

St. Lucie County Reach 1 Permitting and Dredging Engineering Services February 2017

Presented to



TAYLOR ENGINEERING, INC.

BY



AMERICAN VIBRACORE
S E R V I C E S

AMERICAN VIBRACORE
SERVICES

February 27, 2017

Taylor Engineering, Inc.
10151 Deerwood Park Blvd. Bldg. 300, Suite 300
Jacksonville, FL 32256
Attn: Bill Aley

**Re: St Lucie Reach 1 Permitting and Dredging
Engineering Services
Ft Pierce, Florida
Geotechnical Investigation**



Overview

American Vibracore Services, Inc. (AVS) under contract from Taylor Engineering, Inc., conducted vibracore sampling operations in Reach 1 of the ICWW, Ft Pierce, Florida February 23-24, 2017. A total of 19 cores were collected at locations determined by the client. Cores were then analyzed per the proposal and FDEP guidelines, and a report of the findings was prepared.

Vibracore Equipment

AVS's vessel "Scully" was used as a work platform for vibracore operations. AVS's electronic coring machine was used to perform vibracore samples at each core location to 6 foot below the seafloor bottom or to refusal at the locations noted on **Figure 1** herein. It should be noted that at locations SL-17-V03, SL-17-V04, SL-17-V12 and SL-17-V15 the vibracore advancement was limited due to hard bottom/rock refusal with the electric vibracore. In each case, 3 or more attempts were conducted to penetrate the sediment and rock.

Core Processing and Laboratory Testing

All cores collected from the project were transported to an US Army Corps of Engineers certified lab, where they were split, logged, photographed, sampled, and preserved. Laboratory testing was conducted in the form of grain size analysis, visual shell content, and Munsell color designation.

Reporting

The vibracore logs, photo-documentation, and laboratory analysis results (in giNT format) are all contained in this report.

Closing

We appreciate the opportunity to be of service to Taylor Engineering on this project and look forward to a continued relationship.

Respectfully Submitted,

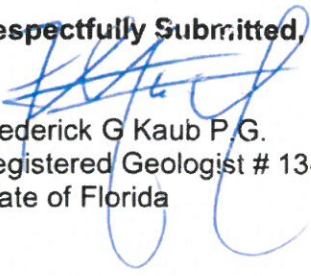

Frederick G Kaub P.G.
Registered Geologist # 1344
State of Florida



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Site Map

Figure 1



Figure 1 - Vibracore Locations



Vibracore Logs

—0
—5
—10

VIBRACORE LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services 			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION SL-17-V-02			10. COORDINATE SYSTEM/DATUM Florida State Plane East	
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL ☐ AUTO HAMMER ☒ MANUAL HAMMER Vibracore	
4. NAME OF DRILLER BM			12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED			13. TOTAL NUMBER CORE BOXES 0	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER N/A	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED COMPLETED 02-23-17 08:59 02-23-17	
8. TOTAL DEPTH OF BORING 6.0 Ft.			16. ELEVATION TOP OF BORING -12.5 Ft.	
			17. TOTAL RECOVERY FOR BORING 5.3 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR FK	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-12.5	0.0					
					S-1	Sample #S-1, Depth = 0.0' - 2.0'
			Sand (fine to coarse) with shell, visual rock 0%, visual shell 10%, grey (10YR 5/1) with shell up to 2" size @ 2.2', (SW).			
-16.6	4.1				S-2	Sample #S-2, Depth = 3.5' - 4.1'
			Sand (fine to coarse) w/ shell and rock, visual rock 25%, visual shell 5%, grey (10YR 6/1) with 3' size rock @ 4.3', 2.5" size rock @ 4.7', 2" size shell @ 4.8', (SW).			
-17.8	5.3					
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services 			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION SL-17-V-03			10. COORDINATE SYSTEM/DATUM Florida State Plane East	
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore	
4. NAME OF DRILLER BM			12. TOTAL SAMPLES	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED			13. TOTAL NUMBER CORE BOXES 0	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER N/A	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING 02-23-17 09:20	
8. TOTAL DEPTH OF BORING 4.2 Ft.			16. ELEVATION TOP OF BORING -13.8 Ft.	
			17. TOTAL RECOVERY FOR BORING 4 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR FK	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-13.8	0.0					
			Sand (fine to coarse) with shell, visual rock 0%, visual shell 10%, gray (10YR 5/1), (SW).		S-1	Sample #S-1, Depth = 0.0' - 2.9'
-16.7	2.9					
			Sand (fine to coarse) with shell and rock, visual rock 20%, visual shell 5%, gray (10YR 5/1) 2-3" size rock @ 3.1', 3.6', 4.0' rock shallow refusal on 3 attempts, (SW).		S-2	Sample #S-2, Depth = 2.9' - 4.0'
-17.8	4.0					
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services 			9. SIZE AND TYPE OF BIT 3.0 in.	
2. BORING DESIGNATION SL-17-V-04			10. COORDINATE SYSTEM/DATUM Florida State Plane East	
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore	
4. NAME OF DRILLER BM			12. TOTAL SAMPLES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED			13. TOTAL NUMBER CORE BOXES 0	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER N/A	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING 02-23-17 09:41	
8. TOTAL DEPTH OF BORING 3.5 Ft.			16. ELEVATION TOP OF BORING -13.6 Ft.	
			17. TOTAL RECOVERY FOR BORING 3 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR FK	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-13.6	0.0					
-16.3	2.7		Sand (fine to coarse) with shell, visual rock 0%, visual shell 5%, grey 10YR 5/1,, (SW).		S-1	Sample #S-1, Depth = 0.0' - 2.7'
-16.6	3.0		Sand (fine to coarse) with shell and rock, visual rock 20%, visual shell 5%, grey 10YR 5/1, 3" size rock @ 2.9' refusal in rock on 3 attempts, (SW-SM).		S-2	Sample #S-2, Depth = 2.7' - 3.0'
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services 			9. SIZE AND TYPE OF BIT 3.0 in.	
2. BORING DESIGNATION SL-17-V-05			10. COORDINATE SYSTEM/DATUM Florida State Plane East	
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore	
4. NAME OF DRILLER BM			12. TOTAL SAMPLES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED			13. TOTAL NUMBER CORE BOXES 0	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER N/A	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING 02-23-17 10:29	
8. TOTAL DEPTH OF BORING 6.2 Ft.			16. ELEVATION TOP OF BORING -11.6 Ft.	
			17. TOTAL RECOVERY FOR BORING 5.7 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR FK	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-11.6	0.0					
			Silty sand, visual rock 0%, visual shell <5%, dary grey (10YR 4/1), (SM).		S-1	Sample #S-1, Depth = 0.0' - 3.0'
-15.8	4.2					
-16.3	4.7		Sand (fine to medium) and shell, visual rock 0%, visual shell 10%, light brownish grey (10YR 6/2), (SW-SM).		S-2	Sample #S-2, Depth = 4.2' - 4.7'
-16.7	5.1		Silty sand, visual rock 0%, visual shell <5%, dark grey (10YR 4/1), (SW-SM).			
-17.3	5.7		Sand (fine to medium) and shell, visaul rock 0%, visual shell 10%, grayish brown to gray (10YR 5/2, 10YR 5/1) with mottling, (SW).			
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION	INSTALLATION		SHEET 1 OF 1 SHEETS
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services			9. SIZE AND TYPE OF BIT 3.0 In.		
			10. COORDINATE SYSTEM/DATUM Florida State Plane East		HORIZONTAL NAD 1983
2. BORING DESIGNATION SL-17-V-06			LOCATION COORDINATES X = 1138163.1 Y = 876589		VERTICAL MLLW
3. DRILLING AGENCY		CONTRACTOR FILE NO.	11. MANUFACTURER'S DESIGNATION OF DRILL Vibrocure		☐ AUTO HAMMER ☐ MANUAL HAMMER
4. NAME OF DRILLER BM			12. TOTAL SAMPLES		DISTURBED 1
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED		DEG. FROM VERTICAL	13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD)
6. THICKNESS OF OVERBURDEN 0.0 Ft.		BEARING	14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING		STARTED 02-23-17 10:55
8. TOTAL DEPTH OF BORING 6.5 Ft.			COMPLETED 02-23-17		
			16. ELEVATION TOP OF BORING -16.0 Ft.		
			17. TOTAL RECOVERY FOR BORING 6.4 Ft.		
			18. SIGNATURE AND TITLE OF INSPECTOR FK		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-16.0	0.0					
					S-1	Sample #S-1, Depth = 0.0' - 1.5'
			Sand (fine to medium) w/ silt, visual rock 0%, visual shell 10%, gray (10YR 5/1) 1 1/2" size shell @ 5.7', (SW-SM).		S-2	Sample #S-2, Depth = 3.0' - 4.5'
-22.4	6.4					
			End of Boring			

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services 				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION SL-17-V-07				10. COORDINATE SYSTEM/DATUM Florida State Plane East		HORIZONTAL NAD 1983	
3. DRILLING AGENCY				11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		☐ AUTO HAMMER ☐ MANUAL HAMMER	
4. NAME OF DRILLER BM				12. TOTAL SAMPLES		DISTURBED 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD)	
6. THICKNESS OF OVERBURDEN 0.0 Ft.				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				15. DATE BORING		STARTED 02-23-17 12:47	
8. TOTAL DEPTH OF BORING 6.5 Ft.				16. ELEVATION TOP OF BORING -12.1 Ft.		COMPLETED 02-23-17	
				17. TOTAL RECOVERY FOR BORING 5.5 Ft.			
				18. SIGNATURE AND TITLE OF INSPECTOR FK			

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-12.1	0.0					
-13.6	1.5		Silty sand (fine to coarse) with rock and shell, visual rock 20%, visual shell 10%, pale brown (10YR 6/3), (SW-SM).		S-1	Sample #S-1, Depth = 0.0' - 1.5'
-14.6	2.5		Silty sand (fine to medium), visual rock 0%, visual shell <5%, light grey (10 YR 7/1), (SW-SM).			
-15.1	3.0		Silty sand (fine to medium), visual rock 0%, visual shell 5%, greyish brown (10YR 5/2), (SW-SM).			
-16.5	4.4		Silty sand (fine to medium) and tr shell, visual rock 0%, visual shell 5%, dark brown (10YR 3/3) 1" lense of organic matter @ 3.9', (SW-SM).		S-2	Sample #S-2, Depth = 3.0' - 4.4'
-17.6	5.5		Sand (fine to coarse) with shell, visual rock 0% visual shell 15%, grey (10YR 6/1) some shell hash, (SW).			
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services				9. SIZE AND TYPE OF BIT 3.0 in.			
2. BORING DESIGNATION SL-17-V-08				10. COORDINATE SYSTEM/DATUM Florida State Plane East		HORIZONTAL NAD 1983	
3. DRILLING AGENCY				11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		VERTICAL MLLW	
4. NAME OF DRILLER BM				12. TOTAL SAMPLES		DISTURBED 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD)	
6. THICKNESS OF OVERBURDEN 0.0 Ft.				14. ELEVATION GROUND WATER N/A		15. DATE BORING	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				16. ELEVATION TOP OF BORING -11.4 Ft.		STARTED 02-23-17 13:02	
8. TOTAL DEPTH OF BORING 5.0 Ft.				17. TOTAL RECOVERY FOR BORING 5 Ft.		COMPLETED 02-23-17	
				18. SIGNATURE AND TITLE OF INSPECTOR FK			

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-11.4	0.0					
-12.5	1.1		Silty sand (fine to coarse) with rock and shell, visual rock 20%, visual shell 10%, lt grey (10YR 7/1), rocks up to 2.5" in size, (SW-SM).			
-12.9	1.5		Silty sand (fine to coarse) with rock and shell, visual rock 10%, visual shell 10%, pale brown (10YR 6/3), rocks up to 1.5" in size, (SW-SM).		S-1	Sample #S-1, Depth = 1.1' - 1.5'
			Silty sand (fine to coarse) with rock, visual rock 10%, visual shell <5%, grey (10YR 6/1), (SW-SM).		S-2	Sample #S-2, Depth = 1.5' - 4.1'
-15.5	4.1					
-15.6	4.2		Sand (fine to medium), visual rock 0%, visual shell <5%, dk brown (10YR 3/3), (SP).			
-16.4	5.0		Sand (medium to coarse) and trace shell, visual rock 0%, visual shell <5%, brown (10YR 4/3), (SP).			
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION SL-17-V-09				10. COORDINATE SYSTEM/DATUM Florida State Plane East		HORIZONTAL NAD 1983	
3. DRILLING AGENCY				11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		VERTICAL MLLW	
4. NAME OF DRILLER BM				12. TOTAL SAMPLES		DISTURBED 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD)	
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 -7.8 Ft.		STARTED 02-23-17 13:55	
8. TOTAL DEPTH OF BORING 6.5 Ft.				17. TOTAL RECOVERY FOR BORING 6 Ft.		COMPLETED 02-23-17	
				18. SIGNATURE AND TITLE OF INSPECTOR FK			

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-7.8	0.0					
-11.1	3.3		Sand (fine to coarse) with trace shell, visual rock 0%, visual shell 5%, grey (10YR 6/1) with organic inclusion @ 3.3', (SP).		S-1	Sample #S-1, Depth = 1.5' - 3.3'
-13.8	6.0		Silty sand (fine to coarse) with rock and shell, visual rock 25%, visual shell 10%, pale brown (10YR 6/3) with 2"-3" rocks between 3.9'-5.3', (SW-SM).		S-2	Sample #S-2, Depth = 3.3' - 6.0'
			End of Boring			

FLORIDA DEP ROSS, SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services 				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION SL-17-V-10				LOCATION COORDINATES X = 1132579.1 Y = 878603.8		10. COORDINATE SYSTEM/DATUM Florida State Plane East	
3. DRILLING AGENCY				CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore	
4. NAME OF DRILLER BM				12. TOTAL SAMPLES		13. TOTAL NUMBER CORE BOXES 0	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				DEG. FROM VERTICAL		BEARING	
6. THICKNESS OF OVERBURDEN 0.0 Ft.				14. ELEVATION GROUND WATER N/A		15. DATE BORING	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				16. ELEVATION TOP OF BORING -8.8 Ft.		17. TOTAL RECOVERY FOR BORING 6.9 Ft.	
8. TOTAL DEPTH OF BORING 7.5 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR FK		19. STARTED 02-23-17 14:10	
20. COMPLETED 02-23-17							

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-8.8	0.0					
-10.6	1.8		Silty sand (fine to medium) to shell, visual rock 0%, visual shell <5%, grey (10YR 5/1), (SW-SM).		S-1	Sample #S-1, Depth = 0.0' - 1.8'
-11.9	3.1		Silty sand (fine to medium) to shell, visual rock 0%, visual shell <5%, lt grey (10YR 7/1), (SW-SM).			
-12.9	4.1		Silty sand and shell with rock, visual rock 15%, visual shell <5%, grey (10YR 5/1) with rock of 3.5" in size @3.4', (SW-SM).			
-15.7	6.9		Silty sand (fine to coarse) with shell, visual rock 5%, visual shell 10%, pale brown (10YR 6/3) with shell up to 2" in size, (SW-SM).		S-2	Sample #S-2, Depth = 4.1' - 6.9'
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services 				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION SL-17-V-11				10. COORDINATE SYSTEM/DATUM Florida State Plane East		HORIZONTAL NAD 1983	
3. DRILLING AGENCY				11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		☐ AUTO HAMMER ☐ MANUAL HAMMER	
4. NAME OF DRILLER BM				12. TOTAL SAMPLES		DISTURBED 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD)	
6. THICKNESS OF OVERBURDEN 0.0 Ft.				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				15. DATE BORING			
8. TOTAL DEPTH OF BORING 6.0 Ft.				16. ELEVATION TOP OF BORING -8.1 Ft.			
				17. TOTAL RECOVERY FOR BORING 5.4 Ft.			
				18. SIGNATURE AND TITLE OF INSPECTOR FK			

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-8.1	0.0					
-10.1	2.0		Sand (fine to coarse) w/ trace shell, visual rock 0%, visual shell <5%, grey (10YR 6/1), (SW).		S-1	Sample #S-1, Depth = 0.0' - 2.0'
-11.6	3.5		Sand (coarse to medium) with trace shell, visual rock 0%, visual shell <5%, lt grey (10YR 7/1), (SW).		S-2	Sample #S-2, Depth = 2.0' - 3.5'
-13.5	5.4		Sand (fine to medium) w/ trace shell and rock, visual rock 5%, visual shell <5%, lt grey (10YR 7/1), (SW).		S-3	Sample #S-3, Depth = 3.5' - 5.4'
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION SL-17-V-12				10. COORDINATE SYSTEM/DATUM Florida State Plane East			
3. DRILLING AGENCY				11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			
4. NAME OF DRILLER BM				12. TOTAL SAMPLES 1			
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN 0.0 Ft.				14. ELEVATION GROUND WATER N/A			
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				15. DATE BORING 02-23-17 15:05			
8. TOTAL DEPTH OF BORING 3.0 Ft.				16. ELEVATION TOP OF BORING -9.8 Ft.			
				17. TOTAL RECOVERY FOR BORING 3 Ft.			
				18. SIGNATURE AND TITLE OF INSPECTOR FK			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS	
-9.8	0.0						
-11.6	1.8		Sand (fine to coarse) with shell, visual rock 0%, visual shell 10%, grey (10YR 5/1), (SW).		S-1	Sample #S-1, Depth = 0.0' - 1.8'	
-12.5	2.7		Sand (fine to coarse) with trace shell and rock, visual rock 10%, visual shell 5%, grey (10 YR 6/1) with 2" size rock, (SW).				
-12.8	3.0		Sand and rock fragments, refusal on 3 attempts recovered 3" x 4" rock, bent core pipes, lt grey (10YR 6/1), (GP).		S-2	Sample #S-2, Depth = 2.7' - 3.0'	
			End of Boring				

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION SL-17-V-13				10. COORDINATE SYSTEM/DATUM Florida State Plane East			
3. DRILLING AGENCY				11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore			
4. NAME OF DRILLER BM				12. TOTAL SAMPLES 1			
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				13. TOTAL NUMBER CORE BOXES 0			
6. THICKNESS OF OVERBURDEN 0.0 Ft.				14. ELEVATION GROUND WATER			
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				15. DATE BORING 02-23-17 16:05			
8. TOTAL DEPTH OF BORING 6.5 Ft.				16. ELEVATION TOP OF BORING -9.1 Ft.			
				17. TOTAL RECOVERY FOR BORING 6.3 Ft.			
				18. SIGNATURE AND TITLE OF INSPECTOR FK			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS	
-9.1	0.0						
-11.4	2.3		Silty sand (fine to medium) and tr shell, visual rock 0%, visual shell 5%, greyish brown (10YR 5/2), (SW-SM).		S-1	Sample #S-1, Depth = 0.0' - 2.3'	
-13.7	4.6		Silty sand (fine to coarse) with rock, visual rock 10%, visual shell <5%, pale brown (10 YR 6/3), (SW-SM).		S-2	Sample #S-2, Depth = 2.3' - 4.6'	
-14.9	5.8		Silty sand (fine to coarse) with shell, visual rock 0%, visual shell 10%, grey (10YR 6/1) with some shell hash, (SW-SM).				
-15.4	6.3		Silty sand w trace of shell, visual rock 0%, visual shell 10%, grey (10YR 6/1), (SW-SM).				
			End of Boring				

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION	INSTALLATION	SHEET 1
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services		9. SIZE AND TYPE OF BIT 3.0 in.		
2. BORING DESIGNATION SL-17-V-14		10. COORDINATE SYSTEM/DATUM Florida State Plane East		
3. DRILLING AGENCY		11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		
4. NAME OF DRILLER BM		12. TOTAL SAMPLES 1		
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED		13. TOTAL NUMBER CORE BOXES 0		
6. THICKNESS OF OVERBURDEN 0.0 Ft.		14. ELEVATION GROUND WATER		
7. DEPTH DRILLED INTO ROCK 0.0 Ft.		15. DATE BORING 02-23-17 16:25		
8. TOTAL DEPTH OF BORING 8.5 Ft.		16. ELEVATION TOP OF BORING -8.8 Ft.		
		17. TOTAL RECOVERY FOR BORING 7.9 Ft.		
		18. SIGNATURE AND TITLE OF INSPECTOR FK		

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-8.8	0.0					
-10.8	2.0		Sand (fine to coarse), visual rock 0%, visual shell <5%, grey (10YR 6/1), (SW).		S-1	Sample #S-1, Depth = 0.0' - 2.0'
-12.1	3.3		Silty sand w shell and rock frags, visual rock 15% visual shell 10%, lt brownish grey (10YR 6/2), (SW-SM).			
-12.2	3.4		Silty sand and shell, visual rock 0%, visual shell 10%, dk grey (10YR 4/1) with shell 2" in size, (SW-SM).			
-14.8	6.0		Silty sand (fine to coarse) with shell, visual rock 0%, visual shell 5%, lt grey (10YR 7/1), (SW-SM).		S-2	Sample #S-2, Depth = 3.4' - 6.0'
-16.7	7.9		Silty sand (fine to coarse) with shell, visual rock 0%, visual shell 5%, very dk grey (10YR 3/1), (SW-SM).			
			End of Boring			

FLORIDA DEP ROSS - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1	
						OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services 				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION SL-17-V-15				10. COORDINATE SYSTEM/DATUM Florida State Plane East		HORIZONTAL NAD 1983	
3. DRILLING AGENCY				11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		☐ AUTO HAMMER ☐ MANUAL HAMMER	
4. NAME OF DRILLER BM				12. TOTAL SAMPLES		DISTURBED 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD)	
6. THICKNESS OF OVERBURDEN 0.0 Ft.				14. ELEVATION GROUND WATER			
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				15. DATE BORING		STARTED 02-23-17 16:48	
8. TOTAL DEPTH OF BORING 1.5 Ft.				16. ELEVATION TOP OF BORING -9.7 Ft.		COMPLETED 02-23-17	
				17. TOTAL RECOVERY FOR BORING 1.1 Ft.			
				18. SIGNATURE AND TITLE OF INSPECTOR FK			

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-9.7	0.0					
-10.8	1.1		Sand with rock, visual rock 40%, visual shell 5%, grey (10YR 7/1) rock up to 3" in size, refusal on 3 attempts, bent core pipes, (SW).		S-1	Sample #S-1, Depth = 0.0' - 1.1'
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION	INSTALLATION	SHEET 1
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION SL-17-V-16			10. COORDINATE SYSTEM/DATUM Florida State Plane East NAD 1983 MLLW	
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL ☐ AUTO HAMMER ☐ MANUAL HAMMER Vibracore	
4. NAME OF DRILLER BM			12. TOTAL SAMPLES DISTURBED UNDISTURBED (UD) 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED			13. TOTAL NUMBER CORE BOXES 0	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING STARTED COMPLETED 02-24-17 08:35 02-24-17	
8. TOTAL DEPTH OF BORING 7.2 Ft.			16. ELEVATION TOP OF BORING -9.7 Ft.	
			17. TOTAL RECOVERY FOR BORING 7 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR FK	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-9.7	0.0					
-12.0	2.3		Sand (fine to medium) and tr shell, visual rock 0%, visual shell 5%, grey (10YR 6/1), (SP).		S-1	Sample #S-1, Depth = 0.0' - 2.3'
-12.5	2.8		Silty sand (fine to coarse) with rock, visual rock 20%, visual shell 5%, grey (10YR 5/1), (SW-SM).			
-13.0	3.3		Silty sand (fine to coarse) with rock, visual rock 40%, visual shell 5%, grey (10YR 7/1), (SW-SM).		S-2	Sample #S-2, Depth = 2.8' - 3.3'
-14.5	4.8		Sandy clay, visual rock 0%, visual shell <5%, pale brown (10YR 6/3), (CH).			
-16.3	6.6		Peat and silty sand, visual rock 0%, visual shell <5%, dark brown (10YR 3/3), (PT).		S-3	Sample #S-3, Depth = 4.8' - 6.6'
-16.7	7.0		Sand and rock, visual rock 70%, visual shell <5%, dark grey (10YR 3/1), (GM).			
			End of Boring			

FLORIDA DEP ROSS SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION SL-17-V-17				10. COORDINATE SYSTEM/DATUM Florida State Plane East		HORIZONTAL NAD 1983	
3. DRILLING AGENCY				11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		VERTICAL MLLW	
4. NAME OF DRILLER BM				12. TOTAL SAMPLES 1		DISTURBED UNDISTURBED (UD)	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER	
6. THICKNESS OF OVERBURDEN 0.0 Ft.				15. DATE BORING 02-24-17 08:52		STARTED COMPLETED 02-24-17	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				16. ELEVATION TOP OF BORING -9.8 Ft.		17. TOTAL RECOVERY FOR BORING 7 Ft.	
8. TOTAL DEPTH OF BORING 7.5 Ft.				18. SIGNATURE AND TITLE OF INSPECTOR FK			
ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS	
-9.8	0.0						
-11.8	2.0		Sand (fine to coarse) w/ trace shell, visual rock 0%, visual shell 5%, grey (10YR 6/1), (SW).		S-1	Sample #S-1, Depth = 0.0' - 2.0'	
-12.5	2.7		Sand (fine to medium) w/ rock, visual rock 20%, visual shell 5%, grey (10YR 5/1), (SW).				
-13.3	3.5		Sand (fine to coarse) with shell, visual rock 0%, visual shell 10%, grey (10YR 5/1), (SW).		S-2	Sample #S-2, Depth = 2.7' - 3.5'	
-15.1	5.3		Sand (fine to medium) w/ rock, visual rock 20%, visual shell 10%, grey to lt grey (10YR 5/1 7/1) 2.5" rock @4.6', (SW).				
-16.8	7.0		Sand (fine to coarse) w/ trace shell, visual rock 0%, visual shell <5%, pale brown (10YR 6/3), (SW).				
			End of Boring				

FLORIDA DEP ROSS - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

VIBRACORE LOG		DIVISION		INSTALLATION		SHEET 1 OF 1 SHEETS	
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services				9. SIZE AND TYPE OF BIT 3.0 In.			
2. BORING DESIGNATION SL-17-V-18				10. COORDINATE SYSTEM/DATUM Florida State Plane East		HORIZONTAL NAD 1983	
3. DRILLING AGENCY				11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore		☐ AUTO HAMMER ☐ MANUAL HAMMER	
4. NAME OF DRILLER BM				12. TOTAL SAMPLES 1		UNDISTURBED (UD)	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED				13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER	
6. THICKNESS OF OVERBURDEN 0.0 Ft.				15. DATE BORING		STARTED 02-24-17 09:06	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.				16. ELEVATION TOP OF BORING -10.0 Ft.		COMPLETED 02-24-17	
8. TOTAL DEPTH OF BORING 6.0 Ft.				17. TOTAL RECOVERY FOR BORING 5.9 Ft.			
				18. SIGNATURE AND TITLE OF INSPECTOR FK			

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-10.0	0.0					
			Sand (fine to coarse) w/ trace shell, visual rock 0%, visual shell 5%, grey (10YR 6/1 to 5/1), (SW).		S-1	Sample #S-1, Depth = 0.0' - 3.2'
-13.2	3.2					
-13.5	3.5		Silty sand (fine to coarse) with rock and shell, visual rock 20%, visual shell 5%, pale brown (10YR 6/3), (SW-SM).			
			Silty sand (fine to coarse) with rock and shell, visual rock 20%, visual shell 5%, grey (10YR 6/1) several 1" rocks, (SW-SM).		S-2	Sample #S-2, Depth = 3.5' - 5.9'
-15.9	5.9					
			End of Boring			

