0.0	2.49	0.18	0.26	1.97	1.32	1.20		7	0.00	0.00	0.00	0.33	1.16	1.84	2.46	4.04	5.92	7.98	10.10	12.77	16.26	20.62	27.96	50.58	92.06	98.71	98.78	98.80	99.92
AMVC-07-10#2	-13.4	0.0	1.09	0.47	0.64	0.65	1.98	1.30		6	0.00	0.00	0.84	1.97	6.37	8.05	11.40	19.70	26.53	34.20	40.37	45.19	49.38	52.80	57.26	71.77	95.79	98.63	98.69	98.70	99.94
AMVC-07-10#3	-15.2	0.0	2.72	0.15	0.17	2.52	0.87	1.16		8	0.00	0.07	0.22	0.49	0.49	0.49	0.49	0.96	1.66	2.57	3.33	4.26	5.26	6.64	9.30	23.03	85.74	98.58	98.80	98.84	99.99
AMVC-07-10#4	-18.2	0.0	2.77	0.15	0.15	2.75	0.42	1.42		7	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.14	0.28	0.39	0.49	0.62	0.74	0.91	1.31	12.98	80.93	97.49	98.52	98.58	100.00
AMVC-07-10#5	-22.0	0.0	2.80	0.14	0.17	2.58	1.02	3.30		6	0.00	0.00	0.00	0.38	0.81	0.86	0.99	1.57	2.22	2.98	3.67	4.67	5.80	7.14	11.50	28.82	63.65	91.48	96.11	96.70	100.00
AMVC-07-10 Composite												VIBRACORE NOT USED IN CHANNEL COMPOSITES																			

CUMULATIVE PERCENTS AND COMPUTED DISTRIBUTIONS LONGBOAT PASS MAINTENANCE DREDGING PROJECT (2 of 2)

SAMPLE I. D.	ELEVATION (NAVD 88 FT)	EFFECTIVE LENGTH (FT)	PHI MEDIAN	MEDIAN (mm)	MEAN (mm)	PHI MEAN	PHI SORTING	% SILT	% CARBONATE	WET MUNSELL COLOR	PHI SIZES																	PAN			
											-4.25	-4.0	-3.50	-3.0	-2.50	-2.25	-2.0	-1.5	-1.0	-0.5	0.0	0.5	1.0	1.5	2.0	2.5	3.0		3.5	3.75	4.00
AMVC-07-11#1	-9.2	3.9	2.34	0.20	0.27	1.91	1.22	1.03	ND	7	0.00	0.00	0.00	0.00	0.00	0.41	0.73	2.33	4.91	8.09	11.01	14.25	17.85	22.10	30.87	58.83	95.03	98.88	98.94	98.97	99.89
AMVC-07-11#2	-11.9	1.3	2.57	0.17	0.19	2.37	0.85	1.28	ND	8	0.00	0.00	0.00	0.24	0.43	0.99	1.21	1.50	1.99	2.47	2.95	3.60	4.63	6.52	12.62	42.70	92.75	98.59	98.69	98.72	99.90
AMVC-07-11#3	-13.0	0.9	0.30	0.81	0.87	0.20	2.02	1.29	ND	6	0.00	0.00	2.04	5.24	12.28	14.67	17.92	24.79	32.01	40.06	46.60	52.19	57.48	62.41	69.98	82.42	97.01	98.64	98.68	98.71	99.92
AMVC-07-11#4	-14.0	0.1	2.02	0.25	0.26	1.93	0.59	1.08	ND	8	0.00	0.00	0.00	0.00	0.23	0.23	0.38	0.57	0.98	1.53	2.27	2.82	3.72	6.81	48.07	94.84	98.89	98.91	98.92	99.99	
Cut to -13.6 ft NAVD																															
AMVC-07-11 Composite		6.2	2.32	0.20	0.30	1.76	1.46	1.12	ND	7	0.00	0.00	0.30	0.81	1.88	2.60	3.32	5.39	8.17	11.45	14.35	17.34	20.60	24.44	33.00	59.45	94.90	98.78	98.85	98.88	99.90
AMVC-07-12#1	-10.1	0.0	2.33	0.20	0.26	1.95	1.35	1.05		8	0.00	0.00	1.14	2.37	2.91	3.52	3.88	4.94	6.31	7.80	8.86	10.19	11.93	14.33	21.70	63.94	96.98	98.91	98.94	98.95	99.95
AMVC-07-12#2	-13.2	0.0	0.95	0.52	0.70	0.51	1.92	1.40		7	0.00	0.00	2.08	3.30	8.98	11.22	13.67	18.94	24.85	32.14	38.40	44.57	50.59	56.71	66.57	82.27	97.11	98.49	98.56	98.60	99.99
AMVC-07-12#3	-14.7	0.0	2.15	0.23	0.30	1.72	1.24	1.15		8	0.00	0.00	0.00	0.00	0.77	1.17	1.74	4.16	6.17	8.50	10.79	14.27	19.06	26.31	39.19	74.82	97.51	98.81	98.85	98.85	99.87
AMVC-07-12 Composite		VIBRACORE NOT USED IN CHANNEL COMPOSITES																													
AMVC-07-13#1	-6.4	0.0			1.69	-0.76	2.11	0.85		7	0.00	0.00	8.27	18.02	27.12	29.96	34.29	43.67	50.65	58.11	63.67	69.15	73.49	77.37	81.96	91.43	98.40	99.11	99.14	99.15	99.88
AMVC-07-13#2	-7.5	0.0	2.34	0.20	0.24	2.07	1.05	1.06		8	0.00	0.00	0.00	0.00	0.63	1.08	1.36	2.32	3.74	5.38	6.86	8.52	10.45	13.12	19.64	64.50	96.89	98.89	98.93	98.94	100.00
AMVC-07-13#3	-12.5	0.0	2.63	0.16	0.17	2.57	0.40	1.01		8	0.00	0.00	0.00	0.00	0.07	0.07	0.09	0.31	0.31	0.38	0.47	0.63	0.95	2.45	35.14	93.84	98.98	98.99	98.99	99.99	
AMVC-07-13#4	-16.4	0.0			1.24	-0.31	1.72	2.32		7	0.00	0.00	0.88	6.62	11.61	14.45	19.11	28.33	36.80	46.88	53.94	62.37	70.15	79.62	88.95	93.92	96.94	97.59	97.66	97.68	99.84
AMVC-07-13 Composite		VIBRACORE NOT USED IN CHANNEL COMPOSITES																													
AMVC-07-14#1	-6.9	0.0	2.35	0.20	0.28	1.86	1.25	1.05		7	0.00	0.00	0.00	0.00	0.25	0.31	0.84	2.69	4.41	7.30	10.59	14.91	20.30	27.31	38.04	55.21	93.87	98.87	98.95	98.95	99.87
AMVC-07-14#2	-7.8	0.0			1.19	-0.25	2.00	0.88		6	0.00	0.00	3.82	8.60	17.19	19.71	23.49	31.15	38.50	47.28	54.79	61.58	67.96	74.19	80.75	87.31	97.04	99.06	99.11	99.12	99.92
AMVC-07-14#3	-10.4	0.0	2.55	0.17	0.19	2.36	0.84	0.83		8	0.00	0.00	0.00	0.00	0.40	0.69	0.92	1.35	1.95	2.62	3.20	3.96	5.09	6.97	12.59	44.67	93.26	99.04	99.14	99.17	99.79
AMVC-07-14#4	-13.4	0.0	2.29	0.20	0.26	1.97	1.12	2.13		8	0.00	0.00	0.00	0.00	0.13	0.58	1.48	2.95	4.96	6.85	8.25	10.03	12.34	15.38	24.32	68.62	94.82	97.78	97.86	97.87	99.99
AMVC-07-14#5	-18.6	0.0	2.24	0.21	0.40	1.34	1.83	1.78		7	0.00	0.00	0.00	0.75	4.93	5.62	7.74	12.27	16.67	21.82	24.93	27.97	30.51	32.97	37.64	63.69	93.52	97.98	98.09	98.22	99.90
AMVC-07-14 Composite		VIBRACORE NOT USED IN CHANNEL COMPOSITES																													
AMVC-07-15#1	-12.7	2.3	0.15	0.90	0.95	0.07	1.77	1.93	ND	6	0.00	0.00	1.45	5.18	9.08	10.65	13.97	20.41	28.22	37.95	47.21	56.61	65.67	73.21	80.54	88.31	96.64	97.94	98.00	98.07	99.87
AMVC-07-15#2	-15.6	0.6	2.01	0.25	0.37	1.44	1.40	2.11	ND	7	0.00	0.00	0.00	0.00	0.61	1.00	1.88	3.98	7.44	12.43	17.97	24.22	31.00	38.48	49.40	71.51	94.99	97.80	97.87	97.89	99.97
AMVC-07-15#3	-19.2	0.0	2.38	0.19	0.21	2.22	0.74	1.88		8	0.00	0.00	0.00	0.00	0.00	0.08	0.08	0.40	0.91	1.48	2.28	3.64	6.08	10.19	22.42	59.12	94.80	98.06	98.11	98.12	99.84
Cut to -13.6 ft NAVD																															
AMVC-07-15 Composite		2.9	0.51	0.70	0.78	0.35	1.79	1.97	ND	6	0.00	0.00	1.15	4.11	7.33	8.65	11.47	17.01	23.92	32.67	41.16	49.91	58.50	66.02	74.10	84.83	96.30	97.91	97.97	98.03	99.89
AMVC-07-17#1	-8.9	0.0	2.67	0.16	0.16	2.61	0.45	1.39		7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.08	0.18	0.33	0.63	1.14	1.99	4.00	30.90	87.92	97.83	98.56	98.61	100.00
AMVC-07-17 Composite		VIBRACORE NOT USED IN CHANNEL COMPOSITES																													
AMVC-07-18#1	-5.5	0.0	2.46	0.18	0.20	2.33	0.66	1.66		7	0.00	0.00	0.00	0.00	0.00	0.03	0.16	0.34	0.79	1.39	2.77	4.94	8.35	15.50	52.94	93.44	98.13	98.31	98.34	100.00	
AMVC-07-18#2	-6.8	0.0	2.14	0.23	0.35	1.51	1.45	1.75		7	0.00	0.00	0.00	0.00	0.25	0.67	1.40	3.46	8.01	15.06	19.73	25.06	29.74	34.96	43.13	67.51	94.33	97.98	98.21	98.25	99.86
AMVC-07-18#3	-8.2	0.0			1.04	-0.05	1.66	2.68		6	0.00	0.00	0.00	1.07	3.39	4.46	6.61	16.97	34.17	50.46	58.98	66.73	71.11	74.30	77.53	85.49	95.26	97.11	97.27	97.32	99.88
AMVC-07-18 Composite		VIBRACORE NOT USED IN CHANNEL COMPOSITES																													
AMVC-07-19#1	-6.1	0.0	2.43	0.19	0.23	2.15	1.00	1.86		7	0.00	0.00	0.00	0.00	0.27	0.32	0.71	1.53	2.78	4.44	5.95	7.67	9.73	13.10	20.29	55.23	93.77	97.90	98.10	98.14	99.94
AMVC-07-19#2	-8.4	0.0	1.53	0.35	0.59	0.76	1.89	2.76		7	0.00	0.00	0.00	0.82	2.44	4.27	5.98	14.04	24.77	34.99	40.89	44.87	47.30	49.73	53.71	71.46	93.23	96.82	97.12	97.24	99.94
AMVC-07-19#3	-11.5	0.0	2.58	0.17	0.17	2.55	0.36	2.27		6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.08	0.14	0.22	0.29	0.37	0.49	1.07	42.47	92.46	97.39	97.69	97.73	100.00
AMVC-07-19 Composite		VIBRACORE NOT USED IN CHANNEL COMPOSITES																													
AMVC-07-20#1	-6.3	0.0	2.43	0.19	0.21	2.28	0.82	1.15		8	0.00	0.00	0.00	0.00	0.00	0.15	0.22	0.59	1.44	2.91	4.20	5.48	6.66	8.08	11.58	56.55	94.34	98.67	98.83	98.85	99.97
AMVC-07-20#2	-9.7	0.0	2.57	0.17	0.21	2.26	1.10	2.30		6	0.00	0.00	0.00	0.00	0.11	0.83	1.87	3.21	4.79	6.32	6.91	7.51	8.01	8.67	10.65	43.14	92.60	97.35	97.63	97.70	99.87
AMVC-07-20#3	-10.9	0.0	0.29	0.82	0.81	0.31	2.05	2.83		5	0.00	0.00	3.27	5.59	9.62	11.23	13.50	20.68	30.27	40.87	46.82	52.22	55.88	59.31	64.25	76.15	94.20	96.88	97.12	97.17	99.78
AMVC-07-20 Composite		VIBRACORE NOT USED IN CHANNEL COMPOSITES																													

