



LEE COUNTY
SOUTHWEST FLORIDA

Blind Pass Restoration
Partial Response to Request for Additional
Information (RAI) #2

0265943-JC

December 2006

Prepared By: Lee County Division of Natural Resources
1500 Monroe Street
P.O. Box 398Fort Myers, FL 33902-0398



LEE COUNTY

SOUTHWEST FLORIDA

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Florida Department of Environmental Protection
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3900 Commonwealth Blvd., MS 300
Tallahassee, Florida 32399-3000

Donald D. Stilwell
County Manager

Subject: Blind Pass Restoration (0265943-JC)
Partial Response to Request for Additional Information (RAI) #2

David M. Owen
County Attorney

Diana M. Parker
County Hearing
Examiner

Dear Dr. Edwards:

The following information is provided as a partial response for additional information concerning the Blind Pass Restoration. Specifically, this submittal addresses comments 5, 28(a) & (b) and 33(b), regarding the analysis of the proposed dredge material. Information required for inclusion in the ROSS database is also being submitted. The RAI comments are shown below with their corresponding response.

Comment 5 – *Describe in general terms the proposed activity including any phasing.*

Will there be any order of work regarding the dredging or placement of material? Please fully describe the separation and handling of beach quality material versus material that is not beach quality. In the discussion please include a plan view map of the handling area. Has an area been identified for the upland disposal of silty and non-beach compatible material? Please redefine the fill placement area in the project description so that there is no confusion that the fill placement area has been reduced. What is the volume of sediment to be excavated? What is the volume of beach compatible material to be placed on the beach?

Response 5 – The proposed activity includes the maintenance dredging of Blind Pass and the interior channel. Attachment 5 - Plan View shows a plan view drawing of the project footprint and the disposal area at J.N. Ding Darling National Wildlife Refuge.

The first order of work will be to remove mangrove and other vegetation that have established within the work footprint. The top layer of sediment will be scraped to ensure all vegetation remnants are removed. This material will be collected and transported by road for disposal at J.N. Ding Darling National Wildlife Refuge. This task may be completed in tandem with the dredging operations, but the area shall be cleared prior to commencing in Area 3a.

Dredging will begin in the interior channel of Blind Pass, starting in the designated Sub Area 4a or 4b, and proceed towards Blind Pass Bridge. Upon reaching the bridge, a sheet pile wall

will be placed on the gulf side. The wall will enable the opening of the pass to be coordinated with an outgoing tide.

Dredging operations will then begin on the exterior of the pass, moving from the seaward edge towards the bridge. The sheet pile wall will be removed after all the sediment has been excavated with surveys to confirm.

Spoil material will be hydraulically placed on the beach and in the nearshore between reference monument R-112 and R-114. Approximately 141,000 cubic yards of material may be excavated, with 113,748 estimated to be placed on the beach and 27,252 placed in the nearshore. Material from the designated Sub Areas 1, 2, 3a, and 4a will be placed on the beach, leaving material from 3b, 3c, and 4b to be placed in the nearshore.

Previous submittals reflected a placement area from R112 to R113. This was proposed with the intent of transferring material to an upland disposal area. The placement area will be extended to R114 to allow for placement of the total project volume on the beach or in the nearshore. The material will be placed at an average ratio of 70 cubic yards per foot over approximately 2000 feet. The berm height will be consistent with the 2005 nourishment at 4.76 NAVD88¹; the depth of closure is estimated at -11.24 NAVD88. It is expected the shoreline will equilibrate to an average extension of approximately 100 feet by considering the overfill ratio of 1.2. Revised drawings of the placement area will be submitted in a later RAI response.

The design depth for Sub Area 1, 2 and 3a is -10 NAVD88. The design depth for Area 3b is -9 and the remaining areas have a design depth of -8 NAVD88. This correlates to a design volume of 114,231 cyds. The excavation depths range from -10 to -12 NAVD88. This includes a 2 foot vertical buffer below the design depth, proposed to provide sufficient 'room to work' without exceeding the permitted depths. Material removed below the design depths will also serve as advance maintenance and is estimated at 27,072 cubic yards.

Mitigation and public interest aspects of the project include a proposed seagrass restoration area, a mangrove mitigation area, and mitigation for removal of beach elder. Measures will also be taken to mitigate for the loss of sea turtle habitat. The proposed mangrove mitigation area and seagrass restoration area are shown on the plan view drawing included in Attachment 5 - Plan View. These aspects are currently conceptual and will be further defined in the Blind Pass Mitigation and Restoration Plan.

Comment 28 (a) – *Core boring logs and sediment grain size analyses from representative points throughout the area to be excavated. Logs should extend at least two feet below the proposed bottom elevation. The depth of each visible horizon in the log should be reported relative to (NAVD88) and the material in each stratum classified according to grain size.*

Please provide a sediment QA/QC plan required in Chapter 62B-41.008(1)(k)4.b. The dredging methods and handling method for non-beach compatible material should be included in the QA/QC plan. Please include a shapefile suitable for inclusion in ROSS showing the dredge area (including the subareas) and the vibracore locations.

1. Coastal Planning & Engineering, Inc. (2006), "Captiva and Sanibel Islands Beach Renourishment Project; Post Construction Engineering Report" Boca Raton, Florida.

Comment 28 (b) - *Particle size analysis of the sediment and a measure of the percent organics by dry weight. Gradation curves should be produced from sieve analysis of each stratum in the core. Grain size distribution must be determined down to the standard unit 230 sieve size.*

To aid in the review of the fill material, please include a table of mean, median (d50), standard deviation (sorting), Munsell color, silt percent and carbonate content for ALL samples from ALL cores within the areas of influence of the dredge area. Please also include the native sample data in the table.

Response 28 (a) & (b) - In an effort to determine the sediment characteristics the County, in conjunction with the Department, conducted two sampling operations. The results of these activities were submitted as Attachment 28 of the original permit. Due to the inclusion of samples taken outside of the proposed work area, data for the specific samples within the work area are repeated in entirety as Attachment 28B.1 - Sampling Analysis. The conceptual dredge footprint has been reduced and divided into sub areas for evaluating sediment characteristics. Table 1 shows the sample, or core designation, the sub area(s) influenced, the depth of the core, the design depth, and a two (2) foot buffer below the design limit. The core locations, sub areas and depiction of influence are also shown on the drawing titled "Core Locations and Area of Influence"; which is provided in Attachment 28B.4 – Project Characteristics.

Table 1 – Core Sampling Information

Core Designation	Sub Area(s) of Influence	Depth of Core	Design Depth	2 Ft. Buffer Limits
C22	Area 1	-17.0	-10	-12
C1	Area 1	-18.4	-10	-12
C23	Area 1 & 2	-19.4	-10	-12
C2	Area 2	-20.0	-10	-12
C3	Area 2 & 3A	-15.0	-10	-12
BP-5	Area 3A & 3B	-13.6	-10 / -9	-12 / -11
C4	Area 3A & 3B	-10.6	-10 / -9	-12 / -11
C14	Area 3B & 3C	-15.9	-9 / -8	-11 / -10
BP-6	Area 3B & 3C	-14.2	-9 / -8	-11 / -10
C15	Area 3C & 4A	-15.3	-8	-10
BP-7	Area 3C & 4A	-14.2	-8	-10
BP-8A	Area 4A & 4B	-14.9	-8	-10
C16	Area 4A & 4B	-11.9	-8	-10
BP-11	Area 4B	-12.8	-8	-10

Notes: 1 All depths reference NAVD 88.

2 Where the area of influence extends into sub areas with differing design depths, the design depths and buffer limits are referenced to the respective sub area in the order of notation in column 2 titled "Sub Area(s) of Influence".

Samples from each core were taken for analysis at each major stratum. Composites were then created to characterize the material. Alternate samples yielding similar descriptions were utilized when sufficient data was not available from the analysis. A list of core stratums in which alternate samples were used is provided in Table 2. The table lists the core samples and stratum limits for both the original core and the alternate core. Only the description for BP-6 sample 6 was determined to best be described by an alternate sample outside of the proposed work area. C07 sample 1 is supplemented to provide this additional data and is included in Attachment 28B.1 – Sampling Analysis.

Table 2 – Listing of Alternate Samples

Original Core	Sample	Stratum Limits			Utilized Core	Sample	Stratum Limits		
C14	Sample 3	-7.7	to	-10.2	C3	Sample 4	-11.0	to	-11.6
C14	Sample 4	-10.2	to	-11.0	C15	Sample 2	-9.0	to	-15.3
BP-6	Sample 6	-9.0	to	-9.1	C7	Sample 1	-1.4	to	-6.7
BP-6	Sample 7	-8.5	to	-9.0	BP-6	Sample 4	-9.1	to	-13.8
BP-7	Sample 5	-7.4	to	-8.2	BP-7	Sample 1	-3.1	to	-6.4

Core composites and sediment characteristics are shown in Attachment 28B.2 – Core Characteristics. Parameters including the USCS classification, descriptive phi sizes for percent passing (Phi 5, Phi 16, Phi 25, Phi 50, Phi 75, Phi 84, Phi 95); the median phi and sorting, skewness and kurtosis in phi units are included in the composite information. Also shown is the Munsell color classification and percent silt, defined by material passing the #230 sieve. The carbonate content is also shown when it was determined. (A summary table of all the samples including available information for the native beach material is shown in the table titled “Native Material vs. Fill Material” provided in Attachment 28B.4– Project Characteristics.)

The equations used to conduct the calculations for the mean (Φ_{50}), standard deviation (σ), skewness (α), and kurtosis (β) are recognized as those implemented in the gINT software and are as follows²:

$$\Phi_{50} = \Sigma (fm) / n$$

$$\sigma = \text{sqrt} [\Sigma f(m - \Phi_{50})^2 / 100]$$

$$\alpha = [\Sigma f(m - \Phi_{50})^3 / (100 * \sigma^3)]$$

$$\beta = [\Sigma f(m - \Phi_{50})^4 / (100 * \sigma^4)]$$

where f = weight percent in each phi size present;
 m = midpoint of each phi size;
 n = total number of samples (100 when f is in percent).

2. The Method of Moments formulas are referenced from Carver, Robert E. 1971. “Procedures in Sedimentary Petrology”. Wiley-Interscience, A division of John Wiley and Sons., Inc. New York, London, Tokyo, 653 pp. ISBN 471 13855 X.

Composites for each sub area were calculated using the same method and shown in Attachment 28B.3-Sub Area Characteristics. Each core was weighted based on the surface area the sample could be expected to influence. Representative surface areas were derived by dividing straight line distances between cores and extending the borders across the work footprint. Where no samples were available, such as the seaward edge of Area 1, the closest samples were assumed to govern. This is reasonable because the samples used for Sub Area 1 are located on the seaward side of the pass, on the sandy beach. Material within this area traveled from adjacent beaches, and therefore considered representative of the two beach samples provided. The drawing titled "Core Locations and Area of Influence" provided in Attachment 28B.4 – Project Characteristics shows the representative areas for each sample.

Results yield all the sub areas have a fine content, (percent of material passing the 230 sieve), of less than 20%. Sub areas 1, 2 and 3B have content less than 5 percent. Equating this to a volume of material for the total project provides approximately 135,000 cubic yards of beach compatible material and 6,300 cubic yards of fines. A breakdown of the volumes for each sub area and the percent fines is shown in Attachment 28B.4 – Project Characteristics. The volumes shown include the 2 foot buffer below the design limits.

A sediment quality assurance / quality control plan is included in this submittal. The plan addresses the dredging and sediment handling methods. The applicant intends to dispose of fines in the nearshore and place compatible material on the beach.

A shapefile for inclusion in ROSS is attached in digital format as Attachment 28A.1 ROSS Data. Also provided in PDF format are the drilling logs, granulometric reports, grain size distribution curves, and photographs of each core sample collected. This includes samples that are located outside the proposed excavation areas.

Comment 33 (b) - *Analysis of the compatibility of the fill material with respect to the native sediment of the disposal site. The analysis should include all relevant computations, the overflow ratios, and composite graphs of the grain size distribution of the fill material and the native sediment at the disposal site.*

1&2) For ease of review, please include the native beach data in the table referenced in comment 28. Some cores have samples with rather large mean grain sizes and contain more than 5% gravel-size material. Is this material shell or gravel? How will this be accounted for?

3) Please provide an Excel spreadsheet showing the calculations of the composites generated for both the native and fill material. This spreadsheet should include at least the area of influence of each core, the thickness of strata within each core to which a given set of parameters (mean grain size, sorting, color, carbonate content, etc.) is applied, and value of the parameter. Please provide a cumulative frequency curve for the composite. (Cumulative frequency curves were submitted already, there is no supporting information for the native composite curve.) The Spreadsheet submitted was not labeled in a way that facilitated its review. Please provide this information in an active spreadsheet(not a PDF) that has sufficient labeling for review, or some commentary describing the layout of the spreadsheet.

4) Please provide a sand spec for this project if one has been developed. (This should be in the sediment QA/QC plan.)

5) Based upon the core logs and sample information provided, cores BP5, BP6, BP7, BP8, BP11, C3, C6, C14, and C15 contain significant layers of excessive silt. Some of these layers are defined on the core logs as Clay and contain upwards of 70% silt. Are there any subareas that can be identified up front as non-beach compatible so that there is no concern that they will be placed on the beach? The Department generally asks for a 2 foot buffer above non-compatible material and the bottom of the core. Please be aware the Department expresses concern over the use of a hydrocyclone for this type of project. There is not sufficient data to support its effectiveness.

6) Please provide the carbonate content for the native beach.

Response 33 (b) - The compatibility analysis of the fill material with respect to the native sediment of the disposal site is shown in the table titled "Blind Pass Compatibility Analysis" provided in Attachment 28B.4 – Project Characteristics. Included are all relevant computations and the overfill ratios. Composites characteristics and grain size distribution curves of the fill material and the native sediment at the disposal site are shown in Attachment 33B.1-Native and Sub Area GSD Curves. The native sample was taken as the October 2001 conditions. This information is the most reliable found and was provided by the design engineer for the Captiva and Sanibel Island nourishment, (CPE). Previous samples collected in the vicinity of R112 are believed to be from the interior of the Blind Pass shoreline, not from the sandy beach. The native data has been incorporated into the compatibility analysis and is shown in original form in Attachment 33B.2 – R112 Native Data (2001 Monitoring Event). The composite data has been recalculated using the same methodology as used to calculate the fill composite. This resulted in a .03 mm difference from the value reported by CPE. The recalculated value of 0.35 mm was taken as D₅₀ for the analysis. The utilized composite data is shown in the native composite spreadsheet of Attachment 28B.4 Project Characteristics.

1&2) The native beach data sampled for R112 (2001), has been included in the table referenced for comment 28. The table, titled "Native Material vs. Fill Material" is provided in Attachment 28B.4 – Project Characteristics.

The material containing more than 5% gravel-size material is shell. The large shell material will be placed directly on the beach. The material is believed to be native to Sanibel and Captiva Island and representative of present day material. Any gravel pieces or rock, including solidified coral, found during construction, shall be removed from the beach and disposed of at an approved upland facility. This requirement shall be incorporated into the Sediment QA/QC plan and shall identify the upland facility.

3) The Excel spreadsheet showing the calculations of the composites generated for both the native and fill material is provided in digital format as Attachment 33B.3 – Spreadsheet. Below is a listing of the spreadsheets included on the CD.

- Core Composites (Sub Areas 1-3a).
- Core Composites (Sub Area 3b)
- Core Composites (Sub Areas 3c – 4b)
- Moment Calcs Composites
- Volume Calcs
- Compatibility Analysis
- Sub Area Composites
- Moment Calcs for Sub Areas
- Project Composite – Fill
- Project Composite – Native
- Moment Calcs for Project
- Native vs. Fill
- Moment Calcs (Overfill)
- Native & Sub Area GSD Curves

Please note the applicant has revised the method for calculating composites and the cumulative frequency curves. The method of determining the area of influence has been changed to represent an average value between cores. Also, the method of moments has been implored to derive the sediment characteristics. Further discussion regarding the new method is shown under the response for Comment 28 (b) above.

4) Specifications for sand placement will be in accordance with FAC 62-B.007 (2)j & k. This requirement has been placed in the attached Sediment QA/QC plan.

5) Three (3) samples influencing the excavation area are identified as Clay. Table 3 below shows the samples with depth range and percent silt. Eleven (11) additional samples, also shown below, are identified as a sand-clay mixture.

Table 3 – Samples Identified as Clay or Clayey Mixture Influencing the Fill

Core	Sample	USCS Description	Top Elevation	Bottom Elevation	Dredge Depth ³	Percent Silt
C3	#4	CL	-11.0	-11.6	-12.0	44.17
C14	#3 ¹	CL	-7.7	-10.2	-11.0	44.17
BP-11	#2	CL	-7.2	-8.5	-10.0	50.74
BP-5	#1	SP-SC	-2.9	-4.1	-12.0	5.56
BP-5	#3	SC	-7.4	-9.2	-12.0	29.96
BP-5	#5	SC	-9.2	-11.1	-12.0	4.27
BP-6	#1	SC	-1.8	-3.5	-11.0	13.65
BP-6	#3	SC	-7.9	-8.5	-11.0	20.05
BP-6	#6 ²	SC	-9.0	-9.1	-11.0	23.32
BP-7	#2	SC	-6.4	-7.4	-10.0	26.37
BP-7	#4	SC	-1.8	-3.1	-10.0	15.17
BP-8A	#1	SC	-1.1	-6.9	-10.0	12.66
BP-11	#1	SP-SC	-3.2	-7.2	-10.0	8.10
BP-11	#3	SP-SC	-8.5	-10	-10.0	7.78

Notes: 1) Gradation report for C03 Sample 4 used to describe sediment due to lack of information available and similar description.
 2) Gradation report for C07 Sample 1 used to describe sediment due to lack of information available and similar description.
 3) Dredge depth includes an additional 2' foot buffer zone below design limits.

The composite information suggests that no area will have more than 15% silt; and, the project as a whole yields approximately 5% silt. The composite information is shown in Attachment 28B.4-Project Characteristics and also repeated below in Table 4.

All material will be placed either directly on the beach or in the nearshore. Table 4 below shows the placement locations for each sub area. The placement criteria are further discussed in the attached sediment QA/QC plan. The potential use of a hydrocyclone has been eliminated as a treatment method.

Table 4 – Sub Area Composite Characteristics

Beach Compatibility Analysis						
Sub Area	Placement Area	Percent Silt (%)	Volume (cyds)	Volume Fines (cyds)	Overfill Ratio	Equivalent Fill (cyd)
Area 1	Beach	01%	45,195	295	1.0	45,195
Area 2	Beach	02%	37,443	900	1.0	37,443
Area 3A	Beach	04%	17,767	787	1.0	17,767
Area 3B	Nearshore	12%	7,440	893	1.6	5,535
Area 3C	Nearshore	10%	7,041	671	1.7	5,017
Area 4A	Beach	07%	13,343	925	2.5	5,359
Area 4B	Nearshore	14%	13,074	1,788	3.3	3,926
Total (cyds)		04%	141,303	6,259	1.2	120,241

Notes: 1) Volume estimates include 2 additional feet below design depth as a buffer for construction (Overdredge).
 2) Percent (%) fines defined as passing #230 sieve.
 3) Equivalent fill defined as material available with a composite mean grain size equivalent to the native sample.

6) Native carbonate content samples are not available for R112. However, samples collected post construction of the 2005 nourishment show a carbonate content ranging from approximately 10% at R110.5 to 90% at R116. Table 5 below shows the post construction carbonate content in the fill area vicinity. The gradation curves and laboratory reports for the referenced data are provided in Attachment 33B.4 - 2006 Carbonate Content. The sample dates were in January and February of 2006.

Table 5 – Carbonate Content in the Vicinity of the Fill Area

Monument	Location	Carbonate Content		Monument	Location	Carbonate Content
R-110.5	Back Beach	31.3%		R116	Back Beach	84.4%
R-110.5	Foreshore	11.1%		R116	Foreshore	81.2%
R-110.5	MTL	45.0		R116	MTL	77.1%
R-115	Back Beach	85.7%		R116	Back Beach	89.3%
R115	Foreshore	89.5%		R116	Foreshore	77.0%
R115	MTL	84.6%		R116	MTL	31.5%

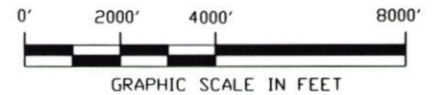
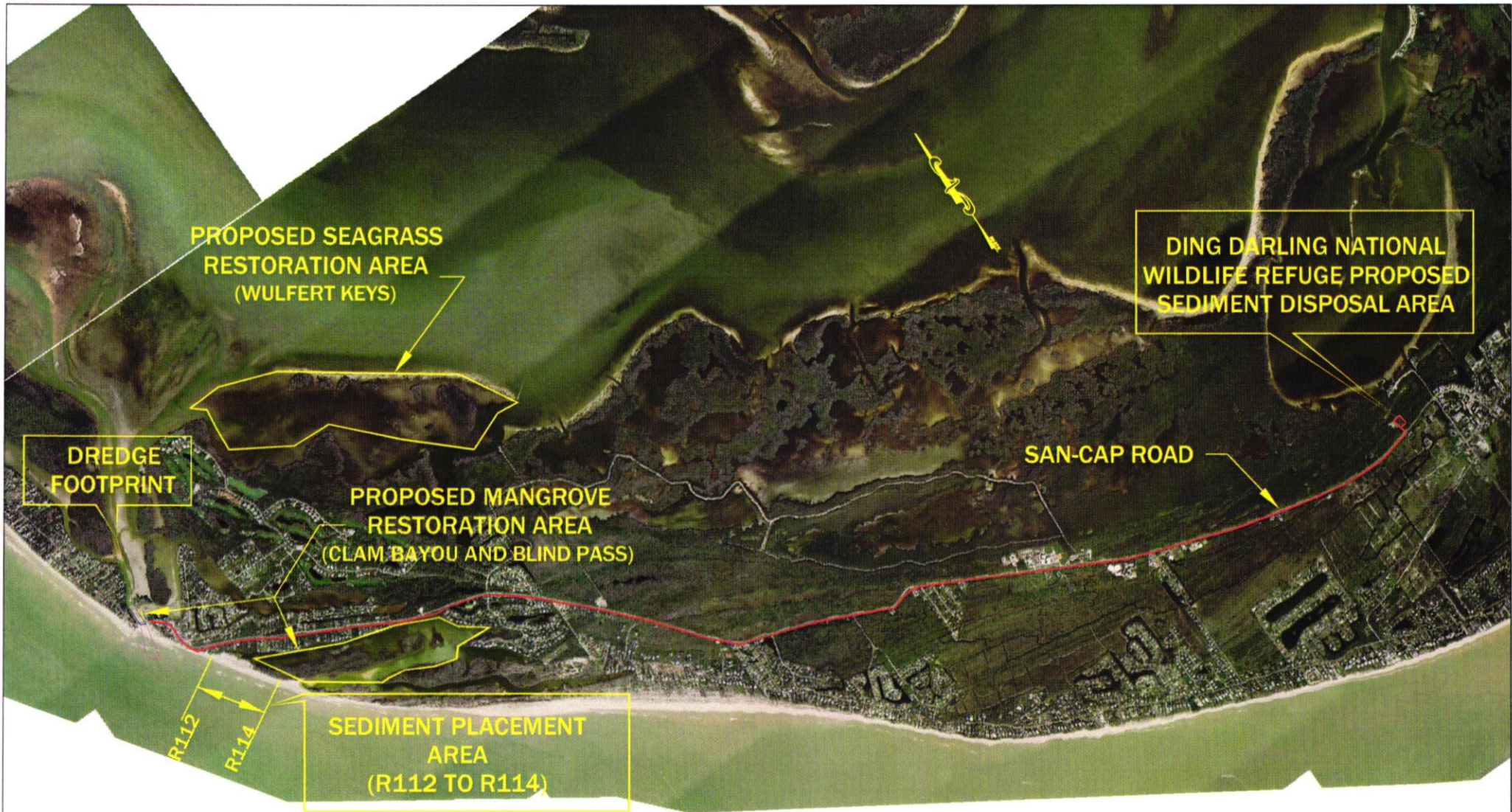
The information provided is in support of the Blind Pass Restoration project. This partial response for additional information is intended to address concerns regarding sediment quality and the design report. If there are any questions, please do not hesitate to contact me.

Sincerely,

LEE COUNTY PUBLIC WORKS
Division of Natural Resources

A handwritten signature in black ink, appearing to read "Robert Neal". The signature is fluid and cursive, with a prominent initial "R" and "N".

Robert Neal, P.E.
Coastal Engineer



SHEET: 01 OF 01	SCALE:	1" = 4000'
	FILE:	S:\NATRES\MARINE\BEACHMANAGEMENT\BLINDPASS\DRAWINGS\PLANVIEW.dwg
	DESIGN:	
	DRAWN:	
	APPROVED:	



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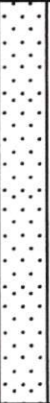
TITLE: **BLIND PASS RESTORATION
DREDGE AND PLACEMENT FOOTPRINT
PLANVIEW**

Drilling Logs

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 2 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION C01		LOCATION COORDINATES X = 596,349. Y = 781,169.		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER		12. TOTAL SAMPLES		VERTICAL NAVD 88 (ft)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
6. THICKNESS OF OVERBURDEN 0.0 Ft.		13. TOTAL NUMBER CORE BOXES		12. TOTAL SAMPLES
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		14. ELEVATION GROUND WATER		DISTURBED
8. TOTAL DEPTH OF BORING 20.0 Ft.		15. DATE BORING		UNDISTURBED (UD)
		16. ELEVATION TOP OF BORING 1.6 Ft.		STARTED 03-10-04
		17. TOTAL RECOVERY FOR BORING 11 Ft.		COMPLETED 03-10-04
		18. SIGNATURE AND TITLE OF INSPECTOR		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
1.6	0.0					
					1	Sample #1, Depth = 2.0' - 2.3' Recovered interval 0.8'-1.1'
			Well sorted, medium grained, quartz-rich, shelly, SAND, sparce gravel sized shell, light gray (10YR-7/1), (SP).		2	Sample #2, Depth = 10.0' - 10.3' Recovered interval 5.0'-5.3'
					3	Sample #3, Depth = 14.0' - 14.3' Recovered interval 7.5'-7.8'

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/14/05

DRILLING LOG (Cont. Sheet)			INSTALLATION		SHEET 2 OF 2 SHEETS	
PROJECT			COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
Blind Pass			Florida State Plane West		NAD 1983	NAVD 88 (ft)
LOCATION COORDINATES			ELEVATION TOP OF BORING			
X = 596,349 Y = 781,169			1.6 Ft.			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-18.4	20.0		Well sorted, medium grained, quartz-rich, shelly, SAND, sparce gravel sized shell, light gray (10YR-7/1), (SP). (continued)			
			End of Boring			

15

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FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/14/05

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 2 SHEETS	
1. PROJECT Blind Pass				9. SIZE AND TYPE OF BIT			
2. BORING DESIGNATION C22		LOCATION COORDINATES X = 596,394. Y = 781,027.		10. COORDINATE SYSTEM/DATUM Florida State Plane West		HORIZONTAL NAD 1983	VERTICAL NAVD 88 (ft)
3. DRILLING AGENCY		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER				12. TOTAL SAMPLES		DISTURBED	UNDISTURBED (UD)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING		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 03-10-04	COMPLETED 03-10-04
8. TOTAL DEPTH OF BORING 20.0 Ft.				16. ELEVATION TOP OF BORING 3.0 Ft.			
				17. TOTAL RECOVERY FOR BORING 10.5 Ft.			
18. SIGNATURE AND TITLE OF INSPECTOR							

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
3.0	0.0					
			Well sorted, fine grained, quartz-rich, skeletal, SAND, light gray (10YR-7/1), (SP).		1	Sample #1, Depth = 2.0' - 2.3' Recovered interval 1.1'-1.4'
					2	Sample #2, Depth = 14.0' - 14.3' Recovered interval 7.8'-8.1'

FLORIDA DEP ROSS, BLIND PASS, GP, J, FL DEP ROSS, GDT, 12/14/05

DRILLING LOG (Cont. Sheet)			INSTALLATION		SHEET 2 OF 2 SHEETS	
PROJECT			COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
Blind Pass			Florida State Plane West		NAD 1983	NAVD 88 (ft)
LOCATION COORDINATES			ELEVATION TOP OF BORING			
X = 596,394 Y = 781,027			3.0 Ft.			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	REMARKS
	15	[Dotted Pattern]	Well sorted, fine grained, quartz-rich, skeletal, SAND, light gray (10YR-7/1), (SP). (continued)			
-17.0'	20.0'					
			End of Boring			
	25					
	30					

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/14/05

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 2 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION C23			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			12. TOTAL SAMPLES	
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 03-10-04	
8. TOTAL DEPTH OF BORING 20.0 Ft.			16. ELEVATION TOP OF BORING 0.6 Ft.	
			17. TOTAL RECOVERY FOR BORING 14 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
0.6	0.0					
					1	Sample #1, Depth = 2.0' - 2.3' Recovered interval 1.3'-1.6'
			Well sorted, medium grained, shelly, quartz, SAND, quartz-rich at top and base, light gray (10YR-7/1), (SP).		2	Sample #2, Depth = 10.0' - 10.3' Recovered interval 7.5'-7.8'

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/14/05

DRILLING LOG (Cont. Sheet)			INSTALLATION		SHEET 2 OF 2 SHEETS	
PROJECT			COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
Blind Pass			Florida State Plane West		NAD 1983	NAVD 88 (ft)
LOCATION COORDINATES			ELEVATION TOP OF BORING			
X = 596,500 Y = 781,258			0.6 Ft.			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-19.4	20.0		Well sorted, medium grained, shelly, quartz, SAND, quartz-rich at top and base, light gray (10YR-7/1), (SP). (continued)			
			End of Boring			


15
20
25
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FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/14/05

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 2 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION C02			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			12. TOTAL SAMPLES	
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 03-10-04 COMPLETED 03-10-04	
8. TOTAL DEPTH OF BORING 20.0 Ft.			16. ELEVATION TOP OF BORING 0.0 Ft.	
			17. TOTAL RECOVERY FOR BORING 10.5 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
0.0	0.0					
			Poorly sorted, medium to coarse grained quartz-rich, skeletal, SAND and gravel, light gray (10YR-7/1), (SW).		1	Sample #1, Depth = 2.0' - 2.3' Recovered interval 1.0'-1.3'
					2	Sample #2, Depth = 6.0' - 6.3' Recovered interval 3.0'-3.3'
					3	Sample #3, Depth = 10.0' - 10.3' Recovered interval 5.0'-5.3'

FLORIDA DEP. ROSS BLIND PASS.GPJ. FL DEP. ROSS.GDT. 12/14/05

DRILLING LOG (Cont. Sheet)			INSTALLATION		SHEET 2 OF 2 SHEETS	
PROJECT			COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL
Blind Pass			Florida State Plane West		NAD 1983	NAVD 88 (ft)
LOCATION COORDINATES			ELEVATION TOP OF BORING			
X = 596,498 Y = 781,539			0.0 Ft.			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-20.0	20.0		Poorly sorted, medium to coarse grained quartz-rich, skeletal, SAND and gravel, light gray (10YR-7/1), (SW). (continued)			
			End of Boring			

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/14/05

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION C03		LOCATION COORDINATES X = 596,458. Y = 781,933.		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER		12. TOTAL SAMPLES		VERTICAL NAVD 88 (ft)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
6. THICKNESS OF OVERBURDEN 0.0 Ft.		13. TOTAL NUMBER CORE BOXES		12. TOTAL SAMPLES
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		14. ELEVATION GROUND WATER		DISTURBED
8. TOTAL DEPTH OF BORING 12.0 Ft.		15. DATE BORING		UNDISTURBED (UD)
		16. ELEVATION TOP OF BORING -3.0 Ft.		STARTED 03-11-04
		17. TOTAL RECOVERY FOR BORING 7.3 Ft.		COMPLETED 03-11-04
		18. SIGNATURE AND TITLE OF INSPECTOR		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-3.0	0.0					
					1	Sample #1, Depth = 0.0' - 0.2' Recovered Interval 0.0'-0.2'
					2	Sample #2, Depth = 3.0' - 3.2' Recovered Interval 3.0'-3.2'
			Well sorted, medium to coarse grained, quartz-rich, skeletal, SAND, silty at top (SP-SM), (SP).			
					3	Sample #3, Depth = 7.5' - 7.8' Recovered Interval 4.8'-5.0'
-11.0	8.0				4	Sample #4, Depth = 8.0' - 8.3' Recovered Interval 5.4'-5.7'
-11.6	8.6		CLAY, (CL).		5	Sample #5, Depth = 8.8' - 9.1' Recovered Interval 5.8'-6.1'
			Fine grained, quartz, SAND, (SP).		6	Sample #6, Depth = 10.1' - 10.4' Recovered Interval 6.4'-6.7'
-12.9	9.9					
			Fibrous, PEAT, red, (PT).			
-14.6	11.6					
-15.0	12.0		Fine grained, shelly, quartz, SAND, (SW).			
			End of Boring			

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/18/05

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION C04		LOCATION COORDINATES X = 596,737. Y = 782,194.		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER		12. TOTAL SAMPLES		VERTICAL NAVD 88 (ft)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
6. THICKNESS OF OVERBURDEN 0.0 Ft.		13. TOTAL NUMBER CORE BOXES		12. TOTAL SAMPLES
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		14. ELEVATION GROUND WATER		DISTURBED
8. TOTAL DEPTH OF BORING 8.9 Ft.		15. DATE BORING		UNDISTURBED (UD)
		16. ELEVATION TOP OF BORING -1.7 Ft.		STARTED 03-12-04
		17. TOTAL RECOVERY FOR BORING 8.5 Ft.		COMPLETED 03-12-04
		18. SIGNATURE AND TITLE OF INSPECTOR		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-1.7	0.0					
		•••••	Well sorted, fine grained, shelly, quartz, SAND, clay ball at 3.1'-3.3' (CL), shell layers at top of core and at 6.0'-6.6', light gray (10YR-7/1), (SP).		1	Sample #1, Depth = 0.8' - 1.0' Recovered interval 0.5'-0.7'
					2	Sample #2, Depth = 3.9' - 4.1' Recovered interval 4.0'-4.2'
					3	Sample #3, Depth = 6.0' - 6.2' Recovered interval 5.5'-5.7'
-10.6	8.9		End of Boring			

FLORIDA DEP. ROSS BLIND PASS.GPJ FL DEP.ROSS.GDT 12/14/05

Boring Designation BP5 Decompacked

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION BP5 DECOMPACKED		LOCATION COORDINATES X = 596,664.3 Y = 782,194.5		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER		12. TOTAL SAMPLES		VERTICAL NAVD 88 (ft)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
6. THICKNESS OF OVERBURDEN 0.0 Ft.		13. TOTAL NUMBER CORE BOXES		12. TOTAL SAMPLES
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		14. ELEVATION GROUND WATER		DISTURBED
8. TOTAL DEPTH OF BORING 10.7 Ft.		15. DATE BORING		UNDISTURBED (UD)
		16. ELEVATION TOP OF BORING -2.9 Ft.		STARTED 08-25-05
		17. TOTAL RECOVERY FOR BORING 10.7 Ft.		COMPLETED 08-25-05
		18. SIGNATURE AND TITLE OF INSPECTOR		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-2.9	0.0					
-3.2	0.3		Medium grained, quartz-rich, skeletal sand, abrupt contact, gray (10YR-6/1), (SP).			
-4.1	1.2		Clayey sand, gradational contact, gray (10YR-6/1), (SP-SC).		1	Sample #1, Depth = 1.0' - 1.2'
			Medium to coarse grained, quartz-rich skeletal sand with gravel, abrupt contact, light gray (10YR-7/1), (SW).			
-7.4	4.5				2	Sample #2, Depth = 3.7' - 3.9'
-7.9	5.0		Clay, gray (10YR-5/1), (CH).			
-8.6	5.7		Clayey sand, quartz-rich towards base, abrupt contact, gray (10YR-6/1), (SC).		3	Sample #3, Depth = 5.2' - 5.4'
-9.7	6.8		Medium to coarse grained, quartz-rich skeletal sand, abrupt contact, light gray (10YR-7/1), (SP).			
-11.1	8.2		Clayey, quartz-rich skeletal sand, gray (10YR-6/1), (SC).		5	Sample #5, Depth = 7.2'
			Medium to coarse grained, quartz-rich skeletal sand with gravel, light gray (10YR-7/1), (SW).		4	Sample #4, Depth = 8.4' - 8.6'
-13.6	10.7		End of Boring			

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/14/05

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION C14			10. COORDINATE SYSTEM/DATUM Florida State Plane West	
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			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: 03-25-04 COMPLETED: 03-25-04	
8. TOTAL DEPTH OF BORING 11.0 Ft.			16. ELEVATION TOP OF BORING -4.9 Ft.	
			17. TOTAL RECOVERY FOR BORING 6 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-4.9	0.0					
-5.6	0.7		Clayey, fine grained, shelly, quartz SAND, (SC).		1	Sample #1, Depth = 0.2' - 0.4' Recovered Interval 0.2'-0.24'
			Silty, fine grained, shelly, quartz, SAND, wood fragment at 1.4', (SP-SM).		2	Sample #2, Depth = 0.7' - 0.9' Recovered Interval 0.5'-0.7'
-8.9	4.0		CLAY, (CL).			
-11.4	6.5		Poorly sorted, skeletal, SAND, quartz sand mixture at base, (SW).		3	Sample #3, Depth = 6.5' - 6.8' Recovered Interval 4.3'-4.7'
-15.9	11.0		End of Boring			

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/8/05

Boring Designation BP6 Decompacked






DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION BP6 DECOMPACKED		LOCATION COORDINATES X = 596,881 Y = 782,632		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER		5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		VERTICAL NAVD 88 (ft)
6. THICKNESS OF OVERBURDEN 0.0 Ft.		7. DEPTH DRILLED INTO ROCK 0.0 Ft.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
8. TOTAL DEPTH OF BORING 12.4 Ft.		12. TOTAL SAMPLES		DISTURBED
		13. TOTAL NUMBER CORE BOXES		UNDISTURBED (UD)
		14. ELEVATION GROUND WATER		
		15. DATE BORING		STARTED 08-25-05
		16. ELEVATION TOP OF BORING -1.8 Ft.		COMPLETED 08-25-05
		17. TOTAL RECOVERY FOR BORING 12.4 Ft.		
		18. SIGNATURE AND TITLE OF INSPECTOR		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	REMARKS
-1.8'	0					
			Clayey fine to medium grained sand. Clay decreases with depth. Grain size and shell increases with depth, gradational contact, light gray (10YR-7/1), (SC).		1	Sample #1, Depth = 0.5'-0.7'
-5.1'	3.3'				2	Sample #2, Depth = 2.7'-2.9'
			Medium to coarse grained quartz-rich skeletal sand with gravel. Clay layer (SC) at 3.4ft to 3.5ft, light gray (10YR-7/1), (SW).		5	Sample #5, Depth = 4.0
-6.7'	4.9'					
			Medium to coarse grained quartz-rich skeletal sand, abrupt contact, light gray (10YR-7/1), (SW).			
-7.9'	6.1'					
			Clayey fine-grained quartz sand, gradational contact, gray (10YR-6/1), (SC).		3	Sample #3, Depth = 6.3'-6.5'
-8.5'	6.7'					
			Fine grained quartz sand, abrupt contact, light gray (10YR-7/1), (SP).			
-9.0'	7.2'					
			Clay, abrupt contact, gray (10YR-6/1), (CH).		4	Sample #4, Depth = 7.8'-8.0'
-9.1'	7.3'					
			Fine grained quartz sand, light gray (10YR-7/1), (SP).			
	10					
-13.8'	12.0'					
-14.2'	12.4'					
			Clayey medium grained quartz-rich skeletal sand, gray (10YR-6/1), (SC).			
			End of Boring			

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/14/05

Boring Designation BP7 Decompacked

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION BP7 DECOMPACTED		LOCATION COORDINATES X = 597,013 Y = 783,023		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER		12. TOTAL SAMPLES		VERTICAL NAVD 88 (ft)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
6. THICKNESS OF OVERBURDEN 0.0 Ft.		13. TOTAL NUMBER CORE BOXES		12. TOTAL SAMPLES
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		14. ELEVATION GROUND WATER		DISTURBED
8. TOTAL DEPTH OF BORING 12.4 Ft.		15. DATE BORING		UNDISTURBED (UD)
		16. ELEVATION TOP OF BORING -1.8 Ft.		STARTED 08-25-05
		17. TOTAL RECOVERY FOR BORING 12.4 Ft.		COMPLETED 08-25-05
		18. SIGNATURE AND TITLE OF INSPECTOR		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	REMARKS
-1.8'	0					
-3.1'	1.3'		Clayey fine-grained quartz sand, gradational contact, gray (10YR-6/1), (SC).		4	Sample #4, Depth = 0.8
-6.0'	4.2'		Fine grained quartz sand, trace to common shell, abrupt contact, light gray (10YR-7/1), (SP).		1	Sample #1, Depth = 2.5'-2.8'
-6.4'	4.6'		Quartz-rich skeletal sand, abrupt contact, gray (10YR-6/1), (SP).			
-7.4'	5.6'		Clayey fine-grained quartz sand, gradational contact, gray (10YR-6/1), (SC).		2	Sample #2, Depth = 4.8'-5.1'
-8.2'	6.4'		Fine-grained quartz sand, gray (10YR-6/1), (SP).			
-14.2'	12.4'		Medium to coarse grained quartz-rich skeletal sand, gray (10YR-6/1), (SW WITH GRAVEL).		3	Sample #3, Depth = 7.6'-7.9'
			End of Boring			

FLORIDA DEP. ROSS, BLIND PASS, GP, J. FL DEP. ROSS, GDT. 12/14/05

DRILLING LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Blind Pass				9. SIZE AND TYPE OF BIT			
2. BORING DESIGNATION C15		LOCATION COORDINATES X = 596,855. Y = 782,990.		10. COORDINATE SYSTEM/DATUM Florida State Plane West		HORIZONTAL NAD 1983	
3. DRILLING AGENCY		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL		<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER				12. TOTAL SAMPLES			
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL		BEARING		13. TOTAL NUMBER CORE BOXES	
6. THICKNESS OF OVERBURDEN		0.0 Ft.		14. ELEVATION GROUND WATER		15. DATE BORING	
7. DEPTH DRILLED INTO ROCK		0.0 Ft.		16. ELEVATION TOP OF BORING		-3.8 Ft.	
8. TOTAL DEPTH OF BORING		11.5 Ft.		17. TOTAL RECOVERY FOR BORING		10 Ft.	
				18. SIGNATURE AND TITLE OF INSPECTOR			

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-3.8	0.0					
			Well sorted, fine to medium grained, quartz, SAND, shelly at 0.0'-1.0', clayey at 5.0'-5.2', (SP).		1	Sample #1, Depth = 1.1' - 1.4' Recovered Interval 1.0'-1.3'
-9.0	5.2		Poorly sorted, skeletal and quartz, SAND mixture, clayey at 9.4'-10.8', (SW).		2	Sample #2, Depth = 9.8' - 10.2' Recovered Interval 8.5'-8.8'
-15.3	11.5		End of Boring			

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/8/05

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION C16			10. COORDINATE SYSTEM/DATUM Florida State Plane West	HORIZONTAL NAD 1983
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			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 03-12-04 COMPLETED 03-12-04	
8. TOTAL DEPTH OF BORING 8.0 Ft.			16. ELEVATION TOP OF BORING -3.9 Ft.	
			17. TOTAL RECOVERY FOR BORING 5.2 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-3.9	0.0					
			Well sorted, fine to medium grained, quartz, SAND, shelly at 5.3'-7.6', (SP).		1	Sample #1, Depth = 1.7' - 2.0' Recovered Interval 0.5'-0.8'
			End of Boring		2	Sample #2, Depth = 7.7' - 8.0' Recovered Interval 3.7'-4.0'
-11.9	8.0					

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/8/05

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION BP8A DECOMPACTED		LOCATION COORDINATES X = 596,796.6 Y = 783,194.3		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER		11. MANUFACTURER'S DESIGNATION OF DRILL		VERTICAL NAVD 88 (ft)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	<input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
6. THICKNESS OF OVERBURDEN 0.0 Ft.		12. TOTAL SAMPLES		DISTURBED
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		13. TOTAL NUMBER CORE BOXES		UNDISTURBED (UD)
8. TOTAL DEPTH OF BORING 13.8 Ft.		14. ELEVATION GROUND WATER		
		15. DATE BORING		STARTED 08-24-05
		16. ELEVATION TOP OF BORING -1.1 Ft.		COMPLETED 08-24-05
		17. TOTAL RECOVERY FOR BORING 13.8 Ft.		
		18. SIGNATURE AND TITLE OF INSPECTOR		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-1.1	0.0					
			Clayey fine-grained quartz sand with common shell, organic-rich layer at 1.7ft to 1.8ft, gradational contact, gray (10YR-6/1), (SC).		1	Sample #1, Depth = 0.8' - 1.2'
			Medium to coarse grained, quartz-rich, skeletal sand grading downwards to gravelly sand, gray (10YR-6/1), (SW).		2	Sample #2, Depth = 6.6' - 7.0'
			Fine-grained quartz sand, abrupt contact, light gray (10YR-7/1), (SP).			
			Medium to coarse grained skeletal sand, light gray (10YR-7/2), (SW WITH GRAVEL).		3	Sample #3, Depth = 10.6' - 11.0'
			End of Boring			



FLORIDA DEP. ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/8/05

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION BP11 DECOMPACKED		LOCATION COORDINATES X = 597,179.4 Y = 783,600.2		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER		12. TOTAL SAMPLES		VERTICAL NAVD 88 (ft)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
6. THICKNESS OF OVERBURDEN 0.0 Ft.		13. TOTAL NUMBER CORE BOXES		12. TOTAL SAMPLES
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		14. ELEVATION GROUND WATER		DISTURBED
8. TOTAL DEPTH OF BORING 9.6 Ft.		15. DATE BORING		UNDISTURBED (UD)
		16. ELEVATION TOP OF BORING -3.2 Ft.		13. TOTAL NUMBER CORE BOXES
		17. TOTAL RECOVERY FOR BORING 9.6 Ft.		14. ELEVATION GROUND WATER
		18. SIGNATURE AND TITLE OF INSPECTOR		15. DATE BORING

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-3.2	0.0					
			Fine-grained quartz sand with clay-rich intervals and clay lamina, gradational contact, gray (10YR-6/1), (SP-SC).		1	Sample #1, Depth = 0.5' - 0.8'
-7.2	4.0		Quartz-rich clay, gray (10YR-6/1), (CL).		2	Sample #2, Depth = 4.2' - 4.5'
-8.5	5.3		Fine-grained shelly quartz sand with caly, gray (10YR-6/1), (SP-SC).		3	Sample #3, Depth = 6.1' - 6.4'
-12.8	9.6		End of Boring			

FLORIDA DEP ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/8/05

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Blind Pass			9. SIZE AND TYPE OF BIT	
2. BORING DESIGNATION C07		LOCATION COORDINATES X = 597,494. Y = 783,311.		10. COORDINATE SYSTEM/DATUM Florida State Plane West
3. DRILLING AGENCY		CONTRACTOR FILE NO.		HORIZONTAL NAD 1983
4. NAME OF DRILLER		12. TOTAL SAMPLES		VERTICAL NAVD 88 (ft)
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER
6. THICKNESS OF OVERBURDEN 0.0 Ft.		13. TOTAL NUMBER CORE BOXES		12. TOTAL SAMPLES
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		14. ELEVATION GROUND WATER		DISTURBED
8. TOTAL DEPTH OF BORING 8.0 Ft.		15. DATE BORING		UNDISTURBED (UD)
		16. ELEVATION TOP OF BORING -1.4 Ft.		13. TOTAL NUMBER CORE BOXES
		17. TOTAL RECOVERY FOR BORING 6.5 Ft.		14. ELEVATION GROUND WATER
		18. SIGNATURE AND TITLE OF INSPECTOR		15. DATE BORING
				STARTED 03-25-04
				COMPLETED 03-25-04

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations corrected for either expansion or compaction based on judgement	% REC.	BOX OR SAMPLE	REMARKS
-1.4	0.0					
			Clayey, fine grained, quartz, SAND, quartz increases to base, gray (10YR-6/1), (SC).		1	Sample #1, Depth = 0.0' - 0.2' Recovered interval 0.0'-0.2'
			Silty, fined grained, shelly, quartz, SAND, light gray (10YR 7/1), (SM).		2	Sample #2, Depth = 5.6' - 5.8' Recovered interval 4.6'-4.8'
			End of Boring			

FLORIDA DEP. ROSS BLIND PASS.GPJ FL DEP ROSS.GDT 12/14/05

Granulometric Reports

Granularmetric Report



Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Project Name: Wulfert Channel
Sample Name: C01 #1
Analysis Date: 07-30-04
Analyzed By: JCB

Easting 782,151	Northing 596,828	Coordinate System: Florida State Plane West	Elevation (ft): 0.8 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 64.72	Wash Weight (g): 64.72	Pan Retained (g): 0.15	Sieve Loss (%): 0.14	Fines (%): #200 - 0.49 #230 - 0.37	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	4.90	7.57	4.90	7.57
3.5	-2.50	5.66	2.92	4.51	7.82	12.08
5	-2.00	4.00	4.79	7.40	12.61	19.48
7	-1.50	2.83	6.47	10.00	19.08	29.48
10	-1.00	2.00	5.24	8.10	24.32	37.58
14	-0.50	1.41	7.45	11.51	31.77	49.09
18	0.00	1.00	6.41	9.90	38.18	58.99
25	0.50	0.71	6.09	9.41	44.27	68.40
35	1.00	0.50	6.49	10.03	50.76	78.43
45	1.50	0.35	5.16	7.97	55.92	86.40
60	2.00	0.25	4.01	6.20	59.93	92.60
80	2.50	0.18	2.94	4.54	62.87	97.14
120	3.00	0.13	1.18	1.82	64.05	98.96
170	3.50	0.09	0.28	0.43	64.33	99.40
200	3.75	0.07	0.07	0.11	64.40	99.51
230	4.00	0.06	0.08	0.12	64.48	99.63

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.26	1.35	0.83	-0.45	-1.72	-2.24	-3.42

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	-0.44	1.36	1.63	0.04	2.17

GRANULARMETRIC REPORT BLIND_PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Project Name: Wulfert Channel
 Sample Name: C01 #2
 Analysis Date: 07-26-04
 Analyzed By: JCB

Coastal Tech
 715 North Drive Suite G
 Melbourne, Florida 32934
 ph 321 751 1135
 fax

Easting 782,151	Northing 596,828	Coordinate System: Florida State Plane West	Elevation (ft): -7.2 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 146.58	Wash Weight (g): 146.58	Pan Retained (g): 0.24	Sieve Loss (%): 0.10	Fines (%): #200 - 0.35 #230 - 0.27	Shells (%):
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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
11/16"	-3.50	11.31	3.80	2.59	3.80	2.59
5/16"	-3.00	8.00	6.60	4.50	10.40	7.10
3.5	-2.50	5.66	9.96	6.79	20.36	13.89
5	-2.00	4.00	11.89	8.11	32.25	22.00
7	-1.50	2.83	11.44	7.80	43.69	29.81
10	-1.00	2.00	12.61	8.60	56.30	38.41
14	-0.50	1.41	14.29	9.75	70.59	48.16
18	0.00	1.00	16.42	11.20	87.01	59.36
25	0.50	0.71	16.96	11.57	103.97	70.93
35	1.00	0.50	14.49	9.89	118.46	80.82
45	1.50	0.35	10.60	7.23	129.06	88.05
60	2.00	0.25	6.53	4.45	135.59	92.50
80	2.50	0.18	5.11	3.49	140.70	95.99
120	3.00	0.13	3.85	2.63	144.55	98.62
170	3.50	0.09	1.33	0.91	145.88	99.52
200	3.75	0.07	0.18	0.12	146.06	99.65
230	4.00	0.06	0.13	0.09	146.19	99.73

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.36	1.22	0.71	-0.42	-1.81	-2.37	-3.23

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	-0.5	1.41	1.66	0.04	2.31

GRANULOMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Project Name: Wulfert Channel
 Sample Name: C01 #3
 Analysis Date: 07-26-04
 Analyzed By: JCB

Coastal Tech
 715 North Drive Suite G
 Melbourne, Florida 32934
 ph 321 751 1135
 fax

Easting 782,151	Northing 596,828	Coordinate System: Florida State Plane West	Elevation (ft): -11.2 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 88.39	Wash Weight (g): 88.39	Pan Retained (g): 0.42	Sieve Loss (%): 0.02	Fines (%): #200 - 0.68 #230 - 0.50	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	4.40	4.98	4.40	4.98
3.5	-2.50	5.66	8.72	9.87	13.12	14.84
5	-2.00	4.00	9.93	11.23	23.05	26.08
7	-1.50	2.83	12.13	13.72	35.18	39.80
10	-1.00	2.00	9.86	11.16	45.04	50.96
14	-0.50	1.41	12.70	14.37	57.74	65.32
18	0.00	1.00	9.75	11.03	67.49	76.35
25	0.50	0.71	7.40	8.37	74.89	84.73
35	1.00	0.50	5.61	6.35	80.50	91.07
45	1.50	0.35	3.16	3.58	83.66	94.65
60	2.00	0.25	1.83	2.07	85.49	96.72
80	2.50	0.18	1.13	1.28	86.62	98.00
120	3.00	0.13	0.64	0.72	87.26	98.72
170	3.50	0.09	0.44	0.50	87.70	99.22
200	3.75	0.07	0.09	0.10	87.79	99.32
230	4.00	0.06	0.16	0.18	87.95	99.50

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1.58	0.46	-0.06	-1.04	-2.05	-2.45	-3.00

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	-0.98	1.97	1.4	0.52	2.99

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Project Name: Wulfert Channel
Sample Name: C22 #1
Analysis Date: 07-26-04
Analyzed By: JCB

Easting 782,585	Northing 598,441	Coordinate System: Florida State Plane West	Elevation (ft): 2.2 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 154.23	Wash Weight (g): 154.23	Pan Retained (g): 0.42	Sieve Loss (%): 0.43	Fines (%): #200 - 0.82 #230 - 0.70	Shells (%):
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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	3.19	2.07	3.19	2.07
11/16"	-3.50	11.31	1.84	1.19	5.03	3.26
5/16"	-3.00	8.00	4.76	3.09	9.79	6.35
3.5	-2.50	5.66	4.19	2.72	13.98	9.06
5	-2.00	4.00	5.02	3.25	19.00	12.32
7	-1.50	2.83	7.13	4.62	26.13	16.94
10	-1.00	2.00	6.79	4.40	32.92	21.34
14	-0.50	1.41	11.97	7.76	44.89	29.11
18	0.00	1.00	12.68	8.22	57.57	37.33
25	0.50	0.71	13.18	8.55	70.75	45.87
35	1.00	0.50	13.97	9.06	84.72	54.93
45	1.50	0.35	13.46	8.73	98.18	63.66
60	2.00	0.25	17.10	11.09	115.28	74.75
80	2.50	0.18	26.12	16.94	141.40	91.68
120	3.00	0.13	9.89	6.41	151.29	98.09
170	3.50	0.09	1.49	0.97	152.78	99.06
200	3.75	0.07	0.18	0.12	152.96	99.18
230	4.00	0.06	0.19	0.12	153.15	99.30

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.76	2.27	2.01	0.73	-0.76	-1.60	-3.22

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	0.4	0.76	1.83	-0.65	2.58

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Project Name: Wulfert Channel
Sample Name: C22 #2
Analysis Date: 07-26-04
Analyzed By: JCB

Easting 782,585	Northing 598,441	Coordinate System: Florida State Plane West	Elevation (ft): -9.8 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 154.72	Wash Weight (g): 154.72	Pan Retained (g): 0.68	Sieve Loss (%): 0.77	Fines (%): #200 - 1.49 #230 - 1.21	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.98	0.63	0.98	0.63
3.5	-2.50	5.66	2.75	1.78	3.73	2.41
5	-2.00	4.00	4.91	3.17	8.64	5.58
7	-1.50	2.83	8.50	5.49	17.14	11.08
10	-1.00	2.00	12.28	7.94	29.42	19.01
14	-0.50	1.41	16.79	10.85	46.21	29.87
18	0.00	1.00	17.61	11.38	63.82	41.25
25	0.50	0.71	16.92	10.94	80.74	52.18
35	1.00	0.50	15.31	9.90	96.05	62.08
45	1.50	0.35	12.86	8.31	108.91	70.39
60	2.00	0.25	10.47	6.77	119.38	77.16
80	2.50	0.18	12.65	8.18	132.03	85.33
120	3.00	0.13	15.77	10.19	147.80	95.53
170	3.50	0.09	4.11	2.66	151.91	98.18
200	3.75	0.07	0.51	0.33	152.42	98.51
230	4.00	0.06	0.43	0.28	152.85	98.79

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.97	2.42	1.84	0.40	-0.72	-1.19	-2.09

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	0.46	0.73	1.58	-0.02	2.15

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Project Name: Wulfert Channel
 Sample Name: C23 #1
 Analysis Date: 07-26-04
 Analyzed By: JCB

Coastal Tech
 715 North Drive Suite G
 Melbourne, Florida 32934
 ph 321 751 1135
 fax

Easting 782,354	Northing 598,798	Coordinate System: Florida State Plane West	Elevation (ft): -0.2 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 116.73	Wash Weight (g): 116.73	Pan Retained (g): 0.24	Sieve Loss (%): 0.03	Fines (%): #200 - 0.31 #230 - 0.24	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.55	0.47	0.55	0.47
5	-2.00	4.00	0.24	0.21	0.79	0.68
7	-1.50	2.83	0.52	0.45	1.31	1.12
10	-1.00	2.00	0.90	0.77	2.21	1.89
14	-0.50	1.41	3.20	2.74	5.41	4.63
18	0.00	1.00	6.49	5.56	11.90	10.19
25	0.50	0.71	11.50	9.85	23.40	20.05
35	1.00	0.50	14.23	12.19	37.63	32.24
45	1.50	0.35	12.47	10.68	50.10	42.92
60	2.00	0.25	20.70	17.73	70.80	60.65
80	2.50	0.18	33.09	28.35	103.89	89.00
120	3.00	0.13	11.12	9.53	115.01	98.53
170	3.50	0.09	1.22	1.05	116.23	99.57
200	3.75	0.07	0.14	0.12	116.37	99.69
230	4.00	0.06	0.08	0.07	116.45	99.76

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.81	2.41	2.25	1.70	0.70	0.29	-0.47

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	1.43	0.37	1.06	-0.88	3.66

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Project Name: Wulfert Channel

Sample Name: C23 #2

Analysis Date: 07-26-04

Analyzed By: JCB

Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Easting <p style="text-align: center;">782,354</p>	Northing <p style="text-align: center;">598,798</p>	Coordinate System: <p style="text-align: center;">Florida State Plane West</p>	Elevation (ft): <p style="text-align: center;">-8.2 NAVD 29</p>
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USCS: <p style="text-align: center;">SP</p>	Munsell <p style="text-align: center;">Dry - 10YR-7/1</p>	Comments:
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Dry Weight (g): <p style="text-align: center;">161.01</p>	Wash Weight (g): <p style="text-align: center;">161.01</p>	Pan Retained (g): <p style="text-align: center;">1.62</p>	Sieve Loss (%): <p style="text-align: center;">0.48</p>	Fines (%): #200 - 1.96 #230 - 1.49	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	2.15	1.34	2.15	1.34
3.5	-2.50	5.66	3.88	2.41	6.03	3.75
5	-2.00	4.00	5.93	3.68	11.96	7.43
7	-1.50	2.83	7.26	4.51	19.22	11.94
10	-1.00	2.00	9.03	5.61	28.25	17.55
14	-0.50	1.41	12.52	7.78	40.77	25.32
18	0.00	1.00	12.52	7.78	53.29	33.10
25	0.50	0.71	13.94	8.66	67.23	41.76
35	1.00	0.50	17.21	10.69	84.44	52.44
45	1.50	0.35	18.39	11.42	102.83	63.87
60	2.00	0.25	18.61	11.56	121.44	75.42
80	2.50	0.18	21.15	13.14	142.59	88.56
120	3.00	0.13	11.02	6.84	153.61	95.40
170	3.50	0.09	3.51	2.18	157.12	97.58
200	3.75	0.07	0.73	0.45	157.85	98.04
230	4.00	0.06	0.76	0.47	158.61	98.51

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.97	2.33	1.98	0.89	-0.52	-1.14	-2.33

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	0.63	0.65	1.61	-0.42	2.38

GRANULARMETRIC REPORT - BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granularmetric Report



Project Name: Wulfert Channel
 Sample Name: C02 #1
 Analysis Date: 07-26-04
 Analyzed By: JCB

Coastal Tech
 715 North Drive Suite G
 Melbourne, Florida 32934
 ph 321 751 1135
 fax

Easting 780,792	Northing 597,464	Coordinate System: Florida State Plane West	Elevation (ft): -0.8 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 118.88	Wash Weight (g): 118.88	Pan Retained (g): 1.23	Sieve Loss (%): 0.09	Fines (%): #200 - 1.13 #230 - 1.13	Shells (%):
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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
11/16"	-3.50	11.31	0.66	0.56	0.66	0.56
5/16"	-3.00	8.00	0.00	0.00	0.66	0.56
3.5	-2.50	5.66	1.64	1.38	2.30	1.93
5	-2.00	4.00	1.21	1.02	3.51	2.95
7	-1.50	2.83	1.84	1.55	5.35	4.50
10	-1.00	2.00	3.55	2.99	8.90	7.49
14	-0.50	1.41	4.57	3.84	13.47	11.33
18	0.00	1.00	5.77	4.85	19.24	16.18
25	0.50	0.71	7.51	6.32	26.75	22.50
35	1.00	0.50	11.73	9.87	38.48	32.37
45	1.50	0.35	15.81	13.30	54.29	45.67
60	2.00	0.25	18.41	15.49	72.70	61.15
80	2.50	0.18	22.72	19.11	95.42	80.27
120	3.00	0.13	7.44	6.26	102.86	86.52
170	3.50	0.09	13.23	11.13	116.09	97.65
200	3.75	0.07	1.45	1.22	117.54	98.87
230	4.00	0.06	0.00	0.00	117.54	98.87

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.38	2.80	2.36	1.64	0.63	-0.02	-1.42

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	1.36	0.39	1.43	-0.91	3.74

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granularmetric Report



Project Name: Wulfert Channel
 Sample Name: C02 #2
 Analysis Date: 07-26-04
 Analyzed By: JCB

Coastal Tech
 715 North Drive Suite G
 Melbourne, Florida 32934
 ph 321 751 1135
 fax

Easting 780,792	Northing 597,464	Coordinate System: Florida State Plane West	Elevation (ft): -4.8 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 126.01	Wash Weight (g): 126.01	Pan Retained (g): 0.21	Sieve Loss (%): 0.02	Fines (%): #200 - 0.41 #230 - 0.18	Shells (%):
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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
11/16"	-3.50	11.31	0.97	0.77	0.97	0.77
5/16"	-3.00	8.00	4.84	3.84	5.81	4.61
3.5	-2.50	5.66	7.21	5.72	13.02	10.33
5	-2.00	4.00	8.64	6.86	21.66	17.19
7	-1.50	2.83	10.46	8.30	32.12	25.49
10	-1.00	2.00	11.86	9.41	43.98	34.90
14	-0.50	1.41	14.84	11.78	58.82	46.68
18	0.00	1.00	10.50	8.33	69.32	55.01
25	0.50	0.71	8.71	6.91	78.03	61.92
35	1.00	0.50	8.15	6.47	86.18	68.39
45	1.50	0.35	12.46	9.89	98.64	78.28
60	2.00	0.25	10.58	8.40	109.22	86.68
80	2.50	0.18	8.34	6.62	117.56	93.29
120	3.00	0.13	4.78	3.79	122.34	97.09
170	3.50	0.09	2.05	1.63	124.39	98.71
200	3.75	0.07	1.10	0.87	125.49	99.59
230	4.00	0.06	0.29	0.23	125.78	99.82

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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2.73	1.84	1.33	-0.30	-1.53	-2.09	-2.97
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	-0.15	1.11	1.77	0.07	2.07

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Project Name: Wulfert Channel
Sample Name: C02 #3
Analysis Date: 07-26-04
Analyzed By: JCB

Easting 780,792	Northing 597,464	Coordinate System: Florida State Plane West	Elevation (ft): -8.8 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 129.58	Wash Weight (g): 129.58	Pan Retained (g): 0.90	Sieve Loss (%): 0.05	Fines (%): #200 - 1.01 #230 - 0.75	Shells (%):
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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
11/16"	-3.50	11.31	1.69	1.30	1.69	1.30
5/16"	-3.00	8.00	0.55	0.42	2.24	1.73
3.5	-2.50	5.66	4.03	3.11	6.27	4.84
5	-2.00	4.00	9.40	7.25	15.67	12.09
7	-1.50	2.83	11.37	8.77	27.04	20.87
10	-1.00	2.00	11.19	8.64	38.23	29.50
14	-0.50	1.41	12.07	9.31	50.30	38.82
18	0.00	1.00	12.39	9.56	62.69	48.38
25	0.50	0.71	12.09	9.33	74.78	57.71
35	1.00	0.50	12.43	9.59	87.21	67.30
45	1.50	0.35	12.17	9.39	99.38	76.69
60	2.00	0.25	12.25	9.45	111.63	86.15
80	2.50	0.18	9.92	7.66	121.55	93.80
120	3.00	0.13	4.17	3.22	125.72	97.02
170	3.50	0.09	2.12	1.64	127.84	98.66
200	3.75	0.07	0.43	0.33	128.27	98.99
230	4.00	0.06	0.34	0.26	128.61	99.25

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.69	1.89	1.41	0.09	-1.26	-1.78	-2.49

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	0.05	0.97	1.64	-0.05	2.18

GRANULARMETRIC REPORT BLIND PASSZ.GPJ FL DEP ROSS.GDT 8/4/04

Granularmetric Report



Project Name: Wulfert Channel
 Sample Name: C03 #1
 Analysis Date: 07-26-04
 Analyzed By: JCB

Coastal Tech
 715 North Drive Suite G
 Melbourne, Florida 32934
 ph 321 751 1135
 fax

Easting 781,169	Northing 596,349	Coordinate System: Florida State Plane West	Elevation (ft): -1.8 NAVD 29
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USCS: SP-SM	Munsell Dry - 10YR-6/1	Comments:
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Dry Weight (g): 80.27	Wash Weight (g): 80.27	Pan Retained (g): 3.40	Sieve Loss (%): 0.70	Fines (%): #200 - 6.37 #230 - 4.93	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	1.62	2.02	1.62	2.02
3.5	-2.50	5.66	0.50	0.62	2.12	2.64
5	-2.00	4.00	0.41	0.51	2.53	3.15
7	-1.50	2.83	0.57	0.71	3.10	3.86
10	-1.00	2.00	1.35	1.68	4.45	5.54
14	-0.50	1.41	2.70	3.36	7.15	8.91
18	0.00	1.00	3.68	4.58	10.83	13.49
25	0.50	0.71	5.80	7.23	16.63	20.72
35	1.00	0.50	8.46	10.54	25.09	31.26
45	1.50	0.35	10.70	13.33	35.79	44.59
60	2.00	0.25	11.62	14.48	47.41	59.06
80	2.50	0.18	12.68	15.80	60.09	74.86
120	3.00	0.13	8.33	10.38	68.42	85.24
170	3.50	0.09	5.41	6.74	73.83	91.98
200	3.75	0.07	1.33	1.66	75.16	93.63
230	4.00	0.06	1.15	1.43	76.31	95.07

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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3.99	2.94	2.51	1.69	0.70	0.17	-1.16
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	1.4	0.38	1.43	-0.98	4.28

GRANULARMETRIC REPORT - BLIND PASS2.GPJ - FL DEP ROSS.GDT - 8/4/04

Granularmetric Report



Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Project Name: Wulfert Channel
Sample Name: C03 #2
Analysis Date: 07-26-04
Analyzed By: JCB

Easting 781,169	Northing 596,349	Coordinate System: Florida State Plane West	Elevation (ft): -4.8 NAVD 29
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USCS: SP	Munsell Dry - 10YR-6/1	Comments:
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Dry Weight (g): 64.90	Wash Weight (g): 64.90	Pan Retained (g): 0.10	Sieve Loss (%): 0.06	Fines (%): #200 - 0.42 #230 - 0.22	Shells (%):
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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	4.55	7.01	4.55	7.01
11/16"	-3.50	11.31	2.40	3.70	6.95	10.71
5/16"	-3.00	8.00	1.52	2.34	8.47	13.05
3.5	-2.50	5.66	1.97	3.04	10.44	16.09
5	-2.00	4.00	2.18	3.36	12.62	19.45
7	-1.50	2.83	3.62	5.58	16.24	25.02
10	-1.00	2.00	4.52	6.96	20.76	31.99
14	-0.50	1.41	6.39	9.85	27.15	41.83
18	0.00	1.00	6.29	9.69	33.44	51.53
25	0.50	0.71	5.87	9.04	39.31	60.57
35	1.00	0.50	5.79	8.92	45.10	69.49
45	1.50	0.35	4.79	7.38	49.89	76.87
60	2.00	0.25	4.55	7.01	54.44	83.88
80	2.50	0.18	4.09	6.30	58.53	90.18
120	3.00	0.13	2.94	4.53	61.47	94.71
170	3.50	0.09	3.02	4.65	64.49	99.37
200	3.75	0.07	0.14	0.22	64.63	99.58
230	4.00	0.06	0.13	0.20	64.76	99.78

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.03	2.01	1.37	-0.08	-1.50	-2.51	-4.07

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	-0.21	1.16	2.07	-0.28	2.29

GRANULARMETRIC REPORT - BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Project Name: Wulfert Channel

Sample Name: C03 #3

Analysis Date: 07-26-04

Analyzed By: JCB

Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Easting 781,169	Northing 596,349	Coordinate System: Florida State Plane West	Elevation (ft): -9.3 NAVD 29
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USCS: SP	Munsell Dry - 10YR-6/1	Comments:
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Dry Weight (g): 68.06	Wash Weight (g): 68.06	Pan Retained (g): 0.09	Sieve Loss (%): 0.03	Fines (%): #200 - 0.26 #230 - 0.16	Shells (%):
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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	3.47	5.10	3.47	5.10
11/16"	-3.50	11.31	4.91	7.21	8.38	12.31
5/16"	-3.00	8.00	5.36	7.88	13.74	20.19
3.5	-2.50	5.66	4.15	6.10	17.89	26.29
5	-2.00	4.00	4.08	5.99	21.97	32.28
7	-1.50	2.83	4.28	6.29	26.25	38.57
10	-1.00	2.00	4.32	6.35	30.57	44.92
14	-0.50	1.41	5.01	7.36	35.58	52.28
18	0.00	1.00	4.10	6.02	39.68	58.30
25	0.50	0.71	3.50	5.14	43.18	63.44
35	1.00	0.50	3.20	4.70	46.38	68.15
45	1.50	0.35	3.20	4.70	49.58	72.85
60	2.00	0.25	4.18	6.14	53.76	78.99
80	2.50	0.18	6.05	8.89	59.81	87.88
120	3.00	0.13	5.13	7.54	64.94	95.42
170	3.50	0.09	2.68	3.94	67.62	99.35
200	3.75	0.07	0.26	0.38	67.88	99.74
230	4.00	0.06	0.07	0.10	67.95	99.84

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.97	2.28	1.68	-0.65	-2.61	-3.27	-4.00
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	-0.53	1.44	2.31	0.06	1.71	

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report

Depths and elevations corrected for either expansion or compaction based on judgement



COASTAL TECH
Coastal Geology & Sediments Laboratory

715-G North Dr.
Melbourne, Fl. 32934
Phone (321) 751-1135
Fax (321) 751-2343

Project Name: Wulfert Channel
Sample Name: C03 #4
Analysis Date: 11-28-05
Analyzed By: LA

Easting (ft): 781,933.3	Northing (ft): 596,457.6	Coordinate System: Florida State Plane West	Elevation (ft): -11.0 NAVD 88
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USCS: CL	Munsell: Dry - 10YR-6/1	Comments:
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Dry Weight (g): 69.08	Wash Weight (g): 47.22	Pan Retained (g): 0.32	Sieve Loss (%): 12.06	Fines (%): #200 - 45.86 #230 - 44.17	Organics (%): 7.90	Carbonates (%): 24.20	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.07	0.10	0.07	0.10
10	-1.00	2.00	0.08	0.12	0.15	0.22
14	-0.50	1.41	0.05	0.07	0.20	0.29
18	0.00	1.00	0.11	0.16	0.31	0.45
25	0.50	0.71	0.26	0.38	0.57	0.83
35	1.00	0.50	0.32	0.46	0.89	1.29
45	1.50	0.35	0.30	0.43	1.19	1.72
60	2.00	0.25	0.53	0.77	1.72	2.49
80	2.50	0.18	1.80	2.61	3.52	5.10
120	3.00	0.13	12.44	18.01	15.96	23.11
170	3.50	0.09	18.44	26.69	34.40	49.80
200	3.75	0.07	3.00	4.34	37.40	54.14
230	4.00	0.06	1.17	1.69	38.57	55.83

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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			3.51	3.04	2.80	2.48
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Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	2.98	0.13	0.63	-3.14	18.39

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 12/8/05

Granulometric Report

Depths and elevations corrected for either expansion or compaction based on judgement



COASTAL TECH
Coastal Geology & Sediments Laboratory

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Melbourne, Fl. 32934
Phone (321) 751-1135
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Project Name: Wulfert Channel
Sample Name: C03 #5
Analysis Date: 11-28-05
Analyzed By: LA

Easting (ft): 781,933.3	Northing (ft): 596,457.6	Coordinate System: Florida State Plane West	Elevation (ft): -11.8 NAVD 88
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USCS: SP	Munsell: Dry - 10YR-8/1	Comments:
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Dry Weight (g): 81.60	Wash Weight (g): 81.60	Pan Retained (g): 0.01	Sieve Loss (%): 0.00	Fines (%): #200 - 0.23 #230 - 0.01	Organics (%): 1.50	Carbonates (%): 7.40	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	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	0.09	0.11	0.11	0.13
14	-0.50	1.41	0.12	0.15	0.23	0.28
18	0.00	1.00	0.12	0.15	0.35	0.43
25	0.50	0.71	0.19	0.23	0.54	0.66
35	1.00	0.50	0.16	0.20	0.70	0.86
45	1.50	0.35	0.54	0.66	1.24	1.52
60	2.00	0.25	1.01	1.24	2.25	2.76
80	2.50	0.18	11.34	13.90	13.59	16.66
120	3.00	0.13	54.73	67.07	68.32	83.73
170	3.50	0.09	12.54	15.37	80.86	99.10
200	3.75	0.07	0.55	0.67	81.41	99.77
230	4.00	0.06	0.18	0.22	81.59	99.99

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.37	3.01	2.93	2.75	2.56	2.48	2.08

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	2.72	0.15	0.43	-3.25	26.19

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 12/8/05

Granulometric Report



Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Project Name: Wulfert Channel
Sample Name: C04 #1
Analysis Date: 07-26-04
Analyzed By: JCB

Easting 781,539	Northing 596,498	Coordinate System: Florida State Plane West	Elevation (ft): -1.3 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 70.76	Wash Weight (g): 70.76	Pan Retained (g): 0.92	Sieve Loss (%): 0.23	Fines (%): #200 - 2.54 #230 - 1.53	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.64	0.90	0.64	0.90
3.5	-2.50	5.66	0.16	0.23	0.80	1.13
5	-2.00	4.00	0.51	0.72	1.31	1.85
7	-1.50	2.83	0.64	0.90	1.95	2.76
10	-1.00	2.00	0.68	0.96	2.63	3.72
14	-0.50	1.41	0.87	1.23	3.50	4.95
18	0.00	1.00	0.95	1.34	4.45	6.29
25	0.50	0.71	1.08	1.53	5.53	7.82
35	1.00	0.50	1.59	2.25	7.12	10.06
45	1.50	0.35	2.61	3.69	9.73	13.75
60	2.00	0.25	6.39	9.03	16.12	22.78
80	2.50	0.18	18.37	25.96	34.49	48.74
120	3.00	0.13	22.10	31.23	56.59	79.97
170	3.50	0.09	10.85	15.33	67.44	95.31
200	3.75	0.07	1.52	2.15	68.96	97.46
230	4.00	0.06	0.72	1.02	69.68	98.47

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.49	3.13	2.92	2.52	2.04	1.62	-0.48
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.23	0.21	1.19	-2.29	9.14	

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Project Name: Wulfert Channel
Sample Name: C04 #2
Analysis Date: 07-26-04
Analyzed By: JCB

Easting 781,539	Northing 596,498	Coordinate System: Florida State Plane West	Elevation (ft): -4.4 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 102.26	Wash Weight (g): 102.26	Pan Retained (g): 2.12	Sieve Loss (%): 0.61	Fines (%): #200 - 3.39 #230 - 2.68	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.16	0.16	0.16	0.16
10	-1.00	2.00	0.19	0.19	0.35	0.34
14	-0.50	1.41	0.12	0.12	0.47	0.46
18	0.00	1.00	0.20	0.20	0.67	0.66
25	0.50	0.71	0.46	0.45	1.13	1.11
35	1.00	0.50	1.24	1.21	2.37	2.32
45	1.50	0.35	2.39	2.34	4.76	4.65
60	2.00	0.25	8.71	8.52	13.47	13.17
80	2.50	0.18	31.32	30.63	44.79	43.80
120	3.00	0.13	39.28	38.41	84.07	82.21
170	3.50	0.09	13.75	13.45	97.82	95.66
200	3.75	0.07	0.97	0.95	98.79	96.61
230	4.00	0.06	0.73	0.71	99.52	97.32

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.48	3.07	2.91	2.58	2.19	2.05	1.52

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	2.49	0.18	0.62	-1.75	10.72

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granularmetric Report



Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
ph 321 751 1135
fax

Project Name: Wulfert Channel
Sample Name: C04 #3
Analysis Date: 07-26-04
Analyzed By: JCB

Easting 781,539	Northing 596,498	Coordinate System: Florida State Plane West	Elevation (ft): -6.5 NAVD 29
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USCS: SP	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 58.71	Wash Weight (g): 58.71	Pan Retained (g): 0.53	Sieve Loss (%): 0.95	Fines (%): #200 - 2.33 #230 - 1.86	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.00	0.00	0.00	0.00
7	-1.50	2.83	0.24	0.41	0.24	0.41
10	-1.00	2.00	0.27	0.46	0.51	0.87
14	-0.50	1.41	0.39	0.66	0.90	1.53
18	0.00	1.00	0.51	0.87	1.41	2.40
25	0.50	0.71	0.61	1.04	2.02	3.44
35	1.00	0.50	1.25	2.13	3.27	5.57
45	1.50	0.35	2.82	4.80	6.09	10.37
60	2.00	0.25	7.51	12.79	13.60	23.16
80	2.50	0.18	17.85	30.40	31.45	53.57
120	3.00	0.13	12.99	22.13	44.44	75.69
170	3.50	0.09	12.50	21.29	56.94	96.99
200	3.75	0.07	0.40	0.68	57.34	97.67
230	4.00	0.06	0.28	0.48	57.62	98.14

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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3.45	3.20	2.98	2.44	2.03	1.72	0.87
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	2.35	0.20	0.84	-1.61	7.39

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report

Depths and elevations based on measured values



COASTAL TECH

Coastal Geology & Sediments Laboratory

Coastal Tech
715-G North Dr.
Melbourne, FL 32934
ph (321) 751-1135
fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP-5 #1
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 596,664	Northing (ft): 782,195	Coordinate System: Florida State Plane West	Elevation (ft): -3.9' NAVD 88 (ft)
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USCS: SP-SC	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 80.69	Wash Weight (g): 76.37	Pan Retained (g): 0.17	Sieve Loss (%): 0.00	Fines (%): #200 - 6.02 #230 - 5.56	Organics (%): 1.40	Carbonates (%): 16.00	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.36	0.45	0.36	0.45
4	-2.25	4.76	0.06	0.07	0.42	0.52
5	-2.00	4.00	0.09	0.11	0.51	0.63
7	-1.50	2.83	0.32	0.40	0.83	1.03
10	-1.00	2.00	0.64	0.79	1.47	1.82
14	-0.50	1.41	0.87	1.08	2.34	2.90
18	0.00	1.00	1.51	1.87	3.85	4.77
25	0.50	0.71	2.34	2.90	6.19	7.67
35	1.00	0.50	3.72	4.61	9.91	12.28
45	1.50	0.35	4.01	4.97	13.92	17.25
60	2.00	0.25	5.09	6.31	19.01	23.56
80	2.50	0.18	13.39	16.59	32.40	40.15
120	3.00	0.13	30.15	37.37	62.55	77.52
170	3.50	0.09	11.67	14.46	74.22	91.98
200	3.75	0.07	1.61	2.00	75.83	93.98
230	4.00	0.06	0.37	0.46	76.20	94.44

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.22	2.97	2.63	2.04	1.37	0.04

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	2.25	0.21	1.08	-1.78	6.61

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations based on measured values



COASTAL TECH

Coastal Geology & Sediments Laboratory

Project Name: Blind Pass

Sample Name: BP-5 #2

Analysis Date: 09-12-05

Analyzed By: WJD

Coastal Tech
715-G North Dr.
Melbourne, FL 32934
ph (321) 751-1135
fax (321) 751-2343

Easting (ft): <p style="text-align: center;">596,664</p>	Northing (ft): <p style="text-align: center;">782,195</p>	Coordinate System: <p style="text-align: center;">Florida State Plane West</p>	Elevation (ft): <p style="text-align: center;">-6.1' NAVD 88 (ft)</p>
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USCS: <p style="text-align: center;">SW</p>	Munsell: <p style="text-align: center;">Wet - 10YR-7/1</p>	Comments:
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Dry Weight (g): <p style="text-align: center;">87.86</p>	Wash Weight (g):	Pan Retained (g): <p style="text-align: center;">0.06</p>	Sieve Loss (%):	Fines (%): #200 - 0.14 #230 - 0.07	Organics (%): <p style="text-align: center;">1.20</p>	Carbonates (%): <p style="text-align: center;">24.20</p>	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	1.37	1.56	1.37	1.56
5/16"	-3.00	8.00	3.76	4.28	5.13	5.84
3.5	-2.50	5.66	4.39	5.00	9.52	10.84
4	-2.25	4.76	1.36	1.55	10.88	12.38
5	-2.00	4.00	2.12	2.41	13.00	14.80
7	-1.50	2.83	6.11	6.95	19.11	21.75
10	-1.00	2.00	6.57	7.48	25.68	29.23
14	-0.50	1.41	8.26	9.40	33.94	38.63
18	0.00	1.00	7.34	8.35	41.28	46.98
25	0.50	0.71	6.77	7.71	48.05	54.69
35	1.00	0.50	6.93	7.89	54.98	62.58
45	1.50	0.35	8.53	9.71	63.51	72.29
60	2.00	0.25	10.31	11.73	73.82	84.02
80	2.50	0.18	8.29	9.44	82.11	93.46
120	3.00	0.13	3.64	4.14	85.75	97.60
170	3.50	0.09	1.84	2.09	87.59	99.69
200	3.75	0.07	0.15	0.17	87.74	99.86
230	4.00	0.06	0.06	0.07	87.80	99.93

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.69	2.00	1.62	0.20	-1.28	-1.91	-3.10
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.08	0.95	1.8	-0.25	2.09	

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations based on measured values



COASTAL TECH

Coastal Geology & Sediments Laboratory

Project Name: Blind Pass

Sample Name: BP-5 #3

Analysis Date: 09-12-05

Analyzed By: WJD

Coastal Tech
715-G North Dr.
Melbourne, Fl. 32934
ph (321) 751-1135
fax (321) 751-2343

Easting (ft): <p style="text-align: center;">596,664</p>	Northing (ft): <p style="text-align: center;">782,195</p>	Coordinate System: <p style="text-align: center;">Florida State Plane West</p>	Elevation (ft): <p style="text-align: center;">-7.3' NAVD 88 (ft)</p>
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USCS: <p style="text-align: center;">SC</p>	Munsell: <p style="text-align: center;">Wet - 10YR-6/1</p>	Comments:
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Dry Weight (g): <p style="text-align: center;">52.53</p>	Wash Weight (g): <p style="text-align: center;">37.36</p>	Pan Retained (g): <p style="text-align: center;">0.57</p>	Sieve Loss (%): <p style="text-align: center;">0.00</p>	Fines (%): #200 - 32.40 #230 - 29.96	Organics (%): <p style="text-align: center;">3.10</p>	Carbonates (%): <p style="text-align: center;">12.20</p>	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	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	0.04	0.02	0.04
10	-1.00	2.00	0.09	0.17	0.11	0.21
14	-0.50	1.41	0.15	0.29	0.26	0.49
18	0.00	1.00	0.18	0.34	0.44	0.84
25	0.50	0.71	0.16	0.30	0.60	1.14
35	1.00	0.50	0.23	0.44	0.83	1.58
45	1.50	0.35	0.32	0.61	1.15	2.19
60	2.00	0.25	0.52	0.99	1.67	3.18
80	2.50	0.18	0.93	1.77	2.60	4.95
120	3.00	0.13	7.73	14.72	10.33	19.66
170	3.50	0.09	20.18	38.42	30.51	58.08
200	3.75	0.07	5.00	9.52	35.51	67.60
230	4.00	0.06	1.28	2.44	36.79	70.04

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Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			3.39	3.07	2.88	2.50

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	3.08	0.12	0.64	-3.42	19.1

GRANULARMETRIC REPORT - BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations based on measured values



COASTAL TECH

Coastal Geology & Sediments Laboratory

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Project Name: Blind Pass
Sample Name: BP-5 #4
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 596,664	Northing (ft): 782,195	Coordinate System: Florida State Plane West	Elevation (ft): -9.9' NAVD 88 (ft)
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USCS: SW	Munsell: Wet - 10YR-6/3	Comments:
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Dry Weight (g): 74.23	Wash Weight (g):	Pan Retained (g): 0.00	Sieve Loss (%):	Fines (%): #200 - 0.00 #230 - 0.00	Organics (%): 3.60	Carbonates (%): 16.90	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	2.46	3.31	2.46	3.31
11/16"	-3.50	11.31	2.94	3.96	5.40	7.27
5/16"	-3.00	8.00	3.41	4.59	8.81	11.87
3.5	-2.50	5.66	1.57	2.12	10.38	13.98
4	-2.25	4.76	2.72	3.66	13.10	17.65
5	-2.00	4.00	4.52	6.09	17.62	23.74
7	-1.50	2.83	5.54	7.46	23.16	31.20
10	-1.00	2.00	7.93	10.68	31.09	41.88
14	-0.50	1.41	7.58	10.21	38.67	52.09
18	0.00	1.00	6.11	8.23	44.78	60.33
25	0.50	0.71	5.04	6.79	49.82	67.12
35	1.00	0.50	4.24	5.71	54.06	72.83
45	1.50	0.35	3.62	4.88	57.68	77.70
60	2.00	0.25	5.66	7.62	63.34	85.33
80	2.50	0.18	9.28	12.50	72.62	97.83
120	3.00	0.13	1.56	2.10	74.18	99.93
170	3.50	0.09	0.04	0.05	74.22	99.99
200	3.75	0.07	0.01	0.01	74.23	100.00
230	4.00	0.06	0.00	0.00	74.23	100.00