VIBRACORE LOG		DIVISION	INSTALLATION	SHEET 1 OF 1 SHEETS
1. PROJECT Saint Lucie County Reach 1 Permitting and Dredging Engineering Services 			9. SIZE AND TYPE OF BIT 3.0 In.	
2. BORING DESIGNATION SL-17-V-19			10. COORDINATE SYSTEM/DATUM Florida State Plane East	
3. DRILLING AGENCY			11. MANUFACTURER'S DESIGNATION OF DRILL Vibracore	
4. NAME OF DRILLER BM			12. TOTAL SAMPLES 1	
5. DIRECTION OF BORING ☒ VERTICAL ☐ INCLINED			13. TOTAL NUMBER CORE BOXES 0	
6. THICKNESS OF OVERBURDEN 0.0 Ft.			14. ELEVATION GROUND WATER N/A	
7. DEPTH DRILLED INTO ROCK 0.0 Ft.			15. DATE BORING 02-24-17 09:28	
8. TOTAL DEPTH OF BORING 6.5 Ft.			16. ELEVATION TOP OF BORING -10.1 Ft.	
			17. TOTAL RECOVERY FOR BORING 6 Ft.	
			18. SIGNATURE AND TITLE OF INSPECTOR FK	

ELEV. (ft)	DEPTH (ft)	LEGEND	CLASSIFICATION OF MATERIALS Depths and elevations based on measured values	% REC.	BOX OR SAMPLE	REMARKS
-10.1	0.0					
			Sand (fine to coarse) with trace shell, visual rock 0%, visual shell 5%, grey (10YR 6/1), (SW).		S-1	Sample #S-1, Depth = 0.0' - 2.1'
-12.2	2.1					
			Sand (fine to medium) w/ rock, visual rock 5%, visual shell 5%, grey (10YR 6/1), (SW-SM).		S-2	Sample #S-2, Depth = 2.1' - 2.9'
-13.0	2.9					
			Sand (fine to coarse) with trace shell, visual rock 0%, visual shell 5%, pale brown (10YR 6/3) shell 3" in size @3.4', (SW-SM).		S-3	Sample #S-3, Depth = 2.9' - 6.0'
-16.1	6.0					
			End of Boring			



Vibracore Photos



Saint Lucie County Reach 1

SL-17-V-01

Top of Core
-13.94 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-02

Top of Core
-12.53 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-03

Top of Core
-13.77 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-04

Top of Core
-13.64 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-05

Top of Core
-11.63 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-06

Top of Core
-16.04 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-07

Top of Core
-12.13 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-08

Top of Core
-11.44 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-09

Top of Core
-7.81 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-10

Top of Core
-8.77 FT MLLW

Scale in Feet



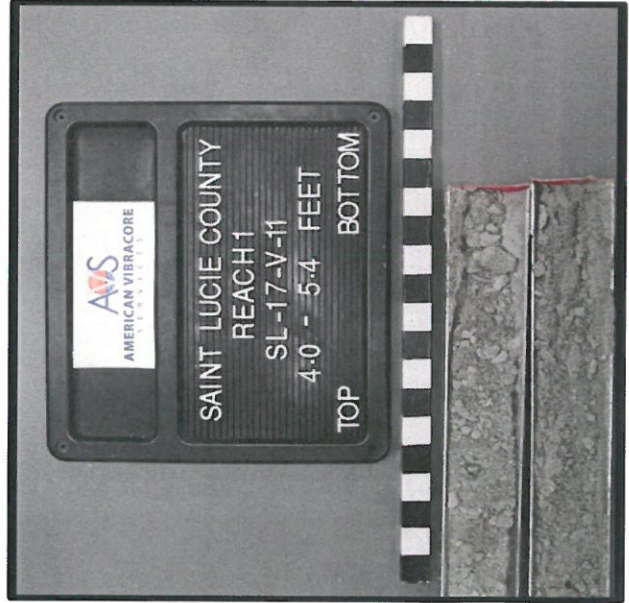


Saint Lucie County Reach 1

SL-17-V-11

Top of Core
-8.09 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-12

Top of Core
-9.83 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-13

Top of Core
-9.05 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-14

Top of Core
-8.82 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-15

Top of Core
-9.71 FT MLLW

Scale in Feet



Saint Lucie County Reach 1

SL-17-V-16

Top of Core
-9.69 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-17

Top of Core
-9.82 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-18

Top of Core
-10.02 FT MLLW

Scale in Feet





Saint Lucie County Reach 1

SL-17-V-19

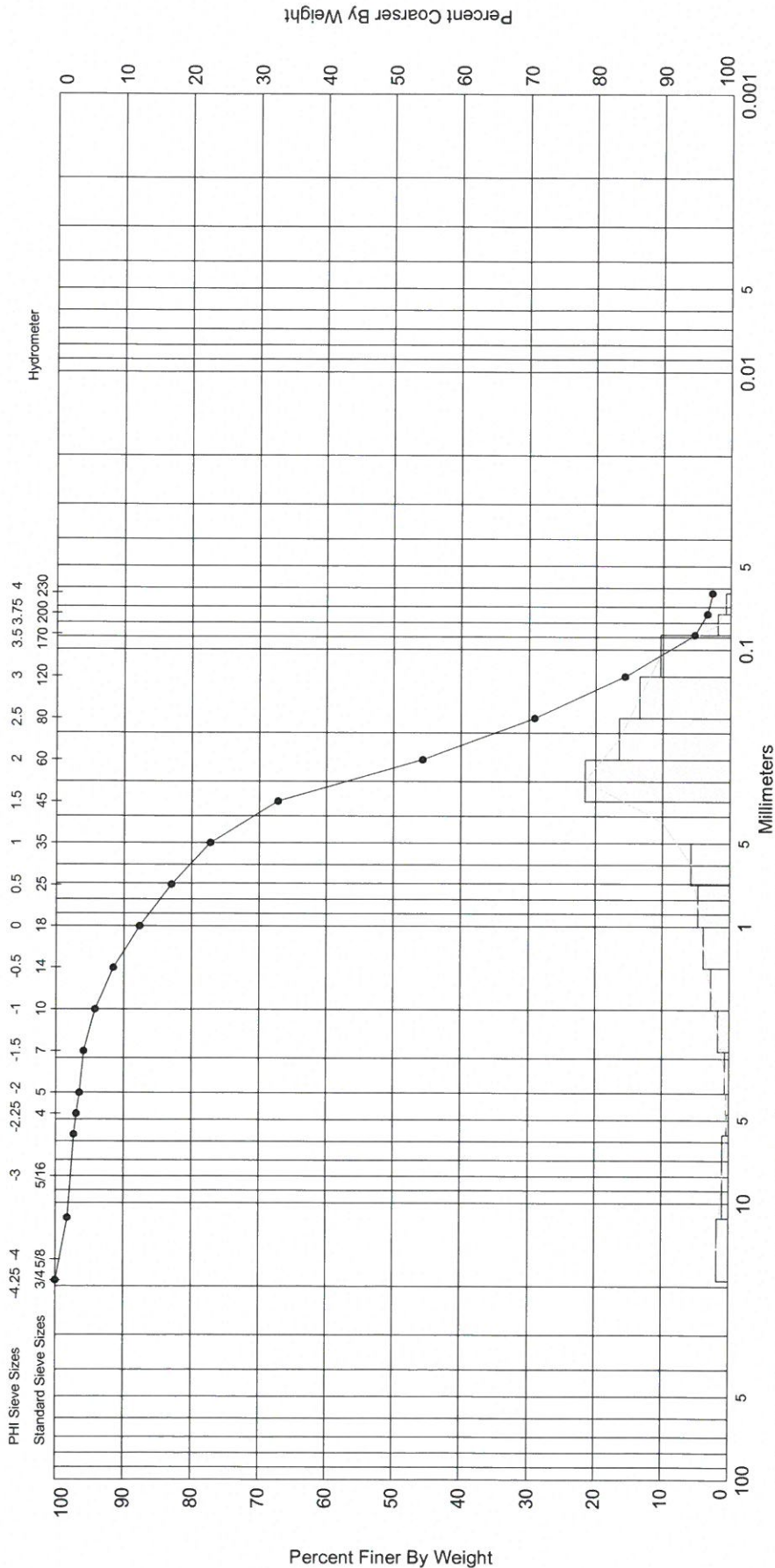
Top of Core
-10.05 FT MLLW

Scale in Feet





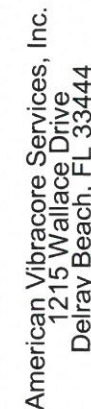
Grain Size Distribution Curves



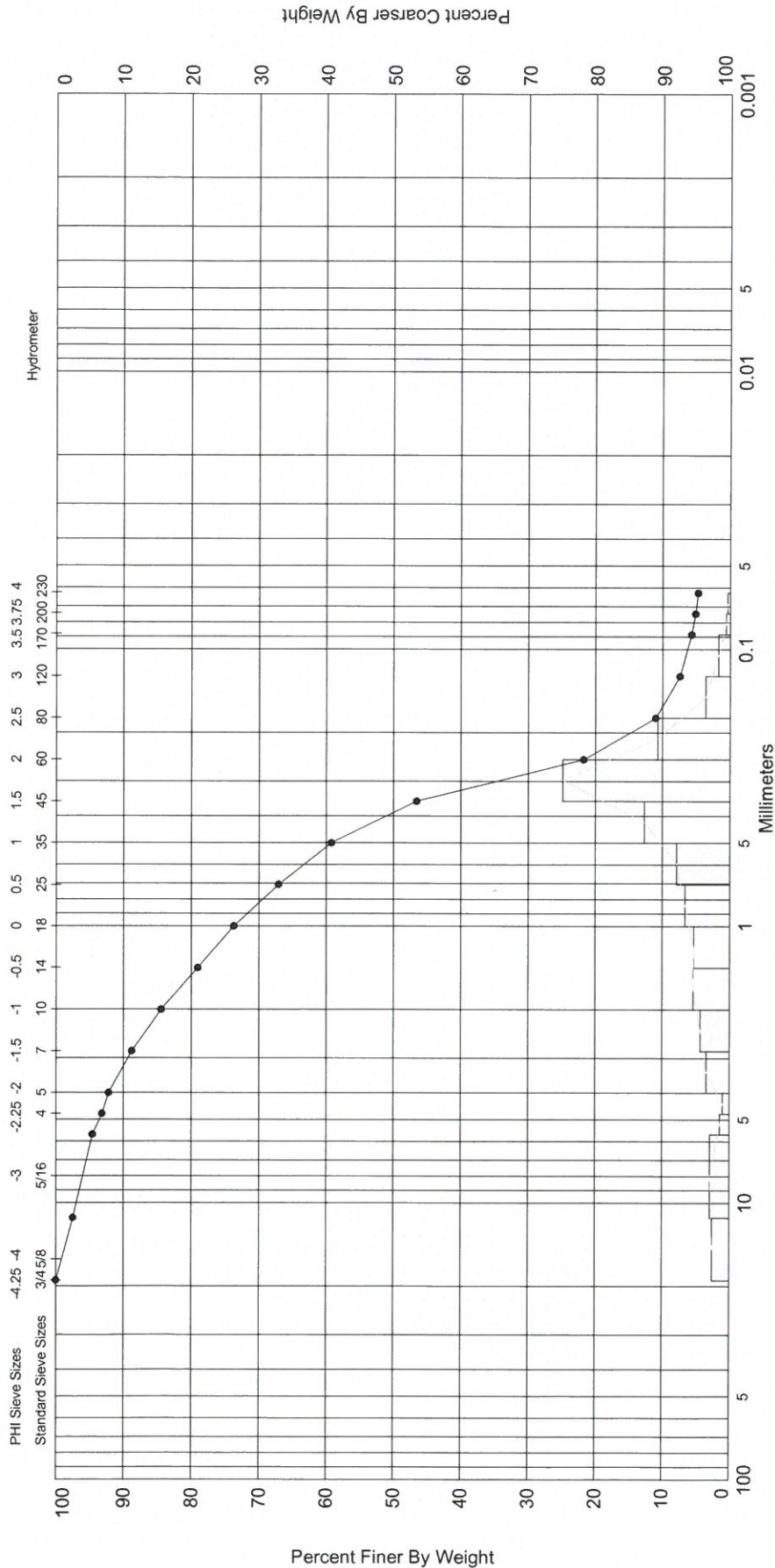
Gravel		Sand					Silt and Clay						
Coarse		Fine		Coarse	Medium	Fine							
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-01 #S-1	—●—	-14.6	SW	#200 - 3.40 #230 - 2.68			1.9	0.33	-1.49	5.76	1.48	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
												Latitude:	1140827.6
												Longitude:	875392.3
												Horizontal System:	NAD 1983
												Vertical System:	MLLW



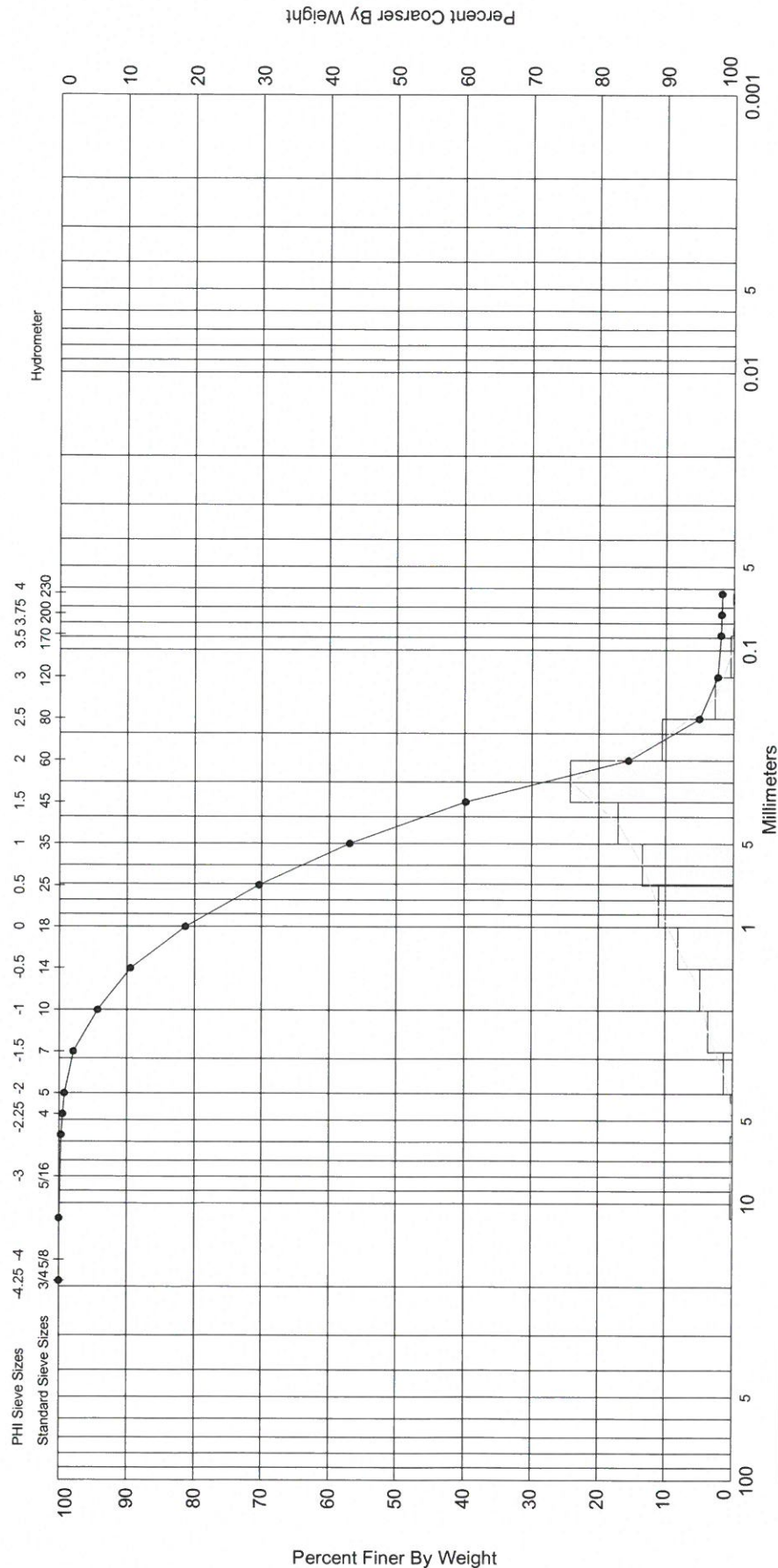
AMERICAN VIBRACORE
SERVICES



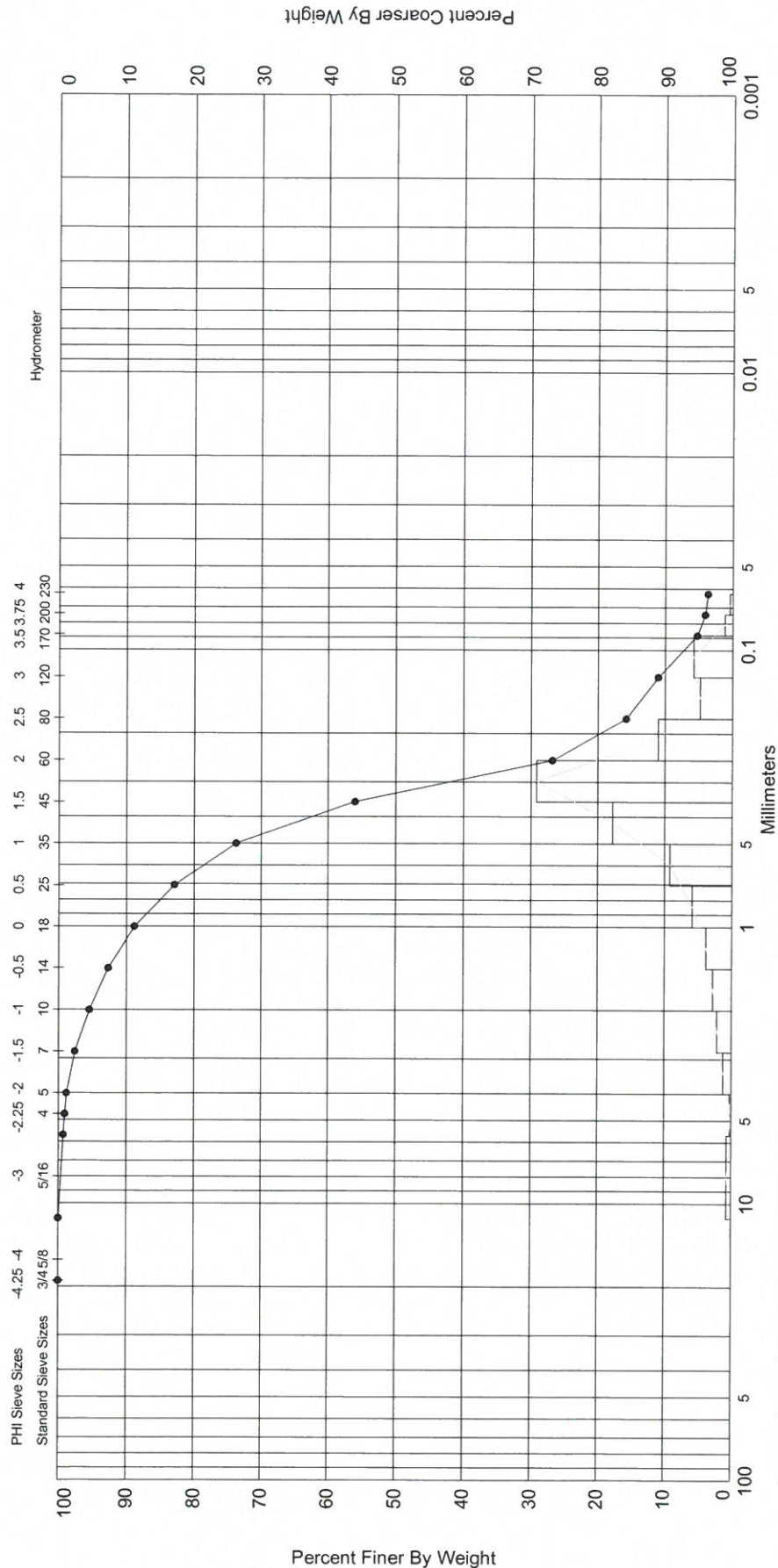
American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444



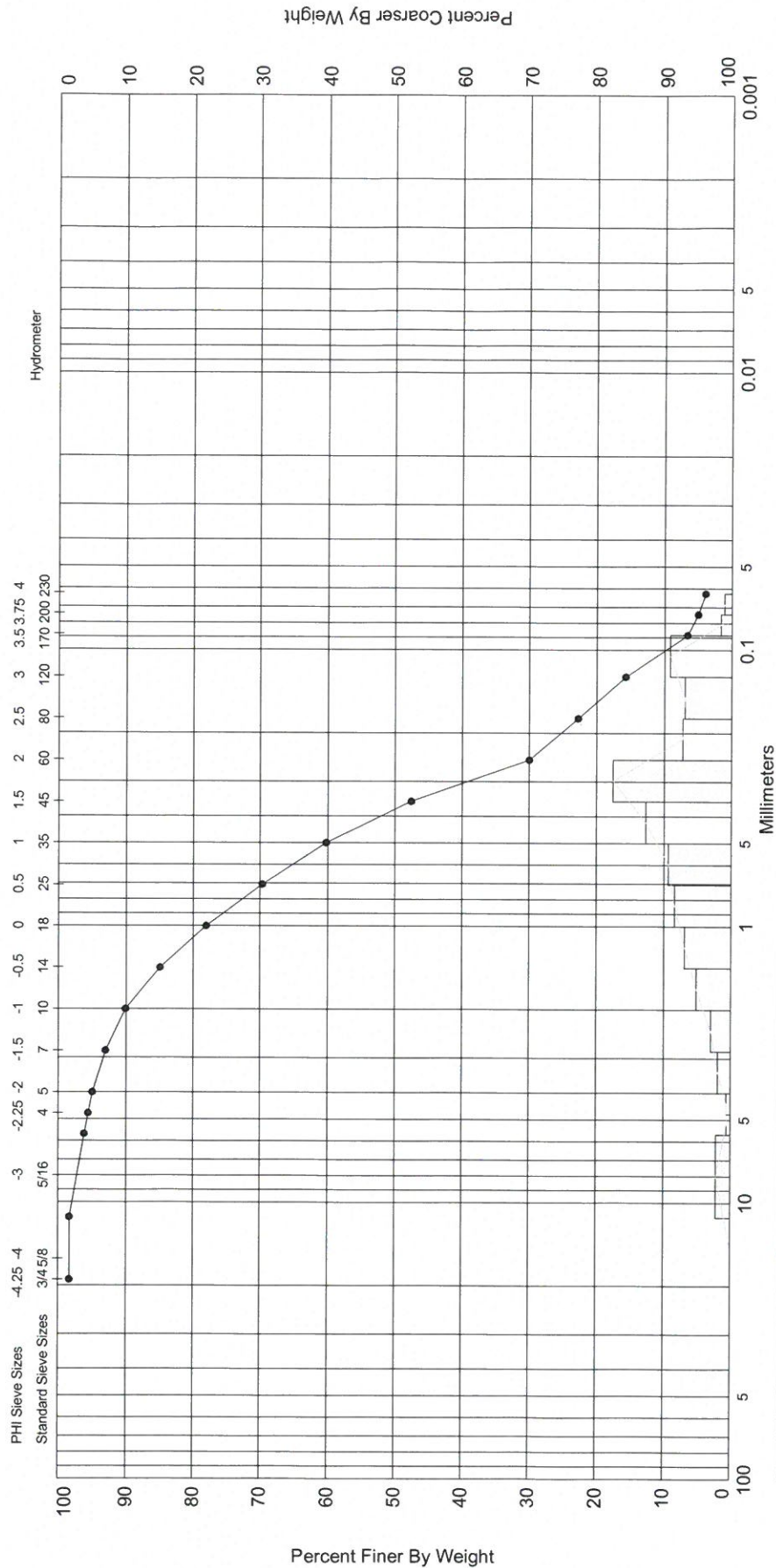
Gravel		Sand				Silt and Clay						
Coarse	Fine	Coarse	Medium	Fine								
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information
SL-17-V-01 #S-2	—●—	-15.9	SW-SM	#200 - 5.11 #230 - 4.73			1.36	0.60	-0.98	3.39	1.65	Project Name: Saint Lucie County Reach 1 Permitting
Comments:												
Depths and elevations based on measured values												
					American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444							
					Latitude: 1140827.6							
					Longitude: 875392.3							
					Horizontal System: NAD 1983							
					Vertical System: MLLW							



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	
SL-17-V-01 #S-3	—●—	-17.0	SW	#200 - 1.80 #230 - 1.72			1.2	0.51	-0.68	3.19	1.08	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
												Latitude:	1140827.6
												Longitude:	875392.3
												Horizontal System:	NAD 1983
												Vertical System:	MLLW