APPENDIX 7

ALT. 6F-4 CHANNEL COMPOSITE GRANULARMETRIC REPORTS

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
A CB&I Company
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391-8102

Project Name: Longboat Pass Alt. 6F-4 Channel

Sample Name: AMVC-07-11 COMP

Analysis Date: 01-22-14

Analyzed By: KM

Easting (ft): 430,620	Northing (ft): 1,129,814	Coordinate System: Florida State Plane West	Elevation (ft):
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USCS: SW	Munsell:	Comments: COMPOSITE
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Dry Weight (g): 100.00	Wash Weight (g): 100.00	Pan Retained (g): 1.02	Sieve Loss (%): 0.10	Fines (%): #200 - 1.15 #230 - 1.12	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	0.30	0.30	0.30	0.30
5/16"	-3.00	8.00	0.51	0.51	0.81	0.81
3.5	-2.50	5.66	1.07	1.07	1.88	1.88
4	-2.25	4.76	0.72	0.72	2.60	2.60
5	-2.00	4.00	0.72	0.72	3.32	3.32
7	-1.50	2.83	2.07	2.07	5.39	5.39
10	-1.00	2.00	2.78	2.78	8.17	8.17
14	-0.50	1.41	3.28	3.28	11.45	11.45
18	0.00	1.00	2.90	2.90	14.35	14.35
25	0.50	0.71	2.99	2.99	17.34	17.34
35	1.00	0.50	3.26	3.26	20.60	20.60
45	1.50	0.35	3.84	3.84	24.44	24.44
60	2.00	0.25	8.56	8.56	33.00	33.00
80	2.50	0.18	26.45	26.45	59.45	59.45
120	3.00	0.13	35.45	35.45	94.90	94.90
170	3.50	0.09	3.88	3.88	98.78	98.78
200	3.75	0.07	0.07	0.07	98.85	98.85
230	4.00	0.06	0.03	0.03	98.88	98.88

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.01	2.85	2.72	2.32	1.53	0.28	-1.59
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.76	0.30	1.46	-1.64	4.89	

GRANULARMETRIC REPORT LONGBOAT_PASS_ALT_6F-4_COMP.GPJ_JPBRAZIL.GDT 1/22/14

Granularmetric Report

Depths and elevations based on measured values



Coastal Planning & Engineering
A CB&I Company
2481 NW Boca Raton Blvd.
Boca Raton, FL 33431
ph (561) 391-8102

Project Name: Longboat Pass Alt. 6F-4 Channel

Sample Name: AMVC-07-15 COMP

Analysis Date: 01-22-14

Analyzed By: KM

Easting (ft): 432,201	Northing (ft): 1,130,972	Coordinate System: Florida State Plane West	Elevation (ft):
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USCS: SW	Munsell:	Comments: COMPOSITE
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Dry Weight (g): 100.00	Wash Weight (g): 100.00	Pan Retained (g): 1.86	Sieve Loss (%): 0.11	Fines (%): #200 - 2.03 #230 - 1.97	Organics (%):	Carbonates (%):	Shell Hash (%):
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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
7/16"	-3.50	11.31	1.15	1.15	1.15	1.15
5/16"	-3.00	8.00	2.96	2.96	4.11	4.11
3.5	-2.50	5.66	3.22	3.22	7.33	7.33
4	-2.25	4.76	1.32	1.32	8.65	8.65
5	-2.00	4.00	2.82	2.82	11.47	11.47
7	-1.50	2.83	5.54	5.54	17.01	17.01
10	-1.00	2.00	6.91	6.91	23.92	23.92
14	-0.50	1.41	8.75	8.75	32.67	32.67
18	0.00	1.00	8.49	8.49	41.16	41.16
25	0.50	0.71	8.75	8.75	49.91	49.91
35	1.00	0.50	8.59	8.59	58.50	58.50
45	1.50	0.35	7.52	7.52	66.02	66.02
60	2.00	0.25	8.08	8.08	74.10	74.10
80	2.50	0.18	10.73	10.73	84.83	84.83
120	3.00	0.13	11.47	11.47	96.30	96.30
170	3.50	0.09	1.61	1.61	97.91	97.91
200	3.75	0.07	0.06	0.06	97.97	97.97
230	4.00	0.06	0.06	0.06	98.03	98.03

Shell Hash calculated from visual estimate of shell <4.75mm and >2.8mm.

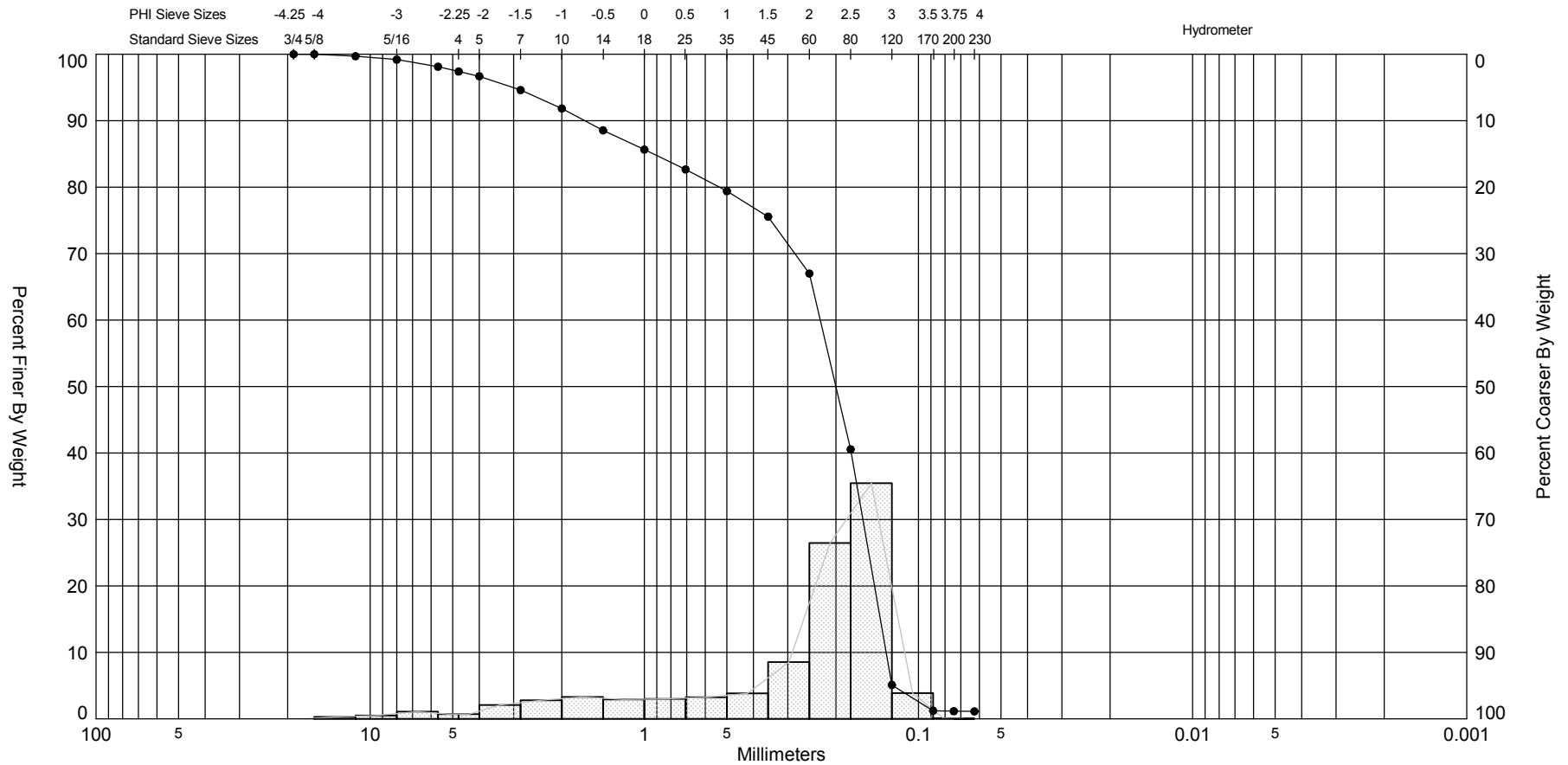
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.94	2.46	2.04	0.51	-0.94	-1.59	-2.86
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.35	0.78	1.79	-0.31	2.13	