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
2.39	1.91	1.22	-0.60	-1.92	-2.36	-3.79

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	-0.35	1.27	1.81	-0.01	1.97

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations corrected for either expansion or compaction based on judgement



COASTAL TECH
Coastal Geology & Sediments Laboratory

715-G North Dr.
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Project Name: Blind Pass
Sample Name: BP5 Decompacked #5
Analysis Date: 11-29-05
Analyzed By: LA

Easting (ft): 596,664.3	Northing (ft): 782,194.5	Coordinate System: Florida State Plane West	Elevation (ft): -10.1 NAVD 88 (ft)
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USCS: SC	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 93.78	Wash Weight (g):	Pan Retained (g): 3.82	Sieve Loss (%):	Fines (%): #200 - 6.07 #230 - 4.27	Organics (%): 2.50	Carbonates (%): 32.30	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.26	0.28	0.26	0.28
3.5	-2.50	5.66	0.16	0.17	0.42	0.45
4	-2.25	4.76	0.55	0.59	0.97	1.04
5	-2.00	4.00	0.52	0.55	1.49	1.59
7	-1.50	2.83	1.41	1.50	2.90	3.09
10	-1.00	2.00	2.01	2.14	4.91	5.23
14	-0.50	1.41	2.63	2.80	7.54	8.03
18	0.00	1.00	3.10	3.31	10.64	11.34
25	0.50	0.71	3.34	3.56	13.98	14.90
35	1.00	0.50	3.91	4.17	17.89	19.07
45	1.50	0.35	5.28	5.63	23.17	24.70
60	2.00	0.25	9.29	9.91	32.46	34.61
80	2.50	0.18	13.33	14.21	45.79	48.82
120	3.00	0.13	22.68	24.18	68.47	73.00
170	3.50	0.09	17.07	18.20	85.54	91.20
200	3.75	0.07	2.56	2.73	88.10	93.93
230	4.00	0.06	1.69	1.80	89.79	95.73

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Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.90	3.30	3.05	2.52	1.52	0.63	-1.05

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	1.99	0.25	1.41	-1.3	4.13

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 12/8/05

Granulometric Report



Project Name: Wulfert Channel
 Sample Name: C14 #1
 Analysis Date: 07-07-04
 Analyzed By: JCB

Coastal Tech
 715 North Drive Suite G
 Melbourne, Florida 32934
 ph 321 751 1135
 fax

Easting 781,183	Northing 597,585	Coordinate System: Florida State Plane West	Elevation (ft): -3.9 NAVD 29
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USCS: SP	Munsell Dry - 10YR-6/1	Comments:
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Dry Weight (g): 79.10	Wash Weight (g): 52.00	Pan Retained (g): 0.56	Sieve Loss (%): 0.09	Fines (%): #200 - 38.52 #230 - 35.06	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.22	0.28	0.22	0.28
5	-2.00	4.00	0.18	0.23	0.40	0.51
7	-1.50	2.83	0.03	0.04	0.43	0.54
10	-1.00	2.00	0.18	0.23	0.61	0.77
14	-0.50	1.41	0.37	0.47	0.98	1.24
18	0.00	1.00	0.50	0.63	1.48	1.87
25	0.50	0.71	0.70	0.88	2.18	2.76
35	1.00	0.50	1.36	1.72	3.54	4.48
45	1.50	0.35	2.24	2.83	5.78	7.31
60	2.00	0.25	4.17	5.27	9.95	12.58
80	2.50	0.18	7.68	9.71	17.63	22.29
120	3.00	0.13	12.56	15.88	30.19	38.17
170	3.50	0.09	14.26	18.03	44.45	56.19
200	3.75	0.07	4.18	5.28	48.63	61.48
230	4.00	0.06	2.74	3.46	51.37	64.94

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			3.33	2.59	2.18	1.09

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	2.6	0.16	1.02	-1.9	8.39

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report



Project Name: Wulfert Channel
 Sample Name: C14 #2
 Analysis Date: 07-07-04
 Analyzed By: JCB

Coastal Tech
 715 North Drive Suite G
 Melbourne, Florida 32934
 ph 321 751 1135
 fax

Easting 781,183	Northing 597,585	Coordinate System: Florida State Plane West	Elevation (ft): -4.4 NAVD 29
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USCS: SP-SM	Munsell Dry - 10YR-7/1	Comments:
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Dry Weight (g): 112.20	Wash Weight (g): 102.20	Pan Retained (g): 0.56	Sieve Loss (%): 0.84	Fines (%): #200 - 11.30 #230 - 10.25	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.47	0.42	0.47	0.42
3.5	-2.50	5.66	0.24	0.21	0.71	0.63
5	-2.00	4.00	0.39	0.35	1.10	0.98
7	-1.50	2.83	0.89	0.79	1.99	1.77
10	-1.00	2.00	1.52	1.35	3.51	3.13
14	-0.50	1.41	1.93	1.72	5.44	4.85
18	0.00	1.00	2.45	2.18	7.89	7.03
25	0.50	0.71	3.07	2.74	10.96	9.77
35	1.00	0.50	4.82	4.30	15.78	14.06
45	1.50	0.35	7.00	6.24	22.78	20.30
60	2.00	0.25	10.32	9.20	33.10	29.50
80	2.50	0.18	17.46	15.56	50.56	45.06
120	3.00	0.13	0.00	0.00	50.56	45.06
170	3.50	0.09	46.01	41.01	96.57	86.07
200	3.75	0.07	2.95	2.63	99.52	88.70
230	4.00	0.06	1.18	1.05	100.70	89.75

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.45	3.23	2.62	1.76	1.16	-0.47

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	2.25	0.21	1.34	-1.43	4.9

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Granulometric Report

Depths and elevations based on measured values



Coastal Tech
715-G North Dr.
Melbourne, FL 32934
ph (321) 751-1135
fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP-6 #1
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 596,881	Northing (ft): 782,632	Coordinate System: Florida State Plane West	Elevation (ft): -2.4' NAVD 88 (ft)
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USCS: SC	Munsell: Wet - 10YR-7/1	Comments:
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Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%): #200 - 15.54 #230 - 13.65	Organics (%):	Carbonates (%):	Shells (%):
47.18	41.15	0.41	0.00		4.20	18.90	
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.11	0.23	0.11	0.23	0.23
5	-2.00	4.00	0.01	0.02	0.12	0.25	0.25
7	-1.50	2.83	0.04	0.08	0.16	0.34	0.34
10	-1.00	2.00	0.11	0.23	0.27	0.57	0.57
14	-0.50	1.41	0.28	0.59	0.55	1.17	1.17
18	0.00	1.00	0.47	1.00	1.02	2.16	2.16
25	0.50	0.71	0.70	1.48	1.72	3.65	3.65
35	1.00	0.50	1.18	2.50	2.90	6.15	6.15
45	1.50	0.35	1.86	3.94	4.76	10.09	10.09
60	2.00	0.25	3.12	6.61	7.88	16.70	16.70
80	2.50	0.18	5.25	11.13	13.13	27.83	27.83
120	3.00	0.13	12.46	26.41	25.59	54.24	54.24
170	3.50	0.09	11.53	24.44	37.12	78.68	78.68
200	3.75	0.07	2.73	5.79	39.85	84.46	84.46
230	4.00	0.06	0.89	1.89	40.74	86.35	86.35

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.73	3.42	2.92	2.37	1.95	0.77
Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
	2.58	0.17	0.94	-1.73	7	

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations based on measured values



COASTAL TECH
Coastal Geology & Sediments Laboratory

Coastal Tech
715-G North Dr.
Melbourne, FL 32934
ph (321) 751-1135
fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP-6 #2
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 596,881	Northing (ft): 782,632	Coordinate System: Florida State Plane West	Elevation (ft): -4.2' NAVD 88 (ft)
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USCS: SW	Munsell: Wet - 10YR-7/1	Comments:
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Dry Weight (g): 74.04	Wash Weight (g): 72.47	Pan Retained (g): 0.00	Sieve Loss (%): 0.11	Fines (%): #200 - 2.66 #230 - 2.23	Organics (%): 1.00	Carbonates (%): 25.50	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	1.82	2.46	1.82	2.46
3.5	-2.50	5.66	0.77	1.04	2.59	3.50
4	-2.25	4.76	1.13	1.53	3.72	5.02
5	-2.00	4.00	0.86	1.16	4.58	6.19
7	-1.50	2.83	2.43	3.28	7.01	9.47
10	-1.00	2.00	2.71	3.66	9.72	13.13
14	-0.50	1.41	4.20	5.67	13.92	18.80
18	0.00	1.00	3.78	5.11	17.70	23.91
25	0.50	0.71	3.73	5.04	21.43	28.94
35	1.00	0.50	3.98	5.38	25.41	34.32
45	1.50	0.35	5.16	6.97	30.57	41.29
60	2.00	0.25	8.37	11.30	38.94	52.59
80	2.50	0.18	13.01	17.57	51.95	70.16
120	3.00	0.13	12.95	17.49	64.90	87.66
170	3.50	0.09	6.43	8.68	71.33	96.34
200	3.75	0.07	0.74	1.00	72.07	97.34
230	4.00	0.06	0.32	0.43	72.39	97.77

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.42	2.90	2.64	1.89	0.11	-0.75	-2.25

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	1.25	0.42	1.74	-0.88	2.81

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations based on measured values



COASTAL TECH
Coastal Geology & Sediments Laboratory

Coastal Tech
715-G North Dr.
Melbourne, FL 32934
ph (321) 751-1135
fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP-6 #3
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 596,881	Northing (ft): 782,632	Coordinate System: Florida State Plane West	Elevation (ft): -7.2' NAVD 88 (ft)
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USCS: SC	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 59.69	Wash Weight (g): 48.36	Pan Retained (g): 0.64	Sieve Loss (%): 0.00	Fines (%): #200 - 21.04 #230 - 20.05	Organics (%): 2.40	Carbonates (%): 13.50	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	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	0.12	0.20	0.14	0.23
14	-0.50	1.41	0.23	0.39	0.37	0.62
18	0.00	1.00	0.33	0.55	0.70	1.17
25	0.50	0.71	0.31	0.52	1.01	1.69
35	1.00	0.50	0.50	0.84	1.51	2.53
45	1.50	0.35	0.79	1.32	2.30	3.85
60	2.00	0.25	2.55	4.27	4.85	8.13
80	2.50	0.18	9.51	15.93	14.36	24.06
120	3.00	0.13	20.71	34.70	35.07	58.75
170	3.50	0.09	10.79	18.08	45.86	76.83
200	3.75	0.07	1.27	2.13	47.13	78.96
230	4.00	0.06	0.59	0.99	47.72	79.95

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
		3.45	2.87	2.51	2.25	1.63

Moment Statistics	Mean Phi 2.64	Mean mm 0.16	Sorting 0.69	Skewness -2.11	Kurtosis 10.61
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GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations based on measured values



Coastal Tech
715-G North Dr.
Melbourne, Fl. 32934
ph (321) 751-1135
fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP-6 #4
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 596,881	Northing (ft): 782,632	Coordinate System: Florida State Plane West	Elevation (ft): -8.4' NAVD 88 (ft)
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USCS: SP	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 70.32	Wash Weight (g): 68.54	Pan Retained (g): 0.06	Sieve Loss (%): 0.33	Fines (%): #200 - 3.34 #230 - 2.94	Organics (%): 0.60	Carbonates (%): 6.80	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.83	1.18	0.83	1.18
3.5	-2.50	5.66	0.00	0.00	0.83	1.18
4	-2.25	4.76	0.01	0.01	0.84	1.19
5	-2.00	4.00	0.00	0.00	0.84	1.19
7	-1.50	2.83	0.06	0.09	0.90	1.28
10	-1.00	2.00	0.01	0.01	0.91	1.29
14	-0.50	1.41	0.14	0.20	1.05	1.49
18	0.00	1.00	0.14	0.20	1.19	1.69
25	0.50	0.71	0.20	0.28	1.39	1.98
35	1.00	0.50	0.36	0.51	1.75	2.49
45	1.50	0.35	0.73	1.04	2.48	3.53
60	2.00	0.25	2.09	2.97	4.57	6.50
80	2.50	0.18	15.92	22.64	20.49	29.14
120	3.00	0.13	34.81	49.50	55.30	78.64
170	3.50	0.09	11.93	16.97	67.23	95.61
200	3.75	0.07	0.74	1.05	67.97	96.66
230	4.00	0.06	0.28	0.40	68.25	97.06

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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3.48	3.16	2.96	2.71	2.41	2.21	1.75
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	2.58	0.17	0.83	-4.7	32.13

GRANULARMETRIC REPORT - BLIND PASS.GPJ - FL DEP ROSS.GDT - 10/18/05

Granulometric Report

Depths and elevations corrected for either expansion or compaction based on judgement



COASTAL TECH
Coastal Geology & Sediments Laboratory

715-G North Dr.
Melbourne, FL 32934
Phone (321) 751-1135
Fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP6 Decompacked #5
Analysis Date: 11-29-05
Analyzed By: LA

Easting (ft): 596,881.4	Northing (ft): 782,631.9	Coordinate System: Florida State Plane West	Elevation (ft): -5.8 NAVD 88 (ft)
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USCS: SW	Munsell: Wet - 10YR-7/1	Comments:
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Dry Weight (g): 99.54	Wash Weight (g):	Pan Retained (g): 0.13	Sieve Loss (%):	Fines (%): #200 - 0.21 #230 - 0.14	Organics (%): 1.00	Carbonates (%): 51.80	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	2.98	2.99	2.98	2.99
11/16"	-3.50	11.31	6.52	6.55	9.50	9.54
5/16"	-3.00	8.00	5.82	5.85	15.32	15.39
3.5	-2.50	5.66	3.82	3.84	19.14	19.23
4	-2.25	4.76	1.01	1.01	20.15	20.24
5	-2.00	4.00	2.52	2.53	22.67	22.77
7	-1.50	2.83	3.20	3.21	25.87	25.98
10	-1.00	2.00	4.06	4.08	29.93	30.06
14	-0.50	1.41	5.40	5.42	35.33	35.48
18	0.00	1.00	4.79	4.81	40.12	40.29
25	0.50	0.71	5.12	5.14	45.24	45.43
35	1.00	0.50	6.50	6.53	51.74	51.96
45	1.50	0.35	9.83	9.88	61.57	61.84
60	2.00	0.25	13.70	13.76	75.27	75.60
80	2.50	0.18	14.20	14.27	89.47	89.87
120	3.00	0.13	6.01	6.04	95.48	95.91
170	3.50	0.09	3.57	3.59	99.05	99.50
200	3.75	0.07	0.29	0.29	99.34	99.79
230	4.00	0.06	0.07	0.07	99.41	99.86

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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2.92	2.29	1.98	0.85	-1.65	-2.92	-3.85
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	0.14	0.91	2.09	-0.38	1.97

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 12/8/05

Granulometric Report

Depths and elevations based on measured values



COASTAL TECH

Coastal Geology & Sediments Laboratory

Project Name: Blind Pass

Sample Name: BP-7 #1

Analysis Date: 09-12-05

Analyzed By: WJD

Coastal Tech
715-G North Dr.
Melbourne, FL 32934
ph (321) 751-1135
fax (321) 751-2343

Easting (ft): 597,013	Northing (ft): 783,023	Coordinate System: Florida State Plane West	Elevation (ft): -4.0' NAVD 88 (ft)
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USCS: SP	Munsell: Wet - 10YR-7/1	Comments:
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Dry Weight (g): 83.20	Wash Weight (g): 80.98	Pan Retained (g): 0.16	Sieve Loss (%): 0.10	Fines (%): #200 - 3.43 #230 - 2.96	Organics (%): 0.90	Carbonates (%): 8.10	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.02	0.02	0.02	0.02
4	-2.25	4.76	0.02	0.02	0.04	0.05
5	-2.00	4.00	0.02	0.02	0.06	0.07
7	-1.50	2.83	0.00	0.00	0.06	0.07
10	-1.00	2.00	0.01	0.01	0.07	0.08
14	-0.50	1.41	0.03	0.04	0.10	0.12
18	0.00	1.00	0.10	0.12	0.20	0.24
25	0.50	0.71	0.24	0.29	0.44	0.53
35	1.00	0.50	0.55	0.66	0.99	1.19
45	1.50	0.35	1.15	1.38	2.14	2.57
60	2.00	0.25	4.31	5.18	6.45	7.75
80	2.50	0.18	20.21	24.29	26.66	32.04
120	3.00	0.13	36.78	44.21	63.44	76.25
170	3.50	0.09	14.97	17.99	78.41	94.24
200	3.75	0.07	1.94	2.33	80.35	96.57
230	4.00	0.06	0.39	0.47	80.74	97.04

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.58	3.22	2.99	2.70	2.36	2.17	1.73
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.64	0.16	0.54	-1.6	11.8	

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report
Depths and elevations based on measured values



Coastal Tech
715-G North Dr.
Melbourne, Fl. 32934
ph (321) 751-1135
fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP-7 #2
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 597,013	Northing (ft): 783,023	Coordinate System: Florida State Plane West	Elevation (ft): -5.8' NAVD 88 (ft)
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USCS: SC	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 76.88	Wash Weight (g): 56.89	Pan Retained (g): 0.28	Sieve Loss (%): 0.00	Fines (%): #200 - 28.17 #230 - 26.37	Organics (%): 3.20	Carbonates (%): 17.90	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.01	0.01	0.01	0.01
7	-1.50	2.83	0.15	0.20	0.16	0.21
10	-1.00	2.00	0.58	0.75	0.74	0.96
14	-0.50	1.41	0.67	0.87	1.41	1.83
18	0.00	1.00	0.92	1.20	2.33	3.03
25	0.50	0.71	1.10	1.43	3.43	4.46
35	1.00	0.50	1.44	1.87	4.87	6.33
45	1.50	0.35	2.00	2.60	6.87	8.94
60	2.00	0.25	4.65	6.05	11.52	14.98
80	2.50	0.18	9.69	12.60	21.21	27.59
120	3.00	0.13	17.30	22.50	38.51	50.09
170	3.50	0.09	15.10	19.64	53.61	69.73
200	3.75	0.07	1.61	2.09	55.22	71.83
230	4.00	0.06	1.39	1.81	56.61	73.63

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
			3.00	2.40	2.04	0.64

Moment Statistics	Mean Phi 2.47	Mean mm 0.18	Sorting 0.99	Skewness -1.71	Kurtosis 6.31
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GRANULARMETRIC REPORT - BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations based on measured values



Coastal Tech
715-G North Dr.
Melbourne, FL 32934
ph (321) 751-1135
fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP-7 #3
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 597,013	Northing (ft): 783,023	Coordinate System: Florida State Plane West	Elevation (ft): -8.0' NAVD 88 (ft)
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USCS: SW	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 81.37	Wash Weight (g): 77.41	Pan Retained (g): 0.09	Sieve Loss (%): 0.00	Fines (%): #200 - 5.17 #230 - 4.98	Organics (%): 1.40	Carbonates (%): 29.30	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	7.65	9.40	7.65	9.40
11/16"	-3.50	11.31	0.00	0.00	7.65	9.40
5/16"	-3.00	8.00	2.07	2.54	9.72	11.95
3.5	-2.50	5.66	3.01	3.70	12.73	15.64
4	-2.25	4.76	1.35	1.66	14.08	17.30
5	-2.00	4.00	1.50	1.84	15.58	19.15
7	-1.50	2.83	3.23	3.97	18.81	23.12
10	-1.00	2.00	3.80	4.67	22.61	27.79
14	-0.50	1.41	4.02	4.94	26.63	32.73
18	0.00	1.00	3.93	4.83	30.56	37.56
25	0.50	0.71	3.69	4.53	34.25	42.09
35	1.00	0.50	3.44	4.23	37.69	46.32
45	1.50	0.35	3.89	4.78	41.58	51.10
60	2.00	0.25	6.24	7.67	47.82	58.77
80	2.50	0.18	8.10	9.95	55.92	68.72
120	3.00	0.13	13.97	17.17	69.89	85.89
170	3.50	0.09	6.53	8.03	76.42	93.92
200	3.75	0.07	0.74	0.91	77.16	94.83
230	4.00	0.06	0.16	0.20	77.32	95.02

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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3.97	2.94	2.68	1.38	-1.30	-2.45	
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	0.93	0.52	1.98	-0.58	2.05

GRANULARMETRIC REPORT: BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations corrected for either expansion or compaction based on judgement



COASTAL TECH
Coastal Geology & Sediments Laboratory

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Phone (321) 751-1135
Fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP7 Decompact #4
Analysis Date: 11-29-05
Analyzed By: LA

Easting (ft): 597,013.3	Northing (ft): 783,022.7	Coordinate System: Florida State Plane West	Elevation (ft): -2.6 NAVD 88 (ft)
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USCS: SC	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 85.30	Wash Weight (g): 74.76	Pan Retained (g): 2.30	Sieve Loss (%): 0.12	Fines (%): #200 - 19.17 #230 - 15.17	Organics (%): 2.70	Carbonates (%): 19.70	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.02	0.02	0.02	0.02
5	-2.00	4.00	0.00	0.00	0.02	0.02
7	-1.50	2.83	0.00	0.00	0.02	0.02
10	-1.00	2.00	0.09	0.11	0.11	0.13
14	-0.50	1.41	0.07	0.08	0.18	0.21
18	0.00	1.00	0.12	0.14	0.30	0.35
25	0.50	0.71	0.29	0.34	0.59	0.69
35	1.00	0.50	0.42	0.49	1.01	1.18
45	1.50	0.35	0.72	0.84	1.73	2.02
60	2.00	0.25	1.95	2.29	3.68	4.31
80	2.50	0.18	4.73	5.55	8.41	9.86
120	3.00	0.13	19.58	22.95	27.99	32.81
170	3.50	0.09	33.75	39.57	61.74	72.38
200	3.75	0.07	7.21	8.45	68.95	80.83
230	4.00	0.06	3.41	4.00	72.36	84.83

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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	3.95	3.58	3.22	2.83	2.63	2.06
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Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	3.01	0.12	0.59	-2.32	13.27

GRANULARMETRIC REPORT: BLIND PASS.GPJ FL DEP ROSS.GDT 12/8/05

Granularmetric Report

Depths and elevations corrected for either expansion or compaction based on judgement



COASTAL TECH
Coastal Geology & Sediments Laboratory

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Phone (321) 751-1135
Fax (321) 751-2343

Project Name: Wulfert Channel
Sample Name: C15 #1
Analysis Date: 11-28-05
Analyzed By: LA

Easting (ft): 782,989.7	Northing (ft): 596,855.4	Coordinate System: Florida State Plane West	Elevation (ft): -4.9 NAVD 88
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USCS: SP	Munsell: Wet - 10YR-8/1	Comments:
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Dry Weight (g): 84.61	Wash Weight (g): 84.61	Pan Retained (g): 0.03	Sieve Loss (%): 0.57	Fines (%): #200 - 0.60 #230 - 0.60	Organics (%): 1.50	Carbonates (%): 10.90	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.11	0.13	0.11	0.13
7	-1.50	2.83	0.05	0.06	0.16	0.19
10	-1.00	2.00	0.21	0.25	0.37	0.44
14	-0.50	1.41	0.37	0.44	0.74	0.88
18	0.00	1.00	0.56	0.66	1.30	1.54
25	0.50	0.71	1.08	1.28	2.38	2.82
35	1.00	0.50	2.05	2.42	4.43	5.24
45	1.50	0.35	3.94	4.66	8.37	9.90
60	2.00	0.25	32.49	38.40	40.86	48.30
80	2.50	0.18	29.42	34.77	70.28	83.07
120	3.00	0.13	12.37	14.62	82.65	97.69
170	3.50	0.09	1.37	1.62	84.02	99.31
200	3.75	0.07	0.08	0.09	84.10	99.40
230	4.00	0.06	0.00	0.00	84.10	99.40

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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2.91	2.53	2.38	2.02	1.70	1.58	0.95
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	1.99	0.25	0.62	-1.7	9.98

GRANULARMETRIC REPORT - BLIND PASS2.GPJ FL DEP ROSS.GDT 12/8/05

Granulometric Report

Depths and elevations corrected for either expansion or compaction based on judgement



COASTAL TECH
Coastal Geology & Sediments Laboratory

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Project Name: Wulfert Channel
Sample Name: C15 #2
Analysis Date: 11-28-05
Analyzed By: LA

Easting (ft): 782,989.7	Northing (ft): 596,855.4	Coordinate System: Florida State Plane West	Elevation (ft): -13.6 NAVD 88
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USCS: SW	Munsell: Wet - 10YR-7/1	Comments:
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Dry Weight (g): 78.61	Wash Weight (g): 78.61	Pan Retained (g): 0.65	Sieve Loss (%): 0.34	Fines (%): #200 - 1.53 #230 - 1.16	Organics (%): 3.80	Carbonates (%): 35.50	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	4.48	5.70	4.48	5.70
11/16"	-3.50	11.31	2.00	2.54	6.48	8.24
5/16"	-3.00	8.00	6.28	7.99	12.76	16.23
3.5	-2.50	5.66	4.88	6.21	17.64	22.44
4	-2.25	4.76	0.42	0.53	18.06	22.97
5	-2.00	4.00	2.23	2.84	20.29	25.81
7	-1.50	2.83	2.69	3.42	22.98	29.23
10	-1.00	2.00	2.93	3.73	25.91	32.96
14	-0.50	1.41	2.83	3.60	28.74	36.56
18	0.00	1.00	2.80	3.56	31.54	40.12
25	0.50	0.71	2.58	3.28	34.12	43.40
35	1.00	0.50	4.29	5.46	38.41	48.86
45	1.50	0.35	3.59	4.57	42.00	53.43
60	2.00	0.25	5.29	6.73	47.29	60.16
80	2.50	0.18	9.68	12.31	56.97	72.47
120	3.00	0.13	15.31	19.48	72.28	91.95
170	3.50	0.09	4.54	5.78	76.82	97.73
200	3.75	0.07	0.58	0.74	77.40	98.47
230	4.00	0.06	0.29	0.37	77.69	98.84

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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3.26	2.80	2.56	1.12	-2.07	-3.01	
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Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	0.29	0.82	2.24	-0.17	1.68

GRANULOMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 12/8/05

Granulometric Report

Depths and elevations corrected for either expansion or compaction based on judgement



COASTAL TECH
Coastal Geology & Sediments Laboratory

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Project Name: Wulfert Channel
Sample Name: C16 #1
Analysis Date: 11-28-05
Analyzed By: LA

Easting (ft): 783,245.7	Northing (ft): 596,580.3	Coordinate System: Florida State Plane West	Elevation (ft): -5.6 NAVD 88
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USCS: SP	Munsell: Wet - 10YR-7/2	Comments:
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Dry Weight (g): 74.91	Wash Weight (g): 74.91	Pan Retained (g): 1.60	Sieve Loss (%): 0.00	Fines (%): #200 - 3.96 #230 - 2.13	Organics (%): 2.40	Carbonates (%): 12.00	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	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	0.08	0.11	0.08	0.11
14	-0.50	1.41	0.05	0.07	0.13	0.18
18	0.00	1.00	0.10	0.13	0.23	0.31
25	0.50	0.71	0.25	0.33	0.48	0.64
35	1.00	0.50	2.26	3.02	2.74	3.66
45	1.50	0.35	1.60	2.14	4.34	5.80
60	2.00	0.25	1.75	2.34	6.09	8.14
80	2.50	0.18	3.98	5.31	10.07	13.45
120	3.00	0.13	34.67	46.28	44.74	59.73
170	3.50	0.09	23.58	31.48	68.32	91.21
200	3.75	0.07	3.62	4.83	71.94	96.04
230	4.00	0.06	1.37	1.83	73.31	97.87

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.70	3.39	3.24	2.89	2.62	2.53	1.31
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	2.81	0.14	0.64	-1.98	8.73	

GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 12/8/05

Granulometric Report

Depths and elevations corrected for either expansion or compaction based on judgement



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Project Name: Wulfert Channel
Sample Name: C16 #2
Analysis Date: 11-28-05
Analyzed By:

Easting (ft): 783,245.7 Northing (ft): 596,580.3 Coordinate System: Florida State Plane West Elevation (ft): -11.6 NAVD 88

USCS: SW Munsell: Wet - 10YR-7/2 Comments:

Dry Weight (g): 82.56	Wash Weight (g): 82.56	Pan Retained (g): 1.58	Sieve Loss (%): 0.18	Fines (%): #200 - 3.40 #230 - 2.10	Organics (%): 1.40	Carbonates (%): 13.80	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.11	0.13	0.11	0.13
5	-2.00	4.00	0.14	0.17	0.25	0.30
7	-1.50	2.83	0.06	0.07	0.31	0.37
10	-1.00	2.00	0.18	0.22	0.49	0.59
14	-0.50	1.41	0.18	0.22	0.67	0.81
18	0.00	1.00	0.47	0.57	1.14	1.38
25	0.50	0.71	2.05	2.48	3.19	3.86
35	1.00	0.50	1.82	2.20	5.01	6.06
45	1.50	0.35	3.58	4.34	8.59	10.40
60	2.00	0.25	4.65	5.63	13.24	16.03
80	2.50	0.18	11.58	14.03	24.82	30.06
120	3.00	0.13	29.12	35.27	53.94	65.33
170	3.50	0.09	22.97	27.82	76.91	93.15
200	3.75	0.07	2.85	3.45	79.76	96.60
230	4.00	0.06	1.07	1.30	80.83	97.90

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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3.63	3.34	3.17	2.78	2.32	2.00	0.76
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Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	2.58	0.17	0.86	-1.89	8.08

GRANULARMETRIC REPORT - BLIND PASS2.GPJ FL DEP ROSS.GDT - 12/8/05

Granulometric Report

Depths and elevations based on measured values



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Project Name: Blind Pass
Sample Name: BP-8A #1
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 596,797	Northing (ft): 783,194	Coordinate System: Florida State Plane West	Elevation (ft): -1.7' NAVD 88 (ft)
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USCS: SC	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 78.99	Wash Weight (g): 69.55	Pan Retained (g): 0.28	Sieve Loss (%): 0.35	Fines (%): #200 - 14.38 #230 - 12.66	Organics (%): 1.80	Carbonates (%): 10.70	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.39	0.49	0.39	0.49
5	-2.00	4.00	0.21	0.27	0.60	0.76
7	-1.50	2.83	0.93	1.18	1.53	1.94
10	-1.00	2.00	1.28	1.62	2.81	3.56
14	-0.50	1.41	1.69	2.14	4.50	5.70
18	0.00	1.00	1.18	1.49	5.68	7.19
25	0.50	0.71	1.03	1.30	6.71	8.49
35	1.00	0.50	1.03	1.30	7.74	9.80
45	1.50	0.35	1.26	1.60	9.00	11.39
60	2.00	0.25	2.26	2.86	11.26	14.25
80	2.50	0.18	8.47	10.72	19.73	24.98
120	3.00	0.13	23.70	30.00	43.43	54.98
170	3.50	0.09	21.42	27.12	64.85	82.10
200	3.75	0.07	2.78	3.52	67.63	85.62
230	4.00	0.06	1.36	1.72	68.99	87.34

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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	3.63	3.37	2.92	2.50	2.08	-0.66
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	2.46	0.18	1.25	-2.09	6.86

GRANULARMETRIC REPORT - BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granularmetric Report
Depths and elevations based on measured values



Coastal Tech
715-G North Dr.
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fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP-8A #2
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 596,797	Northing (ft): 783,194	Coordinate System: Florida State Plane West	Elevation (ft): -4.6' NAVD 88 (ft)
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USCS: SP	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 49.62	Wash Weight (g): 47.11	Pan Retained (g): -0.61	Sieve Loss (%): 0.00	Fines (%): #200 - 5.02 #230 - 3.83	Organics (%):	Carbonates (%):	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.00	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	0.04	0.02	0.04
10	-1.00	2.00	0.12	0.24	0.14	0.28
14	-0.50	1.41	0.23	0.46	0.37	0.75
18	0.00	1.00	0.33	0.67	0.70	1.41
25	0.50	0.71	0.31	0.62	1.01	2.04
35	1.00	0.50	0.50	1.01	1.51	3.04
45	1.50	0.35	0.79	1.59	2.30	4.64
60	2.00	0.25	2.55	5.14	4.85	9.77
80	2.50	0.18	9.51	19.17	14.36	28.94
120	3.00	0.13	20.71	41.74	35.07	70.68
170	3.50	0.09	10.79	21.75	45.86	92.42
200	3.75	0.07	1.27	2.56	47.13	94.98
230	4.00	0.06	0.59	1.19	47.72	96.17

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.75	3.31	3.10	2.75	2.40	2.16	1.54

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	2.64	0.16	0.69	-2.11	10.61

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report
Depths and elevations based on measured values



Coastal Tech
715-G North Dr.
Melbourne, Fl. 32934
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Project Name: Blind Pass
Sample Name: BP-11 #1
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 597,179	Northing (ft): 783,600	Coordinate System: Florida State Plane West	Elevation (ft): -3.8' NAVD 88 (ft)
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USCS: SP-SC	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 84.46	Wash Weight (g): 78.27	Pan Retained (g): 0.30	Sieve Loss (%): 0.41	Fines (%): #200 - 8.75 #230 - 8.10	Organics (%): 1.30	Carbonates (%): 11.10	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
4	-2.25	4.76	0.06	0.07	0.06	0.07
5	-2.00	4.00	0.04	0.05	0.10	0.12
7	-1.50	2.83	0.05	0.06	0.15	0.18
10	-1.00	2.00	0.08	0.09	0.23	0.27
14	-0.50	1.41	0.29	0.34	0.52	0.62
18	0.00	1.00	0.40	0.47	0.92	1.09
25	0.50	0.71	0.83	0.98	1.75	2.07
35	1.00	0.50	1.56	1.85	3.31	3.92
45	1.50	0.35	2.86	3.39	6.17	7.31
60	2.00	0.25	7.30	8.64	13.47	15.95
80	2.50	0.18	23.73	28.10	37.20	44.04
120	3.00	0.13	29.04	34.38	66.24	78.43
170	3.50	0.09	9.30	11.01	75.54	89.44
200	3.75	0.07	1.53	1.81	77.07	91.25
230	4.00	0.06	0.55	0.65	77.62	91.90

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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	3.25	2.95	2.59	2.16	2.00	1.16
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	2.42	0.19	0.71	-1.71	9.01

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations based on measured values



COASTAL TECH

Coastal Geology & Sediments Laboratory

Coastal Tech
715-G North Dr.
Melbourne, Fl. 32934
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fax (321) 751-2343

Project Name: Blind Pass
Sample Name: BP-11 #2
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 597,179 Northing (ft): 783,600 Coordinate System: Florida State Plane West Elevation (ft): -6.6' NAVD 88 (ft)

USCS: CL Munsell: Wet - 10YR-6/1 Comments:

Dry Weight (g): 67.14 Wash Weight (g): 33.18 Pan Retained (g): 0.11 Sieve Loss (%): 0.00
Fines (%): #200 - 52.50 Organics (%): 3.80 Carbonates (%): 16.60 Shells (%): #230 - 50.74

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.01	0.01	0.01	0.01
4	-2.25	4.76	0.02	0.03	0.03	0.04
5	-2.00	4.00	0.01	0.01	0.04	0.06
7	-1.50	2.83	0.04	0.06	0.08	0.12
10	-1.00	2.00	0.17	0.25	0.25	0.37
14	-0.50	1.41	0.23	0.34	0.48	0.71
18	0.00	1.00	0.15	0.22	0.63	0.94
25	0.50	0.71	0.33	0.49	0.96	1.43
35	1.00	0.50	0.41	0.61	1.37	2.04
45	1.50	0.35	0.77	1.15	2.14	3.19
60	2.00	0.25	1.45	2.16	3.59	5.35
80	2.50	0.18	3.85	5.73	7.44	11.08
120	3.00	0.13	11.35	16.90	18.79	27.99
170	3.50	0.09	11.42	17.01	30.21	45.00
200	3.75	0.07	1.68	2.50	31.89	47.50
230	4.00	0.06	1.18	1.76	33.07	49.26

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
				2.91	2.65	1.92

Moment Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
	2.75	0.15	0.82	-2.34	10.95

GRANULARMETRIC REPORT: BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granulometric Report

Depths and elevations based on measured values



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Project Name: Blind Pass
Sample Name: BP-11 #3
Analysis Date: 09-12-05
Analyzed By: WJD

Easting (ft): 597,179	Northing (ft): 783,600	Coordinate System: Florida State Plane West	Elevation (ft): -7.8' NAVD 88 (ft)
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USCS: SP-SC	Munsell: Wet - 10YR-6/1	Comments:
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Dry Weight (g): 73.38	Wash Weight (g): 68.06	Pan Retained (g): 0.04	Sieve Loss (%): 0.48	Fines (%): #200 - 8.52 #230 - 7.78	Organics (%): 1.30	Carbonates (%): 10.70	Shells (%):
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Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
5/8"	-4.00	16.00	0.00	0.00	0.00	0.00
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.11	0.15	0.11	0.15
4	-2.25	4.76	0.10	0.14	0.21	0.29
5	-2.00	4.00	0.02	0.03	0.23	0.31
7	-1.50	2.83	0.21	0.29	0.44	0.60
10	-1.00	2.00	0.15	0.20	0.59	0.80
14	-0.50	1.41	0.37	0.50	0.96	1.31
18	0.00	1.00	0.38	0.52	1.34	1.83
25	0.50	0.71	0.58	0.79	1.92	2.62
35	1.00	0.50	0.66	0.90	2.58	3.52
45	1.50	0.35	0.95	1.29	3.53	4.81
60	2.00	0.25	1.88	2.56	5.41	7.37
80	2.50	0.18	9.58	13.06	14.99	20.43
120	3.00	0.13	34.28	46.72	49.27	67.14
170	3.50	0.09	16.88	23.00	66.15	90.15
200	3.75	0.07	0.98	1.34	67.13	91.48
230	4.00	0.06	0.54	0.74	67.67	92.22

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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	3.37	3.17	2.82	2.55	2.33	1.54
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Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Statistics	2.66	0.16	0.76	-3.25	17.89

GRANULARMETRIC REPORT BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05

Granularmetric Report



Coastal Tech
715 North Drive Suite G
Melbourne, Florida 32934
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fax

Project Name: Wulfert Channel
Sample Name: C07 #1
Analysis Date: 05-20-04
Analyzed By: RWP

Easting 782,510	Northing 596,973	Coordinate System: Florida State Plane West	Elevation (ft): -0.2 NAVD 29
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USCS: SC	Munsell Dry - 10YR-6/1	Comments:
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Dry Weight (g): 64.80	Wash Weight (g): 50.30	Pan Retained (g): 0.64	Sieve Loss (%): -0.05	Fines (%): #200 - 26.39 #230 - 23.32	Shells (%):
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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
11/16"	-3.50	11.31	0.00	0.00	0.00	0.00
5/16"	-3.00	8.00	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.00	0.00	0.00	0.00
5	-2.00	4.00	0.28	0.43	0.28	0.43
7	-1.50	2.83	0.25	0.39	0.53	0.82
10	-1.00	2.00	0.17	0.26	0.70	1.08
14	-0.50	1.41	0.25	0.39	0.95	1.47
18	0.00	1.00	0.31	0.48	1.26	1.94
25	0.50	0.71	0.49	0.76	1.75	2.70
35	1.00	0.50	0.74	1.14	2.49	3.84
45	1.50	0.35	1.04	1.60	3.53	5.45
60	2.00	0.25	1.55	2.39	5.08	7.84
80	2.50	0.18	5.73	8.84	10.81	16.68
120	3.00	0.13	18.23	28.13	29.04	44.81
170	3.50	0.09	15.92	24.57	44.96	69.38
200	3.75	0.07	2.74	4.23	47.70	73.61
230	4.00	0.06	1.99	3.07	49.69	76.68

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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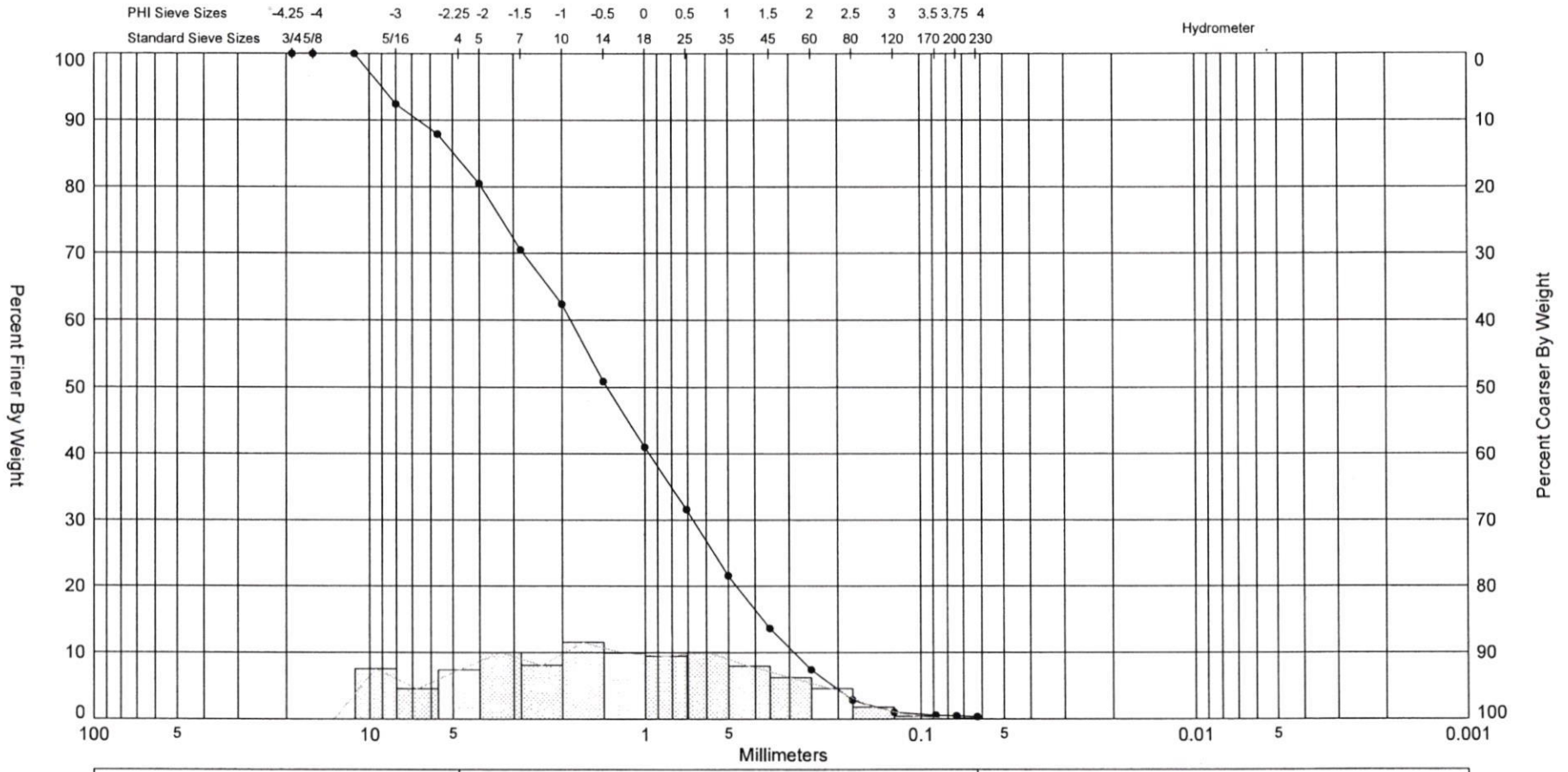
		3.86	3.11	2.65	2.46	1.36
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Moment Statistics	Mean Phi 2.73	Mean mm 0.15	Sorting 0.9	Skewness -2.67	Kurtosis 12.66
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GRANULARMETRIC REPORT BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04

Grain Size Distribution Curves

SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04



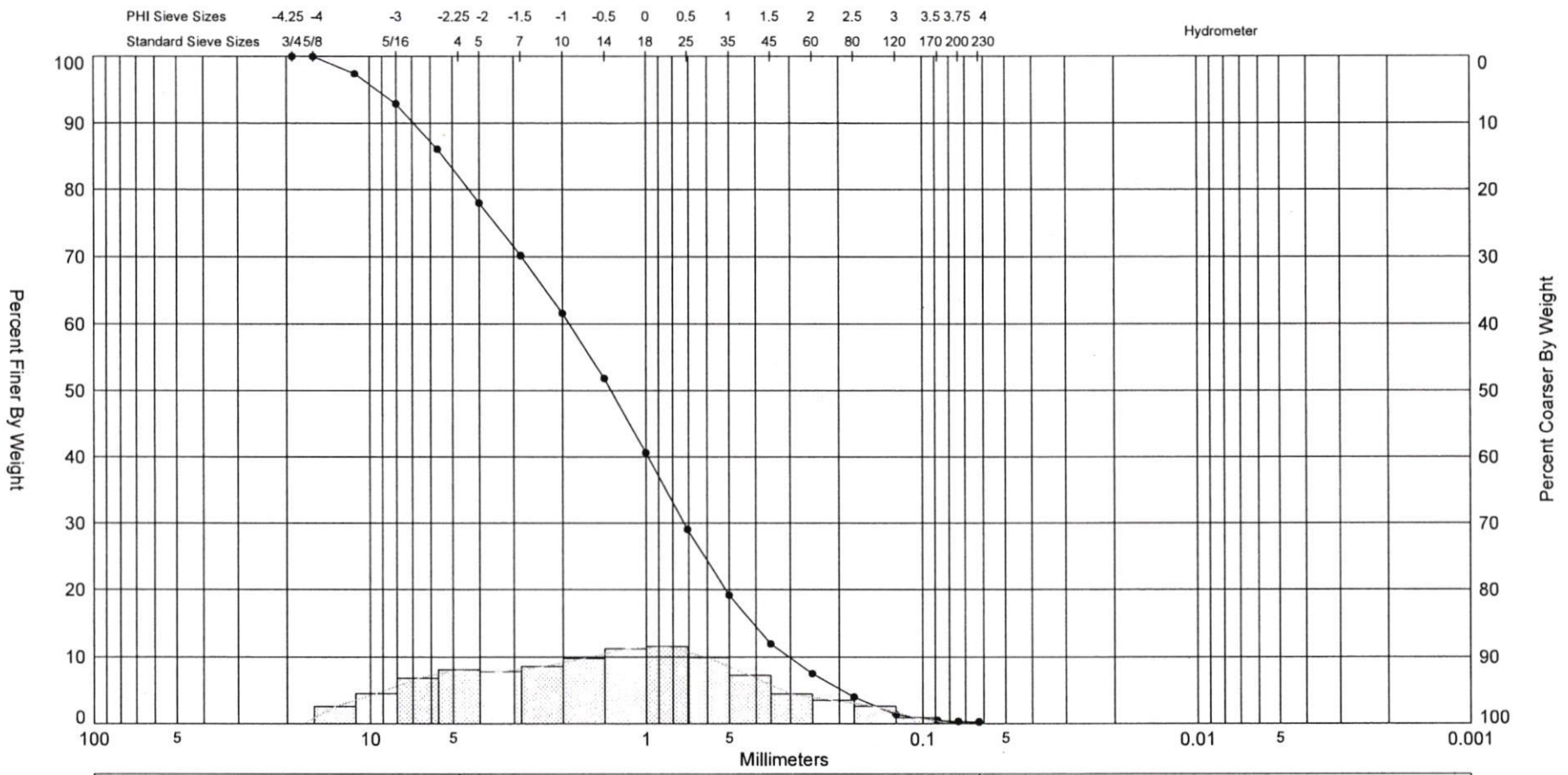
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C01 #1	—●—	0.8		SP	#200 - 0.49 #230 - 0.37		-0.44	0.04	2.17	1.63	Project Name:	Wulfert Channel
											Analysis Date:	07-30-04
											Analyzed By:	JCB
											Easting (X):	782,151
											Northing (Y):	596,828
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29



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SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04



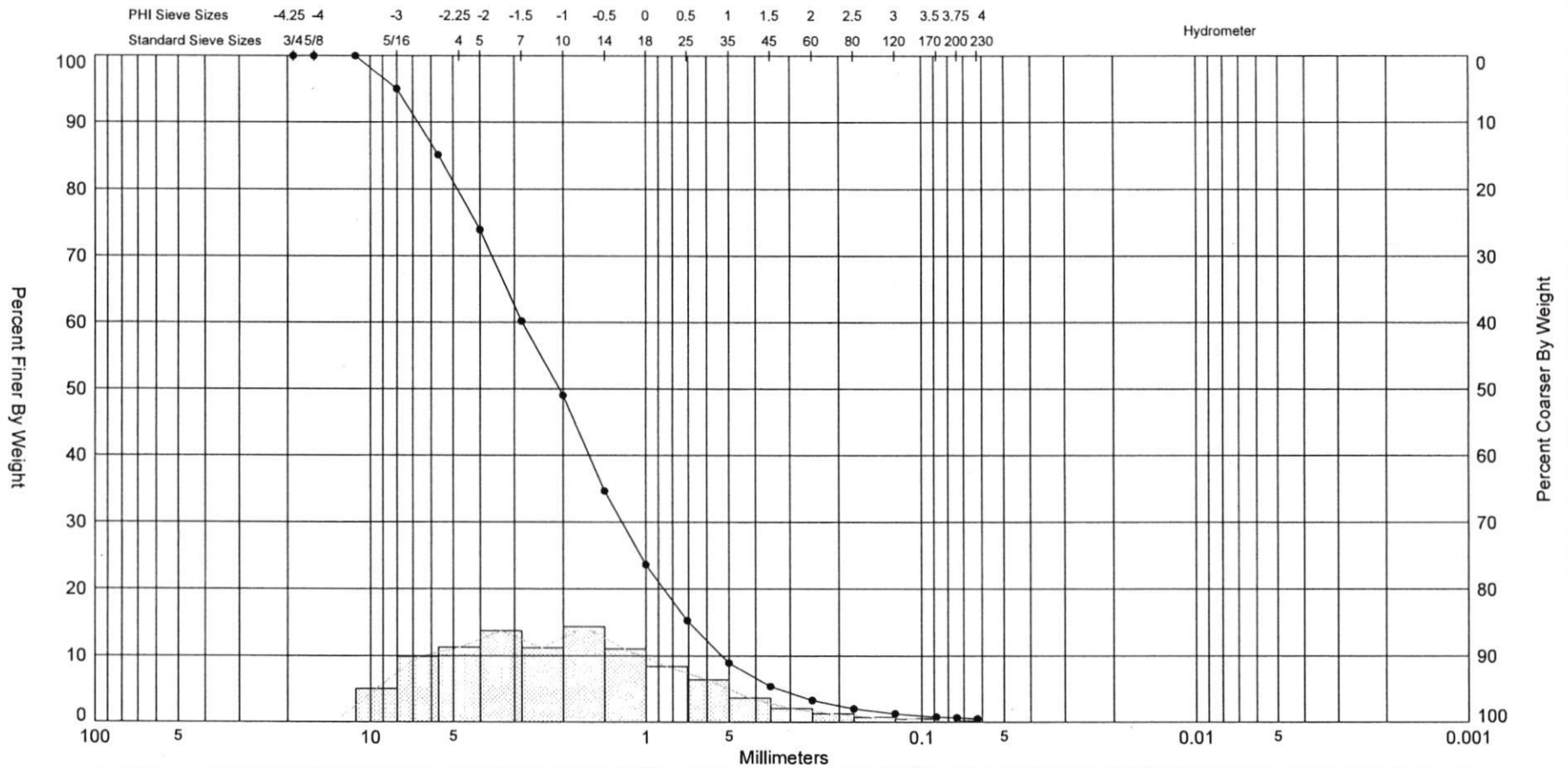
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C01 #2	—●—	-7.2		SP	#200 - 0.35 #230 - 0.27		-0.5	0.04	2.31	1.66	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
											Easting (X):	782,151
											Northing (Y):	596,828
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29



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SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04



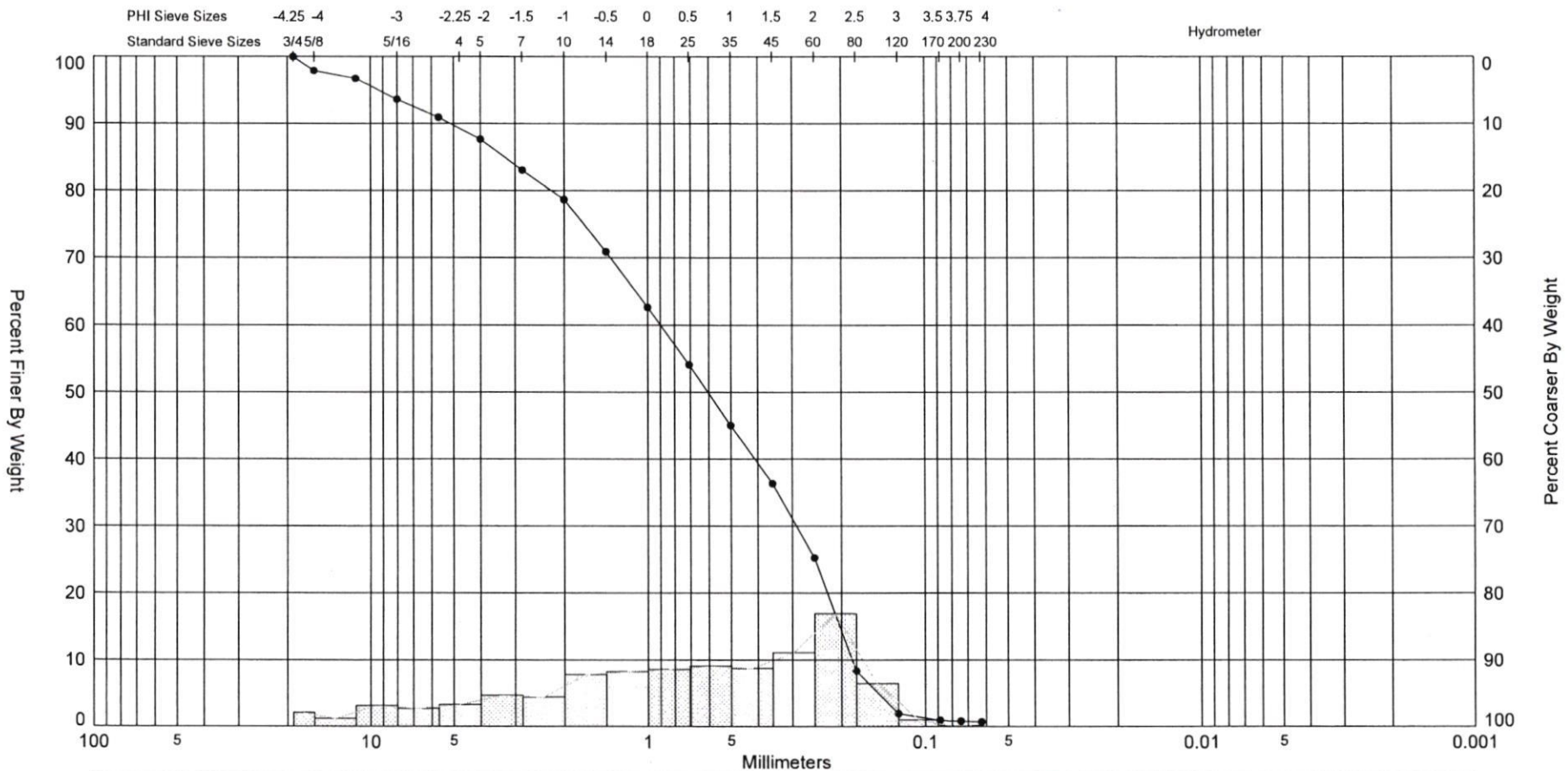
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C01 #3	—●—	-11.2		SP	#200 - 0.68 #230 - 0.50		-0.98	0.52	2.99	1.4	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
											Easting (X):	782,151
											Northing (Y):	596,828
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29



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SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04



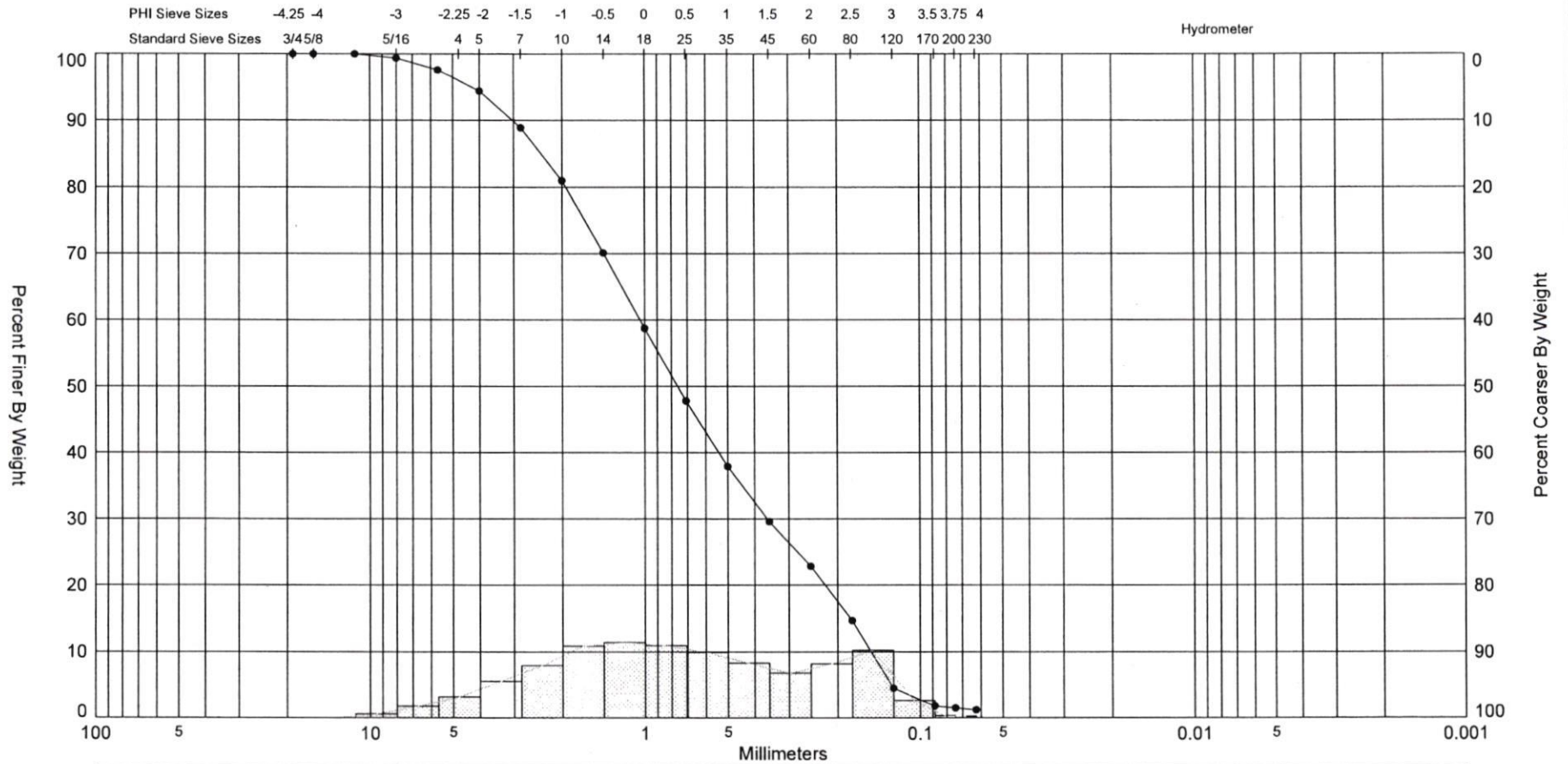
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C22 #1	—●—	2.2		SP	#200 - 0.82 #230 - 0.70	0.73	0.4	-0.65	2.58	1.83	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
											Easting (X):	782,585
											Northing (Y):	598,441
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29



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SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS GDT 8/4/04



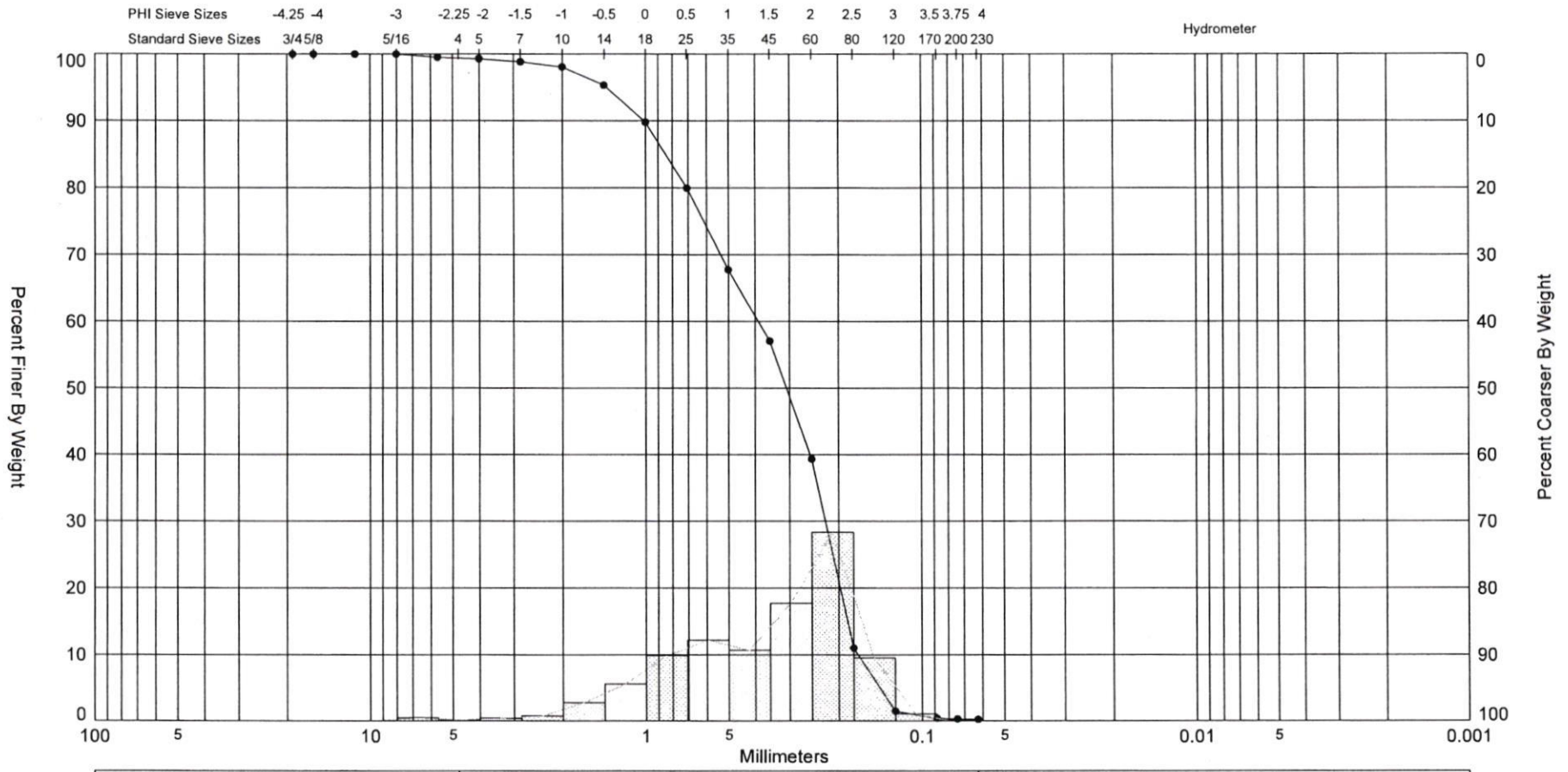
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C22 #2	—●—	-9.8		SP	#200 - 1.49 #230 - 1.21	0.4	0.46	-0.02	2.15	1.58	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
											Easting (X):	782,585
											Northing (Y):	598,441
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29




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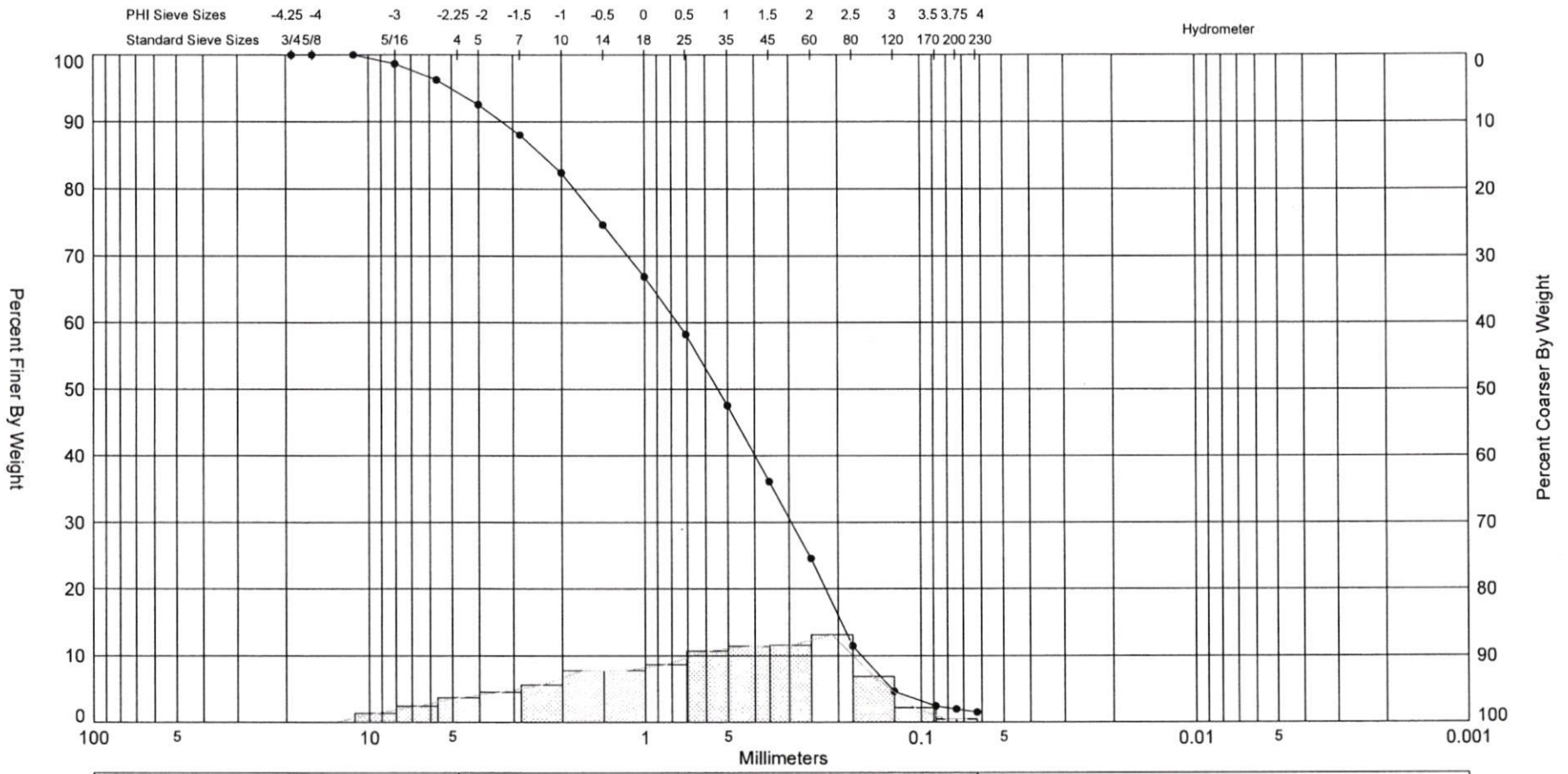
SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C23 #1	—●—	-0.2		SP	#200 - 0.31 #230 - 0.24	1.7	1.43	-0.88	3.66	1.06	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
 COASTAL TECH Coastal Geology & Sediments Laboratory				Coastal Tech 715 North Drive Suite G Melbourne, Florida 32934 ph 321 751 1135 fax						Easting (X):	782,354	
										Northing (Y):	598,798	
										Horizontal System:	NAD 1983	
										Vertical System:	NAVD 29	

SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS GDT 8/4/04



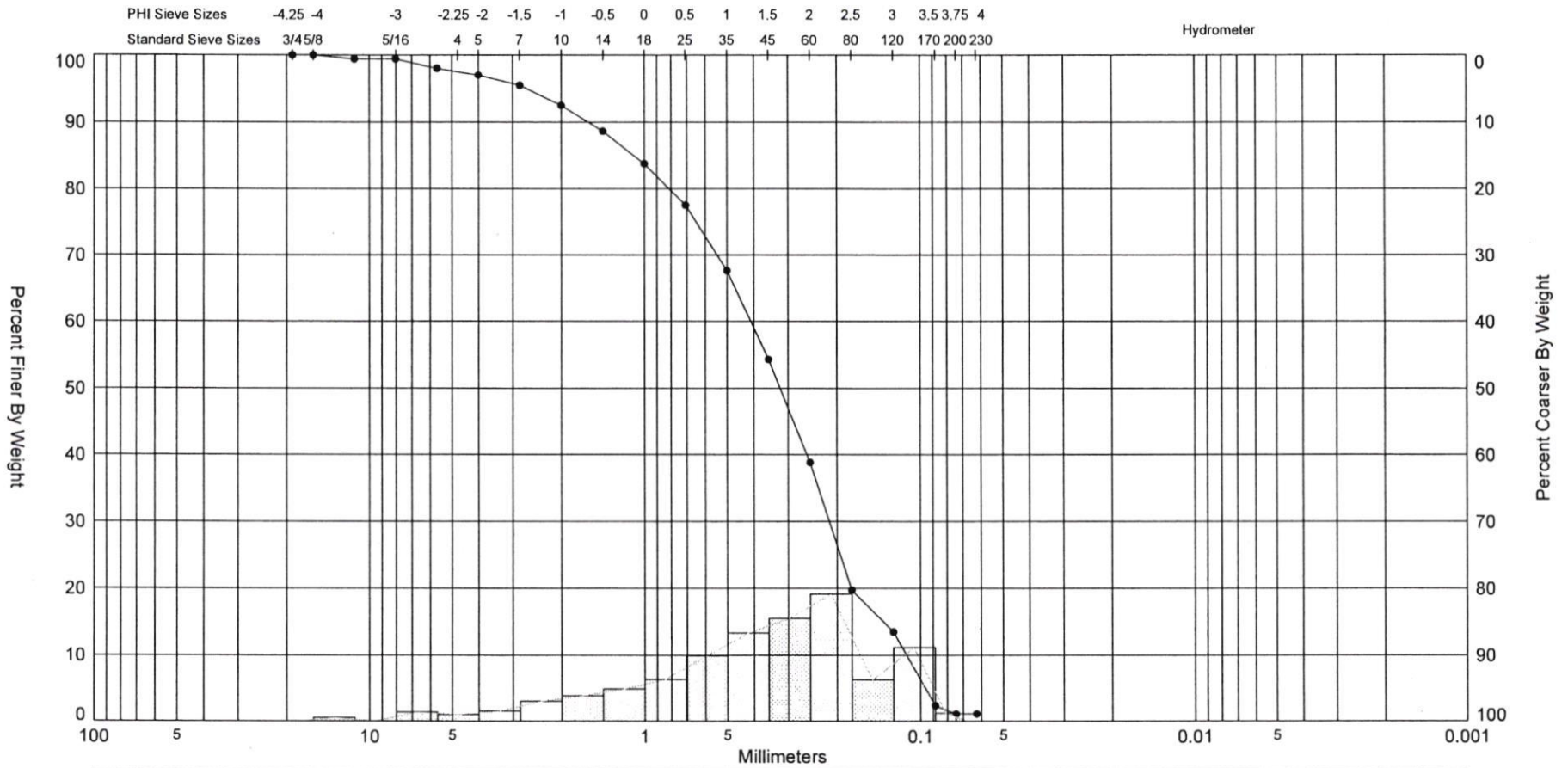
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C23 #2	—●—	-8.2		SP	#200 - 1.96 #230 - 1.49	0.89	0.63	-0.42	2.38	1.61	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
											Easting (X):	782,354
											Northing (Y):	598,798
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29




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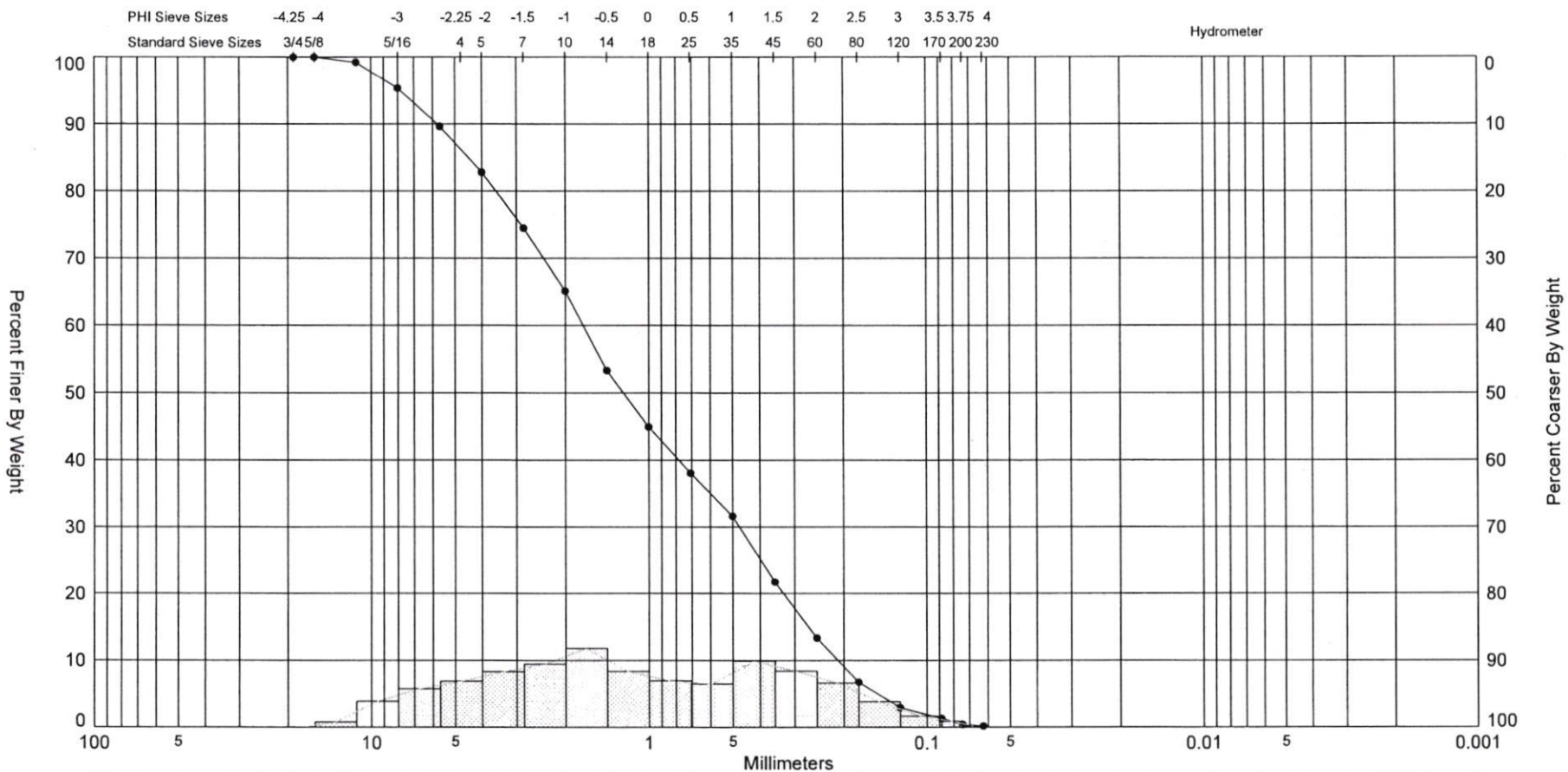
SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C02 #1	—●—	-0.8		SP	#200 - 1.13 #230 - 1.13	1.64	1.36	-0.91	3.74	1.43	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
 COASTAL TECH Coastal Geology & Sediments Laboratory				Coastal Tech 715 North Drive Suite G Melbourne, Florida 32934 ph 321 751 1135 fax						Easting (X):	780,792	
										Northing (Y):	597,464	
										Horizontal System:	NAD 1983	
										Vertical System:	NAVD 29	

SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04



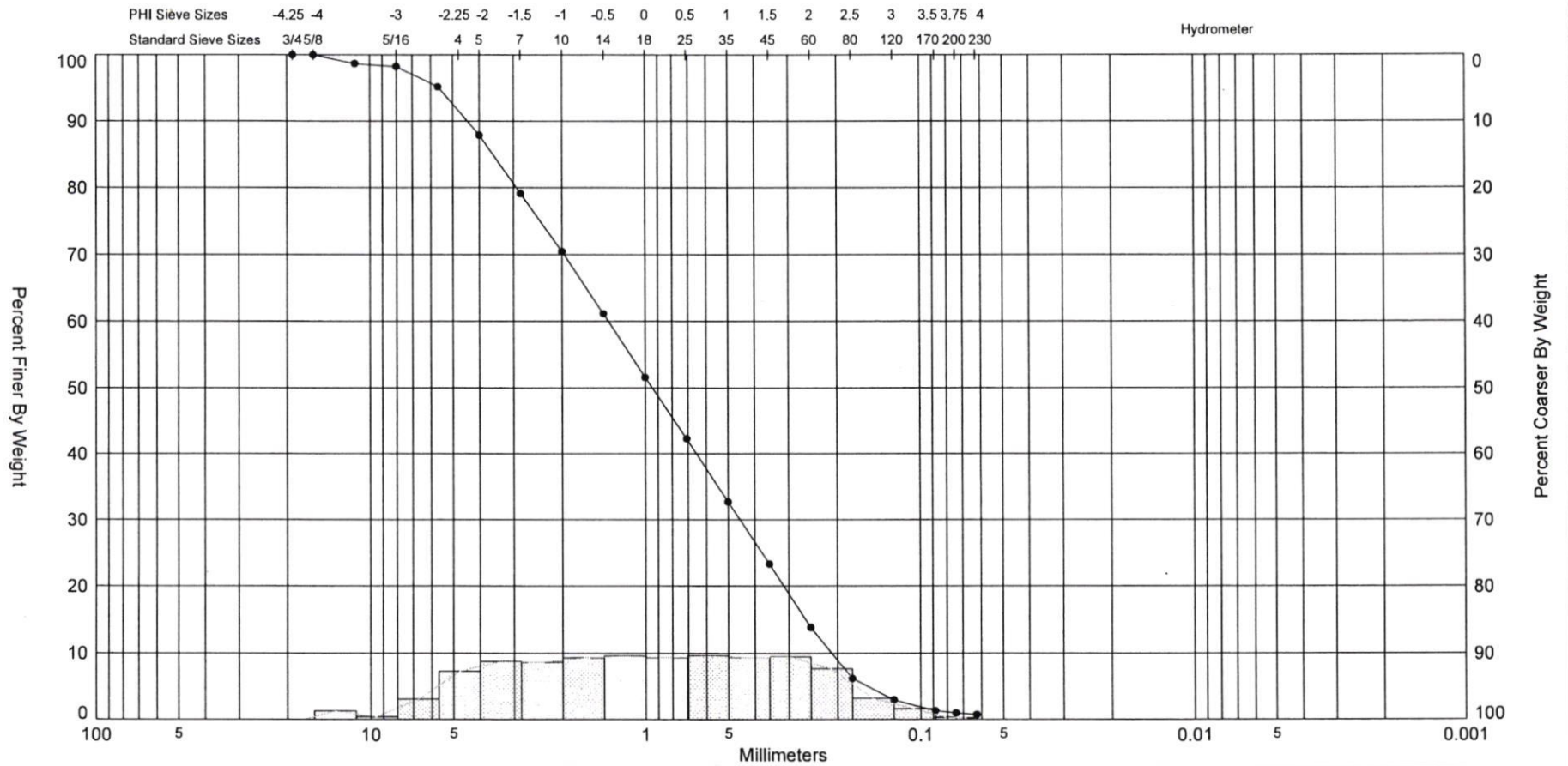
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C02 #2	—●—	-4.8		SP	#200 - 0.41 #230 - 0.18		-0.15	0.07	2.07	1.77	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
											Easting (X):	780,792
											Northing (Y):	597,464
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29



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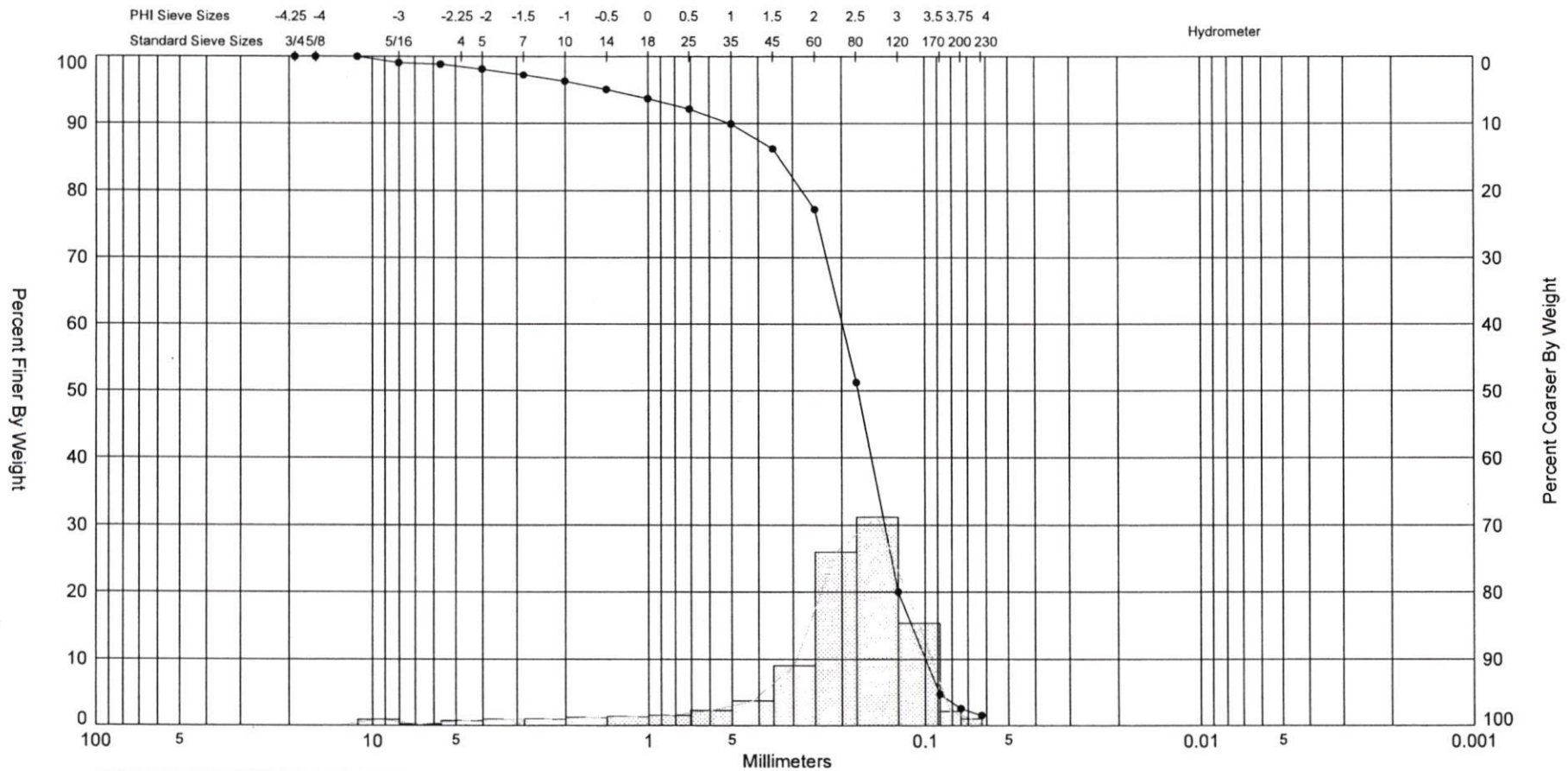
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C02 #3	—●—	-8.8		SP	#200 - 1.01 #230 - 0.75	0.09	0.05	-0.05	2.18	1.64	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
											Easting (X):	780,792
											Northing (Y):	597,464
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29



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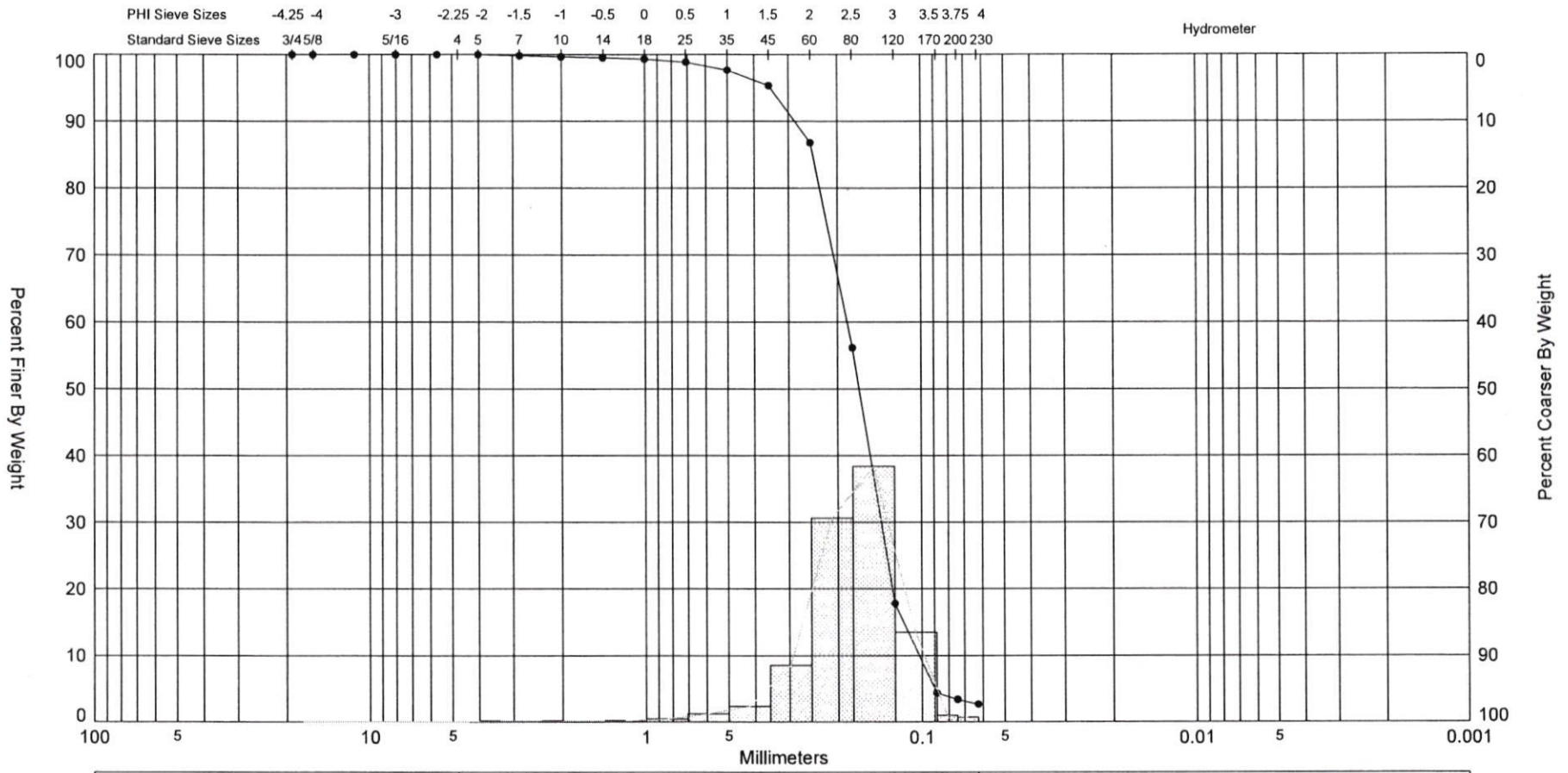
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C04 #1	—●—	-1.3		SP	#200 - 2.54 #230 - 1.53	2.52	2.23	-2.29	9.14	1.19	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
											Easting (X):	781,539
											Northing (Y):	596,498
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29