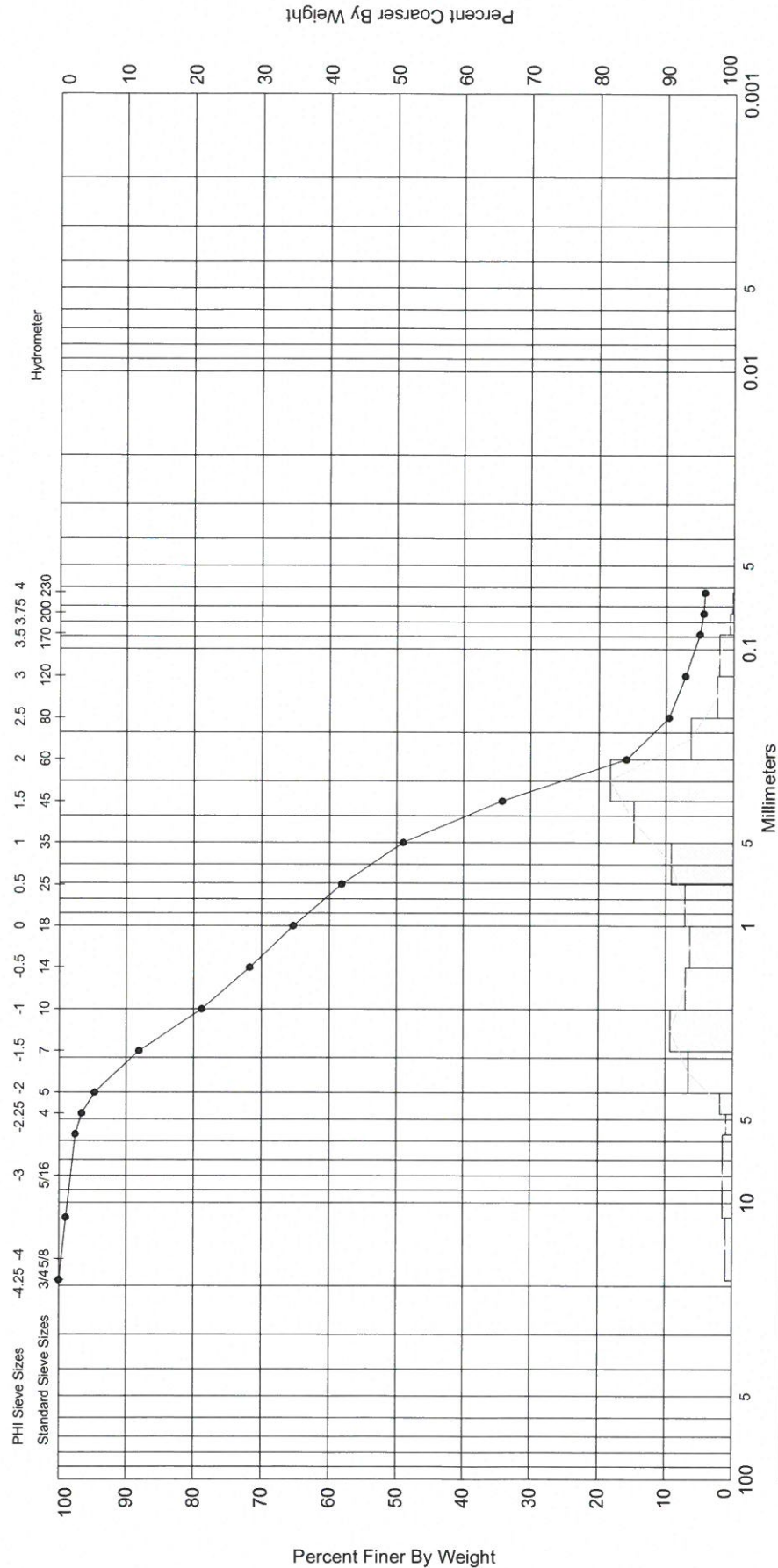


Gravel		Sand				Silt and Clay			
Coarse		Fine		Coarse		Medium		Fine	
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew
SL-17-V-02 #S-1	—●—	-12.5	SW	#200 - 4.09 #230 - 3.67			1.6	0.38	-0.88
Sort									
Kurt									
Sample Information									
Project Name:									
Analysis Date:									
Analyzed By:									
Latitude:									
Longitude:									
Horizontal System:									
Vertical System:									
Comments:									
Depths and elevations based on measured values									
					American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444				

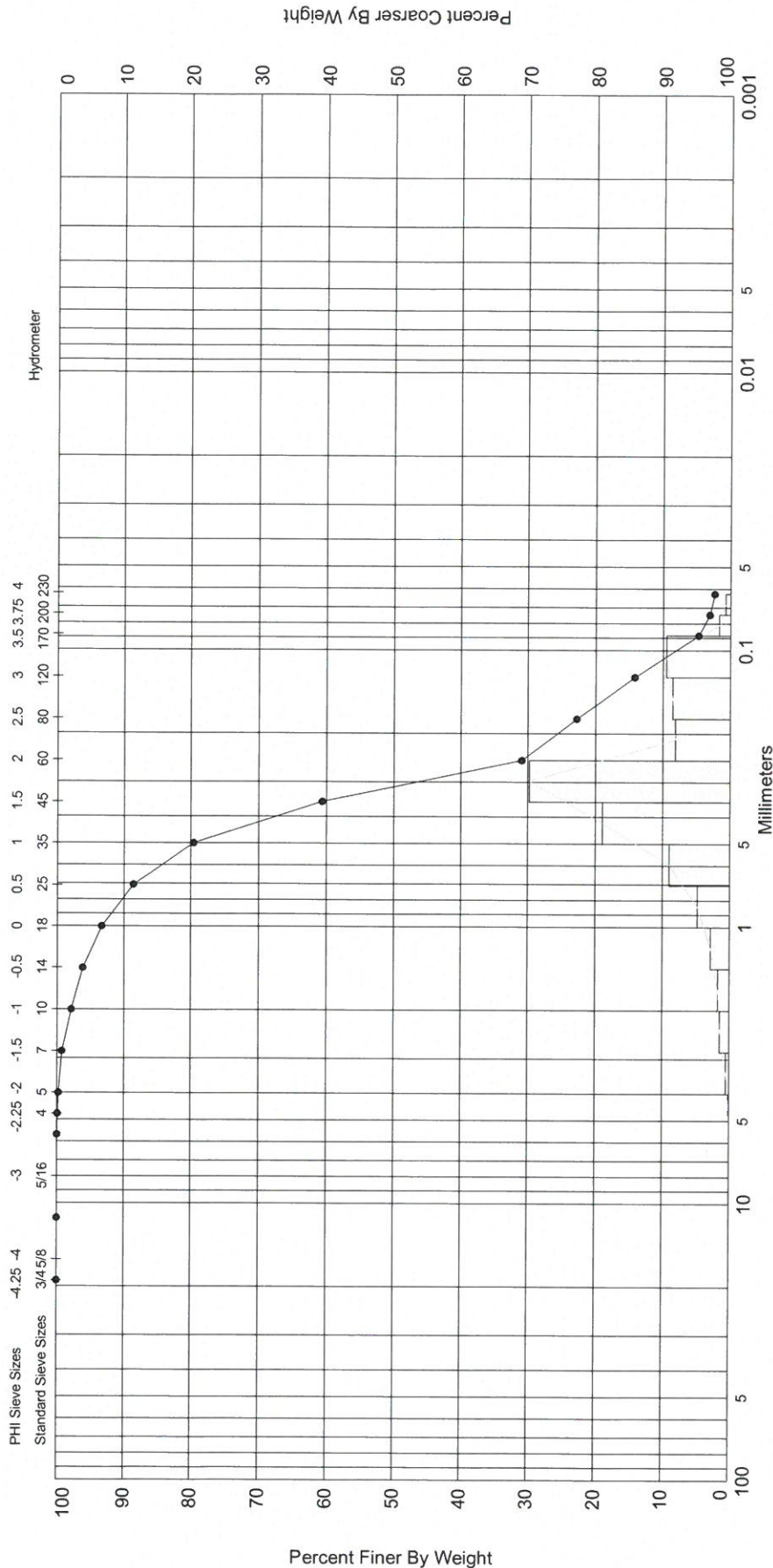


Gravel		Sand				Silt and Clay							
Coarse	Fine	Coarse	Medium	Fine									
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-03 #S-1	—●—	-13.8	SW	#200 - 4.98 #230 - 3.88			1.4	0.48	-0.35	2.93	1.5	Project Name:	Saint Lucie County Reach 1 Permitting
Comments: SW												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
												Latitude:	1139933
												Longitude:	875816
												Horizontal System:	NAD 1983
												Vertical System:	MLLW

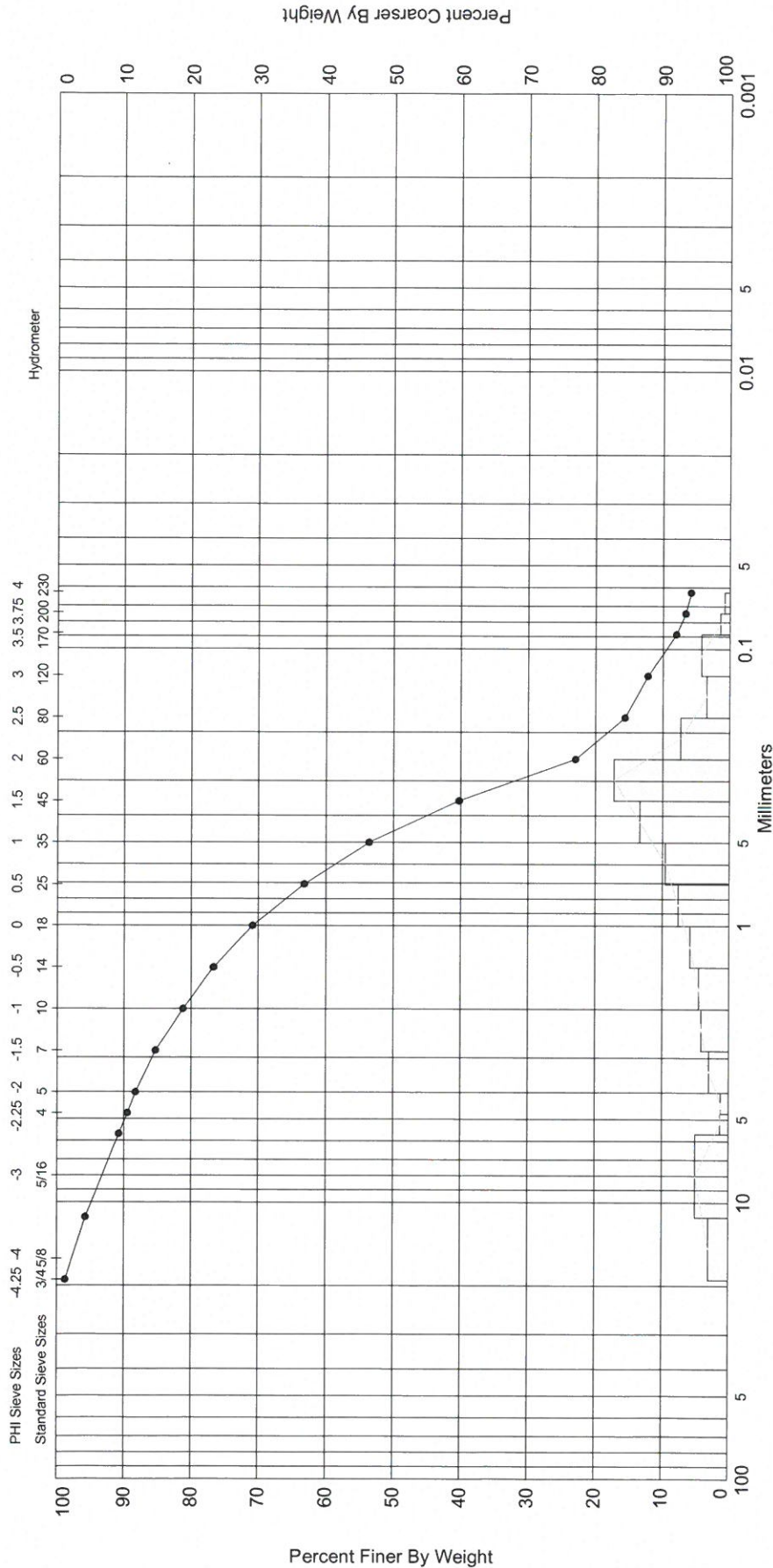
	American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444
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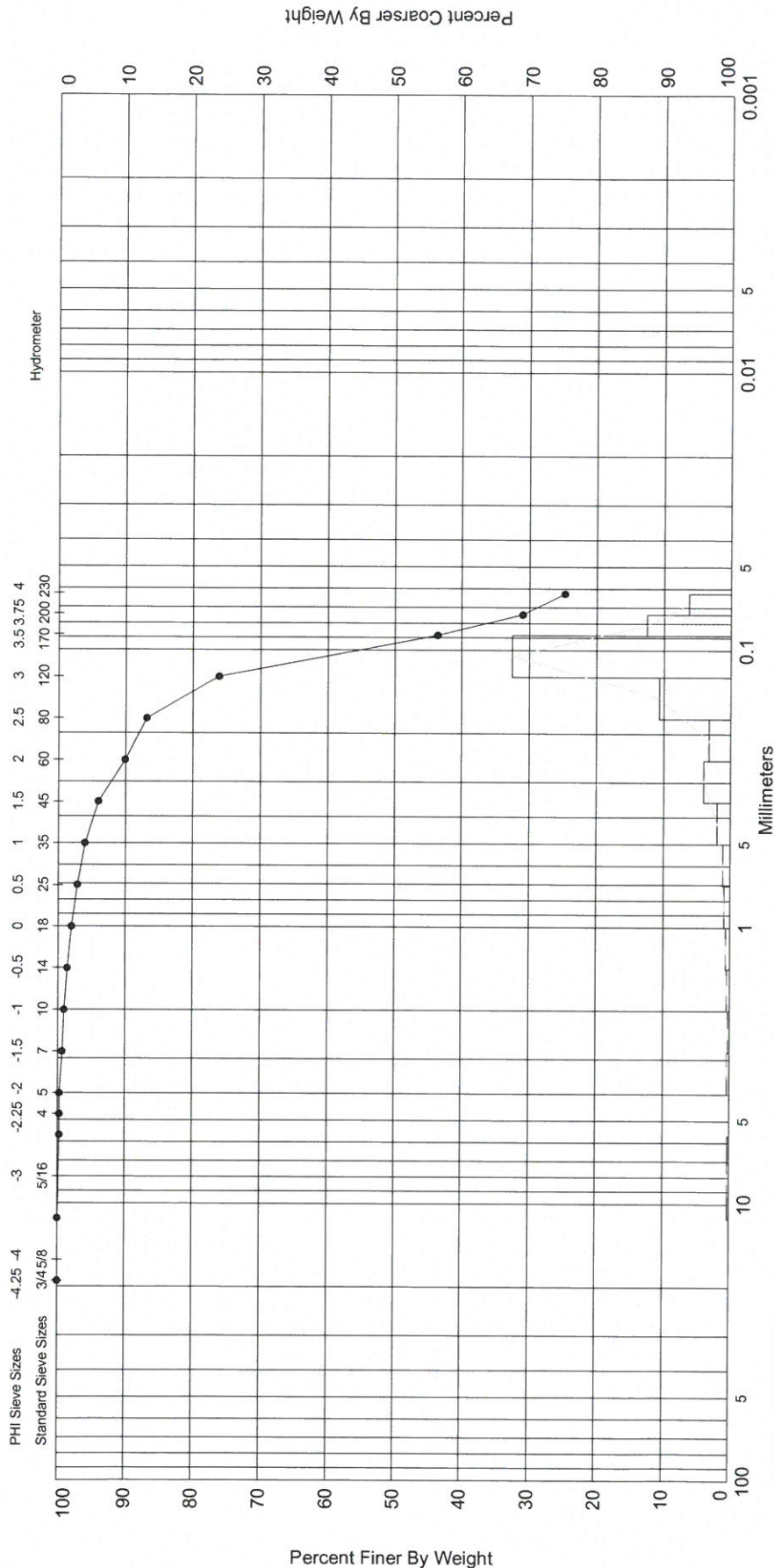
Gravel			Sand				Silt and Clay						
Coarse		Fine	Coarse	Medium	Fine								
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-03 #S-2	—●—	-16.7	SW	#200 - 4.48 #230 - 4.30			0.95	0.72	-0.44	2.53	1.54	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
 AMERICAN VIBRACORE SERVICES												Latitude:	1139933
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												Horizontal System:	NAD 1983
												Vertical System:	MLLW



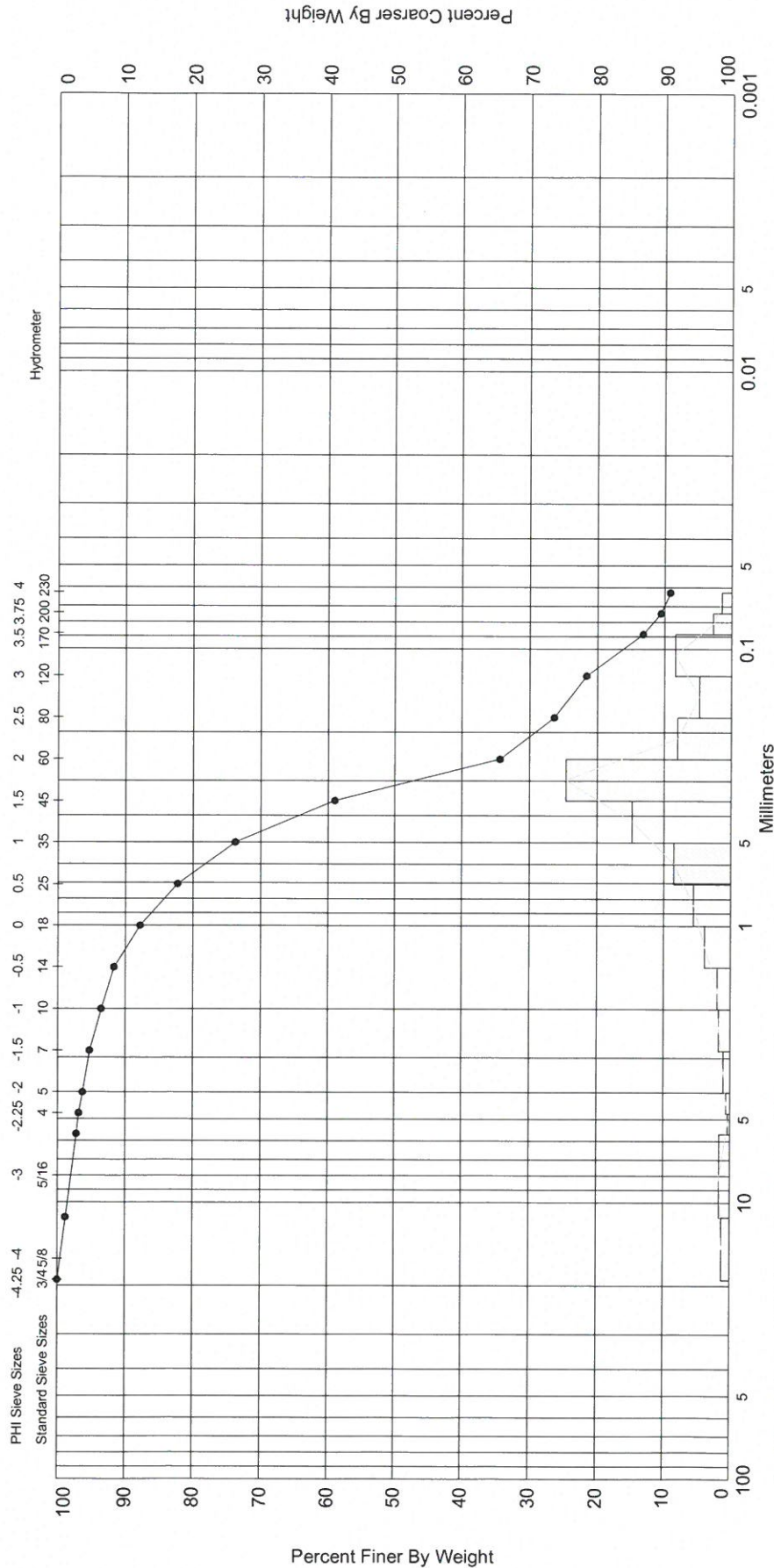
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Coarse		Fine		Coarse		Medium		Fine					
Sample	Symbol	Elev. (ft)	USCS	% Fines #200 - 3.04 #230 - 2.33	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-04 #S-1	—●—	-13.6	SW				1.68	0.32	-0.48	3.75	1.05	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444												Latitude:	1139436.8
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												Horizontal System:	NAD 1983
												Vertical System:	MLLW



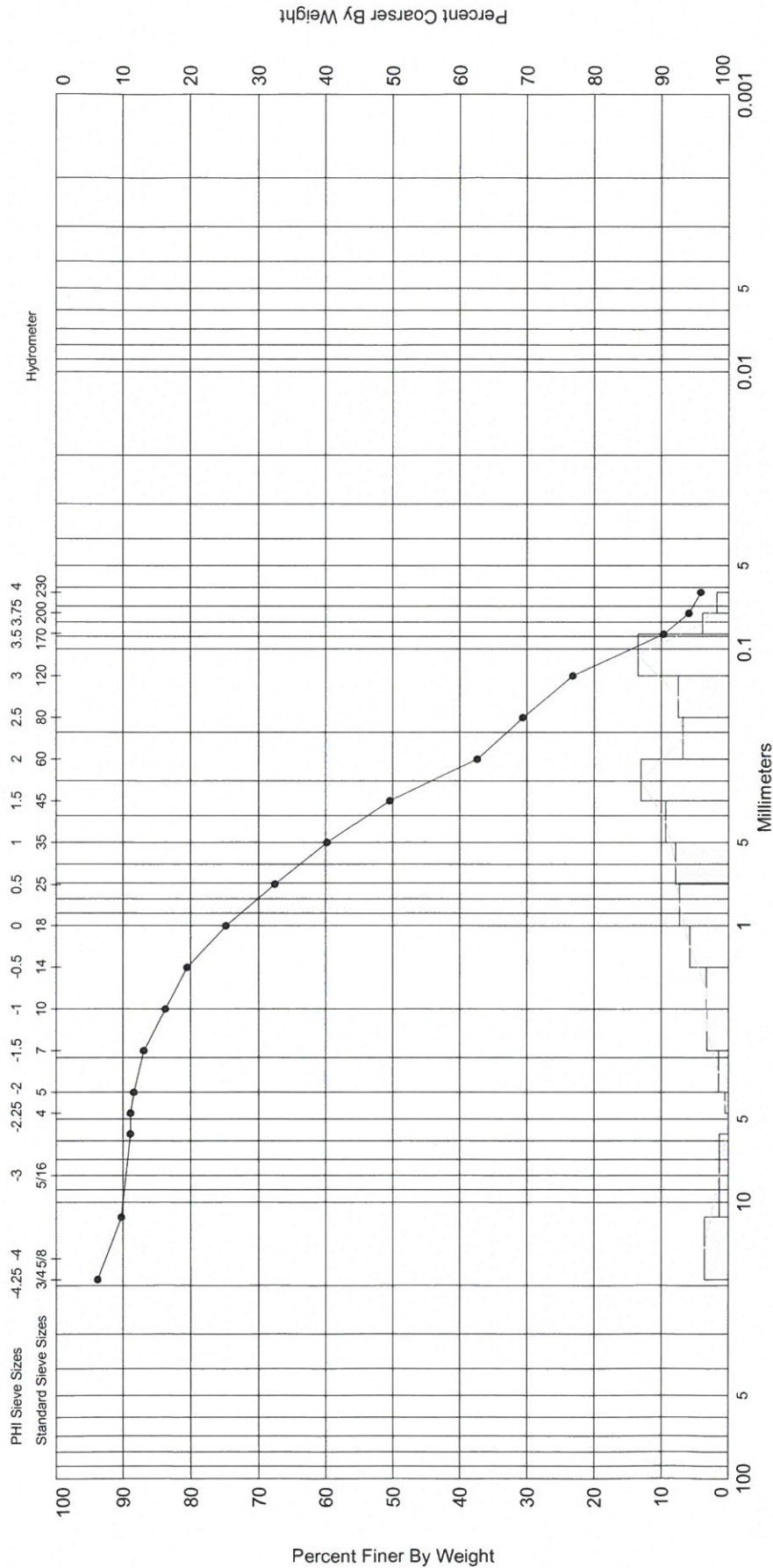
Gravel				Sand				Silt and Clay					
Coarse		Fine		Coarse		Medium		Fine					
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-04 #S-2	—●—	-16.3	SW-SM	#200 - 6.60 #230 - 5.79			1.13	0.69	-0.62	2.89	1.8	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
 AMERICAN VIBRACORE SERVICES												Latitude:	1139436.8
												Longitude:	876103.5
												Horizontal System:	NAD 1983
												Vertical System:	MLLW