GRANULARMETRIC REPORT LONGBOAT_PASS_ALT_6F-4_COMP.GPJ_JPBRAZIL.GDT 1/22/14


APPENDIX 8

ALT. 6F-4 CHANNEL COMPOSITE GRAIN SIZE DISTRIBUTION
CURVES/HISTOGRAMS

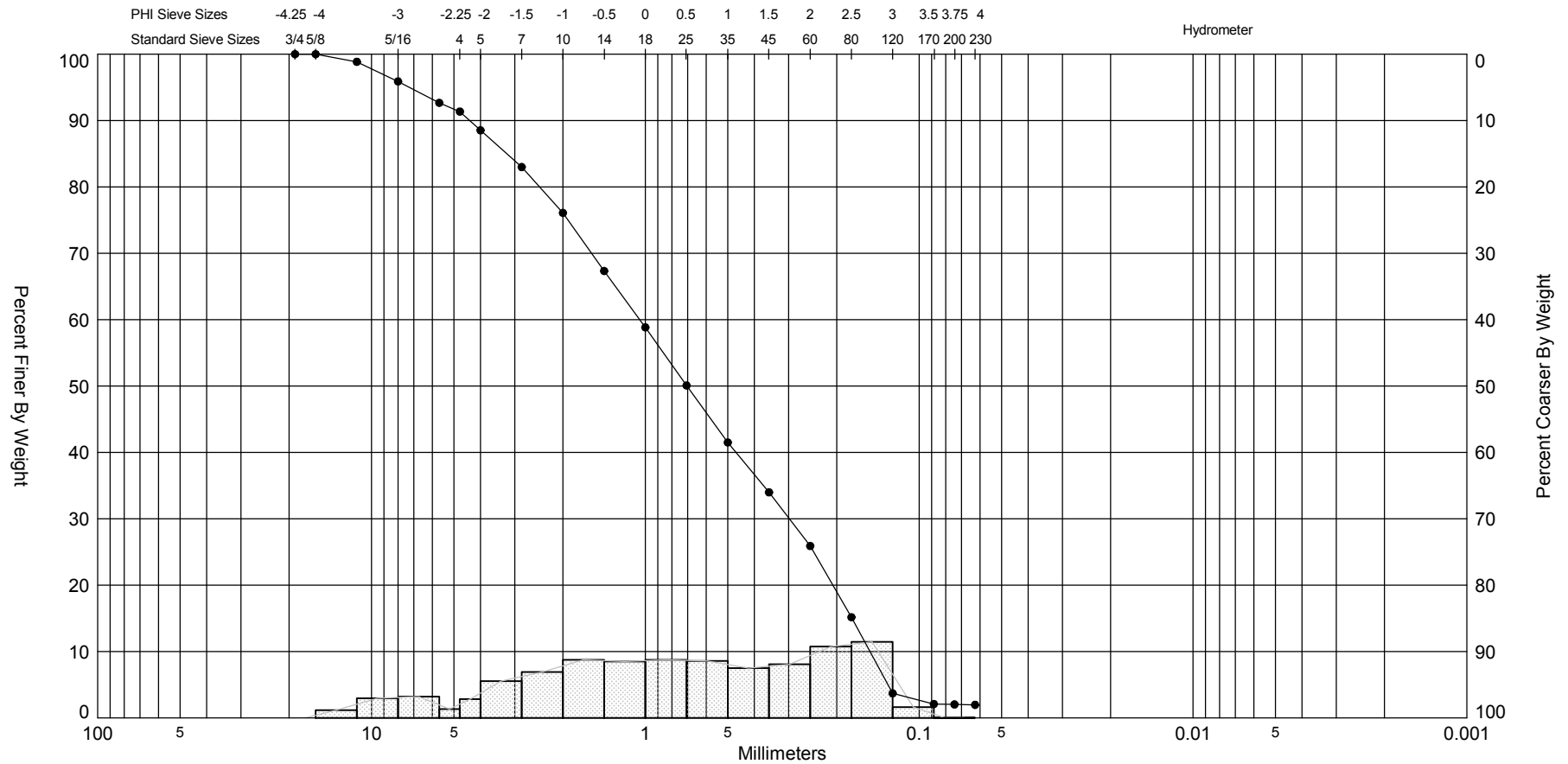
SIEVE ANALYSIS LONGBOAT_PASS_ALT_6F4_COMP.GPJ_JPBRAZIL.GDT 1/22/14




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

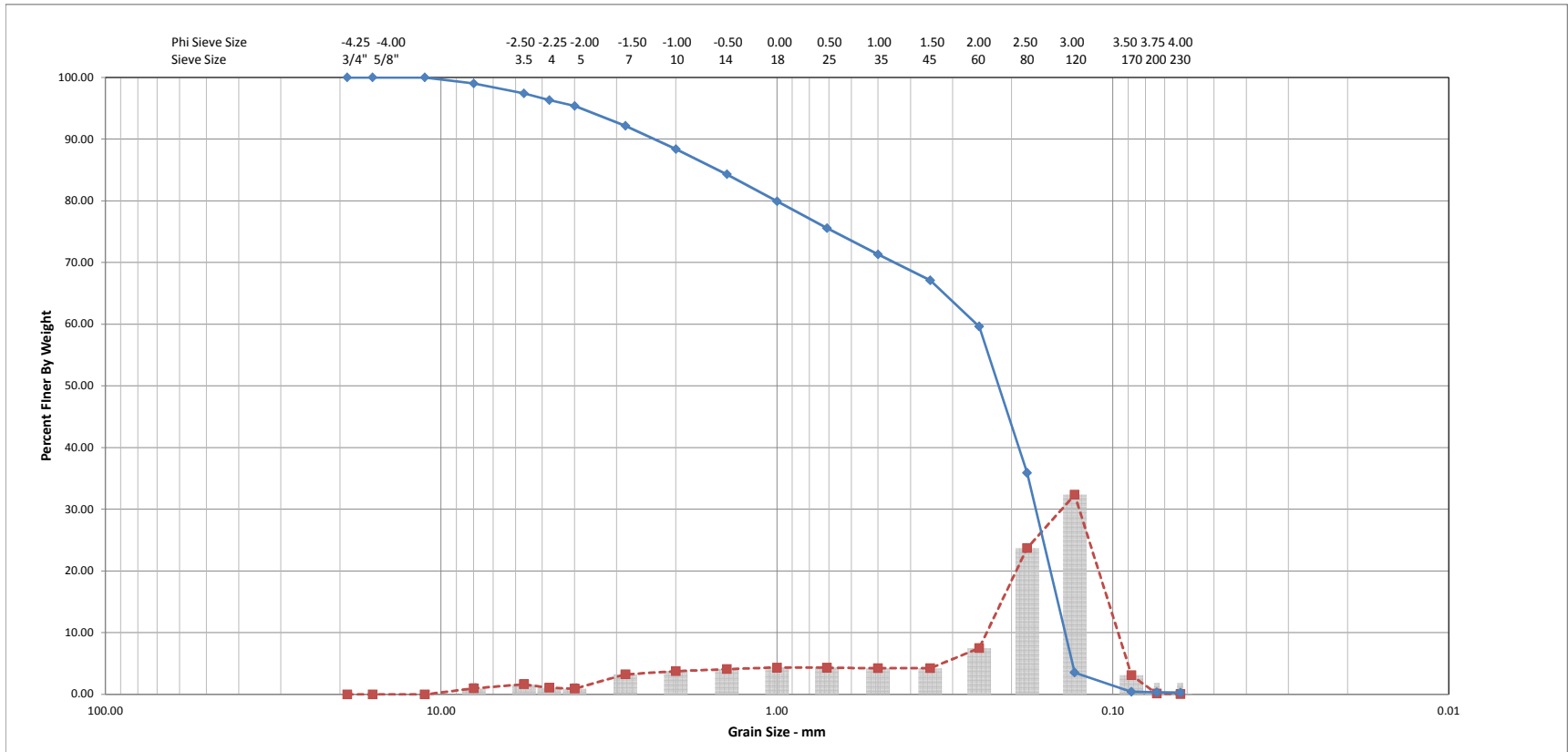
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-11 COMP	—●—		SW	#200 - 1.15 #230 - 1.12			2.32	1.76	-1.64	4.89	1.46	Project Name:	Longboat Pass Alt. 6F-4 Channel
Comments: COMPOSITE												Analysis Date:	01-22-14
Depths and elevations based on measured values												Analyzed By:	KM
						Coastal Planning & Engineering A CB&I Company 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391-8102						Easting (X, ft):	430,620
												Northing (Y, ft):	1,129,814
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

SIEVE ANALYSIS LONGBOAT_PASS_ALT_6F4_COMP.GPJ_JPBRAZIL.GDT 1/22/14



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
AMVC-07-15 COMP	—●—		SW	#200 - 2.03 #230 - 1.97			0.51	0.35	-0.31	2.13	1.79	Project Name:	Longboat Pass Alt. 6F-4 Channel
Comments: COMPOSITE											Analysis Date:	01-22-14	
Depths and elevations based on measured values											Analyzed By:	KM	
						Coastal Planning & Engineering A CB&I Company 2481 NW Boca Raton Blvd. Boca Raton, FL 33431 ph (561) 391-8102						Easting (X, ft):	432,201
												Northing (Y, ft):	1,130,972
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88