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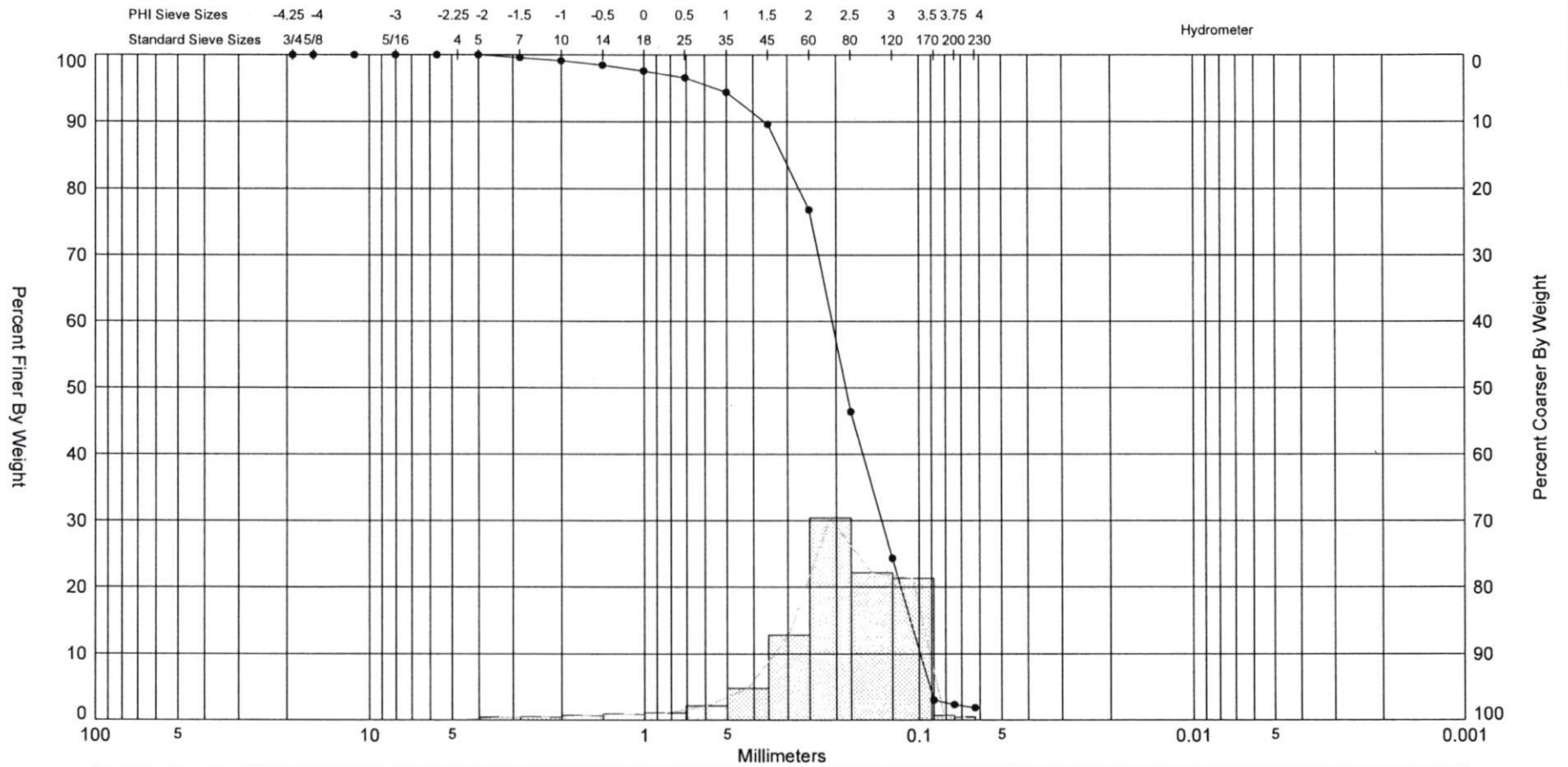
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C04 #2	—●—	-4.4		SP	#200 - 3.39 #230 - 2.68	2.58	2.49	-1.75	10.72	0.62	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
											Easting (X):	781,539
											Northing (Y):	596,498
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29




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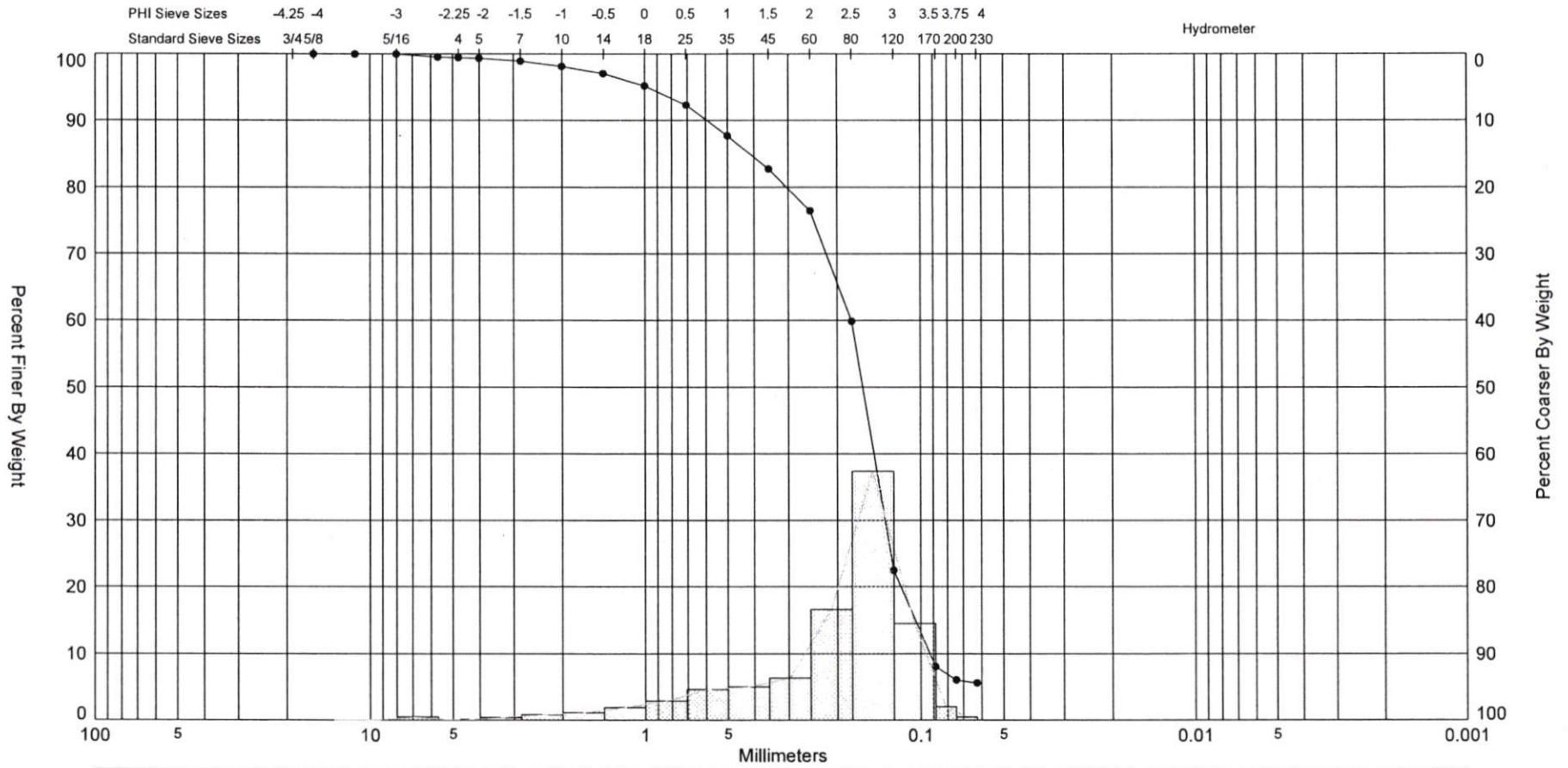
SIEVE ANALYSIS BLIND_PASS2.GPJ FL DEP ROSS.GDT 8/4/04




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C04 #3	—●—	-6.5		SP	#200 - 2.33 #230 - 1.86	2.44	2.35	-1.61	7.39	0.84	Project Name:	Wulfert Channel
											Analysis Date:	07-26-04
											Analyzed By:	JCB
 COASTAL TECH Coastal Geology & Sediments Laboratory				Coastal Tech 715 North Drive Suite G Melbourne, Florida 32934 ph 321 751 1135 fax						Easting (X):	781,539	
										Northing (Y):	596,498	
										Horizontal System:	NAD 1983	
										Vertical System:	NAVD 29	

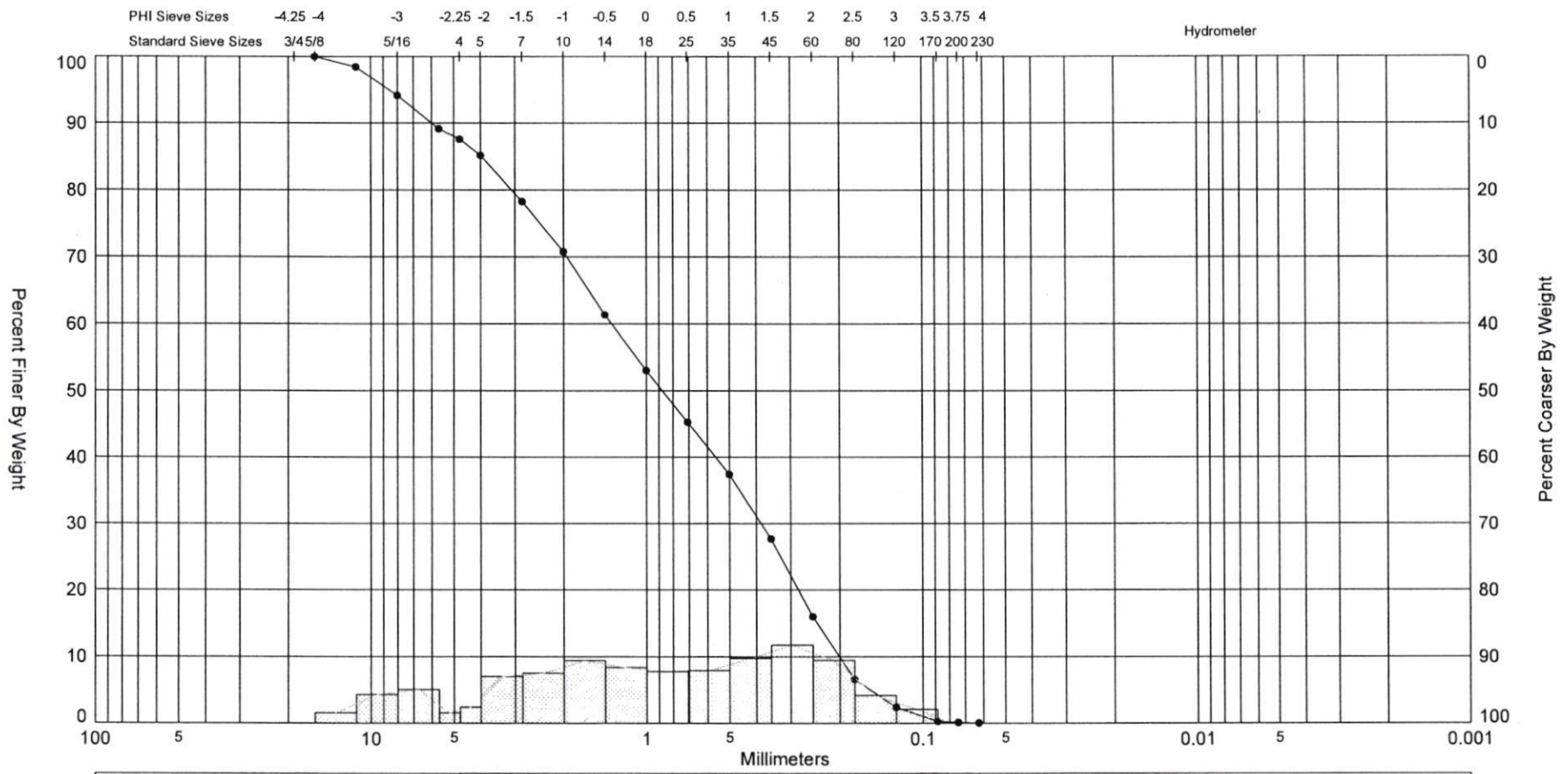
SIEVE ANALYSIS BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05




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	
BP-5 #1	—●—	-3.9'	SP-SC	#200 - 6.02 #230 - 5.56	1.40	16.00	2.63	2.25	-1.78	6.61	1.08	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory							Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343					Easting (X, ft):	596,664
												Northing (Y, ft):	782,195
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)

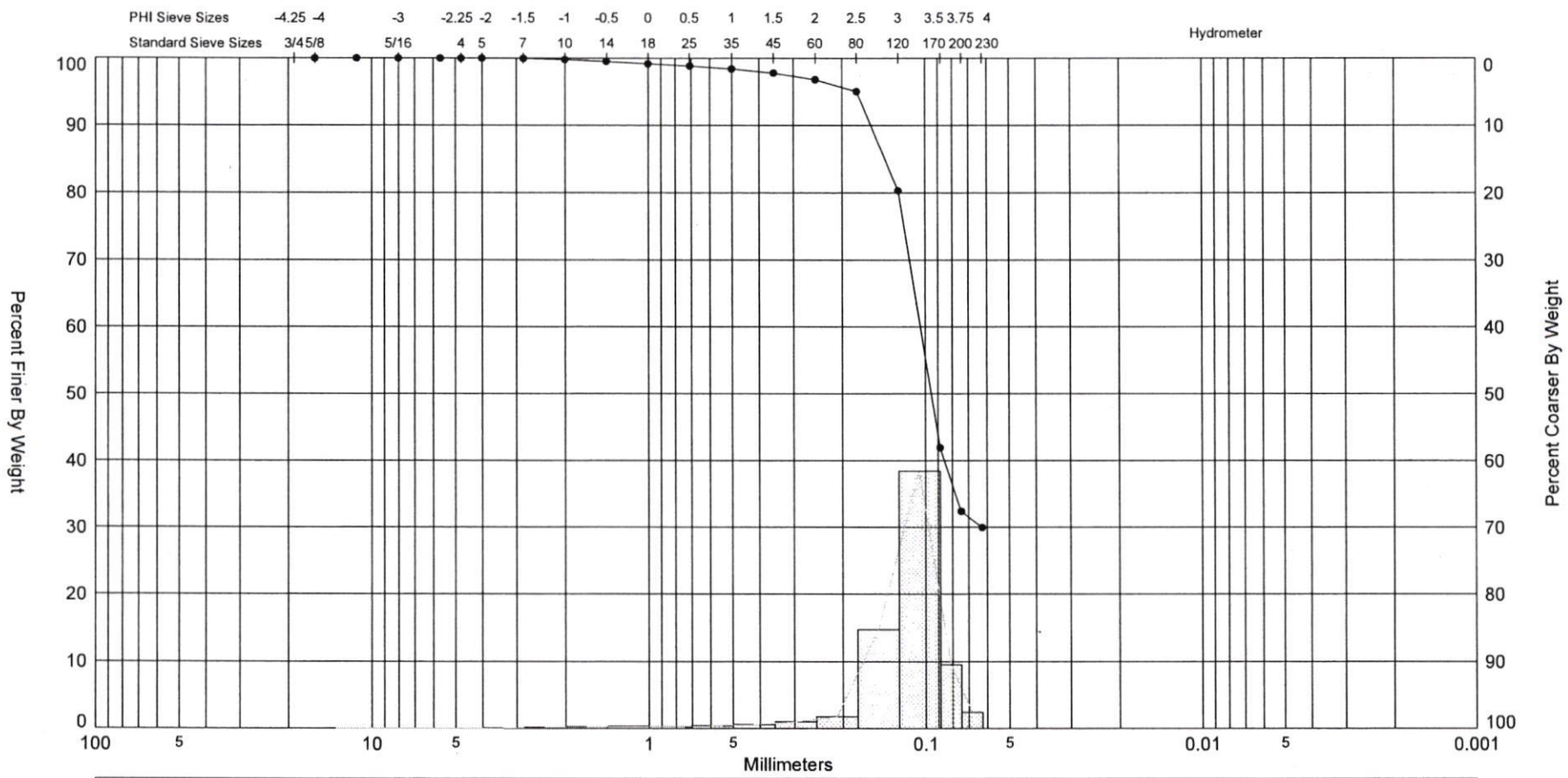
SIEVE ANALYSIS BLIND PASS GPJ FL DEP ROSS GDT 10/18/05




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	
BP-5 #2	—●—	-6.1'	SW	#200 - 0.14 #230 - 0.07	1.20	24.20	0.2	0.08	-0.25	2.09	1.8	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	596,664
												Northing (Y, ft):	782,195
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
												Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343	

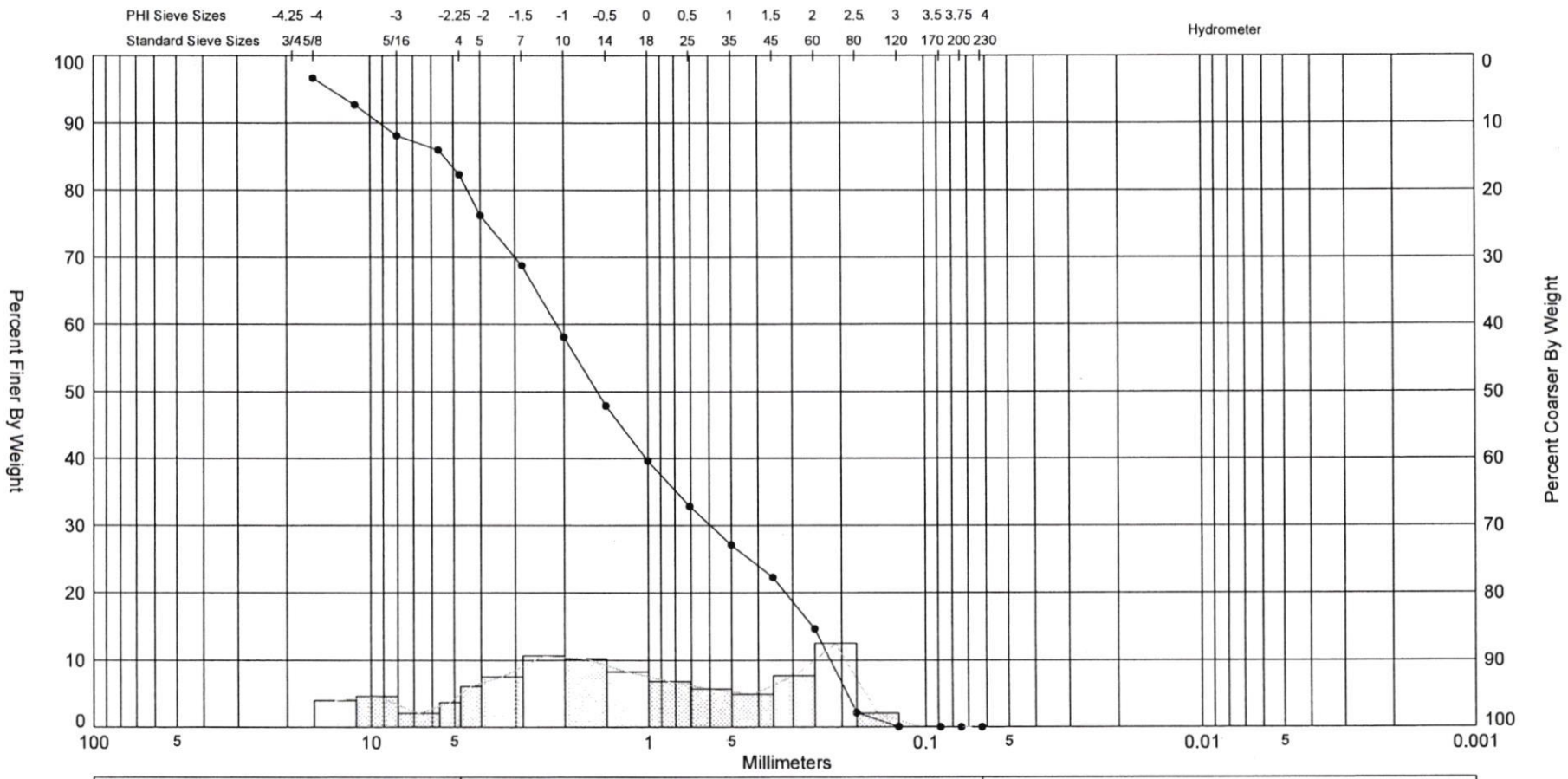
SIEVE ANALYSIS BLIND PASS GPJ FL DEP ROSS GDT 10/18/05




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	
BP-5 #3	—●—	-7.3'	SC	#200 - 32.40 #230 - 29.96	3.10	12.20	3.39	3.08	-3.42	19.1	0.64	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	596,664
												Northing (Y, ft):	782,195
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343													

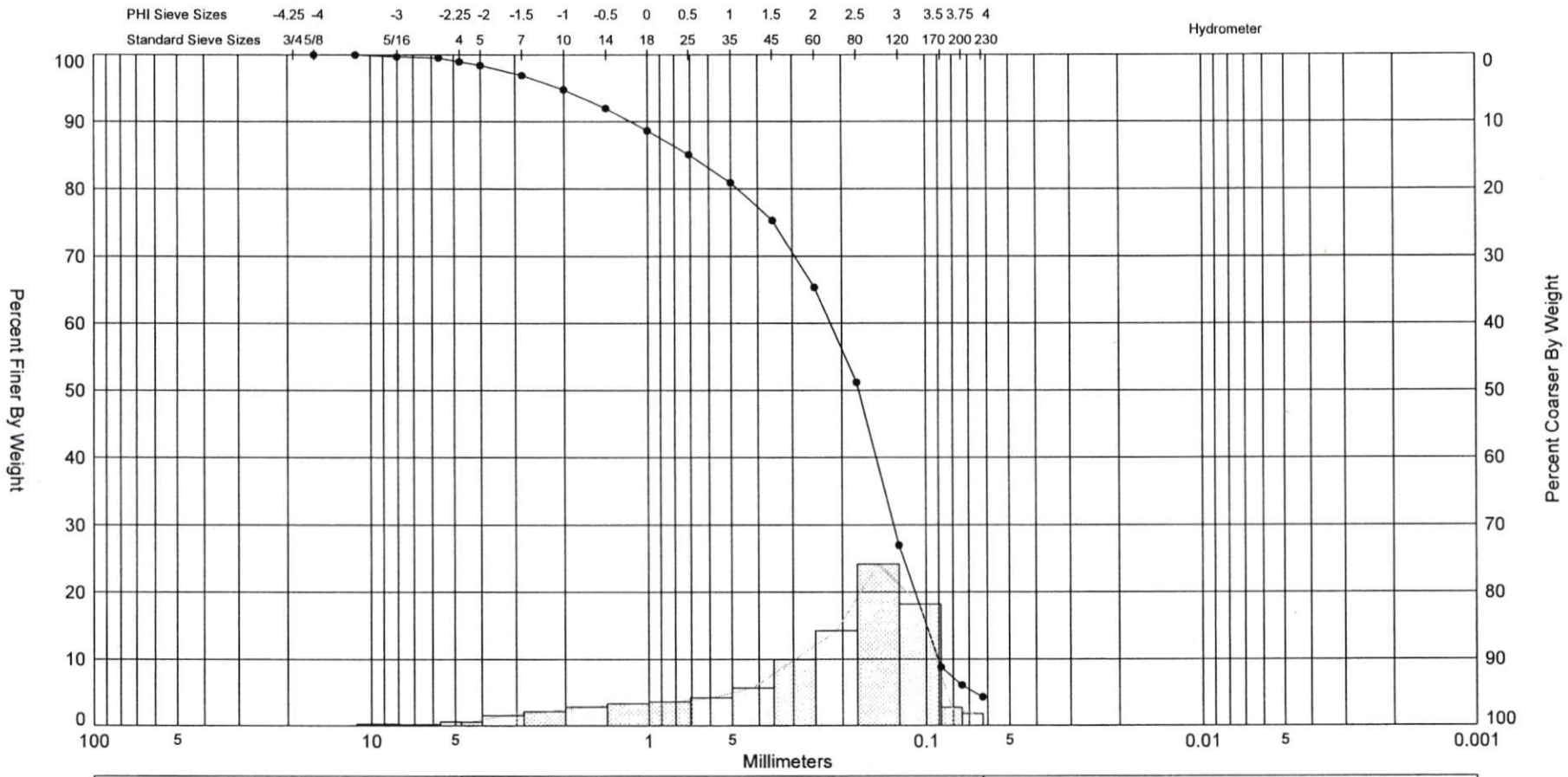
SIEVE ANALYSIS BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05




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	
BP-5 #4	—●—	-9.9'	SW	#200 - 0.00 #230 - 0.00	3.60	16.90		-0.35	-0.01	1.97	1.81	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory						Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343						Easting (X, ft):	596,664
												Northing (Y, ft):	782,195
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)

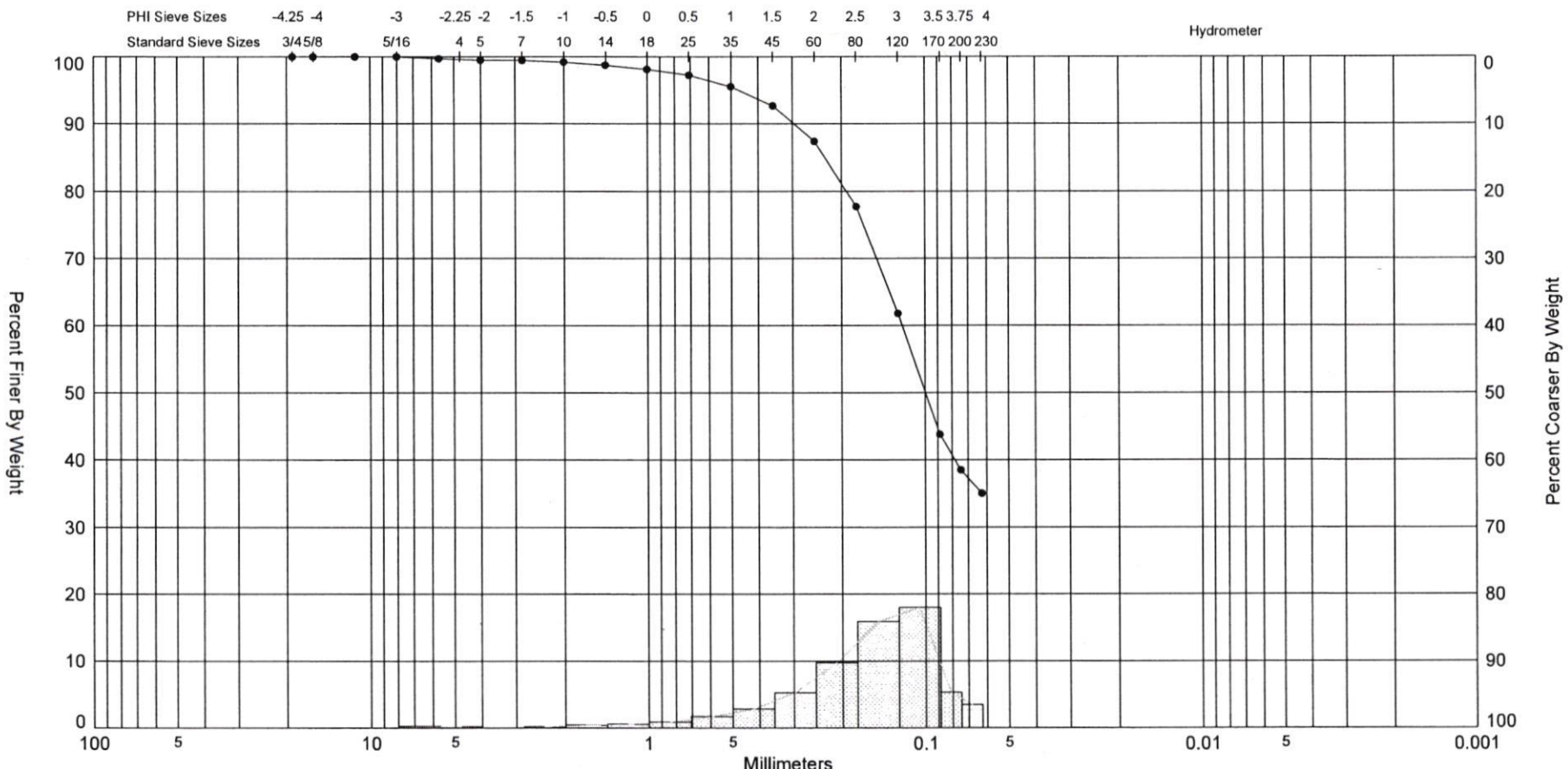
SIEVE ANALYSIS BLIND PASS GPJ FL DEP ROSS GDT 12/8/05



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	
BP5 Decompacted #5	—●—	-10.1	SC	#200 - 6.07 #230 - 4.27	2.50	32.30	2.52	1.99	-1.3	4.13	1.41	Project Name:	Blind Pass
Comments:												Analysis Date:	11-29-05
Depths and elevations corrected for either expansion or compaction based on judgement												Analyzed By:	LA
												Easting (X, ft):	596,664.3
												Northing (Y, ft):	782,194.5
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
												715-G North Dr. Melbourne, FL 32934 Phone (321) 751-1135 Fax (321) 751-2343	

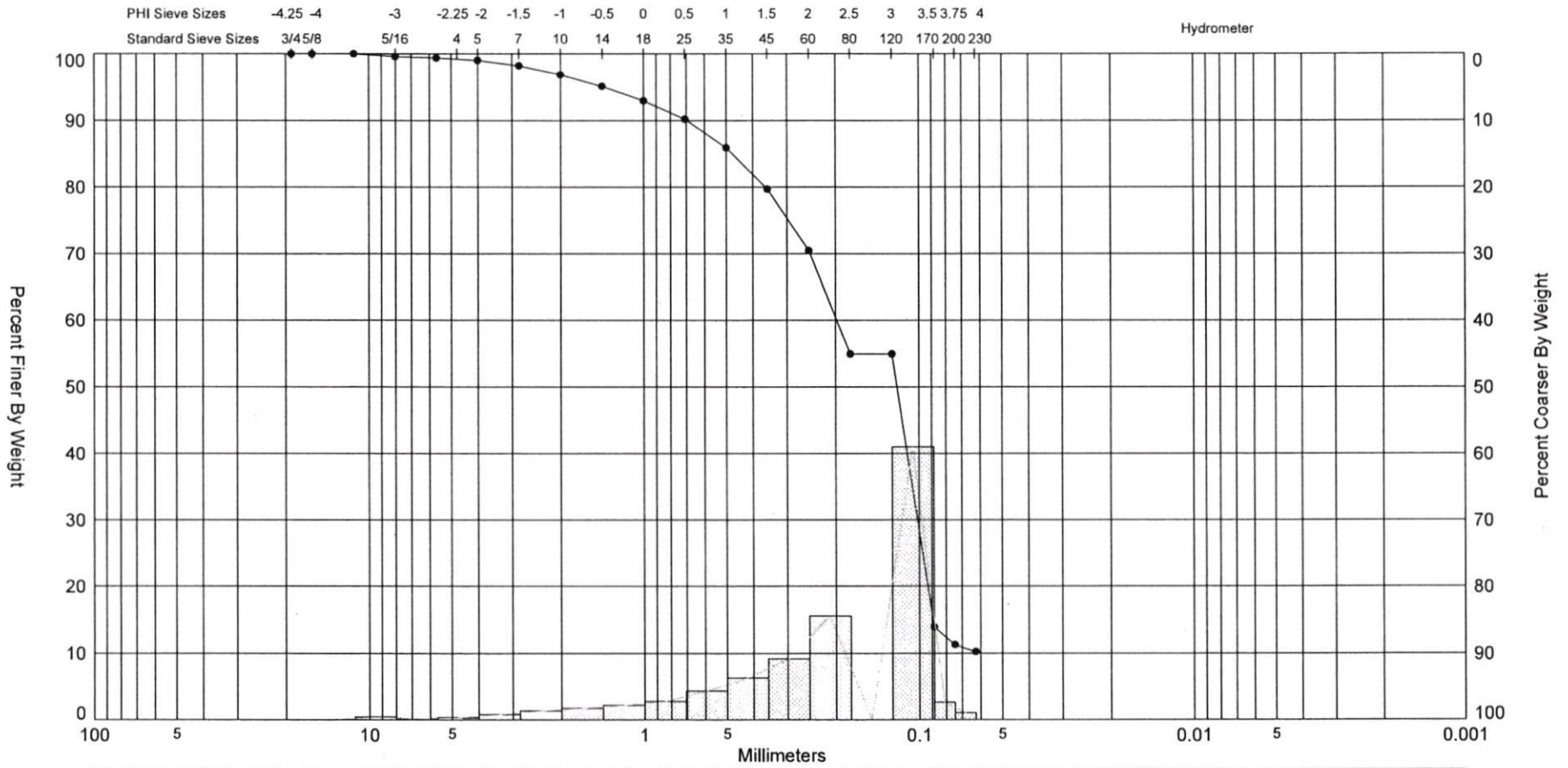
SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C14 #1	—●—	-3.9		SP	#200 - 38.52 #230 - 35.06	3.33	2.6	-1.9	8.39	1.02	Project Name:	Wulfert Channel
											Analysis Date:	07-07-04
											Analyzed By:	JCB
											Easting (X):	781,183
											Northing (Y):	597,585
											Horizontal System:	NAD 1983
											Vertical System:	NAVD 29
Coastal Tech 715 North Drive Suite G Melbourne, Florida 32934 ph 321 751 1135 fax												

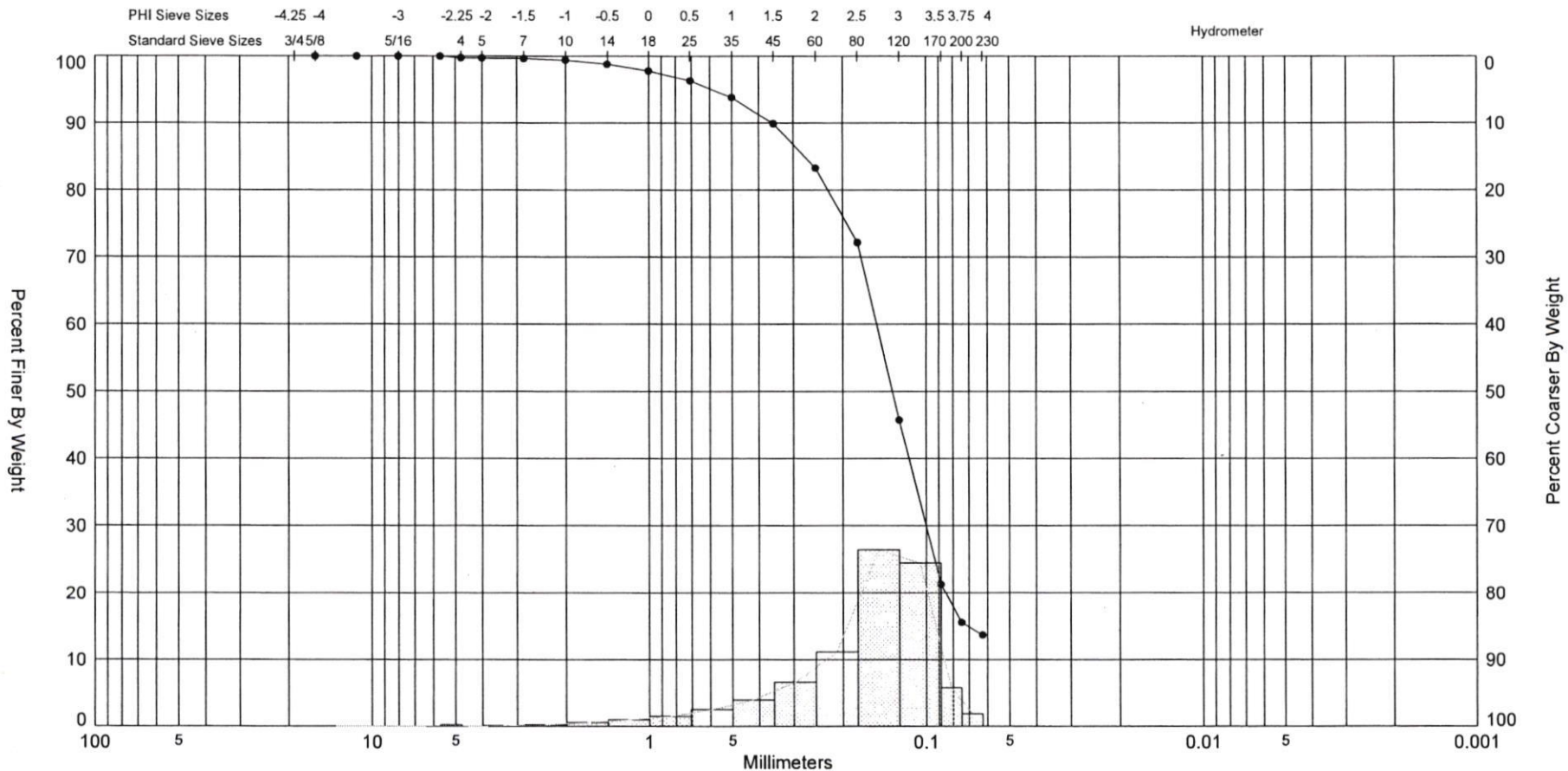
SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 8/4/04




Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Fines	Median	Mean	Skew	Kurt	Sort	Sample Information	
C14 #2	—●—	-4.4		SP-SM	#200 - 11.30 #230 - 10.25	3.06	2.25	-1.43	4.9	1.34	Project Name:	Wulfert Channel
											Analysis Date:	07-07-04
											Analyzed By:	JCB
 COASTAL TECH Coastal Geology & Sediments Laboratory		Coastal Tech 715 North Drive Suite G Melbourne, Florida 32934 ph 321 751 1135 fax						Easting (X):	781,183			
								Northing (Y):	597,585			
								Horizontal System:	NAD 1983			
								Vertical System:	NAVD 29			

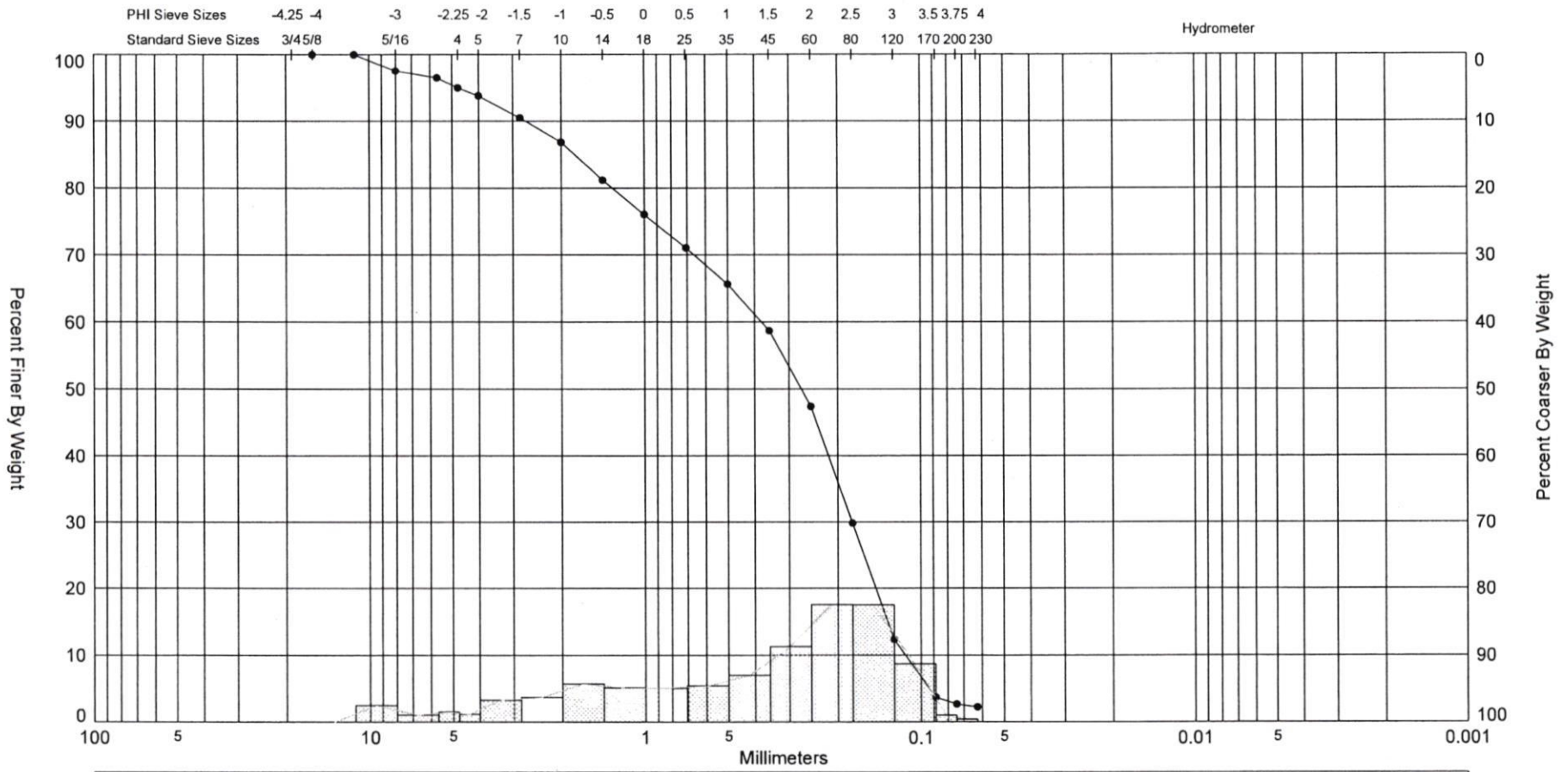
SIEVE ANALYSIS: BLIND PASS GPJ FL DEP ROSS.GDT 10/18/05




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	
BP-6 #1	—●—	-2.4'	SC	#200 - 15.54 #230 - 13.65	4.20	18.90	2.92	2.58	-1.73	7	0.94	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Coastal Tech	
												715-G North Dr.	
												Melbourne, FL 32934	
												ph (321) 751-1135 fax (321) 751-2343	
												Easting (X, ft):	596,881
												Northing (Y, ft):	782,632
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)

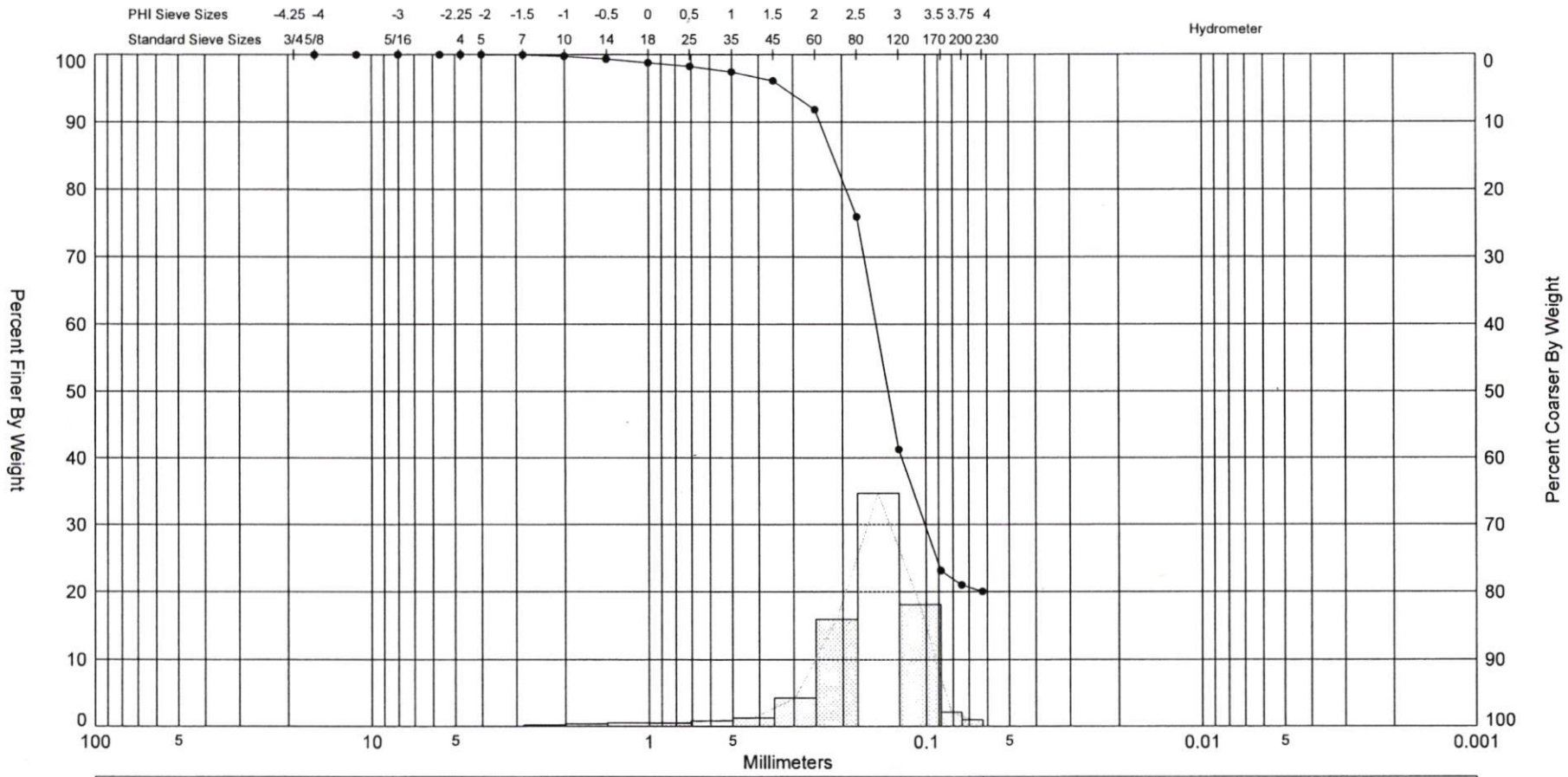
SIEVE ANALYSIS BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05



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	
BP-6 #2	—●—	-4.2'	SW	#200 - 2.66 #230 - 2.23	1.00	25.50	1.89	1.25	-0.88	2.81	1.74	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	596,881
												Northing (Y, ft):	782,632
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
												Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343	

SIEVE ANALYSIS BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05



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	
BP-6 #3	—●—	-7.2'	SC	#200 - 21.04 #230 - 20.05	2.40	13.50	2.87	2.64	-2.11	10.61	0.69	Project Name:	Blind Pass

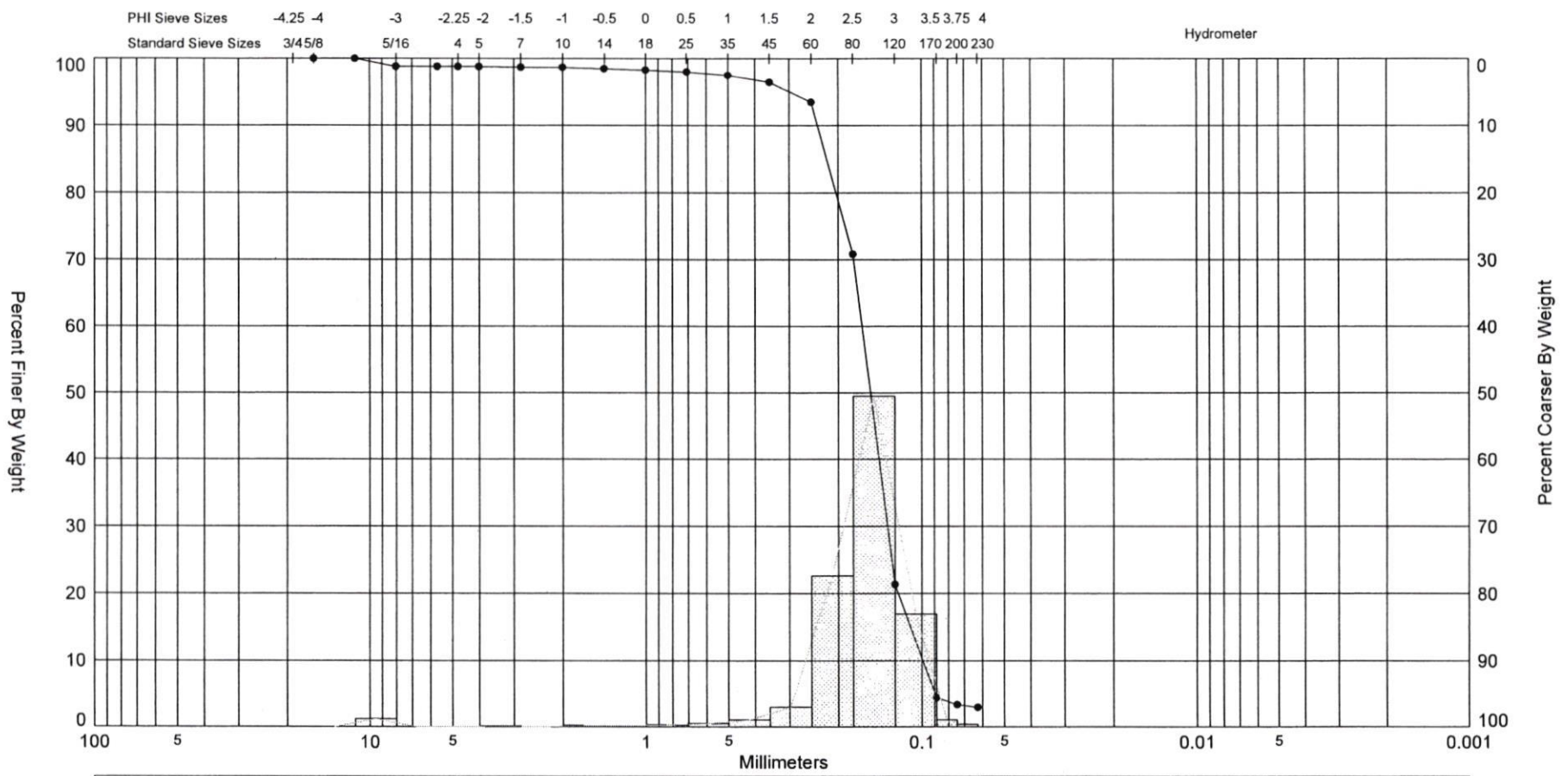
Comments:	Analysis Date:	09-12-05
Depths and elevations based on measured values	Analyzed By:	WJD




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Easting (X, ft):	596,881
Northing (Y, ft):	782,632
Horizontal System:	NAD 1983
Vertical System:	NAVD 88 (ft)

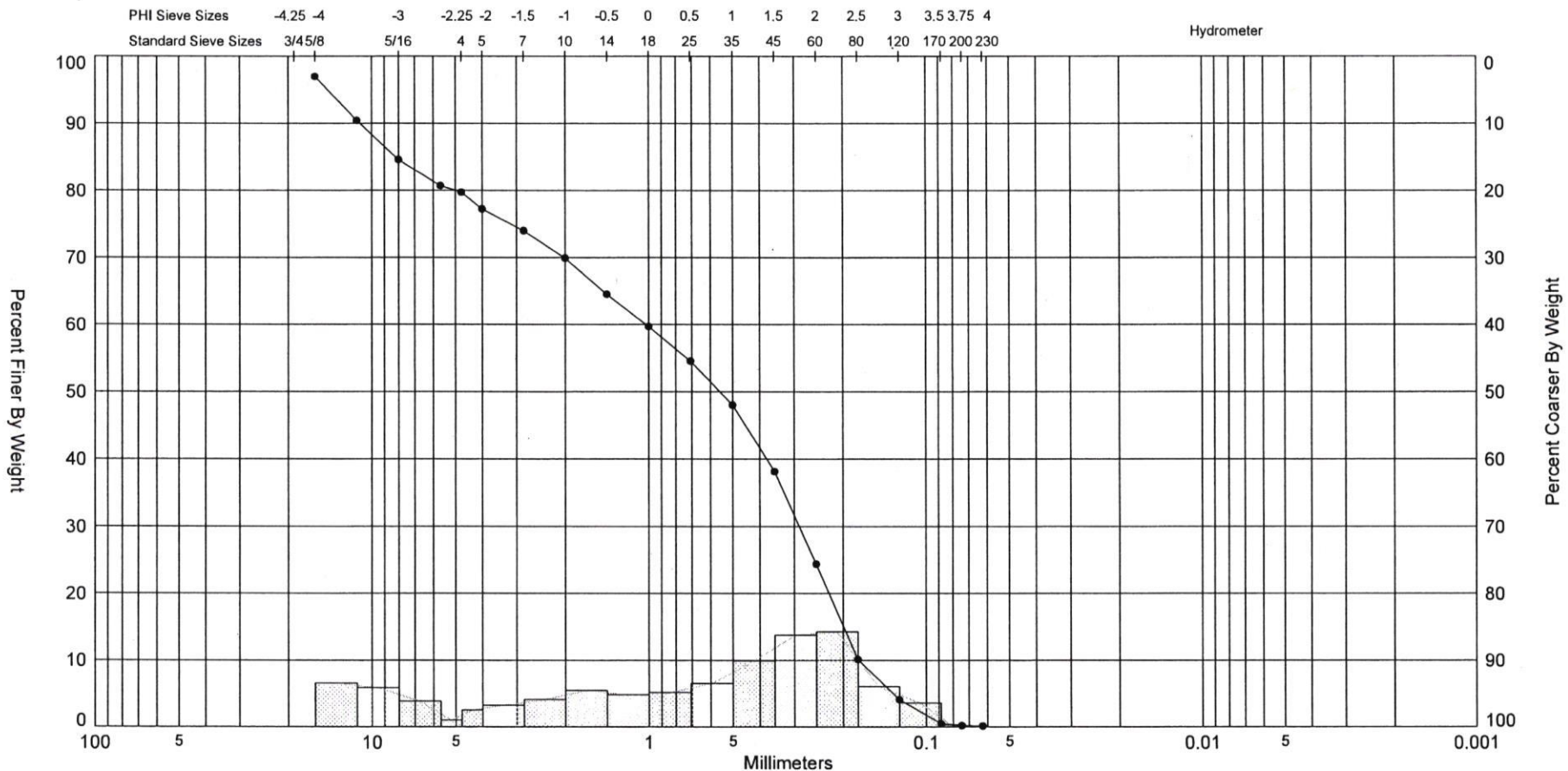
SIEVE ANALYSIS BLIND PASS GPJ FL DEP ROSS GDT 10/18/05




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	
BP-6 #4	—●—	-8.4'	SP	#200 - 3.34 #230 - 2.94	0.60	6.80	2.71	2.58	-4.7	32.13	0.83	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	596,881
												Northing (Y, ft):	782,632
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
												Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343	

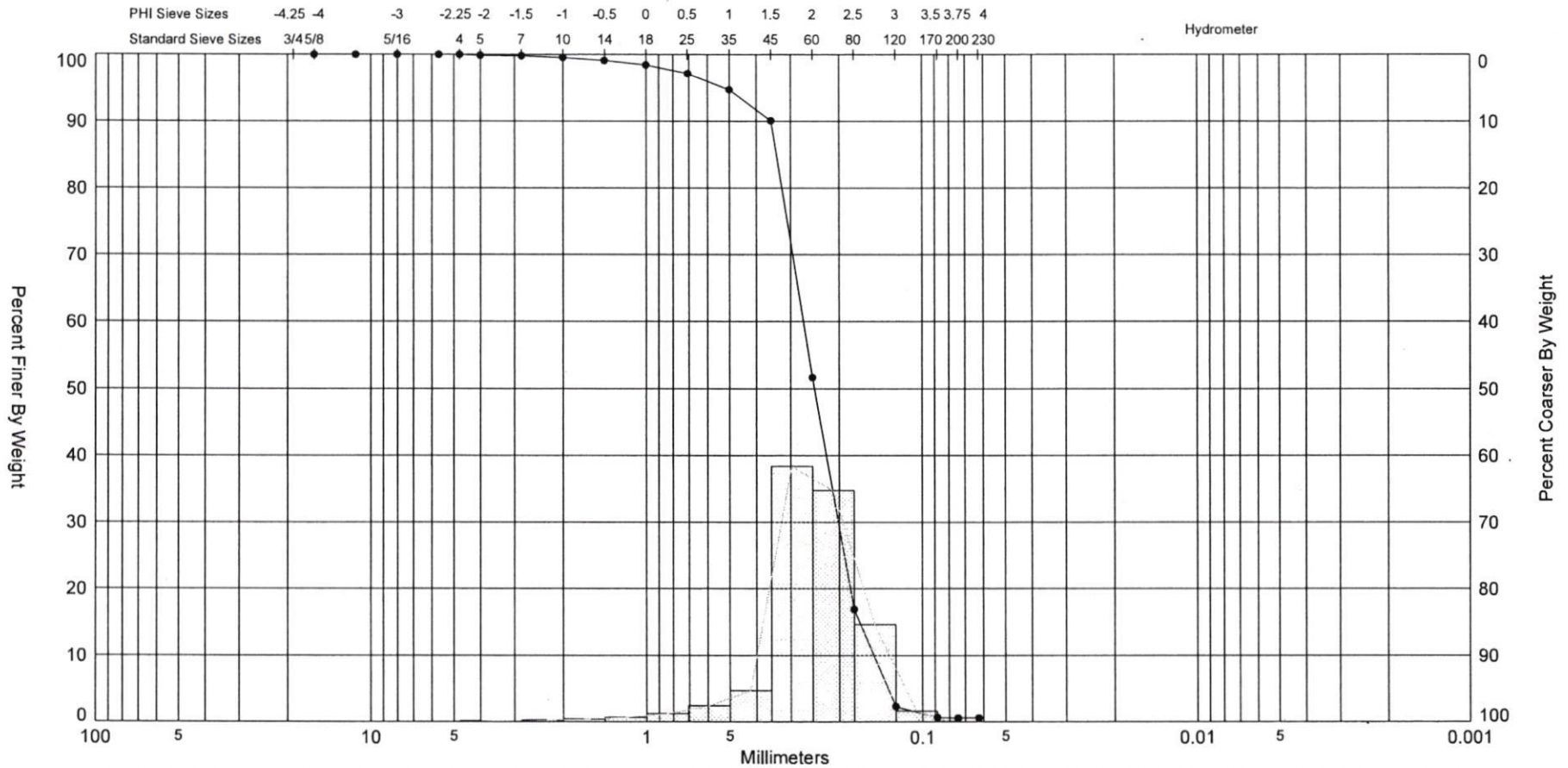
SIEVE ANALYSIS BLIND PASS GPJ FL DEP ROSS.GDT 12/8/05




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	
BP6 Decompacted #5	—●—	-5.8	SW	#200 - 0.21 #230 - 0.14	1.00	51.80	0.85	0.14	-0.38	1.97	2.09	Project Name:	Blind Pass
Comments:												Analysis Date:	11-29-05
Depths and elevations corrected for either expansion or compaction based on judgement												Analyzed By:	LA
												Easting (X, ft):	596,881.4
												Northing (Y, ft):	782,631.9
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
												715-G North Dr. Melbourne, FL 32934 Phone (321) 751-1135 Fax (321) 751-2343	

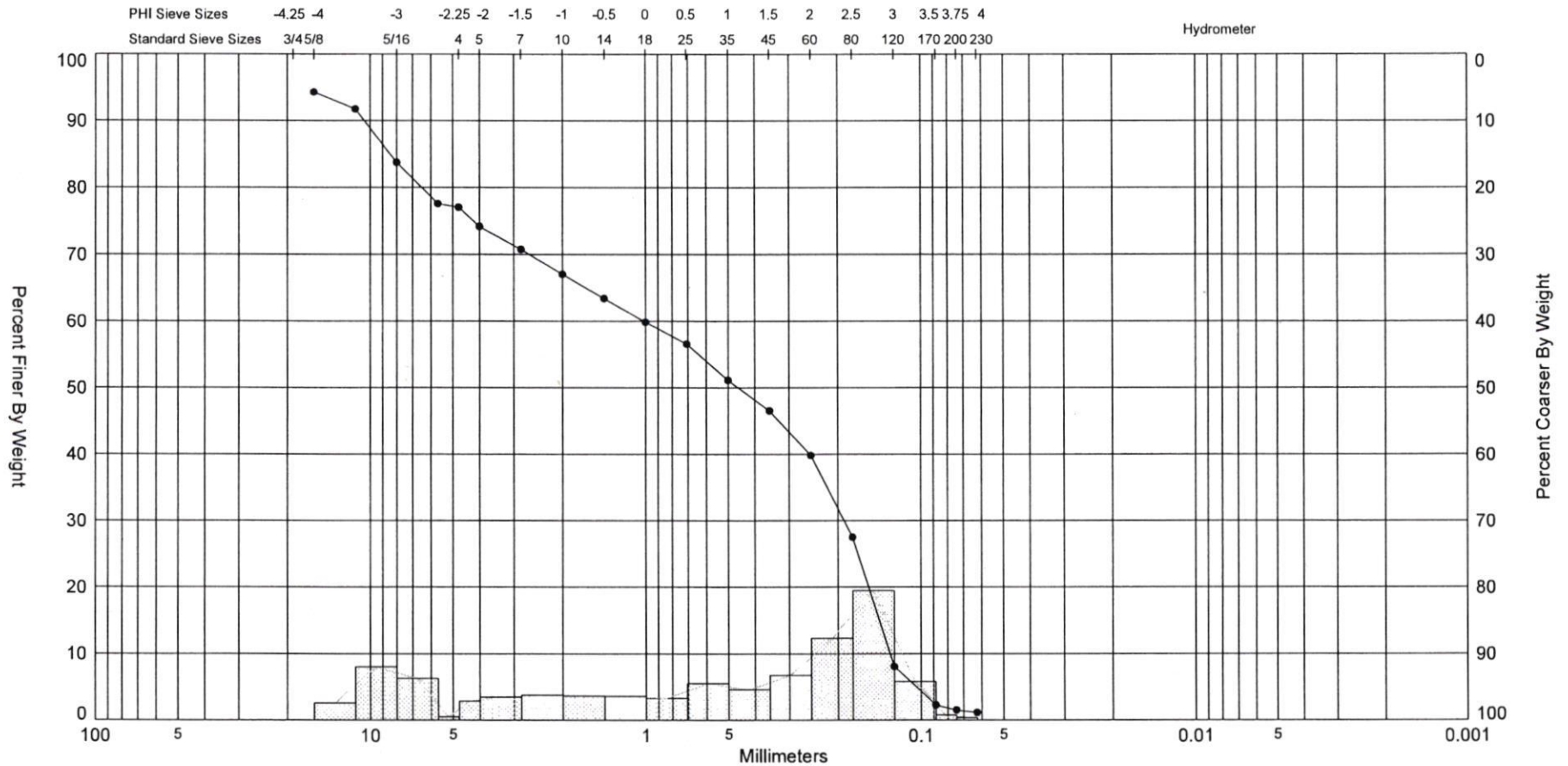
SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 12/8/05




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	
C15 #1	—●—	-4.9	SP	#200 - 0.60 #230 - 0.60	1.50	10.90	2.02	1.99	-1.7	9.98	0.62	Project Name:	Wulfert Channel
Comments:												Analysis Date:	11-28-05
Depths and elevations corrected for either expansion or compaction based on judgement												Analyzed By:	LA
												Easting (X, ft):	782,989.7
												Northing (Y, ft):	596,855.4
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
												715-G North Dr. Melbourne, FL 32934 Phone (321) 751-1135 Fax (321) 751-2343	

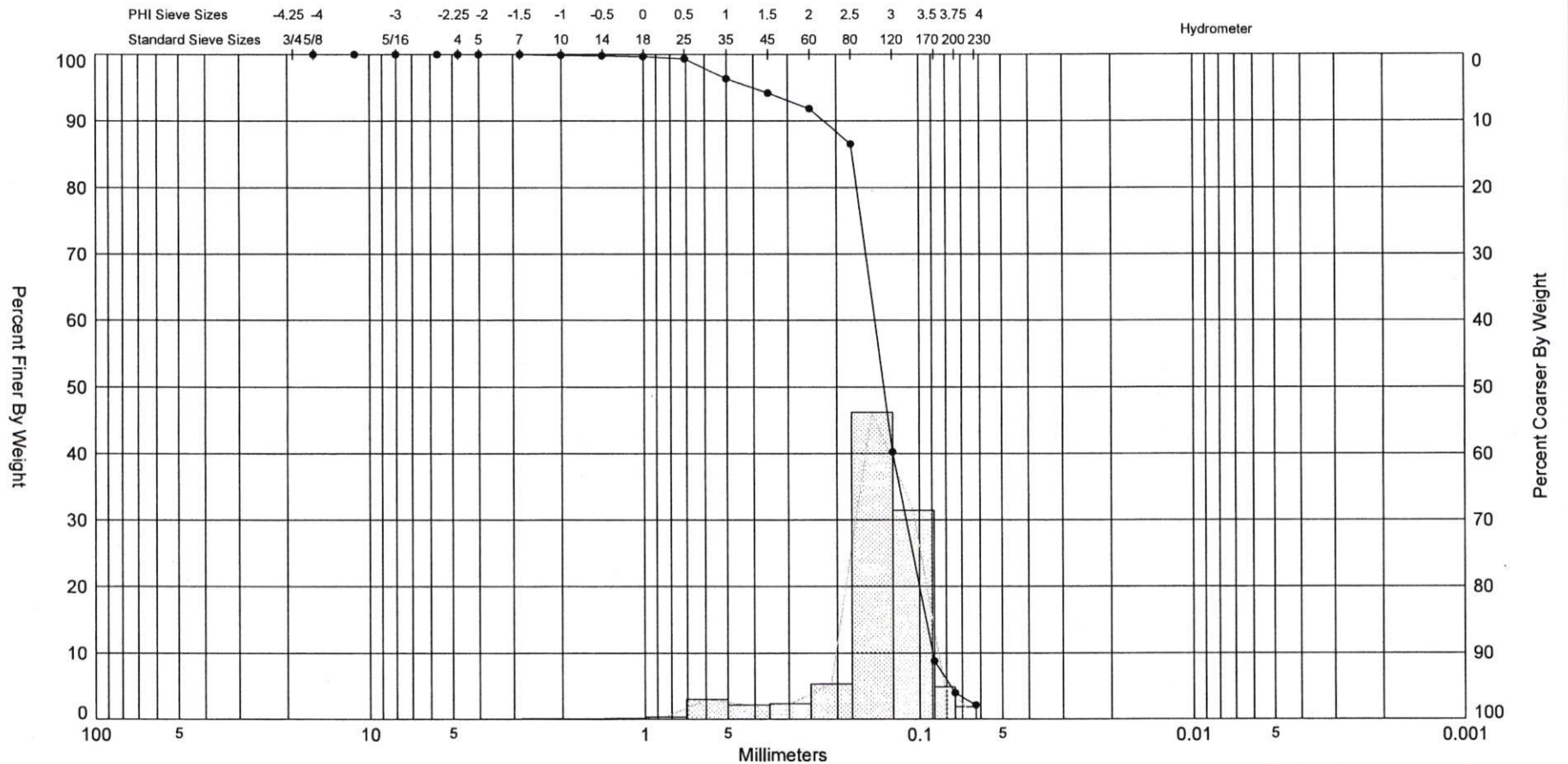
SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 12/8/05




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	
C15 #2	—●—	-13.6	SW	#200 - 1.53 #230 - 1.16	3.80	35.50	1.12	0.29	-0.17	1.68	2.24	Project Name:	Wulfert Channel
Comments:												Analysis Date:	11-28-05
Depths and elevations corrected for either expansion or compaction based on judgement												Analyzed By:	LA
												Easting (X, ft):	782,989.7
												Northing (Y, ft):	596,855.4
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
												715-G North Dr. Melbourne, FL 32934 Phone (321) 751-1135 Fax (321) 751-2343	

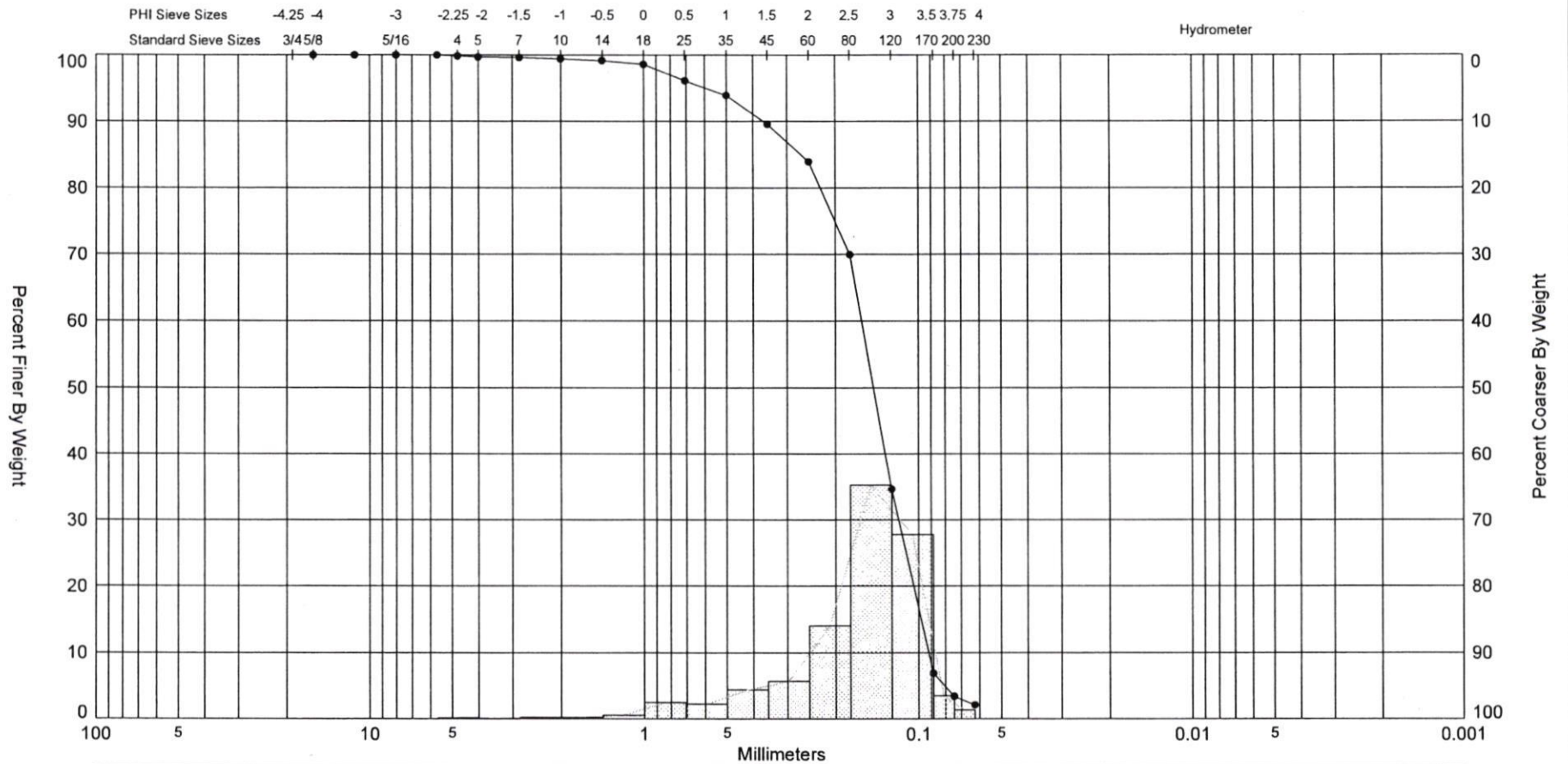
SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 12/8/05




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	
C16 #1	—●—	-5.6	SP	#200 - 3.96 #230 - 2.13	2.40	12.00	2.89	2.81	-1.98	8.73	0.64	Project Name:	Wulfert Channel
Comments:												Analysis Date:	11-28-05
Depths and elevations corrected for either expansion or compaction based on judgement												Analyzed By:	LA
												Easting (X, ft):	783,245.7
												Northing (Y, ft):	596,580.3
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
												715-G North Dr. Melbourne, FL 32934 Phone (321) 751-1135 Fax (321) 751-2343	

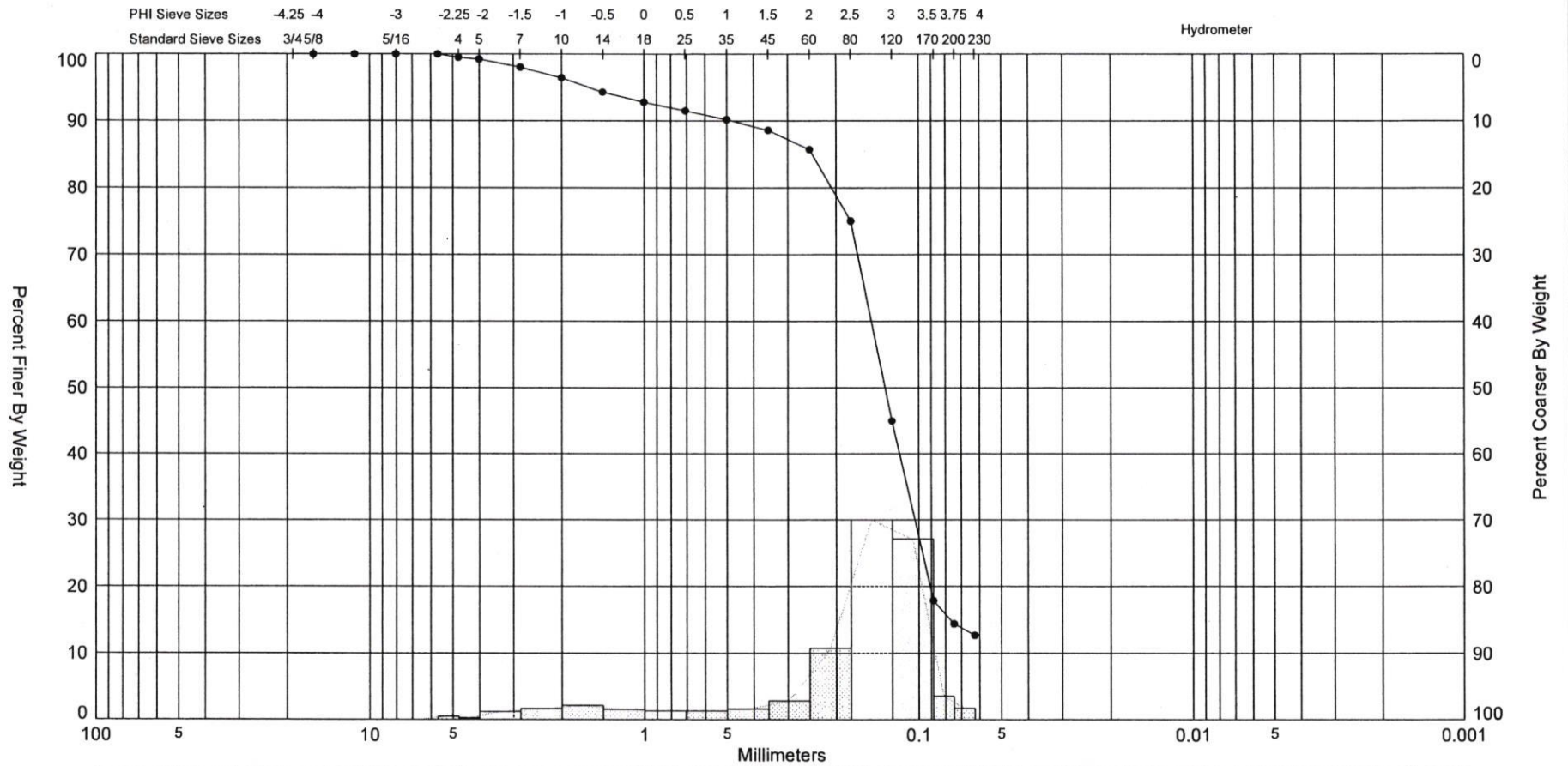
SIEVE ANALYSIS BLIND PASS2.GPJ FL DEP ROSS.GDT 12/8/05




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	
C16 #2	—●—	-11.6	SW	#200 - 3.40 #230 - 2.10	1.40	13.80	2.78	2.58	-1.89	8.08	0.86	Project Name:	Wulfert Channel
Comments:												Analysis Date:	11-28-05
Depths and elevations corrected for either expansion or compaction based on judgement												Analyzed By:	
												Easting (X, ft):	783,245.7
												Northing (Y, ft):	596,580.3
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88
												715-G North Dr. Melbourne, FL 32934 Phone (321) 751-1135 Fax (321) 751-2343	

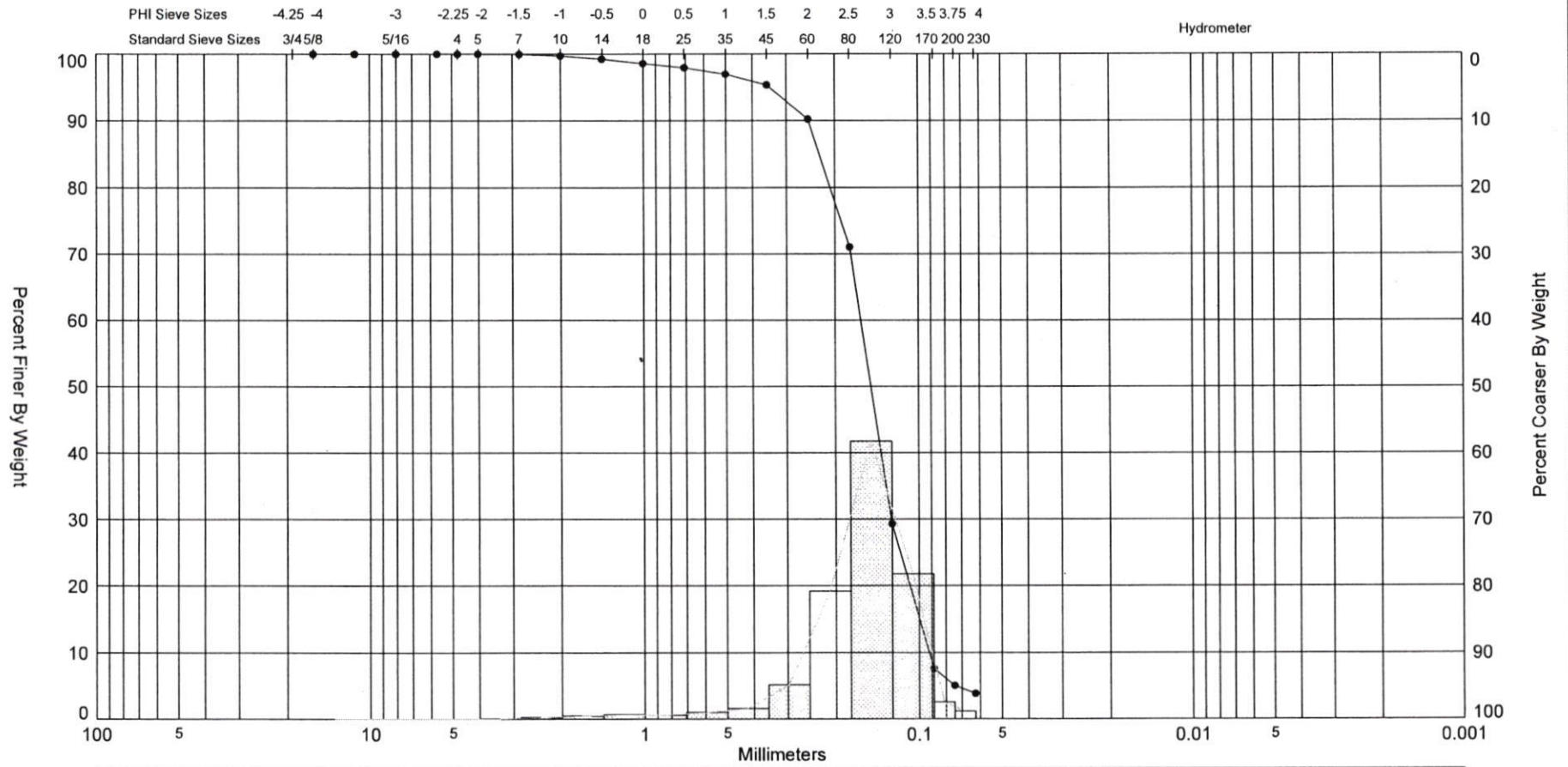
SIEVE ANALYSIS BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05




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		
BP-8A #1	—●—	-1.7'	SC	#200 - 14.38 #230 - 12.66	1.80	10.70	2.92	2.46	-2.09	6.86	1.25	Project Name:	Blind Pass	
Comments:												Analysis Date:	09-12-05	
Depths and elevations based on measured values												Analyzed By:	WJD	
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):		596,797
												Northing (Y, ft):		783,194
												Horizontal System:		NAD 1983
												Vertical System:		NAVD 88 (ft)
												Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343		

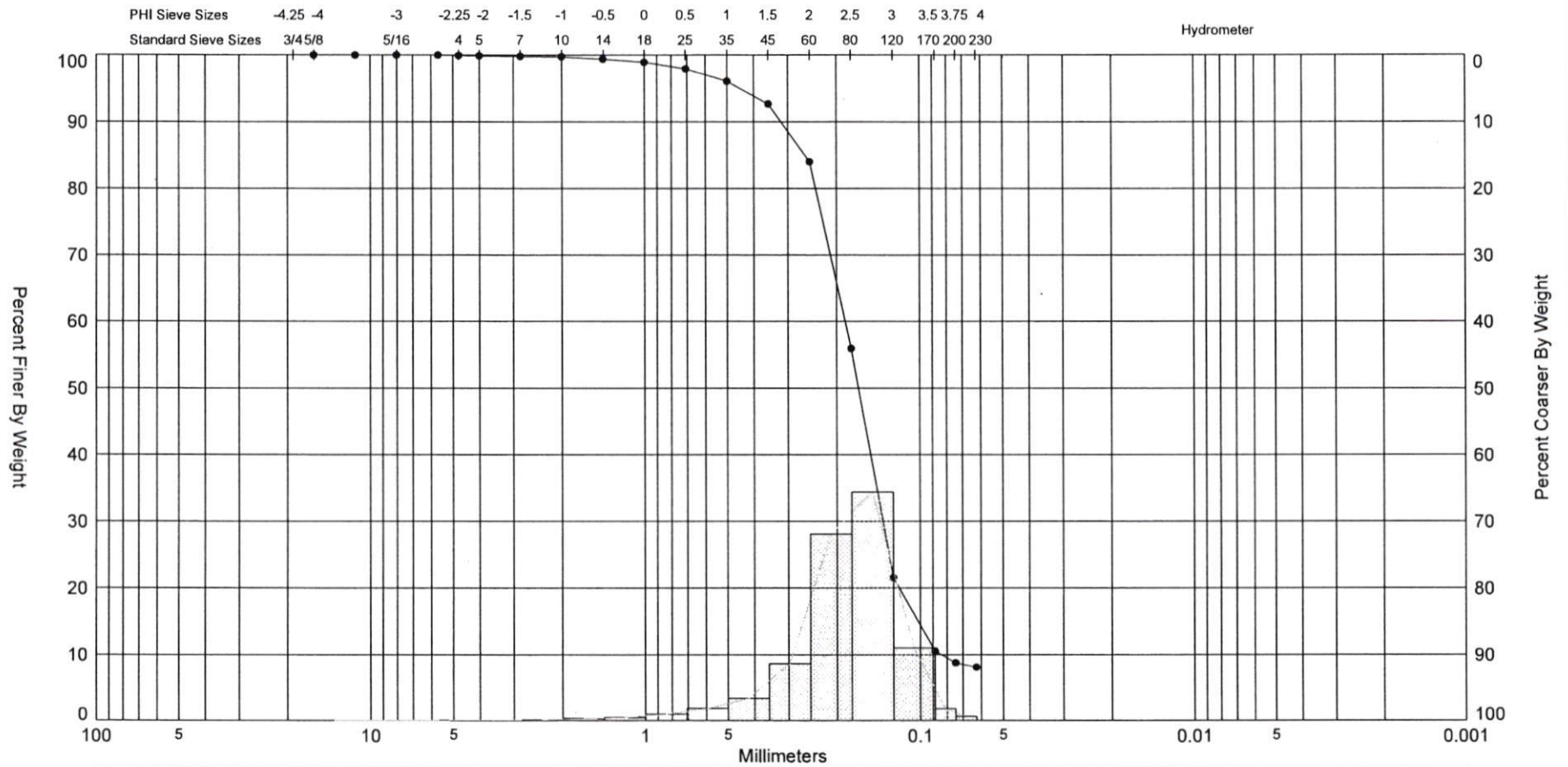
SIEVE ANALYSIS BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05




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	
BP-8A #2	—●—	-4.6'	SP	#200 - 5.02 #230 - 3.83			2.75	2.64	-2.11	10.61	0.69	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	596,797
												Northing (Y, ft):	783,194
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
												Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343	