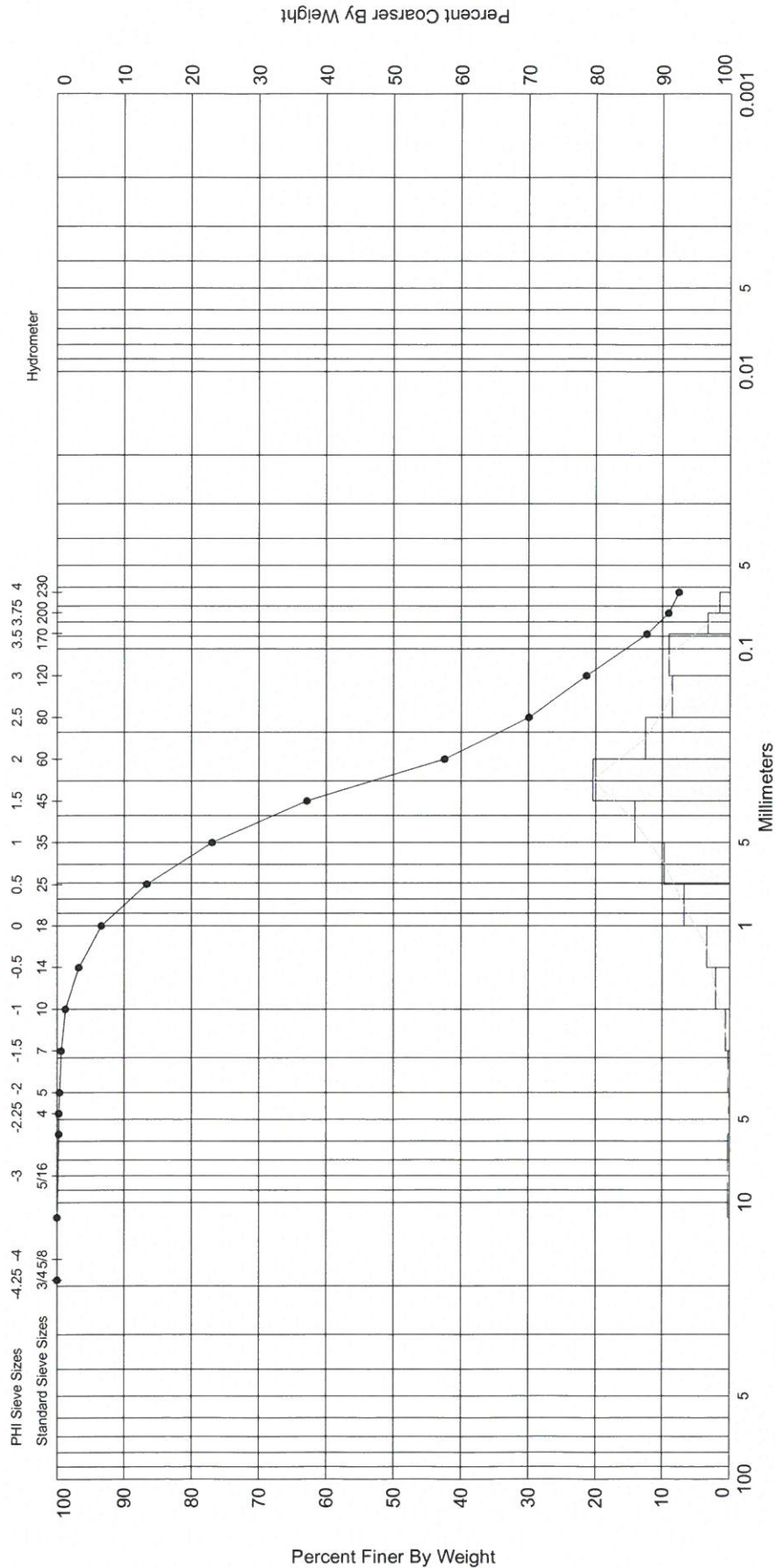
Gravel		Sand				Silt and Clay								
Coarse		Fine		Coarse	Medium	Fine								
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information		
SL-17-V-05 #S-1	—●—	-11.6	SM	#200 - 30.99 #230 - 24.71			3.4	0.13	-2.59	11.43	0.99	Project Name:	Saint Lucie County Reach 1 Permitting	
Comments:												Analysis Date:	02-27-17	
Depths and elevations based on measured values												Analyzed By:	FW	
						American Vibracore Services, Inc.							Latitude:	1138521.5
						1215 Wallace Drive							Longitude:	876674.6
						Delray Beach, FL 33444							Horizontal System:	NAD 1983
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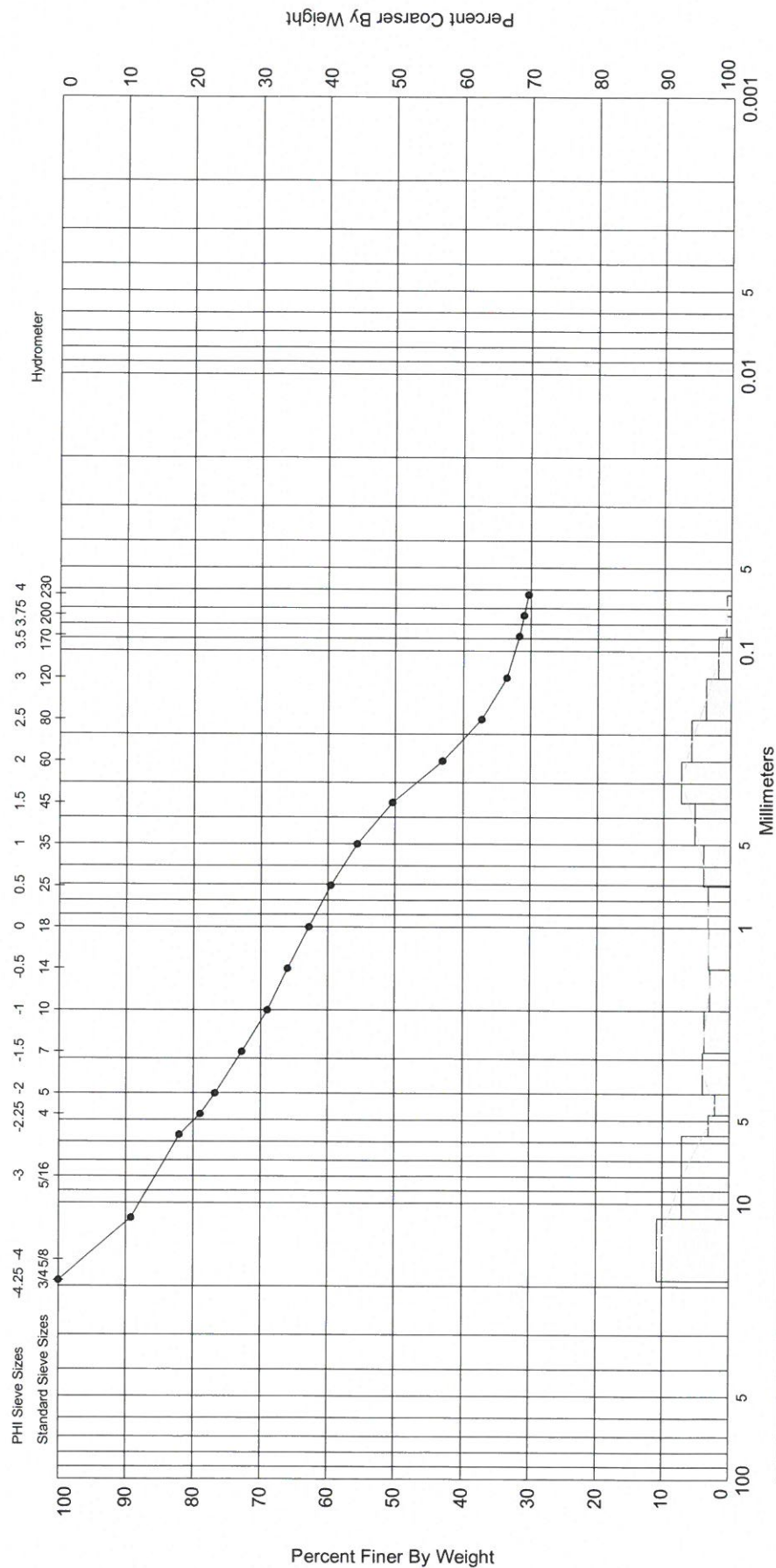
Gravel		Sand				Silt and Clay			
Coarse		Fine		Coarse		Medium		Fine	
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew
SL-17-V-05 #S-2	—●—	-15.8	SW-SM	#200 - 10.54 #230 - 9.14			1.68	0.38	-1.14
Sort									
Kurt									
Sort									
Sample Information									
Project Name:									
Analysis Date:									
Analyzed By:									
Latitude:									
Longitude:									
Horizontal System:									
Vertical System:									
Comments:									
Depths and elevations based on measured values									
American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444					Saint Lucie County Reach 1 Permitting				
AVS AMERICAN VIBRACORE SERVICES					02-27-17				
					FW				
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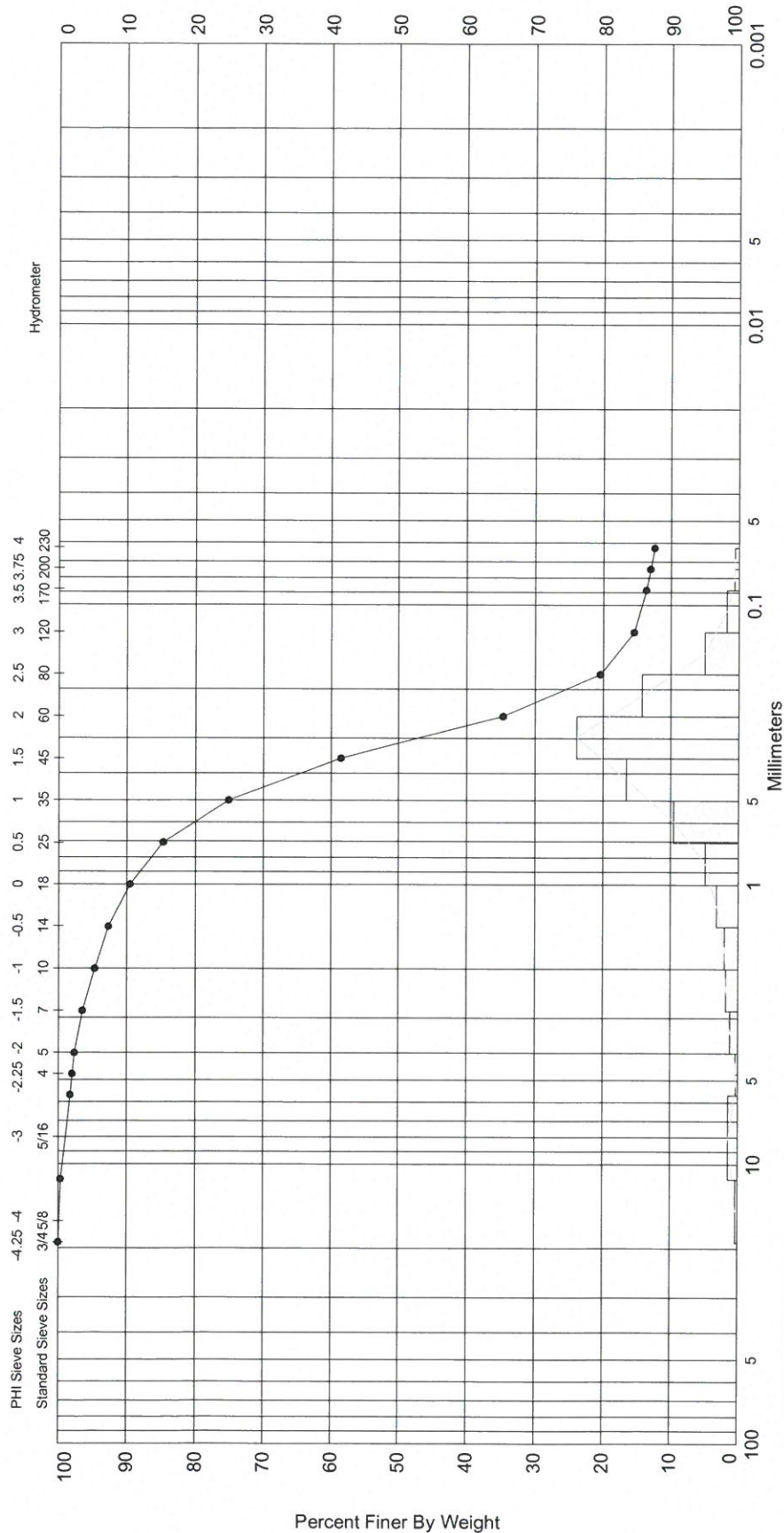


Gravel		Sand				Silt and Clay							
Coarse		Fine		Coarse	Medium	Fine							
Sample	Symbol	Elev. (ft)	USCS	% Fines #200 - 5.84 #230 - 4.08	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-06 #S-1	—●—	-16.0	SW-SM				1.52	0.54	-0.29	3.05	1.82	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
 AMERICAN VIBRACORE SERVICES American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444												Latitude:	1138163.1
												Longitude:	876589
												Horizontal System:	NAD 1983
												Vertical System:	MLLW



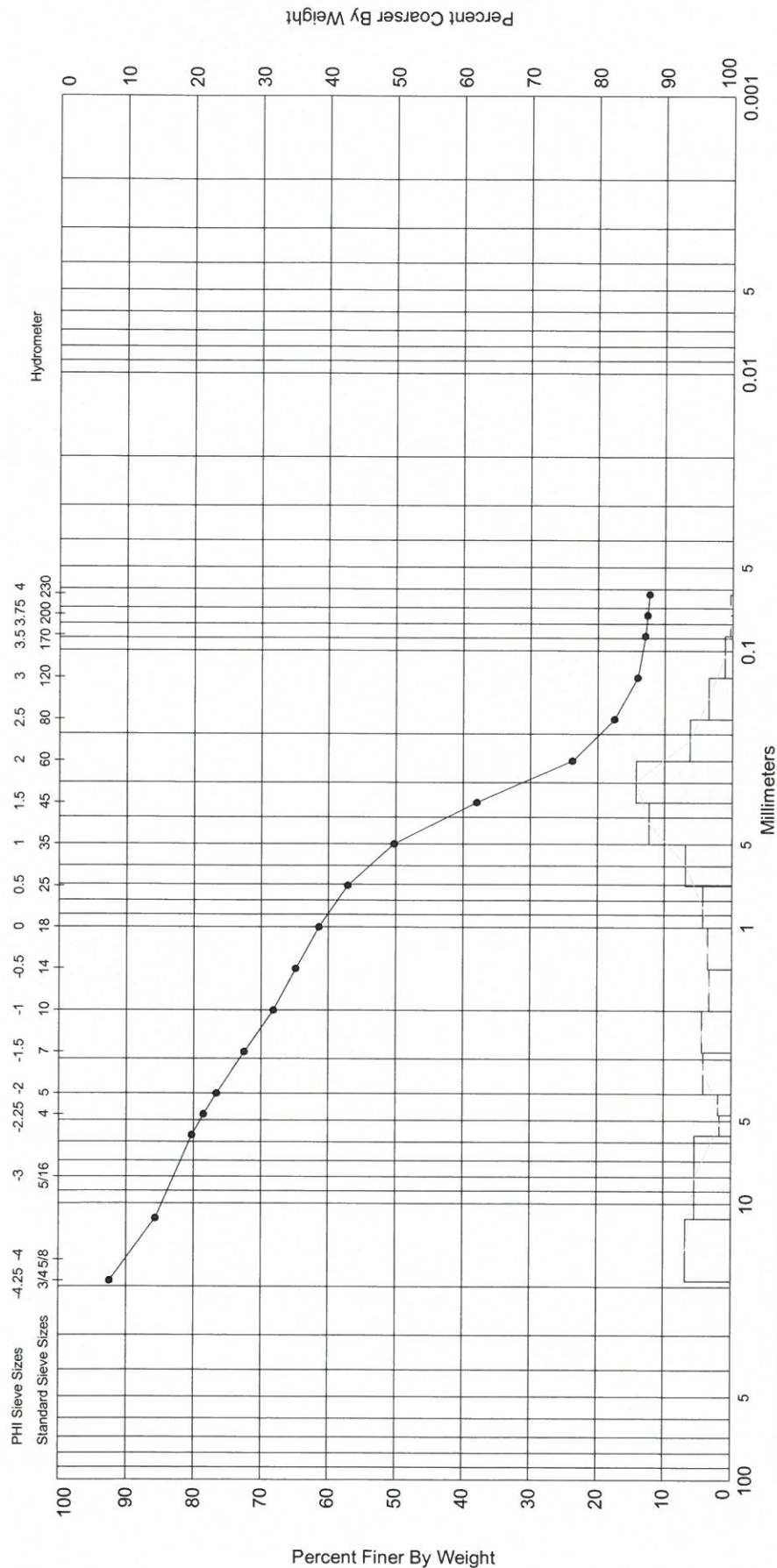
Gravel		Sand				Silt and Clay						
Coarse		Fine		Coarse	Medium	Fine						
Sample	Symbol	Elev. (ft)	USCS	% Fines #200 - 9.08 #230 - 7.53	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information
SL-17-V-06 #S-2	—●—	-19.0	SW-SM				1.81	0.31	-0.41	3.39	1.14	Project Name: Saint Lucie County Reach 1 Permitting
Comments:												
Depths and elevations based on measured values												
 AMERICAN VIBRACORE SERVICES				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444								
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				Horizontal System: NAD 1983								
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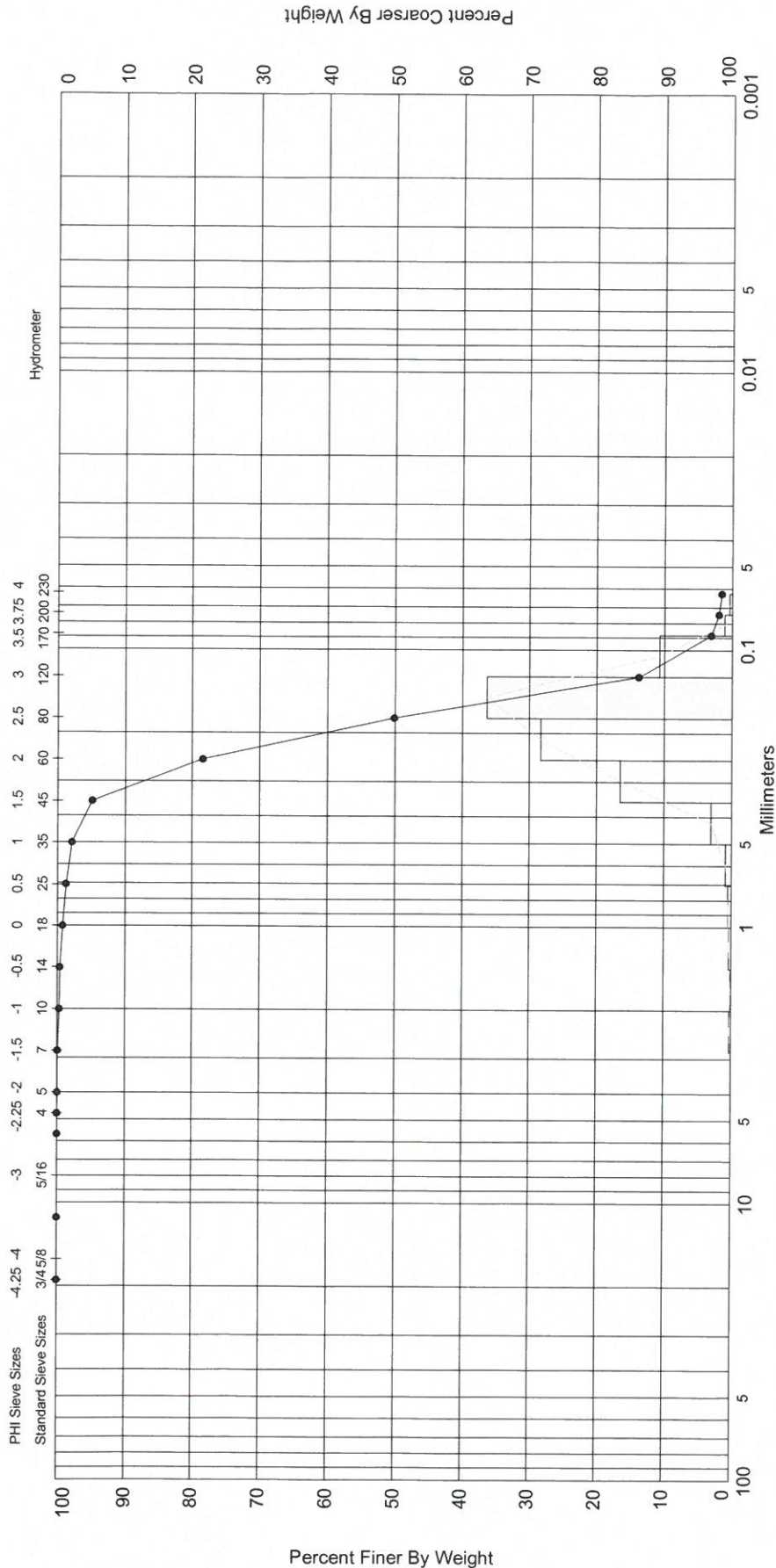


Gravel		Sand			Silt and Clay	
Coarse	Fine	Coarse	Medium	Fine		

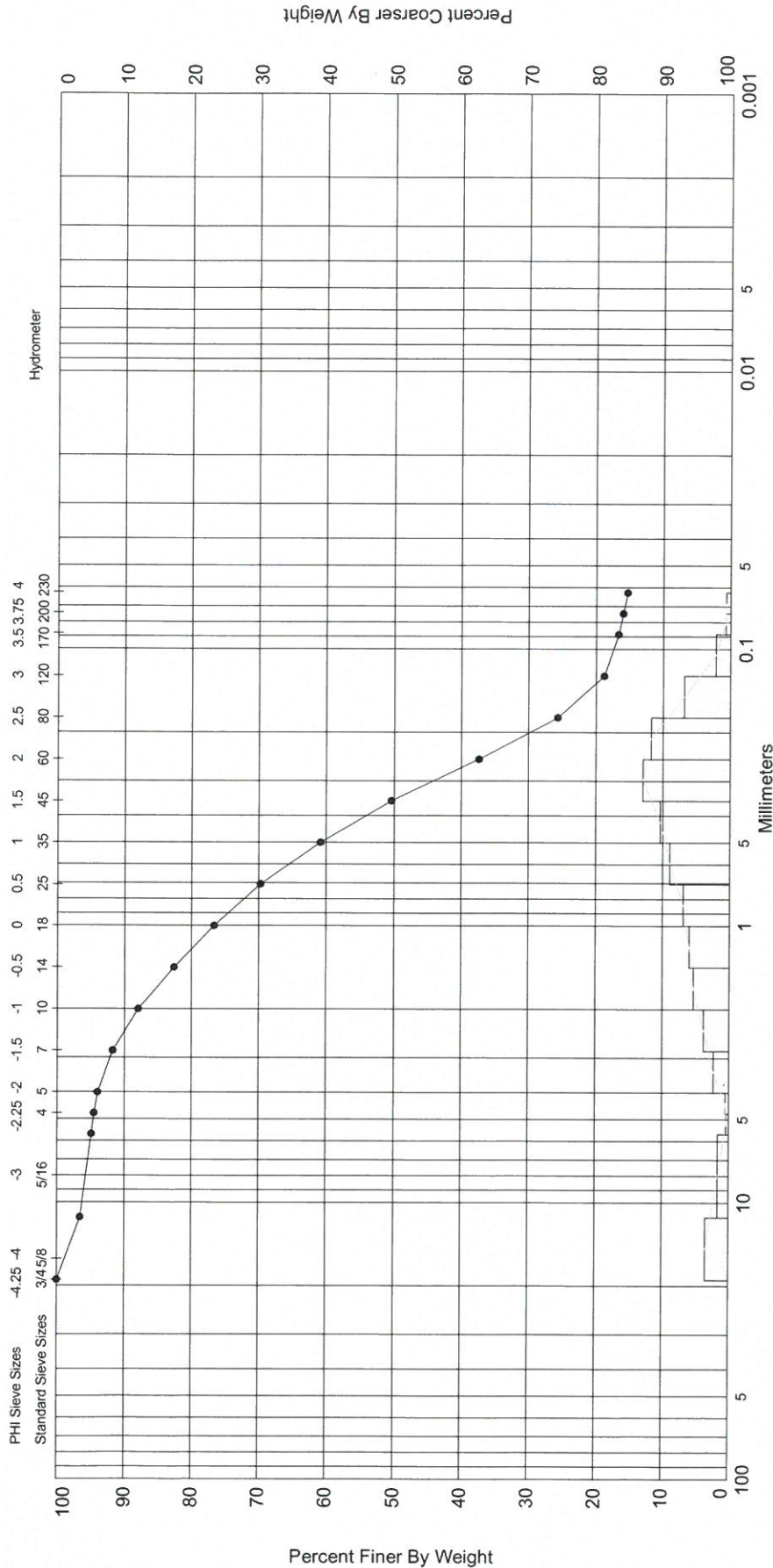
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information
SL-17-V-07 #S-2	—●—	-15.1	SW-SM	#200 - 13.06 #230 - 12.46			1.68	0.41	-1.37	5.81	1.23	Project Name: Saint Lucie County Reach 1 Permitting
Comments:												
Depths and elevations based on measured values												
American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444												
American VIBRACORE SERVICES												
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Longitude: 877776.3												
Horizontal System: NAD 1983												
Vertical System: MLLW												



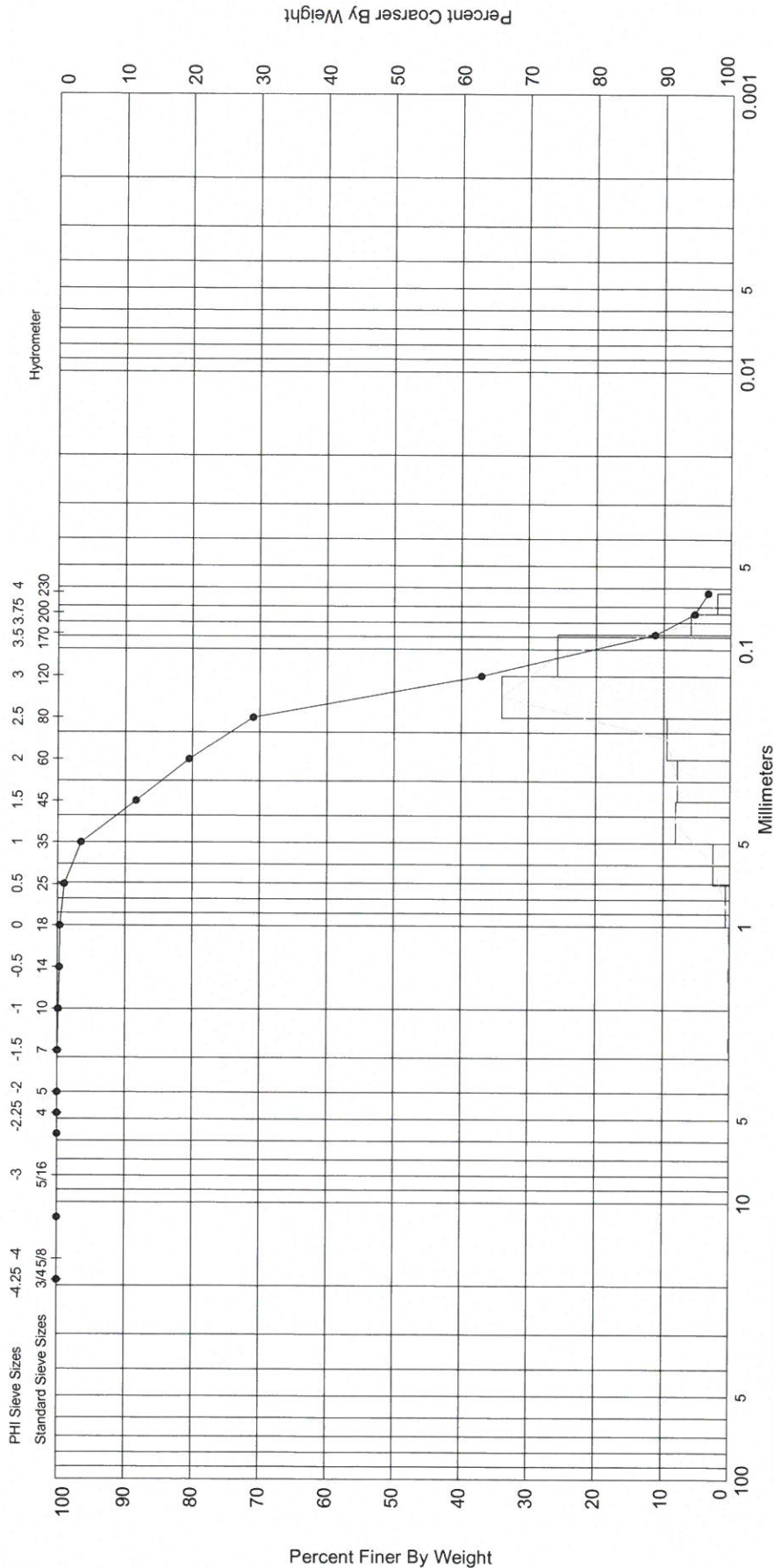
Gravel		Sand					Silt and Clay				
Coarse		Fine		Coarse	Medium	Fine					
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
SL-17-V-08 #S-1	—●—	-12.5	SW-SM	#200 - 12.60 #230 - 12.28			1.01	1.2	0	1.97	1.99
Comments:											
Depths and elevations based on measured values											
 AMERICAN VIBRACORE SERVICES				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444							
				Project Name: Saint Lucie County Reach 1 Permitting							
				Analysis Date: 02-27-17							
				Analyzed By: FW							
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								Horizontal System: NAD 1983			
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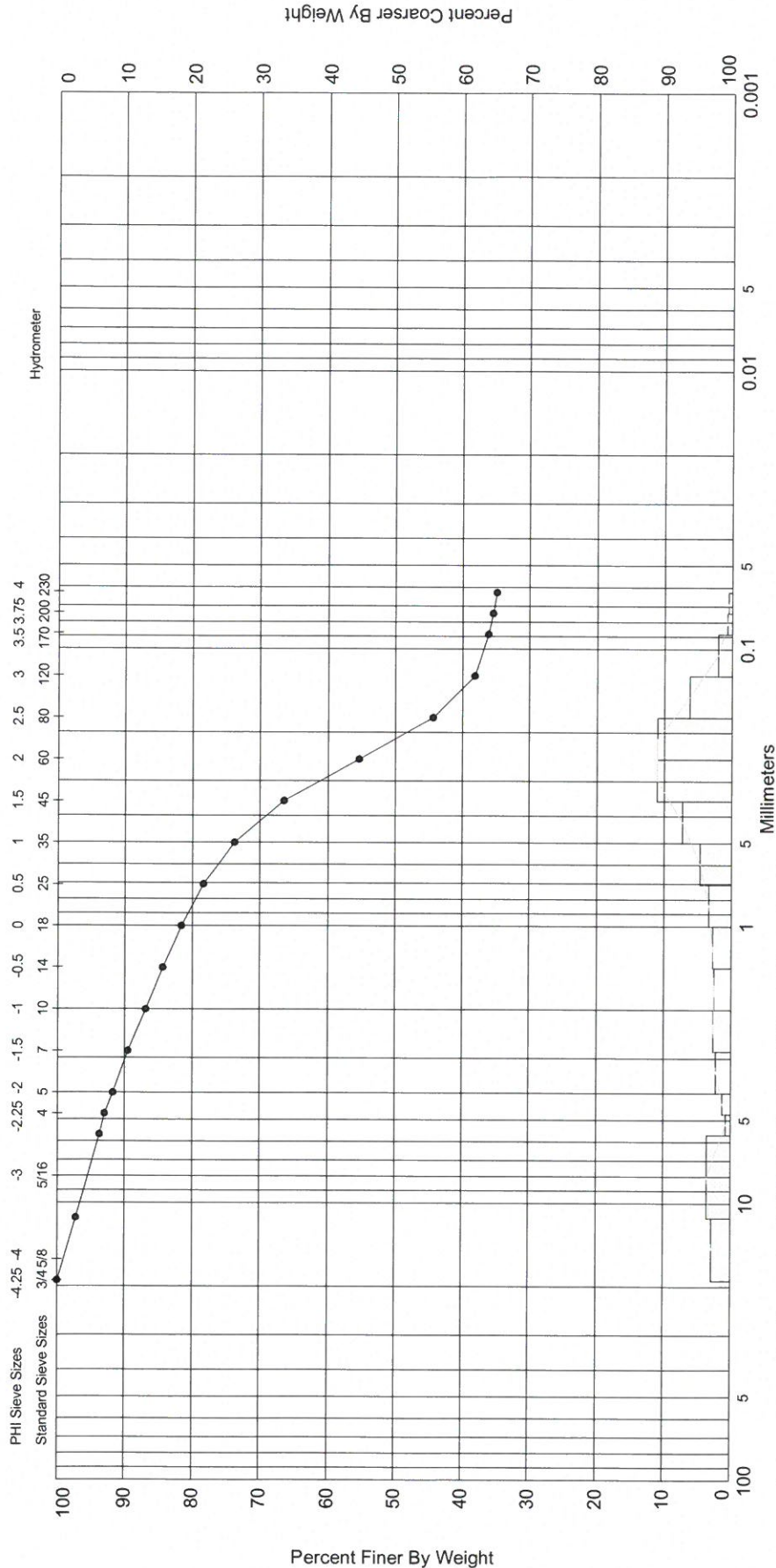
Gravel		Sand			Silt and Clay		
Coarse		Fine		Medium	Fine		
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median
SL-17-V-09 #S-1	●	-9.3	SP	#200 - 1.95 #230 - 1.53			2.5
Mean: 0.19 Skew: -1.36 Kurt: 8.32 Sort: 0.63							
Comments: Depths and elevations based on measured values							
Sample Information Project Name: Saint Lucie County Reach 1 Permitting Analysis Date: 02-27-17 Analyzed By: FW Latitude: 113054.3 Longitude: 878519.5 Horizontal System: NAD 1983 Vertical System: MLLW				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
							