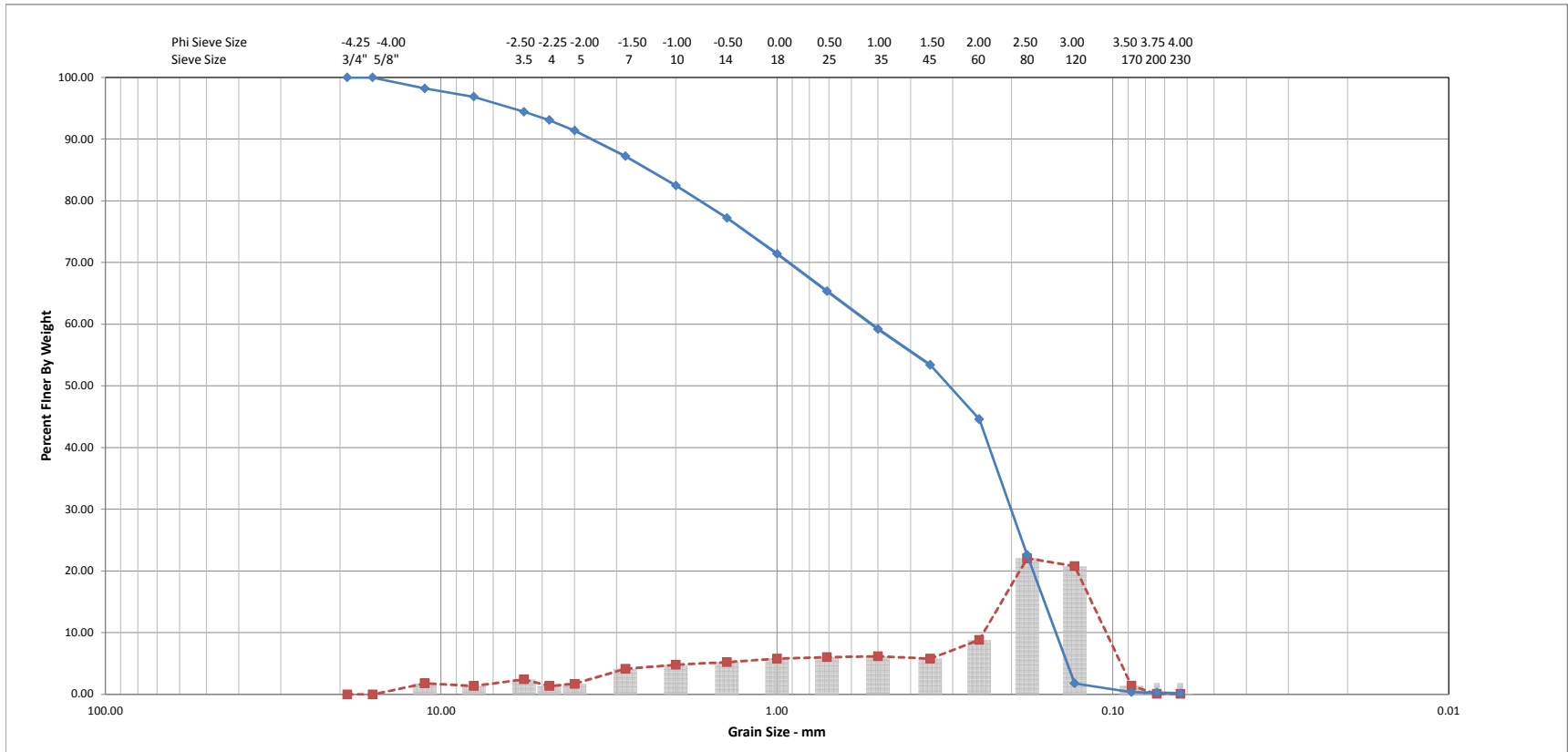


% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
20	33.5	0.25		1.49	0.35	1.62	Project Name:	New Pass / Longboat Pass Dredging & Beach Nourishment Project, Longboat Pass Segment
Comments:							Project Number:	35:24581
							Sample:	R-45
							Client:	olsen associates, inc.



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% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
25	47.5	0.15		0.98	0.51	1.82	Project Name:	New Pass / Longboat Pass Dredging & Beach Nourishment Project, Longboat Pass Segment
Comments:							Project Number:	35:24581
							Sample:	R-48.5
							Client:	olsen associates, inc.



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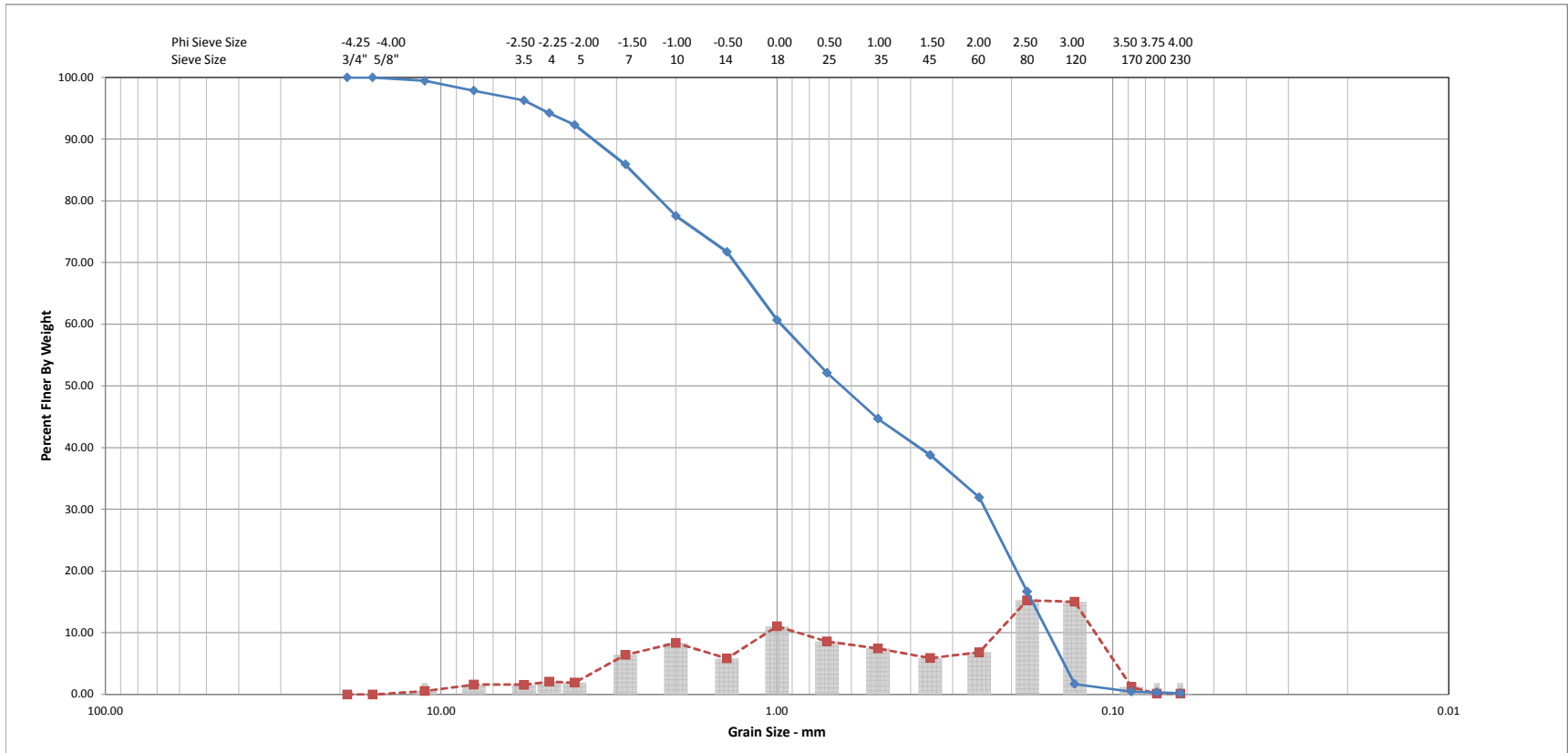
7064 Davis Creek Road
 Jacksonville, FL 32256
 (904) 880-0960 Office
 (904) 880-0970 Fax Number

Geotechnical ■ Construction Materials ■ Environmental ■ Facilities

Project: New Pass / Longboat Pass Dredging & Beach Nourishment Project,
Longboat Pass Segment
 Client: olsen associates, inc.
 Location: Longboat Key, Florida
 Date tested: _____ By: J. Starling

Project No.: 35:24581
 Sample: R-48.5
 Sample Location: _____
 Sample Color: _____

Sieve	Size (mm)	Size (Phi)	Weight Retained (g)	Weight Retained (%)	Cumulative Weight Retained (%)	Cumulative Weight Finer (%)
3/4"	19.03	-4.25	0.00	0.00	0.00	100.00
5/8"	16.00	-4.00	0.00	0.00	0.00	100.00
7/16"	11.20	-3.50	3.06	1.78	1.78	98.22
5/16"	8.00	-3.00	2.32	1.35	3.12	96.88
3.5	5.67	-2.50	4.20	2.44	5.56	94.44
4	4.76	-2.25	2.32	1.35	6.90	93.10
5	4.00	-2.00	2.95	1.71	8.62	91.38
7	2.83	-1.50	7.11	4.12	12.74	87.26
10	2.00	-1.00	8.27	4.80	17.54	82.46
14	1.41	-0.50	9.04	5.24	22.78	77.22
18	1.00	0.00	9.99	5.80	28.58	71.42
25	0.71	0.50	10.43	6.05	34.63	65.37
35	0.50	1.00	10.62	6.16	40.79	59.21
45	0.35	1.50	9.99	5.80	46.59	53.41
60	0.25	2.00	15.18	8.81	55.39	44.61
80	0.18	2.50	38.00	22.05	77.44	22.56
120	0.13	3.00	35.84	20.79	98.23	1.77
170	0.09	3.50	2.45	1.42	99.65	0.35
200	0.07	3.75	0.16	0.09	99.74	0.26
230	0.06	4.00	0.18	0.10	99.85	0.15



% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
50	60.2	0.19		0.58	0.67	1.75	Project Name:	New Pass / Longboat Pass Dredging & Beach Nourishment Project, Longboat Pass Segment
Comments:							Project Number:	35:24581
							Sample:	R-49
							Client:	olsen associates, inc.



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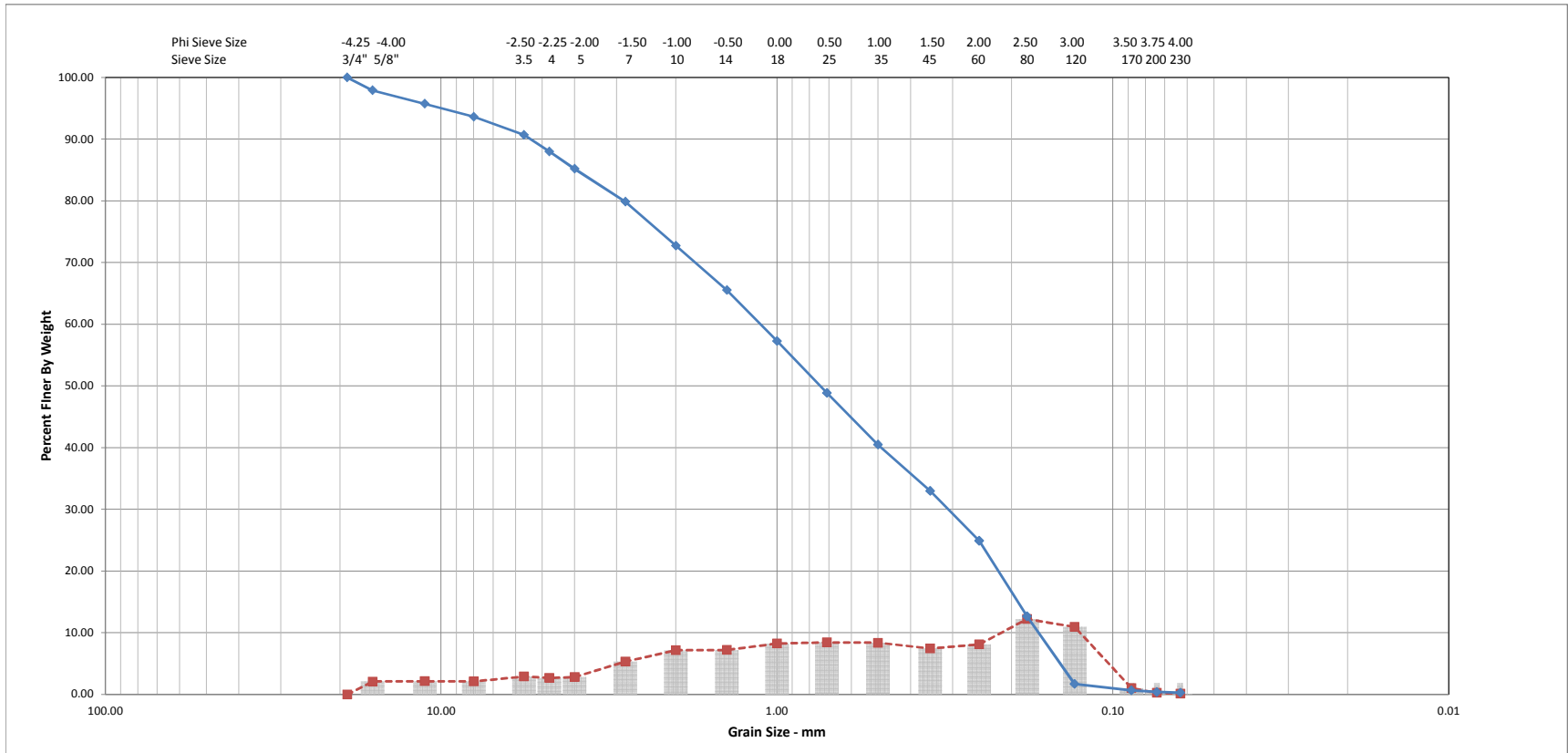
7064 Davis Creek Road
 Jacksonville, FL 32256
 (904) 880-0960 Office
 (904) 880-0970 Fax Number