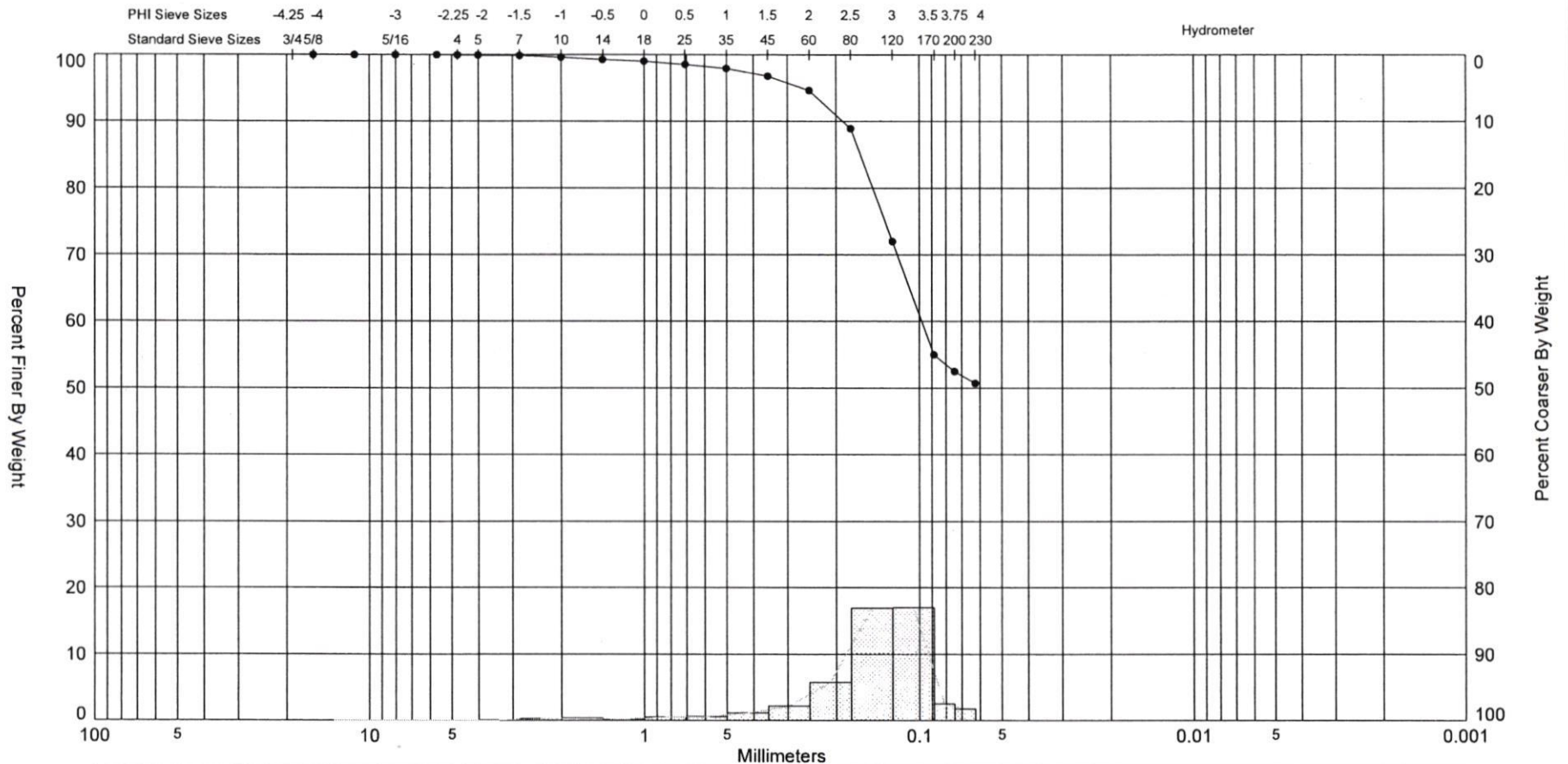
SIEVE ANALYSIS: BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05




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	
BP-11 #1	—●—	-3.8'	SP-SC	#200 - 8.75 #230 - 8.10	1.30	11.10	2.59	2.42	-1.71	9.01	0.71	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Coastal Tech	
												715-G North Dr.	
												Melbourne, FL 32934	
												ph (321) 751-1135 fax (321) 751-2343	
												Easting (X, ft):	597,179
												Northing (Y, ft):	783,600
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)

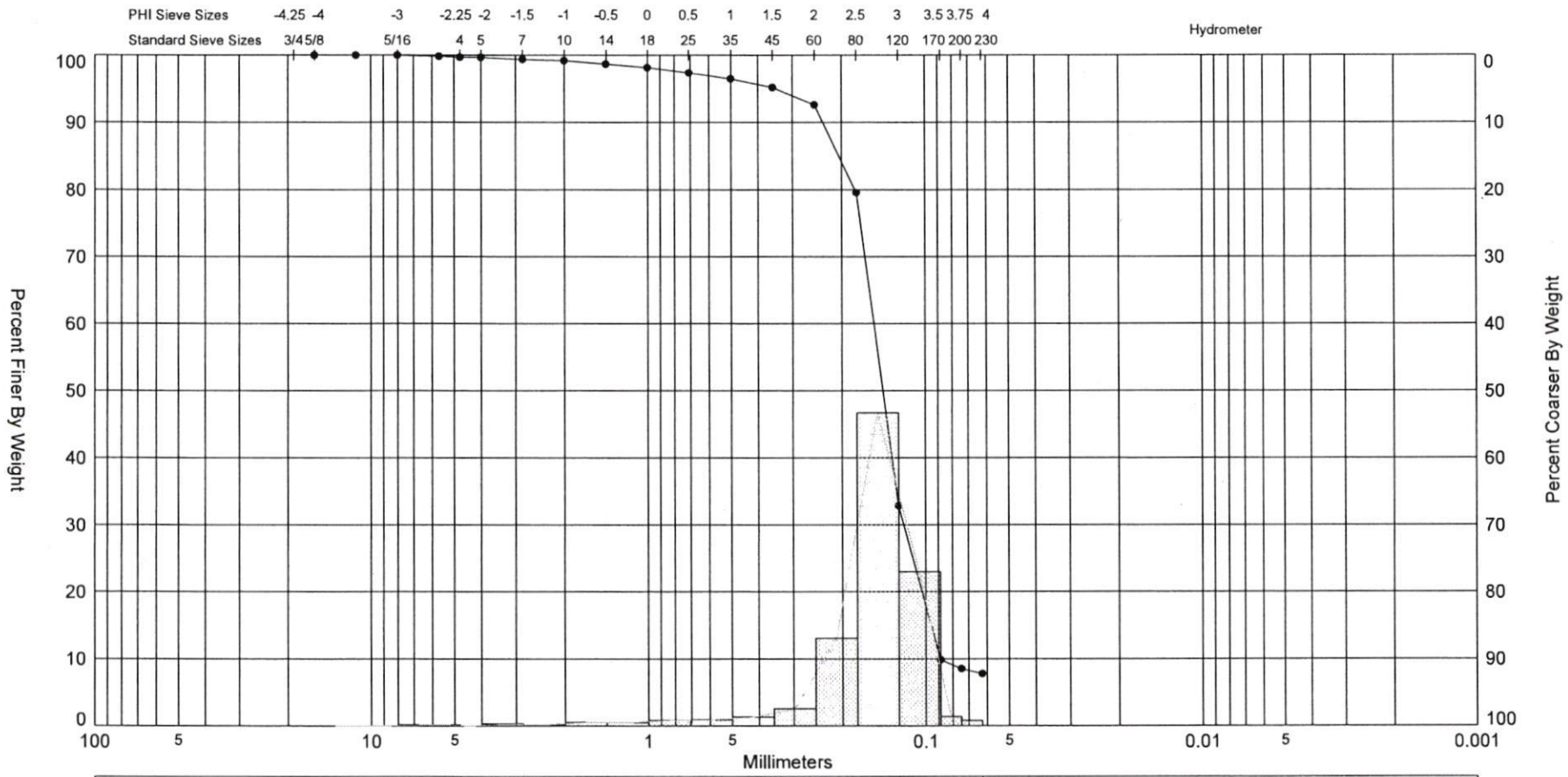
SIEVE ANALYSIS: BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05



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		
BP-11 #2	—●—	-6.6'	CL	#200 - 52.50 #230 - 50.74	3.80	16.60		2.75	-2.34	10.95	0.82	Project Name:	Blind Pass	
Comments:												Analysis Date:	09-12-05	
Depths and elevations based on measured values												Analyzed By:	WJD	
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):		597,179
												Northing (Y, ft):		783,600
												Horizontal System:		NAD 1983
												Vertical System:		NAVD 88 (ft)
												Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343		

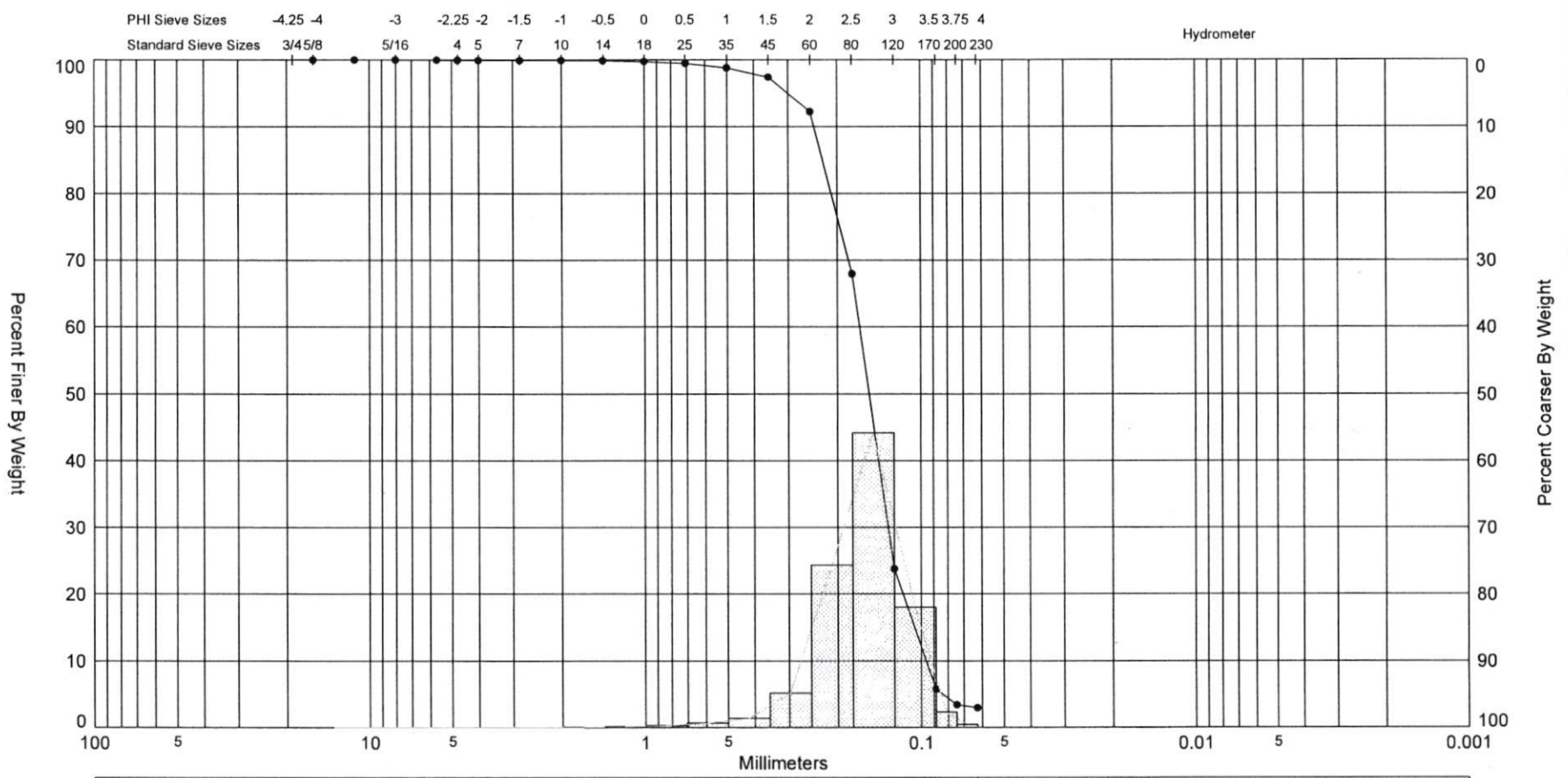
SIEVE ANALYSIS BLIND PASS GPJ FL DEP ROSS.GDT 10/18/05




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	
BP-11 #3	—●—	-7.8'	SP-SC	#200 - 8.52 #230 - 7.78	1.30	10.70	2.82	2.66	-3.25	17.89	0.76	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
												Easting (X, ft):	597,179
												Northing (Y, ft):	783,600
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343													

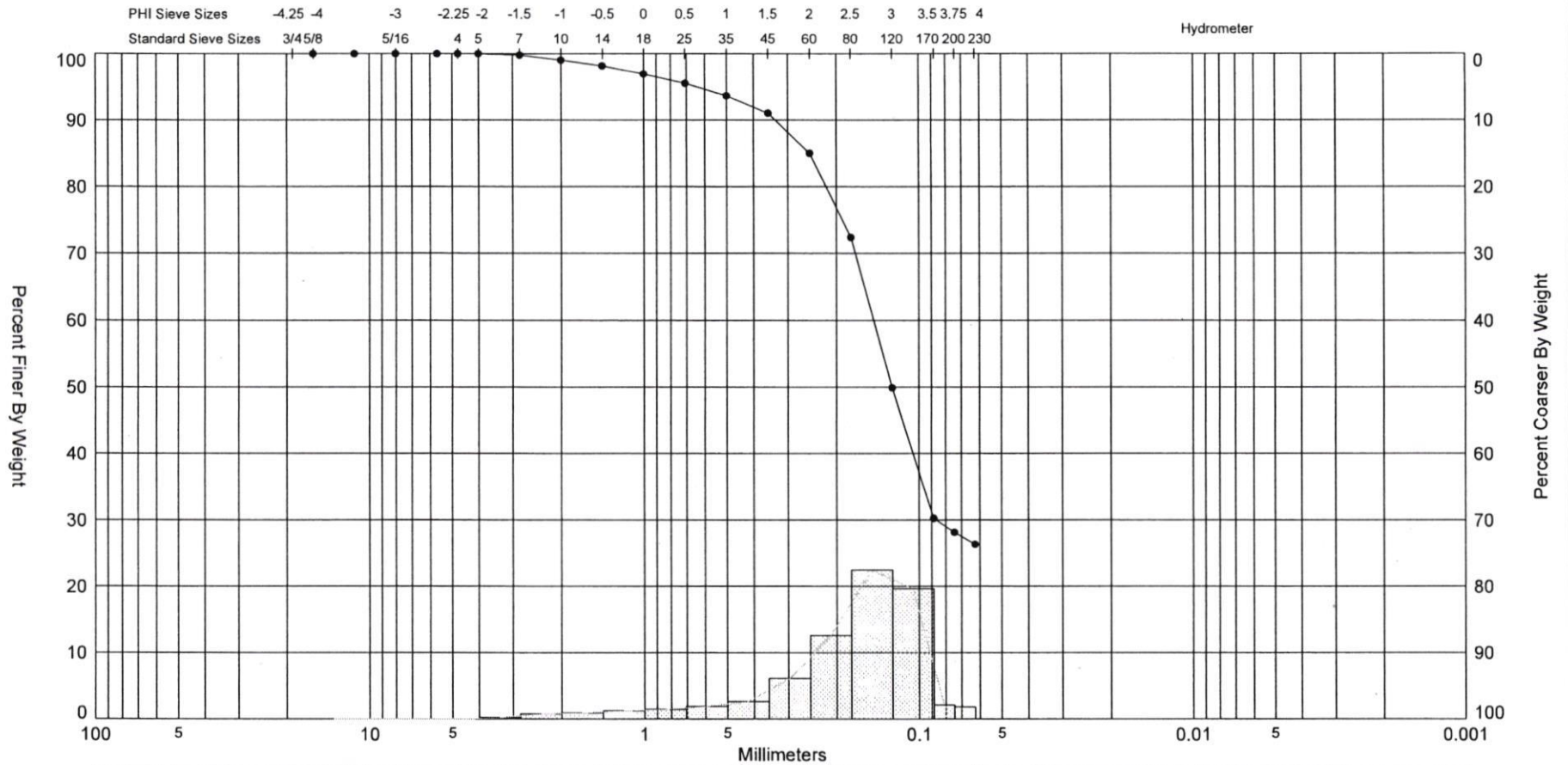
SIEVE ANALYSIS BLIND PASS GPJ FL DEP ROSS GDT 10/18/05




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	
BP-7 #1	—●—	-4.0'	SP	#200 - 3.43 #230 - 2.96	0.90	8.10	2.7	2.64	-1.6	11.8	0.54	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	597,013
												Northing (Y, ft):	783,023
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343													

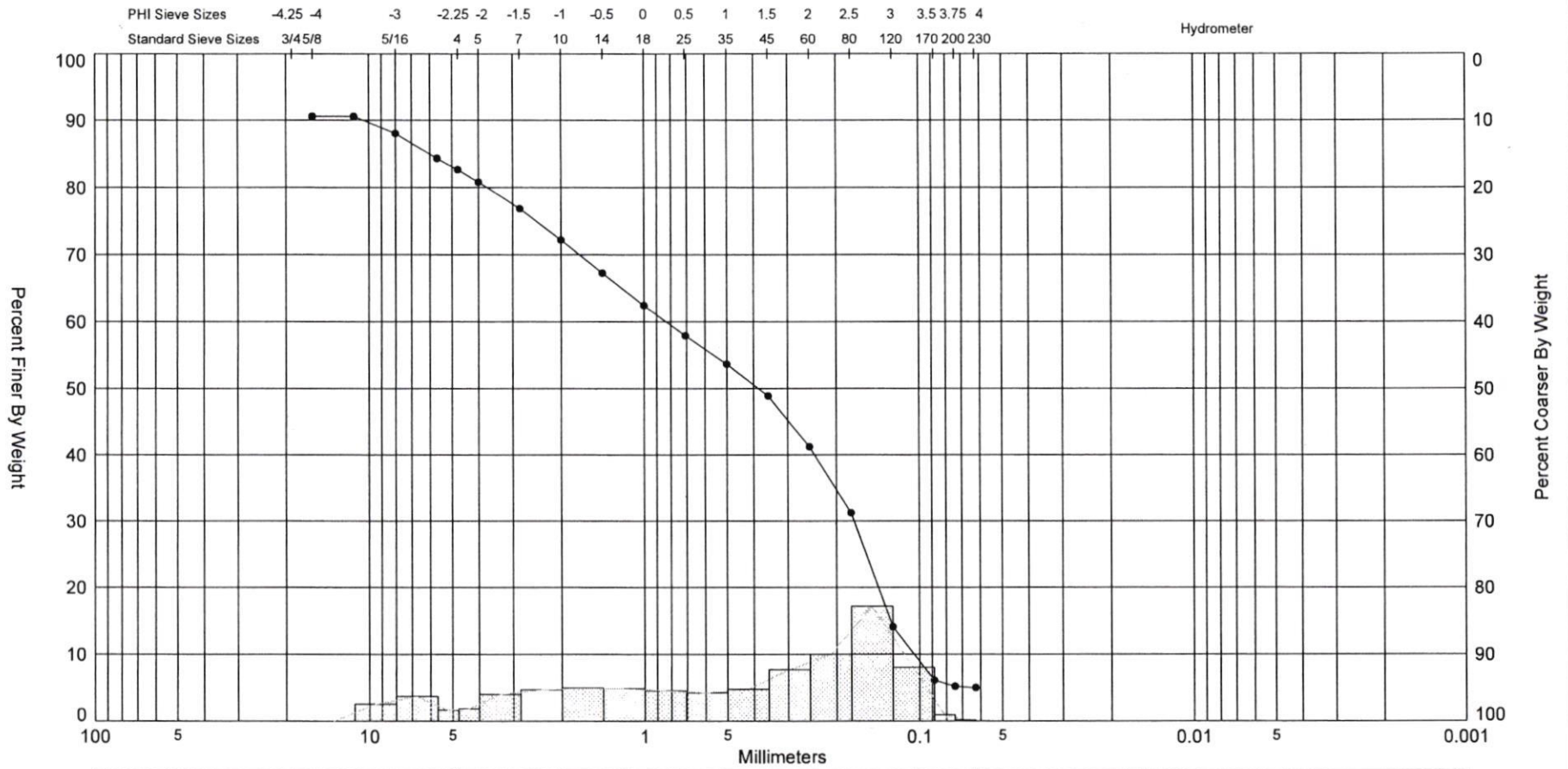
SIEVE ANALYSIS BLIND PASS GPJ FL DEP ROSS GDT 10/18/05




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	
BP-7 #2	—●—	-5.8'	SC	#200 - 28.17 #230 - 26.37	3.20	17.90	3	2.47	-1.71	6.31	0.99	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	597,013
												Northing (Y, ft):	783,023
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
												Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343	

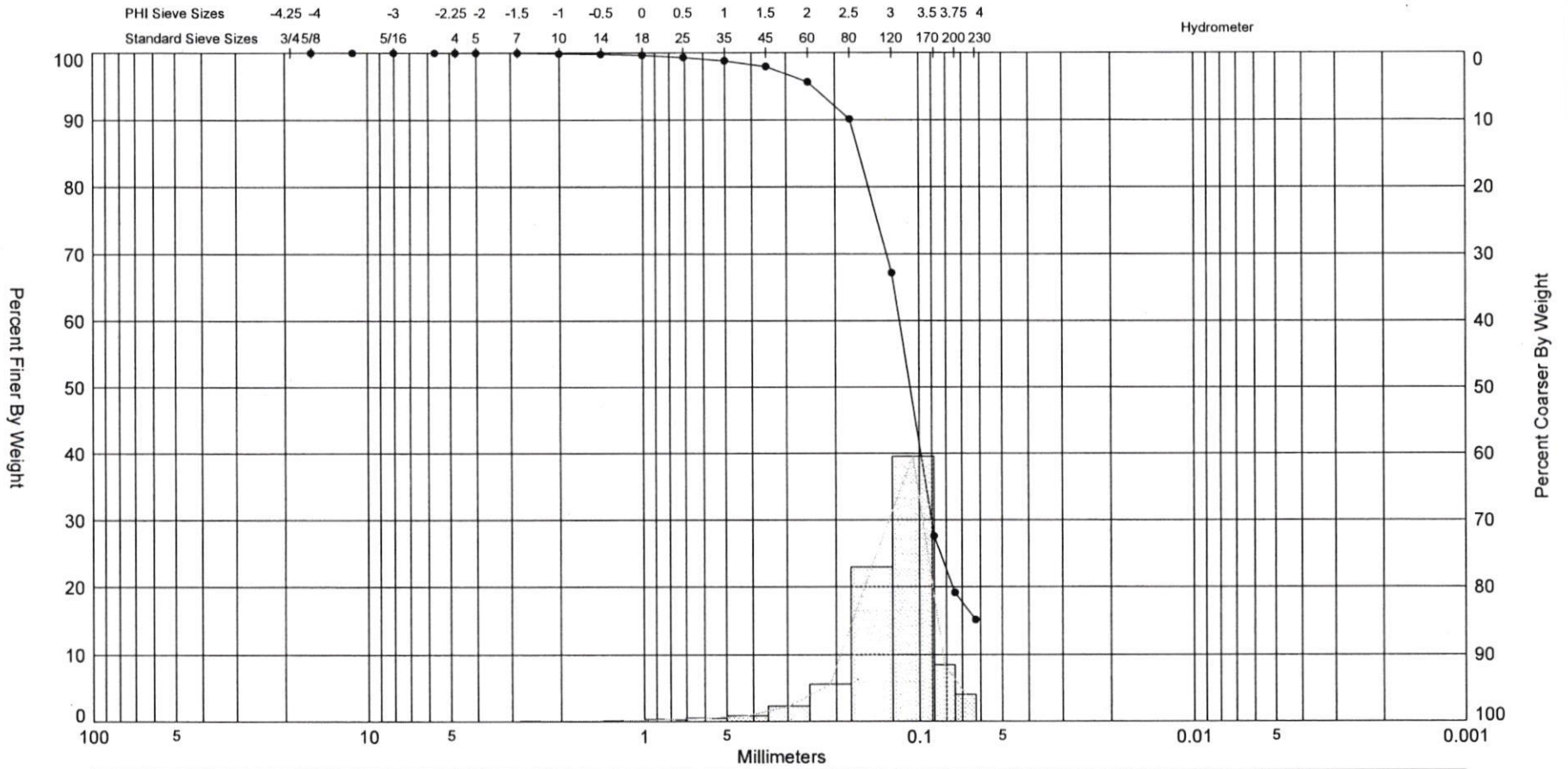
SIEVE ANALYSIS BLIND PASS.GPJ FL DEP ROSS.GDT 10/18/05



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	
BP-7 #3	—●—	-8.0'	SW	#200 - 5.17 #230 - 4.98	1.40	29.30	1.38	0.93	-0.58	2.05	1.98	Project Name:	Blind Pass
Comments:												Analysis Date:	09-12-05
Depths and elevations based on measured values												Analyzed By:	WJD
 COASTAL TECH Coastal Geology & Sediments Laboratory												Easting (X, ft):	597,013
												Northing (Y, ft):	783,023
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
												Coastal Tech 715-G North Dr. Melbourne, FL 32934 ph (321) 751-1135 fax (321) 751-2343	

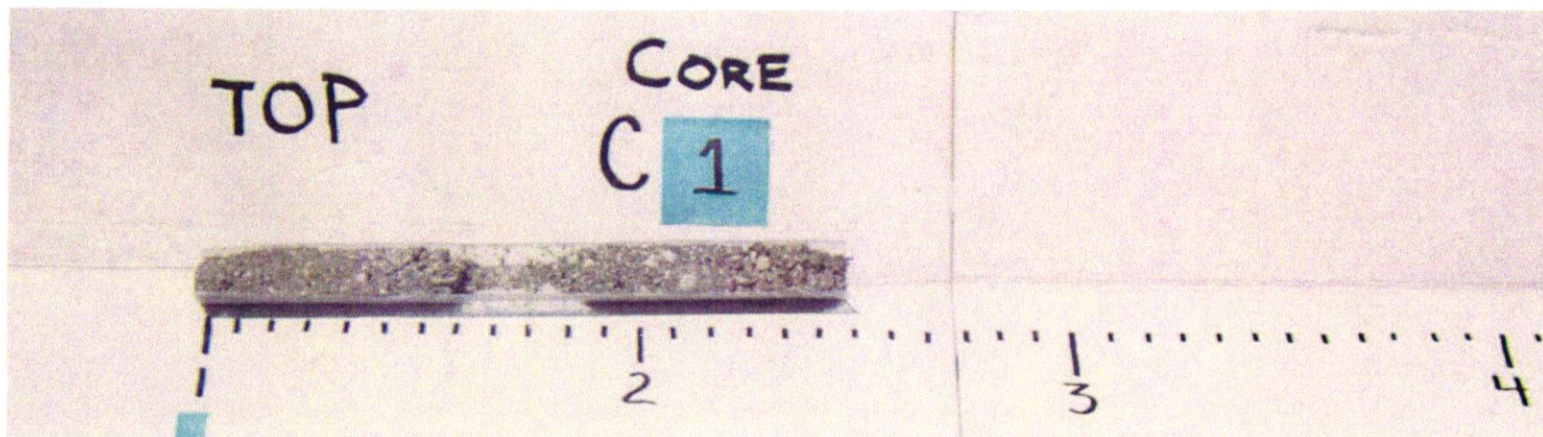
SIEVE ANALYSIS BLIND PASS GPJ FL DEP ROSS GDT 12/8/05



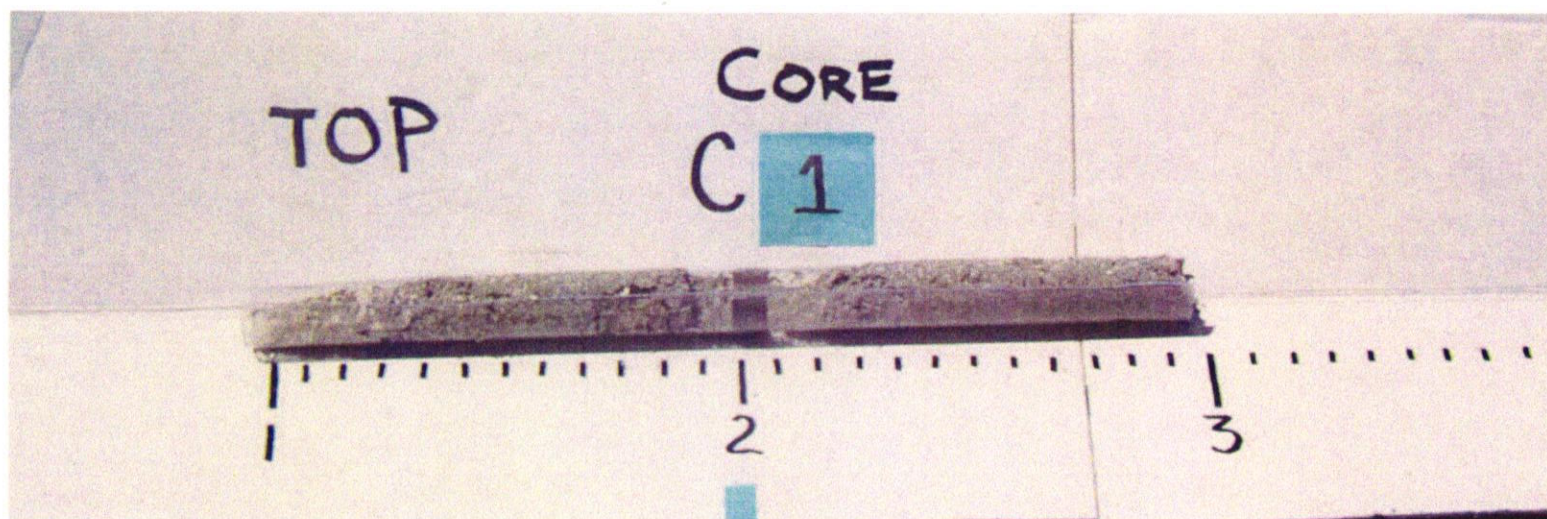
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
BP7 Decompacted #4	—●—	-2.6	SC	#200 - 19.17 #230 - 15.17	2.70	19.70	3.22	3.01	-2.32	13.27	0.59	Project Name:	Blind Pass
Comments:												Analysis Date:	11-29-05
Depths and elevations corrected for either expansion or compaction based on judgement												Analyzed By:	LA
												Easting (X, ft):	597,013.3
												Northing (Y, ft):	783,022.7
												Horizontal System:	NAD 1983
												Vertical System:	NAVD 88 (ft)
												715-G North Dr. Melbourne, FL 32934 Phone (321) 751-1135 Fax (321) 751-2343	

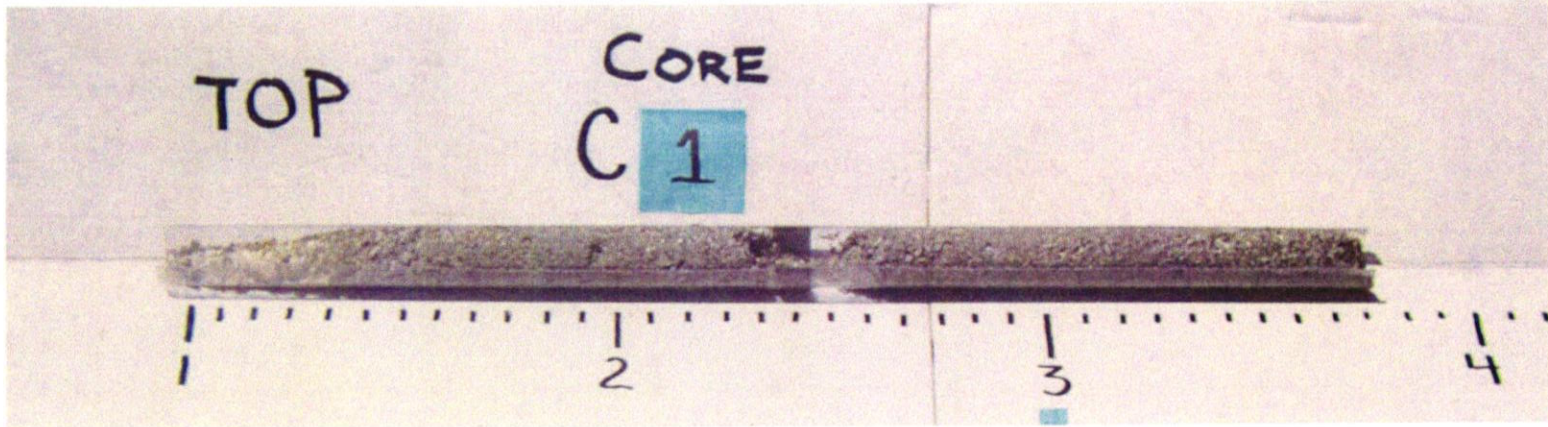
Core Photographs



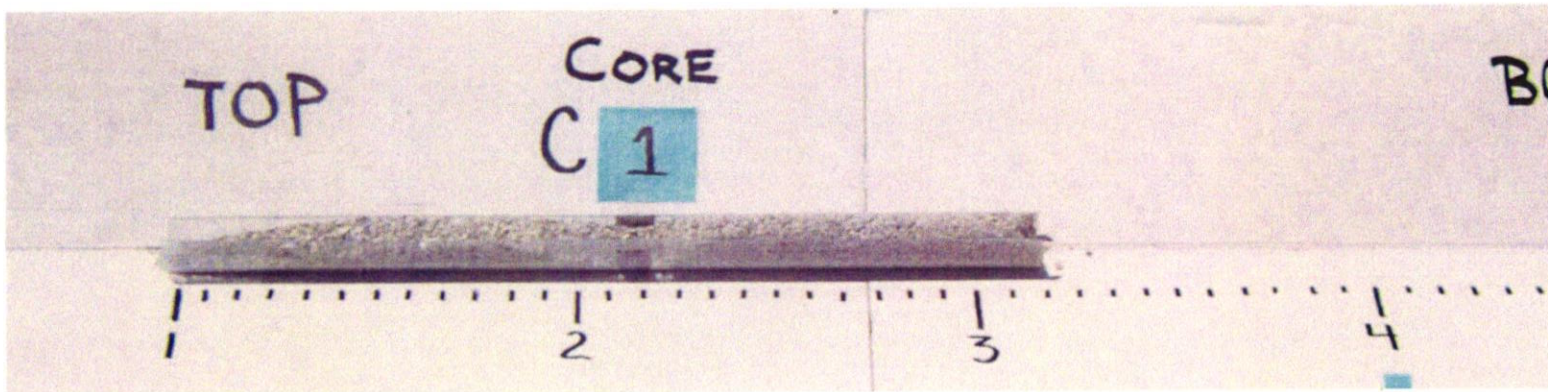
Core 1, +2.8 ft NGVD to -1.2 ft NGVD, 38% Recovery



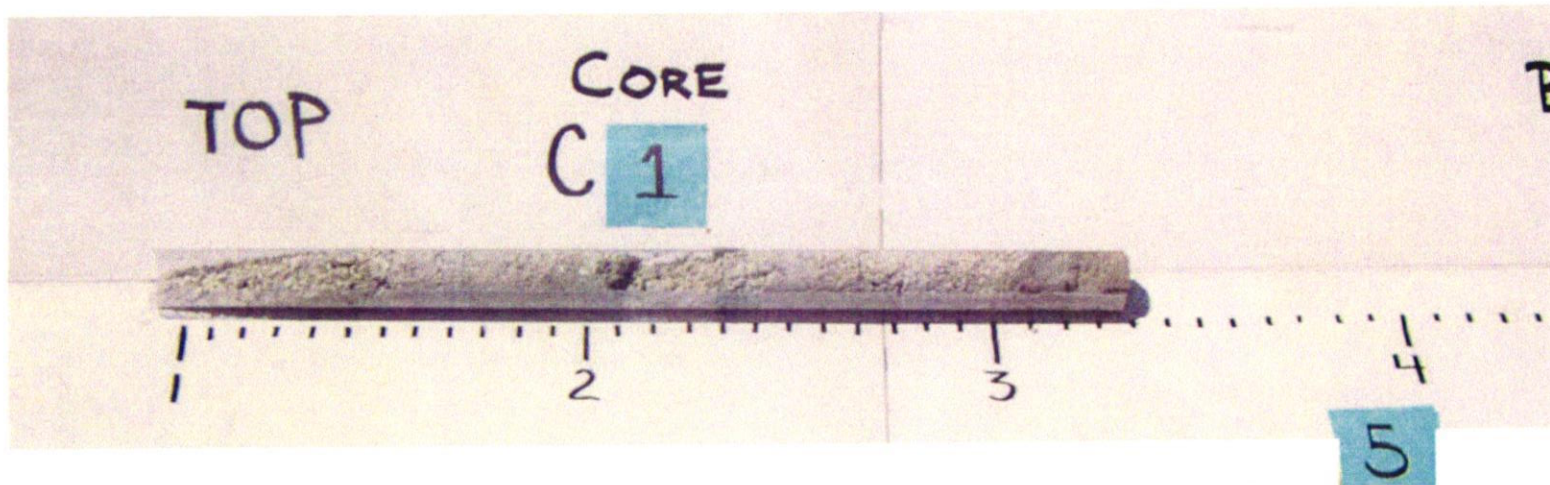
Core 1, -1.2 ft NGVD to -5.2 ft NGVD, 50% Recovery



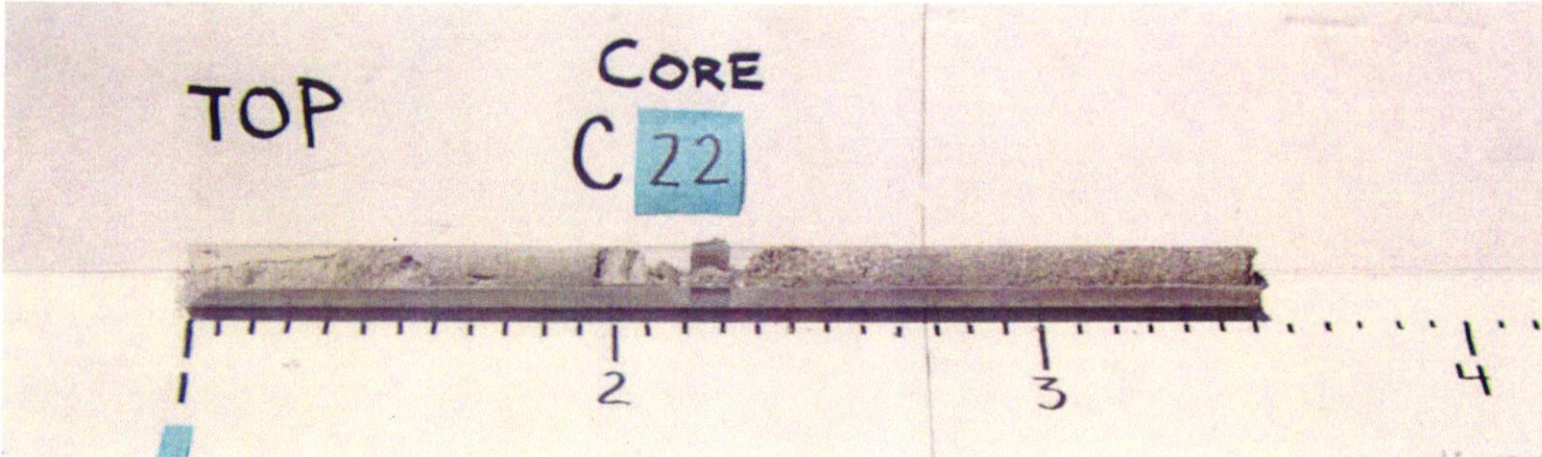
Core 1, -5.2 ft NGVD to -9.2 ft NGVD, 75% Recovery



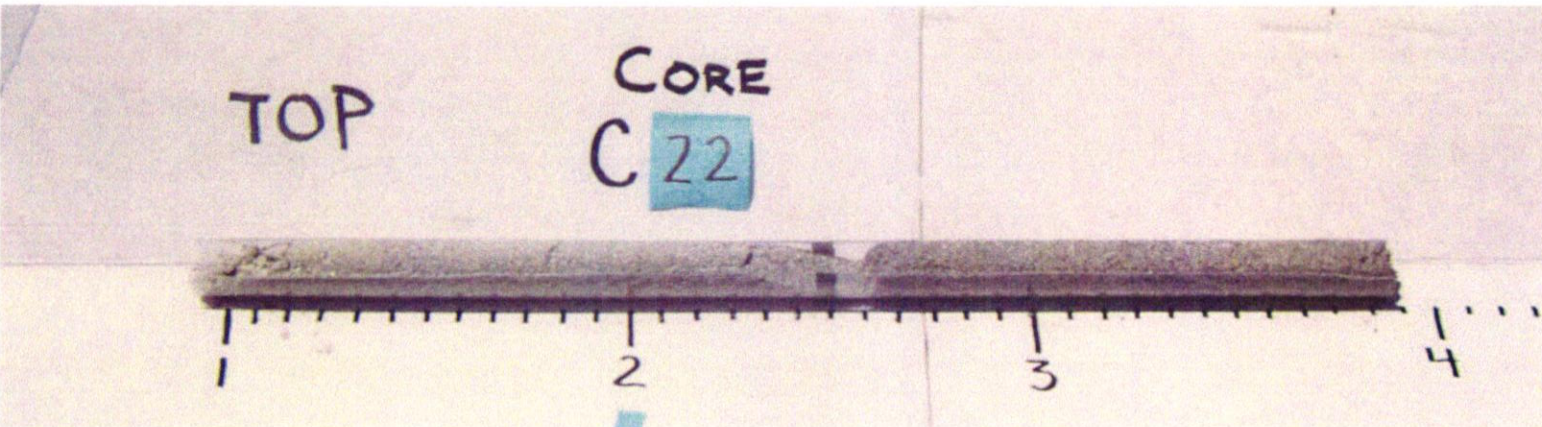
Core 1, -9.2 ft NGVD to -13.2 ft NGVD, 50% Recovery



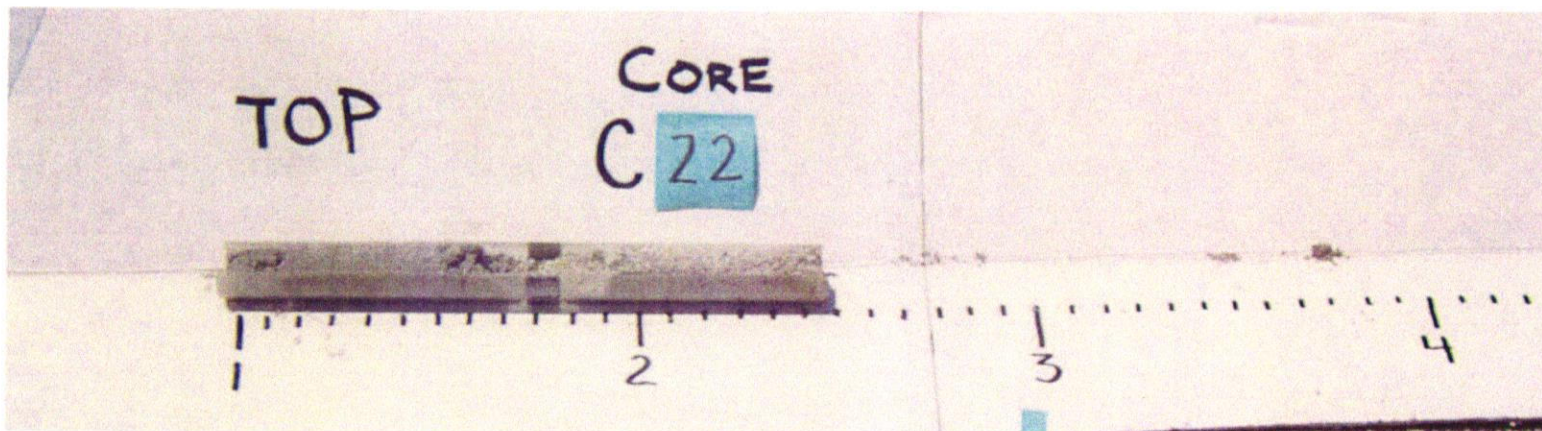
Core 1, -13.2 ft NGVD to -17.2 ft NGVD, 63% Recovery



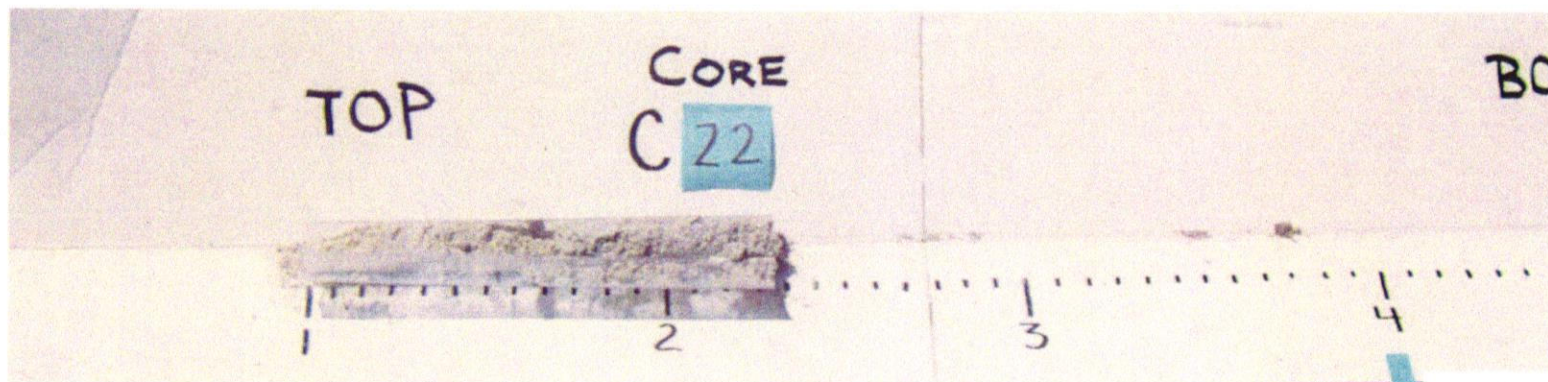
Core 22, +4.2 ft NGVD to +0.2 ft NGVD, 63% Recovery



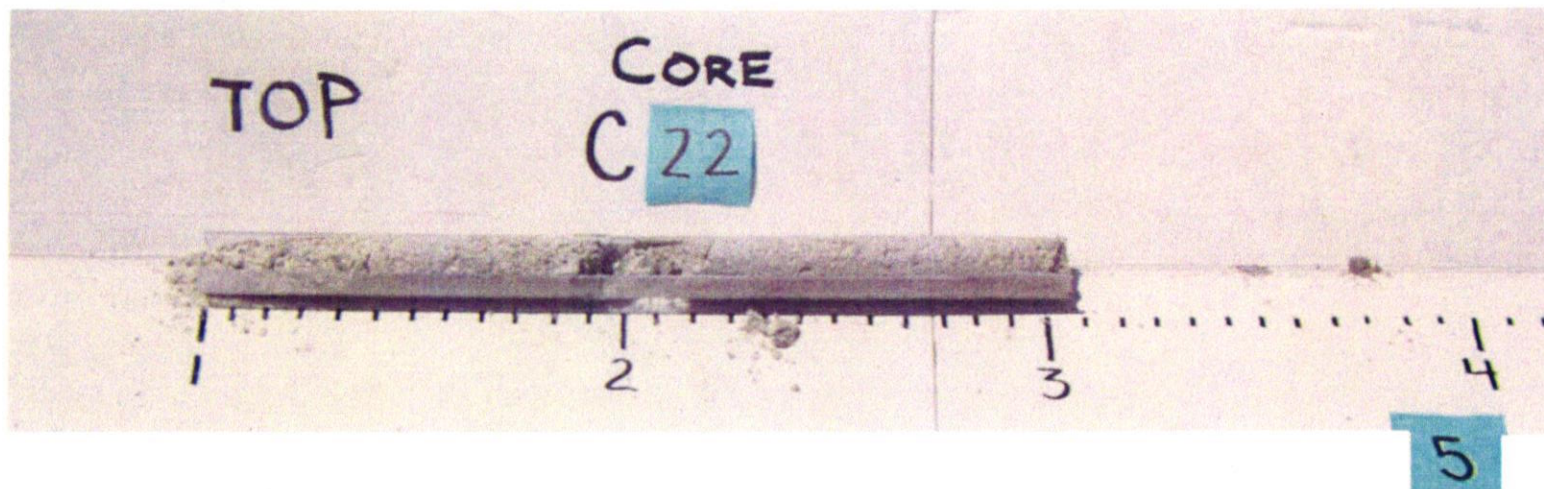
Core 22, +0.2 ft NGVD to -3.8 ft NGVD, 75% Recovery



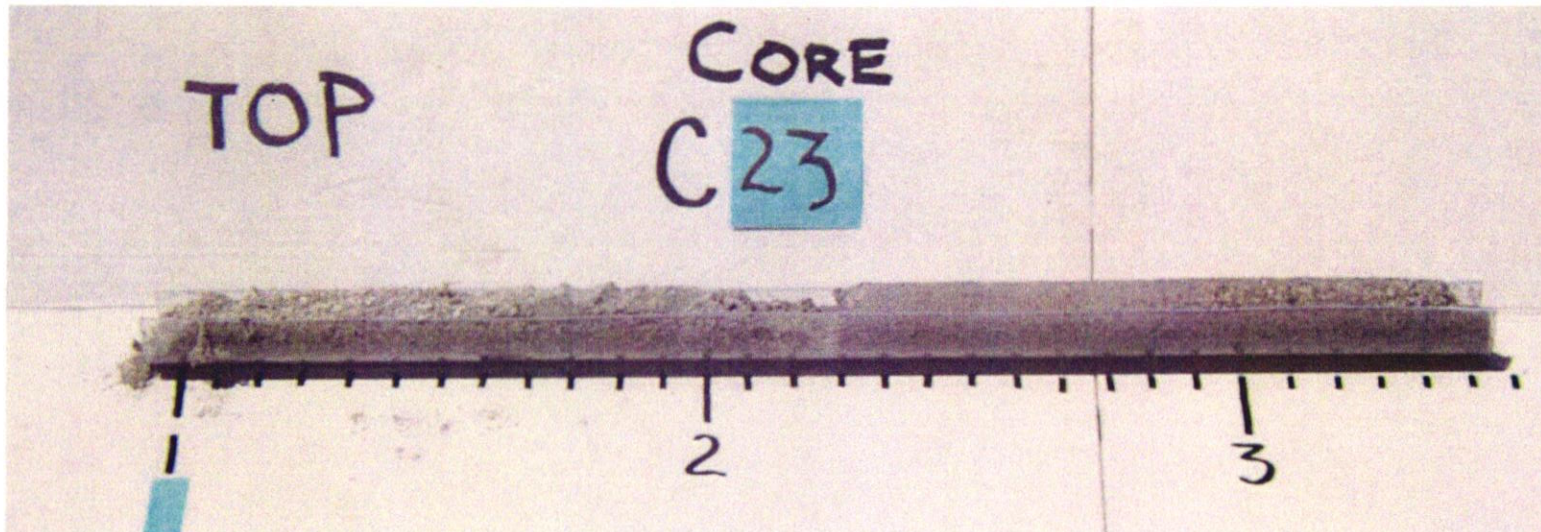
Core 22, -3.8 ft NGVD to -7.8 ft NGVD, 38% Recovery



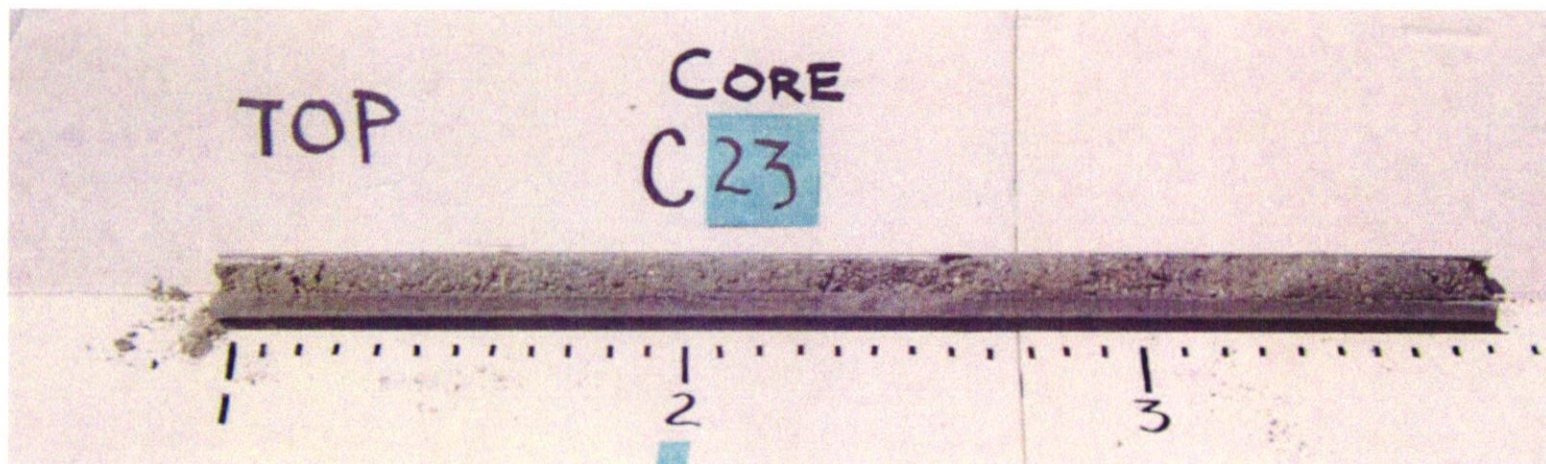
Core 22, -7.8 ft NGVD to -11.8 ft NGVD, 38% Recovery



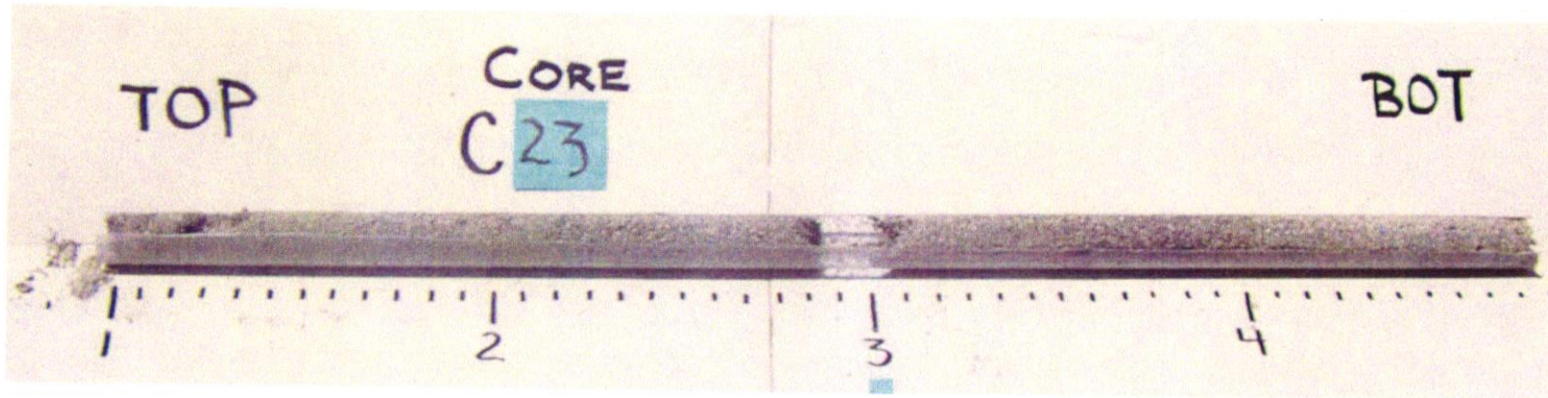
Core 2, -11.8 ft NGVD to -15.8 ft NGVD, 50% Recovery



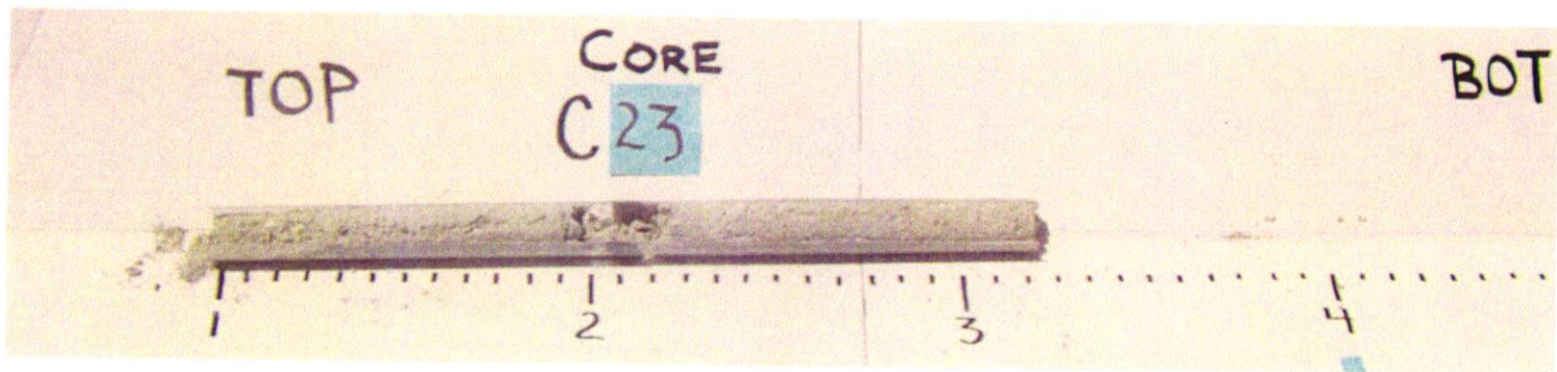
Core 23, +1.8 ft NGVD to -2.2 ft NGVD, 63% Recovery



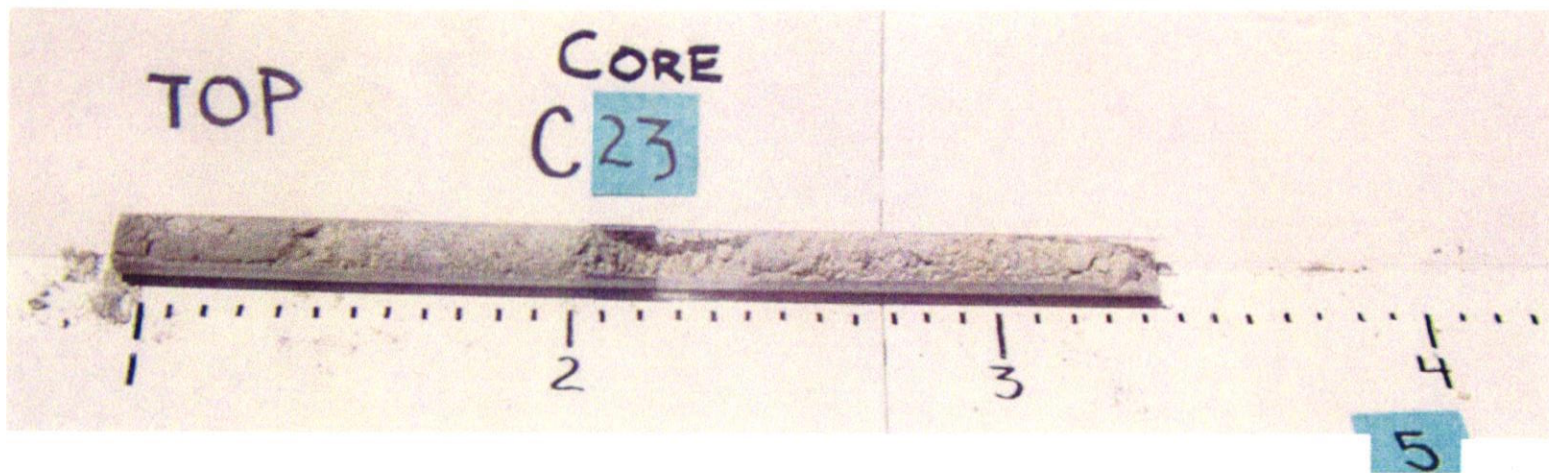
Core 23, -2.2 ft NGVD to -6.2 ft NGVD, 75% Recovery



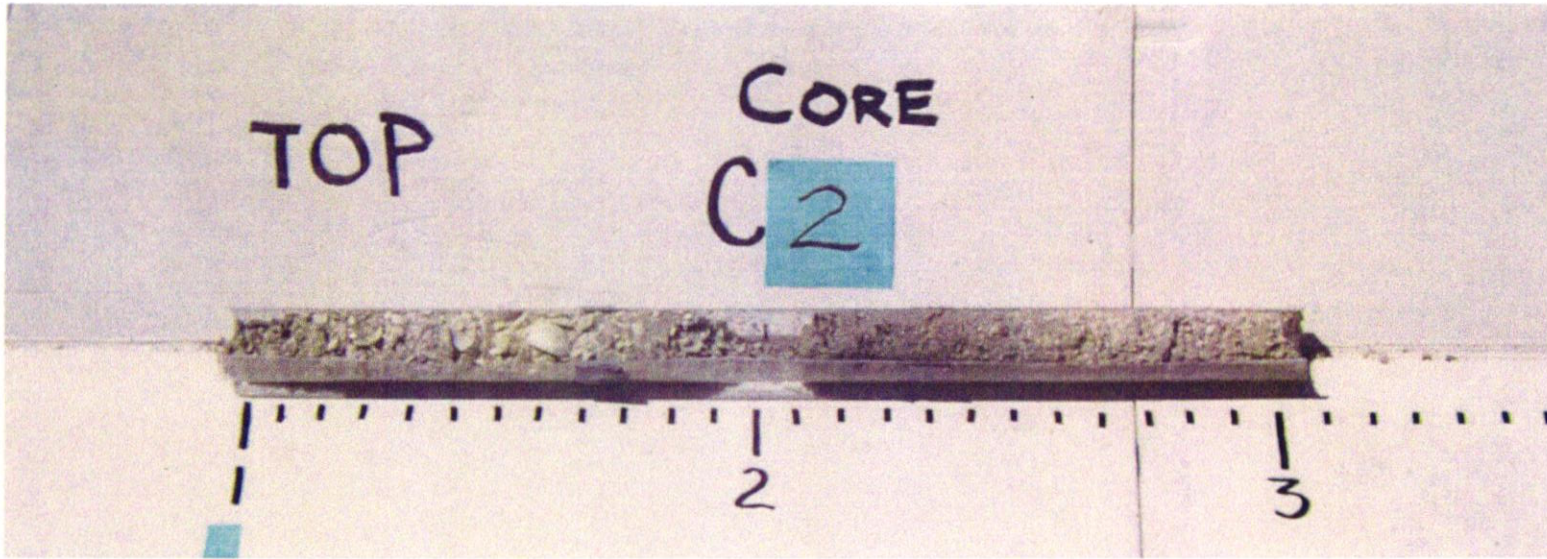
Core 23, -6.2 ft NGVD to -10.2 ft NGVD, 100% Recovery



Core 23, -10.2 ft NGVD to -14.2 ft NGVD, 50% Recovery



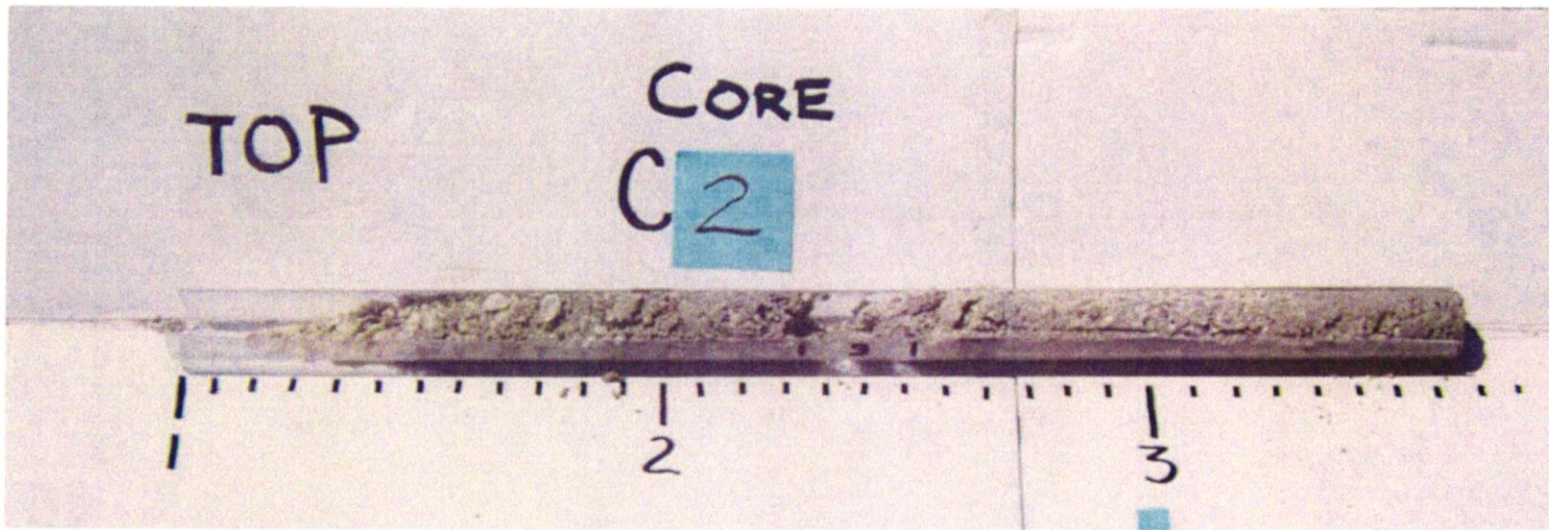
Core 23, -14.2 ft NGVD to -18.2 ft NGVD, 63% Recovery



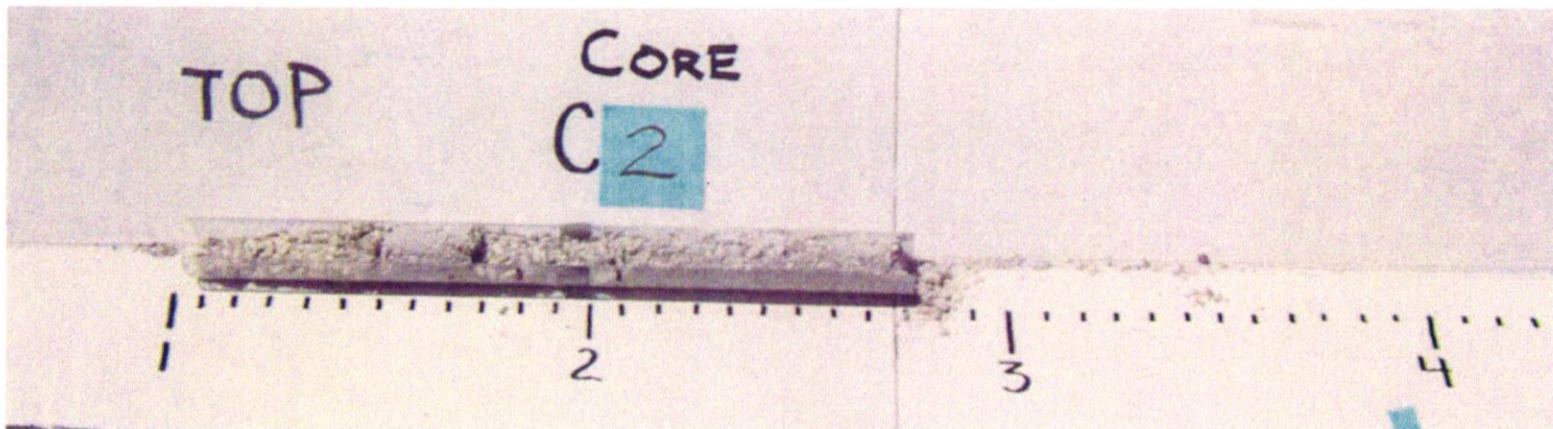
Core 2, +1.2 ft NGVD to -2.8 ft NGVD, 50% Recovery



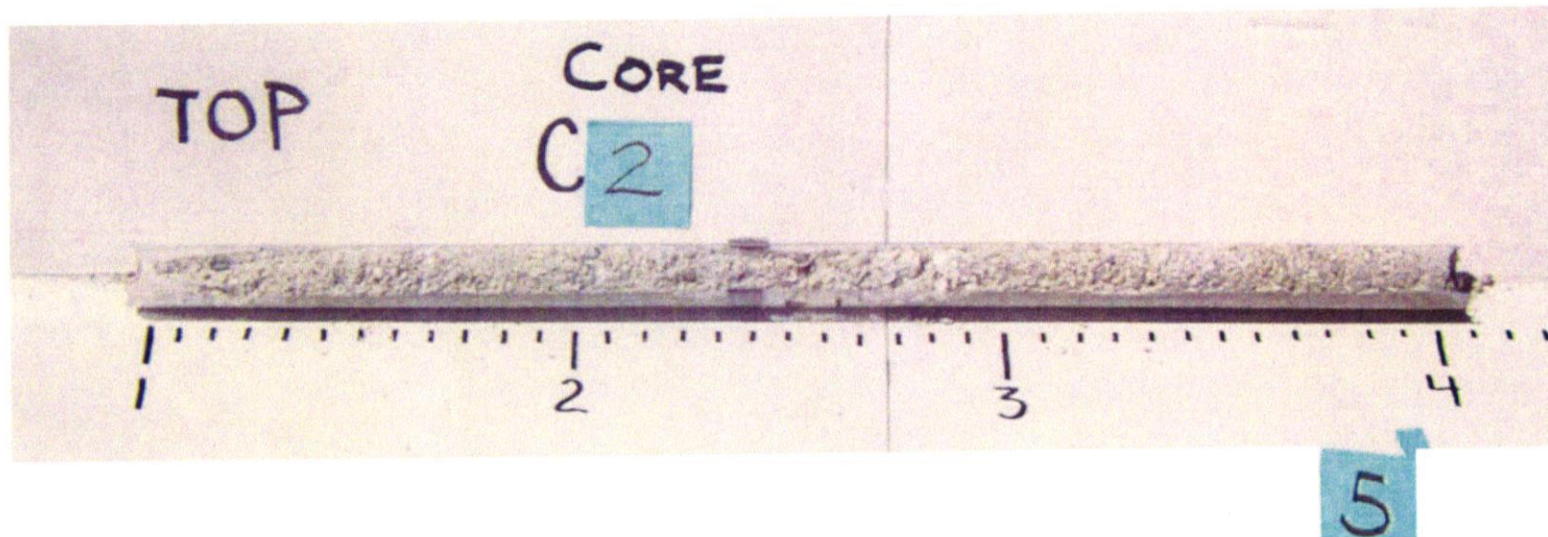
Core 2, -2.8 ft NGVD to -6.8 ft NGVD, 50% Recovery



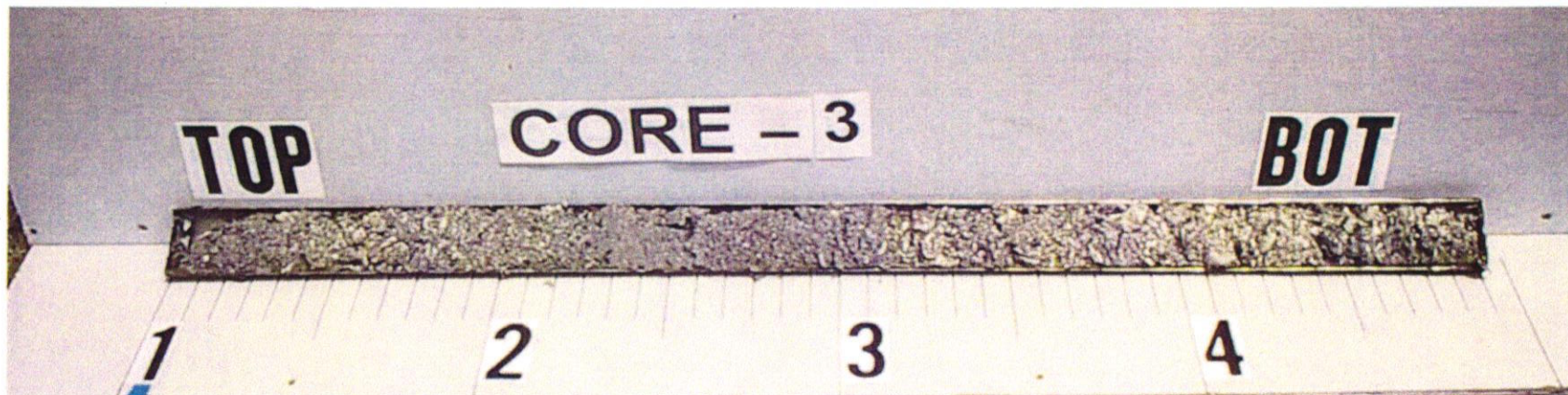
Core 2, -6.8 ft NGVD to -10.8 ft NGVD, 50% Recovery



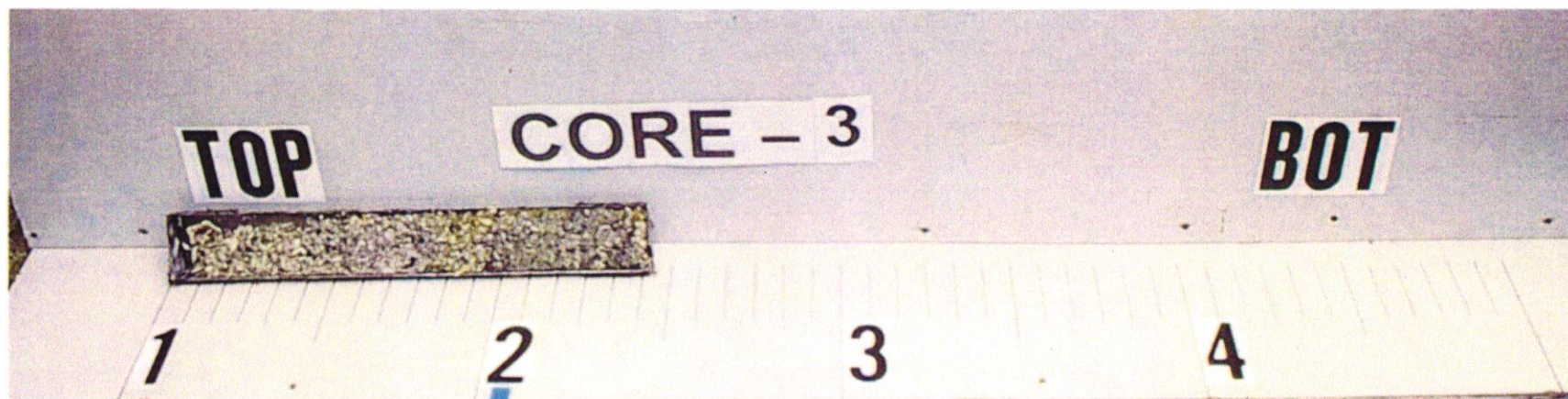
Core 2, -10.8 ft NGVD to -14.8 ft NGVD, 38% Recovery



Core 2, -14.8 ft NGVD to -18.8 ft NGVD, 75% Recovery



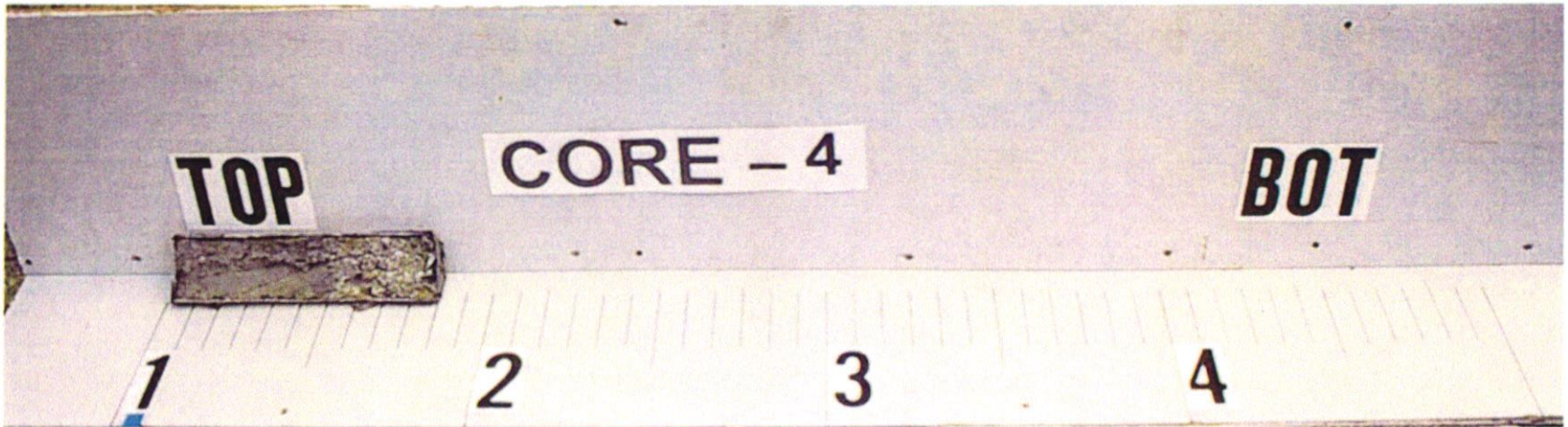
Core 3, -1.8 ft NGVD to -5.8 ft NGVD, 100% Recovery



Core 3, -5.8 ft NGVD to -9.8 ft NGVD, 38% Recovery



Core 3, -9.8 ft NGVD to -13.8 ft NGVD, 48% Recovery



Core 4, -0.5 ft NGVD to -1.4 ft NGVD, 89% Recovery



Core 4, -1.4 ft NGVD to -5.4 ft NGVD, 100% Recovery



Core 4, -5.4 ft NGVD to -9.4 ft NGVD, 93% Recovery

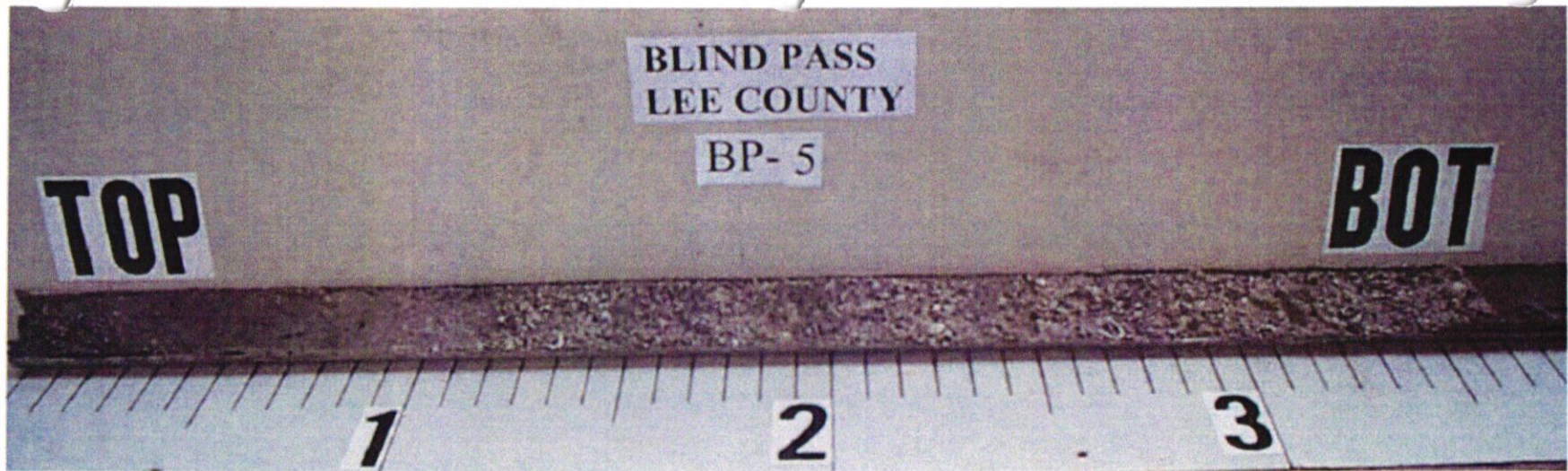


Photo 1 Vibracore BP- 5 (Top) -2.9 to -6.9 NAVD

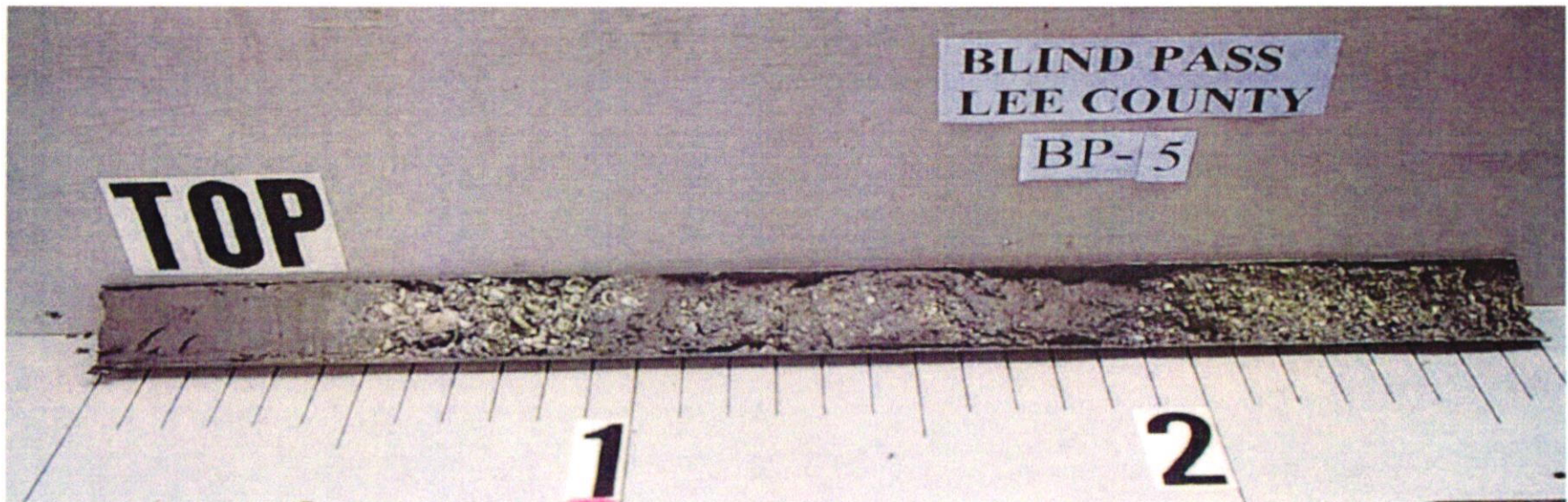


Photo 2 Vibracore BP- 5 (Middle) -6.9 to -9.7 NAVD

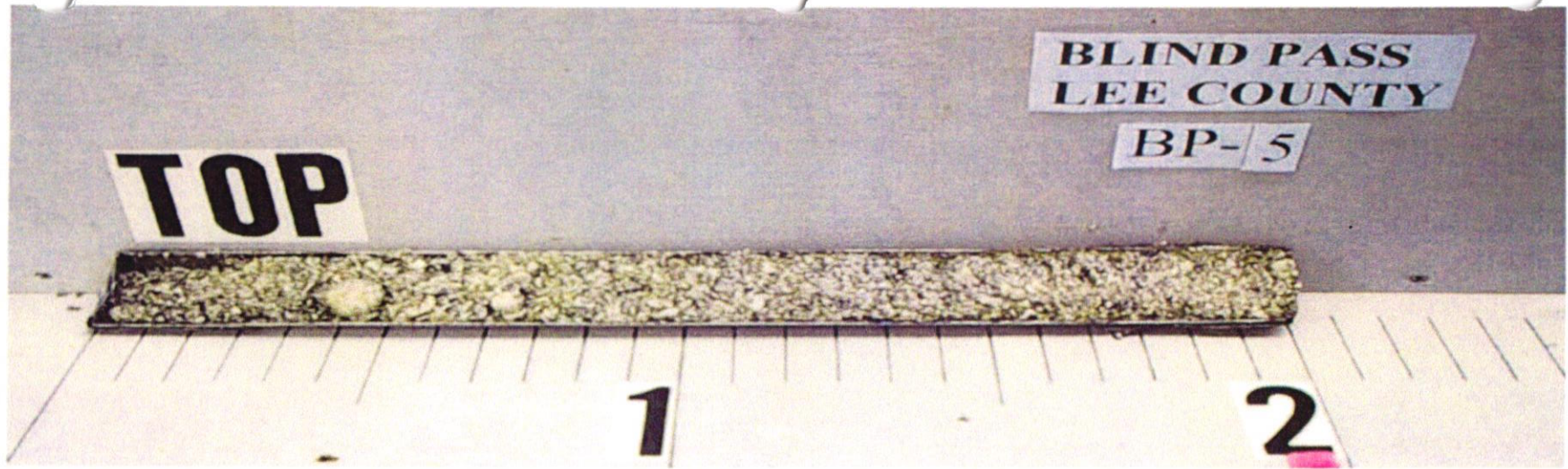


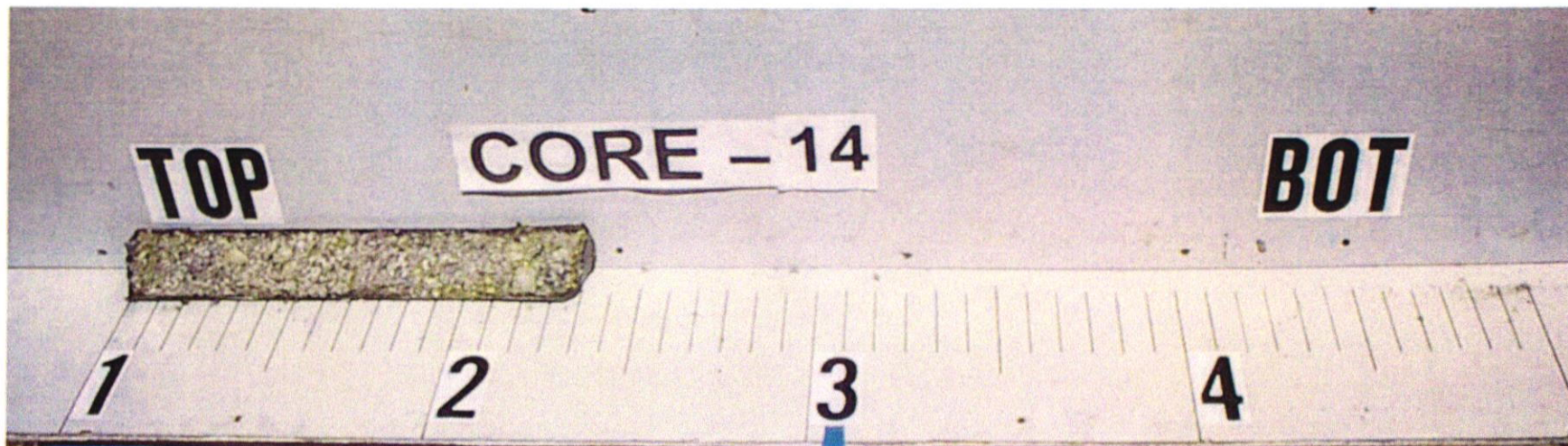
Photo 3 Vibracore BP- 5 (Bottom) -10.0 to -12.0 NAVD (jetted)