Gravel		Sand				Silt and Clay			
Coarse		Fine		Coarse		Medium		Fine	
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew
SL-17-V-09 #S-2	●	-11.1	SW-SM	#200 - 15.99 #230 - 15.35			1.51	0.58	-0.93
Comments:									
Depths and elevations based on measured values									
AVS AMERICAN VIBRACORE SERVICES American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444				Sample Information		Saint Lucie County Reach 1 Permitting			
				Project Name:		02-27-17			
				Analysis Date:		FW			
				Latitude:		1133054.3			
				Longitude:		878519.5			
				Horizontal System:		NAD 1983			
				Vertical System:		MLLW			



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
SL-17-V-10 #S-1	—●—	-8.8	SW-SM	#200 - 5.36 #230 - 3.36			2.81	0.16	-1.09	4.31	0.78	Project Name: Saint Lucie County Reach 1 Permitting
Comments:												
Depths and elevations based on measured values												
					American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444							
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					Longitude: 878603.8							
					Horizontal System: NAD 1983							
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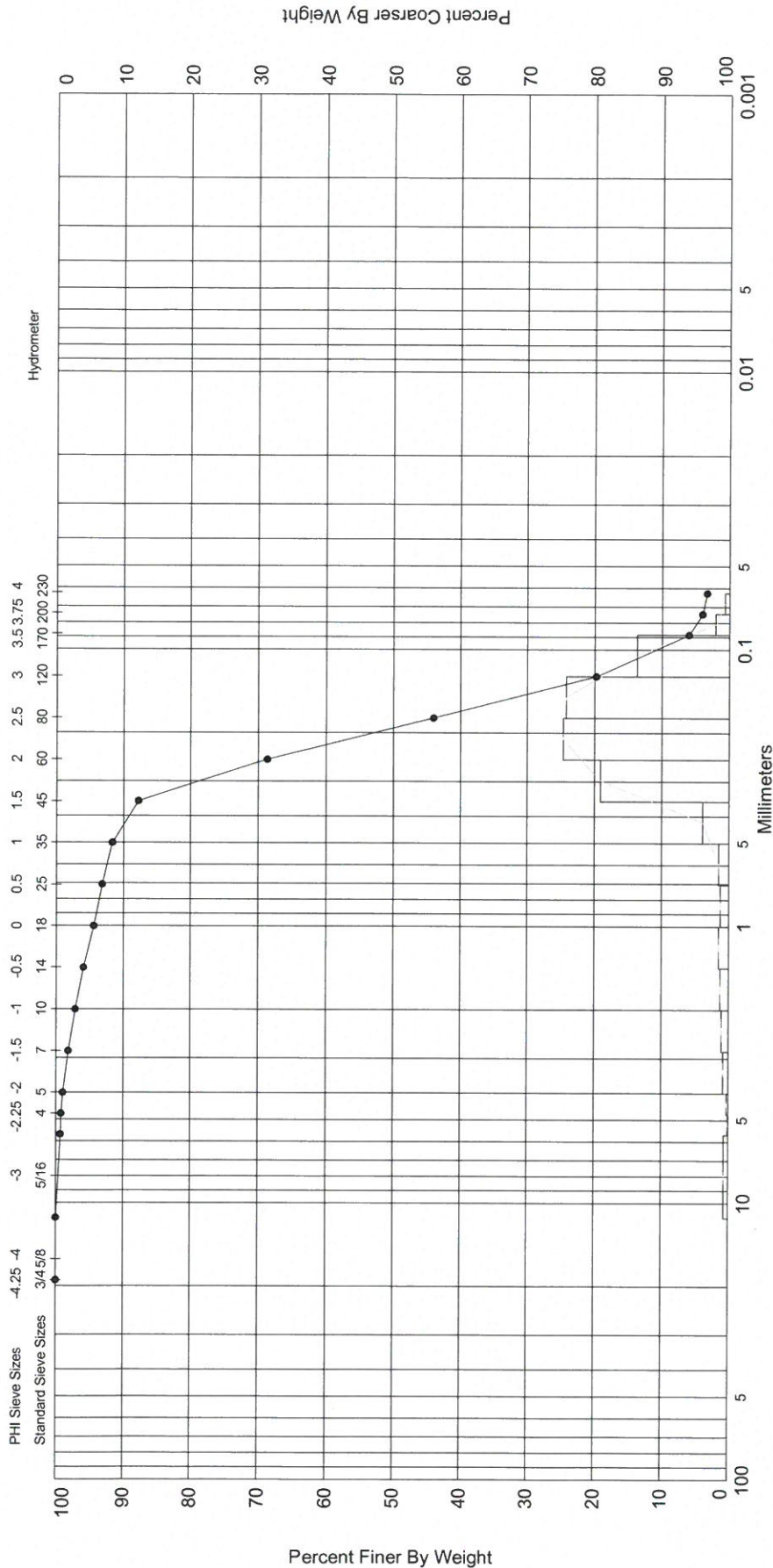


Gravel		Sand			Silt and Clay	
Coarse	Fine	Coarse	Medium	Fine		

Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
SL-17-V-10 #S-2	●	-12.9	SW-SM	#200 - 35.43 #230 - 34.87			2.25	0.59	-0.91	2.85	1.95	Project Name:	Saint Lucie County Reach 1 Permitting		
Comments:												Analysis Date:	02-27-17		
Depths and elevations based on measured values												Analyzed By:	FW		
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												Longitude:	878603.8		
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												Vertical System:	MLLW		



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Delray Beach, FL 33444



Comments:

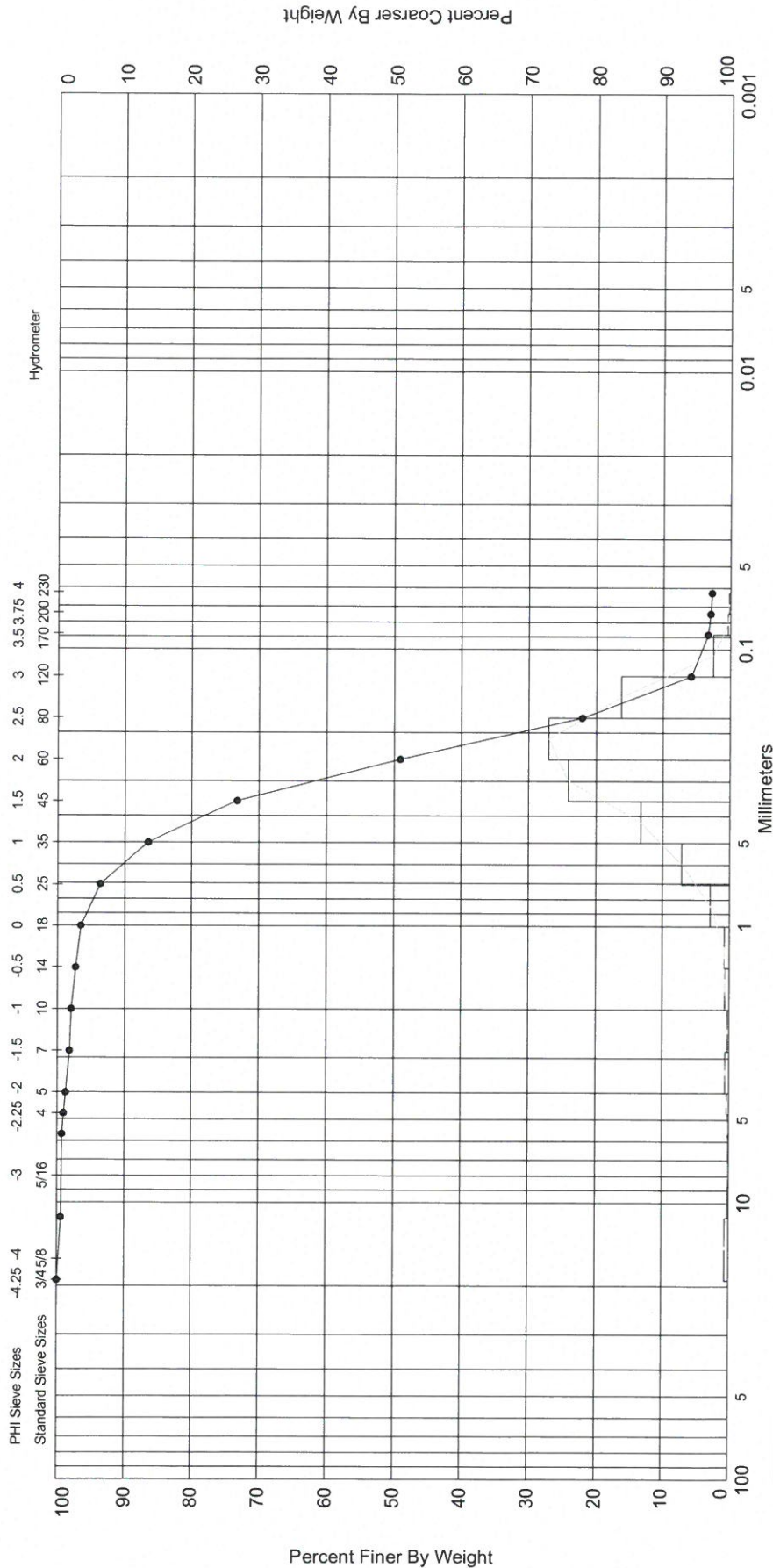
Depths and elevations based on measured values



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1215 Wallace Drive
Delray Beach, FL 33444

Sample Information

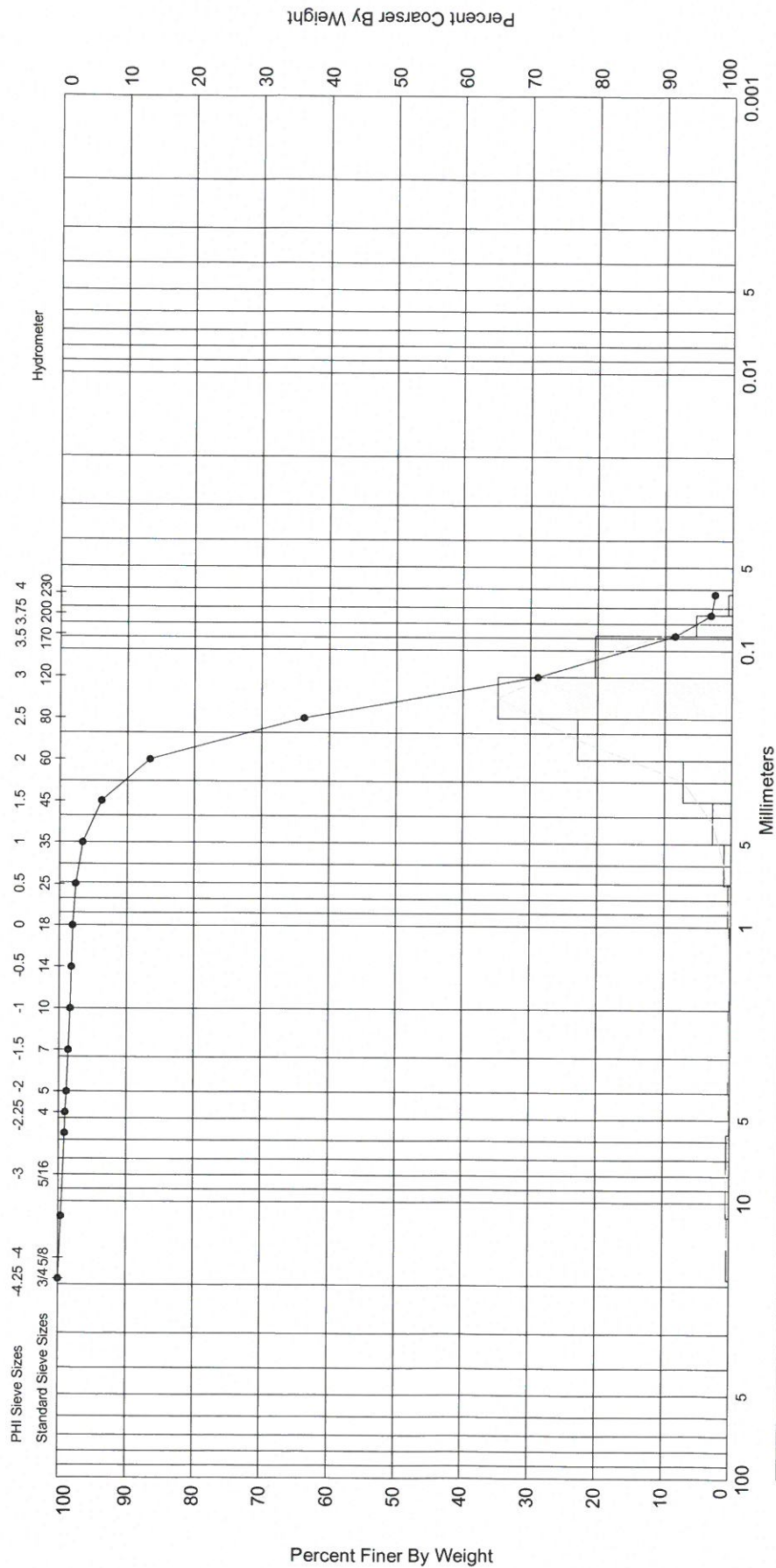
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Analysis Date:	02-27-17
Analyzed By:	FW
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Horizontal System:	NAD 1983
Vertical System:	MLLW



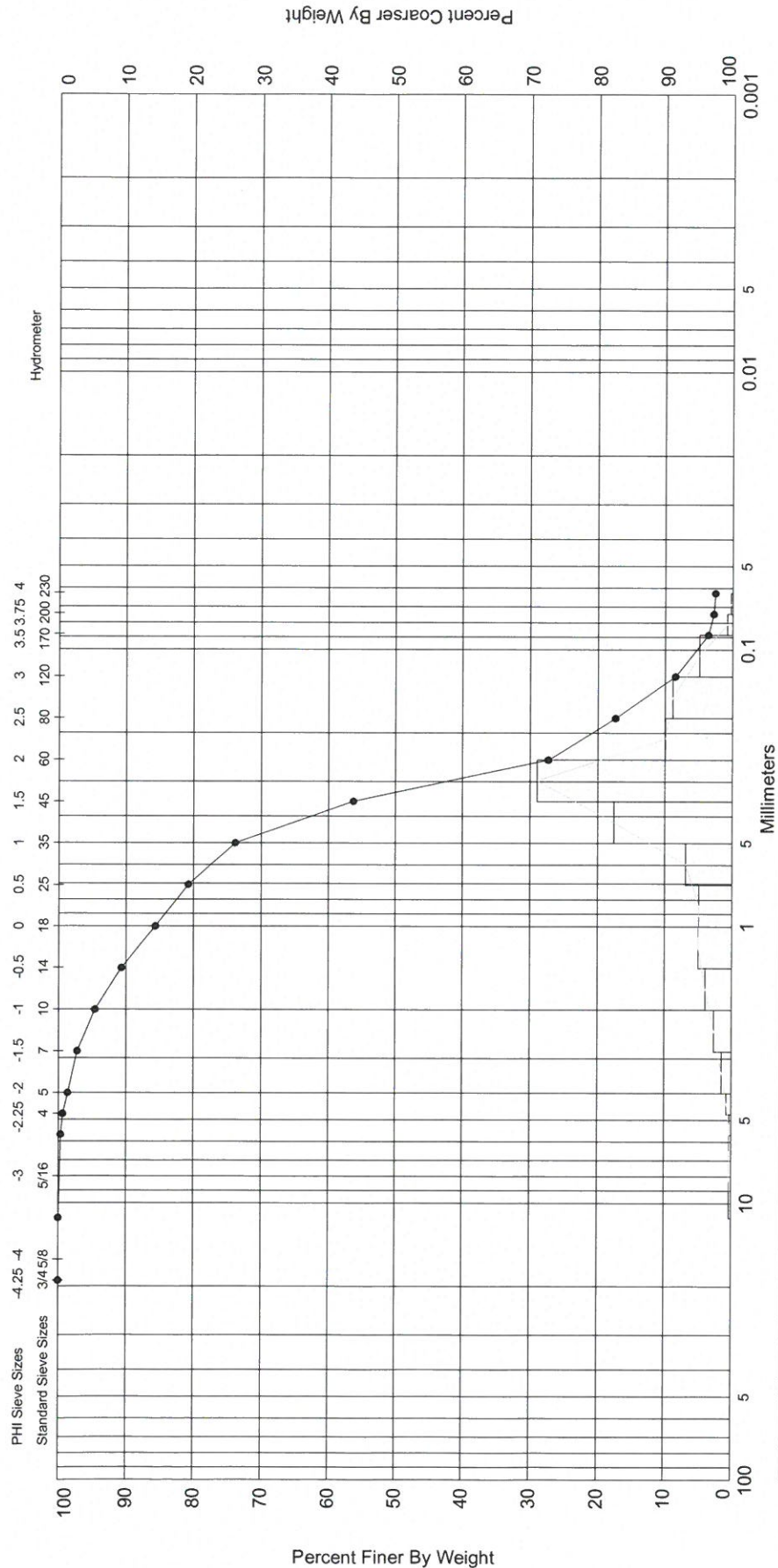
Gravel				Sand				Silt and Clay			
Coarse		Fine		Coarse		Medium		Fine			
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
SL-17-V-11 #S-2	●	-10.1	SW	#200 - 2.91 #230 - 2.72			1.98	0.29	-2.16	11.37	0.98
Comments:											
Depths and elevations based on measured values											
								Sample Information			
								Project Name:		Saint Lucie County Reach 1 Permitting	
								Analysis Date:		02-27-17	
								Analyzed By:		FW	
								Latitude:		1132126.3	
								Longitude:		878873.3	
								Horizontal System:		NAD 1983	
								Vertical System:		MLLW	



American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444



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
SL-17-V-11 #S-3	—●—	-11.6	SW	#200 - 3.14 #230 - 2.56			2.7	0.17	-3.38	20.42	0.93	Project Name: Saint Lucie County Reach 1 Permitting
Comments:												
Depths and elevations based on measured values												
 AMERICAN VIBRACORE SERVICES					American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444							
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					Longitude: 878873.3							
					Horizontal System: NAD 1983							
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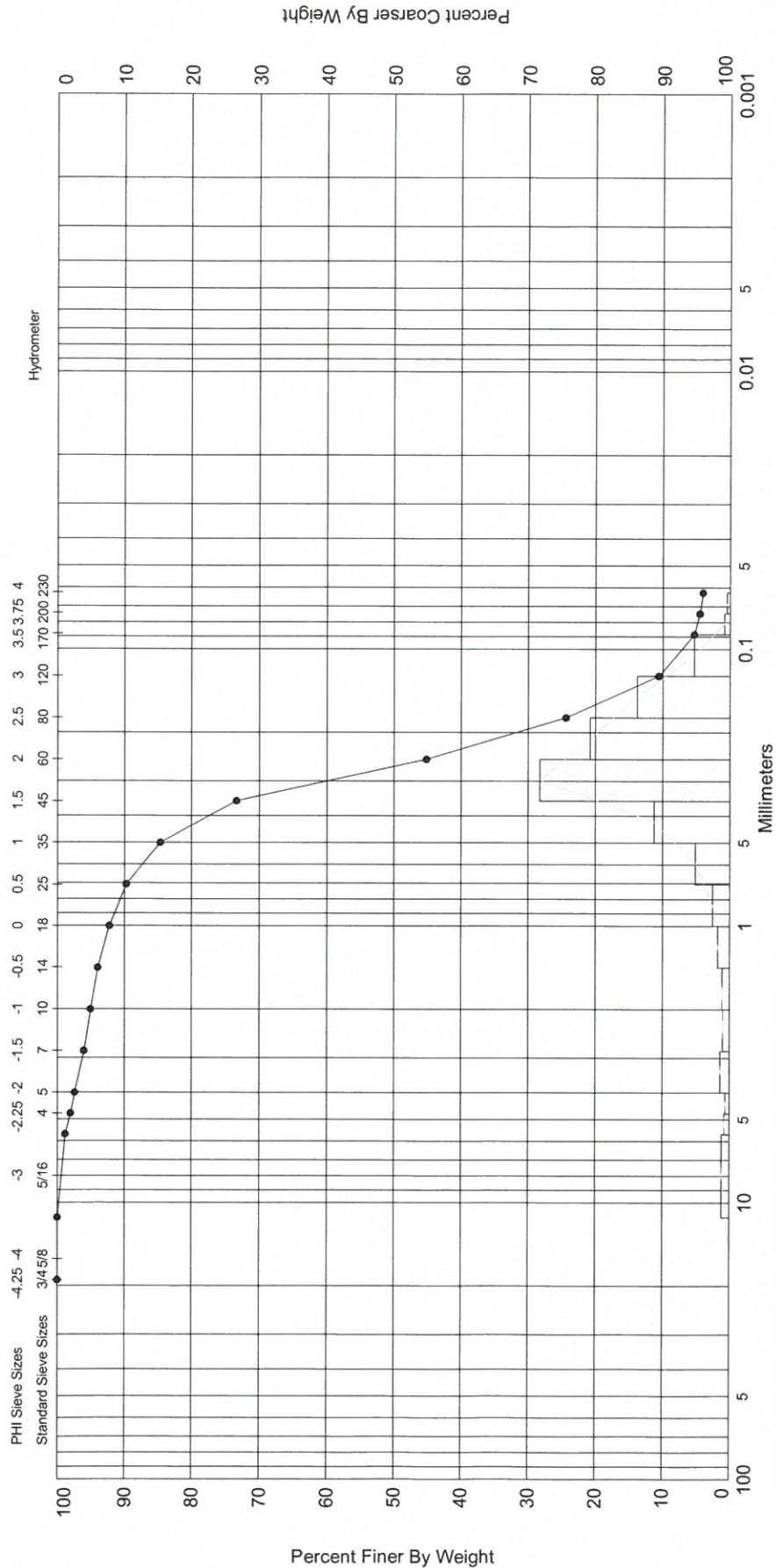


Gravel		Sand			Silt and Clay	
Coarse	Fine	Coarse	Medium	Fine		

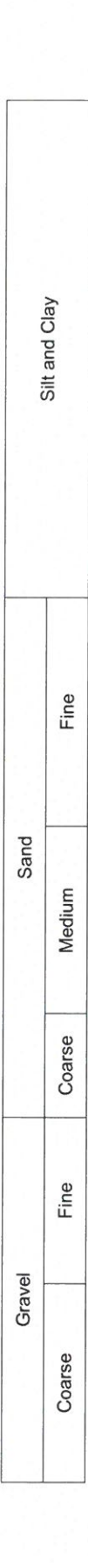
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
SL-17-V-12 #S-1	—●—	-9.8	SW	#200 - 2.78 #230 - 2.54			1.61	0.39	-0.87	3.79	1.21	Project Name:	Saint Lucie County Reach 1 Permitting		
Comments:												Analysis Date:	02-27-17		
Depths and elevations based on measured values												Analyzed By:	FW		
												Latitude:	1131640.1		
												Longitude:	879012.3		
												Horizontal System:	NAD 1983		
												Vertical System:	MLLW		