Geotechnical ■ Construction Materials ■ Environmental ■ Facilities

Project: New Pass / Longboat Pass Dredging & Beach Nourishment Project,
Longboat Pass Segment
 Client: olsen associates, inc.
 Location: Longboat Key, Florida
 Date tested: _____ By: J. Starling

Project No.: 35:24581
 Sample: R-49
 Sample Location: _____
 Sample Color: _____

Sieve	Size (mm)	Size (Phi)	Weight Retained (g)	Weight Retained (%)	Cumulative Weight Retained (%)	Cumulative Weight Finer (%)
3/4"	19.03	-4.25	0.00	0.00	0.00	100.00
5/8"	16.00	-4.00	0.00	0.00	0.00	100.00
7/16"	11.20	-3.50	1.11	0.56	0.56	99.44
5/16"	8.00	-3.00	3.11	1.58	2.14	97.86
3.5	5.67	-2.50	3.10	1.57	3.71	96.29
4	4.76	-2.25	4.09	2.07	5.78	94.22
5	4.00	-2.00	3.78	1.91	7.69	92.31
7	2.83	-1.50	12.64	6.40	14.10	85.90
10	2.00	-1.00	16.45	8.33	22.43	77.57
14	1.41	-0.50	11.53	5.84	28.27	71.73
18	1.00	0.00	21.78	11.03	39.30	60.70
25	0.71	0.50	16.92	8.57	47.87	52.13
35	0.50	1.00	14.70	7.45	55.32	44.68
45	0.35	1.50	11.62	5.89	61.20	38.80
60	0.25	2.00	13.54	6.86	68.06	31.94
80	0.18	2.50	30.15	15.27	83.33	16.67
120	0.13	3.00	29.62	15.00	98.33	1.67
170	0.09	3.50	2.42	1.23	99.56	0.44
200	0.07	3.75	0.25	0.13	99.69	0.31
230	0.06	4.00	0.24	0.12	99.81	0.19



% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
70	67.4	0.25		0.25	0.84	1.93	Project Name:	New Pass / Longboat Pass Dredging & Beach Nourishment Project, Longboat Pass Segment
Comments:							Project Number:	35:24581
							Sample:	R-49.5
							Client:	olsen associates, inc.



Geotechnical ■ Construction Materials ■ Environmental ■ Facilities

7064 Davis Creek Road
Jacksonville, FL 32256
(904) 880-0960 Office
(904) 880-0970 Fax Number



Ellis & Associates inc.

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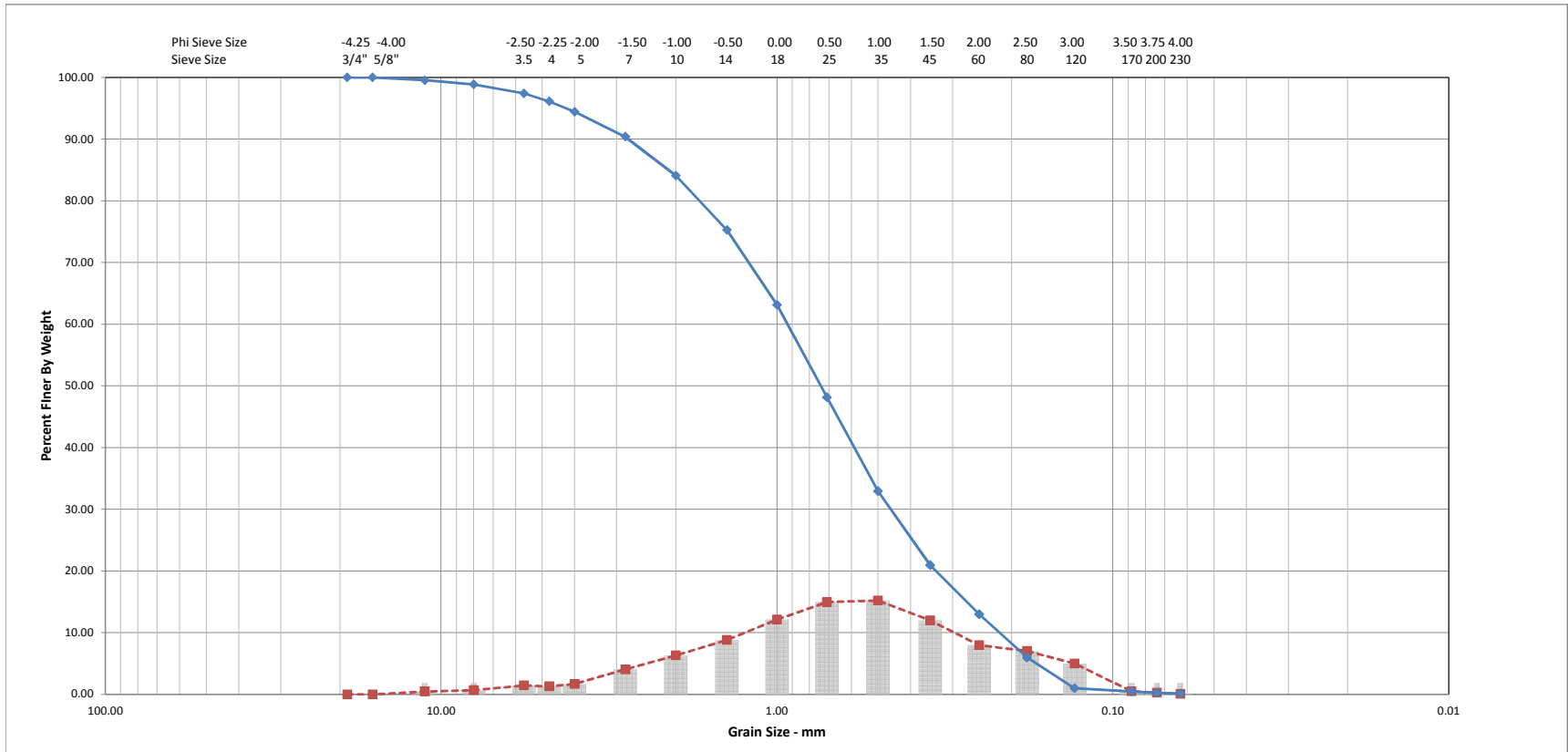
7064 Davis Creek Road
 Jacksonville, FL 32256
 (904) 880-0960 Office
 (904) 880-0970 Fax Number

Geotechnical ■ Construction Materials ■ Environmental ■ Facilities

Project: New Pass / Longboat Pass Dredging & Beach Nourishment Project,
Longboat Pass Segment
 Client: olsen associates, inc.
 Location: Longboat Key, Florida
 Date tested: _____ By: J. Starling

Project No.: 35:24581
 Sample: R-49.5
 Sample Location: _____
 Sample Color: _____

Sieve	Size (mm)	Size (Phi)	Weight Retained (g)	Weight Retained (%)	Cumulative Weight Retained (%)	Cumulative Weight Finer (%)
3/4"	19.03	-4.25	0.00	0.00	0.00	100.00
5/8"	16.00	-4.00	5.85	2.09	2.09	97.91
7/16"	11.20	-3.50	6.10	2.18	4.27	95.73
5/16"	8.00	-3.00	5.90	2.11	6.38	93.62
3.5	5.67	-2.50	8.19	2.93	9.30	90.70
4	4.76	-2.25	7.48	2.67	11.98	88.02
5	4.00	-2.00	7.90	2.82	14.80	85.20
7	2.83	-1.50	14.87	5.31	20.11	79.89
10	2.00	-1.00	20.02	7.15	27.26	72.74
14	1.41	-0.50	20.17	7.21	34.47	65.53
18	1.00	0.00	23.09	8.25	42.72	57.28
25	0.71	0.50	23.59	8.43	51.15	48.85
35	0.50	1.00	23.44	8.37	59.52	40.48
45	0.35	1.50	20.92	7.47	67.00	33.00
60	0.25	2.00	22.72	8.12	75.12	24.88
80	0.18	2.50	34.25	12.24	87.35	12.65
120	0.13	3.00	30.71	10.97	98.32	1.68
170	0.09	3.50	2.87	1.03	99.35	0.65
200	0.07	3.75	0.73	0.26	99.61	0.39
230	0.06	4.00	0.39	0.14	99.75	0.25



% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
50	66.9	0.12		0.37	0.77	1.38	Project Name:	New Pass / Longboat Pass Dredging & Beach Nourishment Project, Longboat Pass Segment
Comments:							Project Number:	35:24581
							Sample:	R-50
							Client:	olsen associates, inc.



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 Jacksonville, FL 32256
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Ellis & Associates inc.