Core 14, -3.7 ft NGVD to -6.7 ft NGVD, 70% Recovery



Core 14, -6.7 ft NGVD to -10.7 ft NGVD, 65% Recovery



Core 14, -10.7 ft NGVD to -14.7 ft NGVD, 33% Recovery

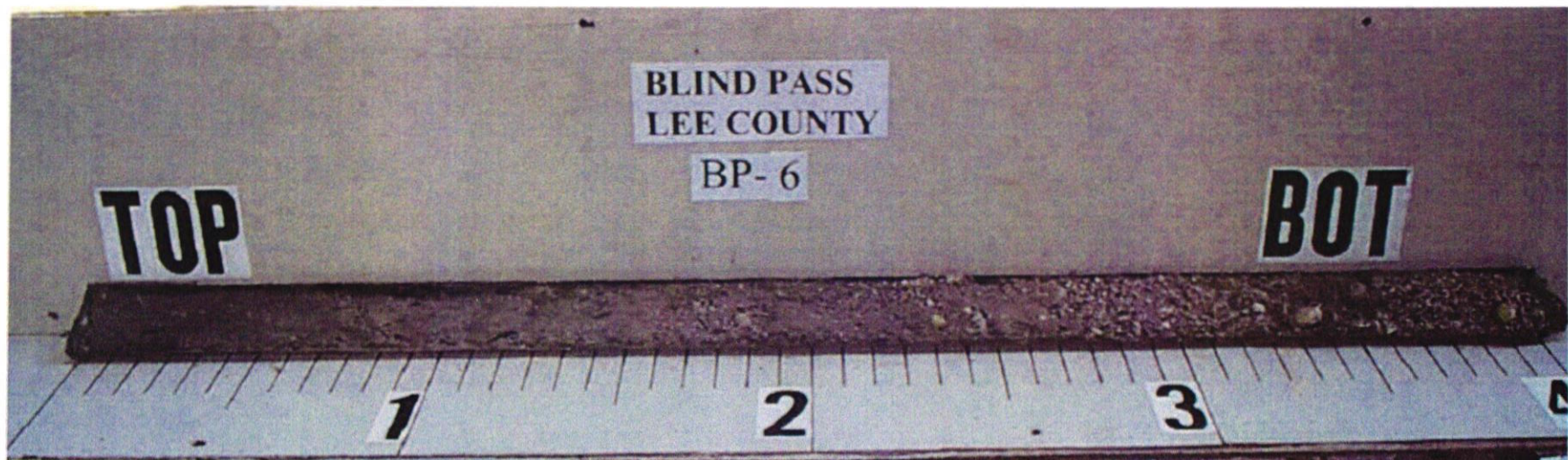


Photo 4 Vibracore BP- 6 (Top) -1.8 to -5.8 NAVD



Photo 5 Vibracore BP- 6 (Middle) -5.8 to -9.8 NAVD

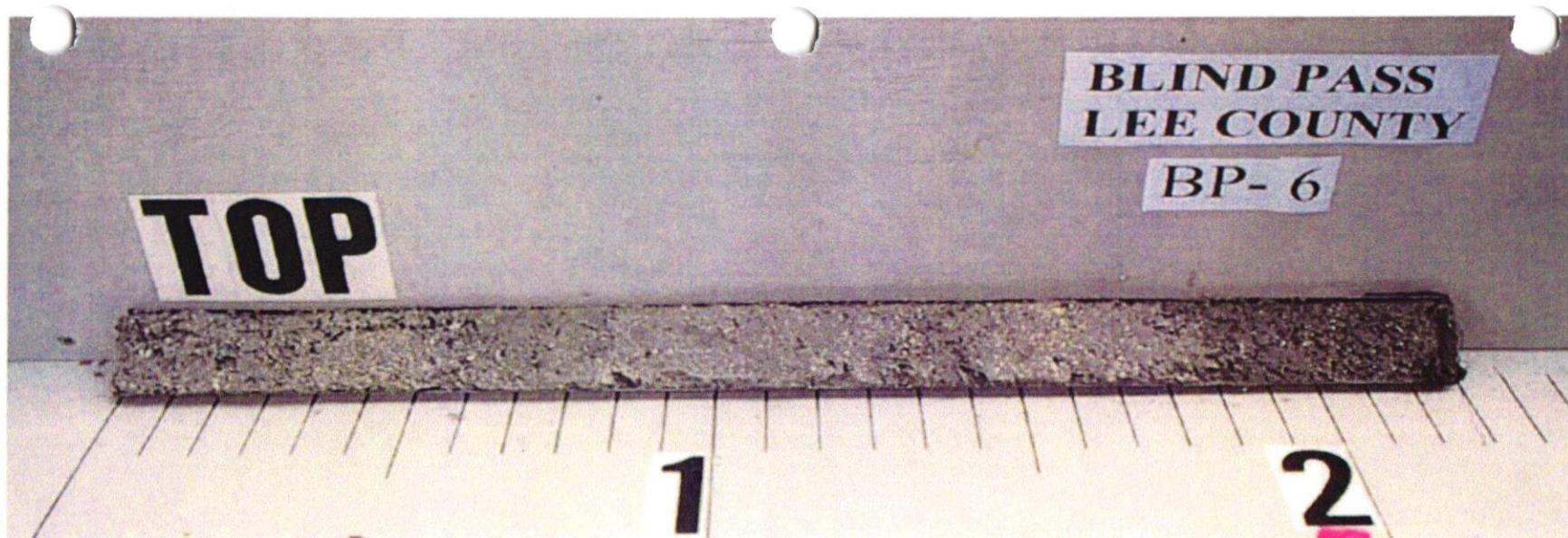


Photo 6 Vibracore BP- 6 (Bottom) -9.8 to -12.1 NAVD

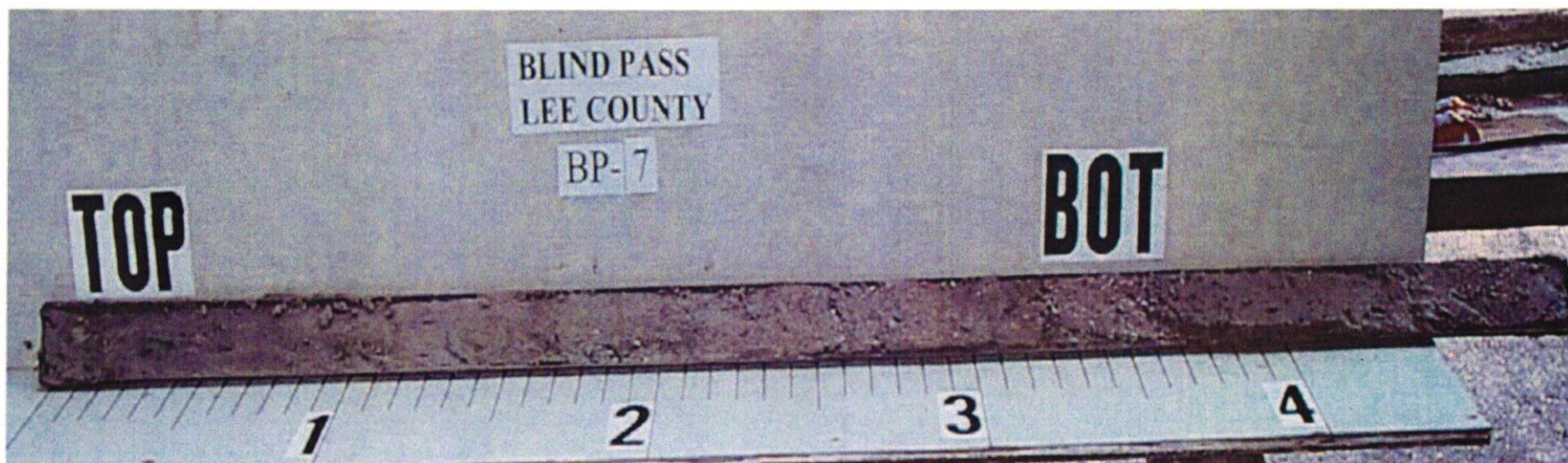


Photo 7 Vibracore BP- 7 (Top) -1.8 to -6.8 NAVD

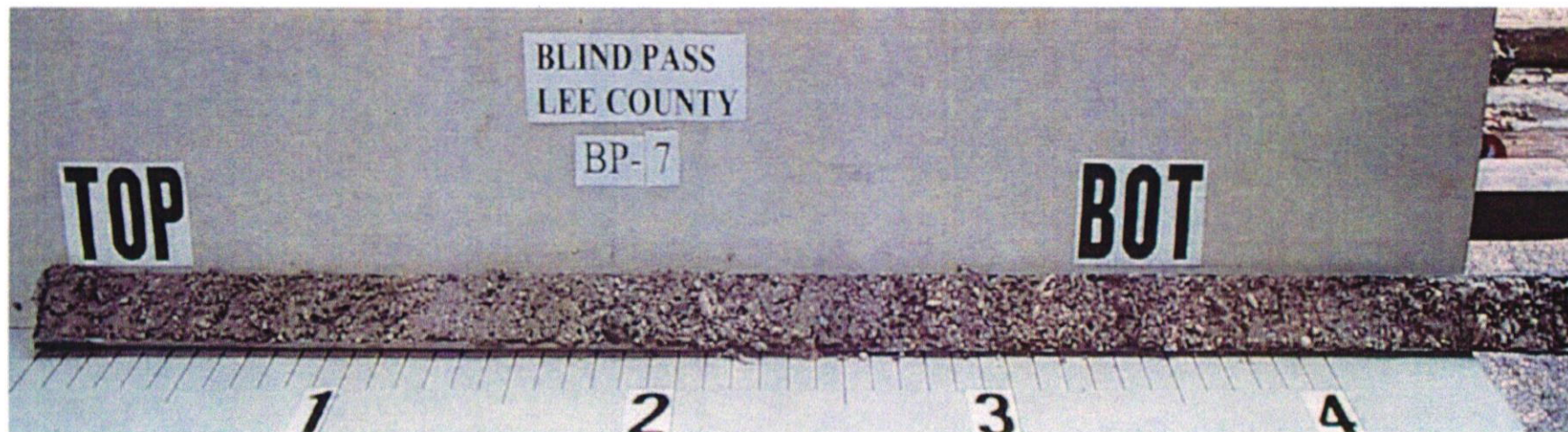
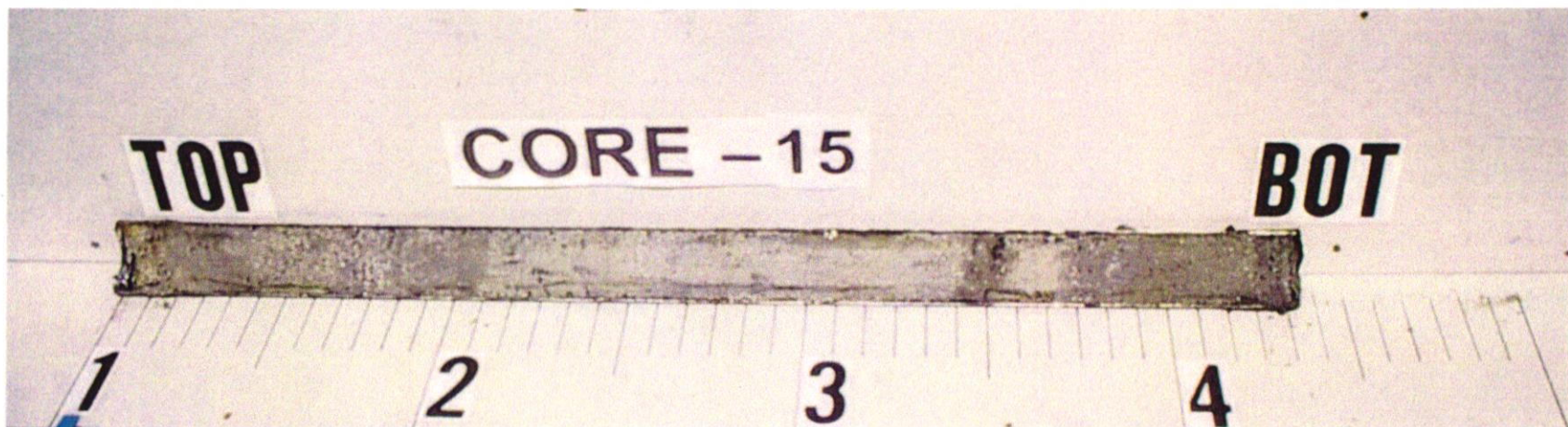
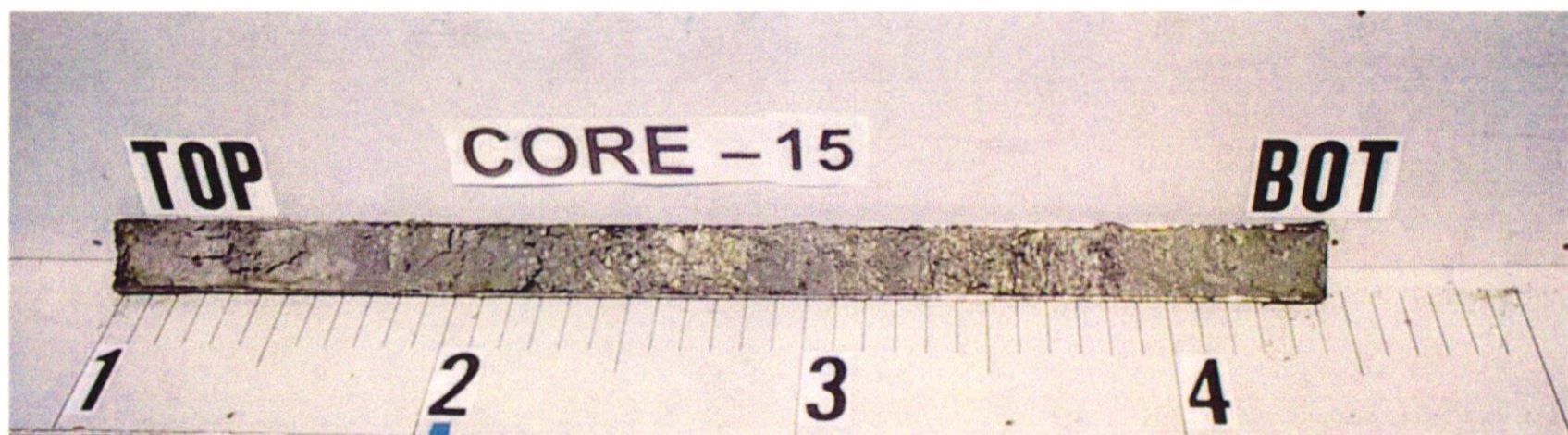


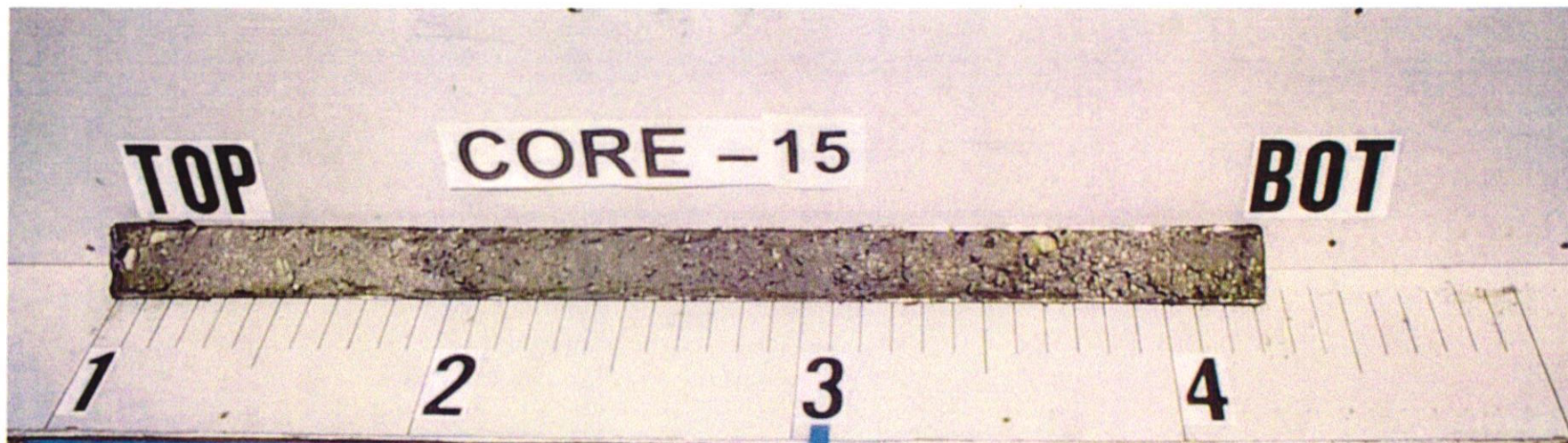
Photo 8 Vibracore BP- 7 (Bottom) -6.8 to -11.6 NAVD



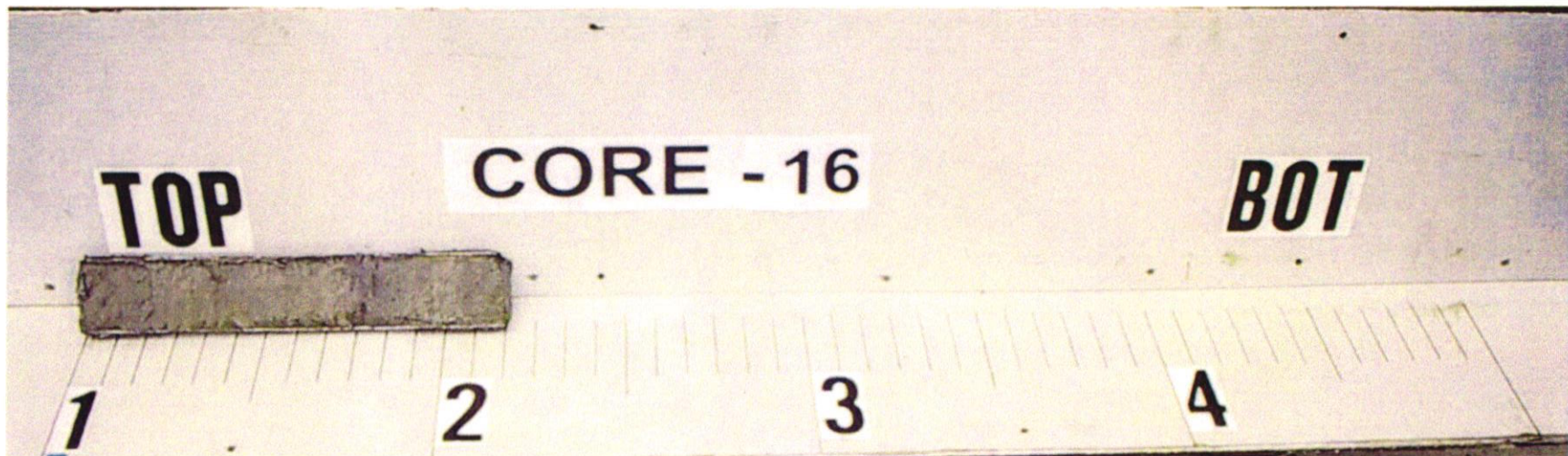
Core 15, -2.6 ft NGVD to -6.1 ft NGVD, 95% Recovery



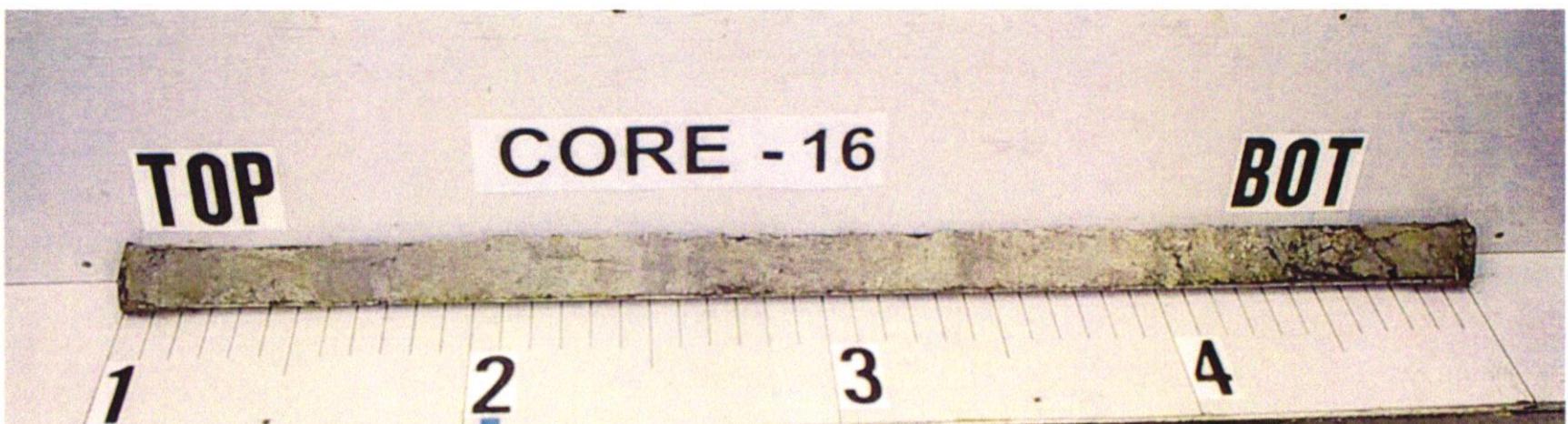
Core 15, -6.1 ft NGVD to -10.1 ft NGVD, 86% Recovery



Core 15, -10.1 ft NGVD to -14.1 ft NGVD, 83% Recovery



Core 16, -2.7 ft NGVD to -6.7 ft NGVD, 29% Recovery



Core 16, -6.7 ft NGVD to -10.7 ft NGVD, 100% Recovery

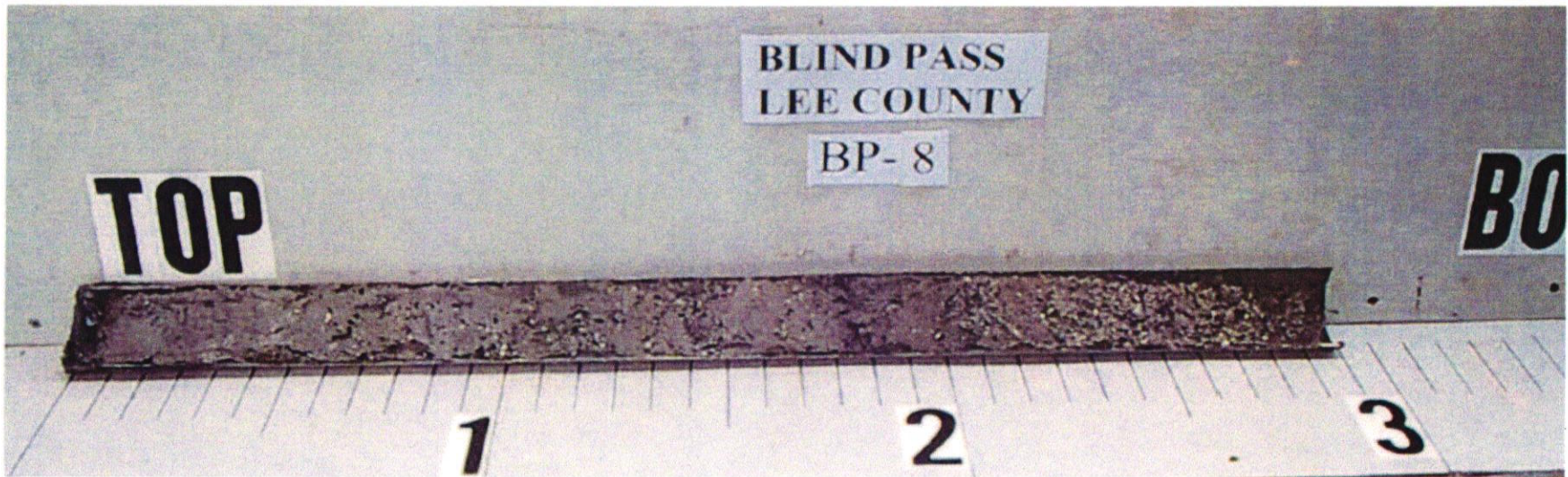


Photo 9 Vibracore BP- 8 (Top) -1.2 to -4.1 NAVD

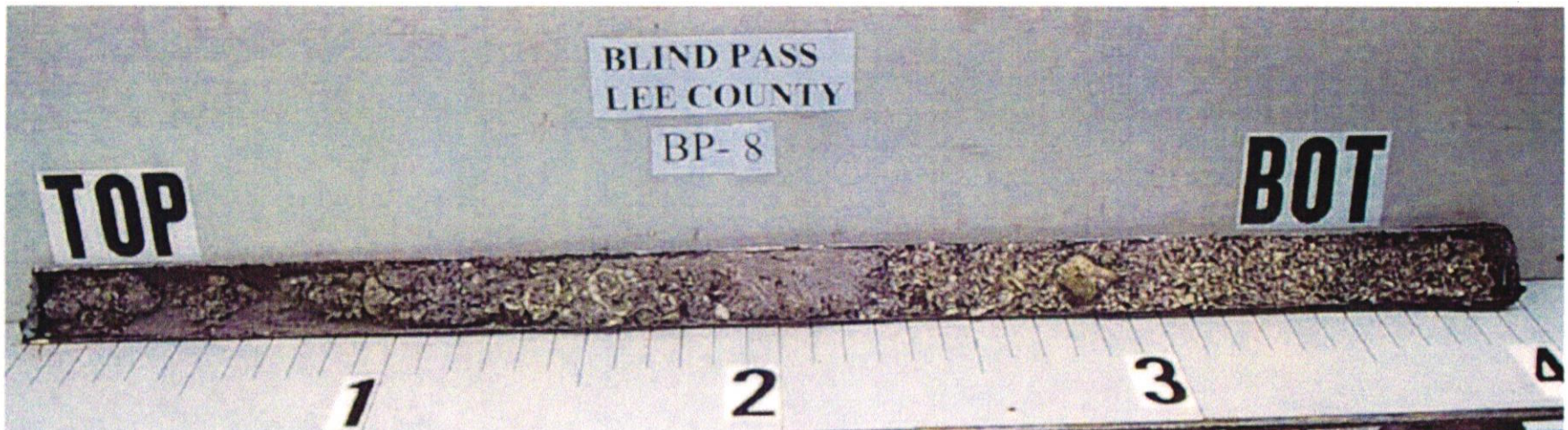


Photo 10 Vibracore BP- 8 (Bottom) -4.1 to -8.0 NAVD

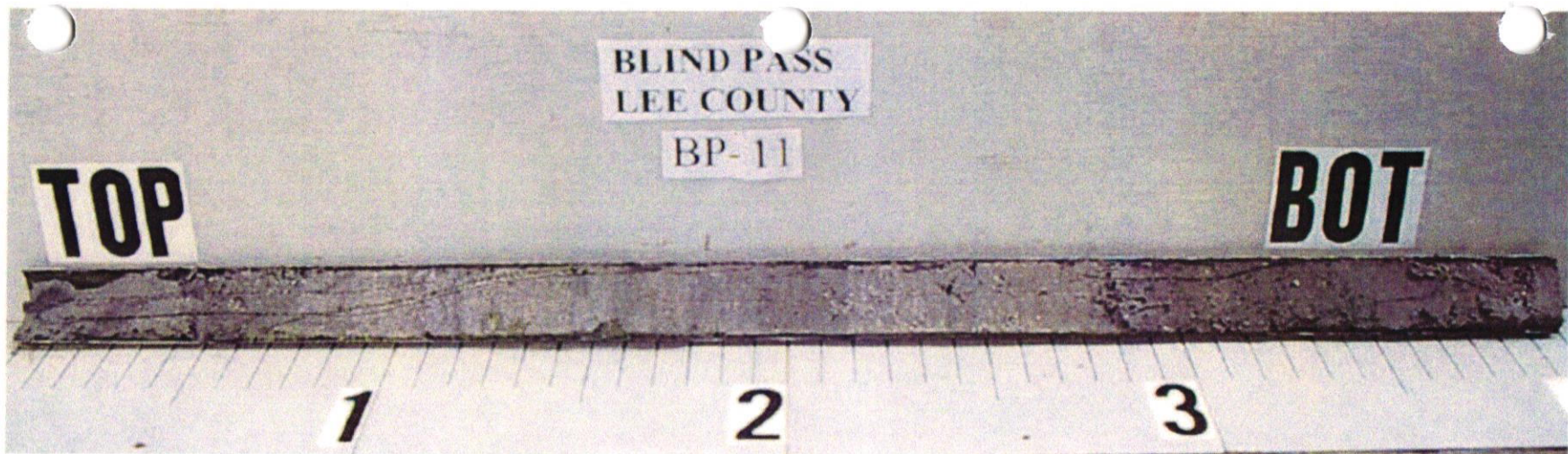


Photo 13 Vibracore BP- 11 (Top) -3.2 to -7.2 NAVD



Photo 14 Vibracore BP- 11 (Bottom) -7.2 to -10.6 NAVD

Core Composites in Sub Areas 1 – 3a

3091

Blind Pass Restoration
Sediment Analysis

Sieve #
Sieve Size (Φ)
Sieve Size (mm)

Sieve Designation Legend																		
3/4	5/8	11/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Design Depth -10 NAVD88

Area of Influence - Sub Area 1

Sieve (Phi)	C-1		
	#1	#2	#3
-4.25	0.00	0.00	0.00
-4	0.00	0.00	0.00
-3.5	0.00	2.59	0.00
-3	7.57	7.10	4.98
-2.5	12.08	13.89	14.84
-2	19.48	22.00	26.08
-1.5	29.48	29.81	39.80
-1	37.58	38.41	50.96
-0.5	49.09	48.16	65.32
0	58.99	59.36	76.35
0.5	68.40	70.93	84.73
1	78.43	80.82	91.07
1.5	86.40	88.05	94.65
2	92.60	92.50	96.72
2.5	97.14	95.99	98.00
3	98.96	98.62	98.72
3.5	99.40	99.52	99.22
3.75	99.51	99.65	99.32
4	99.63	99.73	99.50

Sieve (Phi)	C-1		
	#1	#2	#3
-4.25	100.00	100.00	100.00
-4	100.00	100.00	100.00
-3.5	100.00	97.41	100.00
-3	92.43	92.90	95.02
-2.5	87.92	86.11	85.16
-2	80.52	78.00	73.92
-1.5	70.52	70.19	60.20
-1	62.42	61.59	49.04
-0.5	50.91	51.84	34.68
0	41.01	40.64	23.65
0.5	31.60	29.07	15.27
1	21.57	19.18	8.93
1.5	13.60	11.95	5.35
2	7.40	7.50	3.28
2.5	2.86	4.01	2.00
3	1.04	1.38	1.28
3.5	0.60	0.48	0.78
3.75	0.49	0.35	0.68
4	0.37	0.27	0.50

Sieve (Phi)	Composite C-1	
	Weighted Composite (% Retained)	Weighted Composite (% Passing)
-4.25	0.00	100.00
-4	0.00	100.00
-3.5	1.14	98.86
-3	7.09	92.91
-2.5	13.17	86.83
-2	21.29	78.71
-1.5	30.72	69.28
-1	39.37	60.63
-0.5	50.41	49.59
0	61.00	39.00
0.5	71.25	28.75
1	80.83	19.17
1.5	88.00	12.00
2	92.99	7.01
2.5	96.73	3.27
3	98.78	1.22
3.5	99.43	0.57
3.75	99.55	0.45
4	99.66	0.34

Sample	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	1.63	-4.55	6.18	45.34%	SP
2	-4.55	-10.55	6	44.02%	SP
3	-10.55	-12	1.45	10.64%	SP
Composite	1.63	-12	13.63	100.00%	SP

Phi 95 -3.18

Phi 84 -2.33

Phi 75 -1.80

Phi 50 -0.52

Phi 25 0.70

Phi 16 1.22

Phi 5 2.27

C-1 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	2.26	1.35	0.83	-0.45	-1.72	-2.24	-3.42
2	2.36	1.22	0.71	-0.42	-1.81	-2.37	-3.23
3	1.58	0.46	-0.06	-1.04	-2.05	-2.45	-3
Composite	2.27	1.22	0.70	-0.52	-1.80	-2.33	-3.18

Sample	C-1 Parameters in Phi Units							Munsell Color	Silt %	Carbonate %
	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)			
1	-0.45	1.37	-0.44	1.36	1.63	0.04	2.17	Dry 10YR-7/1	0.37	
2	-0.42	1.34	-0.50	1.41	1.66	0.04	2.31	Dry 10YR-7/1	0.27	
3	-0.98	1.97	1.97	0.26	1.40	0.52	2.99	Dry 10YR-7/1	0.50	
Composite	-0.52	1.43	-0.51	1.42	1.65	0.14	2.36	Dry 10YR-7/1	0.34	

Area of Influence - Sub Area 1

Sieve (Phi)	C-22	
	#1	#2
-4.25	0.00	0.00
-4	2.07	0.00
-3.5	3.26	0.00
-3	6.35	0.63
-2.5	9.06	2.41
-2	12.32	5.58
-1.5	16.94	11.08
-1	21.34	19.01
-0.5	29.11	29.87
0	37.33	41.25
0.5	45.87	52.18
1	54.93	62.08
1.5	63.66	70.39
2	74.75	77.16
2.5	91.68	85.33
3	98.09	95.53
3.5	99.06	98.18
3.75	99.18	98.51
4	99.30	98.79

Sieve (Phi)	C-22	
	#1	#2
-4.25	100.00	100.00
-4	97.93	100.00
-3.5	96.74	100.00
-3	93.65	99.37
-2.5	90.94	97.59
-2	87.68	94.42
-1.5	83.06	88.92
-1	78.66	80.99
-0.5	70.89	70.13
0	62.67	58.75
0.5	54.13	47.82
1	45.07	37.92
1.5	36.34	29.61
2	25.25	22.84
2.5	8.32	14.67
3	1.91	4.47
3.5	0.94	1.82
3.75	0.82	1.49
4	0.70	1.21

Sieve (Phi)	Composite C-22	
	Weighted Composite (% Retained)	Weighted Composite (% Passing)
-4.25	0.00	100.00
-4	1.12	98.88
-3.5	1.77	98.23
-3	3.73	96.27
-2.5	6.02	93.98
-2	9.23	90.77
-1.5	14.26	85.74
-1	20.27	79.73
-0.5	29.46	70.54
0	39.12	60.88
0.5	48.76	51.24
1	58.20	41.80
1.5	66.74	33.26
2	75.85	24.15
2.5	88.77	11.23
3	96.92	3.08
3.5	98.66	1.34
3.75	98.87	1.13
4	99.07	0.93

Sample	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	3.03	-5.12	8.15	54.22%	SP
2	-5.12	-12	6.88	45.78%	SP
Composite	3.03	-12	15.03	100.00%	SP

Phi 95 -2.72

Phi 84 -1.36

Phi 75 -0.74

Phi 50 0.57

Phi 25 1.95

Phi 16 2.32

Phi 5 2.88

C-22 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	2.76	2.27	2.01	0.73	-0.76	-1.6	-3.22
2	2.97	2.42	1.84	0.4	-0.72	-1.19	-2.09
Composite	2.88	2.32	1.95	0.57	-0.74	-1.36	-2.72

Sample	C-22 Parameters in Phi Units							Munsell Color	Silt %	Carbonate %
	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)			
1	0.73	0.60	0.40	0.76	1.83	-0.65	2.58	Dry 10YR-7/1	0.70	
2	0.40	0.76	0.46	0.73	1.58	-0.02	2.15	Dry 10YR-7/1	1.21	
Composite	0.57	0.68	0.42	0.75	1.71	-0.44	2.54	Dry 10YR-7/1	0.93	

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Blind Pass Restoration
Sediment Analysis

Sieve #
Sieve Size (Φ)
Sieve Size (mm)

Sieve Designation Legend																		
3/4	5/8	11/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Design Depth -10 NAVD88

Area of Influence - Sub Area 1 & 2

Core C-23		C-23	
		Sample Cumulative % by Weight Retained	
Sieve (Phi)	#1	#2	
-4.25	0.00	0.00	
-4	0.00	0.00	
-3.5	0.00	0.00	
-3	0.00	1.34	
-2.5	0.47	3.75	
-2	0.68	7.43	
-1.5	1.12	11.94	
-1	1.89	17.55	
-0.5	4.63	25.32	
0	10.19	33.10	
0.5	20.05	41.76	
1	32.24	52.44	
1.5	42.92	63.87	
2	60.65	75.42	
2.5	89.00	88.56	
3	98.53	95.40	
3.5	99.57	97.58	
3.75	99.69	98.04	
4	99.76	98.51	

C-23	
Sample Cumulative % by Weight Passing	
#1	#2
100.00	100.00
100.00	100.00
100.00	100.00
100.00	98.66
99.53	96.25
99.32	92.57
98.88	88.06
98.11	82.45
95.37	74.68
89.81	66.90
79.95	58.24
67.76	47.56
57.08	36.13
39.35	24.58
11.00	11.44
1.47	4.60
0.43	2.42
0.31	1.96
0.24	1.49

Composite C-23	
Weighted Composite (% Retained)	Weighted Composite (% Passing)
0.00	100.00
0.00	100.00
0.00	100.00
0.68	99.32
2.15	97.85
4.13	95.87
6.65	93.35
9.89	90.11
15.20	84.80
21.89	78.11
31.14	68.86
42.56	57.44
53.62	46.38
68.19	31.81
88.78	11.22
96.93	3.07
98.55	1.45
98.85	1.15
99.12	0.88

C-23	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
Sample 1	0.63	-5.55	6.18	48.93%	SP
Sample 2	-5.55	-12	6.45	51.07%	SP
Composite	0.63	-12	12.63	100.00%	SP

C-23 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	2.81	2.41	2.25	1.7	0.7	0.29	-0.47
2	2.97	2.33	1.98	0.89	-0.52	-1.14	-2.33
Composite	2.88	2.38	2.17	1.34	0.17	-0.44	-1.83

C-23	Parameters in Phi Units							Munsell Color	Silt %	Carbonate %
	Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)			
1	1.70	0.31	1.43	0.37	1.06	-0.88	3.66	Dry 10YR-7/1	0.24	
2	0.89	0.54	0.63	0.65	1.61	-0.42	2.38	Dry 10YR-7/1	1.49	
Composite	1.34	0.40	1.02	0.49	1.42	-0.78	3.11	Dry 10YR-7/1	0.88	

Area of Influence - Sub Area 2

Core C-2		C-2		
		Sample Cumulative % by Weight Retained		
Sieve (Phi)	Sample 1	Sample 2	Sample 3	
-4.25	0.00	0.00	0.00	
-4	0.00	0.00	0.00	
-3.5	0.56	0.77	1.30	
-3	0.56	4.61	1.73	
-2.5	1.93	10.33	4.84	
-2	2.95	17.19	12.09	
-1.5	4.50	25.49	20.87	
-1	7.49	34.90	29.50	
-0.5	11.33	46.68	38.82	
0	16.18	55.01	48.38	
0.5	22.50	61.92	57.71	
1	32.37	68.39	67.30	
1.5	45.67	78.28	76.69	
2	61.15	86.68	86.15	
2.5	80.27	93.29	93.80	
3	86.52	97.09	97.02	
3.5	97.65	98.71	98.66	
3.75	98.87	99.59	98.99	
4	98.87	99.82	99.25	

C-2		
Sample Cumulative % by Weight Passing		
Sample 1	Sample 2	Sample 3
100.00	100.00	100.00
100.00	100.00	100.00
99.44	99.23	98.70
99.44	95.39	98.27
98.07	89.67	95.16
97.05	82.81	87.91
95.50	74.51	79.13
92.51	65.10	70.50
88.67	53.32	61.18
83.82	44.99	51.62
77.50	38.08	42.29
67.63	31.61	32.70
54.33	21.72	23.31
38.85	13.32	13.85
19.73	6.71	6.20
13.48	2.91	2.98
2.35	1.29	1.34
1.13	0.41	1.01
1.13	0.18	0.75

Composite C-2	
Weighted Composite (% Retained)	Weighted Composite (% Passing)
0.00	100.00
0.00	100.00
0.87	99.13
2.29	97.71
5.66	94.34
10.63	89.37
16.75	83.25
23.69	76.31
31.93	68.07
39.45	60.55
46.94	53.06
55.58	44.42
66.49	33.51
77.68	22.32
88.95	11.05
93.41	6.59
98.33	1.67
99.15	0.85
99.31	0.69

C-2	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
Sample 1	0	-4.15	4.15	34.58%	SP
Sample 2	-4.15	-8.15	4.00	33.33%	SP
Sample 3	-8.15	-12	3.85	32.08%	SP
Composite	0	-12	12	100.00%	SP

C-2 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	3.38	2.8	2.36	1.64	0.63	-0.02	-1.42
2	2.73	1.84	1.33	-0.3	-1.53	-2.09	-2.97
3	2.69	1.89	1.41	0.09	-1.26	-1.78	-2.49
Composite	3.16	2.28	1.88	0.68	-0.92	-1.56	-2.60

C-2	Parameters in Phi Units							Munsell Color	Silt %	Carbonate %
	Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)			
1	1.64	0.32	1.36	0.39	1.43	-0.91	3.74	Dry 10YR-7/1	1.13	
2	-0.30	1.23	-0.15	1.11	1.77	0.07	2.07	Dry 10YR-7/1	0.18	
3	0.09	0.94	0.05	0.97	1.64	-0.05	2.18	Dry 10YR-7/1	0.75	
Composite	0.68	0.63	0.43	0.74	1.75	-0.28	2.18	Dry 10YR-7/1	0.69	

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Blind Pass Restoration
Sediment Analysis

Sieve #
Sieve Size (Φ)
Sieve Size (mm)

Sieve #	3/4	5/8	1 1/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Sieve Designation Legend

Design Depth -10 NAVD88

Area of Influence - Sub Area 2 & 3a

Sieve (Phi)	C-3					C-3					Composite C-3	
	Sample Cumulative % by Weight Retained					Sample Cumulative % by Weight Passing					Weighted Composite (% Retained)	Weighted Composite (% Passing)
	#1	#2	#3	#4	#5	#1	#2	#3	#4	#5		
-4.25	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00
-4	0.00	7.01	5.10	0.00	0.00	100.00	92.99	94.90	100.00	100.00	4.47	95.53
-3.5	0.00	10.71	12.31	0.00	0.00	100.00	89.29	87.69	100.00	100.00	8.14	91.86
-3	2.02	13.05	20.19	0.00	0.00	97.98	86.95	79.81	100.00	100.00	11.78	88.22
-2.5	2.64	16.09	26.29	0.00	0.00	97.36	83.91	73.71	100.00	100.00	14.96	85.04
-2	3.15	19.45	32.28	0.00	0.00	96.85	80.55	67.72	100.00	100.00	18.22	81.78
-1.5	3.86	25.02	38.57	0.10	0.02	96.14	74.98	61.43	99.90	99.98	22.55	77.45
-1	5.54	31.99	44.92	0.22	0.13	94.46	68.01	55.08	99.78	99.87	27.66	72.34
-0.5	8.91	41.83	52.28	0.29	0.28	91.09	58.17	47.72	99.71	99.72	34.59	65.41
0	13.49	51.53	58.30	0.45	0.43	86.51	48.47	41.70	99.55	99.57	41.27	58.73
0.5	20.72	60.57	63.44	0.83	0.66	79.28	39.43	36.56	99.17	99.34	47.90	52.10
1	31.26	69.49	68.15	1.29	0.86	68.74	30.51	31.85	98.71	99.14	54.92	45.08
1.5	44.59	76.87	72.85	1.72	1.52	55.41	23.13	27.15	98.28	98.48	61.78	38.22
2	59.06	83.88	78.99	2.49	2.76	40.94	16.12	21.01	97.51	97.24	69.15	30.85
2.5	74.86	90.18	87.88	5.10	16.66	25.14	9.82	12.12	94.90	83.34	77.93	22.07
3	85.24	94.71	95.42	23.11	83.73	14.76	5.29	4.58	76.89	16.27	88.02	11.98
3.5	91.98	99.37	99.35	49.80	99.10	8.02	0.63	0.65	50.20	0.90	94.77	5.23
3.75	93.63	99.58	99.74	54.14	99.77	6.37	0.42	0.26	45.86	0.23	95.58	4.42
4	95.07	99.78	99.84	55.83	99.99	4.93	0.22	0.16	44.17	0.01	96.07	3.93

C-3	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-3	-4.55	1.55	17.22%	SP-SM
2	-4.55	-8.38	3.83	42.56%	SP
3	-8.38	-11	2.62	29.11%	SP
4	-11	-11.6	0.6	6.67%	CL
5	-11.6	-12	0.4	4.44%	SP
Composite	-3	-12	9	100.00%	-

Phi 95 -3.93

Phi 84 -2.34

Phi 75 -1.26

Phi 50 0.65

Phi 25 2.40

Phi 16 2.80

Phi 5 3.57

C-3 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	3.99	2.94	2.51	1.69	0.7	0.17	-1.16
2	3.03	2.01	1.37	-0.08	-1.5	-2.51	-4.07
3	2.97	2.28	1.68	-0.65	-2.61	-3.27	-4
4				3.51	3.04	2.8	2.48
5	3.37	3.01	2.93	2.75	2.56	2.48	2.08
Composite	3.57	2.80	2.40	0.65	-1.26	-2.34	-3.93

C-3	Parameters in Phi Units							Munsell Color	Silt %	Carbonate %
	Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)			
1	1.69	0.31	1.60	0.33	1.55	0.10	1.17	Dry 10YR-6/1	4.93	
2	-0.08	1.06	-0.19	1.14	2.31	0.10	1.01	Dry 10YR-6/1	0.22	
3	-0.65	1.57	-0.55	1.46	2.55	-0.05	0.67	Dry 10YR-6/1	0.16	
4	3.51	0.09	2.10	0.23	1.11	-1.67	0.33	Dry 10YR-6/1	44.17	24.2
5	2.75	0.15	2.75	0.15	0.35	0.03	1.43	Dry 10YR-8/1	0.01	7.4
Composite	0.65	0.64	0.22	0.86	2.18	-0.40	2.16		3.93	

Area of Influence - Sub Area 3A

Sieve (Phi)	C-4			C-4			Composite C-4	
	Sample Cumulative % by Weight Retained			Sample Cumulative % by Weight Passing			Weighted Composite (% Retained)	Weighted Composite (% Passing)
	#1	#2	#3	#1	#2	#3		
-4.25	0.00	0.00	0.00	100.00	100.00	100.00	0.00	100.00
-4	0.00	0.00	0.00	100.00	100.00	100.00	0.00	100.00
-3.5	0.00	0.00	0.00	100.00	100.00	100.00	0.00	100.00
-3	0.90	0.00	0.00	99.10	100.00	100.00	0.25	99.75
-2.5	1.13	0.00	0.00	98.87	100.00	100.00	0.31	99.69
-2	1.85	0.00	0.00	98.15	100.00	100.00	0.51	99.49
-1.5	2.76	0.16	0.41	97.24	99.84	99.59	0.98	99.02
-1	3.72	0.34	0.87	96.28	99.66	99.13	1.50	98.50
-0.5	4.95	0.46	1.53	95.05	99.54	98.47	2.16	97.84
0	6.29	0.66	2.40	93.71	99.34	97.60	2.96	97.04
0.5	7.82	1.11	3.44	92.18	98.89	96.56	3.97	96.03
1	10.06	2.32	5.57	89.94	97.68	94.43	5.86	94.14
1.5	13.75	4.65	10.37	86.25	95.35	89.63	9.63	90.37
2	22.78	13.17	23.16	77.22	86.83	76.84	20.14	79.86
2.5	48.74	43.80	53.57	51.26	56.20	46.43	49.39	50.61
3	79.97	82.21	75.69	20.03	17.79	24.31	78.77	21.23
3.5	95.31	95.66	96.99	4.69	4.34	3.01	96.14	3.86
3.75	97.46	96.61	97.67	2.54	3.39	2.33	97.30	2.70
4	98.47	97.32	98.14	1.53	2.68	1.86	97.99	2.01

C-4	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-1.7	-4.15	2.45	27.53%	SP
2	-4.15	-6.75	2.6	29.21%	SP
3	-6.75	-10.6	3.85	43.26%	SP
Composite	-1.7	-10.6	8.9	100.00%	SP

C-4 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	3.49	3.13	2.92	2.52	2.04	1.62	-0.48
2	3.48	3.07	2.91	2.58	2.19	2.05	1.52
3	3.45	3.2	2.98	2.44	2.03	1.72	0.87
Composite	3.47	3.15	2.94	2.51	2.08	1.80	0.77

Phi 95 0.77

Phi 84 1.80

Phi 75 2.08

Phi 50 2.51

Phi 25 2.94

Phi 16 3.15

Phi 5 3.47

C-4	Parameters in Phi Units							Munsell Color	Silt %	Carbonate %
	Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)			
1.00	2.52	0.17	2.23	0.21	1.19	-2.29	9.14	Dry 10YR-7/1	1.53	-
2.00	2.58	0.17	2.49	0.18	0.62	-1.75	10.72	Dry 10YR-7/1	2.68	-
3.00	-0.98	1.97	2.35	0.20	0.84	-1.61	7.39	Dry 10YR-7/1	1.86	-
Composite	2.51	0.18	2.31	0.20	0.90	-2.18	11.23	Dry 10YR-7/1	2.01	-

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Blind Pass Restoration
Sediment AnalysisSieve #
Sieve Size (Φ)
Sieve Size (mm)

3/4	5/8	11/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Sieve Designation Legend

Design Depth -10 NAVD88

Area of Influence - Sub Area 3A

Core BP-5

Sieve (Phi)	BP-5					BP-5					Composite BP-5	
	Sample Cumulative % by Weight Retained					Sample Cumulative % by Weight Passing					Weighted Composite (% Retained)	Weighted Composite (% Passing)
	#1	#2	#3	#4	#5	#1	#2	#3	#4	#5		
-4.25	0.00		0.00		0.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00
-4	0.00	0.00	0.00	3.31	0.00	100.00	100.00	100.00	96.69	100.00	0.33	99.67
-3.5	0.00	1.56	0.00	7.27	0.00	100.00	98.44	100.00	92.73	100.00	1.28	98.72
-3	0.00	5.84	0.00	11.87	0.28	100.00	94.16	100.00	88.13	99.72	3.35	96.65
-2.5	0.45	10.84	0.00	13.98	0.45	99.55	89.16	100.00	86.02	99.55	5.47	94.53
-2	0.63	14.80	0.00	23.74	1.59	99.37	85.20	100.00	76.26	98.41	8.13	91.87
-1.5	1.03	21.75	0.04	31.20	3.09	98.97	78.25	99.96	68.80	96.91	11.76	88.24
-1	1.82	29.23	0.21	41.88	5.23	98.18	70.77	99.79	58.12	94.77	16.12	83.88
-0.5	2.90	38.63	0.49	52.09	8.03	97.10	61.37	99.51	47.91	91.97	21.32	78.68
0	4.77	46.98	0.84	60.33	11.34	95.23	53.02	99.16	39.67	88.66	26.17	73.83
0.5	7.67	54.69	1.14	67.12	14.90	92.33	45.31	98.86	32.88	85.10	30.82	69.18
1	12.28	62.58	1.58	72.83	19.07	87.72	37.42	98.42	27.17	80.93	35.81	64.19
1.5	17.25	72.29	2.19	77.70	24.70	82.75	27.71	97.81	22.30	75.30	41.76	58.24
2	23.56	84.02	3.18	85.33	34.61	76.44	15.98	96.82	14.67	65.39	49.87	50.13
2.5	40.15	93.46	4.95	97.83	48.82	59.85	6.54	95.05	2.17	51.18	60.03	39.97
3	77.52	97.60	19.66	99.93	73.00	22.48	2.40	80.34	0.07	27.00	74.63	25.37
3.5	91.98	99.69	58.08	99.99	91.20	8.02	0.31	41.92	0.01	8.80	88.70	11.30
3.75	93.98	99.86	67.60	100.00	93.93	6.02	0.14	32.40	0.00	6.07	91.48	8.52
4	94.44	99.93	70.04	100.00	95.73	5.56	0.07	29.96	0.00	4.27	92.42	7.58

Sample	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-2.9	-4.1	1.2	13.19%	SP-SC
2	-4.1	-7.4	3.30	36.26%	SW
3	-7.4	-9.2	1.8	19.78%	SC
4	-11.1	-12	0.9	9.89%	SW
5	-9.2	-11.1	1.9	20.88%	SC
Composite	-2.9	-12	9.1	100.00%	-

Phi 95 -2.61

BP-5 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1		3.22	2.97	2.63	2.04	1.37	0.04
2	2.69	2.00	1.62	0.20	-1.28	-1.91	-3.10
3				3.39	3.07	2.88	2.50
4	2.39	1.91	1.22	-0.60	-1.92	-2.36	-3.79
5	3.90	3.30	3.05	2.52	1.52	0.63	-1.05
Composite		3.33	3.01	2.01	-0.12	-1.01	-2.61

Phi 84 -1.01

Phi 75 -0.12

Phi 50 2.01

Phi 25 3.01

Phi 16 3.33

BP-5 Parameters in Phi Units										
Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
1	2.63	0.16	2.25	0.21	1.08	-1.78	6.61	Wet 10YR-6/1	5.56	16.00
2	0.20	0.87	0.08	0.95	1.80	-0.25	2.09	Wet 10YR-7/1	0.07	24.20
3	3.39	0.10	3.08	0.12	0.64	-3.42	19.10	Wet 10YR-6/1	29.96	12.20
4	-0.60	1.52	-0.35	1.27	1.81	-0.01	1.97	Wet 10YR-6/3	0.00	16.90
5	2.52	0.17	1.99	0.25	1.41	-1.30	4.13	Wet 10YR-6/1	4.27	32.30
Composite	2.01	0.25	1.09	0.47	1.91	-0.63	2.53		7.58	21.37

Composites for Sub Area 3b

3091
Blind Pass Restoration
Sediment Analysis

Sieve #	3/4	5/8	11/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Sieve Designation Legend

Design Depth -9 NAVD88

Area of Influence - Sub Area 3B

Core

Sieve (Phi)	C-4		
	Sample Cumulative % by Weight Retained		
-4.25	0.00	0.00	0.00
-4	0.00	0.00	0.00
-3.5	0.00	0.00	0.00
-3	0.90	0.00	0.00
-2.5	1.13	0.00	0.00
-2	1.85	0.00	0.00
-1.5	2.76	0.16	0.41
-1	3.72	0.34	0.87
-0.5	4.95	0.46	1.53
0	6.29	0.66	2.40
0.5	7.82	1.11	3.44
1	10.06	2.32	5.57
1.5	13.75	4.65	10.37
2	22.78	13.17	23.16
2.5	48.74	43.80	53.57
3	79.97	82.21	75.69
3.5	95.31	95.66	96.99
3.75	97.46	96.61	97.67
4	98.47	97.32	98.14

Sieve (Phi)	C-4		
	Sample Cumulative % by Weight Passing		
-4.25	100.00	100.00	100.00
-4	100.00	100.00	100.00
-3.5	100.00	100.00	100.00
-3	99.10	100.00	100.00
-2.5	98.87	100.00	100.00
-2	98.15	100.00	100.00
-1.5	97.24	99.84	99.59
-1	96.28	99.66	99.13
-0.5	95.05	99.54	98.47
0	93.71	99.34	97.60
0.5	92.18	98.89	96.56
1	89.94	97.68	94.43
1.5	86.25	95.35	89.63
2	77.22	86.83	76.84
2.5	51.26	56.20	46.43
3	20.03	17.79	24.31
3.5	4.69	4.34	3.01
3.75	2.54	3.39	2.33
4	1.53	2.68	1.86

Sieve (Phi)	Composite C-4	
	Weighted Composite (% Retained)	Weighted Composite (% Passing)
-4.25	0.00	100.00
-4	0.00	100.00
-3.5	0.00	100.00
-3	0.25	99.75
-2.5	0.31	99.69
-2	0.51	99.49
-1.5	0.98	99.02
-1	1.50	98.50
-0.5	2.16	97.84
0	2.96	97.04
0.5	3.97	96.03
1	5.86	94.14
1.5	9.63	90.37
2	20.14	79.86
2.5	49.39	50.61
3	78.77	21.23
3.5	96.14	3.86
3.75	97.30	2.70
4	97.99	2.01

Sample	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-1.7	-4.15	2.45	27.53%	SP
2	-4.15	-6.75	2.6	29.21%	SP
3	-6.75	-10.6	3.85	43.26%	SP
Composite	-1.7	-10.6	8.9	100.00%	SP

C-4 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	3.49	3.13	2.92	2.52	2.04	1.62	-0.48
2	3.48	3.07	2.91	2.58	2.19	2.05	1.52
3	3.45	3.2	2.98	2.44	2.03	1.72	0.87
Composite	3.47	3.15	2.94	2.51	2.08	1.80	0.77

Phi 95 0.77
Phi 84 1.80
Phi 75 2.08
Phi 50 2.51
Phi 25 2.94
Phi 16 3.15
Phi 5 3.47

C-4 Parameters in Phi Units								Munsell Color	Silt %	Carbonate %
Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)			
1	2.52	0.17	2.23	0.21	1.19	-2.29	9.14	Dry 10YR-7/1	1.53	-
2	2.58	0.17	2.49	0.18	0.62	-1.75	10.72	Dry 10YR-7/1	2.68	-
3	-0.98	1.97	2.35	0.20	0.84	-1.61	7.39	Dry 10YR-7/1	1.86	-
Composite	2.51	0.18	2.31	0.20	0.90	-2.18	11.23	Dry 10YR-7/1	2.01	-

Area of Influence - Sub Area 3B

Core

Sieve (Phi)	BP-5				
	Sample Cumulative % by Weight Retained				
-4.25	0.00	0.00	0.00	3.31	0.00
-4	0.00	0.00	0.00	7.27	0.00
-3.5	0.00	1.56	0.00	11.87	0.28
-3	0.00	5.84	0.00	13.98	0.45
-2.5	0.45	10.84	0.00	23.74	1.59
-2	0.63	14.80	0.00	31.20	3.09
-1.5	1.03	21.75	0.04	41.88	5.23
-1	1.82	29.23	0.21	52.09	8.03
-0.5	2.90	38.63	0.49	60.33	11.34
0	4.77	46.98	0.84	67.12	14.90
0.5	7.67	54.69	1.14	72.83	19.07
1	12.28	62.58	1.58	77.70	24.70
1.5	17.25	72.29	2.19	83.33	34.61
2	23.56	84.02	3.18	97.83	48.82
2.5	40.15	93.46	4.95	99.93	73.00
3	77.52	97.60	19.66	99.99	91.20
3.5	91.98	99.69	58.08	100.00	93.93
3.75	93.98	99.86	67.60	100.00	95.73
4	94.44	99.93	70.04	100.00	95.73

Sieve (Phi)	BP-5				
	Sample Cumulative % by Weight Passing				
-4.25	100.00	100.00	100.00	100.00	100.00
-4	100.00	100.00	100.00	96.69	100.00
-3.5	100.00	98.44	100.00	92.73	100.00
-3	100.00	94.16	100.00	88.13	99.72
-2.5	99.55	89.16	100.00	86.02	99.55
-2	99.37	85.20	100.00	76.26	98.41
-1.5	98.97	78.25	99.96	68.80	96.91
-1	98.18	70.77	99.79	58.12	94.77
-0.5	97.10	61.37	99.51	47.91	91.97
0	95.23	53.02	99.16	39.67	88.66
0.5	92.33	45.31	98.86	32.88	85.10
1	87.72	37.42	98.42	27.17	80.93
1.5	82.75	27.71	97.81	22.30	75.30
2	76.44	15.98	96.82	14.67	65.39
2.5	59.85	6.54	95.05	2.17	51.18
3	22.48	2.40	80.34	0.07	27.00
3.5	8.02	0.31	41.92	0.01	8.80
3.75	6.02	0.14	32.40	0.00	6.07
4	5.56	0.07	29.96	0.00	4.27

Sieve (Phi)	Composite BP-5	
	Weighted Composite (% Retained)	Weighted Composite (% Passing)
-4.25	0.00	100.00
-4	0.00	100.00
-3.5	0.64	99.36
-3	2.44	97.56
-2.5	4.58	95.42
-2	6.48	93.52
-1.5	9.71	90.29
-1	13.39	86.61
-0.5	18.06	81.94
0	22.55	77.45
0.5	26.98	73.02
1	31.90	68.10
1.5	37.98	62.02
2	46.12	53.88
2.5	55.97	44.03
3	71.84	28.16
3.5	87.41	12.59
3.75	90.50	9.50
4	91.54	8.46

Sample	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-2.9	-4.1	1.2	14.81%	SP-SC
2	-4.1	-7.4	3.30	40.74%	SW
3	-7.4	-9.2	1.8	22.22%	SC
4	-11	-11	0	0.00%	SW
5	-9.2	-11	1.8	22.22%	SC
Composite	-2.9	-11	8.1	100.00%	-

Phi 95 -2.39
Phi 84 -0.72
Phi 75 0.28
Phi 50 2.20
Phi 25 3.10
Phi 16 3.39

BP-5 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1		3.22	2.97	2.63	2.04	1.37	0.04
2	2.69	2.00	1.62	0.20	-1.28	-1.91	-3.10
3		3.39	3.07	2.88	2.50		
4	2.39	1.91	1.22	-0.60	-1.92	-2.36	-3.79
5	3.90	3.30	3.05	2.52	1.52	0.63	-1.05
Composite	3.39	3.10	2.20	0.28	-0.72	-2.39	

BP-5 Parameters in Phi Units								Munsell Color	Silt %	Carbonate %
Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)			
1	2.63	0.16	2.25	0.21	1.08	-1.78	6.61	Wet 10YR-6/1	5.56	16.00
2	0.20	0.87	0.08	0.95	1.80	-0.25	2.09	Wet 10YR-7/1	0.07	24.20
3	3.39	0.10	3.08	0.12	0.64	-3.42	19.10	Wet 10YR-6/1	29.96	12.20
4	-0.60	1.52	-0.35	1.27	1.81	-0.01	1.97	Wet 10YR-6/3	0.00	16.90
5	2.52	0.17	1.99	0.25	1.41	-1.30	4.13	Wet 10YR-6/1	4.27	32.30
Composite	2.20	0.22	1.25	0.42	1.82	-0.69	2.71		8.46	21.77

Blind Pass Restoration Sediment Analysis

Sieve Designation Legend

Table with sieve sizes (3/4, 5/8, 1 1/16, 5/16, 3/5, 5, 7, 10, 14, 18, 25, 35, 45, 60, 80, 120, 170, 200, 230) and corresponding sieve sizes in inches and millimeters.

Design Depth -9 NAVD88

Area of Influence - Sub Area 3B

Core

Main sediment analysis table for Core C-14, showing sample cumulative % by weight retained and passing, and composite C-14 weighted composite percentages.

Table for Core C-14 showing Depth Interval (NAVD 88) and Representative Values (Length (ft), Percent, USCS).

Table for Core C-14 showing Moment Statistics and Properties in Phi Units (Sample, Phi 5, Phi 16, Phi 25, Phi 50, Phi 75, Phi 84, Phi 95).

Table for Core C-14 showing Parameters in Phi Units (Sample, Median (Phi), Median (mm), Mean (Phi), Mean (mm), Sorting (sigma), Skewness (alpha), Kurtosis (beta), Munsell Color, Silt %, Carbonate %).

- 1 Gradation report for C03 Sample 4 used to describe sediment due to lack of information available and similar description.
2 Gradation report for C15 Sample 2 used to describe sediment due to lack of information available and similar description.

Area of Influence - Sub Area 3B

Core

Main sediment analysis table for Core BP-6, showing sample cumulative % by weight retained and passing, and composite BP-6 weighted composite percentages.

Table for Core BP-6 showing Depth Interval (NAVD 88) and Representative Values (Length (ft), Percent, USCS).

Table for Core BP-6 showing Moment Statistics and Properties in Phi Units (Sample, Phi 5, Phi 16, Phi 25, Phi 50, Phi 75, Phi 84, Phi 95).

Table for Core BP-6 showing Parameters in Phi Units (Sample, Median (Phi), Median (mm), Mean (Phi), Mean (mm), Sorting (sigma), Skewness (alpha), Kurtosis (beta), Munsell Color, Silt %, Carbonate %).

Notes

- 1 Gradation report for C07 Sample 1 used to describe sediment due to lack of information available and similar description.
2 Gradation report for BP6 Sample 4 used to describe sediment due to lack of information available and similar description.

Composites for Sub Areas 3c – 4b

3091

Blind Pass Restoration
Sediment Analysis

Sieve Designation Legend

Sieve #	3/4	5/8	11/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Design Depth -8 NAVD88

Area of Influence - Sub Area 3c

Sieve (Phi)	C-14		
	#1	#2	#3 ¹
-4.25	0.00	0.00	0.00
-4	0.00	0.00	0.00
-3.5	0.00	0.00	0.00
-3	0.00	0.42	0.00
-2.5	0.28	0.63	0.00
-2	0.51	0.98	0.00
-1.5	0.54	1.77	0.10
-1	0.77	3.13	0.22
-0.5	1.24	4.85	0.29
0	1.87	7.03	0.45
0.5	2.76	9.77	0.83
1	4.48	14.06	1.29
1.5	7.31	20.30	1.72
2	12.58	29.50	2.49
2.5	22.29	45.06	5.10
3	38.17	45.06	23.11
3.5	56.19	86.07	49.80
3.75	61.48	88.70	54.14
4	64.94	89.75	55.83

Sample	C-14		
	#1	#2	#3
100.00	100.00	100.00	
100.00	100.00	100.00	
100.00	100.00	100.00	
100.00	99.58	100.00	
99.72	99.37	100.00	
99.49	99.02	100.00	
99.46	98.23	99.90	
99.23	96.87	99.78	
98.76	95.15	99.71	
98.13	92.97	99.55	
97.24	90.23	99.17	
95.52	85.94	98.71	
92.69	79.70	98.28	
87.42	70.50	97.51	
77.71	54.94	94.90	
61.83	54.94	76.89	
43.81	13.93	50.20	
38.52	11.30	45.86	
35.06	10.25	44.17	

Weighted Composite (% Retained)	Composite C-14	
	Weighted Composite (% Retained)	Weighted Composite (% Passing)
0.00	100.00	100.00
0.00	100.00	100.00
0.00	100.00	100.00
0.22	99.78	100.00
0.36	99.64	100.00
0.57	99.43	100.00
1.02	98.98	100.00
1.81	98.19	100.00
2.78	97.22	100.00
4.05	95.95	100.00
5.73	94.27	100.00
8.33	91.67	100.00
12.07	87.93	100.00
17.76	82.24	100.00
27.94	72.06	100.00
36.28	63.72	100.00
69.51	30.49	100.00
73.06	26.94	100.00
74.61	25.39	100.00

Sample	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-3.7	-4.4	0.7	11.11%	SP
2	-4.4	-7.7	3.3	52.38%	SP-SM
3	-7.7	-10	2.3	36.51%	CL
Composite	-3.7	-10	6.3	100.00%	

C-14 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1				3.33	2.59	2.18	1.09
2		3.45	3.23	2.62	1.76	1.16	-0.47
3				3.51	3.04	2.8	2.48
Composite				3.21	2.36	1.85	0.28

C-14 Parameters in Phi Units										
Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
1	3.33	0.10	2.60	0.16	1.02	-1.90	8.39	Dry 10YR-6/1	35.06	
2	2.62	0.16	2.25	0.21	1.34	-1.43	4.90	Dry 10YR-7/1	10.25	
3			2.98	0.13	0.63	-3.14	18.39	Dry 10YR-6/1	44.17	24.20
Composite	3.21	0.11	1.85	0.28	1.17	-0.08	3.70	-	25.39	

1 Gradation report for C03 Sample 4 used to describe sediment due to lack of information available and similar description.

Area of Influence - Sub Area 3c

Sieve (Phi)	BP-6							BP-6							Composite BP-6		
	Sample Cumulative % by Weight Retained							Sample Cumulative % by Weight Passing							Weighted Composite (% Retained)	Weighted Composite (% Passing)	
	#1	#2	#3	#4	#5	#6 ¹	#7 ²	#1	#2	#3	#4	#5	#6	#7			
-4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00	
-4	0.00	0.00	0.00	0.00	0.00	2.99	0.00	100.00	100.00	100.00	100.00	100.00	97.01	100.00	100.00	1.02	98.98
-3.5	0.00	0.00	0.00	0.00	0.00	9.54	0.00	100.00	100.00	100.00	100.00	100.00	90.46	100.00	100.00	3.26	96.74
-3	0.00	2.46	0.00	1.18	15.39	0.00	1.18	100.00	97.54	100.00	98.82	84.61	100.00	98.82	5.94	94.06	
-2.5	0.00	3.50	0.00	1.18	19.23	0.00	1.18	100.00	96.50	100.00	98.82	80.77	100.00	98.82	9.24	92.55	
-2	0.25	6.19	0.00	1.19	22.77	0.43	1.19	99.75	93.81	100.00	98.81	77.23	99.57	98.81	9.24	90.76	
-1.5	0.34	9.47	0.03	1.28	25.98	0.82	1.28	99.66	90.53	99.97	98.72	74.02	99.18	98.72	11.02	88.98	
-1	0.57	13.13	0.23	1.29	30.06	1.08	1.29	99.43	86.87	99.77	98.71	69.94	98.92	98.71	13.19	86.81	
-0.5	1.17	18.80	0.62	1.49	35.48	1.47	1.49	98.83	81.20	99.38	98.51	64.52	98.53	98.51	16.34	83.66	
0	2.16	23.91	1.17	1.69	40.29	1.94	1.69	97.84	76.09	98.83	98.31	59.71	98.06	98.31	19.27	80.73	
0.5	3.65	28.94	1.69	1.98	45.43	2.70	1.98	96.35	71.06	98.31	98.02	54.57	97.30	98.02	22.41	77.59	
1	6.15	34.32	2.53	2.49	51.96	3.84	2.49	93.85	65.68	97.47	97.51	48.04	96.16	97.51	26.37	73.63	
1.5	10.09	41.29	3.85	3.53	61.84	5.45	3.53	89.91	58.71	96.15	96.47	38.16	94.55	96.47	32.22	67.78	
2	16.70	52.59	8.13	6.50	75.60	7.84	6.50	83.30	47.41	91.87	93.50	24.40	92.16	93.50	41.34	58.66	
2.5	27.83	70.16	24.06	29.14	89.87	16.68	29.14	72.17	29.84	75.94	70.86	10.13	83.32	70.86	57.09	42.91	
3	54.24	87.66	58.75	78.64	95.91	44.81	78.64	45.76	12.34	41.25	21.36	4.09	55.19	21.36	79.37	20.63	
3.5	78.68	96.34	76.83	95.61	99.50	69.38	95.61	21.32	3.66	23.17	4.39	0.50	30.62	4.39	91.88	8.12	
3.75	84.46	97.34	78.96	96.66	99.79	73.61	96.66	15.54	2.66	21.04	3.34	0.21	26.39	3.34	93.76	6.24	
4	86.35	97.77	79.95	97.06	99.86	76.68	97.06	13.65	2.23	20.05	2.94	0.14	23.32	2.94	94.43	5.57	

Sample	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length	Percent	USCS
1	-1.8	-3.5	1.7	20.73%	SC
2	-3.5	-5.1	1.6	19.51%	SW
3	-5.1	-6.5	1.4	10.98%	SC
4	-6.5	-7.9	1.4	10.98%	SP
5	-7.9	-9.3	1.4	34.15%	SW
6	-9.3	-10.7	1.4	1.22%	SC
7	-10.7	-12.1	1.4	6.10%	SP
Composite	-1.8	-10	8.2	100.00%	-

BP-6 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1		3.73	3.42	2.92	2.37	1.95	0.77
2		3.42	2.90	2.64	1.89	1.11	-0.75
3				3.45	2.87	2.51	2.25
4		3.48	3.16	2.96	2.71	2.41	2.21
5		2.92	2.29	1.98	0.85	-1.65	-2.92
6				3.86	3.11	2.65	2.46
7		3.48	3.16	2.96	2.71	2.41	2.21
Composite		3.19	2.90	2.28	0.83	-0.55	-3.17

BP-6 Parameters in Phi Units										
Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
1	2.92	0.13	2.58	0.17	0.94	-1.73	7.00	Wet 10YR-7/1	13.65	18.90
2	1.89	0.27	1.25	0.42	1.74	-0.88	2.81	Wet 10YR-7/1	2.23	25.50
3	2.87	0.14	2.64	0.16	0.69	-2.11	10.61	Wet 10YR-6/1	20.05	13.50
4	2.71	0.15	2.58	0.17	0.83	-4.70	32.13	Wet 10YR-6/1	2.94	6.80
5	0.85	0.55	0.14	0.91	2.09	-0.38	1.97	Wet 10YR-7/1	0.14	51.80
6	3.11	0.12	2.73	0.15	0.90	-2.67	12.66	Dry 10YR-6/1	23.32	
7	2.71	0.15	2.58	0.17	0.83	-4.70	32.13	Wet 10YR-6/1	2.94	6.80
Composite	2.28	0.21	1.35	0.39	1.92	-1.21	3.70	-	5.57	

Notes

1 Gradation report for C07 Sample 1 used to describe sediment due to lack of information available and similar description.
2 Gradation report for BP6 Sample 4 used to describe sediment due to lack of information available and similar description

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Sieve Designation Legend

Blind Pass Restoration	Sieve #	3/4	5/8	1 1/2	5/16	3/5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sediment Analysis	Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Design Depth -8 NAVD88	Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Area of Influence - Sub Area 3C, 4A & 4B

Core

BP-7					
Sample Cumulative % by Weight Retained					
Sieve (Phi)	#1	#2	#3	#4	#5 ¹
-4.25	0.00	0.00		0.00	0.00
-4	0.00	0.00	9.40	0.00	0.00
-3.5	0.00	0.00	9.40	0.00	0.00
-3	0.00	0.00	11.95	0.00	0.00
-2.5	0.02	0.00	15.64	0.00	0.02
-2	0.07	0.01	19.15	0.02	0.07
-1.5	0.07	0.21	23.12	0.02	0.07
-1	0.08	0.96	27.79	0.13	0.08
-0.5	0.12	1.83	32.73	0.21	0.12
0	0.24	3.03	37.56	0.35	0.24
0.5	0.53	4.46	42.09	0.69	0.53
1	1.19	6.33	46.32	1.18	1.19
1.5	2.57	8.94	51.10	2.02	2.57
2	7.75	14.98	58.77	4.31	7.75
2.5	32.04	27.59	68.72	9.86	32.04
3	76.25	50.09	85.89	32.81	76.25
3.5	94.24	69.73	93.92	72.38	94.24
3.75	96.57	71.83	94.83	80.83	96.57
4	97.04	73.63	95.02	84.83	97.04

BP-7					
Sample Cumulative % by Weight Passing					
#1	#2	#3	#4	#5	
100.00	100.00	100.00	100.00	100.00	
100.00	100.00	90.60	100.00	100.00	
100.00	100.00	90.60	100.00	100.00	
100.00	100.00	88.05	100.00	100.00	
99.98	100.00	84.36	100.00	99.98	
99.93	99.99	80.85	99.98	99.93	
99.93	99.79	76.88	99.98	99.93	
99.92	99.04	72.21	99.87	99.92	
99.88	98.17	67.27	99.79	99.88	
99.76	96.97	62.44	99.65	99.76	
99.47	95.54	57.91	99.31	99.47	
98.81	93.67	53.68	98.82	98.81	
97.43	91.06	48.90	97.98	97.43	
92.25	85.02	41.23	95.69	92.25	
67.96	72.41	31.28	90.14	67.96	
23.75	49.91	14.11	67.19	23.75	
5.76	30.27	6.08	27.62	5.76	
3.43	28.17	5.17	19.17	3.43	
2.96	26.37	4.98	15.17	2.96	

Composite BP-7	
Weighted Composite (% Retained)	Weighted Composite (% Passing)
0.00	100.00
2.06	97.94
2.06	97.94
2.62	97.38
3.44	96.56
4.24	95.76
5.14	94.86
6.28	93.72
7.50	92.50
8.79	91.21
10.16	89.84
11.72	88.28
13.91	86.09
19.29	80.71
36.03	63.97
68.29	31.71
87.72	12.28
90.68	9.32
91.81	8.19

Sample	Depth Interval (NAVD #)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-3.1	-6.4	3.3	40.24%	SP
2	-6.4	-7.4	1.00	12.20%	SC
3	-8.2	-10	1.8	21.95%	SW
4	-1.8	-3.1	1.3	15.85%	SC
5	-7.4	-8.2	0.8	9.76%	SP
Composite	-1.8	-10	8.2	100.00%	

Phi 95 -1.58
Phi 84 1.69
Phi 75 2.17
Phi 50 2.72
Phi 25 3.17
Phi 16 3.40

BP-7 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	3.58	3.22	2.99	2.70	2.36	2.17	1.73
2				3.00	2.40	2.04	0.64
3	3.97	2.94	2.68	1.38	-1.30	-2.45	
4		3.95	3.58	3.22	2.83	2.63	2.06
5	3.58	3.22	2.99	2.70	2.36	2.17	1.73
Composite	3.40	3.17	2.72	2.17	1.69	-1.58	

BP-7 Parameters in Phi Units										
Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
1	2.70	0.15	2.64	0.16	0.54	-1.60	11.80	Wet 10YR-7/1	2.96	8.10
2	3.00	0.13	2.47	0.18	0.99	-1.71	6.31	Wet 10YR-6/1	26.37	17.90
3	1.38	0.38	0.93	0.52	1.98	-0.58	2.05	Wet 10YR-6/1	4.98	29.30
4	3.22	0.11	3.01	0.12	0.59	-2.32	13.27	Wet 10YR-6/1	15.17	19.70
5	2.70	0.15	2.64	0.16	0.54	-1.60	11.80	Wet 10YR-7/1	2.96	8.10
Composite	2.72	0.15	2.00	0.25	1.54	-2.12	8.12	-	8.19	19.00

Notes
1 Gradation report for BP7 Sample 1 used to describe sediment due to lack of information available and similar description.