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Delray Beach, FL 33444



Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
SL-17-V-12 #S-2	—●—	-12.5	SW	#200 - 4.47 #230 - 4.00			1.91	0.31	-1.71	6.76	1.2	Project Name:	Saint Lucie County Reach 1 Permitting		
Comments:												Analysis Date:	02-27-17		
Depths and elevations based on measured values												Analyzed By:	FW		
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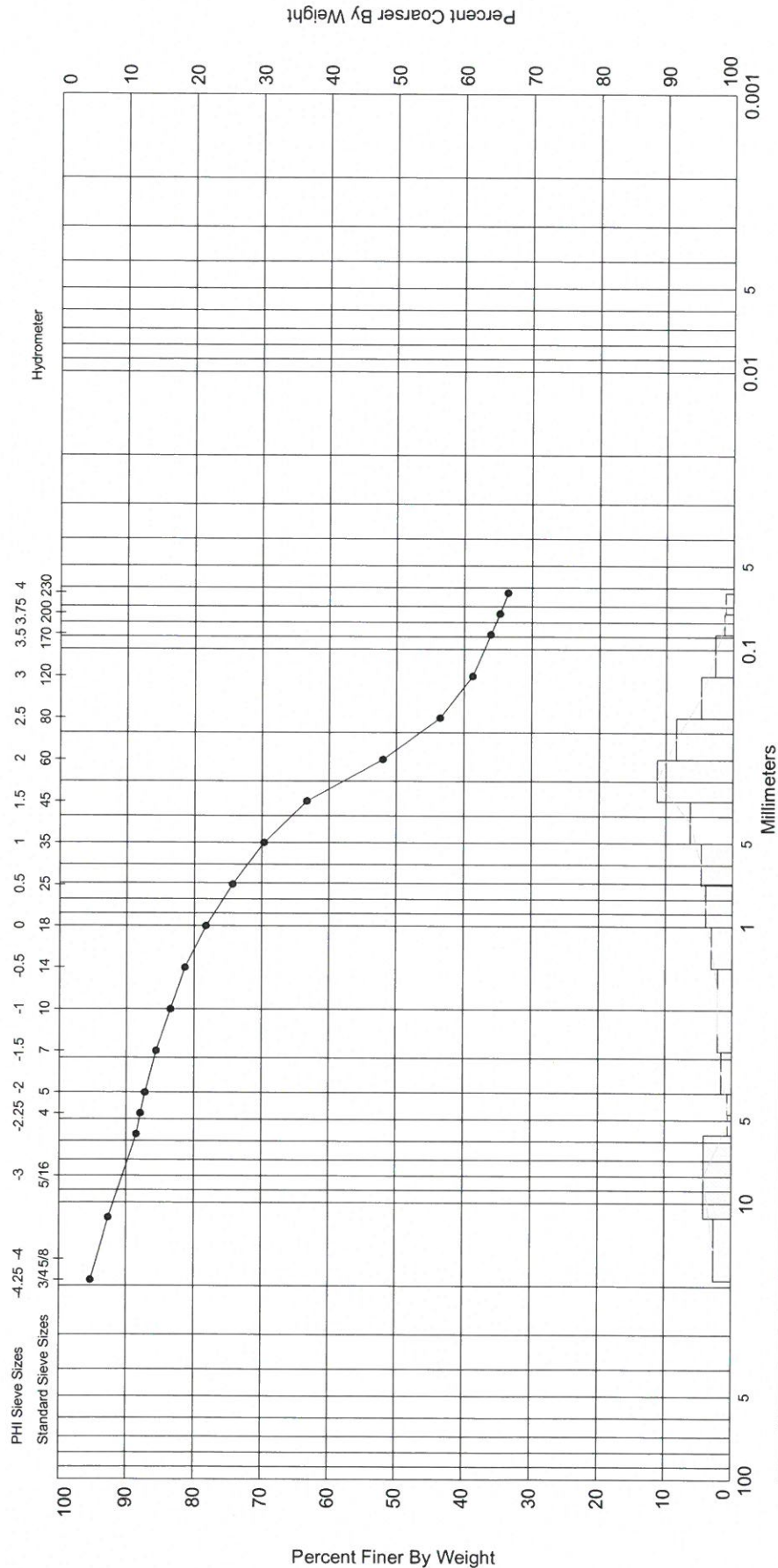


Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information
SL-17-V-13 #S-1	—●—	-9.1	SW-SM	#200 - 8.50 #230 - 8.05			1.66	0.42	-0.85	3.7	1.33	Project Name: Saint Lucie County Reach 1 Permitting
Comments: Analysis Date: 02-27-17												
Depths and elevations based on measured values Analyzed By: FW												
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Longitude: 879275.7												
Horizontal System: NAD 1983												
Vertical System: MLLW												

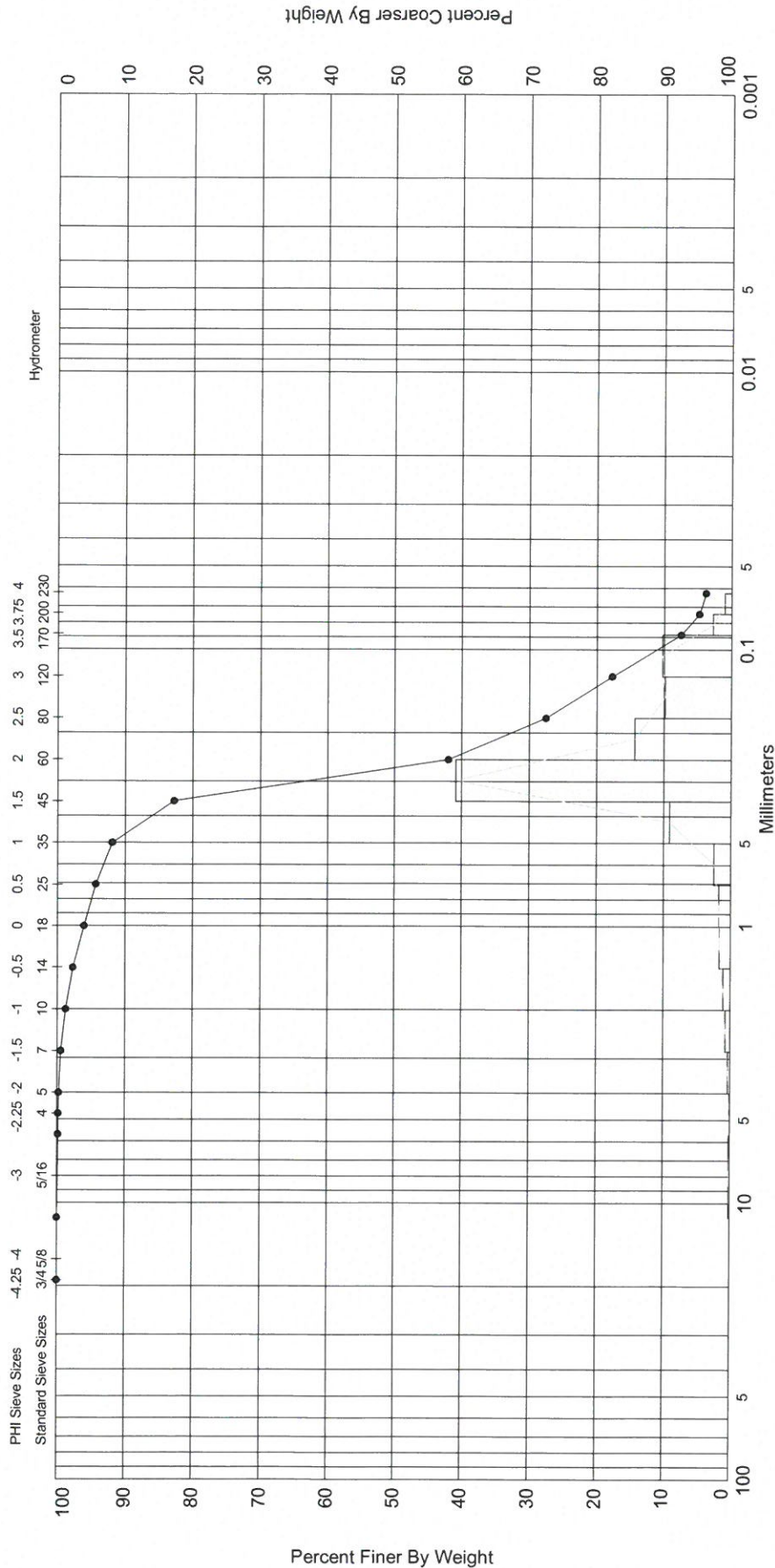


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SERVICES

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1215 Wallace Drive
Delray Beach, FL 33444



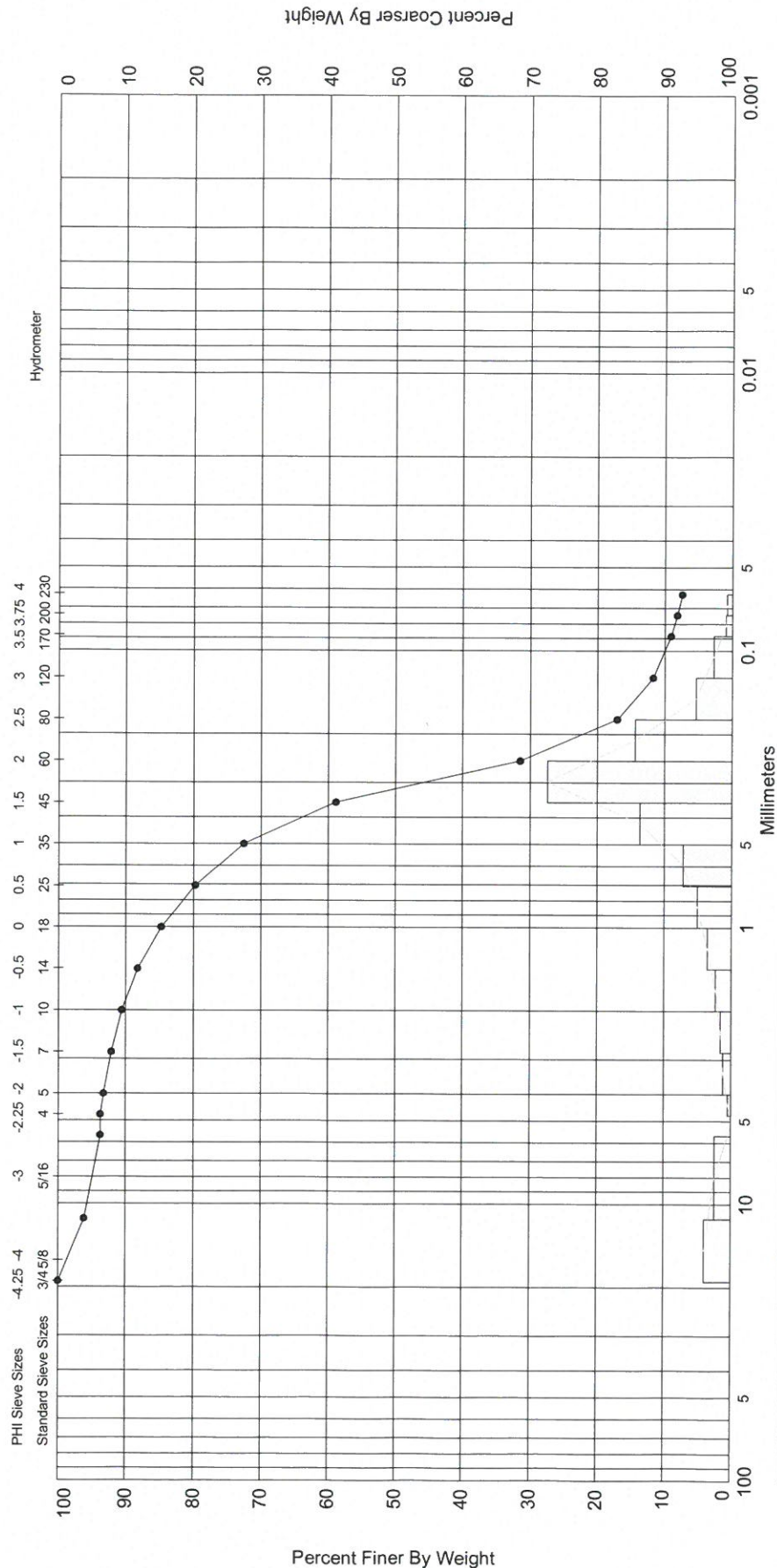
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Coarse		Fine		Coarse		Medium		Fine	
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew
SL-17-V-13 #S-2	—●—	-11.4	SW-SM	34.71 #200 - 34.71 #230 - 33.55			2.12	0.75	-0.26
Comments:									
Depths and elevations based on measured values									
 AMERICAN VIBRACORE SERVICES				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444					
				Sample Information					
				Project Name:		Saint Lucie County Reach 1 Permitting			
				Analysis Date:		02-27-17			
				Analyzed By:		FW			
				Latitude:		1131107.1			
				Longitude:		879275.7			
				Horizontal System:		NAD 1983			
				Vertical System:		MLLW			



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	
SL-17-V-14 #S-1	—●—	-8.8	SW	#200 - 4.76 #230 - 3.77			1.9	0.26	-0.93	6.06	0.93	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
 AMERICAN VIBRACORE SERVICES												Latitude:	1130656.5
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Delray Beach, FL 33444



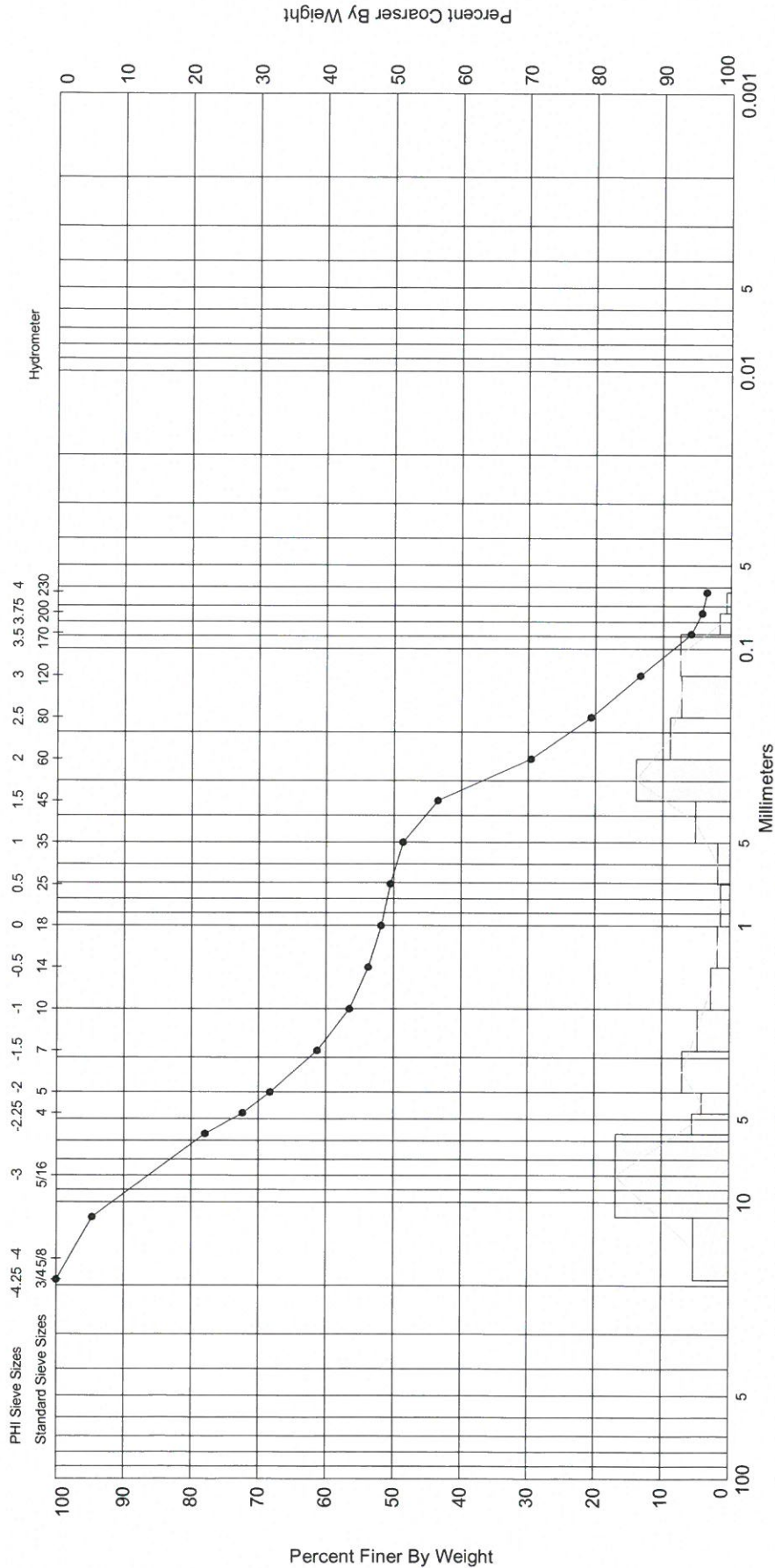
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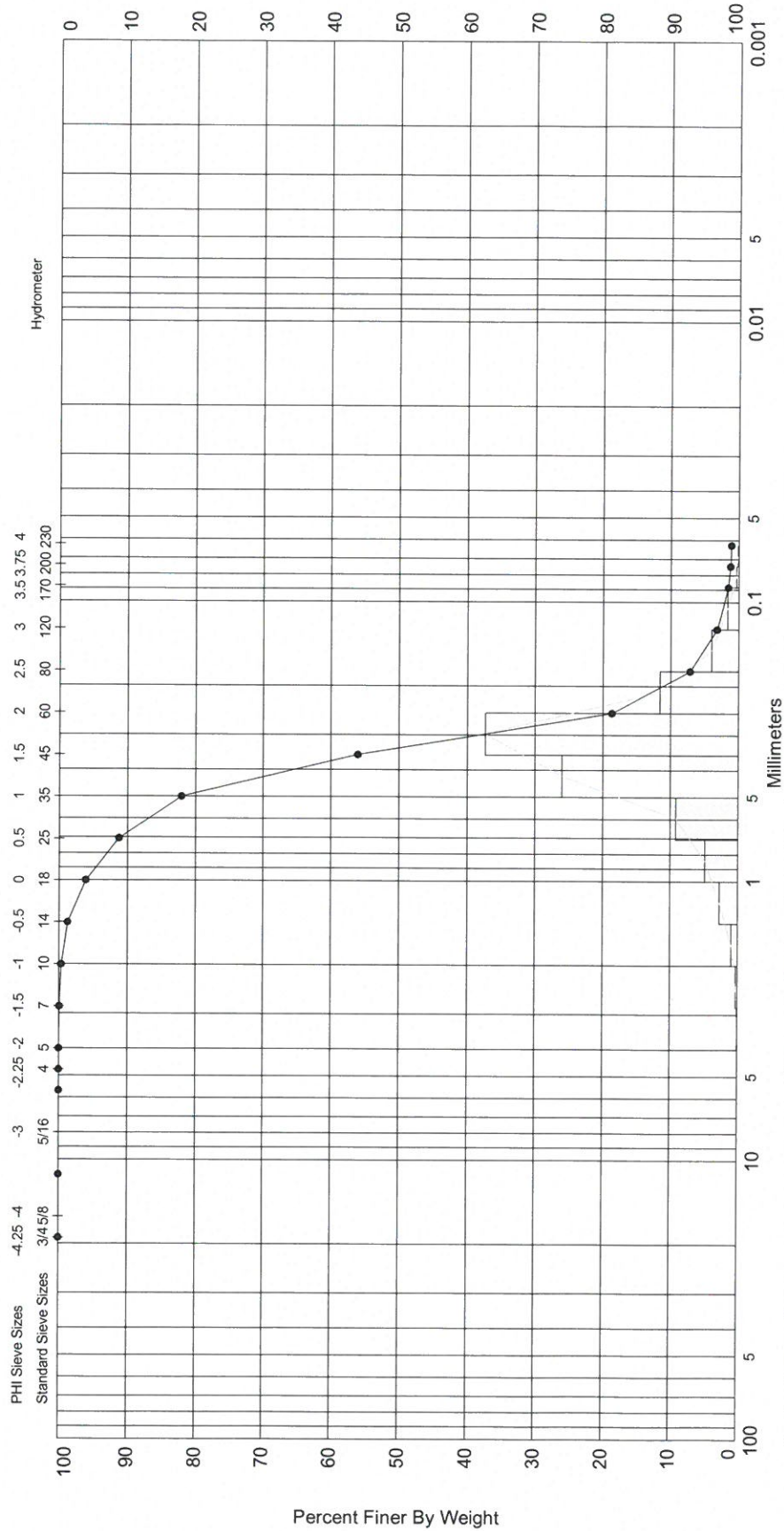
Depths and elevations based on measured values



American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Sample		Sample Information	
SL-17-V-14 #S-2	Symbol	Project Name:	Saint Lucie County Reach 1 Permitting
-12.2	Elev. (ft)	Analysis Date:	02-27-17
SW-SM	USCS	Analyzed By:	FW
#200 - 8.16 #230 - 7.43	% Fines	Latitude:	1130656.5
	% Organics	Longitude:	879359.2
	% Carbonates	Horizontal System:	NAD 1983
	Median	Vertical System:	MLLW
	Mean		
	Skew		
	Kurt		
	Sort		



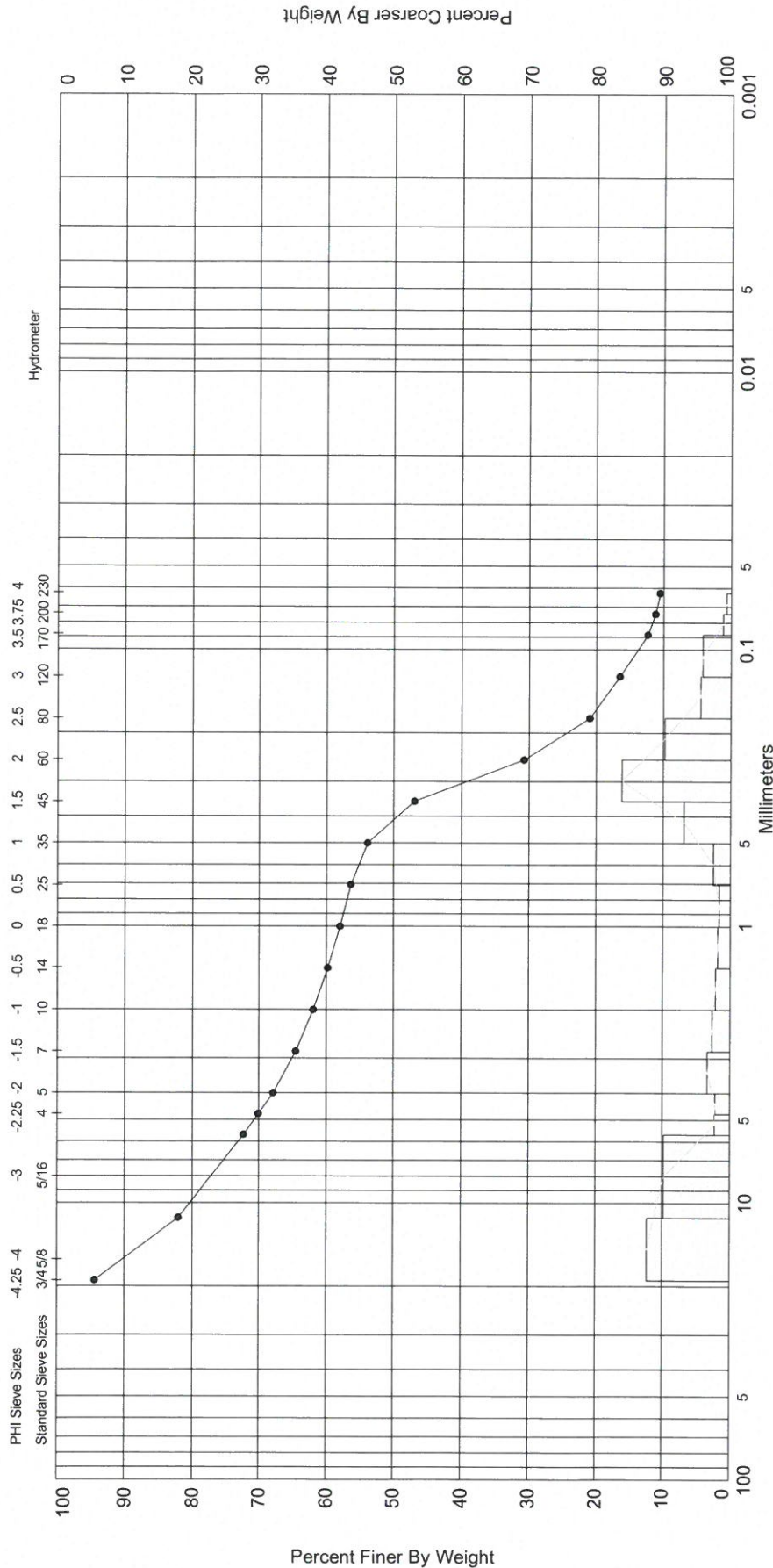


Gravel		Sand			Silt and Clay		
Coarse	Fine	Coarse	Medium	Fine			

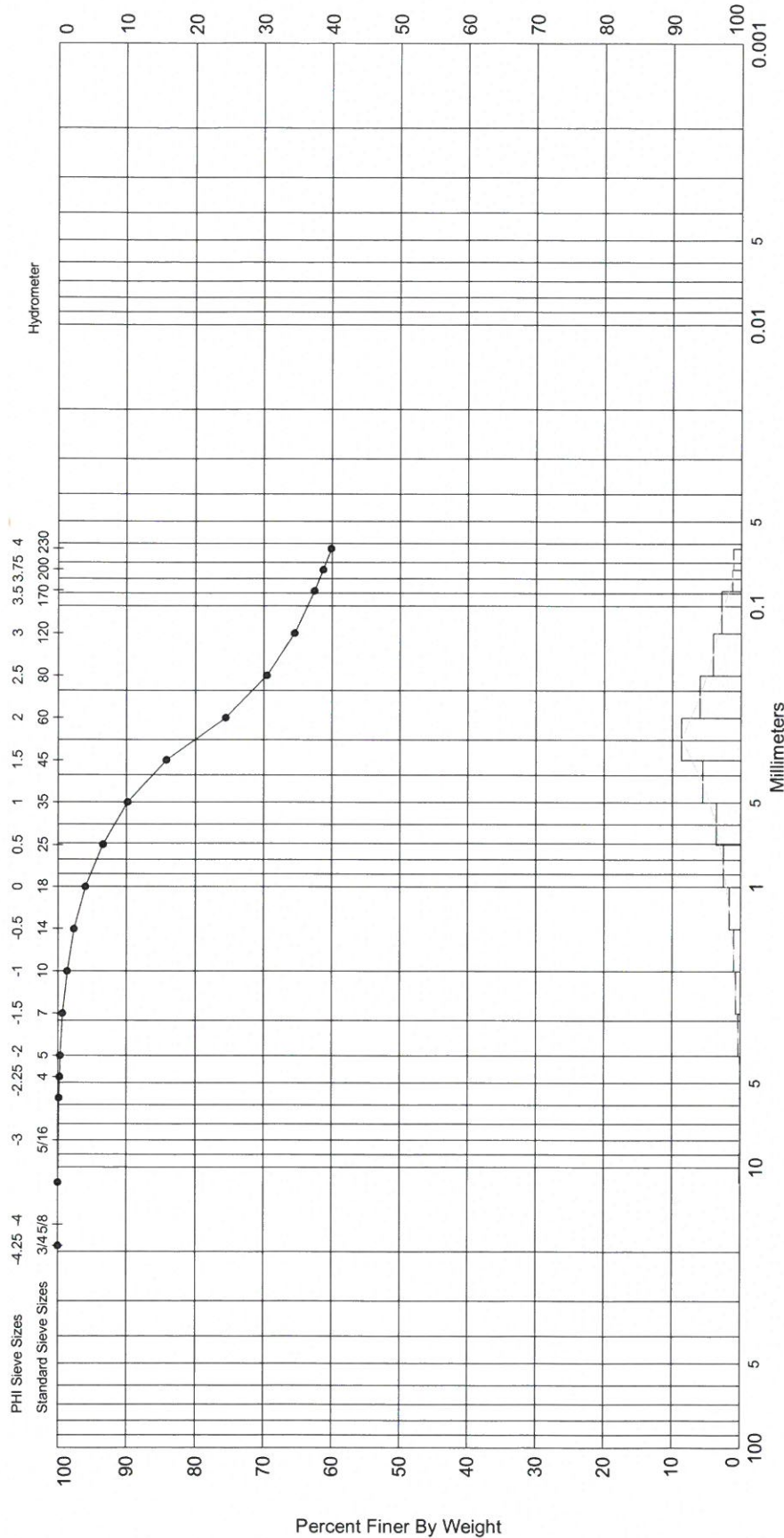
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information			
SL-17-V-16 #S-1	●	-9.7	SP	#200 - 1.21 #230 - 1.08			1.58	0.35	-0.5	4.54	0.73	Project Name:	Saint Lucie County Reach 1 Permitting		
Comments:												Analysis Date:	02-27-17		
Depths and elevations based on measured values												Analyzed By:	FW		
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Delray Beach, FL 33444