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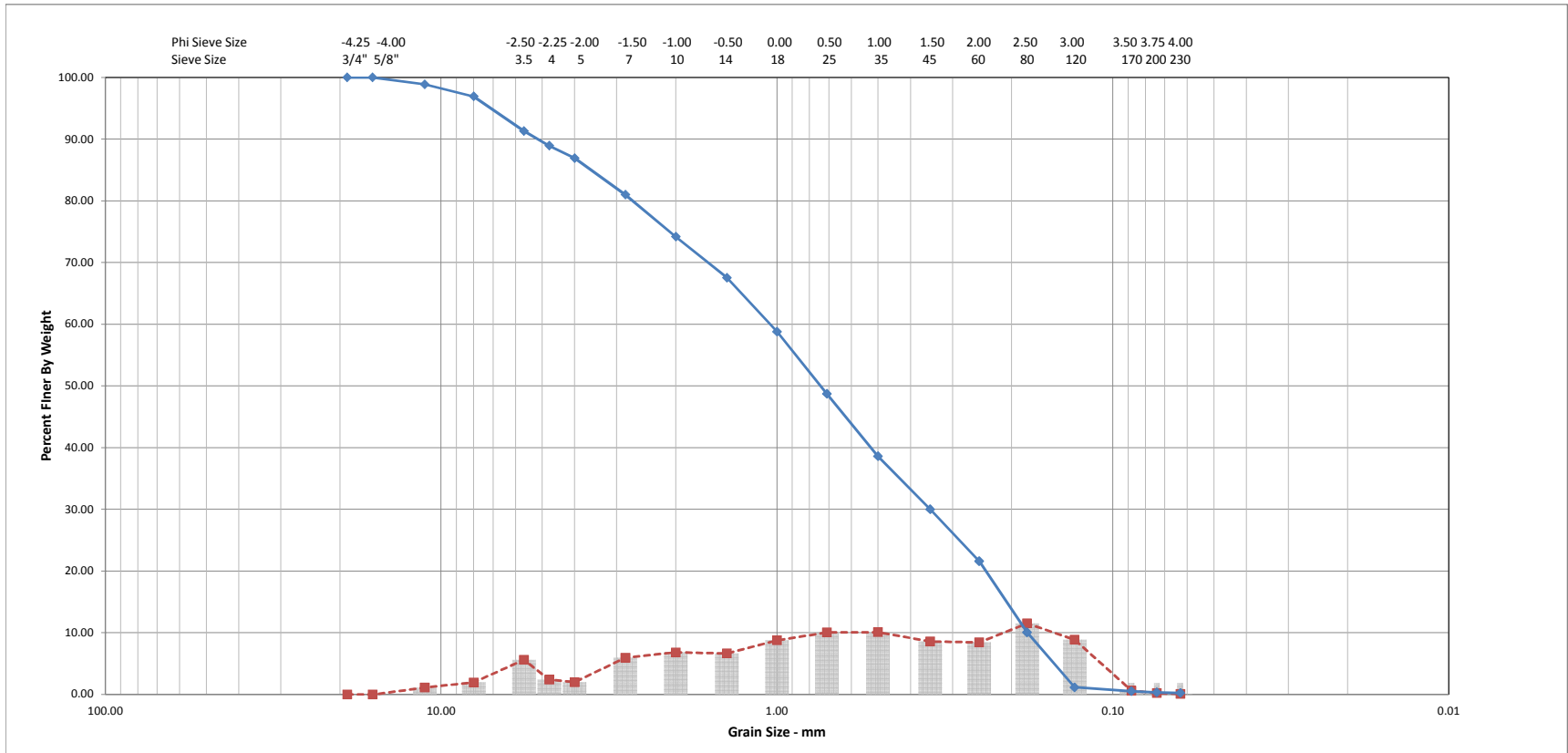
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 (904) 880-0970 Fax Number

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Project: New Pass / Longboat Pass Dredging & Beach Nourishment Project,
Longboat Pass Segment
 Client: olsen associates, inc.
 Location: Longboat Key, Florida
 Date tested: _____ By: J. Starling

Project No.: 35:24581
 Sample: R-50
 Sample Location: _____
 Sample Color: _____

Sieve	Size (mm)	Size (Phi)	Weight Retained (g)	Weight Retained (%)	Cumulative Weight Retained (%)	Cumulative Weight Finer (%)
3/4"	19.03	-4.25	0.00	0.00	0.00	100.00
5/8"	16.00	-4.00	0.00	0.00	0.00	100.00
7/16"	11.20	-3.50	0.99	0.44	0.44	99.56
5/16"	8.00	-3.00	1.55	0.69	1.14	98.86
3.5	5.67	-2.50	3.24	1.45	2.59	97.41
4	4.76	-2.25	2.90	1.30	3.89	96.11
5	4.00	-2.00	3.73	1.67	5.56	94.44
7	2.83	-1.50	9.02	4.04	9.60	90.40
10	2.00	-1.00	14.07	6.30	15.91	84.09
14	1.41	-0.50	19.68	8.82	24.73	75.27
18	1.00	0.00	27.12	12.15	36.88	63.12
25	0.71	0.50	33.38	14.96	51.83	48.17
35	0.50	1.00	33.95	15.21	67.05	32.95
45	0.35	1.50	26.81	12.01	79.06	20.94
60	0.25	2.00	17.78	7.97	87.03	12.97
80	0.18	2.50	15.64	7.01	94.04	5.96
120	0.13	3.00	11.17	5.01	99.04	0.96
170	0.09	3.50	1.12	0.50	99.54	0.46
200	0.07	3.75	0.56	0.25	99.79	0.21
230	0.06	4.00	0.19	0.09	99.88	0.12



% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
50	67.4	0.23		0.27	0.83	1.77	Project Name:	New Pass / Longboat Pass Dredging & Beach Nourishment Project, Longboat Pass Segment
Comments:							Project Number:	35:24581
							Sample:	R-50.5
							Client:	olsen associates, inc.



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 Jacksonville, FL 32256
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 (904) 880-0970 Fax Number

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Project: New Pass / Longboat Pass Dredging & Beach Nourishment Project,
Longboat Pass Segment
 Client: olsen associates, inc.
 Location: Longboat Key, Florida
 Date tested: _____ By: J. Starling

Project No.: 35:24581
 Sample: R-50.5
 Sample Location: _____
 Sample Color: _____

Sieve	Size (mm)	Size (Phi)	Weight Retained (g)	Weight Retained (%)	Cumulative Weight Retained (%)	Cumulative Weight Finer (%)
3/4"	19.03	-4.25	0.00	0.00	0.00	100.00
5/8"	16.00	-4.00	0.00	0.00	0.00	100.00
7/16"	11.20	-3.50	2.99	1.13	1.13	98.87
5/16"	8.00	-3.00	5.15	1.95	3.08	96.92
3.5	5.67	-2.50	14.79	5.59	8.67	91.33
4	4.76	-2.25	6.36	2.40	11.08	88.92
5	4.00	-2.00	5.28	2.00	13.07	86.93
7	2.83	-1.50	15.68	5.93	19.00	81.00
10	2.00	-1.00	18.03	6.82	25.82	74.18
14	1.41	-0.50	17.55	6.64	32.45	67.55
18	1.00	0.00	23.19	8.77	41.22	58.78
25	0.71	0.50	26.62	10.07	51.29	48.71
35	0.50	1.00	26.75	10.11	61.40	38.60
45	0.35	1.50	22.67	8.57	69.98	30.02
60	0.25	2.00	22.36	8.45	78.43	21.57
80	0.18	2.50	30.50	11.53	89.96	10.04
120	0.13	3.00	23.52	8.89	98.86	1.14
170	0.09	3.50	1.64	0.62	99.48	0.52
200	0.07	3.75	0.55	0.21	99.69	0.31
230	0.06	4.00	0.22	0.08	99.77	0.23



August 3, 2021

Mrs. Krista Egan, P.E.
Olsen Associates, Inc.
2618 Herschel Street
Jacksonville, Florida 32204

ECS Project No. 35:31879-B
Client ID: 0309

Reference: Report of Grain Size Analyses
Long Boat Key (LBK) Beach Nourishment – Segment 4
Long Boat Key, Florida

Dear Mrs. Egan:

As requested, ECS Florida, LLC (ECS) has completed Grain Size Analyses on sand samples delivered to our personnel. The gradation of the samples tested was determined in general accordance with latest revision of ASTM D 422. This test procedure determines the grain size distribution of the tested sample by passing the sample through a set of nested sieves. The cumulative amount of material retained on each sieve was recorded and reported on the attached Particle Size Distribution Reports.

It has been a pleasure to have been of service as your geotechnical consultant on this project. If you have any questions, please contact us.

Respectfully Submitted,

ECS FLORIDA, LLC

Chris M. Egan, P.E.

Geotechnical Department Manager

Registered, Florida No. 79645

CEgan@ecslimited.com

Robert W. Clark, P.E.

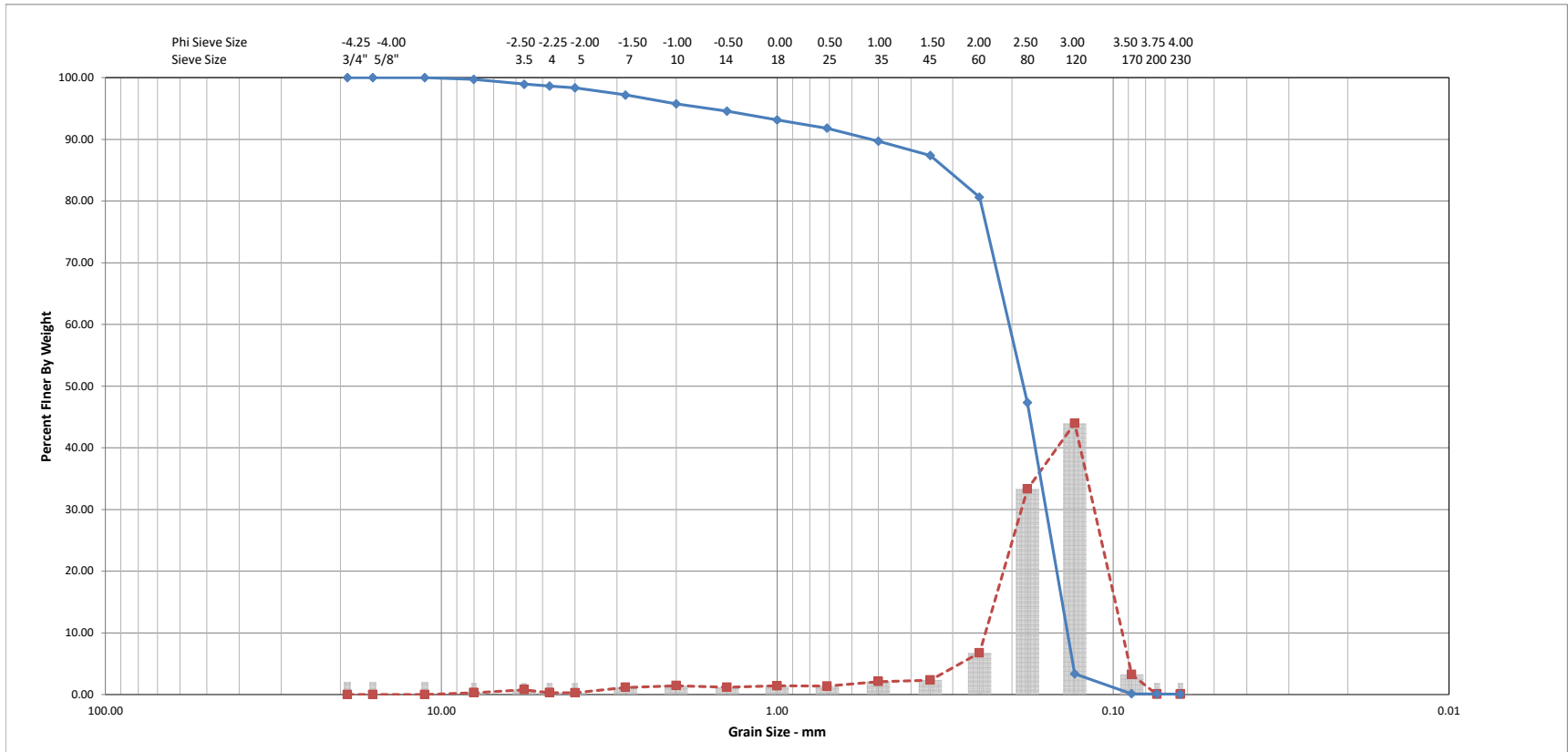
Senior Project Engineer

Registered, Florida No. 52210

RWClark@ecslimited.com

ATTACHMENTS:

Particle Size Distribution Reports



% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
15	15.57%	0.05	10YR 8/1	2.14	0.23	1.12	Project Name:	2021 LBK Beach Nourishment - Segment 4
Comments:							Project Number:	31879-B
							Sample:	R-48.5
							Client:	olsen associates, inc.



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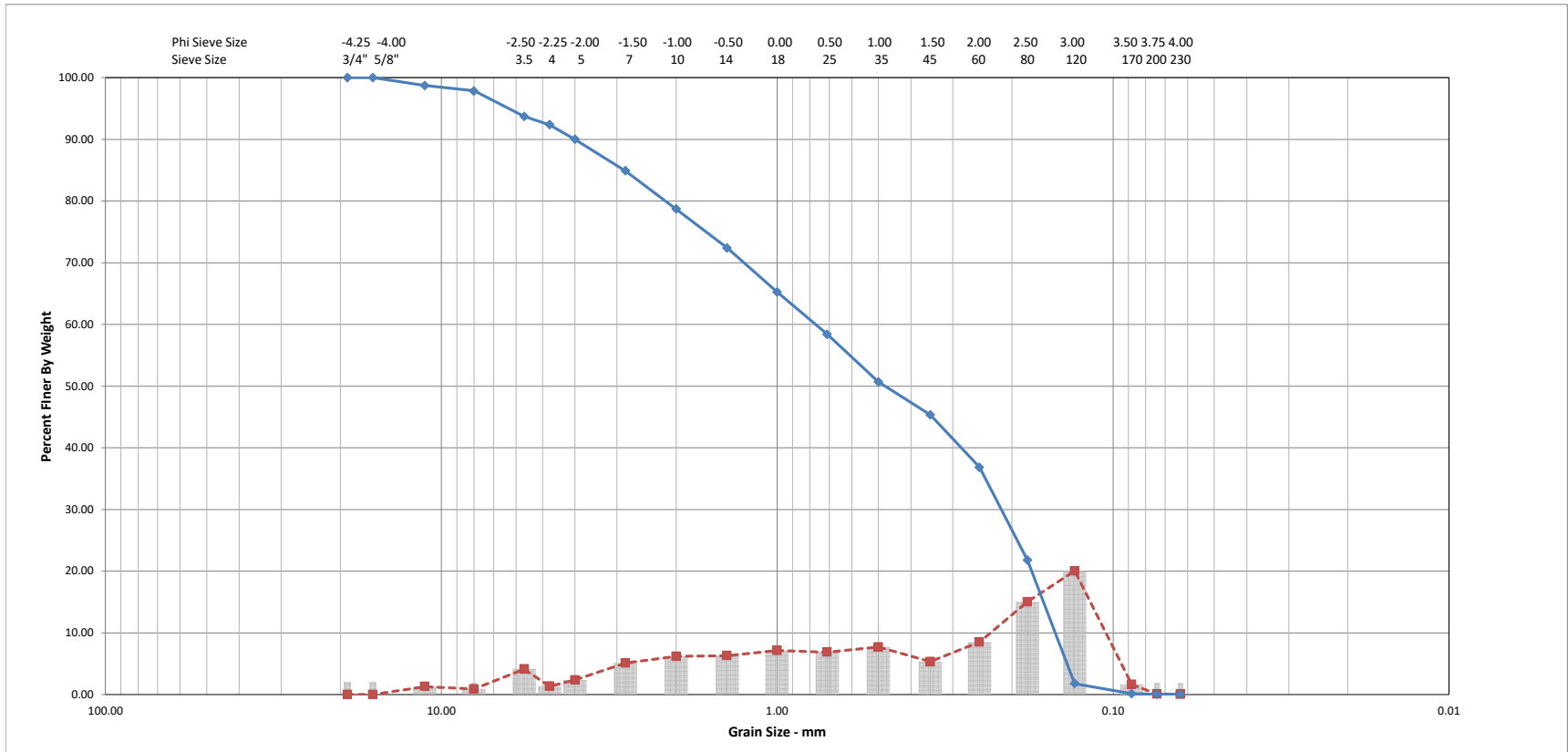
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11554 Davis Creek Court
Jacksonville, FL 32256
(904) 880-0960 Office
(904) 880-0970 Fax Number

Project: 2021 LBK Beach Nourishment - Segment 4
Client: olsen associates, inc.
Location: Longboat Key, Florida
Date tested: _____ By: J. Starling

Project No.: 31879-B
Sample: R-48.5
Sample Location: 57+00
Sample Color: 10YR 8/1

Sieve	Size (mm)	Size (Phi)	Weight Retained (g)	Weight Retained (%)	Cumulative Weight Retained (%)	Cumulative Weight Finer (%)
3/4"	19.03	-4.25	0.00	0.00	0.00	100.00
5/8"	16.00	-4.00	0.00	0.00	0.00	100.00
7/16"	11.20	-3.50	0.00	0.00	0.00	100.00
5/16"	8.00	-3.00	0.50	0.31	0.31	99.69
3.5	5.67	-2.50	1.28	0.78	1.09	98.91
4	4.76	-2.25	0.50	0.31	1.39	98.61
5	4.00	-2.00	0.48	0.29	1.69	98.31
7	2.83	-1.50	1.88	1.15	2.83	97.17
10	2.00	-1.00	2.36	1.44	4.27	95.73
14	1.41	-0.50	1.92	1.17	5.45	94.55
18	1.00	0.00	2.31	1.41	6.86	93.14
25	0.71	0.50	2.22	1.36	8.21	91.79
35	0.50	1.00	3.43	2.09	10.31	89.69
45	0.35	1.50	3.82	2.33	12.64	87.36
60	0.25	2.00	11.07	6.76	19.40	80.60
80	0.18	2.50	54.55	33.31	52.70	47.30
120	0.13	3.00	71.97	43.94	96.65	3.35
170	0.09	3.50	5.31	3.24	99.89	0.11
200	0.07	3.75	0.04	0.02	99.91	0.09
230	0.06	4.00	0.06	0.04	99.95	0.05



% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
85	55.14%	0.01	10 YR 8/1	0.73	0.60	1.85	Project Name:	2021 LBK Beach Nourishment - Segment 4
Comments:							Project Number:	31879-B
							Sample:	R-49.5
							Client:	olsen associates, inc.



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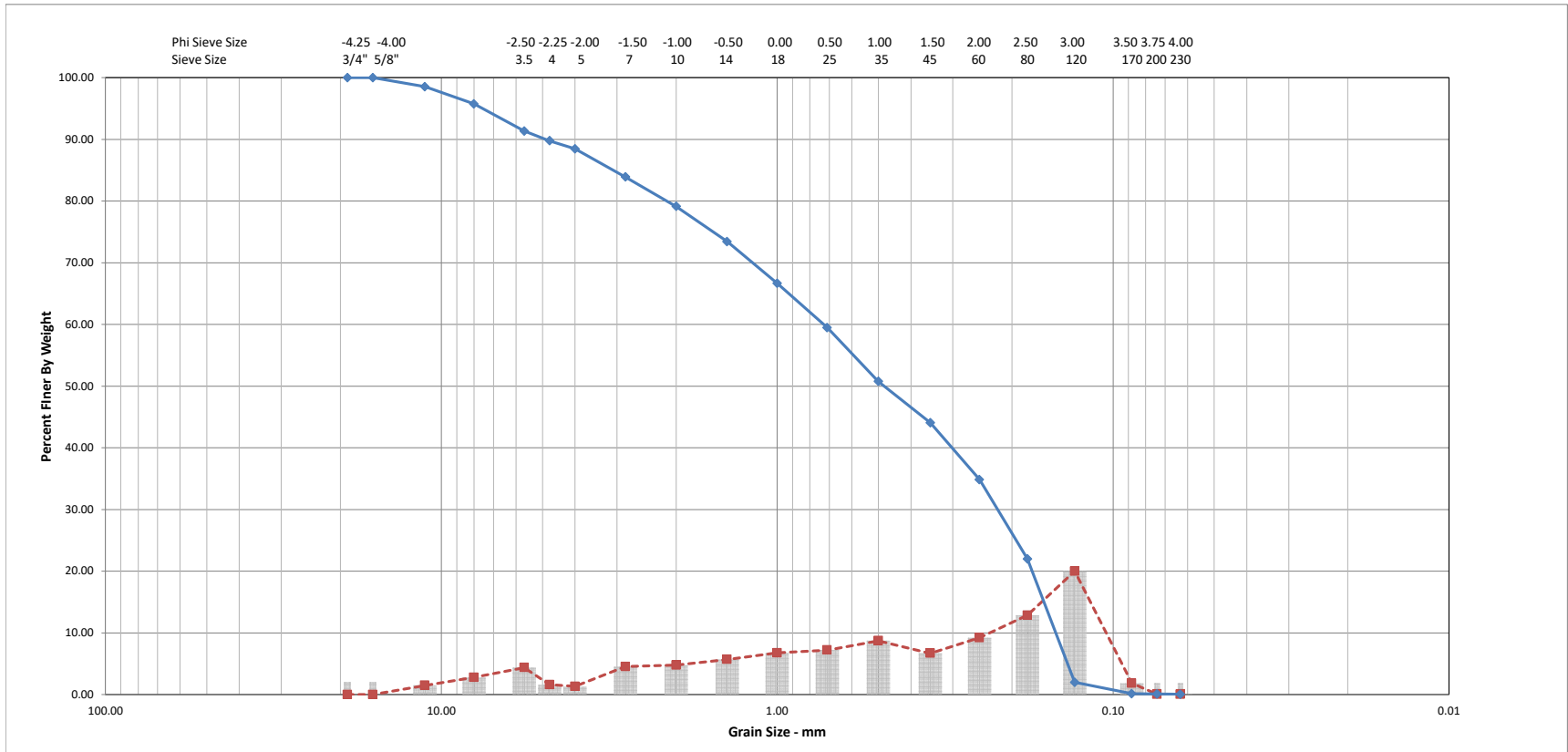
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Jacksonville, FL 32256
(904) 880-0960 Office
(904) 880-0970 Fax Number