Area of Influence - Sub Area 3C & 4A

Core

C-15		
Sample Cumulative % by Weight Retained		
Sieve (Phi)	#1	#2
-4.25	0.00	
-4	0.00	5.70
-3.5	0.00	8.24
-3	0.00	16.23
-2.5	0.00	22.44
-2	0.13	25.81
-1.5	0.19	29.23
-1	0.44	32.96
-0.5	0.88	36.56
0	1.54	40.12
0.5	2.82	43.40
1	5.24	48.86
1.5	9.90	53.43
2	48.30	60.16
2.5	83.07	72.47
3	97.69	91.95
3.5	99.31	97.73
3.75	99.40	98.47
4	99.40	98.84

C-15	
Sample Cumulative % by Weight Passing	
#1	#2
100.00	100.00
100.00	94.30
100.00	91.76
100.00	83.77
100.00	77.56
99.87	74.19
99.81	70.77
99.56	67.04
99.12	63.44
98.46	59.88
97.18	56.60
94.76	51.14
90.10	46.57
51.70	39.84
16.93	27.53
2.31	8.05
0.69	2.27
0.60	1.53
0.60	1.16

Composite C-15	
Weighted Composite (% Retained)	Weighted Composite (% Passing)
0.92	99.08
1.33	98.67
2.62	97.38
3.62	96.38
4.27	95.73
4.87	95.13
5.69	94.31
6.63	93.37
7.76	92.24
9.37	90.63
12.28	87.72
16.92	83.08
50.21	49.79
81.36	18.64
96.76	3.24
99.06	0.94
99.25	0.75
99.31	0.69

Sample	Depth Interval (NAVD #)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-3.8	-9	5.2	83.87%	SP
2	-9	-10	1	16.13%	SW
Composite	-3.8	-10	6.2	100.00%	

Phi 95 -1.42
Phi 84 1.40
Phi 75 1.62
Phi 50 2.00
Phi 25 2.50
Phi 16 2.59
Phi 5 2.94

C-15 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	2.91	2.53	2.38	2.02	1.7	1.58	0.95
2	3.26	2.8	2.56	1.12	-2.07	-3.01	
Composite	2.94	2.59	2.40	2.00	1.62	1.40	-1.42

C-15 Parameters in Phi Units										
Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
1	2.02	0.25	1.99	0.25	0.62	-1.70	9.98	Wet 10YR-8/1	0.60	10.9
2	1.12	0.46	0.82	0.57	2.24	-0.17	1.68	Wet 10YR-7/1	1.16	35.5
Composite	2.00	0.25	1.71	0.31	1.30	-2.63	10.52	-	0.69	14.87

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Blind Pass Restoration
Sediment Analysis

Sieve Designation Legend

Sieve #	3/4	5/8	1 1/16	5/16	3/5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Design Depth -8 NAVD88

Area of Influence - Sub Area 4A

Sieve (Phi)	C-16 Sample Cumulative % by Weight Retained	
	#1	#2
-4.25	0.00	0.00
-4	0.00	0.00
-3.5	0.00	0.00
-3	0.00	0.00
-2.5	0.00	0.00
-2	0.00	0.30
-1.5	0.00	0.37
-1	0.11	0.59
-0.5	0.18	0.81
0	0.31	1.38
0.5	0.64	3.86
1	3.66	6.06
1.5	5.80	10.40
2	8.14	16.03
2.5	13.45	30.06
3	59.73	65.33
3.5	91.21	93.15
3.75	96.04	96.60
4	97.87	97.90

C-16 Sample Cumulative % by Weight Passing	
#1	#2
100.00	100.00
100.00	100.00
100.00	100.00
100.00	100.00
100.00	100.00
100.00	100.00
100.00	99.70
100.00	99.63
99.89	99.41
99.82	99.19
99.69	98.62
99.36	96.14
96.34	93.94
94.20	89.60
91.86	83.97
86.55	69.94
40.27	34.67
8.79	6.85
3.96	3.40
2.13	2.10

Composite C-16	
Weighted Composite (% Retained)	Weighted Composite (% Passing)
0.00	100.00
0.00	100.00
0.00	100.00
0.00	100.00
0.06	99.94
0.08	99.92
0.21	99.79
0.31	99.69
0.53	99.47
1.30	98.70
4.15	95.85
6.74	93.26
9.76	90.24
16.85	83.15
60.88	39.12
91.61	8.39
96.15	3.85
97.88	2.12

C-16 Sample	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-3.9	-8.75	4.85	79.51%	SP
2	-8.75	-10	1.25	20.49%	SW
Composite	-3.9	-10	6.1	100.00%	

C-16 Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	3.7	3.39	3.24	2.89	2.62	2.53	1.31
2	3.63	3.34	3.17	2.78	2.32	2	0.76
Composite	3.69	3.38	3.23	2.88	2.59	2.44	1.16

C-16 Parameters in Phi Units								Munsell Color	Silt %	Carbonate %
Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	σ	α	Kurtosis (β)			
1	2.89	0.13	2.81	0.14	0.64	-1.98	8.73	Wet 10YR-7/2	2.13	12
2	2.78	0.15	2.58	0.17	0.86	-1.89	8.08	Wet 10YR-7/2	2.10	13.8
Composite	2.88	0.14	2.70	0.15	0.69	-1.81	8.78	Wet 10YR-7/2	2.12	12.37

Phi 95 1.16
Phi 84 2.44
Phi 75 2.59
Phi 50 2.88
Phi 25 3.23
Phi 16 3.38
Phi 5 3.69

Area of Influence - Sub Area 4A & 4B

Sieve (Phi)	BP-8A Sample Cumulative % by Weight Retained	
	#1	#2
-4.25	0.00	0.00
-4	0.00	0.00
-3.5	0.00	0.00
-3	0.00	0.00
-2.5	0.00	0.00
-2	0.76	0.00
-1.5	1.94	0.04
-1	3.56	0.28
-0.5	5.70	0.75
0	7.19	1.41
0.5	8.49	2.04
1	9.80	3.04
1.5	11.39	4.64
2	14.25	9.77
2.5	24.98	28.94
3	54.98	70.68
3.5	82.10	92.42
3.75	85.62	94.98
4	87.34	96.17

BP-8A Sample Cumulative % by Weight Passing	
#1	#2
100.00	100.00
100.00	100.00
100.00	100.00
100.00	100.00
100.00	100.00
99.24	100.00
98.06	99.96
96.44	99.72
94.30	99.25
92.81	98.59
91.51	97.96
90.20	96.96
88.61	95.36
85.75	90.23
75.02	71.06
45.02	29.32
17.90	7.58
14.38	5.02
12.66	3.83

Composite BP-8A	
Weighted Composite (% Retained)	Weighted Composite (% Passing)
0.00	100.00
0.00	100.00
0.00	100.00
0.00	100.00
0.00	100.00
0.50	99.50
1.28	98.72
2.42	97.58
3.98	96.02
5.18	94.82
6.24	93.76
7.45	92.55
9.04	90.96
12.69	87.31
26.36	73.64
60.45	39.55
85.69	14.31
88.88	11.12
90.42	9.58

BP-8A Sample	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-1.1	-6.9	5.8	65.17%	SC
2	-6.9	-10	3.1	34.83%	SP
Composite	-1.1	-10	8.9	100.00%	-

BP-8A Moment Statistics and Properties in Phi Units							
Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1	3.63	3.37	2.92	2.5	2.08	-0.66	
2	3.75	3.31	3.1	2.75	2.4	2.16	1.54
Composite	3.47	3.29	2.85	2.45	2.12	-0.07	

BP-8A Parameters in Phi Units								Munsell Color	Silt %	Carbonate %
Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	σ	α	Kurtosis (β)			
1	2.92	0.13	2.46	0.18	1.25	-2.09	6.86	Wet 10YR-6/1	12.66	10.7
2	2.75	0.15	2.64	0.16	0.69	-2.11	10.61	Wet 10YR-6/1	3.83	
Composite	2.85	0.14	2.28	0.21	1.05	-1.61	7.00	Wet 10YR-6/1	9.58	

Phi 95 -0.07
Phi 84 2.12
Phi 75 2.45
Phi 50 2.85
Phi 25 3.29
Phi 16 3.47

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Sieve Designation Legend

Blind Pass Restoration
Sediment Analysis

Sieve #	3/4	5/8	1 1/16	5/16	3/5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Design Depth -8 NAVD88

Area of Influence - Sub Area 4B

Core

Sieve (Phi)	BP-11		
	Sample Cumulative % by Weight Retained		
	#1	#2	#3
-4.25	0.00	0.00	0.00
-4	0.00	0.00	0.00
-3.5	0.00	0.00	0.00
-3	0.00	0.00	0.00
-2.5	0.00	0.01	0.15
-2	0.12	0.06	0.31
-1.5	0.18	0.12	0.60
-1	0.27	0.37	0.80
-0.5	0.62	0.71	1.31
0	1.09	0.94	1.83
0.5	2.07	1.43	2.62
1	3.92	2.04	3.52
1.5	7.31	3.19	4.81
2	15.95	5.35	7.37
2.5	44.04	11.08	20.43
3	78.43	27.99	67.14
3.5	89.44	45.00	90.15
3.75	91.25	47.50	91.48
4	91.90	49.26	92.22

BP-11			
Sample Cumulative % by Weight Passing			
	#1	#2	#3
	100.00	100.00	100.00
	100.00	100.00	100.00
	100.00	100.00	100.00
	100.00	100.00	100.00
	100.00	100.00	100.00
	100.00	99.99	99.85
	99.88	99.94	99.69
	99.82	99.88	99.40
	99.73	99.63	99.20
	99.38	99.29	98.69
	98.91	99.06	98.17
	97.93	98.57	97.38
	96.08	97.96	96.48
	92.69	96.81	95.19
	84.05	94.65	92.63
	55.96	88.92	79.57
	21.57	72.01	32.86
	10.56	55.00	9.85
	8.75	52.50	8.52
	8.10	50.74	7.78

Composite BP-11	
Weighted Composite (% Retained)	Weighted Composite (% Passing)
0.00	100.00
0.00	100.00
0.00	100.00
0.00	100.00
0.00	100.00
0.04	99.97
0.15	99.85
0.26	99.74
0.41	99.59
0.79	99.21
1.22	98.78
2.07	97.93
3.47	96.53
5.97	94.03
12.03	87.97
32.53	67.47
66.30	33.70
81.10	18.90
82.94	17.06
83.82	16.18

Phi 95 1.31
Phi 84 2.10
Phi 75 2.32
Phi 50 2.76
Phi 25 3.29

BP-11	Depth Interval (NAVD 88)		Representative Values		
	Top	Bottom	Length (ft)	Percent	USCS
1	-3.2	-7.2	4	58.82%	SP-SC
2	-7.2	-8.5	1.3	19.12%	CL
3	-8.5	-10	1.5	22.06%	SP-SC
Composite	-3.2	-10	6.8	100.00%	

BP-11 Moment Statistics and Properties in Phi Units

Sample	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
1		3.25	2.95	2.59	2.16	2	1.16
2					2.91	2.65	1.92
3		3.37	3.17	2.82	2.55	2.33	1.54
Composite			3.29	2.76	2.32	2.10	1.31

Parameters in Phi Units

BP-11	Sample	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
2.00	-	-	2.75	0.15	0.82	-2.34	10.95	Wet 10YR-6/1	50.74	16.6	
3.00	-0.98	1.97	2.66	0.16	0.76	-3.25	17.89	Wet 10YR-6/1	7.78	10.7	
Composite	2.76	0.15	2.11	0.23	0.78	-0.19	5.72		16.18	12.06	

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Blind Pass Restoration
Sediment Analysis

Sieve #	3/4	5/8	1 1/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Sieve Designation Legend

Sub Area Composites

Sieve (Phi)	Area 1 Composite Cumulative % by Weight Retained			Area 1 Composite Cumulative % by Weight Passing			Area 1 Weighted Composite (% Retained) / Weighted Composite (% Passing)	
	C1	C23	C22	C1	C23	C22		
-4.25	0.00	0.00	0.00	100.00	100.00	100.00	0.00	100.00
-4	0.00	0.00	1.12	100.00	100.00	98.88	0.56	99.44
-3.5	1.14	0.00	1.77	98.86	100.00	98.23	1.42	98.58
-3	7.09	0.68	3.73	92.91	99.32	96.27	5.23	94.77
-2.5	13.17	2.15	6.02	86.83	97.85	93.98	9.28	90.72
-2	21.29	4.13	9.23	78.71	95.87	90.77	14.77	85.23
-1.5	30.72	6.65	14.26	69.28	93.35	85.74	21.80	78.20
-1	39.37	9.89	20.27	60.63	90.11	79.73	28.98	71.02
-0.5	50.41	15.20	29.46	49.59	84.80	70.54	38.92	61.08
0	61.00	21.89	39.12	39.00	78.11	60.88	48.94	51.06
0.5	71.25	31.14	48.76	28.75	68.86	51.24	58.86	41.14
1	80.83	42.56	58.20	19.17	57.44	41.80	68.42	31.58
1.5	88.00	53.62	66.74	12.00	46.38	33.26	76.39	23.61
2	92.99	68.19	75.85	7.01	31.81	24.15	83.71	16.29
2.5	96.73	88.78	88.77	3.27	11.22	11.23	92.52	7.48
3	98.78	96.93	96.92	1.22	3.07	3.08	97.80	2.20
3.5	99.43	98.55	98.66	0.57	1.45	1.34	99.02	0.98
3.75	99.55	98.85	98.87	0.45	1.15	1.13	99.19	0.81
4	99.66	99.12	99.07	0.34	0.88	0.93	99.35	0.65

Composite	Area of Influence (SF)	Percent of Influence	Depth of Excavation plus 2' (NAVD88)	USCS
C1	119,172	47.10%	-12	SP
C23	7,131	2.82%	-12	SP
C22	126,701	50.08%	-12	SP
Composite	253,004	100.00%	-12	SP

Phi 95 -3.03

Phi 84 -1.91

Phi 75 -1.28

Phi 50 0.05

Phi 25 1.41

Phi 16 2.02

Phi 5 2.74

Area 1 Moment Statistics and Properties in Phi Units							
Composite	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
C1	2.27	1.22	0.70	-0.52	-1.80	-2.33	-3.18
C23	2.88	2.38	2.17	1.34	0.17	-0.44	-1.83
C22	2.88	2.32	1.95	0.57	-0.74	-1.36	-2.72
Composite	2.74	2.02	1.41	0.05	-1.28	-1.91	-3.03

Area 1 Parameters in Phi Units										
Composite	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
C1	-0.52	1.43	-0.51	1.42	1.65	0.14	2.36	DRY 10YR-7/1	0.34	-
C23	1.34	0.40	1.02	0.49	1.42	-0.78	3.11	DRY 10YR-7/1	0.88	-
C22	-0.98	1.97	0.42	0.75	1.71	-0.44	2.54	DRY 10YR-7/1	0.93	-
Composite	0.05	0.96	-2.42	5.34	2.41	7.08	10.67	DRY 10YR-7/1	0.65	-

Sieve (Phi)	Area 2 Composite Cumulative % by Weight Retained			Area 2 Composite Cumulative % by Weight Passing			Area 2 Weighted Composite (% Retained) / Weighted Composite (% Passing)	
	C23	C2	C3	C23	C2	C3		
-4.25	0.00	0.00	0.00	100.00	100.00	100.00	0.00	100.00
-4	0.00	0.00	4.47	100.00	100.00	95.53	2.24	97.76
-3.5	0.00	0.87	8.14	100.00	99.13	91.86	4.10	95.90
-3	0.68	2.29	11.78	99.32	97.71	88.22	6.29	93.71
-2.5	2.15	5.66	14.96	97.85	94.34	85.04	8.66	91.34
-2	4.13	10.63	18.22	95.87	89.37	81.78	11.37	88.63
-1.5	6.65	16.75	22.55	93.35	83.25	77.45	14.89	85.11
-1	9.89	23.69	27.66	90.11	76.31	72.34	19.18	80.82
-0.5	15.20	31.93	34.59	84.80	68.07	65.41	25.38	74.62
0	21.89	39.45	41.27	78.11	60.55	58.73	32.09	67.91
0.5	31.14	46.94	47.90	68.86	53.06	52.10	39.98	60.02
1	42.56	55.58	54.92	57.44	44.42	45.08	49.11	50.89
1.5	53.62	66.49	61.78	46.38	33.51	38.22	58.07	41.93
2	68.19	77.68	69.15	31.81	22.32	30.85	68.94	31.06
2.5	88.78	88.95	77.93	11.22	11.05	22.07	83.35	16.65
3	96.93	93.41	88.02	3.07	6.59	11.98	92.37	7.63
3.5	98.55	98.33	94.77	1.45	1.67	5.23	96.65	3.35
3.75	98.85	99.15	95.58	1.15	0.85	4.42	97.22	2.78
4	99.12	99.31	96.07	0.88	0.69	3.93	97.60	2.40

Composite	Area of Influence (SF)	Percent of Influence	Depth of Excavation plus 2' (NAVD88)	USCS
C23	27,493	27.92%	-12	SP
C2	50,704	51.49%	-12	SP
C3	20,271	20.59%	-12	-
Composite	98,467	100.00%	-12	-

Phi 95 -3.29

Phi 84 -1.37

Phi 75 -0.53

Phi 50 1.05

Phi 25 2.21

Phi 16 2.54

Phi 5 3.31

Area 2 Moment Statistics and Properties in Phi Units							
Composite	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
C23	2.88	2.38	2.17	1.34	0.17	-0.44	-1.83
C2	3.16	2.28	1.88	0.68	-0.92	-1.56	-2.60
C3	3.57	2.80	2.40	0.65	-1.26	-2.34	-3.93
Composite	3.31	2.54	2.21	1.05	-0.53	-1.37	-3.29

Area 2 Parameters in Phi Units										
Composite	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
C23	1.34	0.40	1.02	0.49	1.42	-0.78	3.11	Dry-10Yr-7/1	0.88	-
C2	0.68	0.63	0.43	0.74	1.75	-0.28	2.18	Dry-10Yr-7/1	0.69	-
C3	-0.98	1.97	0.22	0.49	2.18	-0.40	2.16	-	3.93	-
Composite	1.05	0.48	0.70	0.62	1.96	-0.64	2.76	-	2.40	-

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Blind Pass Restoration
Sediment Analysis

Sieve #	3/4	5/8	11/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Sieve Designation Legend

Sub Area Composites

Sieve (Phi)	Area 3A Composite Cumulative % by Weight Retained			Area 3A Composite Cumulative % by Weight Passing			Area 3A Weighted Composite (% Retained)		Area 3A Weighted Composite (% Passing)	
	C3	BP5	C4	C3	BP5	C4				
-4.25	0.00	0.00	0.00	100.00	100.00	100.00	0.00	100.00		
-4	4.47	0.33	0.00	95.53	99.67	100.00	2.35	97.65		
-3.5	8.14	1.28	0.00	91.86	98.72	100.00	4.46	95.54		
-3	11.78	3.35	0.25	88.22	96.65	99.75	6.90	93.10		
-2.5	14.96	5.47	0.31	85.04	94.53	99.69	9.07	90.93		
-2	18.22	8.13	0.51	81.78	91.87	99.49	11.46	88.54		
-1.5	22.55	11.76	0.98	77.45	88.24	99.02	14.71	85.29		
-1	27.66	16.12	1.50	72.34	83.88	98.50	18.55	81.45		
-0.5	34.59	21.32	2.16	65.41	78.68	97.84	23.57	76.43		
0	41.27	26.17	2.96	58.73	73.83	97.04	28.40	71.60		
0.5	47.90	30.82	3.97	52.10	69.18	96.03	33.20	66.80		
1	54.92	35.81	5.86	45.08	64.19	94.14	38.50	61.50		
1.5	61.78	41.76	9.63	38.22	58.24	90.37	44.40	55.60		
2	69.15	49.87	20.14	30.85	50.13	79.86	52.69	47.31		
2.5	77.93	60.03	49.39	22.07	39.97	50.61	66.62	33.38		
3	88.02	74.63	78.77	11.98	25.37	21.23	82.38	17.62		
3.5	94.77	88.70	96.14	5.23	11.30	3.86	93.52	6.48		
3.75	95.58	91.48	97.30	4.42	8.52	2.70	94.92	5.08		
4	96.07	92.42	97.99	3.93	7.58	2.01	95.57	4.43		

Phi 95 -3.39
Phi 84 -1.33
Phi 75 -0.35
Phi 50 1.84
Phi 25 2.77
Phi 16 3.07
Phi 5 3.78

Composite	Area of Influence (SF)	Percent of Influence	Depth of Excavation plus 2' (NAVD88)	USCS
C3	32,555	50.67%	-12	-
BP5	16,682	25.97%	-12	-
C4	15,009	23.36%	-12	SP
Composite	64,245	100.00%	-12	-

Area 3A Moment Statistics and Properties in Phi Units							
Composite	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
C3	3.57	2.80	2.40	0.65	-1.26	-2.34	-3.93
BP5		3.33	3.01	2.01	-0.12	-1.01	-2.61
C4	3.47	3.15	2.94	2.51	2.08	1.80	0.77
Composite	3.78	3.07	2.77	1.84	-0.35	-1.33	-3.39

Area 3A Parameters in Phi Units										
Composite	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
C3	0.65	0.64	0.22	0.86	2.18	-0.40	2.16	-	3.93	-
BP5	2.01	0.25	1.09	0.47	1.91	-0.63	2.53	-	7.58	21.37
C4	-0.98	1.97	2.31	0.20	0.90	-2.18	11.23	-	2.01	-
Composite	1.84	0.28	1.11	0.46	2.16	-0.81	2.69	-	4.43	-

Sieve (Phi)	Area 3B Composite Cumulative % by Weight Retained				Area 3B Composite Cumulative % by Weight Passing				Area 3B Weighted Composite (% Retained)		Area 3B Weighted Composite (% Passing)	
	BP5	C4	C14	BP6	BP5	C4	C14	BP6				
-4.25	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	0.00	100.00		
-4	0.00	0.00	0.62	0.91	100.00	100.00	99.38	99.09	0.53	99.47		
-3.5	0.64	0.00	0.90	3.21	99.36	100.00	99.10	96.79	1.52	98.48		
-3	2.44	0.25	1.97	5.42	97.56	99.75	98.03	94.58	2.99	97.01		
-2.5	4.58	0.31	2.77	6.78	95.42	99.69	97.23	93.22	4.11	95.89		
-2	6.48	0.51	3.32	8.37	93.52	99.49	96.68	91.63	5.19	94.81		
-1.5	9.71	0.98	4.09	9.96	90.29	99.02	95.91	90.04	6.62	93.38		
-1	13.39	1.50	5.18	11.90	86.61	98.50	94.82	88.10	8.37	91.63		
-0.5	18.06	2.16	6.42	14.73	81.94	97.84	93.58	85.27	10.65	89.35		
0	22.55	2.96	7.91	17.36	77.45	97.04	92.09	82.64	12.95	87.05		
0.5	26.98	3.97	9.72	20.19	73.02	96.03	90.28	79.81	15.45	84.55		
1	31.90	5.86	12.58	23.78	68.10	94.14	87.42	76.22	18.78	81.22		
1.5	37.98	9.63	16.32	29.10	62.02	90.37	83.68	70.90	23.45	76.55		
2	46.12	20.14	21.99	37.55	53.88	79.86	78.01	62.45	31.09	68.91		
2.5	55.97	49.39	32.20	54.05	44.03	50.61	67.80	45.95	45.76	54.24		
3	71.84	78.77	42.02	79.29	28.16	21.23	57.98	20.71	64.27	35.73		
3.5	87.41	96.14	72.06	92.28	12.59	3.86	27.94	7.72	84.52	15.48		
3.75	90.50	97.30	75.32	94.07	9.50	2.70	24.68	5.93	86.99	13.01		
4	91.54	97.99	76.75	94.72	8.46	2.01	23.25	5.28	87.99	12.01		

Phi 95 -2.09
Phi 84 0.58
Phi 75 1.60
Phi 50 2.61
Phi 25 3.27
Phi 16 3.49

Composite	Area of Influence (SF)	Percent of Influence	Depth of Excavation plus 2' (NAVD88)	USCS
BP5	6,180	17.08%	-11	-
C4	4,592	12.69%	-11	SP
C14	13,286	36.72%	-11	-
BP6	12,123	33.51%	-11	-
Composite	36,182	100.00%	-11	-

Area 3B Moment Statistics and Properties in Phi Units							
Composite	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
BP5	0.00	3.39	3.10	2.20	0.28	-0.72	-2.39
C4	3.47	3.15	2.94	2.51	2.08	1.80	0.77
C14			3.73	3.13	2.15	1.46	-1.08
BP6		3.18	2.92	2.38	1.12	-0.26	-3.09
Composite	3.49	3.27	2.61	1.60	0.58	-2.09	-

Area 3B Parameters in Phi Units										
Composite	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
BP5	2.20	0.22	1.09	0.47	1.91	-0.63	2.53	-	8.46	21.37
C4	2.51	0.18	2.31	0.20	0.90	-2.18	11.23	Dry 10YR-7/1	2.01	-
C14	3.13	0.11	1.68	0.31	1.50	-0.95	5.01	-	23.25	-
BP6	2.38	0.19	1.48	0.36	1.87	-1.36	4.15	-	5.28	-
Composite	2.61	0.16	2.11	0.23	1.81	-1.50	4.92	-	12.01	-

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Blind Pass Restoration
Sediment Analysis

Sieve #	3/4	5/8	1 1/16	5/16	3/5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Sieve Designation Legend

Sub Area Composites

Sieve (Phi)	Area 3C				Area 3C				Area 3C	
	Composite Cumulative % by Weight Retained				Composite Cumulative % by Weight Passing				Weighted Composite (% Retained)	Weighted Composite (% Passing)
	C14	BP6	C15	BP7	C14	BP6	C15	BP7		
-4.25	0.00	0.00	0.00	0.00	100.00	100.00	0.00	100.00	0.00	100.00
-4	0.00	1.02	0.92	2.06	100.00	98.98	99.08	97.94	1.00	99.00
-3.5	0.00	3.26	1.33	2.06	100.00	96.74	98.67	97.94	1.72	98.28
-3	0.22	5.94	2.62	2.62	99.78	94.06	97.38	97.38	2.97	97.03
-2.5	0.36	7.45	3.62	3.44	99.64	92.55	96.38	96.56	3.87	96.13
-2	0.57	9.24	4.27	4.24	99.43	90.76	95.73	95.76	4.77	95.23
-1.5	1.02	11.02	4.87	5.14	98.98	88.98	95.13	94.86	5.73	94.27
-1	1.81	13.19	5.69	6.28	98.19	86.81	94.31	93.72	6.98	93.02
-0.5	2.78	16.34	6.63	7.50	97.22	83.66	93.37	92.50	8.60	91.40
0	4.05	19.27	7.76	8.79	95.95	80.73	92.24	91.21	10.30	89.70
0.5	5.73	22.41	9.37	10.16	94.27	77.59	90.63	89.84	12.28	87.72
1	8.33	26.37	12.28	11.72	91.67	73.63	87.72	88.28	15.09	84.91
1.5	12.07	32.22	16.92	13.91	87.93	67.78	83.08	86.09	19.28	80.72
2	17.76	41.34	20.21	19.29	82.24	58.66	79.79	80.71	32.96	67.04
2.5	27.94	57.09	28.36	36.03	72.06	42.91	73.66	63.97	51.63	48.37
3	36.28	79.37	46.76	68.29	63.72	20.63	63.72	31.71	71.24	28.76
3.5	69.51	91.88	79.06	87.72	30.49	8.12	0.94	12.28	87.56	12.44
3.75	73.06	93.76	99.25	90.68	26.94	6.24	0.75	9.32	89.64	10.36
4	74.61	94.43	99.31	91.81	25.39	5.57	0.69	8.19	90.47	9.53

Phi 95 -1.88
Phi 84 1.11
Phi 75 1.71
Phi 50 2.46
Phi 25 3.12
Phi 16 3.39

Composite	Area of Influence (SF)	Percent of Influence	Depth of Excavation plus 2' (NAVD88)	USCS
C14	8,306	23.23%	-10	-
BP6	9,798	27.40%	-10	-
C15	9,234	25.83%	-10	-
BP6	8,417	23.54%	-10	-
Composite	35,755	100.00%	-10	-

Area 3C Moment Statistics and Properties in Phi Units							
Composite	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
C14				3.21	2.36	1.85	0.28
BP6		3.19	2.90	2.28	0.83	-0.55	-3.17
C15	2.94	2.59	2.40	2.00	1.62	1.40	-1.42
BP7		3.40	3.17	2.72	2.17	1.69	-1.58
Composite		3.39	3.12	2.46	1.71	1.11	-1.88

Area 3C Parameters in Phi Units										
Composite	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
C14	3.21	0.11	1.85	0.28	1.17	-0.08	3.70	-	25.39	-
BP6	2.28	0.21	1.35	0.39	1.92	-1.21	3.70	-	5.57	-
C15	2.00	0.25	1.71	0.31	1.30	-2.63	10.52	-	0.69	14.87
BP7	2.72	0.15	2.00	0.25	1.54	-2.12	8.12	-	8.19	19.00
Composite	2.46	0.18	2.11	0.23	1.68	-1.74	6.28	-	9.53	-

Sieve (Phi)	Area 4A				Area 4A				Area 4A	
	Composite Cumulative % by Weight Retained				Composite Cumulative % by Weight Passing				Weighted Composite (% Retained)	Weighted Composite (% Passing)
	BP7	C15	BP8A	C16	BP7	C15	BP8A	C16		
-4.25	0.00	0.00	0.00	0.00	100.00	100.00	0.00	100.00	0.00	100.00
-4	2.06	0.92	0.00	0.00	97.94	99.08	100.00	100.00	0.60	99.40
-3.5	2.06	1.33	0.00	0.00	97.94	98.67	100.00	100.00	0.64	99.36
-3	2.62	2.62	0.00	0.00	97.38	97.38	100.00	100.00	0.89	99.11
-2.5	3.44	3.62	0.00	0.00	96.56	96.38	100.00	100.00	1.19	98.81
-2	4.24	4.27	0.50	0.06	95.76	95.73	99.50	99.94	1.69	98.31
-1.5	5.14	4.87	1.28	0.08	94.86	95.13	98.72	99.92	2.33	97.67
-1	6.28	5.69	2.42	0.21	93.72	94.31	97.58	99.79	3.23	96.77
-0.5	7.50	6.63	3.98	0.31	92.50	93.37	96.02	99.69	4.35	95.65
0	8.79	7.76	5.18	0.53	91.21	92.24	94.82	99.47	5.37	94.63
0.5	10.16	9.37	6.24	1.30	89.84	90.63	93.76	98.70	6.50	93.50
1	11.72	12.28	7.45	4.15	88.28	87.72	92.55	95.85	8.28	91.72
1.5	13.91	16.92	9.04	6.74	86.09	83.08	90.96	93.26	10.49	89.51
2	19.29	20.21	12.69	9.76	80.71	79.79	87.31	90.24	17.03	82.97
2.5	36.03	28.36	26.36	16.85	63.97	58.66	73.64	83.15	31.66	68.34
3	68.29	46.76	60.45	60.88	31.71	3.24	39.55	39.12	65.69	34.31
3.5	87.72	79.06	85.69	91.61	12.28	0.94	14.31	8.39	88.58	11.42
3.75	90.68	99.25	88.88	96.15	9.32	0.75	11.12	3.85	91.73	8.27
4	91.81	99.31	90.42	97.88	8.19	0.69	9.58	2.12	93.07	6.93

Phi 95 -0.18
Phi 84 1.92
Phi 75 2.27
Phi 50 2.77
Phi 25 3.20
Phi 16 3.40

Composite	Area of Influence (SF)	Percent of Influence	Depth of Excavation plus 2' (NAVD88)	USCS
BP7	21,965	25.40%	-10	-
C15	7,519	8.70%	-10	-
BP8A	39,292	45.44%	-10	-
BP6	17,685	20.45%	-10	-
Composite	86,461	100.00%	-10	-

Area 4A Moment Statistics and Properties in Phi Units							
Composite	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
BP7		3.40	3.17	2.72	2.17	1.69	-1.58
C15	2.94	2.59	2.40	2.00	1.62	1.40	-1.42
BP8A		3.47	3.29	2.85	2.45	2.12	-0.07
C16	3.69	3.38	3.23	2.88	2.59	2.44	1.16
Composite		3.40	3.20	2.77	2.27	1.92	-0.18

Area 4A Parameters in Phi Units										
Composite	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
BP7	2.72	0.15	2.00	0.25	1.54	-2.12	8.12	-	8.19	-
C15	2.00	0.25	1.71	0.31	1.30	-2.63	10.52	-	0.69	-
BP8A	2.85	0.14	2.28	0.21	1.05	-1.61	7.00	Wet 10YR-6/1	9.58	-
C16	2.88	0.14	2.70	0.15	0.69	-1.81	8.78	Wet - 10YR-7/2	2.12	12.37
Composite	2.77	0.15	2.53	0.17	1.26	-2.42	10.85	-	6.93	-

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Blind Pass Restoration
Sediment Analysis

Sieve #	3/4	5/8	1 1/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Sieve Designation Legend

Sub Area Composites

Sieve (Phi)	Area 4B Composite Cumulative % by Weight Retained			Area 4B Composite Cumulative % by Weight Passing			Area 4B Weighted Composite (% Retained)		Area 4B Weighted Composite (% Passing)	
	BP8A	BP7	BP11	BP8A	BP7	BP11				
-4.25	0.00	0.00	0.00	100.00	100.00	100.00	0.00	100.00		
-4	0.00	2.06	0.00	100.00	97.94	100.00	0.32	99.68		
-3.5	0.00	2.06	0.00	100.00	97.94	100.00	0.32	99.68		
-3	0.00	2.62	0.00	100.00	97.38	100.00	0.41	99.59		
-2.5	0.00	3.44	0.04	100.00	96.56	99.97	0.56	99.44		
-2	0.50	4.24	0.15	99.50	95.76	99.85	0.85	99.15		
-1.5	1.28	5.14	0.26	98.72	94.86	99.74	1.21	98.79		
-1	2.42	6.28	0.41	97.58	93.72	99.59	1.70	98.30		
-0.5	3.98	7.50	0.79	96.02	92.50	99.21	2.44	97.56		
0	5.18	8.79	1.22	94.82	91.21	98.78	3.16	96.84		
0.5	6.24	10.16	2.07	93.76	89.84	97.93	4.12	95.88		
1	7.45	11.72	3.47	92.55	88.28	96.53	5.51	94.49		
1.5	9.04	13.91	5.97	90.96	86.09	94.03	7.79	92.21	Phi 95	0.82
2	12.69	19.29	12.03	87.31	80.71	87.97	13.28	86.72	Phi 84	2.07
2.5	26.36	36.03	32.53	73.64	63.97	67.47	31.89	68.11	Phi 75	2.31
3	60.45	68.29	66.30	39.55	31.71	33.70	65.48	34.52	Phi 50	2.77
3.5	85.69	87.72	81.10	14.31	12.28	18.90	83.01	16.99	Phi 25	3.27
3.75	88.88	90.68	82.94	11.12	9.32	17.06	85.28	14.72	Phi 16	3.61
4	90.42	91.81	83.82	9.58	8.19	16.18	86.32	13.68		

Composite	Area of Influence (SF)	Percent of Influence	Depth of Excavation plus 2' (NAVD88)	USCS
BP8A	8,381	19.22%	-10	-
BP7	6,752	15.49%	-10	-
BP11	28,471	65.29%	-10	-
Composite	43,603	100.00%	-10	-

Area 4B Moment Statistics and Properties in Phi Units							
Composite	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
BP8A		3.47	3.29	2.85	2.45	2.12	-0.07
BP7		3.40	3.17	2.72	2.17	1.69	-1.58
BP11		0.00	3.29	2.76	2.32	2.10	1.31
Composite		3.61	3.27	2.77	2.31	2.07	0.82

Area 4B Parameters in Phi Units										
Composite	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
BP8A	2.85	0.14	2.28	0.21	1.05	-1.61	7.00	Wet 10YR-6/1	9.58	
BP7	2.72	0.15	2.00	0.25	1.54	-2.12	8.12	-	8.19	19.00
BP11	-0.98	1.97	2.11	0.23	0.78	-0.19	5.72	-	16.18	12.06
Composite	2.77	0.15	2.69	0.15	1.10	-2.11	11.36	-	13.68	-



TITLE: BLIND PASS RESTORATION
 SEDIMENT SUB AREAS
 CORE LOCATIONS
 AND AREA OF INFLUENCE

NATURAL RESOURCES DIV
 1500 Monroe St. Fort Myers, Florida 33901
 Ph. (239) 479-8109/10 Fax. (239) 479-8108

LEE COUNTY
 SOUTHWEST FLORIDA

FILE: S:\NATRES\MARINE\BEACHMANAGEMENT\
 BLINDPASS\DRAWINGS\1.C. SUBAREAS.dwg
DESIGN:
DRAWN:
APPROVED:

SCALE:
 1" = 600'

SHEET:
 01 OF 01

LEGEND
 ● CORE LOCATION
 □ AND DESIGNATION



ELEVATIONS REFERENCE NAVD88
 DATE OF PHOTOGRAPH: JAN. 2005

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Blind Pass Restoration
Project Volumes

Sub Area	Proposed Depth of Cut Plus DEP Required 2'	Station	Design Depth Area (SF)	2 Ft. Buffer Area (SF)	Distance to Next (ft)	Volume (cyd)	Total Volume per Sub Area
Area 1	12	0+00	0				45,195
					96	2042.844	
		0+96	628.3	520.8			
					404	16550.53	
Area 2	12	5+00	665.1	398			37,443
					487	26601.92	
		9+87	1548	338.6			
Area 3A	12	13+15	1142.6	298.8			17,767
					328	20214.52	
		16+42	1109.2	294.4			
Area 3B	11				252	10715.6	7,440
		18+94	673.1	219.5			
					253	7051.204	
		21+47	447.2	165.2			
Area 3C	10	21+47	404.3	165.2			7,041
					358	7440.433	
Area 4A	10	25+05	341.7	163.3			13,343
					358	7041.33	
Area 4B	10	28+63	388.7	168.4			13,074
					217	4725.376	
		30+80	441.3	177.5			
					218	4560.641	
		32+98	348.5	162.4			
Area 4B	10				218	4057.222	13,074
		35+16	335	159.1			
					0	0	
		0+73	984.1	382.2			
Area 4B	10				203	8358.713	13,074
		2+76	604.9	252.3			
					251	4715.081	
		5+27	79.8	77.4			
					0		

Total	141,303
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- Notes:**
1.0 Areas based off Profiles from McKim and Creed Survey May 05.
2.0 Drawings found at S:\NatRes\BlindPass\Drawings\Base.dwg

Compatibility Analysis

Sub Area Designation	Representative Composite(s)	Area of Influence (sf)	Percent of Influence by Area	Volume (cyds)
SUB AREA 1	C1	119,172	47.10%	45,195
	C23	7,131	2.82%	
	C22	126,701	50.08%	
	TOTAL	253,004		
	OVERFILL RATIO			
EQUIVALENT FILL			45,195	
SUB AREA 2	C23	27,493	27.92%	37,443
	C2	50,704	51.49%	
	C3	20,271	20.59%	
	TOTAL	98,467		
	OVERFILL RATIO			
EQUIVALENT FILL			37,443	
SUB AREA 3A	C3	32,555	50.67%	17,767
	BP5	16,682	25.97%	
	C4	15,009	23.36%	
	TOTAL	64,245		
	OVERFILL RATIO			
EQUIVALENT FILL			17,767	
SUB AREA 3B	BP5	6,180	17.08%	7,440
	C4	4,592	12.69%	
	C14	13,286	36.72%	
	BP6	12,123	33.51%	
	TOTAL	36,182		
	OVERFILL RATIO			
EQUIVALENT FILL			5,535	

Subarea Designation	Representative Composite(s)	Area of Influence (sf)	Percent of Influence by Area	Volume (cyds)
SUB AREA 3C	C14	8,306	23.23%	7,041
	BP6	9,798	27.40%	
	C15	9,234	25.83%	
	BP7	8,417	23.54%	
	TOTAL	35,755		
	OVERFILL RATIO			
EQUIVALENT FILL			5,017	
SUB AREA 4A	BP7	21,965	25.40%	13,343
	C15	7,519	8.70%	
	BP8A	39,292	45.44%	
	C16	17,685	20.45%	
	TOTAL	86,461		
	OVERFILL RATIO			
EQUIVALENT FILL			5,359	
SUB AREA 4B	BP8A	8,381	19.22%	13,074
	BP7	6,752	15.49%	
	BP11	28,471	65.29%	
	TOTAL	43,603		
OVERFILL RATIO			3.3	
EQUIVALENT FILL			3,926	

AREA TOTAL (ac)	14.2
VOLUME TOTAL (cyd)	141,303
EQUIVALENT FILL TOTAL (CYD)	120,241
OVERFILL RATIO (PROJECT)	1.2

Beach Compatibility Analysis					
Sub Area	Percent Fines	Volume (cyds)	Volume Fines (cyds)	Overfill Ratio	Equivalent Fill (cyd)
Area 1	1%	45,195	295	1.0	45,195
Area 2	2%	37,443	900	1.0	37,443
Area 3A	4%	17,767	787	1.0	17,767
Area 3B	12%	7,440	893	1.3	5,535
Area 3C	10%	7,041	671	1.4	5,017
Area 4A ¹	7%	13,343	925	2.5	5,359
Area 4B ¹	14%	13,074	1,788	3.3	3,926
Total (cyds)		141,303	6,259	1.2	120,241

Notes:

- 1 Volume estimates include 2 additional feet below design limits as a buffer for construction (Overdredge).
- 2 Fines defined as passing the 230 sieve.
- 3 Equivalent fill defined as material available with a composite mean grain size equivalent to the native sample.

Native Material Vs. Fill Material

Core	Sample	Depth Interval (NAVD 88)		USCS	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Parameters in Phi Units			Munsell Color	Silt %	Carbonate %
		Top	Bottom													Sorting (σ)	Skewness (α)	Kurtosis (β)			
NATIVE	R112	-	-	-	3.52	3.11	2.78	1.92	0.45	-0.27	-1.56	1.92	0.26	1.52	0.35	1.65	-0.81	3.14	-	1.92	-
Fill Material																					
C1	1	1.63	-4.55	SP	2.26	1.35	0.83	-0.45	-1.72	-2.24	-3.42	-0.45	1.37	-0.44	1.36	1.63	0.04	2.17	Dry 10YR-7/1	0.37	-
	2	-4.55	-10.55	SP	2.36	1.22	0.71	-0.42	-1.81	-2.37	-3.23	-0.42	1.34	-0.50	1.41	1.66	0.04	2.31	Dry 10YR-7/1	0.27	-
	3	-10.55	-12	SP	1.58	0.46	-0.06	-1.04	-2.05	-2.45	-3	-0.98	1.97	1.97	0.26	1.40	0.52	2.99	Dry 10YR-7/1	0.50	-
C22	1	3.03	-5.12	SP	2.76	2.27	2.01	0.73	-0.76	-1.6	-3.22	0.73	0.60	0.40	0.76	1.83	-0.65	2.58	Dry 10YR-7/1	0.70	-
	2	-5.12	-12	SP	2.97	2.42	1.84	0.4	-0.72	-1.19	-2.09	0.40	0.76	0.46	0.73	1.58	-0.02	2.15	Dry 10YR-7/1	1.21	-
C23	1	0.63	-5.55	SP	2.81	2.41	2.25	1.7	0.7	0.29	-0.47	1.70	0.31	1.43	0.37	1.06	-0.88	3.66	Dry 10YR-7/1	0.24	-
	2	-5.55	-12	SP	2.97	2.33	1.98	0.89	-0.52	-1.14	-2.33	0.89	0.54	0.63	0.65	1.61	-0.42	2.38	Dry 10YR-7/1	1.49	-
C2	1	0	-4.15	SP	3.38	2.8	2.36	1.64	0.63	-0.02	-1.42	1.64	0.32	1.36	0.39	1.43	-0.91	3.74	Dry 10YR-7/1	1.13	-
	2	-4.15	-8.15	SP	2.73	1.84	1.33	-0.3	-1.53	-2.09	-2.97	-0.30	1.23	-0.15	1.11	1.77	0.07	2.07	Dry 10YR-7/1	0.18	-
	3	-8.15	-12	SP	2.69	1.89	1.41	0.09	-1.26	-1.78	-2.49	0.09	0.94	0.05	0.97	1.64	-0.05	2.18	Dry 10YR-7/1	0.75	-
C3	1	-3	-4.55	SP-SM	3.99	2.94	2.51	1.69	0.7	0.17	-1.16	1.69	0.31	1.60	0.33	1.55	0.10	1.17	Dry 10YR-6/1	4.93	-
	2	-4.55	-8.38	SP	3.03	2.01	1.37	-0.08	-1.5	-2.51	-4.07	-0.08	1.06	-0.19	1.14	2.31	0.10	1.01	Dry 10YR-6/1	0.22	-
	3	-8.38	-11	SP	2.97	2.28	1.68	-0.65	-2.61	-3.27	-4	-0.65	1.57	-0.55	1.46	2.55	-0.05	0.67	Dry 10YR-6/1	0.16	-
	4	-11	-11.6	CL	-	-	-	3.51	3.04	2.8	2.48	3.51	0.09	2.10	0.23	1.11	-1.67	0.33	Dry 10YR-6/1	44.17	24.20
	5	-11.6	-12	SP	3.37	3.01	2.93	2.75	2.56	2.48	2.08	2.75	0.15	2.75	0.15	0.35	0.03	1.43	Dry 10YR-8/1	0.01	7.40
C4	1	-1.7	-4.15	SP	3.49	3.13	2.92	2.52	2.04	1.62	-0.48	2.52	0.17	2.23	0.21	1.19	-2.29	9.14	Dry 10YR-7/1	1.53	-
	2	-4.15	-6.75	SP	3.48	3.07	2.91	2.58	2.19	2.05	1.52	2.58	0.17	2.49	0.18	0.62	-1.75	10.72	Dry 10YR-7/1	2.68	-
	3	-6.75	-10.6	SP	3.45	3.2	2.98	2.44	2.03	1.72	0.87	-0.98	1.97	2.35	0.20	0.84	-1.61	7.39	Dry 10YR-7/1	1.86	-
BP5	1	-2.9	-4.1	SP-SC	-	3.22	2.97	2.63	2.04	1.37	0.04	2.63	0.16	2.25	0.21	1.08	-1.78	6.61	Wet 10YR-6/1	5.56	16.00
	2	-4.1	-7.4	SW	2.69	2.00	1.62	0.20	-1.28	-1.91	-3.10	0.20	0.87	0.08	0.95	1.80	-0.25	2.09	Wet 10YR-7/1	0.07	24.20
	3	-7.4	-9.2	SC	-	-	-	3.39	3.07	2.88	2.50	3.39	0.10	3.08	0.12	0.64	-3.42	19.10	Wet 10YR-6/1	29.96	12.20
	4	-11.1	-12	SW	2.39	1.91	1.22	-0.60	-1.92	-2.36	-3.79	-0.60	1.52	-0.35	1.27	1.81	-0.01	1.97	Wet 10YR-6/3	0.00	16.90
	5	-9.2	-11.1	SC	3.90	3.30	3.05	2.52	1.52	0.63	-1.05	2.52	0.17	1.99	0.25	1.41	-1.30	4.13	Wet 10YR-6/1	4.27	32.30
C14	1	-3.7	-4.4	SP	-	-	-	3.33	2.59	2.18	1.09	3.33	0.10	2.60	0.16	1.02	-1.90	8.39	Dry 10YR-6/1	35.06	-
	2	-4.4	-7.7	SP-SM	-	3.45	3.23	2.62	1.76	1.16	-0.47	2.62	0.16	2.25	0.21	1.34	-1.43	4.90	Dry 10YR-7/1	10.25	-
	3 ¹	-7.7	-10.2	CL	-	-	-	3.51	3.04	2.8	2.48	3.51	0.09	2.98	0.13	0.63	-3.14	18.39	Dry 10YR-6/1	44.17	24.20
	4 ²	-10.2	-11	SW	3.26	2.8	2.56	1.12	-2.07	-3.01	-	1.12	0.46	0.29	0.82	2.24	-0.17	1.68	Wet 10YR-7/1	1.16	35.50
BP6	1	-1.8	-3.5	SC	-	3.73	3.42	2.92	2.37	1.95	0.77	2.92	0.13	2.58	0.17	0.94	-1.73	7.00	Wet 10YR-7/1	13.65	18.90
	2	-3.5	-5.1	SW	3.42	2.90	2.64	1.89	0.11	-0.75	-2.25	1.89	0.27	1.25	0.42	1.74	-0.88	2.81	Wet 10YR-7/1	2.23	25.50
	3	-7.9	-8.5	SC	-	-	3.45	2.87	2.51	2.25	1.63	2.87	0.14	2.64	0.16	0.69	-2.11	10.61	Wet 10YR-6/1	20.05	13.50
	4	-9.1	-11	SP	3.48	3.16	2.96	2.71	2.41	2.21	1.75	2.71	0.15	2.58	0.17	0.83	-4.70	32.13	Wet 10YR-6/1	2.94	6.80
	5	-5.1	-7.9	SW	2.92	2.29	1.98	0.85	-1.65	-2.92	-3.85	0.85	0.55	0.14	0.91	2.09	-0.38	1.97	Wet 10YR-7/1	0.14	51.80
	6 ³	-9	-9.1	SC	-	-	3.86	3.11	2.65	2.46	1.36	3.11	0.12	2.73	0.15	0.90	-2.67	12.66	Dry 10YR-6/1	23.32	-
	7 ⁴	-8.5	-9	SP	3.48	3.16	2.96	2.71	2.41	2.21	1.75	2.71	0.15	2.58	0.17	0.83	-4.70	32.13	Wet 10YR-6/1	2.94	6.80
BP7	1	-3.1	-6.4	SP	3.58	3.22	2.99	2.70	2.36	2.17	1.73	2.70	0.15	2.64	0.16	0.54	-1.60	11.80	Wet 10YR-7/1	2.96	8.10
	2	-6.4	-7.4	SC	-	-	-	3.00	2.40	2.04	0.64	3.00	0.13	2.47	0.18	0.99	-1.71	6.31	Wet 10YR-6/1	26.37	17.90
	3	-8.2	-10	SW	3.97	2.94	2.68	1.38	-1.30	-2.45	-	1.38	0.38	0.93	0.52	1.98	-0.58	2.05	Wet 10YR-6/1	4.98	29.30
	4	-1.8	-3.1	SC	-	3.95	3.58	3.22	2.83	2.63	2.06	3.22	0.11	3.01	0.12	0.59	-2.32	13.27	Wet 10YR-6/1	15.17	19.70
	5 ⁵	-7.4	-8.2	SP	3.58	3.22	2.99	2.70	2.36	2.17	1.73	2.70	0.15	2.64	0.16	0.54	-1.60	11.80	Wet 10YR-7/1	2.96	8.10
C15	1	-3.8	-9	SP	2.91	2.53	2.38	2.02	1.7	1.58	0.95	2.02	0.25	1.99	0.25	0.62	-1.70	9.98	Wet 10YR-8/1	0.60	10.90
	2	-9	-10	SW	3.26	2.8	2.56	1.12	-2.07	-3.01	-	1.12	0.46	0.82	0.57	2.24	-0.17	1.68	Wet 10YR-7/1	1.16	35.50
C16	1	-3.9	-8.75	SP	3.7	3.39	3.24	2.89	2.62	2.53	1.31	2.89	0.13	2.81	0.14	0.64	-1.98	8.73	Wet 10YR-7/2	2.13	12.00
	2	-8.75	-10	SW	3.63	3.34	3.17	2.78	2.32	2	0.76	2.78	0.15	2.58	0.17	0.86	-1.89	8.08	Wet 10YR-7/2	2.10	13.80
BP8-A	1	-1.1	-6.9	SC	-	3.63	3.37	2.92	2.5	2.08	-0.66	2.92	0.13	2.46	0.18	1.25	-2.09	6.86	Wet 10YR-6/1	12.66	10.70
	2	-6.9	-10	SP	3.75	3.31	3.1	2.75	2.4	2.16	1.54	2.75	0.15	2.64	0.16	0.69	-2.11	10.61	Wet 10YR-6/1	3.83	-
BP11	1	-3.2	-7.2	SP-SC	-	3.25	2.95	2.59	2.16	2	1.16	2.59	0.17	2.42	0.19	0.71	-1.71	9.01	Wet 10YR-6/1	8.10	11.10
	2	-7.2	-8.5	CL	-	-	-	-	2.91	2.65	1.92	-	-	2.75	0.15	0.82	-2.34	10.95	Wet 10YR-6/1	50.74	16.60
	3	-8.5	-10	SP-SC	-	3.37	3.17	2.82	2.55	2.33	1.54	-0.98	1.97	2.66	0.16	0.76	-3.25	17.89	Wet 10YR-6/1	7.78	10.70

Notes

- 1 Gradation report for C03 Sample 4 used to describe sediment due to lack of information available and similar description.
- 2 Gradation report for C15 Sample 2 used to describe sediment due to lack of information available and similar description.
- 3 Gradation report for C07 Sample 1 used to describe sediment due to lack of information available and similar description.
- 4 Gradation report for BP6 Sample 4 used to describe sediment due to lack of information available and similar description.
- 5 Gradation report for BP7 Sample 1 used to describe sediment due to lack of information available and similar description.
- 6 '-' indicates no data was reported for this value.

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Blind Pass Restoration
Sediment Analysis

Sieve #	3/4	5/8	1 1/16	5/16	3/5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Sieve Designation Legend

Project Composites

Fill Material

Sieve (Phi)	Fill Material								Fill Material								Fill Material		Phi	Z
	Sub Area Cumulative % by Weight Retained								Sub Area Cumulative % by Weight Passing								Weighted Composite (% Retained)	Weighted Composite (% Passing)		
	Area 1	Area 2	Area 3A	Area 3B	Area 3C	Area 4a	Area 4B	Area 1	Area 2	Area 3A	Area 3B	Area 3C	Area 4a	Area 4B						
-4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00				
-4	0.56	2.24	2.35	0.53	1.00	0.60	0.32	99.44	97.76	97.65	99.47	99.00	99.40	99.68	1.23	98.77				
-3.5	1.42	4.10	4.46	1.52	1.72	0.64	0.32	98.58	95.90	95.54	98.48	98.28	99.36	99.68	2.36	97.64				
-3	5.23	6.29	6.90	2.99	2.97	0.89	0.41	94.77	93.71	93.10	97.01	97.03	99.11	99.59	4.63	95.37				
-2.5	9.28	8.66	9.07	4.11	3.87	1.19	0.56	90.72	91.34	90.93	95.89	96.13	98.81	99.44	6.98	93.02	Phi 95	-2.92		
-2	14.77	11.37	11.46	5.19	4.77	1.69	0.85	85.23	88.63	88.54	94.81	95.23	98.31	99.15	9.93	90.07				
-1.5	21.80	14.89	14.71	6.62	5.73	2.33	1.21	78.20	85.11	85.29	93.38	94.27	97.67	98.79	13.73	86.27				
-1	28.98	19.18	18.55	8.37	6.98	3.23	1.70	71.02	80.82	81.45	91.63	93.02	96.77	98.30	17.93	82.07	Phi 84	-1.23		
-0.5	38.92	25.38	23.57	10.65	8.60	4.35	2.44	61.08	74.62	76.43	89.35	91.40	95.65	97.56	23.76	76.24				
0	48.94	32.09	28.40	12.95	10.30	5.37	3.16	51.06	67.91	71.60	87.05	89.70	94.63	96.84	29.72	70.28	Phi 75	-0.40		
0.5	58.86	39.98	33.20	15.45	12.28	6.50	4.12	41.14	60.02	66.80	84.55	87.72	93.50	95.88	36.01	63.99				
1	68.42	49.11	38.50	18.78	15.09	8.28	5.51	31.58	50.89	61.50	81.22	84.91	91.72	94.49	42.77	57.23				
1.5	76.39	58.07	44.40	23.45	19.28	10.49	7.79	23.61	41.93	55.60	76.55	80.72	89.51	92.21	49.31	50.69				
2	83.71	68.94	52.69	31.09	32.96	17.03	13.28	16.29	31.06	47.31	68.91	67.04	82.97	86.72	57.78	42.22	Phi 50	1.54		
2.5	92.52	83.35	66.62	45.76	51.63	31.66	31.89	7.48	16.65	33.38	54.24	48.37	68.34	68.11	70.98	29.02				
3	97.80	92.37	82.38	64.27	71.24	65.69	65.48	2.20	7.63	17.62	35.73	28.76	34.31	34.52	85.31	14.69	Phi 25	2.64		
3.5	99.02	96.65	93.52	84.52	87.56	88.58	83.01	0.98	3.35	6.48	15.48	12.44	11.42	16.99	93.90	6.10	Phi 16	2.95		
3.75	99.19	97.22	94.92	86.99	89.64	91.73	85.28	0.81	2.78	5.08	13.01	10.36	8.27	14.72	95.02	4.98	Phi 5	3.56		
4	99.35	97.60	95.57	87.99	90.47	93.07	86.32	0.65	2.40	4.43	12.01	9.53	6.93	13.68	95.57	4.43				

Fill

Moment Statistics and Properties in Phi Units

Parameters in Phi Units

Area	Area of Influence (SF)	Depth* (NAVD88)	Volume (cyd)	Percent	USCS	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
1	253,004	-12	45,195	31.98%	SP	2.74	2.02	1.41	0.05	-1.28	-1.91	-3.03	0.05	0.96	-2.42	5.34	2.41	7.08	10.67	DRY 10YR- 7/1	0.65	-
2	98,467	-12	37,443	26.50%	-	3.31	2.54	2.21	1.05	-0.53	-1.37	-3.29	1.05	0.48	0.70	0.62	1.96	-0.64	2.76	-	2.40	-
3A	64,245	-12	17,767	12.57%	-	3.78	3.07	2.77	1.84	-0.35	-1.33	-3.39	1.84	0.28	1.11	0.46	2.16	-0.81	2.69	-	4.43	-
3B	36,182	-11	7,440	5.27%	-	-	3.49	3.27	2.61	1.60	0.58	-2.09	2.61	0.16	2.11	0.23	1.81	-1.50	4.92	-	12.01	-
3C	35,755	-10	7,041	4.98%	-	-	3.39	3.12	2.46	1.71	1.11	-1.88	2.46	0.18	2.11	0.23	1.68	-1.74	6.28	-	9.53	-
4A	86,461	-10	13,343	9.44%	-	-	3.40	3.20	2.77	2.27	1.92	-0.18	2.77	0.15	2.53	0.17	1.26	-2.42	10.85	-	6.93	-
4B	43,603	-10	13,074	9.25%	-	-	3.61	3.27	2.77	2.31	2.07	0.82	2.77	0.15	2.69	0.15	1.10	-2.11	11.36	-	13.68	-
Composite	617,717		141,303	1		3.56	2.95	2.64	1.54	-0.40	-1.23	-2.92	1.54	0.34	1.03	0.49	2.04	-0.64	2.54	-	4.43	-

* Depth Includes 2 additional feet below proposed channel limits (Overdredge)

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Blind Pass Restoration
Sediment Analysis

Sieve #	3/4	5/8	11/16	5/16	3.5	5	7	10	14	18	25	35	45	60	80	120	170	200	230
Sieve Size (Φ)	-4.25	-4.00	-3.50	-3.00	-2.50	-2.00	-1.50	-1.00	-0.50	0.00	0.50	1.00	1.50	2.00	2.50	3.00	3.50	3.75	4.00
Sieve Size (mm)	19.03	16.00	11.31	8.00	5.66	4.00	2.83	2.00	1.41	1.00	0.71	0.50	0.35	0.25	0.18	0.13	0.09	0.07	0.06

Sieve Designation Legend

Project Composites

Native Material

Sieve (Phi)	Native Material											Native Material											Native Material	
	R112 Cumulative % by Weight Retained											R112 Cumulative % by Weight Passing											Composite (% Retained)	Composite (% Passing)
Top of Berm	Mid-Berm	MHW	MTL	MLW	Bar	Trough	Ele. -6.0	Ele. -9.0	Ele. -12.0	Top of Berm	Mid-Berm	MHW	MTL	MLW	Bar	Trough	Ele. -6.0	Ele. -9.0	Ele. -12.0					
-4.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00		
-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	0.00	100.00		
-3.25	0.00	0.00	0.00	0.00	0.53	0.68	1.15	0.00	0.81	1.38	100.00	100.00	100.00	100.00	99.47	99.32	98.85	100.00	99.19	98.62	0.48	99.52		
-3	0.33	0.29	1.19	1.32	4.44	2.02	2.98	0.00	1.95	4.58	99.67	99.71	98.81	98.68	95.56	97.98	97.02	100.00	98.05	95.42	1.78	98.22		
-2	0.73	0.73	1.93	2.32	7.94	2.89	4.36	0.30	3.29	6.84	99.27	99.27	98.07	97.68	92.06	97.11	95.64	99.70	96.71	93.16	2.88	97.12		
-1.5	2.21	1.72	4.61	4.57	16.59	4.52	6.32	0.63	5.28	12.48	97.79	98.28	95.39	95.43	83.41	95.48	93.68	99.37	94.72	87.52	5.31	94.69		
-1	5.38	3.85	8.96	7.46	27.61	6.56	9.14	1.48	8.13	18.47	94.62	96.15	91.04	92.54	72.39	93.44	90.86	98.52	91.87	81.53	8.72	91.28		
-0.5	12.84	7.84	15.31	12.49	41.49	9.05	12.52	2.66	11.30	25.93	87.16	92.16	84.69	87.51	58.51	90.95	87.48	97.34	88.70	74.07	13.52	86.48		
0	24.82	13.71	23.41	18.43	54.60	11.93	16.08	3.71	14.40	31.96	75.18	86.29	76.59	81.57	45.40	88.07	83.92	96.29	85.60	68.04	18.96	81.04		
0.5	39.37	23.63	33.36	29.07	68.44	16.69	20.41	4.92	17.85	36.82	60.63	76.37	66.64	70.93	31.56	83.31	79.59	95.08	82.15	63.18	25.66	74.34		
1	54.01	36.60	45.49	41.50	81.61	24.26	26.86	6.09	21.54	40.68	45.99	63.40	54.51	58.50	18.39	75.74	73.14	93.91	78.46	59.32	33.37	66.63		
1.5	64.68	50.61	57.51	54.61	88.93	35.14	35.38	7.23	25.29	43.65	35.32	49.39	42.49	45.39	11.07	64.86	64.62	92.77	74.71	56.35	40.95	59.05		
2	77.32	68.37	74.55	70.39	93.31	53.37	52.62	9.02	32.08	47.56	22.68	31.63	25.45	29.61	6.69	46.63	47.38	90.98	67.92	52.44	51.81	48.19		
2.5	92.54	90.87	92.89	89.45	96.64	80.97	79.40	16.14	42.82	54.32	7.46	9.13	7.11	10.55	3.36	19.03	20.60	83.86	57.18	45.68	66.98	33.02		
3	99.17	99.12	98.63	98.30	98.68	96.64	96.73	48.20	61.24	65.22	0.83	0.88	1.37	1.70	1.32	3.36	3.27	51.80	38.76	34.78	81.06	18.94		
3.5	99.59	99.66	98.88	98.66	98.79	98.69	98.84	91.67	89.56	88.04	0.41	0.34	1.12	1.34	1.21	1.31	1.16	8.33	10.44	11.96	94.59	5.41		
3.75	99.60	99.67	98.90	98.68	98.80	98.77	98.90	96.86	93.91	92.40	0.40	0.33	1.10	1.32	1.20	1.23	1.10	3.14	6.09	7.60	96.50	3.50		
4	99.81	99.84	99.46	99.34	99.40	99.38	99.46	98.89	97.41	96.71	0.19	0.16	0.54	0.66	0.60	0.62	0.54	1.11	2.59	3.29	98.08	1.92		

Native Material	Parameters in Phi Units							Median (Phi)	Median (mm)	Mean (Phi)	Mean (mm)	Sorting (σ)	Skewness (α)	Kurtosis (β)	Munsell Color	Silt %	Carbonate %
	Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95										
Composite	3.52	3.11	2.78	1.92	0.45	-0.27	-1.56	1.92	0.26	1.52	0.35	1.65	-0.81	3.14	-	1.92	-

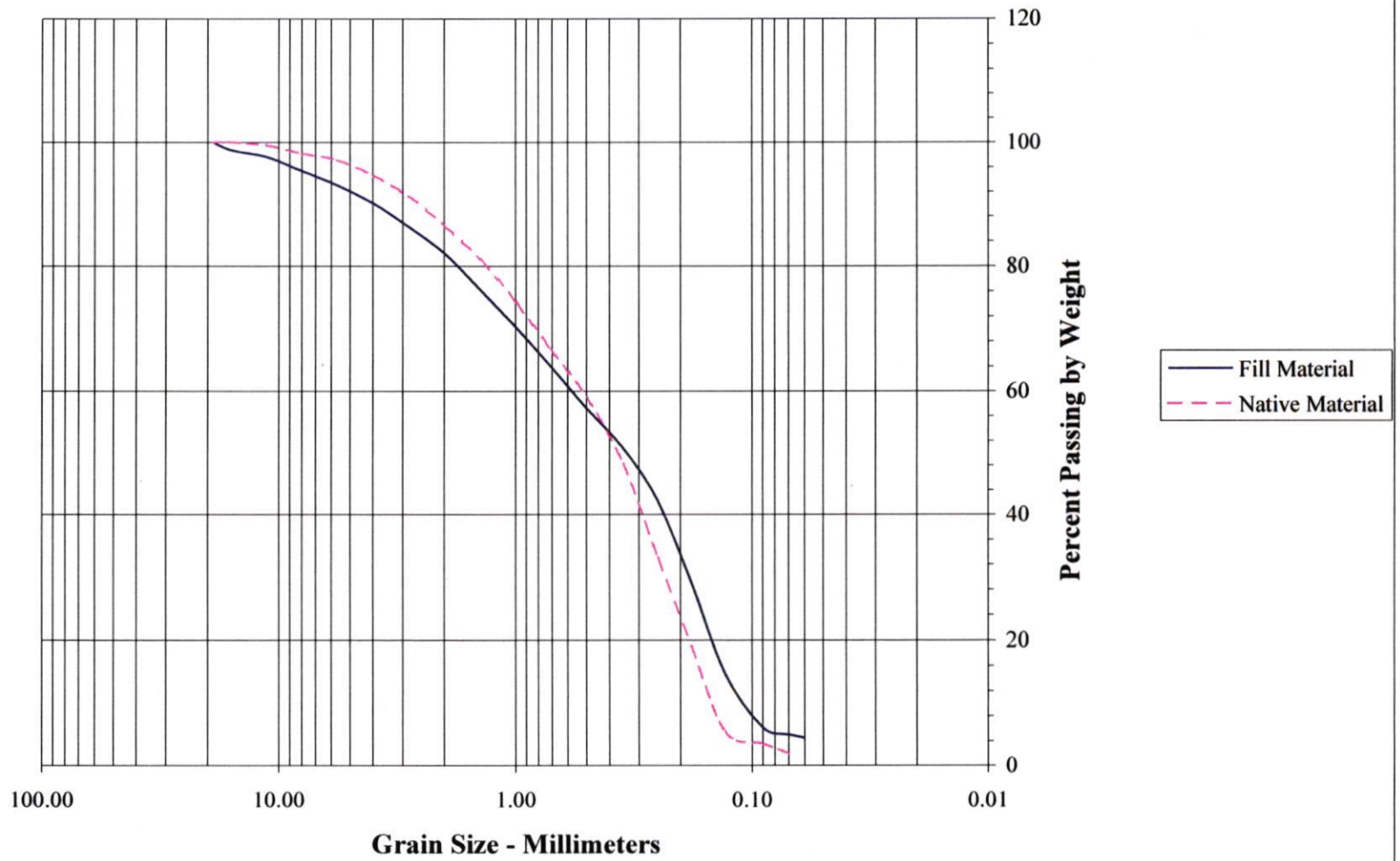
Sample	Elevation	Percent Influence
Top of Berm	7.60	7.77%
MidBerm	5.70	11.48%
MHW	1.27	12.82%
MTL	0.42	4.10%
MLW	-0.42	4.90%
Bar	-1.60	6.75%
Trough	-3.20	10.68%
-6	-6.00	14.08%
-9	-9.00	14.56%
-12	-12.00	12.14%
Total	20.6	99.27%

Notes

- 1 - indicates no value reported for that parameter.
- 2 Cumulative Percent By Weight Retained data provided by Coastal Planning and Engineering, Inc. 2001 Monitoring Report for Captiva Island.

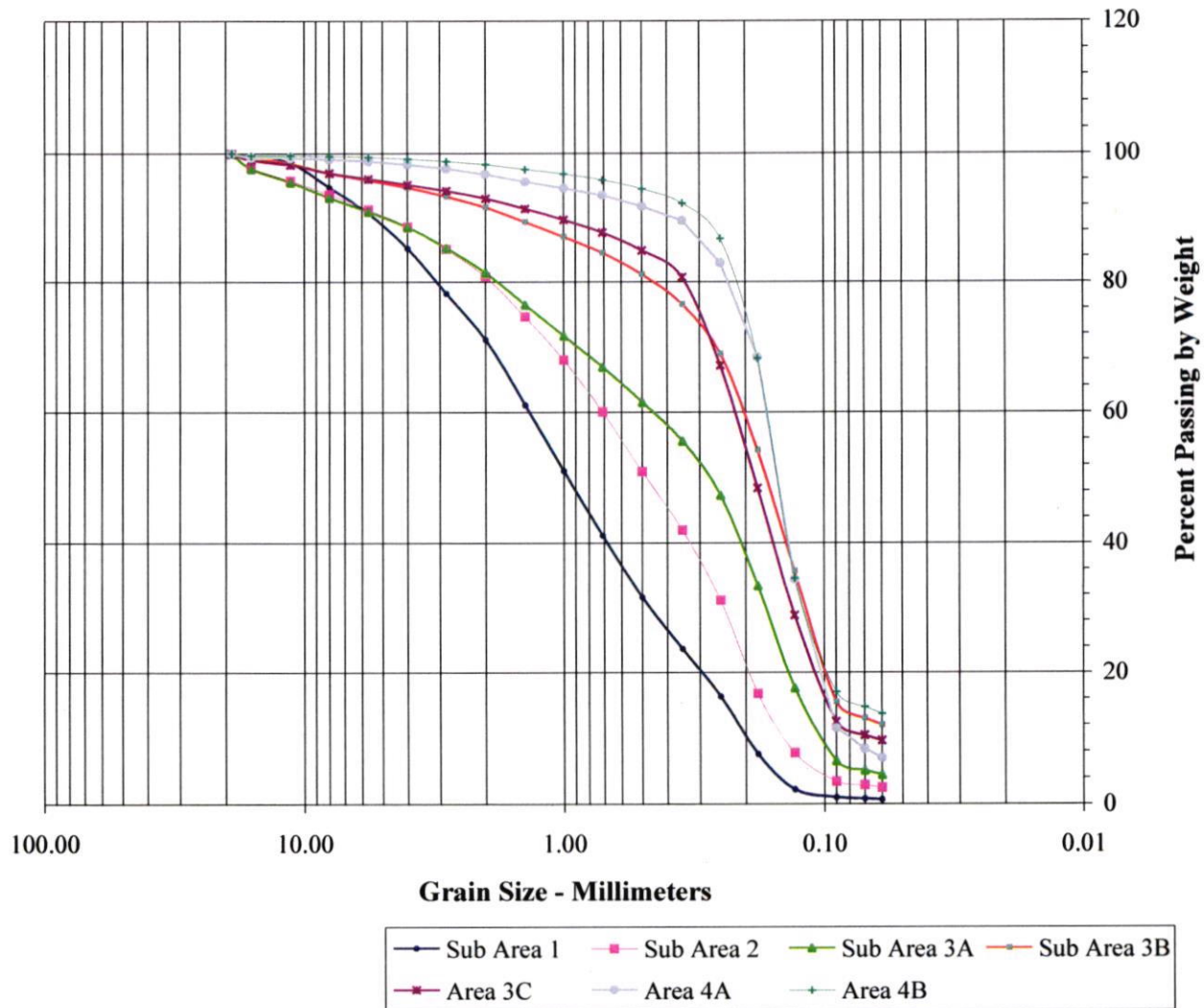
Blind Pass Restoration
Sediment Analysis

Grain Size Distribution Curve Project (Fill and Native Material)



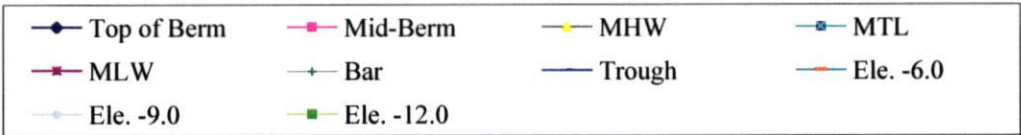
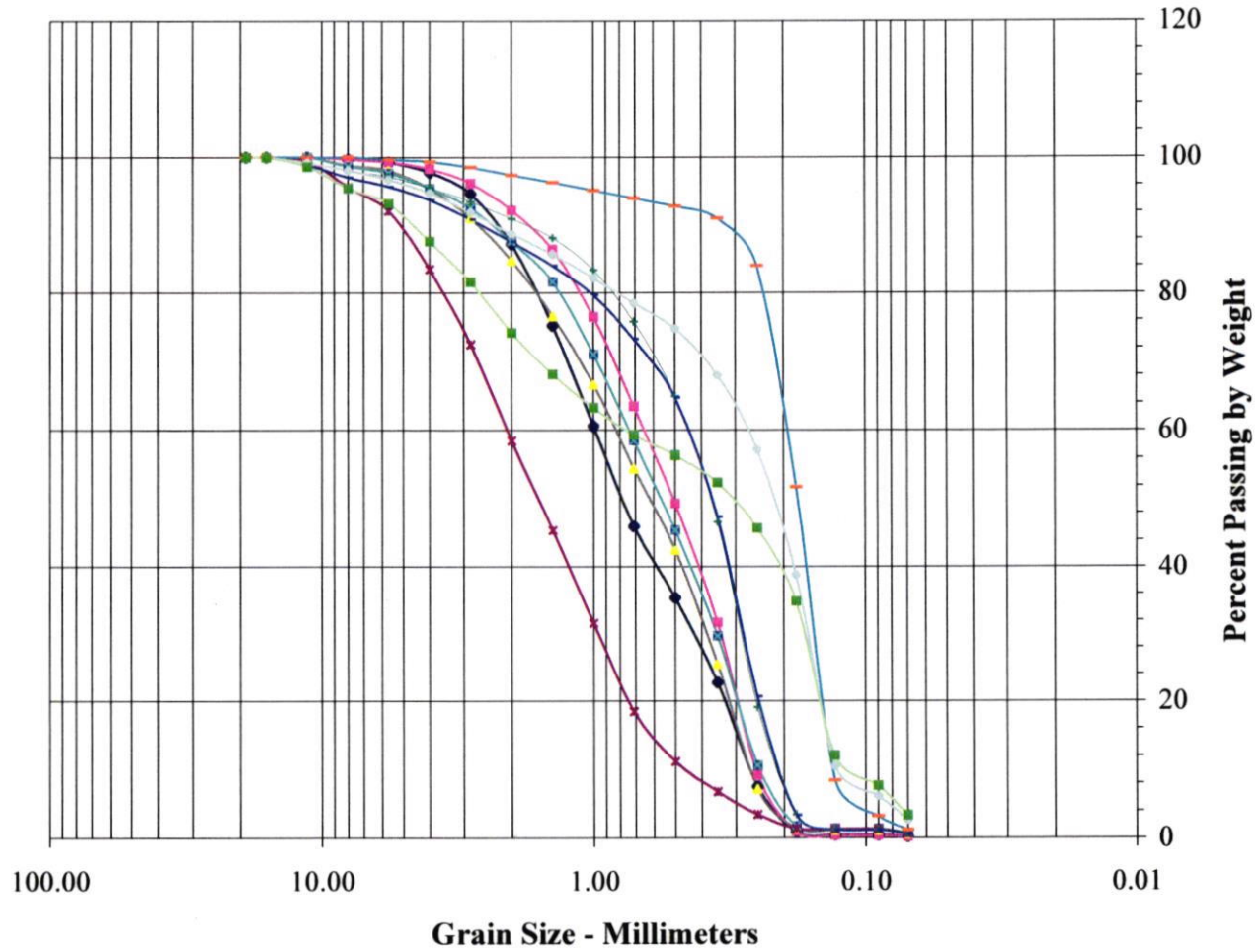
Blind Pass Restoration
Sediment Analysis

Grain Size Distribution Curve Fill Sub Areas



Blind Pass Restoration
Sediment Analysis

Grain Size Distribution Curve
Native Samples



**CAPTIVA AND SANIBEL ISLANDS
RENOURISHMENT PROJECT**

**APPENDIX A:
TO JOINT COASTAL PERMIT APPLICATION
BORROW AREA GEOTECHNICAL DATA**

4-22-04
2001 Sand Samples.

**COMPOSITE GRAIN SIZE DISTRIBUTION FOR CAPTIVA ISLAND
MONITORING OCTOBER 2001**

SAMPLE I. D.	ELEVATION (FEET)	PHI MEAN	(mm) MEAN	PHI SORTING	% SILT	PHI SIZE:																	PAN	
						-4.25	-4.0	-3.3	-3.0	-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
R-112																								
-12	-12.0	1.16	0.45	2.65	3.29	0.00	0.00	1.38	4.58	6.84	12.48	18.47	25.93	31.96	36.82	40.68	43.65	47.56	54.32	65.22	88.04	92.40	96.71	99.99
-9	-9.0	1.90	0.27	1.98	2.59	0.00	0.00	0.81	1.95	3.29	5.28	8.13	11.30	14.40	17.85	21.54	25.29	32.08	42.82	61.24	89.56	93.91	97.41	99.98
-6	-6.0	2.72	0.15	1.05	1.10	0.00	0.00	0.00	0.00	0.30	0.63	1.48	2.66	3.71	4.92	6.09	7.23	9.02	16.14	48.20	91.67	96.86	98.89	99.96
BAR	-1.6	1.42	0.37	1.52	0.62	0.00	0.00	0.68	2.02	2.89	4.52	6.56	9.05	11.93	16.69	24.26	35.14	53.37	80.97	96.64	98.69	98.77	99.38	100.00
TROUGH	-3.2	1.28	0.41	1.73	0.54	0.00	0.00	1.15	2.98	4.36	6.32	9.14	12.52	16.08	20.41	26.86	35.38	52.62	79.40	96.73	98.84	98.90	99.46	100.00
MLW	-0.8	-0.21	1.16	1.75	0.60	0.00	0.00	0.53	4.44	7.94	16.59	27.61	41.49	54.60	68.44	81.61	88.93	93.31	96.64	98.68	98.79	98.80	99.40	100.00
MTL	0.0	1.04	0.49	1.54	0.66	0.00	0.00	0.00	1.32	2.32	4.57	7.46	12.49	18.43	29.07	41.50	54.61	70.39	89.45	98.30	98.66	98.68	99.34	99.99
MHW	1.0	0.90	0.54	1.55	0.54	0.00	0.00	0.00	1.19	1.93	4.61	8.96	15.31	23.41	33.36	45.49	57.51	74.55	92.89	98.63	98.88	98.90	99.46	100.00
MIDBERM	5.7	1.22	0.43	1.32	0.16	0.00	0.00	0.00	0.29	0.73	1.72	3.85	7.84	13.71	23.63	36.60	50.61	68.37	90.87	99.12	99.66	99.67	99.84	100.00
TOP OF BERM	7.6	0.89	0.54	1.43	0.19	0.00	0.00	0.00	0.33	0.73	2.21	5.38	12.84	24.82	39.37	54.01	64.68	77.32	92.54	99.17	99.59	99.60	99.81	100.00
LINE R-112 WT. COMPOSITE (Average Weighted by Elevation)		1.39	0.38	1.91	1.13	0.00	0.00	0.44	1.71	2.85	5.31	8.78	13.72	19.31	26.38	34.45	42.22	52.96	67.93	82.05	95.50	97.36	98.87	99.99

SUB-APPENDIX A-36
2001 BEACH CUMULATIVE PERCENT AND COMPOSITE
DISTRIBUTIONS

Gradation Analysis Report



Coastal Planning & Engineering, Inc.
 2481 N.W. Boca Raton Blvd.
 Boca Raton, FL 33431

Project Name: Captiva Island
 Sample Name: R112 WT. COMP
 Sample Date: 4/2/02
 Analyzed By: S. Kheen

Easting: N/A	Northing: N/A	Coordinate System: N/A	Elevation: 999 N/A
-----------------	------------------	---------------------------	-----------------------

USCS: SW	Dry Munsel: N/A	Wet Munsel: N/A	Comments: R112 Wt. COMPOSITE
-------------	--------------------	--------------------	---------------------------------

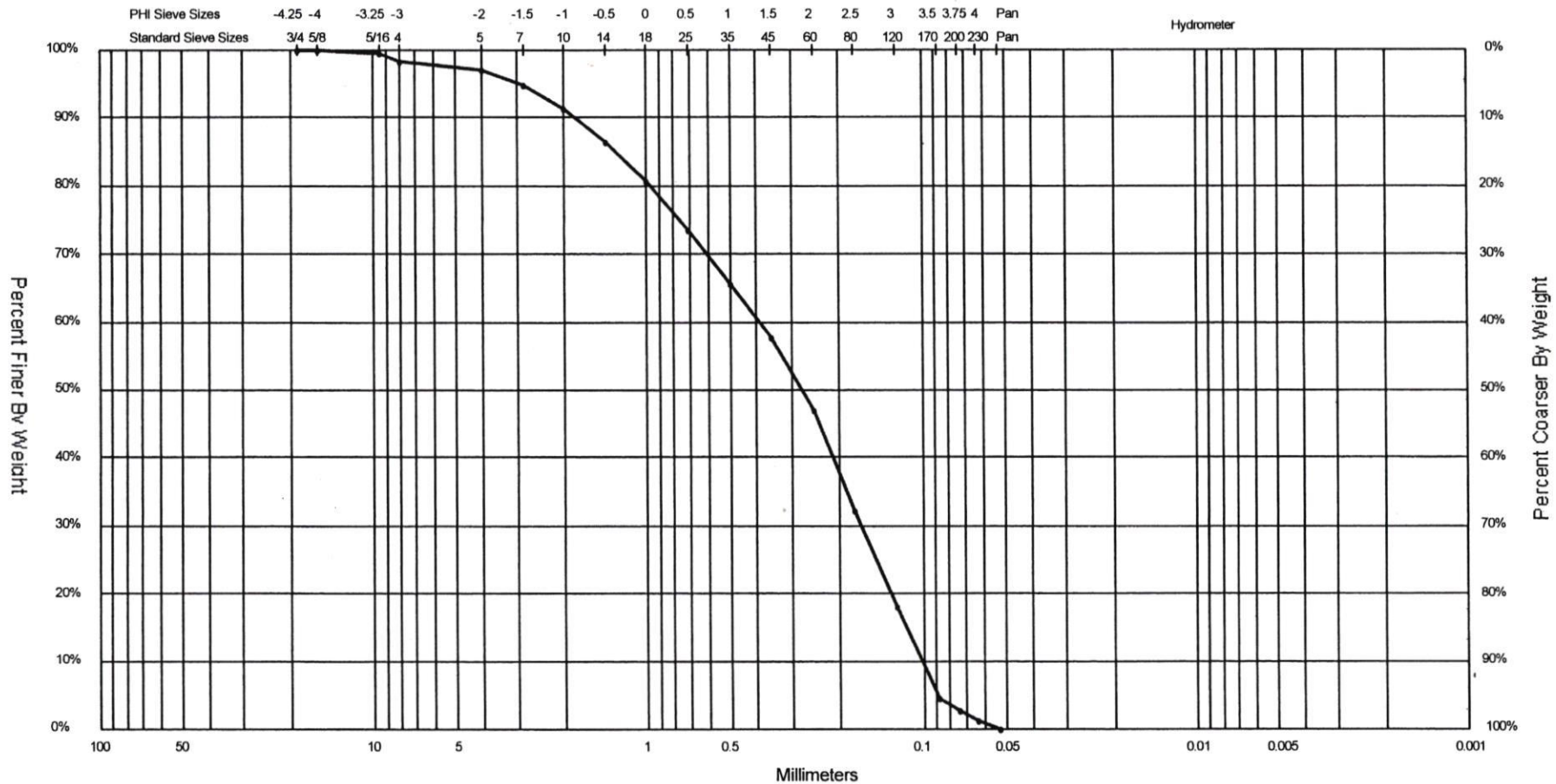
Dry Weight: 100	Wash Weight: 100	Sieve Loss: 0.01	Percent Silt: 1.13	Estimated Percent Shell Content: N/A
--------------------	---------------------	---------------------	-----------------------	---

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4	-4.25	19.02	0.00	0.00	0.00	0.00
5/8	-4.00	16.00	0.00	0.00	0.00	0.00
5/16	-3.25	9.51	0.44	0.44	0.44	0.44
4	-3.00	8.00	1.27	1.27	1.71	1.71
5	-2.00	4.00	1.14	1.14	2.85	2.85
7	-1.50	2.82	2.46	2.46	5.31	5.31
10	-1.00	2.00	3.47	3.47	8.78	8.78
14	-0.50	1.41	4.94	4.94	13.72	13.72
18	0.00	1.00	5.59	5.59	19.31	19.31
25	0.50	0.70	7.07	7.07	26.38	26.38
35	1.00	0.50	8.07	8.07	34.45	34.45
45	1.50	0.35	7.77	7.77	42.22	42.22
60	2.00	0.25	10.74	10.74	52.96	52.96
80	2.50	0.17	14.97	14.97	67.93	67.93
120	3.00	0.12	14.12	14.12	82.05	82.05
170	3.50	0.08	13.45	13.45	95.50	95.50
200	3.75	0.07	1.86	1.86	97.36	97.36
230	4.00	0.06	1.51	1.51	98.87	98.87
Pan	Pan	Pan	1.12	1.12	99.99	99.99

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
-1.56	-0.3	0.4	1.86	2.75	3.07	3.48

Statistics	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis
Graphic	1.31	0.40	1.61	-0.46	0.88
Moment	1.39	0.38	1.91	-0.36	1.46

SUB-APPENDIX A-38
2001 BEACH COMPOSITE GRAIN SIZE DISTRIBUTION CURVES
TOTAL BEACH AND LINES



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112 WT. COMP	—	999	R112 WT. COMPOSITE	SW	1.13	0.28	0.38	-0.36	1.46	1.91	Project Name:	Captiva Island
											Collection Date:	4/2/02
											Analyzed By:	S. Kheen

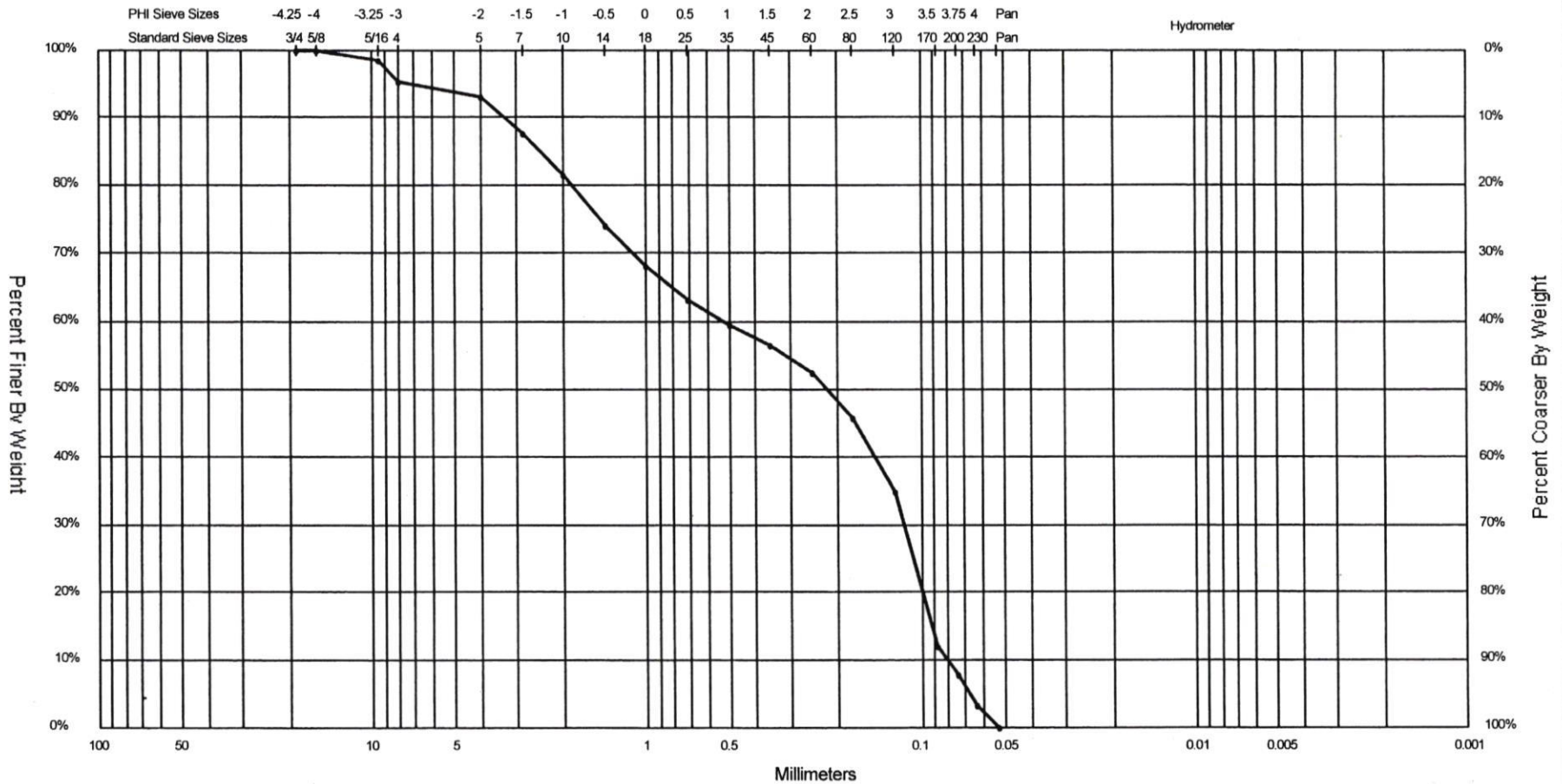


Coastal Planning & Engineering, Inc.
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 Boca Raton, FL 33431

ph 561 391-8102 fax 561 391-9116

Easting (X):	N/A
Northing (Y):	N/A
Horizontal System:	N/A
Vertical System:	N/A

SUB-APPENDIX A-42
2001 BEACH GRAIN SIZE DISTRIBUTION CURVES
INDIVIDUAL SAMPLES



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112-12	—	-12	R112-12	SW-SM	3.29	0.22	0.45	-0.35	1.32	2.65	Project Name:	Captiva Island
											Collection Date:	11/1/02
											Analyzed By:	I Dremal

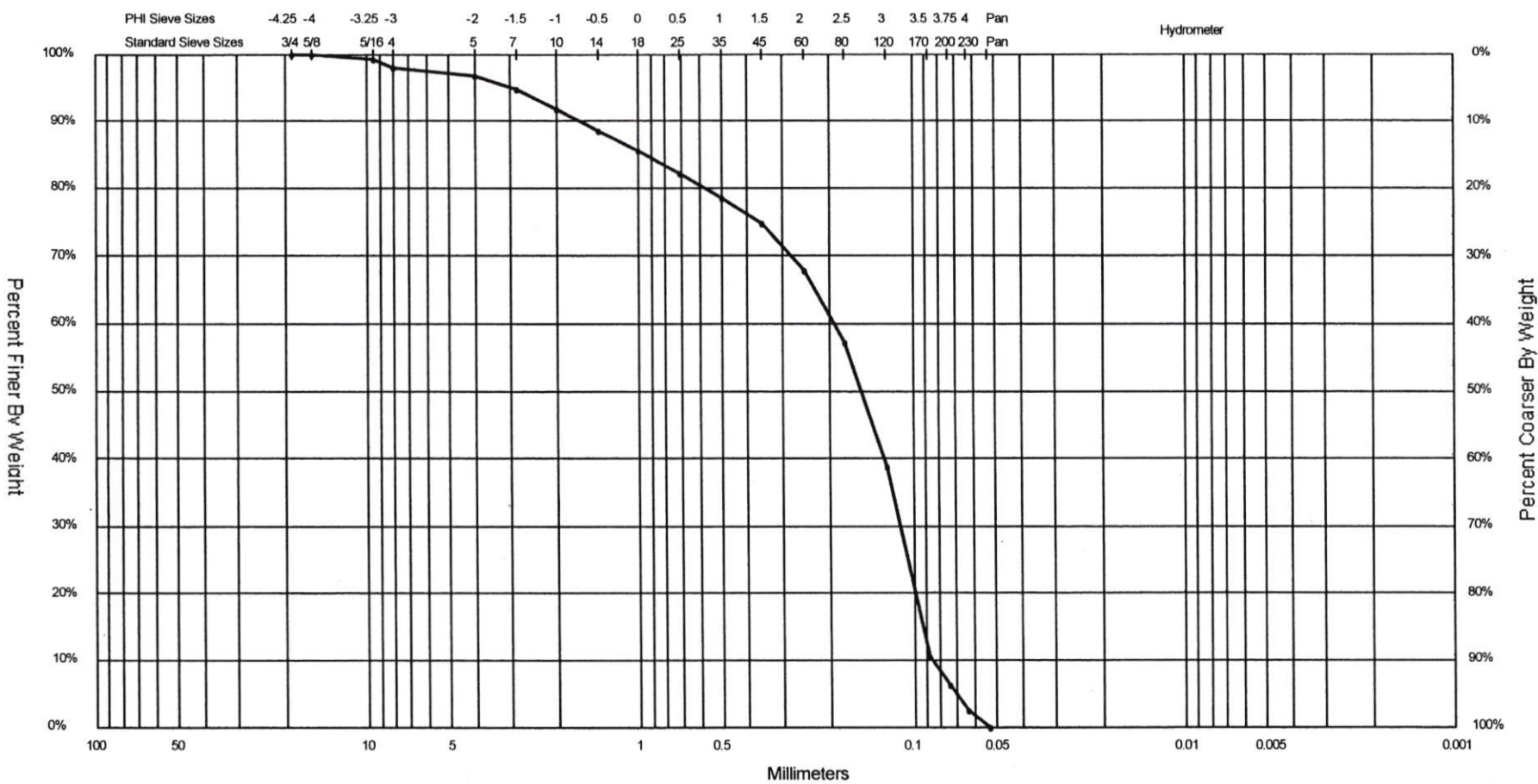


Coastal Planning & Engineering, Inc.
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Easting (X):	438728.23
Northing (Y):	782960.81
Horizontal System:	State Plane FLA West 1983 Fe
Vertical System:	NGVD 29 Feet