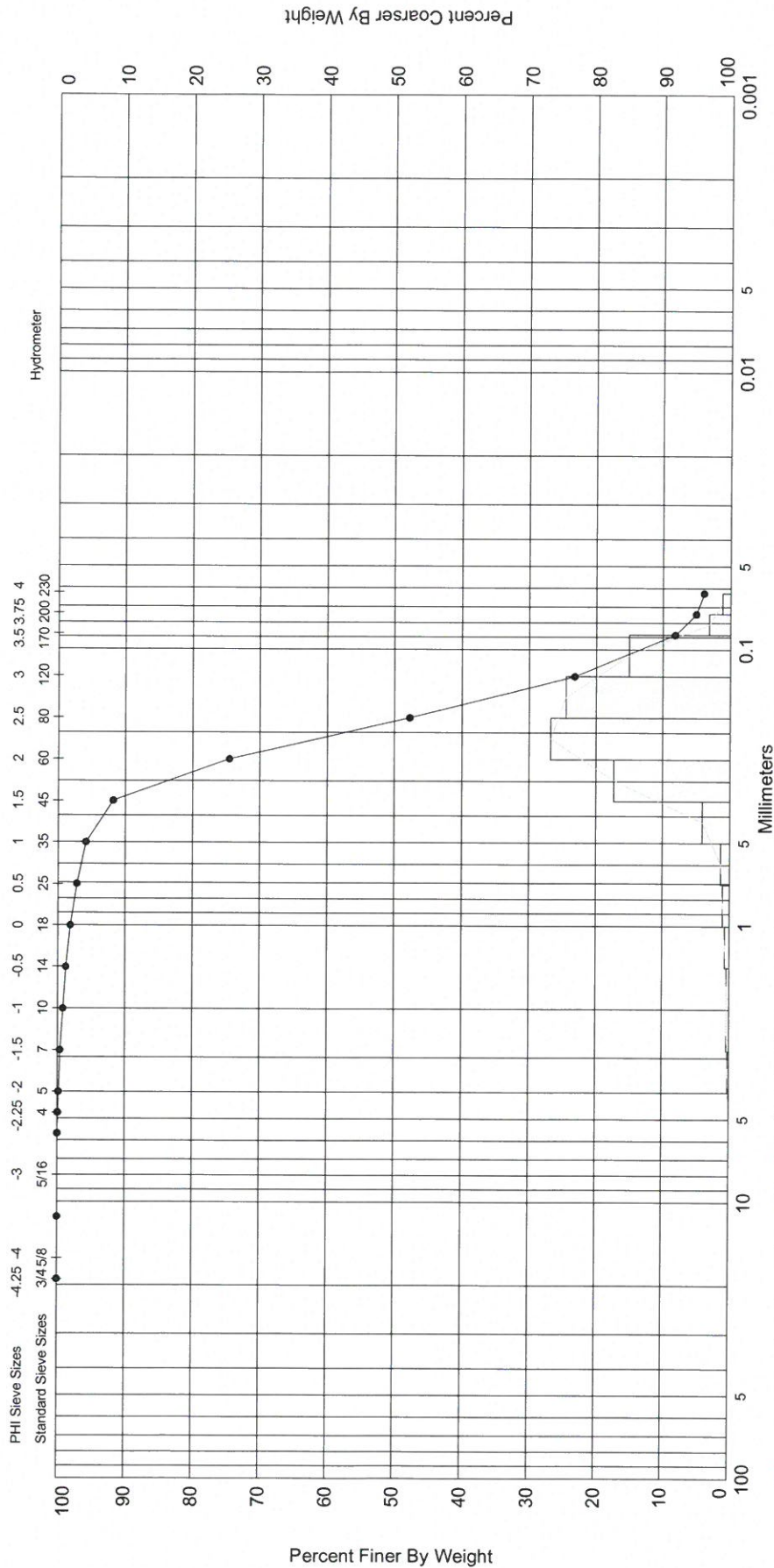


Gravel			Sand				Silt and Clay					
Coarse		Fine	Coarse	Medium	Fine							
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information
SL-17-V-16 #S-2	—●—	-12.5	SW-SM	#200 - 11.18 #230 - 10.52			1.28	1.3	0.02	1.54	2.44	Project Name: Saint Lucie County Reach 1 Permitting
Comments:												
Depths and elevations based on measured values												
						Sample Information						
						Project Name:		Saint Lucie County Reach 1 Permitting				
						Analysis Date:		02-27-17				
						Analyzed By:		FW				
						Latitude:		1129758.4				
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						Horizontal System:		NAD 1983				
						Vertical System:		MLLW				
						American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444						
												



Gravel		Sand			Silt and Clay	
Coarse	Fine	Coarse	Medium	Fine		

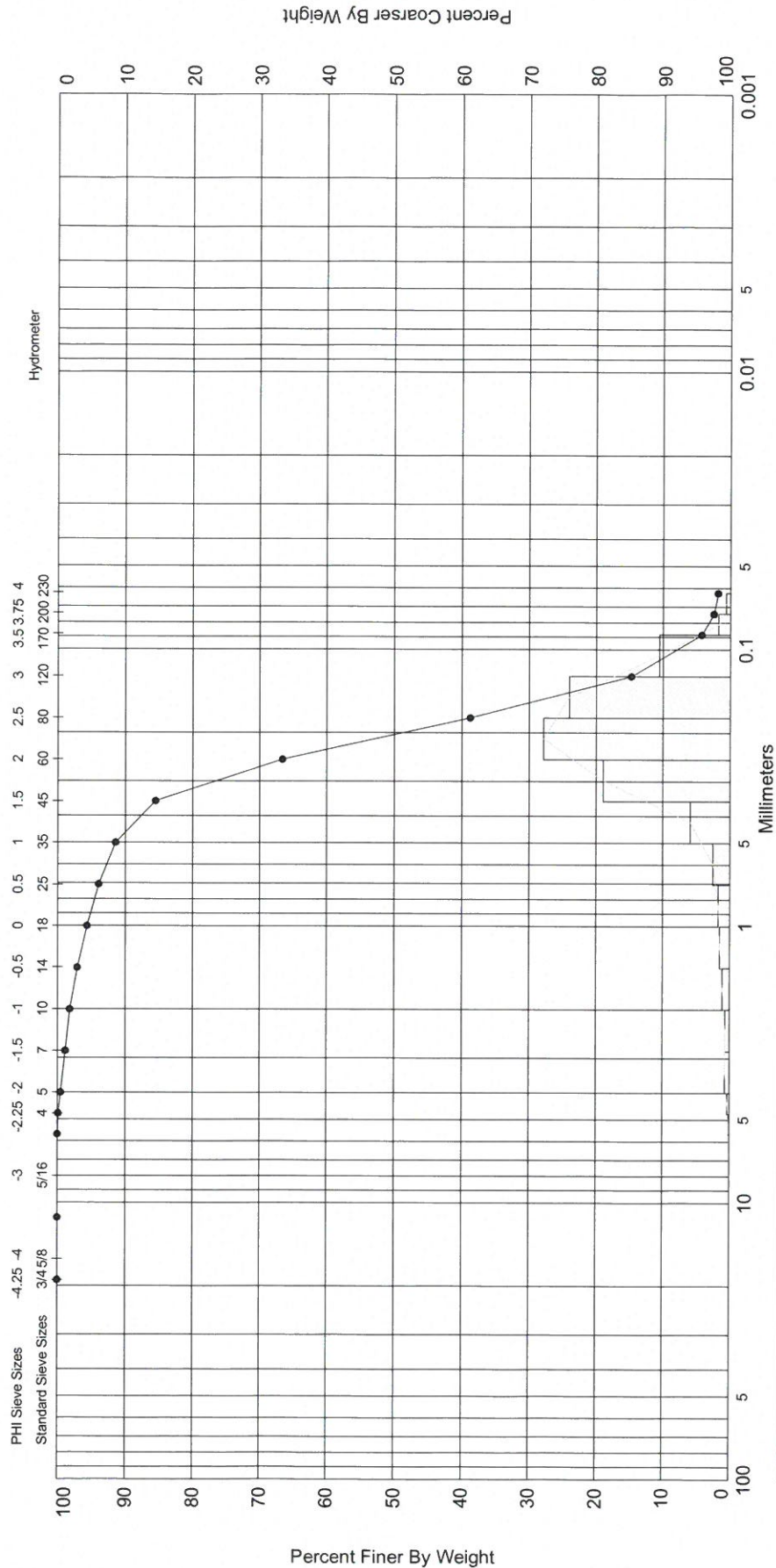
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-16 #S-3	●	-14.5	PT	#200 - 61.28 #230 - 60.10				0.32	-0.62	3.6	1.25	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
 AMERICAN VIBRACORE S E R V I C E S American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444												Latitude:	1129758.4
												Longitude:	879688.4
												Horizontal System:	NAD 1983
												Vertical System:	MLLW



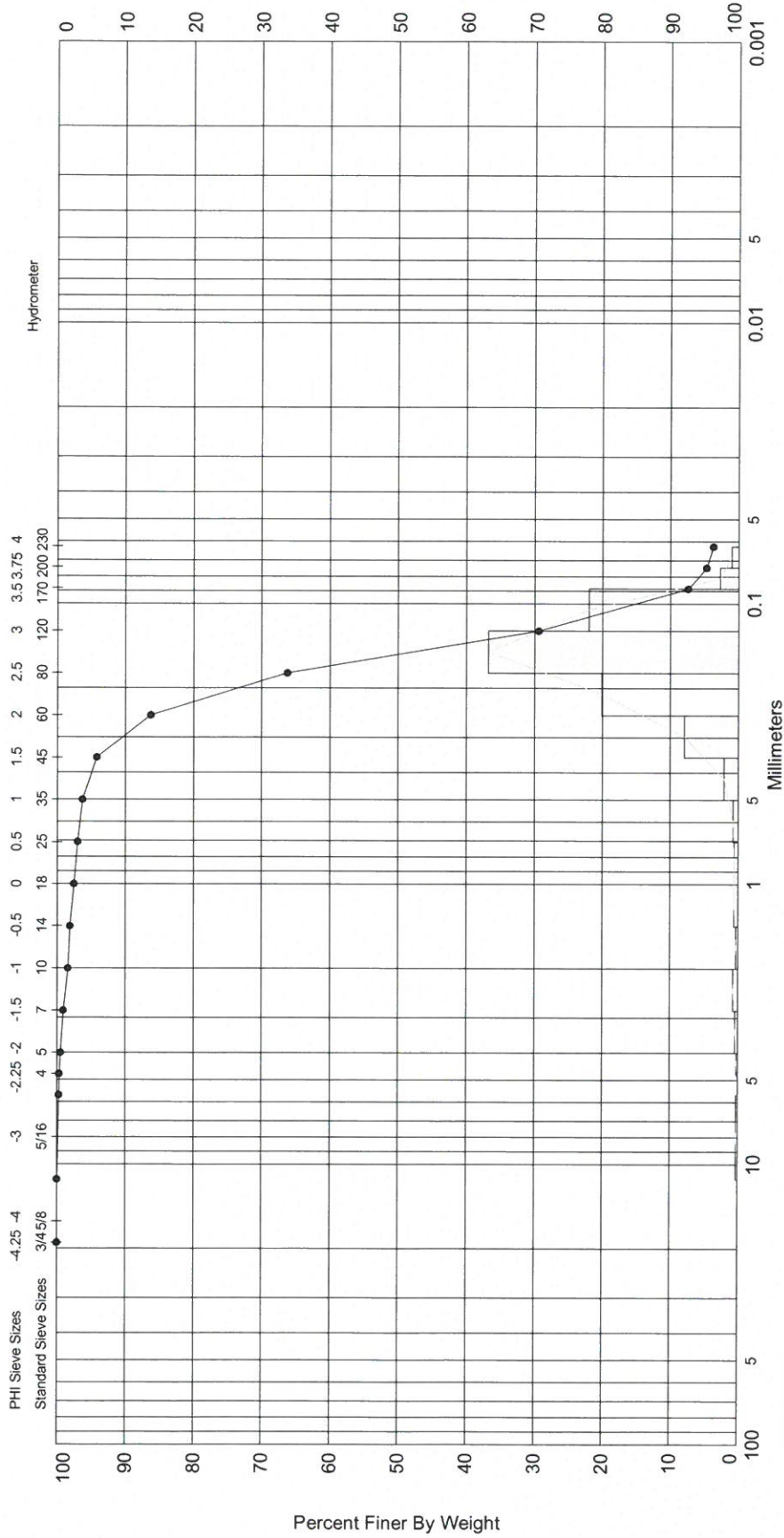
Gravel		Sand				Silt and Clay							
Coarse		Fine		Coarse	Medium	Fine							
Sample	Symbol	Elev. (ft)	USCS	% Fines #200 - 5.04 #230 - 3.88	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-17 #S-1	—●—	-9.8	SW				2.46	0.19	-1.49	8.01	0.81	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
 AMERICAN VIBRACORE SERVICES												Latitude:	1129231.6
												Longitude:	880021.6
												Horizontal System:	NAD 1983
												Vertical System:	MLLW



American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444



Gravel		Sand				Silt and Clay					
Coarse		Fine		Coarse	Medium	Fine					
Sample	Symbol	Elev. (ft)	USCS	% Fines #200 - 2.43 #230 - 1.80	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
SL-17-V-17 #S-2	—●—	-12.5	SW				2.3	0.23	-1.66	7.16	0.96
Comments:											
Depths and elevations based on measured values											
						American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444					
Project Name:						Saint Lucie County Reach 1 Permitting					
Analysis Date:						02-27-17					
Analyzed By:						FW					
Latitude:						1129231.6					
Longitude:						880021.6					
Horizontal System:						NAD 1983					
Vertical System:						MLLW					

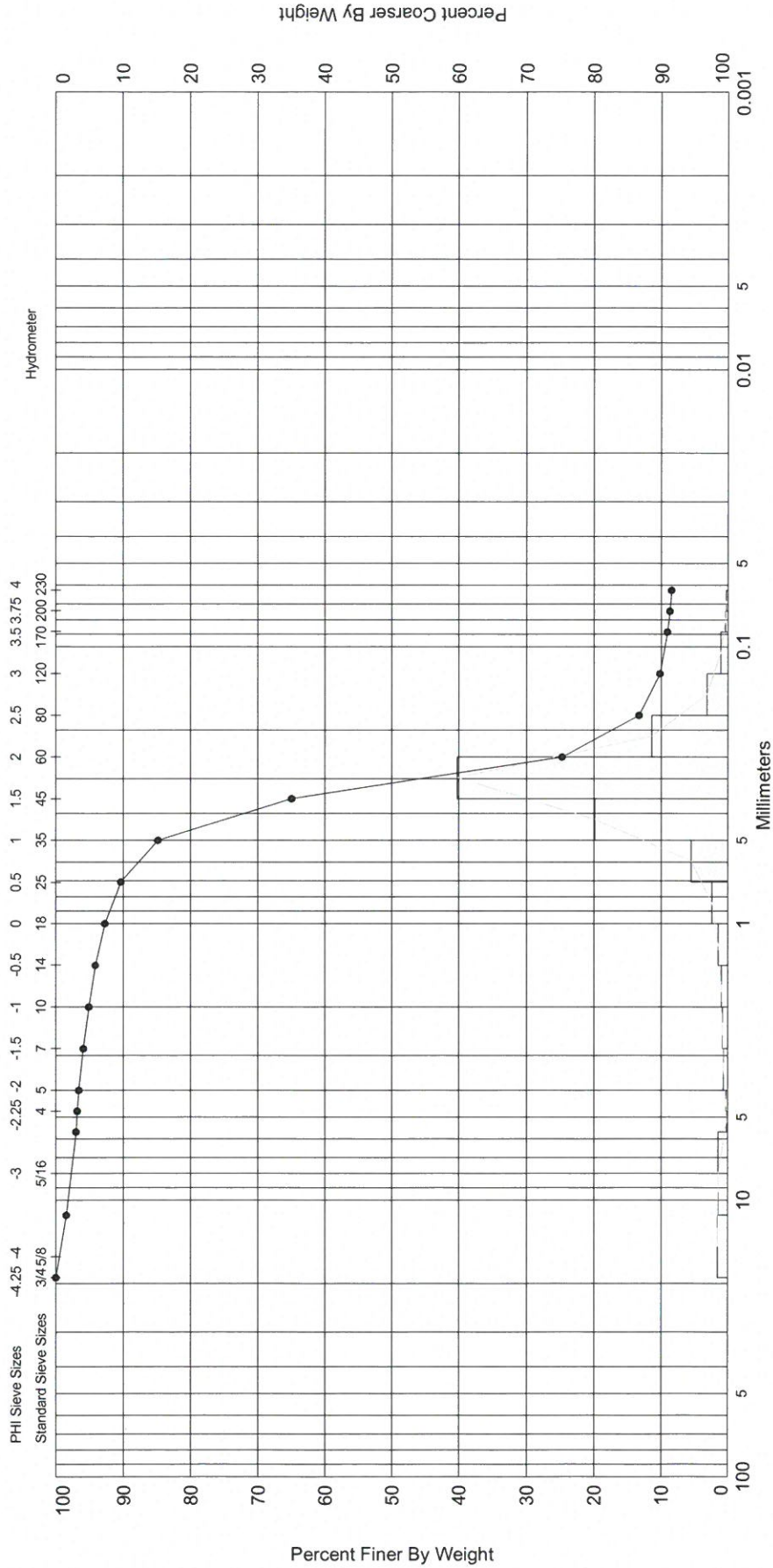


Gravel		Sand			Silt and Clay	
Coarse	Fine	Coarse	Medium	Fine		

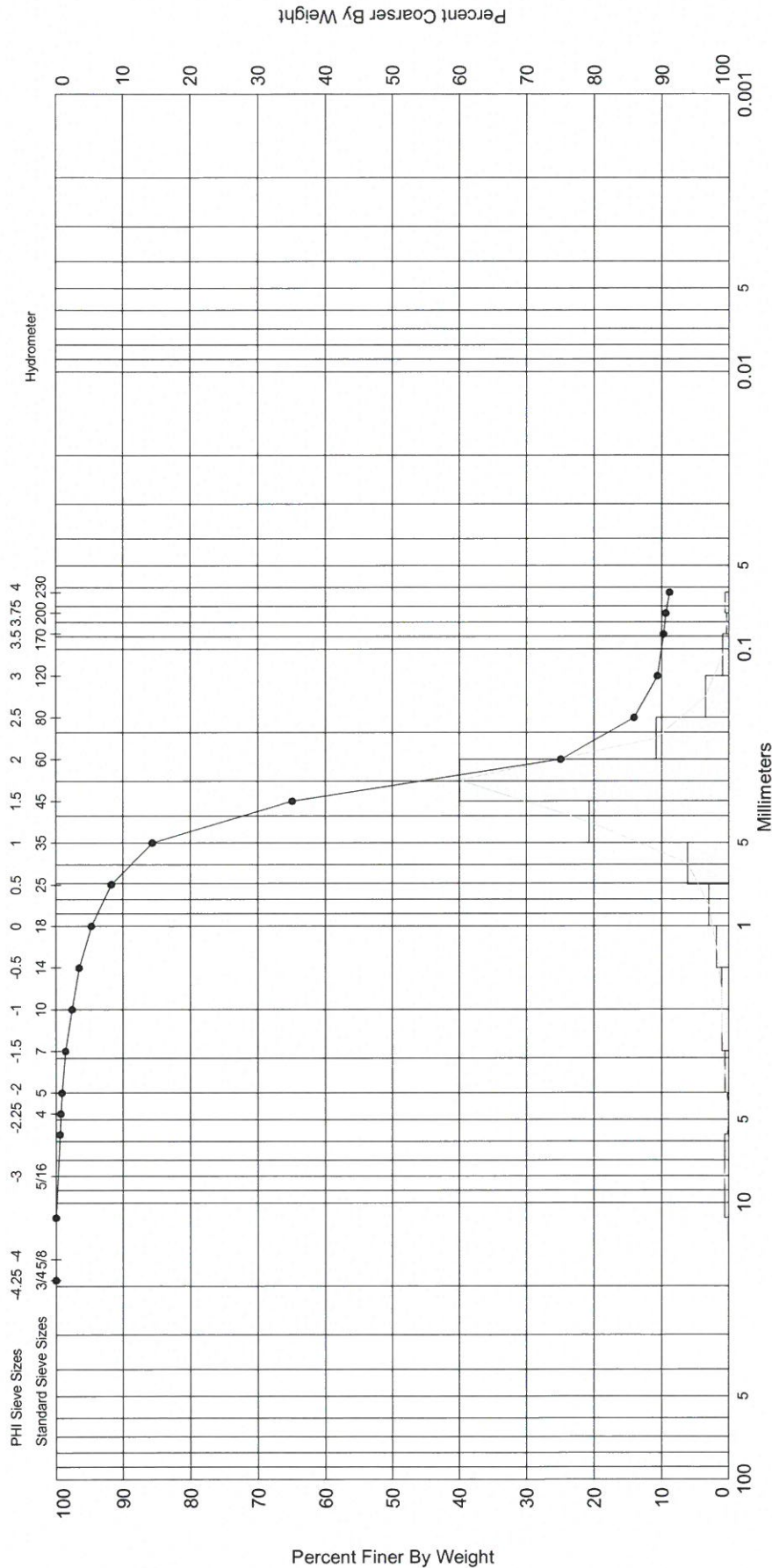
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-19 #S-1	—●—	-10.1	SW	#200 - 4.68 #230 - 3.69			2.72	0.17	-2.77	14.47	0.86	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444												Latitude:	1128322.1
												Longitude:	880358.8
												Horizontal System:	NAD 1983
												Vertical System:	MLLW



American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444



Gravel		Sand				Silt and Clay					
Coarse		Fine		Coarse		Medium		Fine			
Sample	Symbol	Elev. (ft)	USCS	% Fines	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort
SL-17-V-19 #S-2	—●—	-12.2	SW-SM	#200 - 8.72 #230 - 8.47			1.69	0.39	-2.51	10.78	1.19
Comments:											
Depths and elevations based on measured values											
					American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444						
Project Name:					Saint Lucie County Reach 1 Permitting						
Analysis Date:					02-27-17						
Analyzed By:					FW						
Latitude:					1128322.1						
Longitude:					880358.8						
Horizontal System:					NAD 1983						
Vertical System:					MLLW						



Gravel		Sand					Silt and Clay						
Coarse		Fine		Coarse	Medium	Fine							
Sample	Symbol	Elev. (ft)	USCS	% Fines #200 - 9.38 #230 - 8.82	% Organics	% Carbonates	Median	Mean	Skew	Kurt	Sort	Sample Information	
SL-17-V-19 #S-3	—●—	-13.0	SW-SM				1.69	0.36	-1.72	9.13	0.88	Project Name:	Saint Lucie County Reach 1 Permitting
Comments:												Analysis Date:	02-27-17
Depths and elevations based on measured values												Analyzed By:	FW
												Latitude:	1128322.1
												Longitude:	880358.8
												Horizontal System:	NAD 1983
												Vertical System:	MLLW
												American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444	
													



Granularmetric Tables

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS GDT 2/27/17

Granularmetric Report							
Depths and elevations based on measured values				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-01 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude:		Longitude:		Coordinate System:		Elevation (ft):	
1140827.6		875392.3		Florida State Plane East		-14.6 MLLW	
USCS:		Munsell:		Comments:			
SW							
Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
137.37	134.05	0.28	0.06	#200 - 3.40 #230 - 2.68			0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	2.39	1.74	2.39	1.74	
3.5	-2.50	5.66	1.29	0.94	3.68	2.68	
4	-2.25	4.76	0.52	0.38	4.20	3.06	
5	-2.00	4.00	0.64	0.47	4.84	3.52	
7	-1.50	2.83	0.84	0.61	5.68	4.13	
10	-1.00	2.00	2.30	1.67	7.98	5.81	
14	-0.50	1.41	3.70	2.69	11.68	8.50	
18	0.00	1.00	5.28	3.84	16.96	12.35	
25	0.50	0.71	6.39	4.65	23.35	17.00	
35	1.00	0.50	7.91	5.76	31.26	22.76	
45	1.50	0.35	13.75	10.01	45.01	32.77	
60	2.00	0.25	29.66	21.59	74.67	54.36	
80	2.50	0.18	22.68	16.51	97.35	70.87	
120	3.00	0.13	18.52	13.48	115.87	84.35	
170	3.50	0.09	14.23	10.36	130.10	94.71	
200	3.75	0.07	2.60	1.89	132.70	96.60	
230	4.00	0.06	0.99	0.72	133.69	97.32	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.54	2.99	2.65	1.90	1.11	0.39	-1.24	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.6	0.33	1.48	-1.49	5.76		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-01 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1140827.6		Longitude: 875392.3		Coordinate System: Florida State Plane East		Elevation (ft): -15.9 MLLW	
USCS: SW-SM		Munsell:		Comments:			
Dry Weight (g): 196.43	Wash Weight (g): 187.36	Pan Retained (g): 0.20	Sieve Loss (%): 0.02	Fines (%): #200 - 5.11 #230 - 4.73	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	5.01	2.55	5.01	2.55	
3.5	-2.50	5.66	5.66	2.88	10.67	5.43	
4	-2.25	4.76	2.77	1.41	13.44	6.84	
5	-2.00	4.00	1.95	0.99	15.39	7.83	
7	-1.50	2.83	6.71	3.42	22.10	11.25	
10	-1.00	2.00	8.55	4.35	30.65	15.60	
14	-0.50	1.41	10.55	5.37	41.20	20.97	
18	0.00	1.00	10.41	5.30	51.61	26.27	
25	0.50	0.71	13.02	6.63	64.63	32.90	
35	1.00	0.50	15.47	7.88	80.10	40.78	
45	1.50	0.35	24.95	12.70	105.05	53.48	
60	2.00	0.25	48.74	24.81	153.79	78.29	
80	2.50	0.18	21.01	10.70	174.80	88.99	
120	3.00	0.13	7.08	3.60	181.88	92.59	
170	3.50	0.09	3.37	1.72	185.25	94.31	
200	3.75	0.07	1.15	0.59	186.40	94.89	
230	4.00	0.06	0.73	0.37	187.13	95.27	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.82	2.27	1.93	1.36	-0.12	-0.96	-2.65	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	0.73	0.60	1.65	-0.98	3.39		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report							
Depths and elevations based on measured values				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-01 #S-3							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude:		Longitude:		Coordinate System:		Elevation (ft):	
1140827.6		875392.3		Florida State Plane East		-17.0 MLLW	
USCS:		Munsell:		Comments:			
SW							
Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
184.15	181.98	0.06	0.51	#200 - 1.80 #230 - 1.72			0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.51	0.28	0.51	0.28	
4	-2.25	4.76	0.40	0.22	0.91	0.49	
5	-2.00	4.00	0.45	0.24	1.36	0.74	
7	-1.50	2.83	2.46	1.34	3.82	2.07	
10	-1.00	2.00	6.64	3.61	10.46	5.68	
14	-0.50	1.41	8.93	4.85	19.39	10.53	
18	0.00	1.00	14.96	8.12	34.35	18.65	
25	0.50	0.71	20.24	10.99	54.59	29.64	
35	1.00	0.50	24.74	13.43	79.33	43.08	
45	1.50	0.35	31.51	17.11	110.84	60.19	
60	2.00	0.25	44.65	24.25	155.49	84.44	
80	2.50	0.18	19.43	10.55	174.92	94.99	
120	3.00	0.13	4.96	2.69	179.88	97.68	
170	3.50	0.09	0.81	0.44	180.69	98.12	
200	3.75	0.07	0.15	0.08	180.84	98.20	
230	4.00	0.06	0.15	0.08	180.99	98.28	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
2.50	1.99	1.81	1.20	0.29	-0.16	-1.09	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	0.97	0.51	1.08	-0.68	3.19		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report							
Depths and elevations based on measured values							
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-02 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1140328.5		Longitude: 875704.5		Coordinate System: Florida State Plane East		Elevation (ft): -12.5 MLLW	
USCS: SW		Munsell:		Comments:			
Dry Weight (g): 211.40	Wash Weight (g): 203.96	Pan Retained (g): 3.05	Sieve Loss (%): -1.29	Fines (%): #200 - 4.09 #230 - 3.67	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	1.49	0.70	1.49	0.70	
4	-2.25	4.76	0.43	0.20	1.92	0.91	
5	-2.00	4.00	0.53	0.25	2.45	1.16	
7	-1.50	2.83	2.65	1.25	5.10	2.41	
10	-1.00	2.00	4.57	2.16	9.67	4.57	
14	-0.50	1.41	5.87	2.78	15.54	7.35	
18	0.00	1.00	8.11	3.84	23.65	11.19	
25	0.50	0.71	12.43	5.88	36.08	17.07	
35	1.00	0.50	19.48	9.21	55.56	26.28	
45	1.50	0.35	37.55	17.76	93.11	44.04	
60	2.00	0.25	61.62	29.15	154.73	73.19	
80	2.50	0.18	23.29	11.02	178.02	84.21	
120	3.00	0.13	10.10	4.78	188.12	88.99	
170	3.50	0.09	12.16	5.75	200.28	94.74	
200	3.75	0.07	2.47	1.17	202.75	95.91	
230	4.00	0.06	0.89	0.42	203.64	96.33	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.56	2.49	2.08	1.60	0.93	0.41	-0.92	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.38	0.38	1.17	-0.88	4.48		