Project: 2021 LBK Beach Nourishment - Segment 4
Client: olsen associates, inc.
Location: Longboat Key, Florida
Date tested: _____ By: J. Starling

Project No.: 31879-B
Sample: R-49.5
Sample Location: 69+00
Sample Color: 10 YR 8/1

Sieve	Size (mm)	Size (Phi)	Weight Retained (g)	Weight Retained (%)	Cumulative Weight Retained (%)	Cumulative Weight Finer (%)
3/4"	19.03	-4.25	0.00	0.00	0.00	100.00
5/8"	16.00	-4.00	0.00	0.00	0.00	100.00
7/16"	11.20	-3.50	2.73	1.29	1.29	98.71
5/16"	8.00	-3.00	1.86	0.88	2.17	97.83
3.5	5.67	-2.50	8.71	4.13	6.30	93.70
4	4.76	-2.25	2.83	1.34	7.64	92.36
5	4.00	-2.00	4.99	2.36	10.01	89.99
7	2.83	-1.50	10.79	5.11	15.12	84.88
10	2.00	-1.00	13.06	6.19	21.31	78.69
14	1.41	-0.50	13.31	6.31	27.61	72.39
18	1.00	0.00	15.06	7.14	34.75	65.25
25	0.71	0.50	14.51	6.87	41.62	58.38
35	0.50	1.00	16.24	7.69	49.32	50.68
45	0.35	1.50	11.27	5.34	54.66	45.34
60	0.25	2.00	17.97	8.51	63.17	36.83
80	0.18	2.50	31.74	15.04	78.21	21.79
120	0.13	3.00	42.27	20.03	98.24	1.76
170	0.09	3.50	3.44	1.63	99.87	0.13
200	0.07	3.75	0.18	0.09	99.95	0.05
230	0.06	4.00	0.07	0.03	99.99	0.01



% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
85	55.82%	0.03	10 YR 8/1	0.70	0.62	1.90	Project Name:	2021 LBK Beach Nourishment - Segment 4
Comments:							Project Number:	31879-B
							Sample:	R-49
							Client:	olsen associates, inc.



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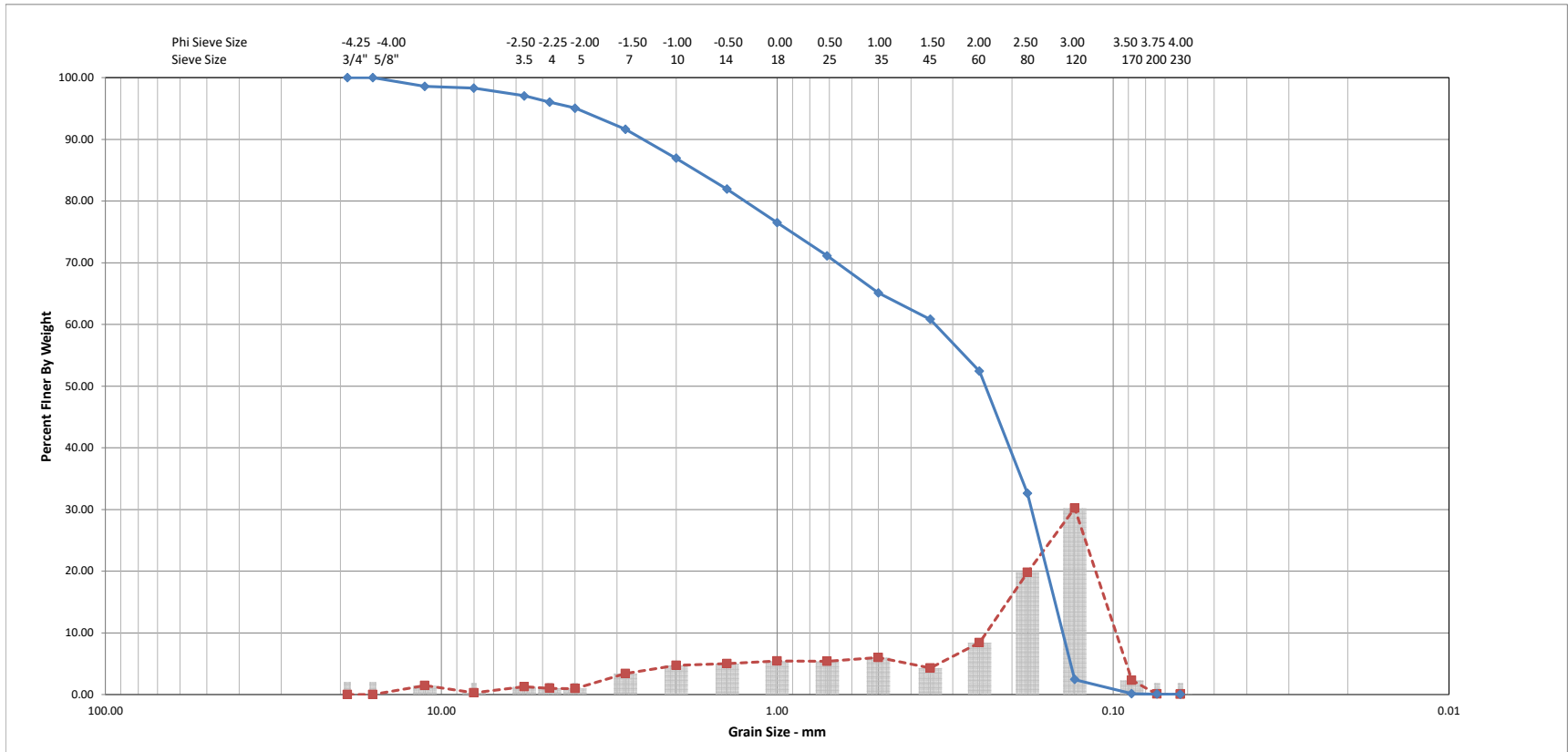
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11554 Davis Creek Court
Jacksonville, FL 32256
(904) 880-0960 Office
(904) 880-0970 Fax Number

Project: 2021 LBK Beach Nourishment - Segment 4
Client: olsen associates, inc.
Location: Longboat Key, Florida
Date tested: _____ By: J. Starling

Project No.: 31879-B
Sample: R-49
Sample Location: 64+00
Sample Color: 10 YR 8/1

Sieve	Size (mm)	Size (Phi)	Weight Retained (g)	Weight Retained (%)	Cumulative Weight Retained (%)	Cumulative Weight Finer (%)
3/4"	19.03	-4.25	0.00	0.00	0.00	100.00
5/8"	16.00	-4.00	0.00	0.00	0.00	100.00
7/16"	11.20	-3.50	2.63	1.49	1.49	98.51
5/16"	8.00	-3.00	4.92	2.79	4.28	95.72
3.5	5.67	-2.50	7.70	4.37	8.65	91.35
4	4.76	-2.25	2.80	1.59	10.24	89.76
5	4.00	-2.00	2.31	1.31	11.55	88.45
7	2.83	-1.50	8.01	4.54	16.09	83.91
10	2.00	-1.00	8.42	4.78	20.87	79.13
14	1.41	-0.50	10.04	5.70	26.56	73.44
18	1.00	0.00	11.93	6.77	33.33	66.67
25	0.71	0.50	12.70	7.20	40.54	59.46
35	0.50	1.00	15.37	8.72	49.25	50.75
45	0.35	1.50	11.79	6.69	55.94	44.06
60	0.25	2.00	16.24	9.21	65.15	34.85
80	0.18	2.50	22.67	12.86	78.01	21.99
120	0.13	3.00	35.27	20.01	98.02	1.98
170	0.09	3.50	3.24	1.84	99.86	0.14
200	0.07	3.75	0.10	0.06	99.91	0.09
230	0.06	4.00	0.09	0.05	99.97	0.03



% Visual Shell	% Carbonates	% Fines	Color	Mean (phi)	Mean (mm)	Sorting (phi)	Sample Information	
20	41.59%	0.05	10 YR 8/1	1.30	0.41	1.70	Project Name:	2021 LBK Beach Nourishment - Segment 4
Comments:							Project Number:	31879-B
							Sample:	R-50
							Client:	olsen associates, inc.



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(904) 880-0970 Fax Number

Project: 2021 LBK Beach Nourishment - Segment 4
Client: olsen associates, inc.
Location: Longboat Key, Florida
Date tested: _____ By: J. Starling

Project No.: 31879-B
Sample: R-50
Sample Location: 74+00
Sample Color: 10 YR 8/1

Sieve	Size (mm)	Size (Phi)	Weight Retained (g)	Weight Retained (%)	Cumulative Weight Retained (%)	Cumulative Weight Finer (%)
3/4"	19.03	-4.25	0.00	0.00	0.00	100.00
5/8"	16.00	-4.00	0.00	0.00	0.00	100.00
7/16"	11.20	-3.50	2.12	1.45	1.45	98.55
5/16"	8.00	-3.00	0.39	0.27	1.72	98.28
3.5	5.67	-2.50	1.85	1.27	2.99	97.01
4	4.76	-2.25	1.48	1.02	4.01	95.99
5	4.00	-2.00	1.41	0.97	4.97	95.03
7	2.83	-1.50	4.94	3.39	8.36	91.64
10	2.00	-1.00	6.89	4.73	13.09	86.91
14	1.41	-0.50	7.29	5.00	18.09	81.91
18	1.00	0.00	7.90	5.42	23.50	76.50
25	0.71	0.50	7.86	5.39	28.90	71.10
35	0.50	1.00	8.73	5.99	34.88	65.12
45	0.35	1.50	6.25	4.29	39.17	60.83
60	0.25	2.00	12.27	8.42	47.59	52.41
80	0.18	2.50	28.85	19.79	67.37	32.63
120	0.13	3.00	44.03	30.20	97.57	2.43
170	0.09	3.50	3.36	2.30	99.88	0.12
200	0.07	3.75	0.09	0.06	99.94	0.06
230	0.06	4.00	0.02	0.01	99.95	0.05