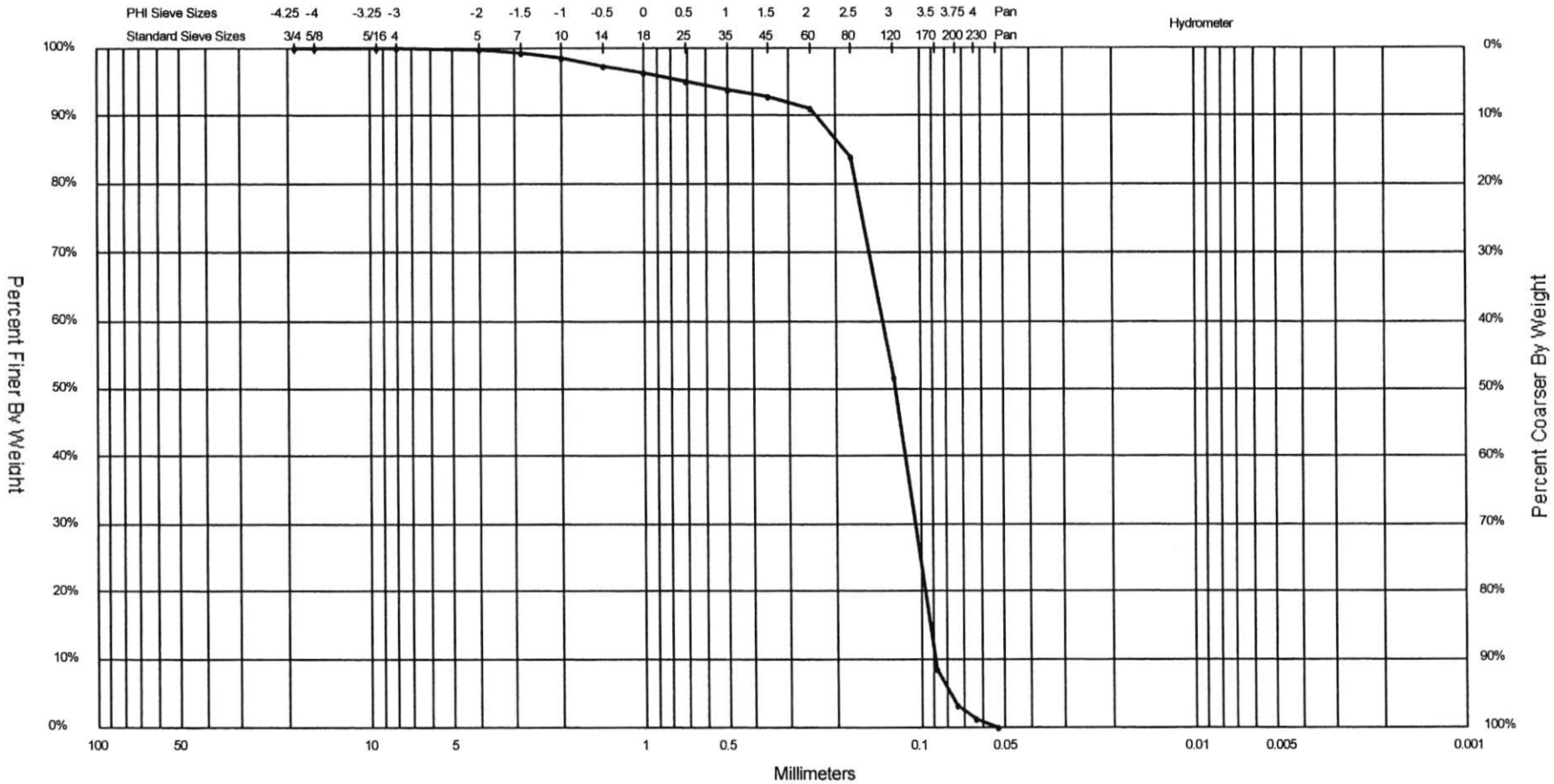
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112-9	—	-9	R112-9	SW-SM	2.59	0.15	0.27	-0.71	1.92	1.98	Project Name:	Captiva Island
											Collection Date:	11/1/02
											Analyzed By:	I Dremal



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Easting (X):	438829.8
Northing (Y):	782956.47
Horizontal System:	State Plane FLA West 1983 Fe
Vertical System:	NGVD 29 Feet



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112-6		-6	R112-6	SW	1.11	0.12	0.15	-1.31	3.28	1.05	Project Name:	Captiva Island
											Collection Date:	11/1/02
											Analyzed By:	I Dremal

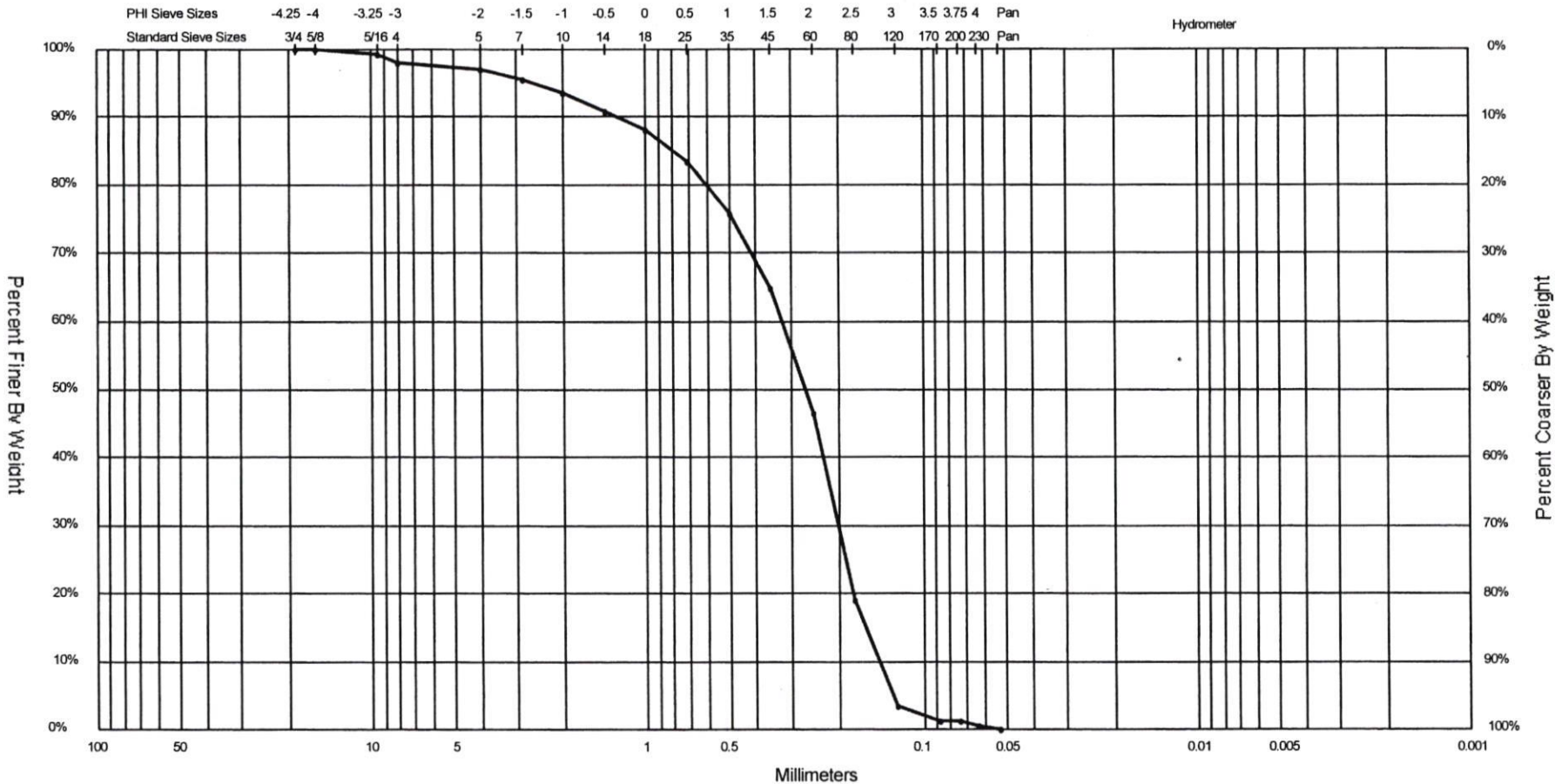


Coastal Planning & Engineering, Inc.
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Easting (X):	438905.67
Northing (Y):	782973.55
Horizontal System:	State Plane FLA West 1983 Fe
Vertical System:	NGVD 29 Feet



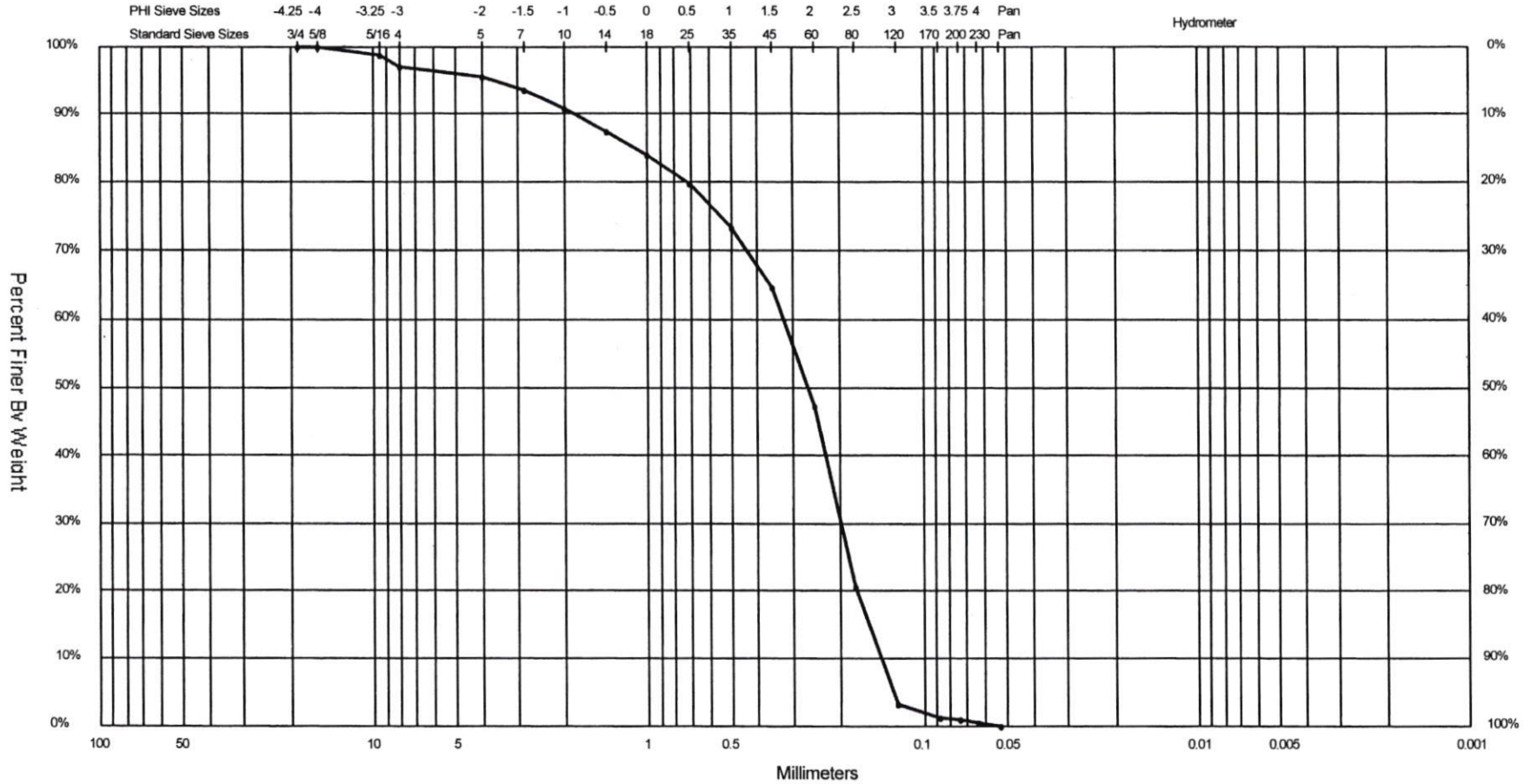
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112 BAR	—	-1.6	R112 BAR	SW	0.62	0.27	0.37	-0.79	2.20	1.52	Project Name:	Captiva Island
											Collection Date:	11/1/02
											Analyzed By:	I Dremal



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Easting (X):	438974.3
Northing (Y):	783002.27
Horizontal System:	State Plane FLA West 1983 Fe
Vertical System:	NGVD 29 Feet



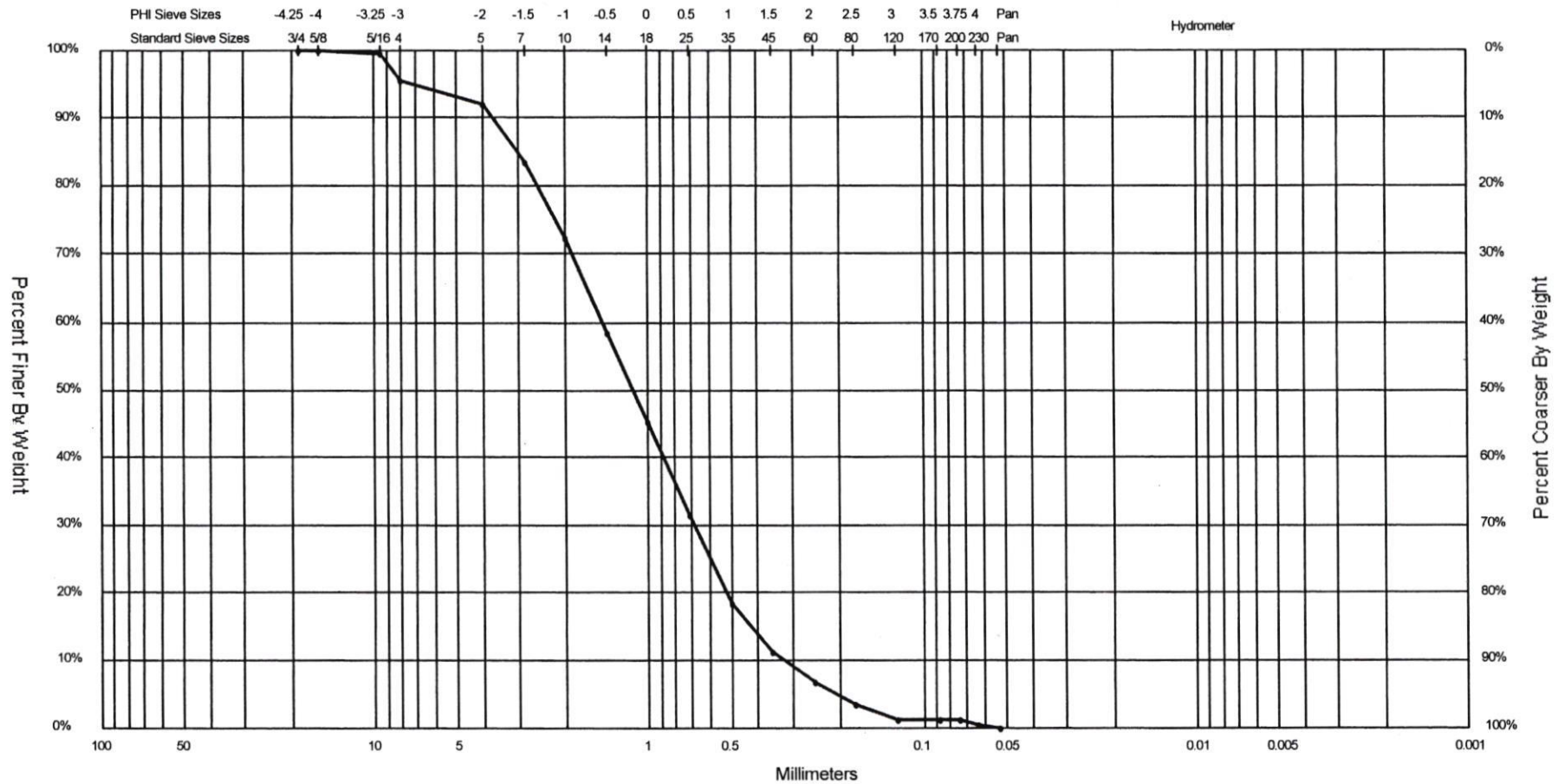
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112 TRO	—	-3.2	R112 TROUGH	SW	0.54	0.26	0.41	-0.76	2.06	1.73	Project Name:	Captiva Island
											Collection Date:	11/1/02
											Analyzed By:	I Dremal



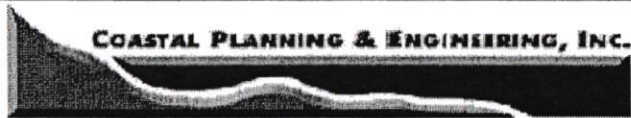
Coastal Planning & Engineering, Inc.
 2481 N.W. Boca Raton Blvd.
 Boca Raton, FL 33431
 ph 561 391-8102 fax 561 391-9116

Easting (X):	439070.81
Northing (Y):	783019.28
Horizontal System:	State Plane FLA West 1983 Fe
Vertical System:	NGVD 29 Feet



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112 MLW	—	-0.8	R112 MLW	SW	0.60	1.13	1.16	-0.08	1.65	1.75	Project Name:	Captiva Island
											Collection Date:	11/1/02
											Analyzed By:	I Dremal

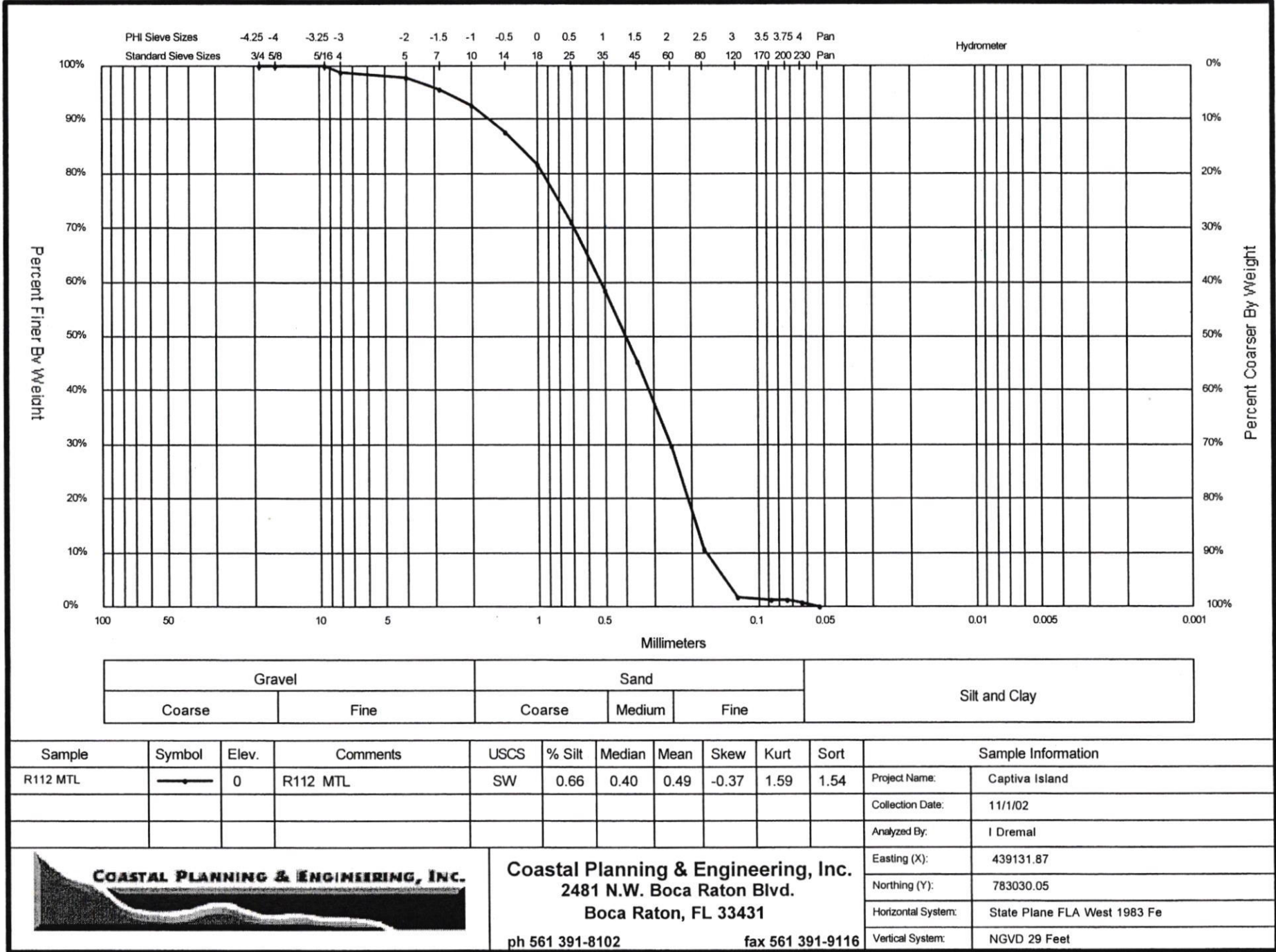


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fax 561 391-9116

Easting (X):	439124.98
Northing (Y):	783028.83
Horizontal System:	State Plane FLA West 1983 Fe
Vertical System:	NGVD 29 Feet



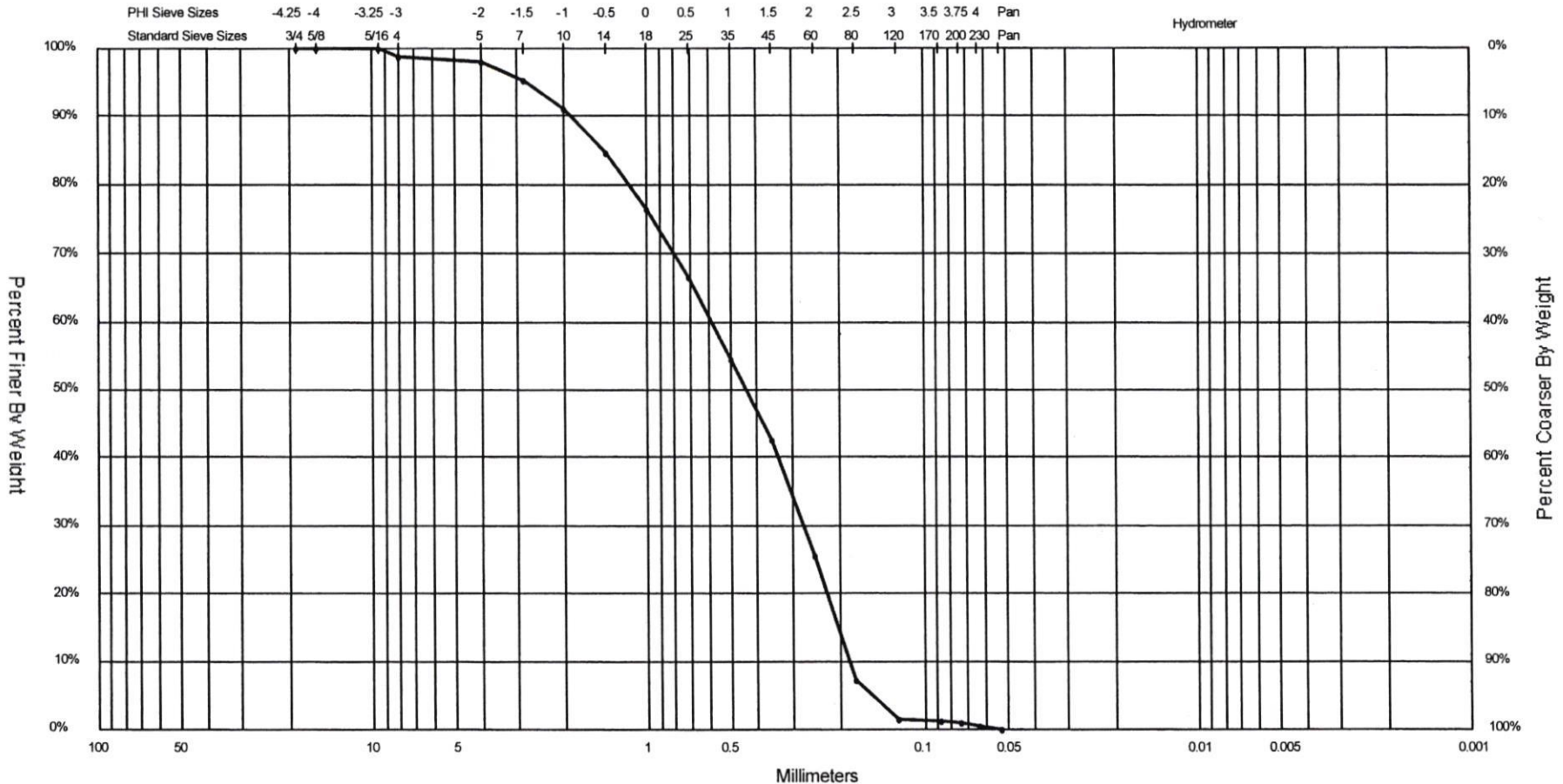
Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
											Project Name:	Collection Date:
R112 MTL	—	0	R112 MTL	SW	0.66	0.40	0.49	-0.37	1.59	1.54	Captiva Island	11/1/02
											Analyzed By:	I Dremal



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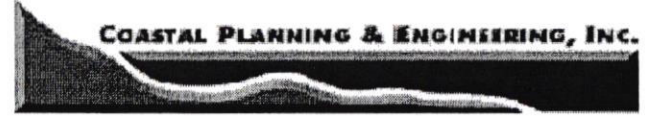
ph 561 391-8102 fax 561 391-9116

Easting (X):	439131.87
Northing (Y):	783030.05
Horizontal System:	State Plane FLA West 1983 Fe
Vertical System:	NGVD 29 Feet



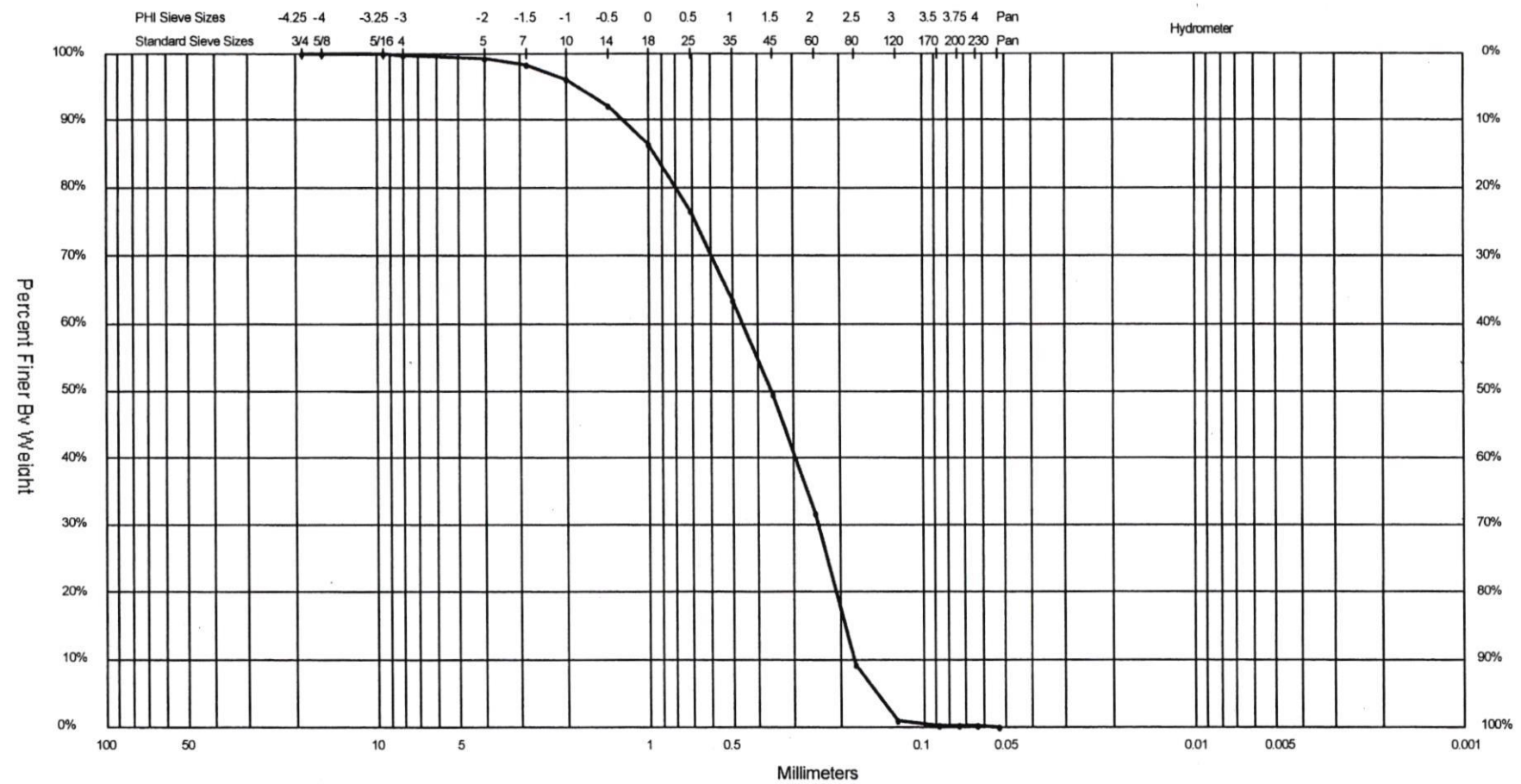
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112 MHW	—	1	R112 MHW	SW	0.54	0.44	0.54	-0.30	1.44	1.55	Project Name:	Captiva Island
											Collection Date:	11/1/02
											Analyzed By:	I Dremal



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Easting (X):	439138.76
Northing (Y):	783031.27
Horizontal System:	State Plane FLA West 1983 Fe
Vertical System:	NGVD 29 Feet



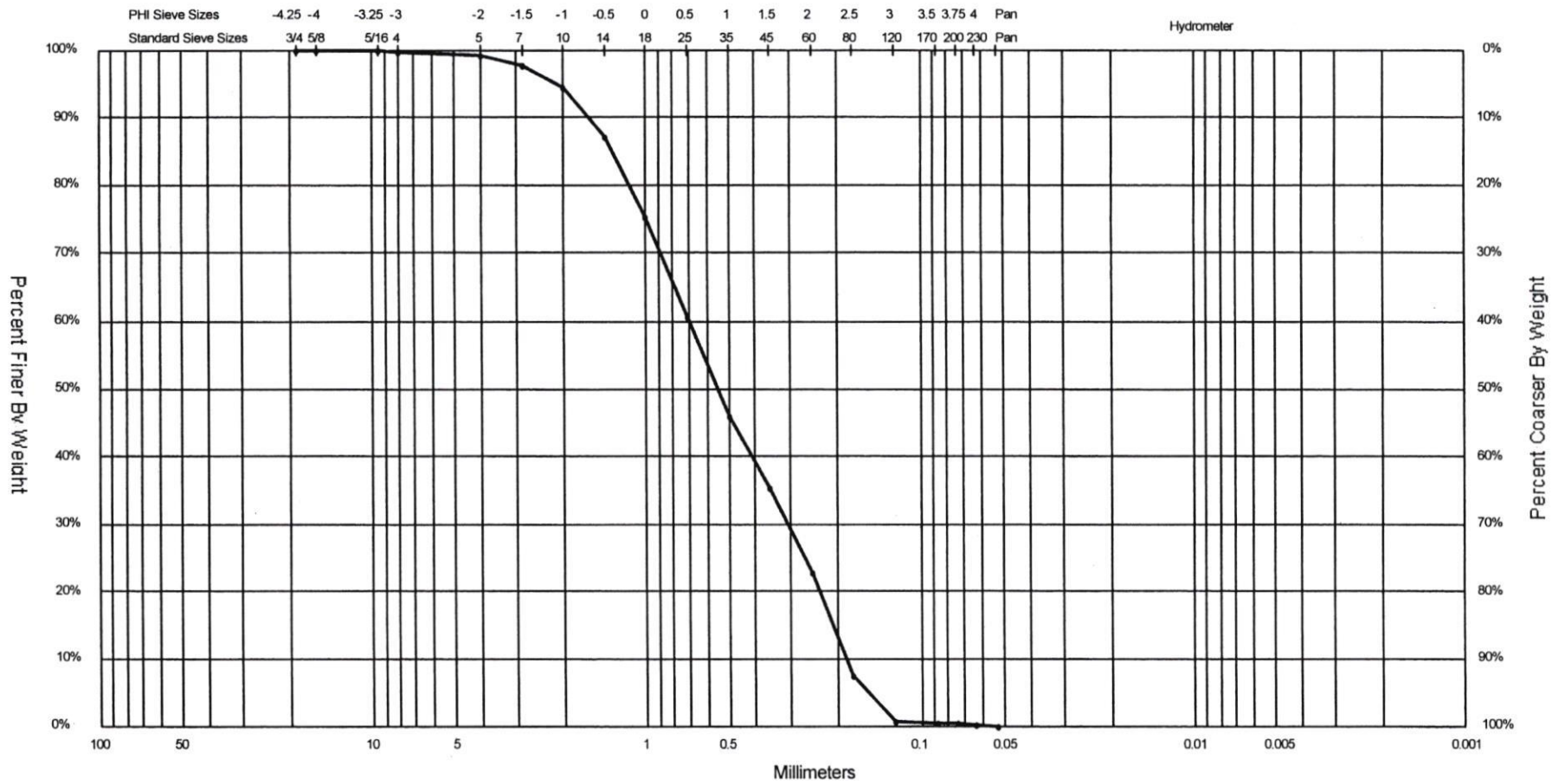
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112 MB	—	5.7	R112 MIDBERM	SW	0.16	0.36	0.43	-0.34	1.53	1.32	Project Name:	Captiva Island
											Collection Date:	11/1/02
											Analyzed By:	I Dremal



Coastal Planning & Engineering, Inc.
 2481 N.W. Boca Raton Blvd.
 Boca Raton, FL 33431
 ph 561 391-8102 fax 561 391-9116

Eastings (X):	439181.11
Northing (Y):	783038.73
Horizontal System:	State Plane FLA West 1983 Fe
Vertical System:	NGVD 29 Feet



Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

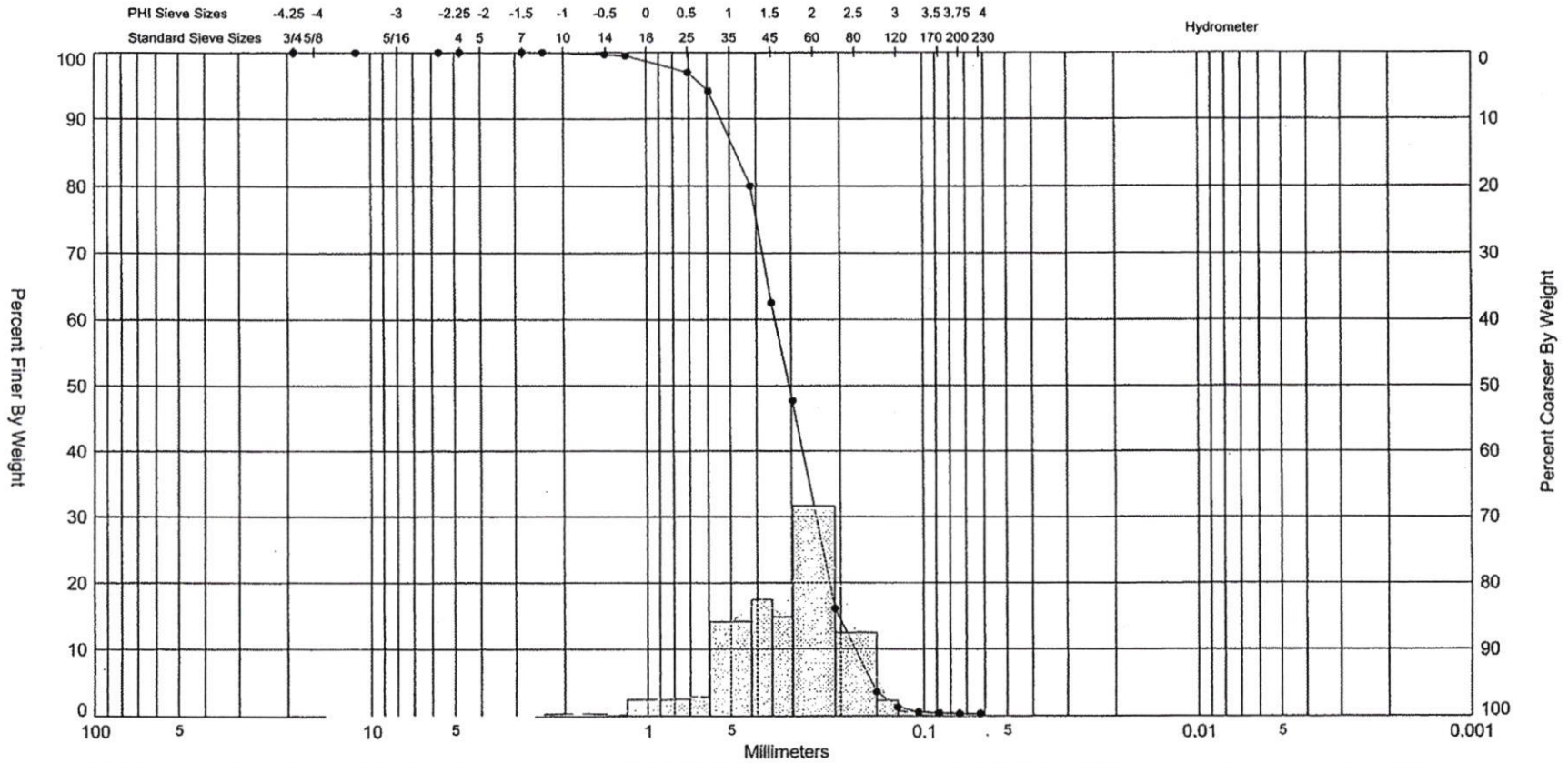
Sample	Symbol	Elev.	Comments	USCS	% Silt	Median	Mean	Skew	Kurt	Sort	Sample Information	
R112 TOB	—	7.6	R112 TOP OF BERM	SW	0.19	0.55	0.54	-0.06	1.30	1.43	Project Name:	Captiva Island
											Collection Date:	11/1/02
											Analyzed By:	I Dremal
											Easting (X):	439222.47
											Northing (Y):	783046.03
											Horizontal System:	State Plane FLA West 1983 Fe
											Vertical System:	NGVD 29 Feet



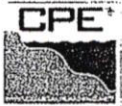
Coastal Planning & Engineering, Inc.
 2481 N.W. Boca Raton Blvd.
 Boca Raton, FL 33431
 ph 561 391-8102 fax 561 391-9116

2006 Grain Size Distribution Curves

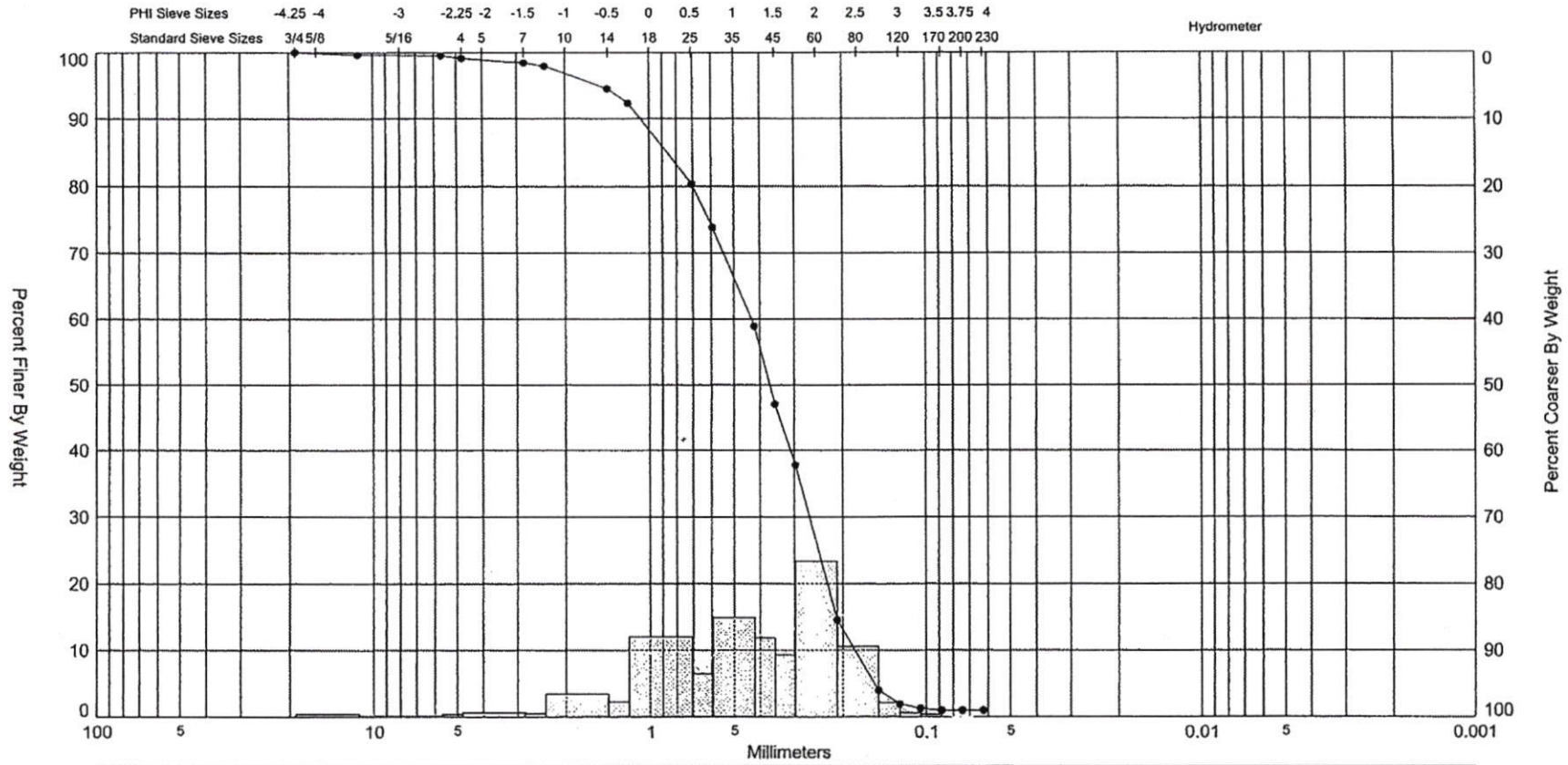
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ FL DEP ROSS.GDT 8/11/06



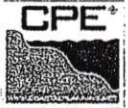
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
30	—●—	0.0	SP	#200 - 0.30 #230 - 0.30		11.10	1.71	1.69	-0.42	3.87	0.61	Project Name:	Captiva Post Con Beach Samples
Comments: FORESHORE, 266+00; R-110.5												Analysis Date:	02-02-06
Depths and elevations based on measured values												Analyzed By:	
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	596,606
												Northing (Y, ft):	780,446
												Horizontal System:	
												Vertical System:	

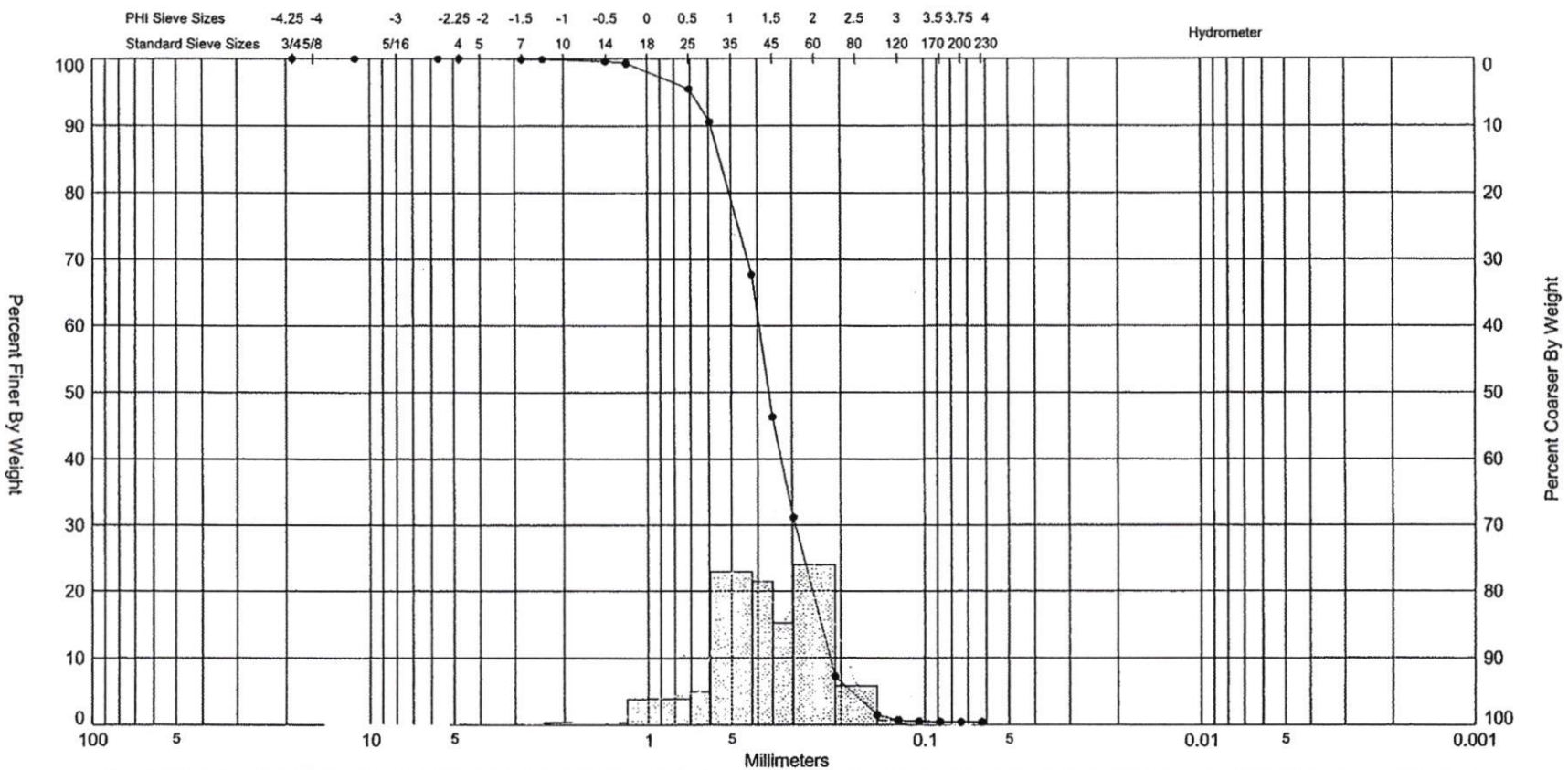
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ FL DEP ROSS.GDT 8/11/06



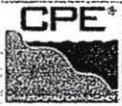
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
31	—●—	0.0	SW	#200 - 0.90 #230 - 0.90		45.00	1.44	1.26	-1.15	5.47	1.04	Project Name:	Captiva Post Con Beach Samples
Comments: ELEVATION 0, 266+00; R-110.5												Analysis Date:	02-02-06
Depths and elevations based on measured values												Analyzed By:	
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	596,591
												Northing (Y, ft):	780,437
												Horizontal System:	
												Vertical System:	

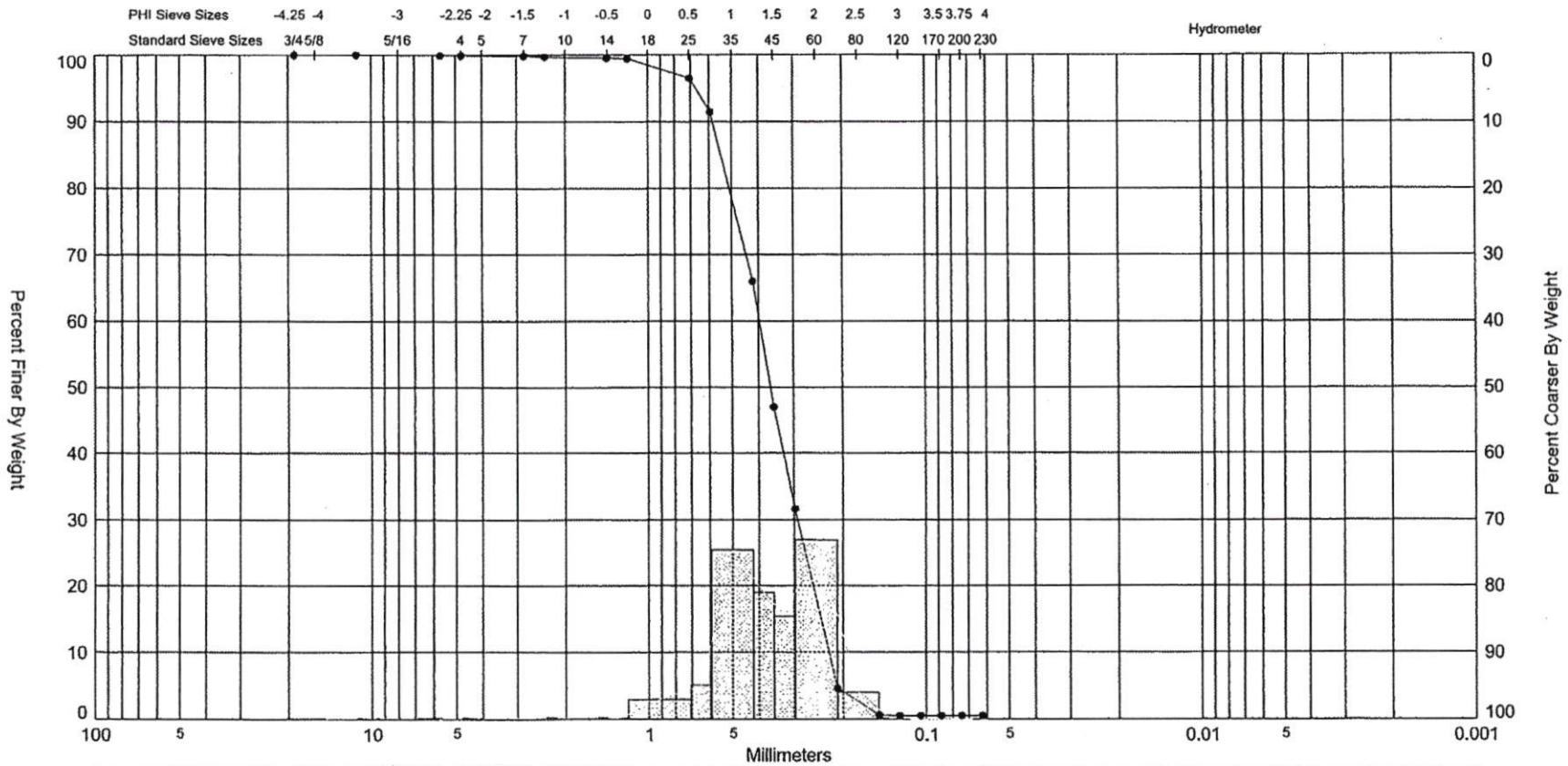
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ FL DEP ROSS.GDT 8/1/06



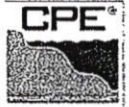
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
25	—●—	0.0	SP	#200 - 0.40 #230 - 0.40		31.30	1.46	1.46	-0.45	4.46	0.59	Project Name:	Captiva Post Con Beach Samples
Comments: BACK BEACH; R-110.5												Analysis Date:	02-02-06
Depths and elevations based on measured values												Analyzed By:	
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	596,632
												Northing (Y, ft):	780,461
												Horizontal System:	
												Vertical System:	

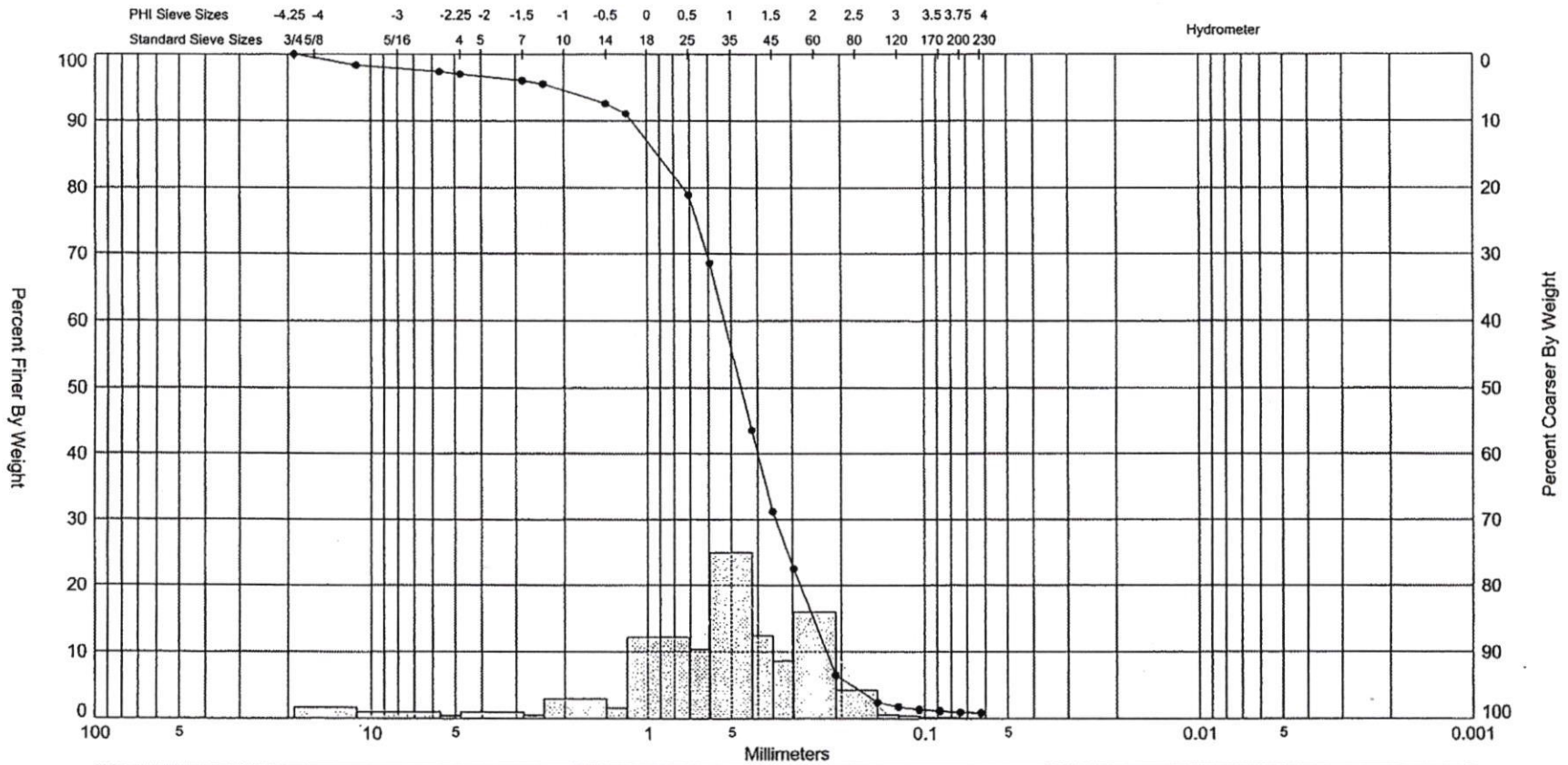
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ_FL DEP ROSS.GDT 8/11/06



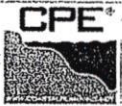
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
16	—●—	0.0	SP	#200 - 0.50 #230 - 0.50		89.50	1.46	1.44	-1.06	8.01	0.57	Project Name:	Captiva Post Con Beach Samples
Comments: FORESHORE, 314+00; R-115												Analysis Date:	01-29-06
Depths and elevations based on measured values												Analyzed By:	
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	599,371
												Northing (Y, ft):	776,489
												Horizontal System:	
												Vertical System:	

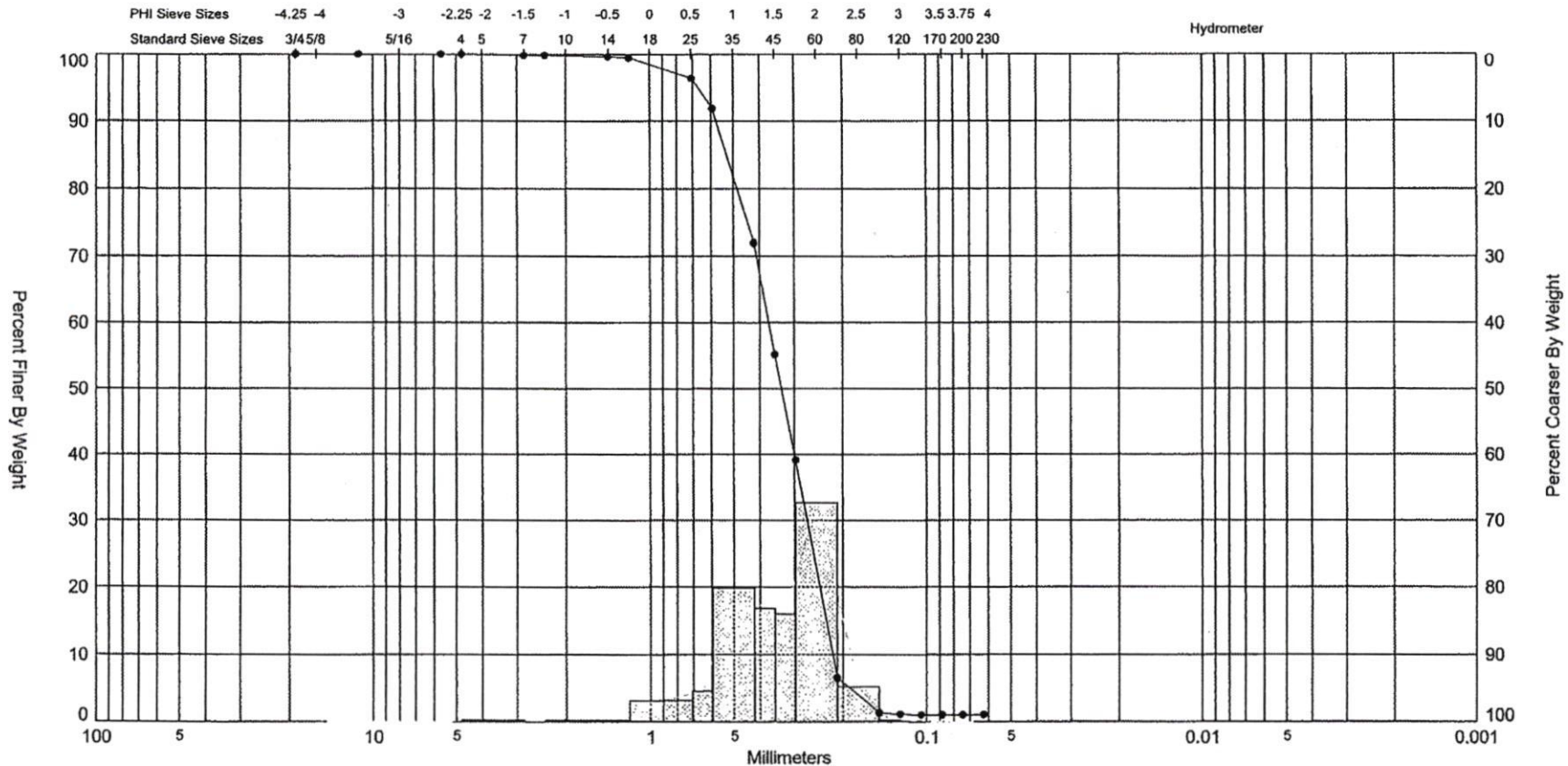
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ FL DEP ROSS.GDT 8/11/06




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	
17	—●—	0.0	SW	#200 - 0.90 #230 - 0.80		85.70	1.12	0.96	-1.74	7.97	1.15	Project Name:	Captiva Post Con Beach Samples
Comments: BACK BEACH, 314+00; R-115												Analysis Date:	01-29-06
Depths and elevations based on measured values												Analyzed By:	
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	599,403
												Northing (Y, ft):	776,518
												Horizontal System:	
												Vertical System:	

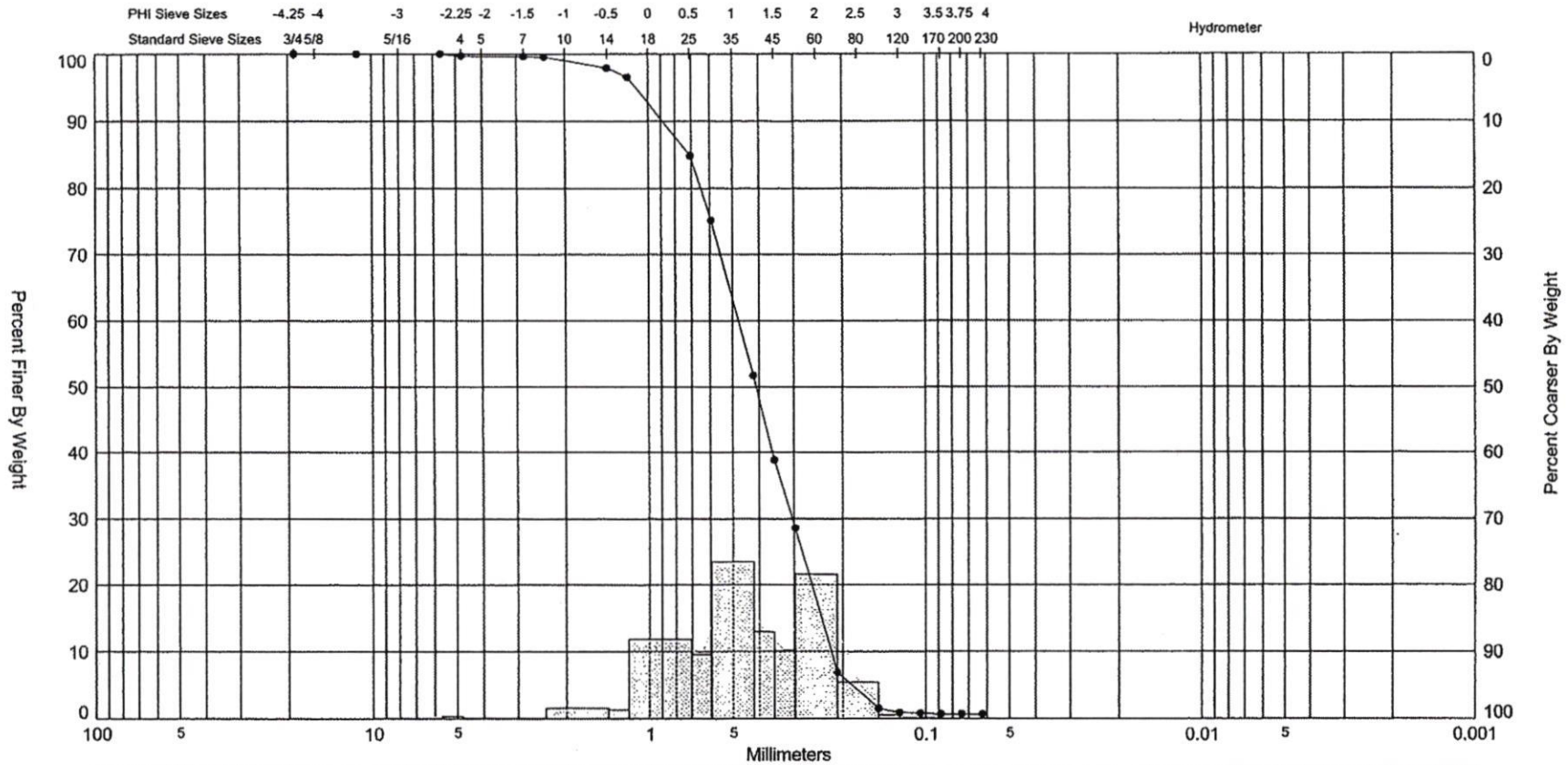
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ FL DEP ROSS.GDT 8/11/06



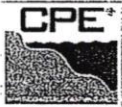
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
18	—●—	0.0	SP	#200 - 1.00 #230 - 1.00		84.60	1.58	1.52	-0.91	5.5	0.58	Project Name:	Captiva Post Con Beach Samples
Comments: ELEVATION 0, 314+00; R-115												Analysis Date:	01-29-06
Depths and elevations based on measured values												Analyzed By:	
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	599,353
												Northing (Y, ft):	776,477
												Horizontal System:	
												Vertical System:	

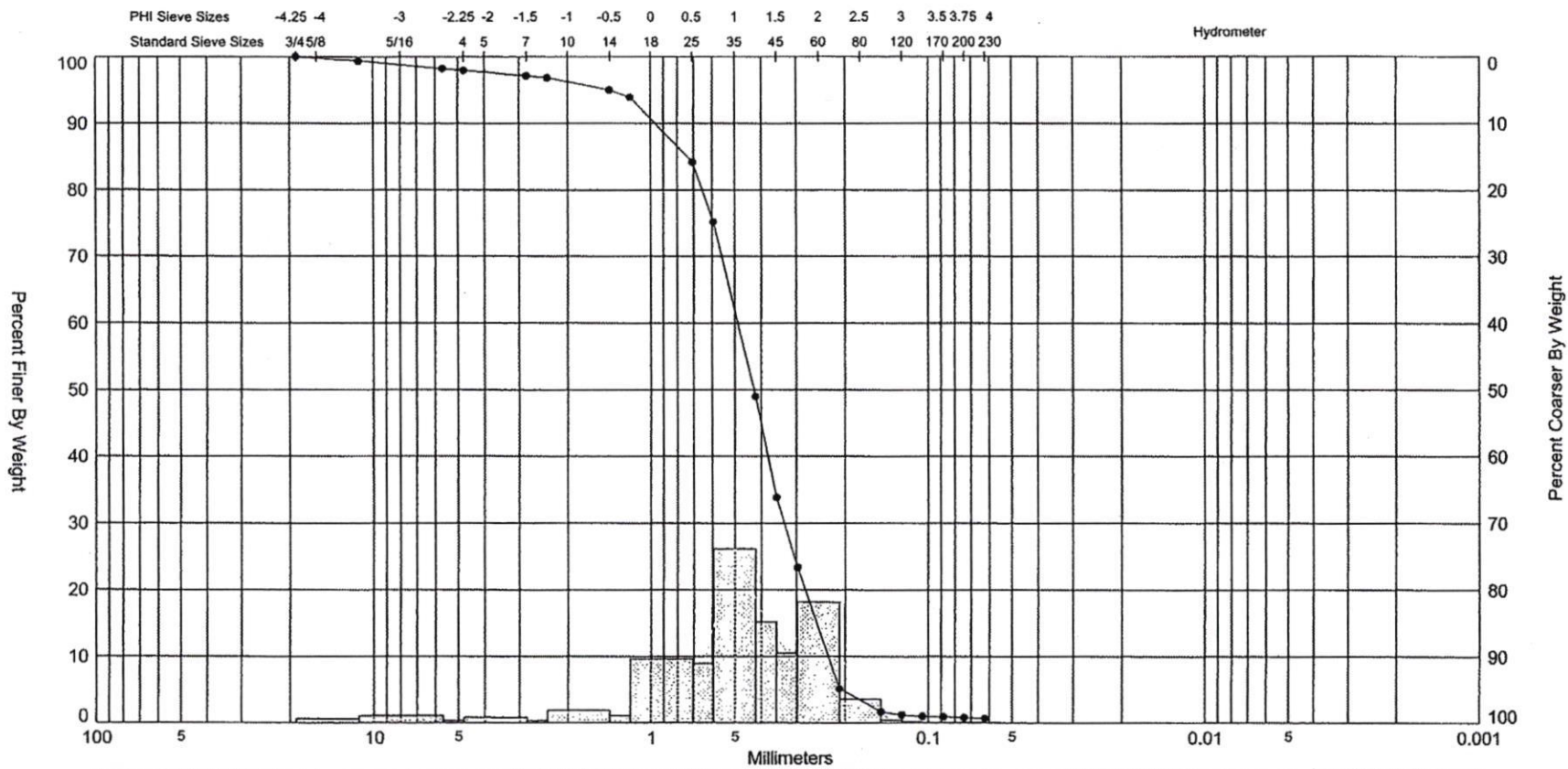
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ FL DEP ROSS.GDT 8/11/06



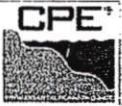
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
26	—●—	0.0	SP	#200 - 0.70 #230 - 0.70		77.70	1.28	1.23	-0.64	4.06	0.78	Project Name:	Captiva Post Con Beach Samples
Comments: ELEVATION 0; R-116												Analysis Date:	02-02-06
Depths and elevations based on measured values												Analyzed By:	
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	600,205
												Northing (Y, ft):	775,607
												Horizontal System:	
												Vertical System:	

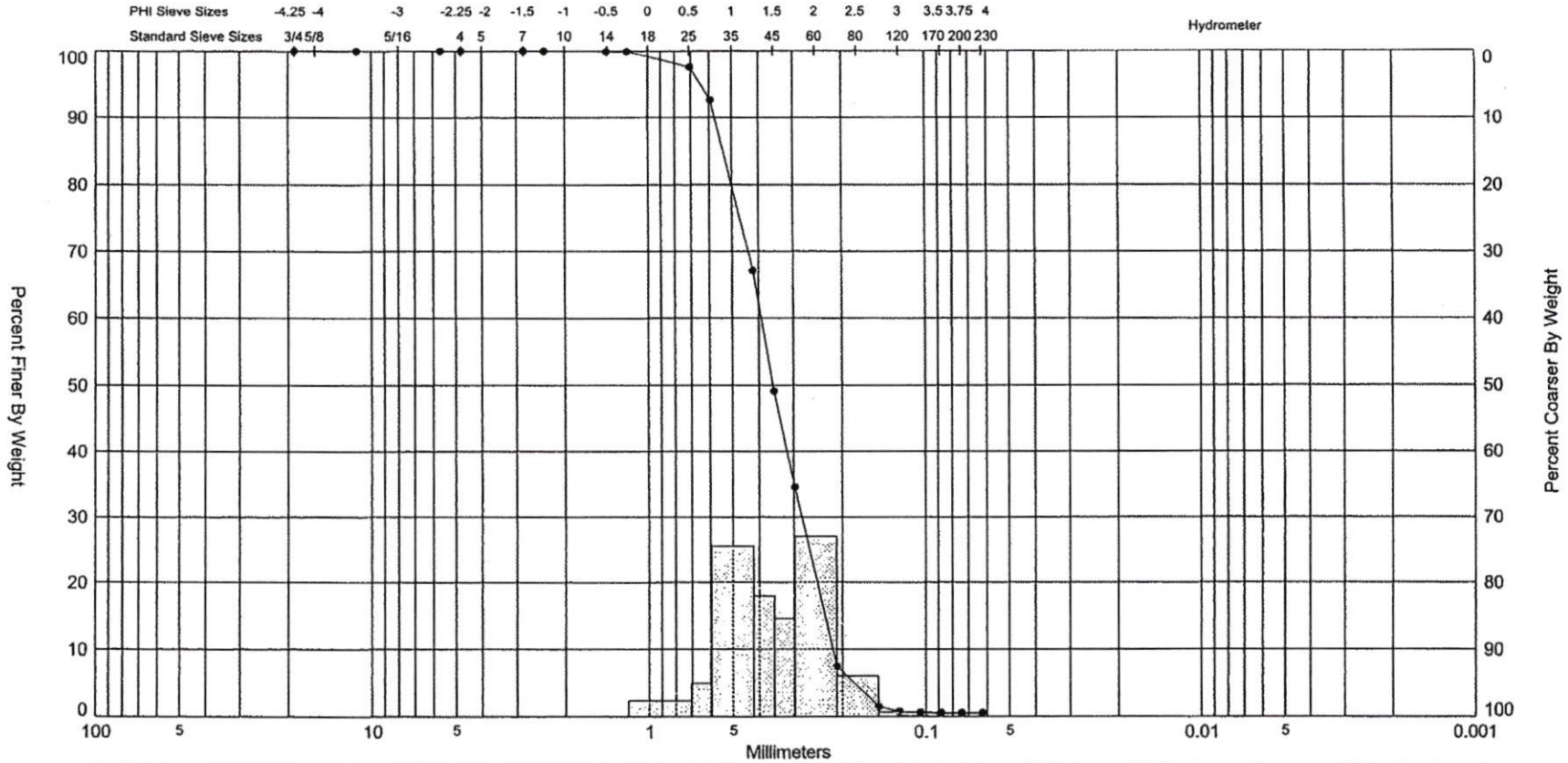
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ FL DEP ROSS.GDT 8/11/06



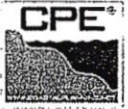
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
27	—●—	0.0	SW	#200 - 0.60 #230 - 0.70		84.40	1.23	1.09	-1.94	9.53	1	Project Name:	Captiva Post Con Beach Samples
Comments: BACK BEACH, 326+00; R-116												Analysis Date:	02-02-06
Depths and elevations based on measured values												Analyzed By:	
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	600,261
												Northing (Y, ft):	775,683
												Horizontal System:	
												Vertical System:	

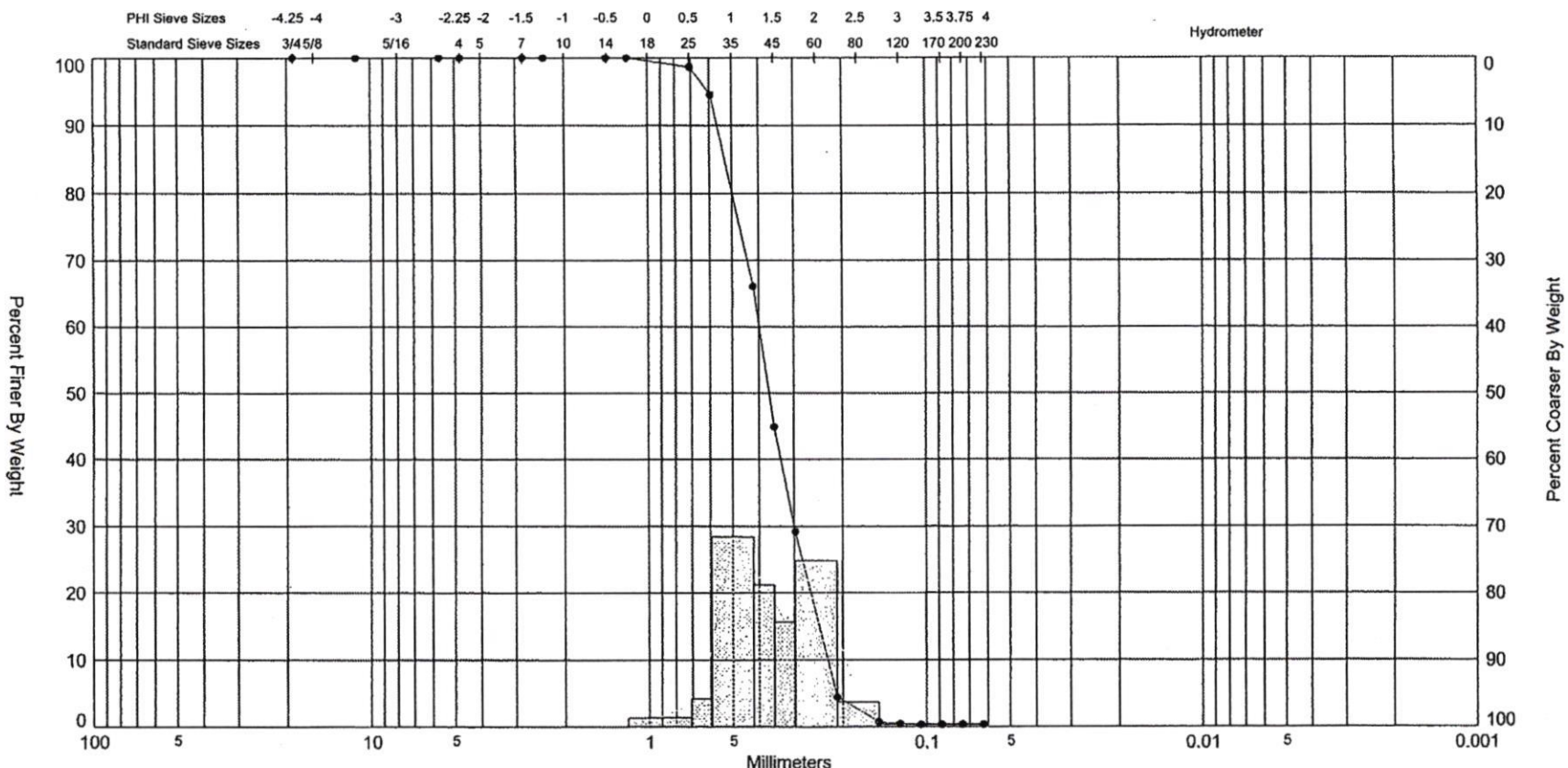
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISD.GPJ FL DEP ROSS.GDT 8/11/06



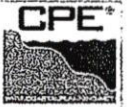
Gravel		Sand			Silt and Clay
Coarse	Fine	Coarse	Medium	Fine	

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
29	—●—	0.0	SP	#200 - 0.50 #230 - 0.50		81.20	1.49	1.5	-0.09	3.03	0.55	Project Name:	Captiva Post Con Beach Samples
Comments: FORESHORE, 326+00; R-116												Analysis Date:	02-02-06
Depths and elevations based on measured values												Analyzed By:	
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	600,227
												Northing (Y, ft):	775,638
												Horizontal System:	
												Vertical System:	

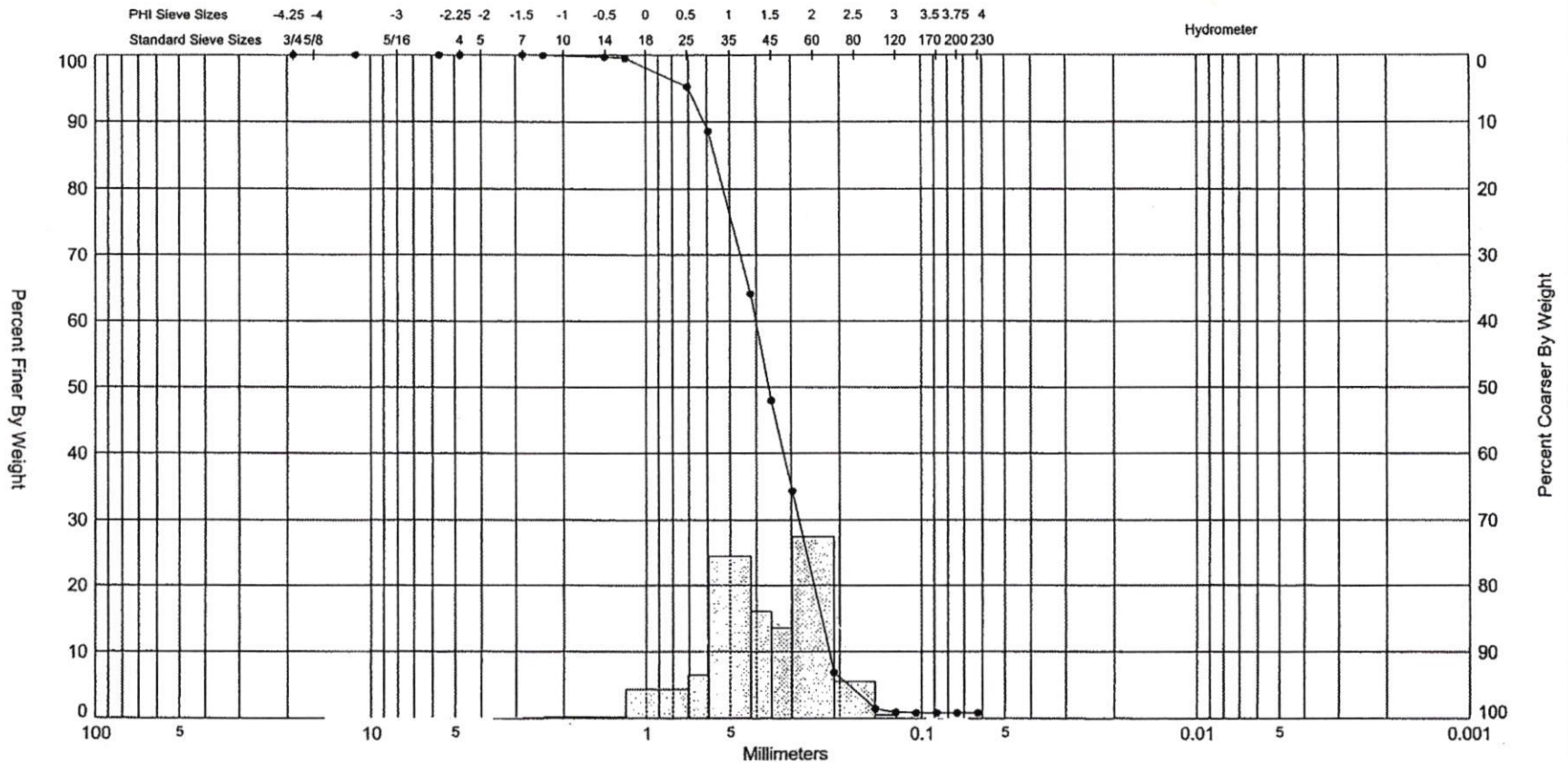
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_06-06_REVISED.GPJ FL DEP ROSS.GDT 8/11/06




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	
21	—●—	0.0	SP	#200 - 0.30 #230 - 0.30		77.00	1.44	1.46	0.08	2.76	0.49	Project Name:	Captiva Post Con Beach Samples
Comments: FORESHORE, 322+00; R-116												Analysis Date:	01-31-06
Depths and elevations based on measured values												Analyzed By:	
						Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116						Easting (X, ft):	599,921
												Northing (Y, ft):	775,910
												Horizontal System:	
												Vertical System:	

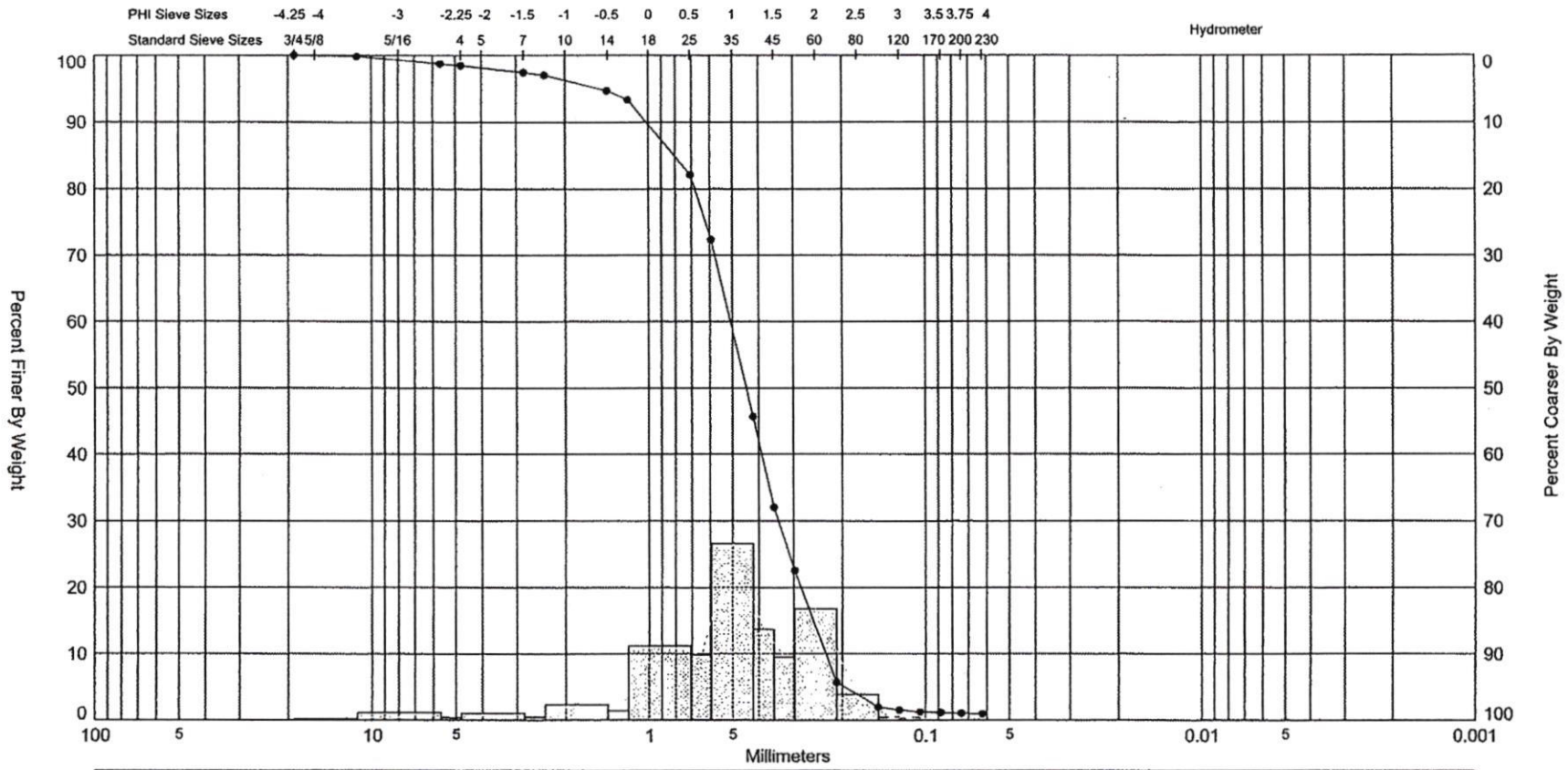
SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ FL DEP ROSS.GDT 8/11/06




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	
22	—●—	0.0	SP	#200 - 0.80 #230 - 0.80		31.50	1.47	1.45	-0.4	3.39	0.6	Project Name:	Captiva Post Con Beach Samples
Comments: ELEVATION 0, 322+00; R-116												Analysis Date:	01-31-06
Depths and elevations based on measured values												Analyzed By:	
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	599,901
												Northing (Y, ft):	775,887
												Horizontal System:	
												Vertical System:	

SIEVE ANALYSIS CAPTIVA_POST_CON_BEACH_05-06_REVISED.GPJ FL DEP ROSS.GDT 8/11/06



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	
24	—●—	0.0	SW	#200 - 1.00 #230 - 0.90		89.30	1.17	1.06	-1.5	7.51	0.97	Project Name:	Captiva Post Con Beach Samples
Comments: BACK BEACH, 322+00; R-116												Analysis Date:	01-31-06
Depths and elevations based on measured values												Analyzed By:	
							Coastal Planning & Engineering 2481 NW Boca Raton Blvd, Boca Raton FL 33431 ph (561) 391-8102 fax (561) 391-9116					Easting (X, ft):	599,966
												Northing (Y, ft):	775,953
												Horizontal System:	
												Vertical System:	

2006 Laboratory Reports



Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239)768-6600
Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.0	100.0	
No. 3.5	0.0	100.0	
No. 4	0.0	100.0	
No. 7	0.0	100.0	
No. 8	0.0	100.0	
No. 14	0.0	100.0	
No. 16	0.0	100.0	
No. 25	1.3	98.7	
No. 30	5.5	94.5	
No. 40	33.9	66.1	
No. 45	55.1	44.9	
No. 50	70.8	29.2	
No. 70	95.6	4.4	
No. 100	99.3	0.7	
No. 120	99.6	0.4	
No. 140	99.7	0.3	
No. 170	99.7	0.3	
No. 200	99.7	0.3	
No. 230	99.7	0.3	

% CARBONATE 77.0

MUNSELL COLOR (DRY) 2.5 Y 5/0

MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:

TOTAL DRY WEIGHT 322.4 grams

SAMPLE NO. 21 SAMPLE LOCATION FORESHORE, 322+00 R-116

POST CONSTRUCTION SAMPLE NORTHING 775909.842 EASTING 599921.299

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 1/31/06 BY CLIENT

Signature 7/12/04

GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239)768-6600
Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.0	100.0	
No. 3.5	0.0	100.0	
No. 4	0.0	100.0	
No. 7	0.0	100.0	
No. 8	0.1	99.9	
No. 14	0.3	99.7	
No. 16	0.5	99.5	
No. 25	4.8	95.2	
No. 30	11.4	88.6	
No. 40	35.9	64.1	
No. 45	52.0	48.0	
No. 50	65.6	34.4	
No. 70	93.1	6.9	
No. 100	98.6	1.4	
No. 120	99.1	0.9	
No. 140	99.2	0.8	
No. 170	99.2	0.8	
No. 200	99.2	0.8	
No. 230	99.2	0.8	

% CARBONATE 31.5

MUNSELL COLOR (DRY) 2.5 Y 5/0

MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:

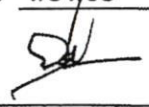
TOTAL DRY WEIGHT 398.8 grams

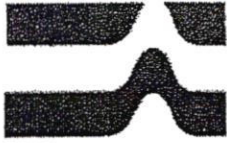
SAMPLE NO. 22 SAMPLE LOCATION ELEVATION 0, 322+00 R-116

POST CONSTRUCTION SAMPLE NORTHING 775887.207 EASTING 599900.606

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 1/31/06 BY CLIENT


GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239)768-6600
Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.2	99.8	
No. 3.5	1.3	98.7	
No. 4	1.6	98.4	
No. 7	2.6	97.4	
No. 8	3.0	97.0	
No. 14	5.3	94.7	
No. 16	6.7	93.3	
No. 25	17.9	82.1	
No. 30	27.7	72.3	
No. 40	54.3	45.7	
No. 45	68.0	32.0	
No. 50	77.5	22.5	
No. 70	94.3	5.7	
No. 100	98.1	1.9	
No. 120	98.5	1.5	
No. 140	98.8	1.2	
No. 170	98.9	1.1	
No. 200	99.0	1.0	
No. 230	99.1	0.9	

% CARBONATE 89.3
MUNSELL COLOR (DRY) 2.5 Y 6/2
MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:

TOTAL DRY WEIGHT 321.7 grams

SAMPLE NO. 24 SAMPLE LOCATION BACK BEACH, 322+00 R-116

POST CONSTRUCTION SAMPLE NORTHING 775953.331 EASTING 599966.051

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 1/31/06 BY CLIENT

[Handwritten Signature]
3/2/06

GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239)768-6600
Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.0	100.0	
No. 3.5	0.0	100.0	
No. 4	0.0	100.0	
No. 7	0.0	100.0	
No. 8	0.0	100.0	
No. 14	0.1	99.9	
No. 16	0.1	99.9	
No. 25	2.4	97.6	
No. 30	7.4	92.6	
No. 40	32.9	67.1	
No. 45	50.9	49.1	
No. 50	65.5	34.5	
No. 70	92.5	7.5	
No. 100	98.6	1.4	
No. 120	99.3	0.7	
No. 140	99.4	0.6	
No. 170	99.5	0.5	
No. 200	99.5	0.5	
No. 230	99.5	0.5	

% CARBONATE 81.2

MUNSELL COLOR (DRY) 2.5 Y 6/2

MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:

TOTAL DRY WEIGHT 334.1 grams

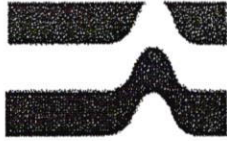
SAMPLE NO. 29 SAMPLE LOCATION FORESHORE, 326+00. R-116

POST CONSTRUCTION SAMPLE NORTHING 775637.977 EASTING 600226.643

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 2/2/06 BY CLIENT

[Signature]
GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239)768-6600
Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.0	100.0	
No. 3.5	0.0	100.0	
No. 4	0.3	99.7	
No. 7	0.4	99.6	
No. 8	0.5	99.5	
No. 14	2.1	97.9	
No. 16	3.4	96.6	
No. 25	15.2	84.8	
No. 30	24.8	75.2	
No. 40	48.3	51.7	
No. 45	61.2	38.8	
No. 50	71.4	28.6	
No. 70	93.0	7.0	
No. 100	98.5	1.5	
No. 120	99.1	0.9	
No. 140	99.2	0.8	
No. 170	99.3	0.7	
No. 200	99.3	0.7	
No. 230	99.3	0.7	

% CARBONATE 77.7

MUNSELL COLOR (DRY) 2.5 Y 5/0

MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:

TOTAL DRY WEIGHT 346.3 grams

SAMPLE NO. 26 SAMPLE LOCATION ELEVATION 0 R-116

POST CONSTRUCTION SAMPLE NORTHING 775606.583 EASTING 600205.094

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 2/2/06 BY CLIENT

GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239)768-6600
Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.7	99.3	
No. 3.5	1.8	98.2	
No. 4	2.1	97.9	
No. 7	2.9	97.1	
No. 8	3.2	96.8	
No. 14	5.0	95.0	
No. 16	6.1	93.9	
No. 25	15.8	84.2	
No. 30	24.8	75.2	
No. 40	51.0	49.0	
No. 45	66.2	33.8	
No. 50	76.7	23.3	
No. 70	94.9	5.1	
No. 100	98.4	1.6	
No. 120	98.8	1.2	
No. 140	99.0	1.0	
No. 170	99.1	0.9	
No. 200	99.2	0.8	
No. 230	99.3	0.7	

% CARBONATE 84.4

MUNSELL COLOR (DRY) 2.5 Y 5/0

MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:


TOTAL DRY WEIGHT 328.3 grams

SAMPLE NO. 27 SAMPLE LOCATION BACK BEACH, 326+00 R-116

POST CONSTRUCTION SAMPLE NORTHING 775682.995 EASTING 600261.040

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 2/2/06 BY CLIENT


GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

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Fort Myers, Florida 33913
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Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.0	100.0	
No. 3.5	0.0	100.0	
No. 4	0.0	100.0	
No. 7	0.2	99.8	
No. 8	0.2	99.8	
No. 14	0.4	99.6	
No. 16	0.6	99.4	
No. 25	3.7	96.3	
No. 30	8.2	91.8	
No. 40	28.0	72.0	
No. 45	44.8	55.2	
No. 50	60.8	39.2	
No. 70	93.5	6.5	
No. 100	98.7	1.3	
No. 120	98.9	1.1	
No. 140	99.0	1.0	
No. 170	99.0	1.0	
No. 200	99.0	1.0	
No. 230	99.0	1.0	

% CARBONATE 84.6

MUNSELL COLOR (DRY) 10 YR 5.5/1

MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:

TOTAL DRY WEIGHT 450.6 grams

SAMPLE NO. 18 SAMPLE LOCATION ELEVATION 0, 314+00 R-115

POST CONSTRUCTION SAMPLE NORTHING 776477.102 EASTING 599353.308

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 1/29/06 BY CLIENT

GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



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REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	1.6	98.4	
No. 3.5	2.6	97.4	
No. 4	3.0	97.0	
No. 7	4.0	96.0	
No. 8	4.5	95.5	
No. 14	7.4	92.6	
No. 16	8.9	91.1	
No. 25	21.1	78.9	
No. 30	31.4	68.6	
No. 40	56.4	43.6	
No. 45	68.8	31.2	
No. 50	77.5	22.5	
No. 70	93.5	6.5	
No. 100	97.7	2.3	
No. 120	98.3	1.7	
No. 140	98.7	1.3	
No. 170	98.9	1.1	
No. 200	99.1	0.9	
No. 230	99.2	0.8	

% CARBONATE 85.7

MUNSELL COLOR (DRY) 2.5 Y 5/0

MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:

TOTAL DRY WEIGHT 314.1 grams

SAMPLE NO. 17 SAMPLE LOCATION BACK BEACH, 314+00 R-115

POST CONSTRUCTION SAMPLE NORTHING 776517.874 EASTING 599403.250

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 1/29/06 BY CLIENT

[Handwritten signature]

GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

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Fort Myers, Florida 33913
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Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.0	100.0	
No. 3.5	0.1	99.9	
No. 4	0.1	99.9	
No. 7	0.2	99.8	
No. 8	0.3	99.7	
No. 14	0.5	99.5	
No. 16	0.6	99.4	
No. 25	3.5	96.5	
No. 30	8.6	91.4	
No. 40	34.0	66.0	
No. 45	53.0	47.0	
No. 50	68.4	31.6	
No. 70	95.4	4.6	
No. 100	99.4	0.6	
No. 120	99.5	0.5	
No. 140	99.5	0.5	
No. 170	99.5	0.5	
No. 200	99.5	0.5	
No. 230	99.5	0.5	

% CARBONATE 89.5

MUNSELL COLOR (DRY) 2.5 Y 5/0

MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:

TOTAL DRY WEIGHT 277.7 grams

SAMPLE NO. 16 SAMPLE LOCATION FORESHORE, 314+00 R-115

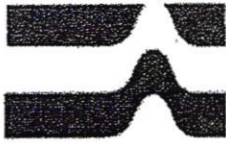
POST CONSTRUCTION SAMPLE NORTHING 776489.180 EASTING 599370.684

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 1/29/06 BY CLIENT

[Handwritten signature]
3/2/06

GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

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Fort Myers, Florida 33913
(239)768-6600
Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.4	99.6	
No. 3.5	0.5	99.5	
No. 4	0.9	99.1	
No. 7	1.6	98.4	
No. 8	2.1	97.9	
No. 14	5.5	94.5	
No. 16	7.7	92.3	
No. 25	19.7	80.3	
No. 30	26.2	73.8	
No. 40	41.1	58.9	
No. 45	52.9	47.1	
No. 50	62.2	37.8	
No. 70	85.5	14.5	
No. 100	96.1	3.9	
No. 120	98.2	1.8	
No. 140	98.8	1.2	
No. 170	99.1	0.9	
No. 200	99.1	0.9	
No. 230	99.1	0.9	

% CARBONATE 45.0

MUNSELL COLOR (DRY) 10 YR 6/1.5

MUNSELL COLOR (WET) 2.5 Y 5/0

REMARKS:

TOTAL DRY WEIGHT 359.8 grams

SAMPLE NO. 31 SAMPLE LOCATION ELEVATION 0, 266+00 RUD.5

POST CONSTRUCTION SAMPLE NORTHING 780436.660 EASTING 596590.722

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 2/2/06 BY CLIENT

[Handwritten signature]
3/2/06

GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

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Fort Myers, Florida 33913
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REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.0	100.0	
No. 3.5	0.0	100.0	
No. 4	0.0	100.0	
No. 7	0.0	100.0	
No. 8	0.0	100.0	
No. 14	0.3	99.7	
No. 16	0.5	99.5	
No. 25	3.0	97.0	
No. 30	5.8	94.2	
No. 40	20.0	80.0	
No. 45	37.5	62.5	
No. 50	52.3	47.7	
No. 70	83.9	16.1	
No. 100	96.4	3.6	
No. 120	98.7	1.3	
No. 140	99.4	0.6	
No. 170	99.6	0.4	
No. 200	99.7	0.3	
No. 230	99.7	0.3	

% CARBONATE 11.1

MUNSELL COLOR (DRY) 10 YR 7/2

MUNSELL COLOR (WET) 10 YR 5.5/1

REMARKS:

TOTAL DRY WEIGHT 405.2 grams

SAMPLE NO. 30 SAMPLE LOCATION FORESHORE, 266+00 R-110.5

POST CONSTRUCTION SAMPLE NORTHING 780446.420 EASTING 596605.917

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 2/2/06 BY CLIENT

[Signature]
GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



Ardaman & Associates, Inc.

9970 Bavaria Road
Fort Myers, Florida 33913
(239)768-6600
Fax (239)768-0409



REPORT OF SIEVE ANALYSIS

PROJECT: CAPTIVA & SANIBEL ISLANDS BEACH
RENOURISHMENT PROJECT, POST
CONSTRUCTION
LEE COUNTY, FLORIDA

FILE NO.: 06-4052

CC. 1-CLIENT
1-GREAT LAKES, NAPLES

REPORTED TO: GREAT LAKES DREDGE & DOCK COMPANY, LLC
NEW ADDRESS

SIEVE ANALYSIS

Sieve Size	Percent Retained	Percent Passing	Specifications
3/4 inch	0.0	100.0	
7/16 inch	0.0	100.0	
No. 3.5	0.0	100.0	
No. 4	0.0	100.0	
No. 7	0.1	99.9	
No. 8	0.1	99.9	
No. 14	0.4	99.6	
No. 16	0.7	99.3	
No. 25	4.5	95.5	
No. 30	9.4	90.6	
No. 40	32.3	67.7	
No. 45	53.7	46.3	
No. 50	68.9	31.1	
No. 70	92.8	7.2	
No. 100	98.6	1.4	
No. 120	99.3	0.7	
No. 140	99.5	0.5	
No. 170	99.6	0.4	
No. 200	99.6	0.4	
No. 230	99.6	0.4	

% CARBONATE 31.3

MUNSELL COLOR (DRY) 10 YR 5/1

MUNSELL COLOR (WET) 10 YR 5.5/1

REMARKS:

TOTAL DRY WEIGHT 406.2 grams

SAMPLE NO. 25 SAMPLE LOCATION BACK BEACH R 110.5

POST CONSTRUCTION SAMPLE NORTHING 780461.359 EASTING 596632.222

DESCRIPTION GRAY MEDIUM AND FINE SAND

PROPOSED USE BEACH RENOURISHMENT DATE SAMPLED 2/2/06 BY CLIENT

[Signature] 3/8/06

GARY A. DREW, P.E., BRANCH MANAGER
FL. LICENSE NO. 35504



LEE COUNTY
SOUTHWEST FLORIDA
BOARD OF COUNTY COMMISSIONERS

Writers Direct Dial (239) 533-8566

John E. Manning
District One

January 18, 2011

Brian Bigelow
District Two

Ray Judah
District Three

Dr. Lainie Edwards
Florida Department of Environmental Protection
Bureau of Beaches and Coastal Systems
3900 Commonwealth Blvd., MS 300
Tallahassee, Florida 32399-3000

Tammy Hall
District Four

Frank Mann
District Five

Karen B. Hawes
County Manager

Subject: Blind Pass Restoration Modification (0265943-JC)
Response to Request for Additional Information (RAI) #1

Diana M. Parker
County Hearing Examiner

Dear Dr. Edwards:

The following information is provided in response to a request for additional information (RAI) concerning the Blind Pass project modification. One original and two (2) hardcopies of the submittal are provided for your reference. Digital files on CD are also provided with each copy. This RAI response addresses concerns regarding the QA / AC plan, revised permit sketches, and results of available wildlife surveys. Also included is the withdrawal of the Captiva fill site.

Responses are shown below with a reference to the specific RAI comment. Appendices containing supporting information as necessary, are attached and numbered corresponding to their respective comment.

Comment 23 – Permit drawings are attached in Appendix 23. These drawings are intended to supplement the previously approved drawings and have been renumbered accordingly.

Comment 27 – A sediment QA/QC plan, as required by Chp 62B-41.008(1)(k)4.b is attached in Appendix 27.

Comment 30 – Attached in Appendix 30 are all available nesting sea turtle reports associated with this project. Reports for the 2009 and 2010 season are attached. The 2009 report is in spreadsheet format, but the 2010 report has a summary text in addition to the spreadsheet. The reports were prepared by the Sanibel Captiva Conservation Foundation (SCCF).

SCCF is scheduled to complete the remaining permit required post construction monitoring. They are also proposed to complete any additional monitoring required by a maintenance event.

The fill area from R118 to R116 has not historically been regularly monitored for shorebirds. Cursory monitoring has occurred by the SCCF and the Sanibel Captiva Audubon Society. Lee County has been in touch with both of these organizations to discuss project monitoring and feel confident at least one will be conducting future monitoring required by maintenance dredging.

Nesting shorebird reports were not compiled for this project.

The names and affiliations of the persons responsible for the shorebird monitoring are provided below.

Monitors for Blind Pass Construction in 2008 / 2009

Monitoring Event	Name	Affiliation
Nesting Shorebird	Jim Griffith	San Cap Audubon Society
Non-Breeding Surveys	Dr. Rob Loflin	City of Sanibel

Potential Future Monitors (other than referenced above)

Monitoring Event	Name	Affiliation
Nesting Shorebird	Joel Caouette	SCCF

Comment 31 – It is acknowledged an updated BO will be required for this modification. It is requested the incidental take for sea turtles be amended to allow for sand placement once every 4 years along any specific shoreline. This would allow for maintenance dredging at a higher frequency than 4 years, but no shoreline segment would have sand placement more often than the 4 year interval.

Comment 33 – The proposed fill section on Captiva Island (R95-R97) has been removed from the modification request.

Comment 39 – The fee of \$420 shall be provided under separate cover to the Department within 45 days of this response. It is understood the modification shall be denied if the fee is not submitted within the given timeframe.

The information provided above is intended to address the Departments concerns regarding QA/QC plan, future shorebird monitoring, an updated Biological Opinion, and the projects consistency with the strategic beach management plan. If there are any questions, please feel free to contact me at the number above.

If there are any questions, please do not hesitate to contact me.

Sincerely,

LEE COUNTY PUBLIC WORKS
Division of Natural Resources



Robert Neal, P.E.
Coastal Engineer

Cc: Lauren Diaz, USACE
Eric Seckinger, FWC
Jeff Howe, FWS
Mindy Schneider-Brown, DEP Pine Island Sound AP
Kathy Rooker, CEPD
Steve Boutelle, LCDNR
Michael Poff, CEC

Attachment 23 – Permit Drawings

BLIND PASS MAINTENANCE DREDGING
SUPPLEMENTAL PERMIT PLANS
PREPARED FOR
LEE COUNTY BOARD OF COUNTY COMMISSIONERS



INDEX:

- 21. COVER SHEET
- 22. LOCATION MAP
- 23. DREDGE SITE PLAN
- 24. SANIBEL BEACH FILL
- 25. CROSS SECTIONS 0+00 TO 8+00
- 26. CROSS SECTIONS 10+00 TO 18+00
- 27. BEACH FILL TYPICAL CROSS SECTION

GENERAL NOTES:

- 1. AERIAL PHOTOGRAPHS PROVIDED BY LEE COUNTY, DATED JANUARY 2010.
- 2. PROJECT LIMITS ALONG THE BEACH EXTEND FROM R109 SOUTH TO R118.
- 3. CONTRACTOR SHALL FIELD VERIFY LOCATION OF TERMINAL GROIN.

SURVEY NOTES:

- 1. ELEVATIONS REFERENCE NAVD88.
- 2. COORDINATES SHOWN HEREON ARE BASED ON THE NORTH AMERICAN DATUM 1983/1990 ADJUSTMENT, FLORIDA MERCATOR WEST ZONE.
- 3. BLIND PASS CHANNEL BATHYMETRIC SURVEY BY COASTAL ENGINEERING CONSULTANTS, INC., OCTOBER 2010.
- 4. MHW & MLW DATA TAKEN FROM CAPTIVA NOURISHMENT 1 YEAR MONITORING REPORT (CPE, 2007).

LEE COUNTY
N.T.S.

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

MICHAEL T. POFF, VP
PROFESSIONAL ENGINEER
FLORIDA LICENSE NO. 48218
DATE OF SIGNATURE: 1/11/11

SHEET 21 OF 21
FILE NO.: 10058-P-21

COASTAL ENGINEERING CONSULTANTS INC.
A CECI GROUP COMPANY
Serving Florida Since 1977
3106 SOUTH HORSESHOE DRIVE
NAPLES, FLORIDA 34104

CIVIL ENGINEERING
SURVEY & MAPPING
COASTAL ENGINEERING
ENVIRONMENTAL
PLANNING SERVICES
PHONE: (239)643-2324
FAX: (239)643-1143
www.coastalengineering.com
E-Mail: info@cecifl.com

CLIENT: LEE COUNTY BOARD OF COMMISSIONERS

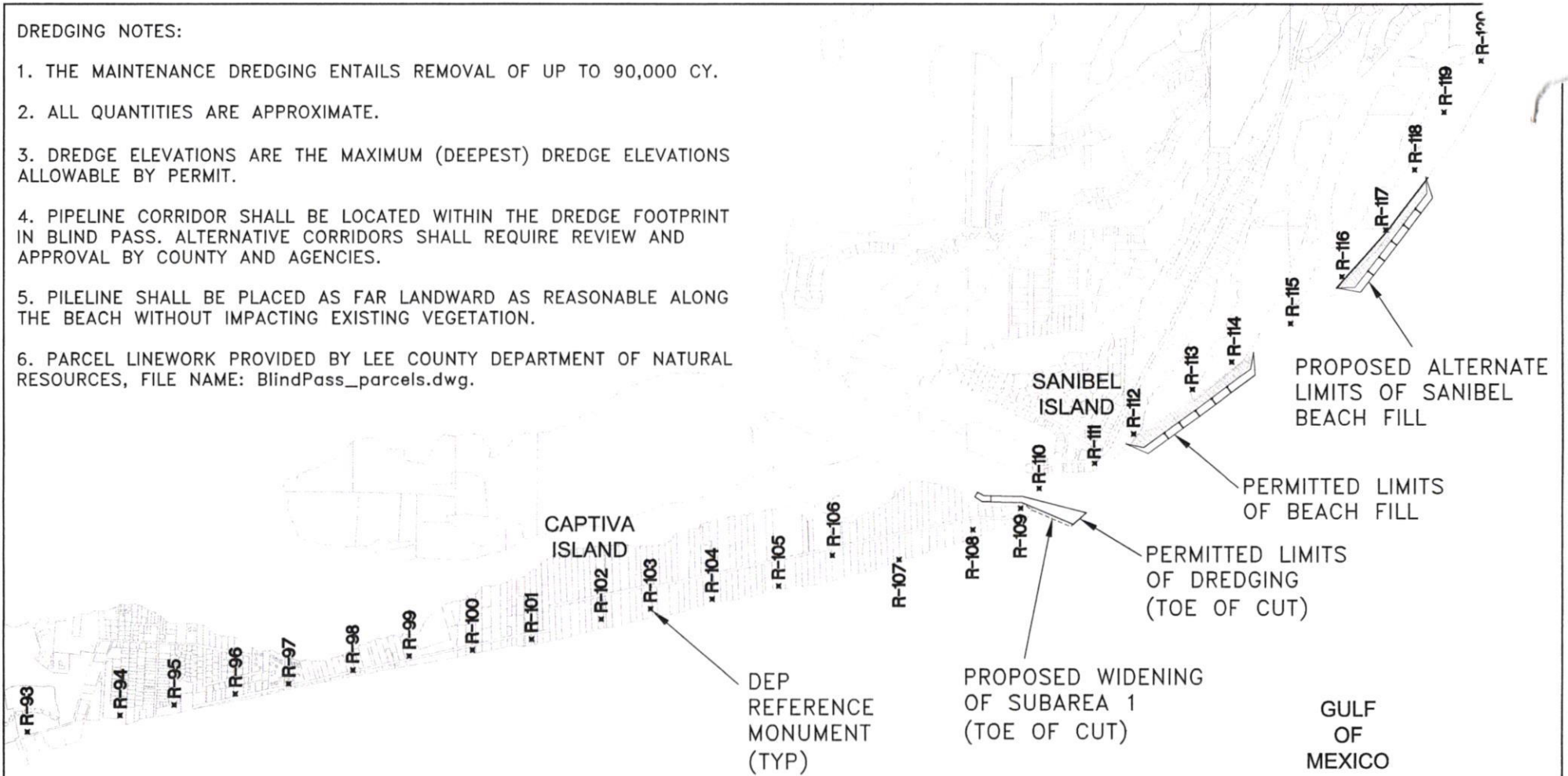
TITLE: COVER SHEET

DATE:	8/10/10	SCALE:	AS NOTED
DRAWN:	SDB	F.B.	
CHECKED:	MTP	PG.	
SEC.	TWP.	RNG.	
ACAD NO.	10058_P21.dwg	1	1/11/11 MTP
REF. NO.	10.058	NO.	DATE BY
			REVISION DESCRIPTION

DEP RAI 1

DREDGING NOTES:

1. THE MAINTENANCE DREDGING ENTAILS REMOVAL OF UP TO 90,000 CY.
2. ALL QUANTITIES ARE APPROXIMATE.
3. DREDGE ELEVATIONS ARE THE MAXIMUM (DEEPEST) DREDGE ELEVATIONS ALLOWABLE BY PERMIT.
4. PIPELINE CORRIDOR SHALL BE LOCATED WITHIN THE DREDGE FOOTPRINT IN BLIND PASS. ALTERNATIVE CORRIDORS SHALL REQUIRE REVIEW AND APPROVAL BY COUNTY AND AGENCIES.
5. PIPELINE SHALL BE PLACED AS FAR LANDWARD AS REASONABLE ALONG THE BEACH WITHOUT IMPACTING EXISTING VEGETATION.
6. PARCEL LINEWORK PROVIDED BY LEE COUNTY DEPARTMENT OF NATURAL RESOURCES, FILE NAME: BlindPass_parcel.dwg.



SCALE: 1" = 2500'

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

MICHAEL T. POFF, M.P.
PROFESSIONAL ENGINEER
FLORIDA LICENSE NO. 48218
DATE OF SIGNATURE: 11/11/11

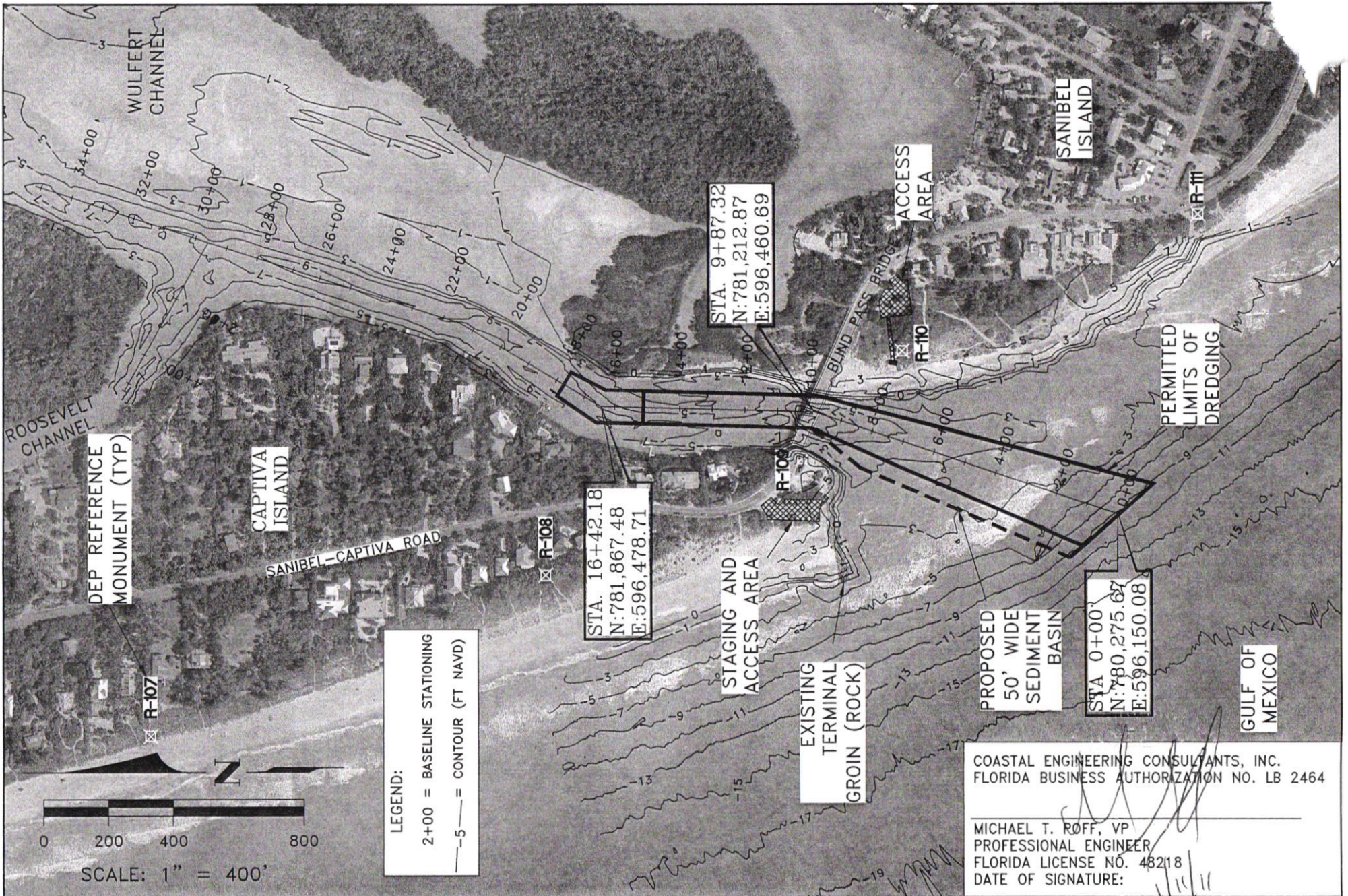
SHEET 22 OF 22
FILE NO.: 10058-P-22

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Serving Florida Since 1977
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PLANNING SERVICES
PHONE: (239)643-2324
FAX: (239)643-1143
www.coastalengineering.com
E-Mail: info@cecifl.com

CLIENT: LEE COUNTY BOARD OF COMMISSIONERS
TITLE: LOCATION MAP

DATE:	8/10/10	SCALE:	AS NOTED
DRAWN:	SDB	F.B.	
CHECKED:	MTP	PG.	
SEC.	TWP.	RNG.	
ACAD NO.	10058_P22.dwg	1	1/11/11 MTP
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			REVISION DESCRIPTION



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MICHAEL T. ROFF, VP
 PROFESSIONAL ENGINEER
 FLORIDA LICENSE NO. 48218
 DATE OF SIGNATURE: 11/11

SHEET 23 OF 23
 FILE NO.: 10058-P-23

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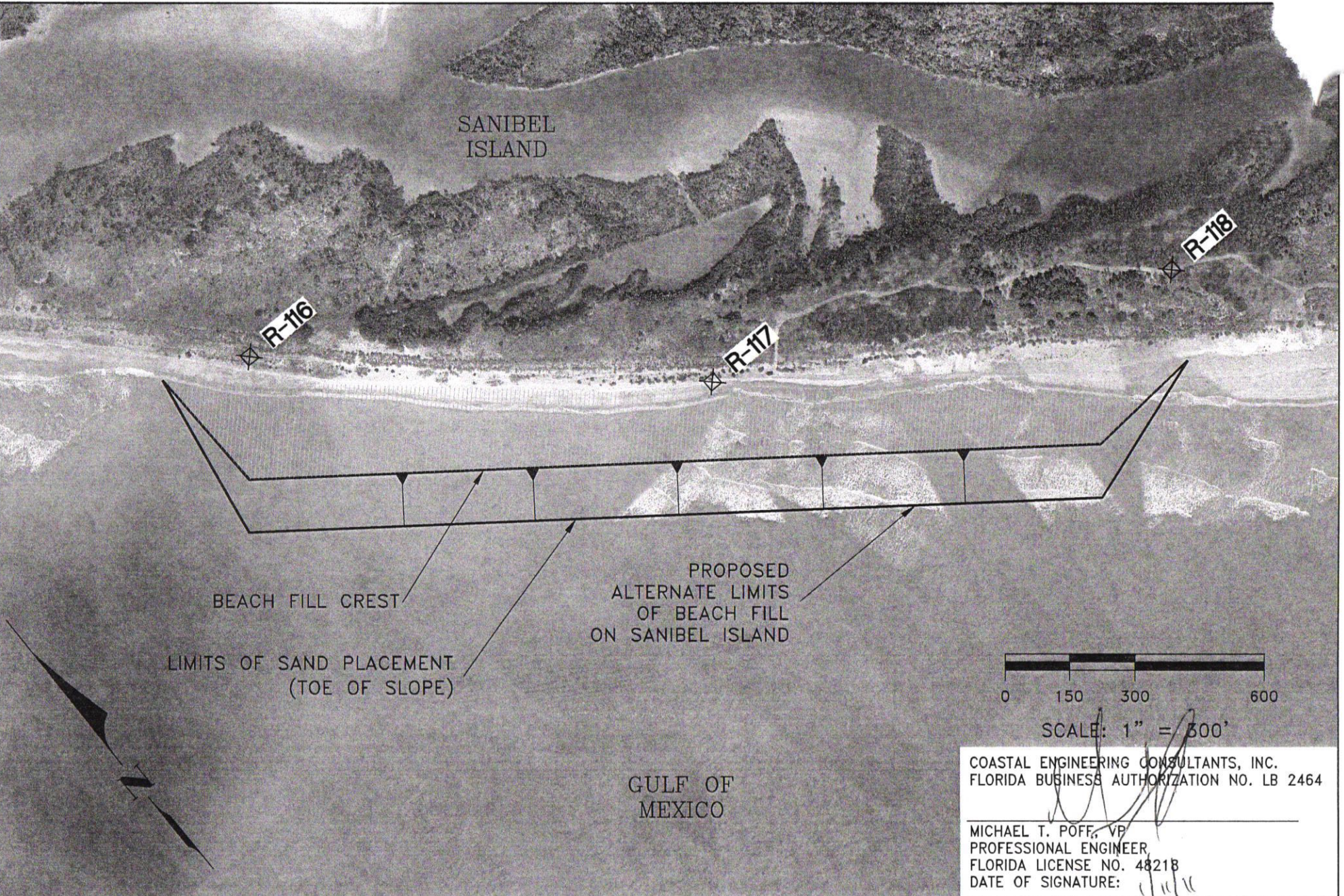
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 E-Mail: info@cecifi.com

CLIENT: **LEE COUNTY BOARD OF COMMISSIONERS**

TITLE: **DREDGE SITE PLAN**

DATE:	8/10/10	SCALE:	AS NOTED
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REF. NO.	10.058	DATE	1/11/11
		BY	MTP
		REVISION	DEP RAI 1
		DESCRIPTION	



SCALE: 1" = 300'

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

[Signature]
 MICHAEL T. POFF, VP
 PROFESSIONAL ENGINEER
 FLORIDA LICENSE NO. 48218
 DATE OF SIGNATURE: 11/11/11

SHEET 24 OF 24
 FILE NO.: 10058-P-24

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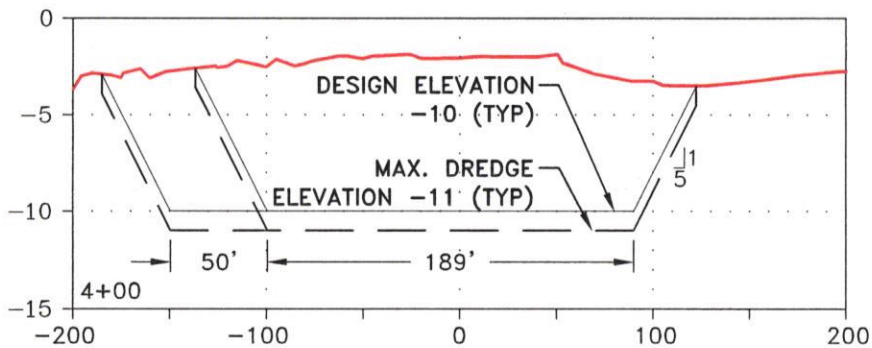
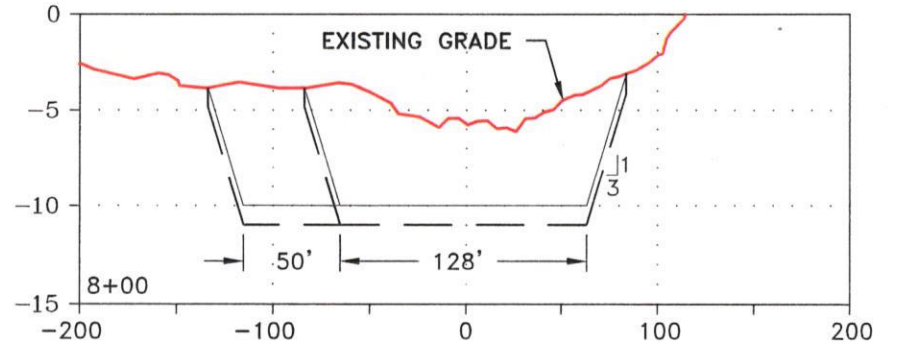
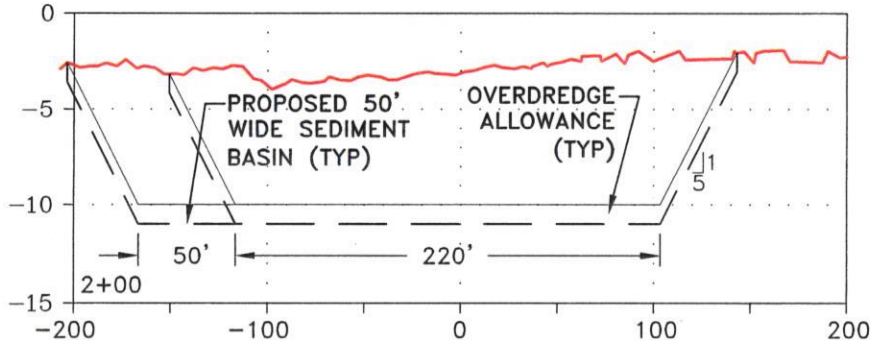
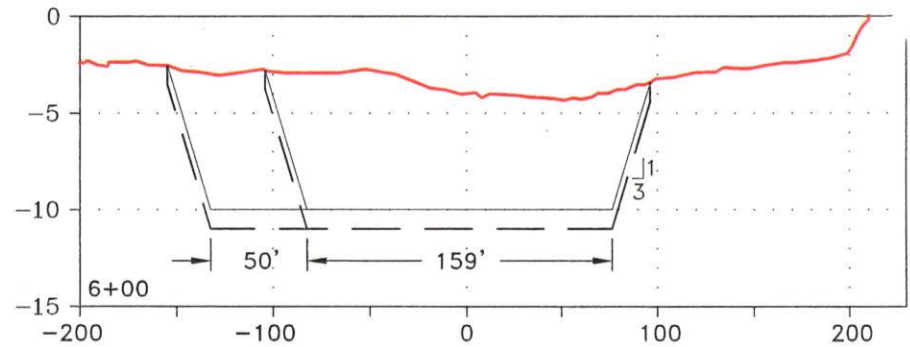
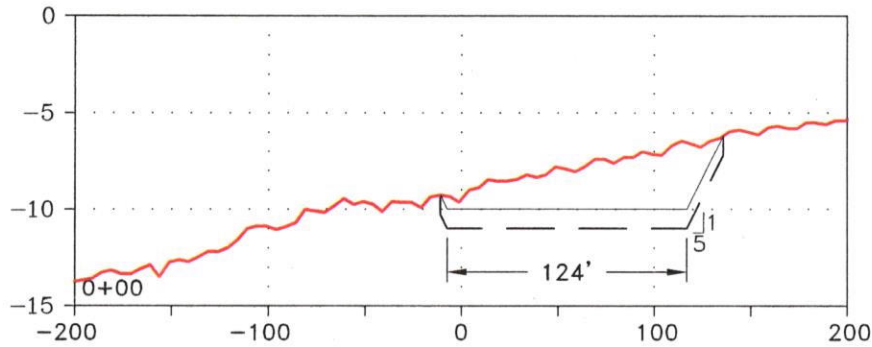
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 E-Mail: Info@cecifl.com

CLIENT: LEE COUNTY BOARD OF COMMISSIONERS
 TITLE: SANIBEL BEACH FILL

DATE:	8/10/10	SCALE:	AS NOTED
DRAWN:	SDB	F.B.	
CHECKED:	MTP	PG.	
SEC.	TWP.	RNG.	
ACAD NO.	10058_P24.dwg	1	1/11/11 MTP
REF. NO.	10.058	NO.	DATE BY REVISION DESCRIPTION

DEP RAI 1

ELEVATION (FT NAVD88)



DISTANCE FROM CENTERLINE (FT)

NOTES:

1. BATHYMETRIC SURVEY CONDUCTED BY COASTAL ENGINEERING CONSULTANTS, INC., OCTOBER 2010.
2. ELEVATIONS SHOWN HEREON ARE BASED ON NORTH AMERICAN VERTICAL DATUM (NAVD 1988).
3. HYDROGRAPHIC SURVEY ACCURACIES AND PROCEDURES ARE IN ACCORDANCE WITH GENERAL SURVEY STANDARDS, AS DEFINED BY THE U.S. ARMY CORPS OF ENGINEERS, HYDROGRAPHIC SURVEY MANUAL.
4. INFORMATION SHOWN HEREON REFLECTS CONDITIONS AS THEY EXISTED ON THE SURVEY DATE SHOWN AND CAN ONLY BE CONSIDERED INDICATIVE OF CONDITIONS AT THAT TIME.

SCALE:

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

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

MICHAEL T. POFF, VP
PROFESSIONAL ENGINEER
FLORIDA LICENSE NO. 48218
DATE OF SIGNATURE: 8/11/11

SHEET 25 OF 25
FILE NO.: 10058-P-25

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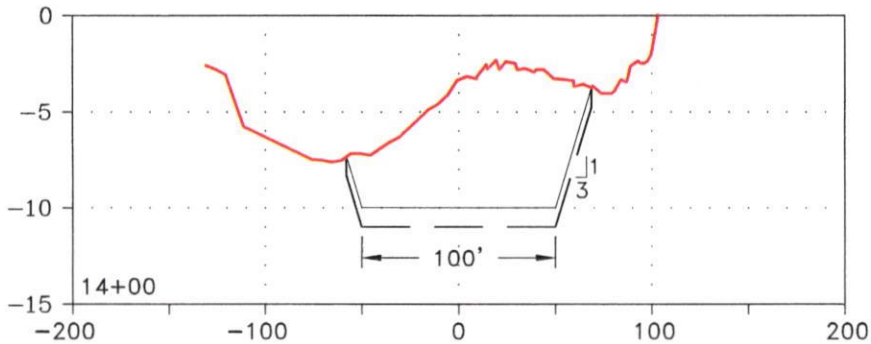
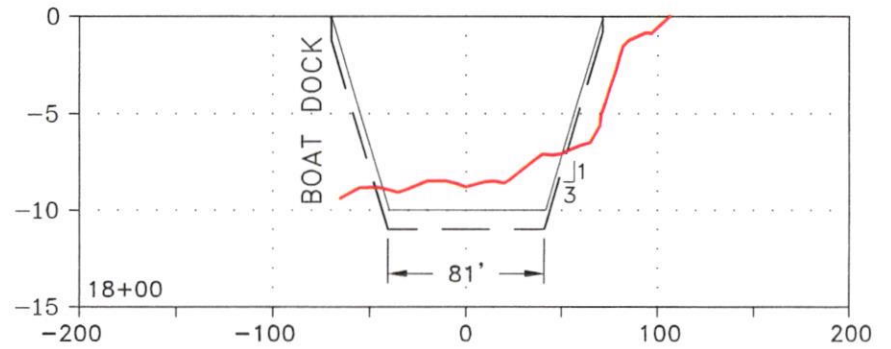
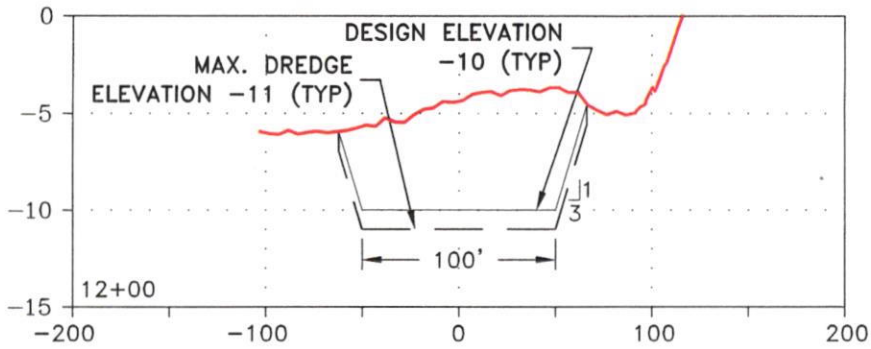
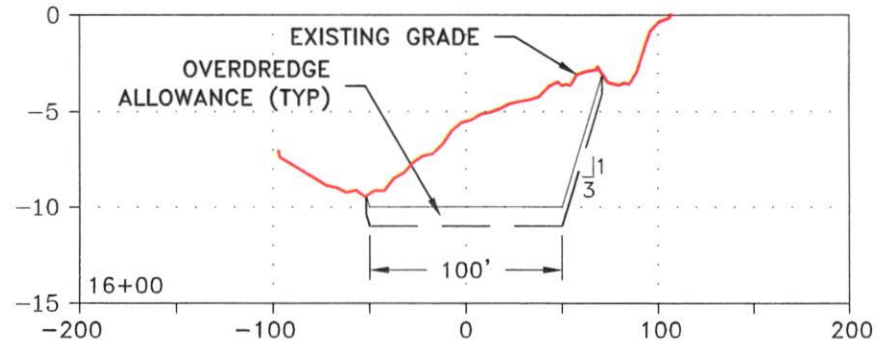
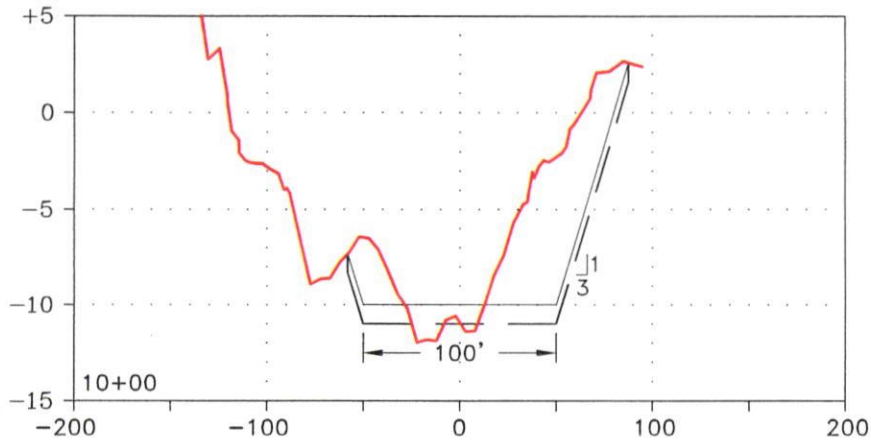
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E-Mail: info@cecifl.com

CLIENT: **LEE COUNTY BOARD OF COMMISSIONERS**
TITLE:

**CROSS SECTIONS
0+00 TO 8+00**

DATE:	8/10/10	SCALE:	AS NOTED
DRAWN:	SDB	F.B.	
CHECKED:	MTP	PG.	
SEC.	TWP.	RNG.	
ACAD NO.	10058_P25.dwg	NO.	1
REF. NO.	10.058	DATE	1/11/11
		BY	MTP
		REVISION DESCRIPTION	DEP RAI 1

ELEVATION (FT NAVD88)



DISTANCE FROM CENTERLINE (FT)

DISTANCE FROM CENTERLINE (FT)

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

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

MICHAEL T. POFF, VP
PROFESSIONAL ENGINEER
FLORIDA LICENSE NO. 48218
DATE OF SIGNATURE: 1/11/11

SHEET 26 OF 26
FILE NO.: 10058-P-26

COASTAL ENGINEERING CONSULTANTS INC.
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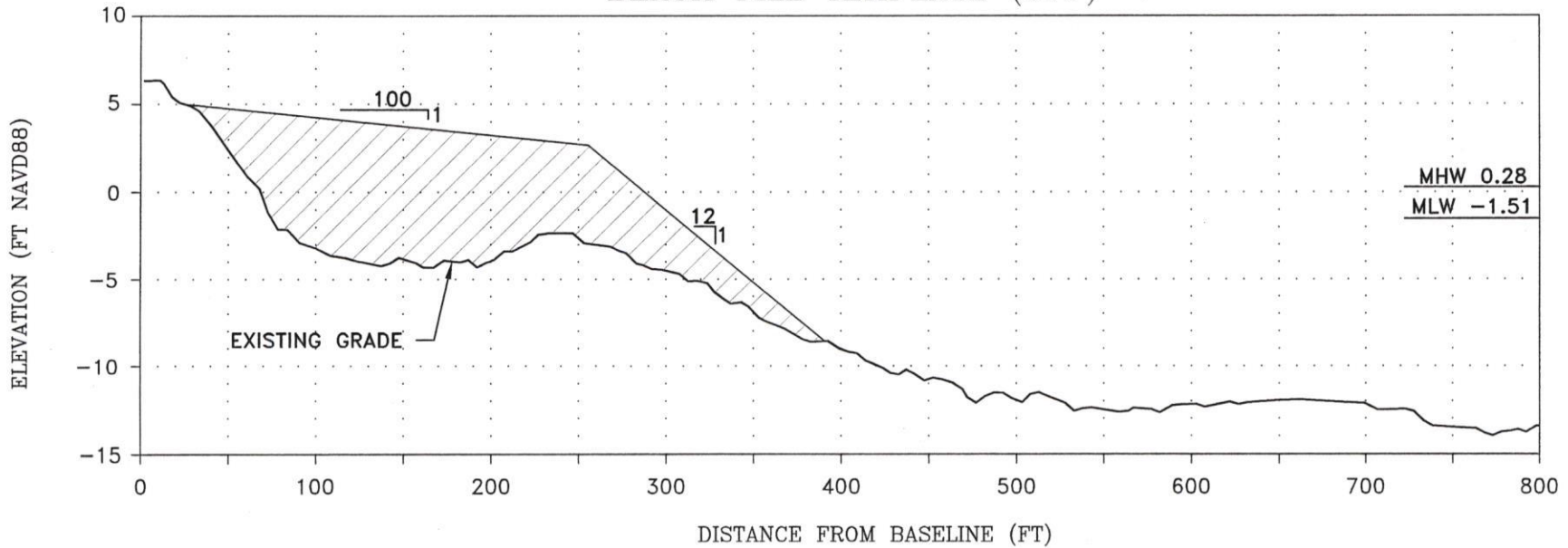
CLIENT:
LEE COUNTY BOARD OF COMMISSIONERS
TITLE:

**CROSS SECTIONS
10+00 TO 18+00**

DATE:	8/10/10	SCALE:	AS NOTED
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CHECKED:	MTP	PG.	
SEC.	TWP.	RNG.	
ACAD NO.	10058_P25.dwg	1	1/11/11 MTP
REF. NO.	10.058	NO.	DATE BY
			REVISION DESCRIPTION

DEP RAI 1

BEACH FILL TEMPLATE (TYP)



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

(Signature)
 MICHAEL T. POFF, VP
 PROFESSIONAL ENGINEER
 FLORIDA LICENSE NO. 48218
 DATE OF SIGNATURE: 1/11/11

SHEET 27 OF 27
 FILE NO.: 10058-P-27

COASTAL ENGINEERING CONSULTANTS INC.
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 www.coastalengineering.com
 E-Mail: info@cecifl.com

CLIENT: **LEE COUNTY BOARD OF COMMISSIONERS**
 TITLE: **BEACH FILL TYPICAL CROSS SECTION**

DATE:	8/10/10	SCALE:	AS NOTED
DRAWN:	SDB	F.B.	
CHECKED:	MTP	PG.	
SEC.	TWP.	RNG.	
ACAD NO.	10058_P25.dwg	1	1/11/11 MTP
REF. NO.	10.058	NO.	DATE BY REVISION DESCRIPTION
			DEP RAI 1

Attachment 27 – QA/QC Plan

**Lee County Government, Division of Natural Resources
Sediment Quality Control/Quality Assurance Plan
for
Maintenance Dredging with Beach & Nearshore Disposal**

**Blind Pass Restoration Modification
0265943-JN,
Lee County
January 18, 2011**

A. Plan Purpose and Objectives

The purpose of the Sediment Quality Control (QC) and Quality Assurance (QA) Plan is to ensure that sediment placed on the beach or in the nearshore meets the standards shown in Appendix A. To protect the environmental functions of Florida's beaches, only compatible fill shall be placed on the beach, in the nearshore, or in any coastal dune system. Compatible fill is material that maintains the general character and functionality of the natural or historic system (beach, nearshore, or dune). Geotechnical investigations and/or historical data for the project have indicated that the sediment located within the spatial limits of the permitted channel cut(s) meets the standards shown in Appendix A. The Permittee has provided an analysis that demonstrates compatibility between the existing or native sediment within the placement area and the sediment within the permitted dredge cuts.

Based upon this information and the design of the maintenance dredge project, the Department of Environmental Protection (Department) has determined that placement (disposal) of the sediment from the dredge area(s) as specified herein, will maintain the general character and functionality of the sediment occurring on the beach, in the nearshore, and in the adjacent dune and coastal system.

The QC provisions of the Plan reiterate the contract requirements placed on the selected contractor and Permittee to perform all work within the construction tolerances of the authorized channel cut(s), to promptly modify dredging activity should sediments unsuitable for placement in the designated area be encountered, and to take remedial actions should unsuitable material be placed. Sediment quality specifications are provided for the dredged material within a range of acceptable sand quality values which must be met for final acceptance. The sediment quality specifications take into account the variability of material within the channel and represent values which may reasonably be attained given what is known about the material to be dredged.

The QA provisions of the Plan outline the steps taken by the Permittee to assure compliance of observations, sample collection, and testing of the placed sediments. In addition, reporting requirements are provided.

B. Risk Management

This section outlines the responsibilities of Contractor and the Permittee as they relate to the placement of dredged material. These responsibilities are in response to the acknowledged minimal risk that non-compatible sediments may exist in lenses within the channel and could be unintentionally placed on the beach or in the nearshore.

The Permittee has performed geotechnical investigations to the standard of care in the industry and has relied on the linear nature of sedimentary deposits, and a limited number of samples to design the channel cuts. The Permittee has the personnel and access to testing facilities to sample and test sediment placed on the beach or in the nearshore.

The Permittee will be directing the work to be done and has relied on its findings, which are based on limited borings as well as previous dredging experience, in authorizing the project to go to construction. The Permittee has experience with these types of projects, and has the authority to modify the project (within the constraints of the permits and available funding) in the event that non-compatible sediments are inadvertently placed on the beach or in the nearshore.

The Contractor will be undertaking the work and will be relying on the Permittee's findings in constructing the project. The Contractor will have on-site quality control personnel who can identify obvious changes in sediment quality at the active placement location. The Contractor has or can acquire the equipment and personnel to remediate the beach if so required by the contract or further directed by the Permittee.

The Contractor will be provided with all available descriptions of sediment samples collected within the channel and will acknowledge at the preconstruction conference that he is aware of the quality of the sediment as described in the geotechnical data. This data will be presented in the construction specifications.

C. Beach Placement Sediment Quality Specifications

The sediment from the dredge cut(s) is similar to the material in the existing coastal system at the placement site. The Department and the Permittee acknowledge that it is possible that discrete occurrences of non-compatible sediments may exist within the permitted dredge cuts that do not comply with the criteria as shown in Appendix A. The compliance values are shown in Table 1.

The Fla. Admin. Code r. 62B-41.007(2)(k), deems sediment from maintenance dredging containing up to a 10% fine material passing the #230 sieve suitable for beach placement and between 10% and 20% suitable for nearshore placement. These specifications take into account the natural variability observed within the channel areas as determined using the existing core boring data. In Table 1, silt is defined as any material passing the #230 sieve. Fill material which falls outside of these limits will be considered unacceptable and subject to remediation.

Unacceptable material also includes debris, trash, and rocks or rubble larger than three-fourths (3/4) inch in diameter, which exceed the size of the natural occurrence of rock or shell on the beach. Deviations from the specifications are acceptable provided that the spatial extent of the deviations does not exceed 10,000 continuous square feet.

Table 1- Sediment Quality Specifications for Channel Area Material

Placement Location	Placement Criteria	Sediment Characteristic
Beach	D < 10% by Weight Passing 230 Sieve	Silt Content
	D < 5% by Weight Retained on 4 Sieve	Fine Gravel
Nearshore	20% < D < 10% by Weight Passing 230 Sieve	Silt Content
	D < 5% by Weight Retained on 4 Sieve	Fine Gravel
Upland	D > 20% by Weight Passing 230 Sieve	Silt Content
	D > 5% by Weight Retained on 4 Sieve	Fine Gravel
	D > 3/4"	Wood, Rock, Debris or Other Foreign Material
	Material resulting in Cementation on the beach	Clay, Excessive Silt or Fines, Wood, Rock, Debris or Other Foreign Material
The fill material shall not contain construction debris, toxic material, other foreign matter, coarse gravel or rocks.		

¹Shell Content is used as the indicator of fine gravel content for the implementation of quality control/quality assurance procedures.

D. Quality Control

The Contractor will be responsible for establishing such control as may be necessary to ensure that the construction tolerances are not exceeded. The contract documents will incorporate the following technical requirements, or equivalent language, that address the dredging location, sediment quality monitoring and reporting, modification of dredging activity, and remedial actions if necessary. The Permittee will seek to enforce these contract requirements during the execution of work.

1. Positioning Equipment

Dredge plants will be equipped with horizontal and vertical control systems that provide the operator with the position of the excavation device, as appropriate. The electronic positioning equipment will be continuously operated to monitor the positioning of the dredge location(s). The dredge positioning equipment will have a horizontal accuracy equal to or better than a standard Differential Global Positioning System (DGPS), equal to or better than plus/minus 5 feet. Vertical positioning shall account for tides and have an accuracy of plus/minus 0.5 foot. Measurements, or fixes, shall be taken with a maximum lag time of three (3) minutes and each record shall be time stamped. If a known permit violation occurs, the dredge positioning data will be made available for review by the Permittee.

2. Beach Observation.

The Contractor will continuously visually monitor the material being placed on the beach for unacceptable material. If occasional debris, trash, rocks, or silty materials appear on the beach during dredging operations and appear to exceed background or existing levels, the Contractor will remediate as specified in the contract. The excavation location of unacceptable material will be provided with the DEP notification required in the Remediation Action section below. If significant sediment exceeding the project target values is placed on the beach, the contractor shall notify the Permittee or designated alternate and proceed as described in Section E.5. below. If the contractors QC personnel observe a significant pattern of non-compliant material, such as streaking, a lens or non-compliant material, they will contact the Permittee within 60 minutes.

If the material exhibits an unusual color, abnormally foul odor or produces a petroleum sheen, dredging shall be discontinued immediately by lifting or moving the excavation device and the discharge pipe flushed clean by continuing to pump only water through the line. Once the line has been flushed clear of solids, pumping may be discontinued. The Permittee shall be notified immediately in this situation.

3. Noncompliant Material Handling Provision.

The Contractor shall have plans and equipment available for use to handle any noncompliant material encountered during dredging. Any debris placed on the beach shall be handled under the guidelines set forth in Section F. below.

E. Quality Assurance

The Permittee may use the contractor's daily reports, plans, and sample descriptions to determine where the Contractor may dredge to avoid placement of unacceptable materials. The Permittee will adjust the construction operation to avoid placement of the unacceptable material on the beach to the greatest extent practicable. The Permittee will determine where non-beach compatible material will be disposed of if encountered. Remediation actions are discussed in Section F below.

The Permittee will enforce the construction contract and FDEP permits related to sediment quality in accordance with the following:

1. Construction observation by the Permittee Quality Assurance Representative (QAR) will be performed during periods of active construction. Most observations will be conducted during daylight hours. However, random nighttime observations may be conducted.
2. The Permittee QAR will provide oversight. The QAR shall be an individual with training or experience in beach placement, construction inspection, and testing; and is knowledgeable of the project design and permit conditions.

3. The project QC provisions to be implemented by the Contractor will be discussed as a matter of importance at the Preconstruction meeting. The Contractor will be required to acknowledge the goals and intent of the above described QC Plan at the meeting.

4. The Permittee will review the Contractor's daily reports which characterize the nature of the sediments encountered at the channel area and placed on the beach with attention to the presence of rock, rubble, shell, silt, or debris that exceeds acceptable limits. The Permittee will review the dredge positions in the Contractor's Daily Report.

5. The QAR or a designated alternate will be available during the period of construction for the purpose of making decisions regarding issues that involve QA/QC Plan compliance.

If non-compliant material or a pattern of non-compliant material continues for more than 1 to 2 hours, the Permittee will determine if dredging should be discontinued in this area of the project. If dredging is discontinued in an area, the Permittee will inform the Contractor and discuss the disposition of the area in question as well as the appropriate beach remediation which may be required. The Permittee will determine where dredging operations can be feasibly relocated into another area and continue dredging in the project footprint.

6. Any modification to the Contract between the Permittee and the Contractor will be evaluated to determine whether or not the change in scope will potentially adversely affect the above described QC Plan.

7. To assure that the fill material placed on the beach is in compliance with the permit, the Permittee will conduct assessments of the beach fill material at not less than 200-foot intervals of newly constructed berm to visually assess grain size, Munsell color, shell content, and silt content. The sample shall be a minimum of 1 U.S. pint (approximately 200 grams). This assessment will consist of handling the fill material to ensure that it is predominantly sand, to note the physical characteristics, and to assure the material meets the sediment compliance parameters specified in this Plan. Each sample will be archived with the date, time, and location of the sample. The results of these inspections, regardless of the quality of the sediment, will be appended to or notated on the Permittee's Daily report. All samples will be stored by the Permittee for at least 30 days after project's physical completion. If deemed necessary by the Permittee, laboratory testing of the material will be conducted by the Contractor or Permittee for grain size, shell and silt content as described in Section G.

The Permittee will have the authority to determine whether the material placed on the beach is acceptable or unacceptable. If the Permittee determines that the beach fill material does not comply with the sediment compliance specifications in this QC/QA Plan, the Permittee will inform the Contractor. The Contractor and Permittee will promptly determine the appropriate course of action. If necessary, the Permittee will determine if further material excavated from this area should be placed in an alternate location.

In the event that the Permittee determines that a section of beach contains material that is not in compliance with the permit, then the FDEP will be notified. Notification will indicate the volume, aerial extent, location of any unacceptable beach areas and any planned remediation.

Additional testing may be required to delineate the area of unacceptable material at the discretion of the FDEP.

8. In order to determine if an area greater than 10,000 square feet of beach fill is noncompliant, the following procedures will be performed by the Permittee:

a. Upon determination that the first random surface grab sample (a minimum of one will be taken) is noncompliant, a minimum of five additional surface grab samples will be taken at a 25-foot spacing in all directions and visually analyzed. If the additional samples are noncompliant, then additional samples can be taken at 25-foot spacing in all directions until the aerial extent is identified.

b. The samples will be visually compared to the sediment quality specifications denoted in Table 1. If deemed necessary, testing by a competent laboratory of the material will be conducted for grain size, shell and silt content as described in Section G.

c. A site map will be prepared depicting the location of all samples and the boundaries of all areas of non-compliant fill. The total square footage will be determined; the site map and laboratory analyses will be provided to the FDEP.

F. Remediation Actions

1. The Permittee shall have the authority to determine whether the material placed on the beach is compliant or noncompliant. If placement of noncompliant material occurs, the Permittee will inform the contractor that remediation action is required as specified in the contract. Should a situation arise during beach disposal that cannot be corrected by the remediation methods described within this QC/QA Plan, the FDEP will be notified. The typical remediation actions for each sediment parameter are as follows:

a. Silt: blending the noncompliant fill material with compliant fill material within the adjacent construction berm sufficiently to meet the compliance value, or removing the noncompliant fill material.

b. Shell: blending the noncompliant fill material with compliant fill material within the adjacent construction berm sufficiently to meet the compliance value or removing the noncompliant fill material.

c. Munsell color: blending the noncompliant fill material with compliant fill material within the adjacent construction berm sufficiently to meet the compliance value or removing the noncompliant fill material.

d. Coarse gravel: screening and removing the noncompliant fill material.

e. Construction debris, toxic material, or other foreign matter: removing the noncompliant fill material.

All fill material that cannot be remediated will be removed from the beach and transported to an appropriate location approved by the DEP located landward of the Coastal Construction Control Line.

2. Post-Remediation Testing.

Re-sampling shall be conducted by the Contractor or Permittee following any remediation actions in accordance with the protocols described in Section E.8a and 8b. Samples will be archived by the Permittee.

3. Reporting.

A post-remediation report containing a site map will be prepared depicting the location of all samples and the boundaries of all areas of remediation actions. The site map, laboratory analyses, and volume of noncompliant fill material will be provided to FDEP within 120 days.

G. Post-Construction Sampling for Laboratory Testing

To assure that the fill material placed on the beach was adequately assessed by the dredge material investigation, the Permittee will conduct assessments of the sediment as follows:

1. Post-construction sampling and testing of the fill material will be conducted to verify that the sediment placed on the beach meets the expected criteria/characteristics provided during from the geotechnical investigation. For each 500-ft long section of beach placement, the Permittee will collect two (2) duplicate sand samples, preferably at a FDEP reference monument profile line, to quantitatively assess the grain size distribution, moist Munsell color, shell content, and silt content. If the beach placement area is less than 1,000 feet, then duplicate samples shall be collected at a minimum of three (3) sample locations evenly spaced along the length of the beach placement area. The Permittee will collect the sediment samples of a minimum of 1 U.S. pint (at least 200 grams) each from the bottom of a test hole 6 to 18 inches deep within the limits of the constructed berm. The Permittee will visually assess grain size, Munsell color, shell content, and silt content of the material by handling the fill material to ensure that it is predominantly sand, and further to note the physical characteristics. The Permittee will note the existence of any layering or rocks within the test hole. One sample will be sent for laboratory analysis while the other sample will be archived by the Permittee. All samples and laboratory test results will be labeled with the Project name, FDEP Reference Monument Profile Line designation, date sample was obtained, and "Berm."

2. All samples will be evaluated for visual attributes (Munsell color and shell content), sieved in accordance with the applicable sections of ASTM D 6913 Particle Size Analysis of Soils, ASTM C 136 Sieve Analysis of Aggregates, and analyzed for carbonate content if applicable. The samples will be sieved using the following U.S. Standard Sieve Numbers: 3/4", 3/8", 3.5, 4, 5, 7, 10, 14, 18, 25, 35, 45, 60, 80, 120, 170, 200, and 230. The testing shall be performed by an appropriately licensed and certified laboratory.

3. A summary table of the sediment samples and test results for the sediment compliance parameters shall accompany the complete set of laboratory testing results. The column headings will include: Sample Number; State Plane (X,Y) Coordinate location, Mean Grain Size (mm); Sorting Value; Silt Content (%); Shell Content (%); Munsell Color Value; and a column stating whether each sample MET or FAILED the compliance values found in Table 1. The sediment testing results will be certified by a P.E or P.G. from the testing laboratory. The Permittee will submit sediment testing results and analysis report to FDEP within 90 days following beach placement.

4. In the event that a section of beach contains fill material that is not in compliance with the sediment quality specifications, then FDEP will be notified. Notification will indicate the volume, aerial extent and location of any unacceptable beach areas and remediation planned.

H. Reports and Notices

All reports or notices relating to this permit shall be emailed and sent to the Department at the following locations:

DEP Bureau of Beaches & Coastal Systems
JCP Compliance Officer
Mail Station 300
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Phone: 850-414-7716

E-mail: JCP.Compliance@dep.state.fl.us

APPENDIX A- Florida DEP Rules on Beach Fill

62B-41.007 (2) (j), F.A.C.

To protect the environmental functions of Florida's beaches, only beach compatible fill shall be placed on the beach or in any associated dune system. Beach compatible fill is material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system. Such material shall be predominately of carbonate, quartz or similar material with a particle size distribution ranging between 0.062mm (4.0 ϕ) and 4.76mm (-2.25 ϕ) (classified as sand by either the Unified Soils or the Wentworth classification), shall be similar in color and grain size distribution (sand grain frequency, mean and median grain size and sorting coefficient) to the material in the existing coastal system at the disposal site and shall not contain:

1. Greater than 5 percent, by weight, silt, clay or colloids passing the #230 sieve (4.0 ϕ);
2. Greater than 5 percent, by weight, fine gravel retained on the #4 sieve (-2.25 ϕ);
3. Coarse gravel, cobbles or material retained on the 3/4 inch sieve in a percentage or size greater than found on the native beach;
4. Construction debris, toxic material or other foreign matter; and
5. Not result in cementation of the beach.

If rocks or other non-specified materials appear on the surface of the filled beach in excess of 50% of background in any 10,000 square foot area, then surface rock should be removed from those areas. These areas shall also be tested for subsurface rock percentage and remediated as required. If the natural beach exceeds any of the limiting parameters listed above, then the fill material shall not exceed the naturally occurring level for that parameter.

62B-41.007 (2) (k), F.A.C.

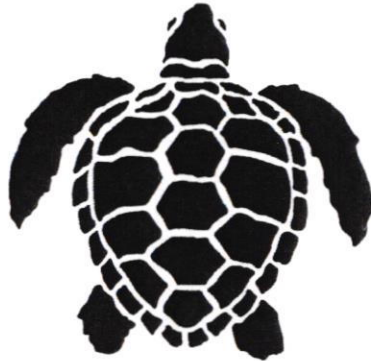
Pursuant to subsection 62B-41.005(15), F.A.C., sandy sediment derived from the maintenance of coastal navigation channels shall be deemed suitable for beach placement with up to 10% fine material passing the #230 sieve, provided that it meets the criteria contained in subparagraphs (j)2. through 5. above and water quality standards. If this material contains between 10% and 20% fine material passing the #230 sieve by weight, and it meets all other sediment and water quality standards, it shall be considered suitable for placement in the nearshore portion of the beach.

Attachment 30 – Turtle Nesting Reports

2010 Sea Turtle Activity and Nest/Hatch Success

for

Blind Pass Maintenance Dredging Project
DEP File No. 0265943-001-JC



Submitted to: Lee County
Division of Natural Resources
1500 Monroe St. Ft. Myers, FL 33901

Submitted by: SCCF
Sea Turtle Research & Monitoring Program
PO BOX 839 Sanibel, FL 33957

Prepared by: Amanda Bryant

Introduction

In 2009 Lee County completed the dredging of Blind Pass between the islands of Sanibel and Captiva. Beach suitable material from the pass was placed on the beach between DEP monuments R-112 and R-114. Work was completed under DEP permit no. 0265943-001-JC

The shoreline of Sanibel Island is utilized as nesting habitat by threatened and endangered marine turtle species, which are protected under the Endangered Species Act of 1973 and by Florida Law. Because beach construction projects can impact sea turtle nesting and nest/emergence success, special condition 30 of the permit outlines the requirements for monitoring marine turtles.

Marine Turtle Monitoring

Daily, early-morning monitoring of the beaches of Sanibel began on May 1, 2010. All monitoring activities were conducted by staff and volunteers of the Sanibel-Captiva Conservation Foundation (SCCF) authorized under marine turtle permits #047 & #170.

Monitoring for adult marine turtle crawls was done on foot and by vehicle. All crawls were marked with a flag, and then an authorized permit holder determined if the crawl was a nest or a false crawl. A false crawl is defined as an emergence that does not result in egg deposition. A nest is defined as any emergence that results in egg deposition.

All nests were left in place and surrounded by four stakes and yellow flagging, except when nests were laid within the roped-off Least Tern (*Sternula antillarum*) colony. Each nest was marked with signage identifying it as a sea turtle nest. The location of the nest's egg chamber was determined prior to staking, and then its location was recorded with a gps unit. The location of the nest was also noted in relationship to permanent beach landmarks, such as condominium/hotels, beach accesses, and mileage markers. Measurements were taken from the nest to the dune vegetation, as well as two stakes placed in the dune, which served as backup stakes should the staking surrounding the nest be lost. Nests laid within the Least Tern colony were marked discreetly with a single stake 3 ft. to the right of the egg chamber. All other nest marking procedures were followed using the utmost care to avoid trampling nests or disturbing nesting & hatchling birds.

Nests were checked daily until they hatched. A hatch was determined by the following:

- A hatchling or hatchlings present at the surface
- Hatchling track(s) in the sand from the nest area
- A depression or emergence hole in the sand at the location of the nest

Three days or 72 hours after a hatch, nests were excavated to determine the success of the nest. If a nest was in imminent danger from predation, it was excavated prior to the end of the three day or 72 hour period. During excavation the numbers of empty eggshells, unhatched eggs,

damaged eggs, live & dead hatchlings, and live & dead pipped hatchlings were recorded. Pipped (live or dead) hatchlings refer to hatchlings that have broken through the eggshell, but not emerged from the egg. When live hatchlings were found in a nest, they were held until evening, and then released near the nest site.

2010 Nesting Activity

The beach monitoring methods described above resulted in the documentation of seven nests and 13 false crawls within the project area (Figure 1 & 2, Table 1). In an area of beach equal in length and adjacent to the project area, three nests and 12 false crawls were documented (Figure 3 & 4, Table 2). All crawls were from loggerhead turtles (*Caretta caretta*). No green turtle (*Chelonia mydas*) crawls were documented.

Figure 1: 2010 Sea Turtle Nests within the Project Area

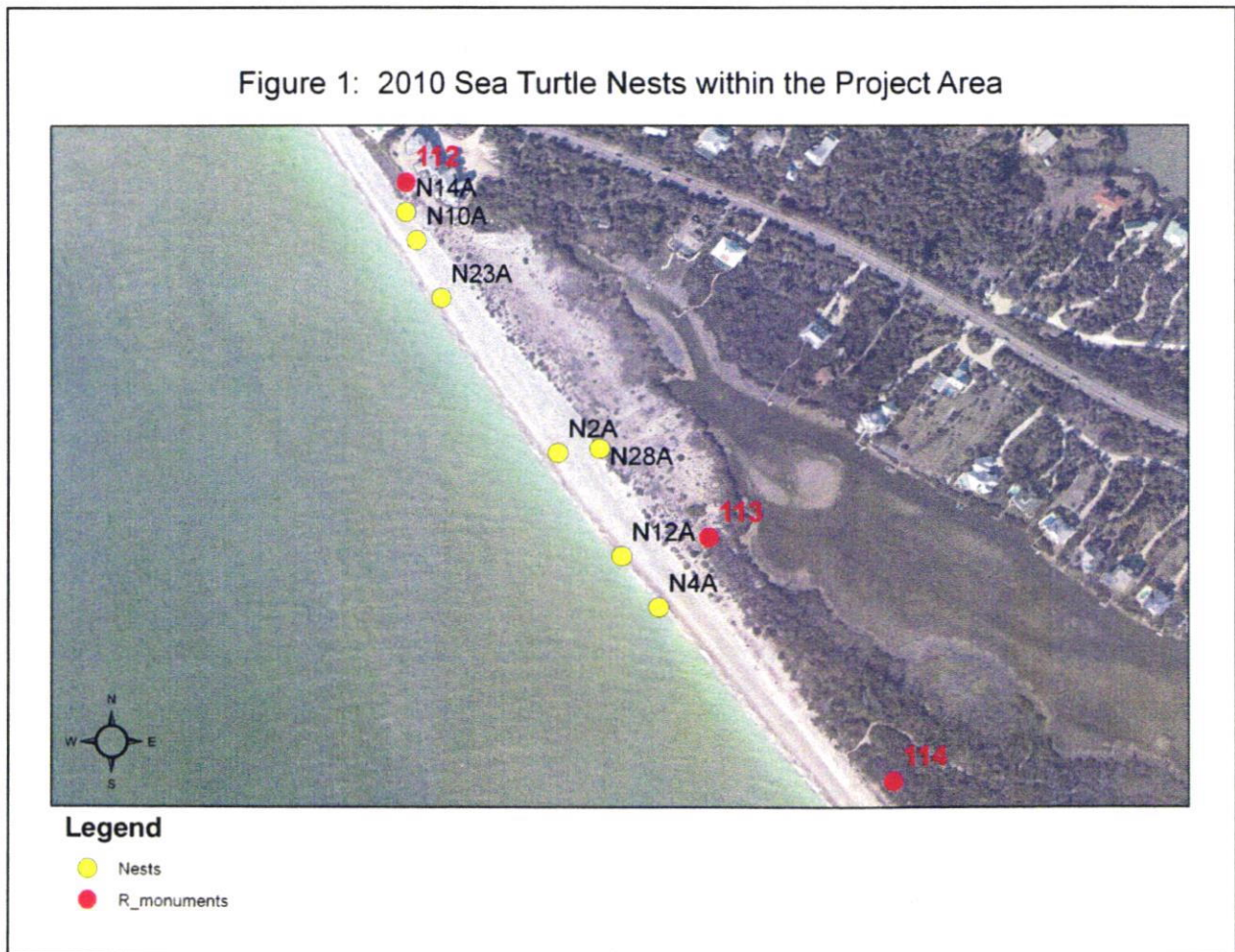


Figure 2: 2010 Sea Turtle False Crawls within the Project Area



Legend

- R_monuments
- False Crawls

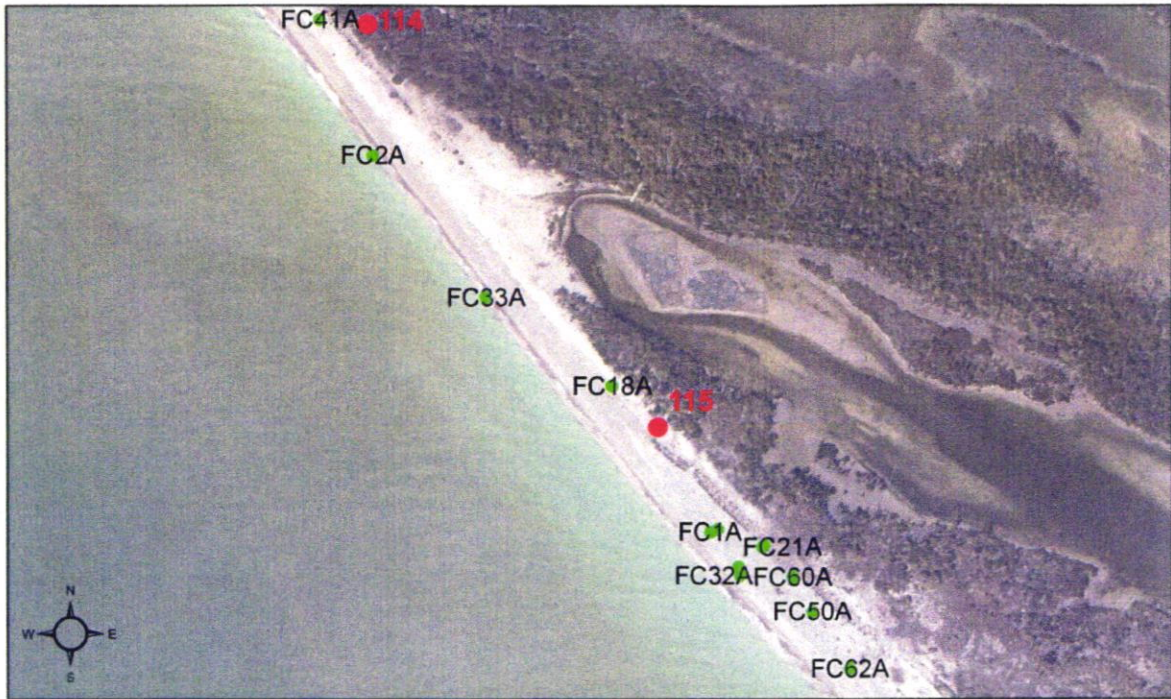
Figure 3: 2010 Sea Turtle Nests along the Equal, Adjacent Stretch of Beach



Legend

- Nests
- R_monuments

Figure 4: 2010 Sea Turtle False Crawls Along the Equal, Adjacent Stretch of Beach



Legend

- R_monuments
- False Crawls

Table 1: 2010 Marine Turtle Nesting Data for the Blind Pass Maintenance Dredging Project

Date	Crawl	Hatch Date	Total Emerged	Total Hatched	Total Eggs	Hatch Success	Emergence Success
5/26	2A	Unk.	88	88	109	80.7%	80.7%
6/3	4A	N/A	0	0	Unk.	0%	0%
6/6	FC-8	N/A					
6/7	FC-14	N/A					
6/7	FC-16	N/A					
6/8	FC-15	N/A					
6/8	FC-17	N/A					
6/12	FC-23	N/A					
6/12	FC-24	N/A					
6/13	FC-26	N/A					
6/13	FC-27	N/A					
6/21	10A	8/11	110	110	119	92.4%	92.4%
6/24	12A	N/A	0	0	Unk.	0%	0%
6/25	FC-41	N/A					
6/25	FC-42	N/A					
6/25	FC-43	N/A					
6/27	14A	8/17	95	95	104	91.3%	91.3%
6/30	FC-47	N/A					
7/15	23A	N/A	0	0	Unk.	0%	0%
7/30	28A	9/16	24	26	111	23.4%	21.6%

Table 2: 2010 Marine Turtle Nesting Data for an Equal Length of Adjacent Beach

Date	Crawl	Hatch Date	Total Emerged	Total Hatched	Total Eggs	Hatch Success	Emergence Success
5/17	FC-1	N/A					
5/17	FC-2	N/A					
6/6	5A	Unk.	Unk.	Unk.	Unk.	0%	0%
6/8	FC-13	N/A					
6/10	FC-18	N/A					
6/11	FC-21	N/A					
6/13	FC-25	N/A					
6/16	9A	Unk.	32	32	80	40.0%	40.0%
6/20	FC-32	N/A					
6/20	FC-33	N/A					
7/2	FC-50	N/A					
7/4	18A	8/25	101	102	110	92.7%	89.1%
7/15	FC-59	N/A					
7/19	FC-60	N/A					
8/14	FC-62	N/A					

Hatch Success

Four of the seven nests within the project area hatched. Three nests were washed away entirely by the higher than average tides during Tropical Depression #5 (August 10-11). The hatch success for evaluated nests in the project area was 72.0% (Table 3), with a range of 0% to 92.4% (Table 1).

Two of the three nests along the adjacent stretch of beach hatched. The hatch success for the area adjacent to the project was 70.5% (Table 3) with a range of 0% to 92.7% (Table 2).

Table 3: Hatch Success for Nests in the Project Area and the Beach Adjacent Area

	Nests in Project Area	Nests in Adjacent Area	Total
Hatched Eggs	319	134	453
Unhatched Eggs	124	54	178
Pipped Live	0	0	0
Pipped Dead	0	1	1
Damaged Eggs	0	1	0
Total Eggs	443	190	633
Hatch Success	72.0%	70.5%	71.6%

Emergence Success

Of the eggs that hatch in a nest, not all hatchlings successfully emerge on their own. Excavations of the nests revealed one live hatchling and one dead hatchling remaining in nests within the project area and three live and one dead hatchling remaining in nests in the adjacent beach area. An estimated 317 hatchlings emerged from the nest on their own in the project area for a hatch success of 71.6% (Table 4) with a range in success from 0% to 92.4% (Table 1). Approximately 130 hatchlings emerged unaided from nests in the adjacent beach area for a hatch success of 68.4% (Table 4) and a range in success from 0% to 89.1% (Table 2).

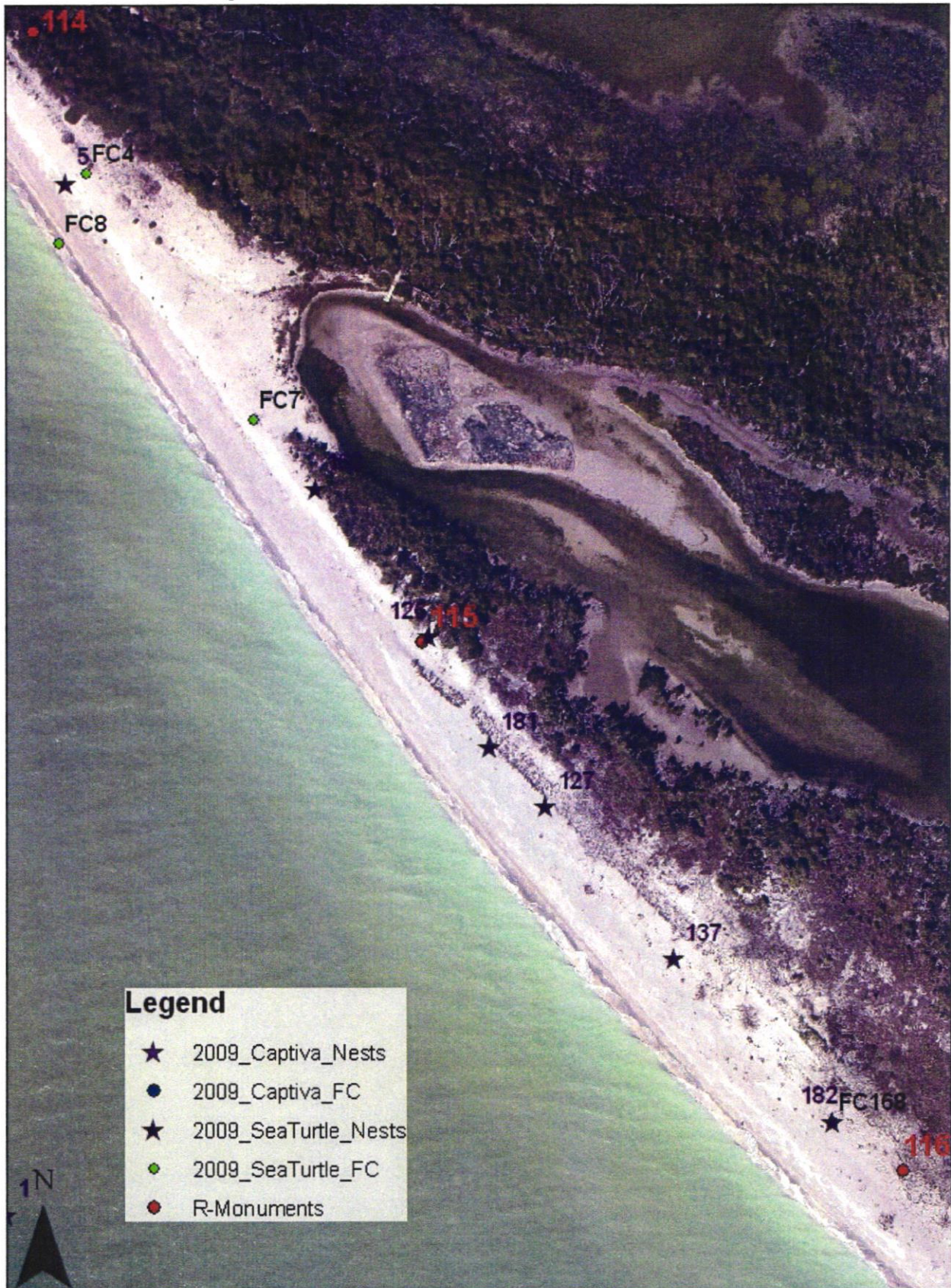
Table 4: Emergence Success for Nests in the Project Area and the Adjacent Beach Area

	Nests in Project Area	Nests in Adjacent Area	Total
Hatched Eggs	319	134	453
Live in Nest	1	3	4
Dead in Nest	1	1	2
Hatchlings Emerged	317	130	447
Total Eggs	443	190	633
Emergence Success	71.6%	68.4%	70.6%

Summary

This report presents the results of marine turtle monitoring for the Blind Pass Maintenance Dredging project in 2010. The project took place prior to and during the 2009 nesting season. This year serves as the first year of marine turtle monitoring post-construction. Seven nests and 13 false crawls were documented within the project area. Three nests and 12 false crawls were documented along an equal length of adjacent beach. The overall hatch success for nests within the project area and along the adjacent stretch of beach was 72.0% and 70.5% respectively. The overall emergence success for nests within the project area was 71.6% and 68.4% for nests along the adjacent stretch of beach.

2009 Sea Turtle Nests and False Crawls on an Equal Stretch of Unnourished Beach



2009 Sea Turtle Nests and False Crawls from R112 to R114