Depths and elevations based on measured values



American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude:	Longitude:	Coordinate System:	Elevation (ft):
1140328.5	875704.5	Florida State Plane East	-16.0 MLLW

USCS:	Munsell:	Comments:
SW		

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%): #200 - 3.41 #230 - 3.13	Organics (%):	Carbonates (%):	Shells (%):
206.53	200.91	0.12	0.35				0.00

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
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3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
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3/8"	-3.50	11.31	0.00	0.00	0.00	0.00
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3.5	-2.50	5.66	3.07	1.49	3.07	1.49
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4	-2.25	4.76	1.49	0.72	4.56	2.21
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5	-2.00	4.00	1.04	0.50	5.60	2.71
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7	-1.50	2.83	3.13	1.52	8.73	4.23
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10	-1.00	2.00	5.65	2.74	14.38	6.96
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14	-0.50	1.41	7.30	3.53	21.68	10.50
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18	0.00	1.00	13.06	6.32	34.74	16.82
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25	0.50	0.71	19.61	9.49	54.35	26.32
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35	1.00	0.50	27.54	13.33	81.89	39.65
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45	1.50	0.35	40.15	19.44	122.04	59.09
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60	2.00	0.25	48.28	23.38	170.32	82.47
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80	2.50	0.18	16.58	8.03	186.90	90.50
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60	2.50	0.10	10.50	0.05	100.90	90.50
120	3.00	0.13	6.72	3.25	103.62	93.75

120	5.00	0.15	0.72	3.25	195.02	95.75
170	3.50	0.09	4.76	2.30	108.38	06.05

170	3.50	0.09	4.70	2.50	196.36	96.05
200	3.75	0.07	1.11	0.54	100.40	06.50

200	3.75	0.07	1.11	0.34	199.49	96.59
220	4.00	0.06	0.58	0.38	200.03	96.87

230	4.00	0.06	0.58	0.28	200.07	96.87
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Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
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3.27	2.10	1.84	1.27	0.43	-0.06	-1.36
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0.27	2.10	1.84	1.27	0.43	-0.00	-1.50
Mean	Mean	Mean	Cost	Cost		Mean

Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis

Statistics	1.01	0.50	1.22	-0.88	4.21
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GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-03 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1139933		Longitude: 875816		Coordinate System: Florida State Plane East		Elevation (ft): -13.8 MLLW	
USCS: SW		Munsell:		Comments: SW			
Dry Weight (g): 239.96	Wash Weight (g): 233.65	Pan Retained (g): 0.06	Sieve Loss (%): 1.23	Fines (%): #200 - 4.98 #230 - 3.88	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	4.09	1.70	4.09	1.70	
3/8"	-3.50	11.31	0.00	0.00	4.09	1.70	
3.5	-2.50	5.66	5.20	2.17	9.29	3.87	
4	-2.25	4.76	1.42	0.59	10.71	4.46	
5	-2.00	4.00	1.50	0.63	12.21	5.09	
7	-1.50	2.83	4.56	1.90	16.77	6.99	
10	-1.00	2.00	7.05	2.94	23.82	9.93	
14	-0.50	1.41	12.30	5.13	36.12	15.05	
18	0.00	1.00	16.59	6.91	52.71	21.97	
25	0.50	0.71	20.21	8.42	72.92	30.39	
35	1.00	0.50	22.51	9.38	95.43	39.77	
45	1.50	0.35	30.48	12.70	125.91	52.47	
60	2.00	0.25	42.15	17.57	168.06	70.04	
80	2.50	0.18	17.37	7.24	185.43	77.28	
120	3.00	0.13	16.73	6.97	202.16	84.25	
170	3.50	0.09	21.98	9.16	224.14	93.41	
200	3.75	0.07	3.86	1.61	228.00	95.02	
230	4.00	0.06	2.64	1.10	230.64	96.12	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.75	2.98	2.34	1.40	0.18	-0.43	-2.04	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.05	0.48	1.5	-0.35	2.93		

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-03 #S-2

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude: 1139933	Longitude: 875816	Coordinate System: Florida State Plane East	Elevation (ft): -16.7 MLLW
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USCS: SW	Munsell:	Comments:
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Dry Weight (g): 182.29	Wash Weight (g): 174.74	Pan Retained (g): 0.21	Sieve Loss (%): 0.04	Fines (%): #200 - 4.48 #230 - 4.30	Organics (%):	Carbonates (%):	Shells (%): 0.00
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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
3/8"	-3.50	11.31	1.84	1.01	1.84	1.01
3.5	-2.50	5.66	2.62	1.44	4.46	2.45
4	-2.25	4.76	1.78	0.98	6.24	3.42
5	-2.00	4.00	3.41	1.87	9.65	5.29
7	-1.50	2.83	12.06	6.62	21.71	11.91
10	-1.00	2.00	16.95	9.30	38.66	21.21
14	-0.50	1.41	12.92	7.09	51.58	28.30
18	0.00	1.00	11.68	6.41	63.26	34.70
25	0.50	0.71	13.03	7.15	76.29	41.85
35	1.00	0.50	16.68	9.15	92.97	51.00
45	1.50	0.35	26.97	14.80	119.94	65.80
60	2.00	0.25	33.36	18.30	153.30	84.10
80	2.50	0.18	11.52	6.32	164.82	90.42
120	3.00	0.13	4.42	2.42	169.24	92.84
170	3.50	0.09	3.88	2.13	173.12	94.97
200	3.75	0.07	1.00	0.55	174.12	95.52
230	4.00	0.06	0.34	0.19	174.46	95.70

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.51	2.00	1.75	0.95	-0.73	-1.28	-2.04
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.47	0.72	1.54	-0.44	2.53	

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-04 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1139436.8		Longitude: 876103.5		Coordinate System: Florida State Plane East		Elevation (ft): -13.6 MLLW	
USCS: SW		Munsell:		Comments:			
Dry Weight (g): 250.63	Wash Weight (g): 245.89	Pan Retained (g): 0.47	Sieve Loss (%): 0.26	Fines (%): #200 - 3.04 #230 - 2.33	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.04	0.02	0.04	0.02	
4	-2.25	4.76	0.16	0.06	0.20	0.08	
5	-2.00	4.00	0.35	0.14	0.55	0.22	
7	-1.50	2.83	1.22	0.49	1.77	0.71	
10	-1.00	2.00	3.59	1.43	5.36	2.14	
14	-0.50	1.41	4.32	1.72	9.68	3.86	
18	0.00	1.00	7.00	2.79	16.68	6.66	
25	0.50	0.71	12.04	4.80	28.72	11.46	
35	1.00	0.50	22.51	8.98	51.23	20.44	
45	1.50	0.35	47.46	18.94	98.69	39.38	
60	2.00	0.25	74.52	29.73	173.21	69.11	
80	2.50	0.18	20.39	8.14	193.60	77.25	
120	3.00	0.13	21.46	8.56	215.06	85.81	
170	3.50	0.09	23.78	9.49	238.84	95.30	
200	3.75	0.07	4.17	1.66	243.01	96.96	
230	4.00	0.06	1.77	0.71	244.78	97.67	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.48	2.89	2.36	1.68	1.12	0.75	-0.30	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.64	0.32	1.05	-0.48	3.75		

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-04 #S-2

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude:

1139436.8

Longitude:

876103.5

Coordinate System:

Florida State Plane East

Elevation (ft):

-16.3 MLLW

USCS:

SW-SM

Munsell:

Comments:

Dry Weight (g):

185.22

Wash Weight (g):

175.48

Pan Retained (g):

0.45

Sieve Loss (%):

0.29

Fines (%):

#200 - 6.60
#230 - 5.79

Organics (%):

Carbonates (%):

Shells (%):

0.00

Sieve Number

Sieve Size
(Phi)

Sieve Size
(Millimeters)

Grams
Retained

% Weight
Retained

Cum. Grams
Retained

C. % Weight
Retained

3/4"

-4.25

19.03

2.30

1.24

2.30

1.24

3/8"

-3.50

11.31

5.58

3.01

7.88

4.25

3.5

-2.50

5.66

9.26

5.00

17.14

9.25

4

-2.25

4.76

2.40

1.30

19.54

10.55

5

-2.00

4.00

2.23

1.20

21.77

11.75

7

-1.50

2.83

5.49

2.96

27.26

14.72

10

-1.00

2.00

7.62

4.11

34.88

18.83

14

-0.50

1.41

8.37

4.52

43.25

23.35

18

0.00

1.00

10.79

5.83

54.04

29.18

25

0.50

0.71

14.16

7.64

68.20

36.82

35

1.00

0.50

17.75

9.58

85.95

46.40

45

1.50

0.35

24.78

13.38

110.73

59.78

60

2.00

0.25

31.99

17.27

142.72

77.05

80

2.50

0.18

13.57

7.33

156.29

84.38

120

3.00

0.13

6.32

3.41

162.61

87.79

170

3.50

0.09

7.80

4.21

170.41

92.00

200

3.75

0.07

2.58

1.39

172.99

93.40

230

4.00

0.06

1.51

0.82

174.50

94.21

Phi 5

Phi 16

Phi 25

Phi 50

Phi 75

Phi 84

Phi 95

2.47

1.94

1.13

-0.36

-1.34

-3.35

Moment

Mean Phi

Mean mm

Sorting

Skewness

Kurtosis

Statistics

0.54

0.69

1.8

-0.62

2.89

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS GDT 2/27/17

Granularmetric Report							
Depths and elevations based on measured values							
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-05 #S-1				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude:		Longitude:		Coordinate System:		Elevation (ft):	
1138521.5		876674.6		Florida State Plane East		-11.6 MLLW	
USCS:		Munsell:		Comments:			
SM							
Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
186.86	143.79	2.83	0.14	#200 - 30.99 #230 - 24.71			0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.48	0.26	0.48	0.26	
4	-2.25	4.76	0.00	0.00	0.48	0.26	
5	-2.00	4.00	0.00	0.00	0.48	0.26	
7	-1.50	2.83	0.74	0.40	1.22	0.65	
10	-1.00	2.00	0.49	0.26	1.71	0.92	
14	-0.50	1.41	0.87	0.47	2.58	1.38	
18	0.00	1.00	1.17	0.63	3.75	2.01	
25	0.50	0.71	1.63	0.87	5.38	2.88	
35	1.00	0.50	2.05	1.10	7.43	3.98	
45	1.50	0.35	3.68	1.97	11.11	5.95	
60	2.00	0.25	7.46	3.99	18.57	9.94	
80	2.50	0.18	6.03	3.23	24.60	13.16	
120	3.00	0.13	20.02	10.71	44.62	23.88	
170	3.50	0.09	60.85	32.56	105.47	56.44	
200	3.75	0.07	23.49	12.57	128.96	69.01	
230	4.00	0.06	11.73	6.28	140.69	75.29	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
		3.99	3.40	3.02	2.63	1.26	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.93	0.13	0.99	-2.59	11.43		

GRANULARMETRIC REPORT, SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report				 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Depths and elevations based on measured values							
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-05 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude:		Longitude:		Coordinate System:		Elevation (ft):	
1138521.5		876674.6		Florida State Plane East		-15.8 MLLW	
USCS:		Munsell:		Comments:			
SW-SM							
Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
177.19	161.59	0.57	0.02	#200 - 10.54 #230 - 9.14			0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	2.10	1.19	2.10	1.19	
3.5	-2.50	5.66	2.85	1.61	4.95	2.79	
4	-2.25	4.76	0.61	0.34	5.56	3.14	
5	-2.00	4.00	1.04	0.59	6.60	3.72	
7	-1.50	2.83	1.78	1.00	8.38	4.73	
10	-1.00	2.00	3.03	1.71	11.41	6.44	
14	-0.50	1.41	3.40	1.92	14.81	8.36	
18	0.00	1.00	6.85	3.87	21.66	12.22	
25	0.50	0.71	9.79	5.53	31.45	17.75	
35	1.00	0.50	15.05	8.49	46.50	26.24	
45	1.50	0.35	26.18	14.78	72.68	41.02	
60	2.00	0.25	43.63	24.62	116.31	65.64	
80	2.50	0.18	14.18	8.00	130.49	73.64	
120	3.00	0.13	8.41	4.75	138.90	78.39	
170	3.50	0.09	14.84	8.38	153.74	86.77	
200	3.75	0.07	4.78	2.70	158.52	89.46	
230	4.00	0.06	2.47	1.39	160.99	90.86	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	3.33	2.64	1.68	0.93	0.34	-1.42	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.38	0.38	1.47	-1.14	5.04		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-06 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1138163.1		Longitude: 876589		Coordinate System: Florida State Plane East		Elevation (ft): -16.0 MLLW	
USCS: SW-SM		Munsell:		Comments:			
Dry Weight (g): 174.94	Wash Weight (g): 168.07	Pan Retained (g): 0.52	Sieve Loss (%): -0.15	Fines (%): #200 - 5.84 #230 - 4.08	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	10.96	6.27	10.96	6.27	
3/8"	-3.50	11.31	6.12	3.50	17.08	9.76	
3.5	-2.50	5.66	2.35	1.34	19.43	11.11	
4	-2.25	4.76	0.04	0.02	19.47	11.13	
5	-2.00	4.00	0.88	0.50	20.35	11.63	
7	-1.50	2.83	2.51	1.43	22.86	13.07	
10	-1.00	2.00	5.56	3.18	28.42	16.25	
14	-0.50	1.41	5.71	3.26	34.13	19.51	
18	0.00	1.00	9.94	5.68	44.07	25.19	
25	0.50	0.71	12.65	7.23	56.72	32.42	
35	1.00	0.50	13.68	7.82	70.40	40.24	
45	1.50	0.35	16.33	9.33	86.73	49.58	
60	2.00	0.25	22.86	13.07	109.59	62.64	
80	2.50	0.18	11.82	6.76	121.41	69.40	
120	3.00	0.13	13.02	7.44	134.43	76.84	
170	3.50	0.09	23.61	13.50	158.04	90.34	
200	3.75	0.07	6.69	3.82	164.73	94.16	
230	4.00	0.06	3.08	1.76	167.81	95.92	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.87	3.27	2.88	1.52	-0.02	-1.04		
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	0.88	0.54	1.82	-0.29	3.05		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report				 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Depths and elevations based on measured values							
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-06 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude:		Longitude:		Coordinate System:		Elevation (ft):	
1138163.1		876589		Florida State Plane East		-19.0 MLLW	
USCS:		Munsell:		Comments:			
SW-SM							
Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
187.85	174.31	0.58	0.02	#200 - 9.08 #230 - 7.53			0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.49	0.26	0.49	0.26	
4	-2.25	4.76	0.02	0.01	0.51	0.27	
5	-2.00	4.00	0.20	0.11	0.71	0.38	
7	-1.50	2.83	0.43	0.23	1.14	0.61	
10	-1.00	2.00	1.21	0.64	2.35	1.25	
14	-0.50	1.41	3.81	2.03	6.16	3.28	
18	0.00	1.00	6.31	3.36	12.47	6.64	
25	0.50	0.71	12.68	6.75	25.15	13.39	
35	1.00	0.50	18.22	9.70	43.37	23.09	
45	1.50	0.35	26.43	14.07	69.80	37.16	
60	2.00	0.25	38.35	20.42	108.15	57.57	
80	2.50	0.18	23.49	12.50	131.64	70.08	
120	3.00	0.13	16.06	8.55	147.70	78.63	
170	3.50	0.09	17.02	9.06	164.72	87.69	
200	3.75	0.07	6.08	3.24	170.80	90.92	
230	4.00	0.06	2.90	1.54	173.70	92.47	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	3.30	2.79	1.81	1.07	0.63	-0.24	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.69	0.31	1.14	-0.41	3.39		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-07 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1134786.3		Longitude: 877776.3		Coordinate System: Florida State Plane East		Elevation (ft): -12.1 MLLW	
USCS: SW-SM		Munsell:		Comments:			
Dry Weight (g): 244.20	Wash Weight (g): 171.63	Pan Retained (g): 0.43	Sieve Loss (%): 0.43	Fines (%): #200 - 30.97 #230 - 30.32	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	26.39	10.81	26.39	10.81	
3.5	-2.50	5.66	17.31	7.09	43.70	17.90	
4	-2.25	4.76	7.69	3.15	51.39	21.04	
5	-2.00	4.00	5.27	2.16	56.66	23.20	
7	-1.50	2.83	9.77	4.00	66.43	27.20	
10	-1.00	2.00	9.25	3.79	75.68	30.99	
14	-0.50	1.41	7.34	3.01	83.02	34.00	
18	0.00	1.00	7.77	3.18	90.79	37.18	
25	0.50	0.71	8.00	3.28	98.79	40.45	
35	1.00	0.50	9.63	3.94	108.42	44.40	
45	1.50	0.35	12.82	5.25	121.24	49.65	
60	2.00	0.25	17.91	7.33	139.15	56.98	
80	2.50	0.18	14.13	5.79	153.28	62.77	
120	3.00	0.13	8.98	3.68	162.26	66.45	
170	3.50	0.09	4.63	1.90	166.89	68.34	
200	3.75	0.07	1.68	0.69	168.57	69.03	
230	4.00	0.06	1.58	0.65	170.15	69.68	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
			1.52	-1.77	-2.77	-3.90	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	-0.47	1.39	2.36	-0.04	1.65		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-07 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1134786.3		Longitude: 877776.3		Coordinate System: Florida State Plane East		Elevation (ft): -15.1 MLLW	
USCS: SW-SM		Munsell:		Comments:			
Dry Weight (g): 174.88	Wash Weight (g): 154.66	Pan Retained (g): 0.35	Sieve Loss (%): 0.70	Fines (%): #200 - 13.06 #230 - 12.46	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.56	0.32	0.56	0.32	
3.5	-2.50	5.66	2.46	1.41	3.02	1.73	
4	-2.25	4.76	0.54	0.31	3.56	2.04	
5	-2.00	4.00	0.59	0.34	4.15	2.37	
7	-1.50	2.83	2.02	1.16	6.17	3.53	
10	-1.00	2.00	3.15	1.80	9.32	5.33	
14	-0.50	1.41	3.52	2.01	12.84	7.34	
18	0.00	1.00	5.50	3.15	18.34	10.49	
25	0.50	0.71	8.50	4.86	26.84	15.35	
35	1.00	0.50	16.71	9.56	43.55	24.90	
45	1.50	0.35	28.94	16.55	72.49	41.45	
60	2.00	0.25	41.73	23.86	114.22	65.31	
80	2.50	0.18	24.94	14.26	139.16	79.57	
120	3.00	0.13	8.73	4.99	147.89	84.57	
170	3.50	0.09	3.09	1.77	150.98	86.33	
200	3.75	0.07	1.06	0.61	152.04	86.94	
230	4.00	0.06	1.05	0.60	153.09	87.54	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	2.94	2.34	1.68	1.00	0.53	-1.09	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.3	0.41	1.23	-1.37	5.81		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report				 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Depths and elevations based on measured values							
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-08 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude:		Longitude:		Coordinate System:		Elevation (ft):	
1134075		878126.4		Florida State Plane East		-12.5 MLLW	
USCS:		Munsell:		Comments:			
SW-SM							
Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
153.47	135.22	0.27	0.22	#200 - 12.60 #230 - 12.28			0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	11.60	7.56	11.60	7.56	
3/8"	-3.50	11.31	10.36	6.75	21.96	14.31	
3.5	-2.50	5.66	8.32	5.42	30.28	19.73	
4	-2.25	4.76	2.64	1.72	32.92	21.45	
5	-2.00	4.00	2.96	1.93	35.88	23.38	
7	-1.50	2.83	6.31	4.11	42.19	27.49	
10	-1.00	2.00	6.69	4.36	48.88	31.85	
14	-0.50	1.41	5.06	3.30	53.94	35.15	
18	0.00	1.00	5.34	3.48	59.28	38.63	
25	0.50	0.71	6.53	4.25	65.81	42.88	
35	1.00	0.50	10.57	6.89	76.38	49.77	
45	1.50	0.35	18.85	12.28	95.23	62.05	
60	2.00	0.25	21.84	14.23	117.07	76.28	
80	2.50	0.18	9.56	6.23	126.63	82.51	
120	3.00	0.13	5.27	3.43	131.90	85.95	
170	3.50	0.09	1.72	1.12	133.62	87.07	
200	3.75	0.07	0.51	0.33	134.13	87.40	
230	4.00	0.06	0.49	0.32	134.62	87.72	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	2.72	1.96	1.01	-1.80	-3.19		
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	-0.29	1.22	1.99	0	1.97		

Granularmetric Report

Depths and elevations based on measured values



American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-08 #S-2

Analysis Date: 02-27-17

Analyzed By: FW

Latitude:

1134075

Longitude:

878126.4

Coordinate System:

Florida State Plane East

Elevation (ft):

-12.9 MLLW

USCS:

SW-SM

Munsell:

Comments:

Dry Weight (g):

158.29

Wash Weight (g):

87.71

Pan Retained (g):

0.47

Sieve Loss (%):

0.03

Fines (%):

#200 - 46.14
#230 - 44.92

Organics (%):

Carbonates (%):

Shells (%):

0.00

Sieve Number

Sieve Size
(Phi)

Sieve Size
(Millimeters)

Grams
Retained

% Weight
Retained

Cum. Grams
Retained

C. % Weight
Retained

3/4"

-4.25

19.03

0.00

0.00

0.00

0.00

3/8"

-3.50

11.31

0.00

0.00

0.00

0.00

3.5

-2.50

5.66

0.80

0.51

0.80

0.51

4

-2.25

4.76

0.16

0.10

0.96

0.61

5

-2.00

4.00

0.32

0.20

1.28

0.81

7

-1.50

2.83

1.70

1.07

2.98

1.88

10

-1.00

2.00

3.52

2.22

6.50

4.11

14

-0.50

1.41

3.77

2.38

10.27

6.49

18

0.00

1.00

4.38

2.77

14.65

9.26

25

0.50

0.71

5.26

3.32

19.91

12.58

35

1.00

0.50

6.89

4.35

26.80

16.93

45

1.50

0.35

11.07

6.99

37.87

23.92

60

2.00

0.25

17.88

11.30

55.75

35.22

80

2.50

0.18

14.87

9.39

70.62

44.61

120

3.00

0.13

8.69

5.49

79.31

50.10

170

3.50

0.09

4.03

2.55

83.34

52.65

200

3.75

0.07

1.91

1.21

85.25

53.86

230

4.00

0.06

1.94

1.23

87.19

55.08

Phi 5

Phi 16

Phi 25

Phi 50

Phi 75

Phi 84

Phi 95

2.99

1.55

0.89

-0.81

Moment

Mean Phi

Mean mm

Sorting

Skewness

Kurtosis

Statistics

1.4

0.38

1.38

-0.73

3.29

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-09 #S-1

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude:

1133054.3

Longitude:

878519.5

Coordinate System:

Florida State Plane East

Elevation (ft):

-9.3 MLLW

USCS:

SP

Munsell:

Comments:

Dry Weight (g):

156.17

Wash Weight (g):

154.10

Pan Retained (g):

0.06

Sieve Loss (%):

0.17

Fines (%):

#200 - 1.95
#230 - 1.53

Organics (%):

Carbonates (%):

Shells (%):

0.00

Sieve Number

Sieve Size
(Phi)

Sieve Size
(Millimeters)

Grams
Retained

% Weight
Retained

Cum. Grams
Retained

C. % Weight
Retained

3/4"

-4.25

19.03

0.00

0.00

0.00

0.00

3/8"

-3.50

11.31

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

0.07

0.04

0.07

0.04

7

-1.50

2.83

0.01

0.01

0.08

0.05

10

-1.00

2.00

0.38

0.24

0.46

0.29

14

-0.50

1.41

0.11

0.07

0.57

0.36

18

0.00

1.00

0.60

0.38

1.17

0.75

25

0.50

0.71

0.75

0.48

1.92

1.23

35

1.00

0.50

1.34

0.86

3.26

2.09

45

1.50

0.35

4.73

3.03

7.99

5.12

60

2.00

0.25

25.75

16.49

33.74

21.60

80

2.50

0.18

44.16

28.28

77.90

49.88

120

3.00

0.13

56.77

36.35

134.67

86.23

170

3.50

0.09

16.69

10.69

151.36

96.92

200

3.75

0.07

1.76

1.13

153.12

98.05

230

4.00

0.06

0.66

0.42

153.78

98.47

Phi 5

Phi 16

Phi 25

Phi 50

Phi 75

Phi 84

Phi 95

3.41

2.97

2.85

2.50

2.06

1.83

1.48

Moment

Mean Phi

Mean mm

Sorting

Skewness

Kurtosis

Statistics

2.41

0.19

0.63

-1.36

8.32

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-09 #S-2

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude: 1133054.3	Longitude: 878519.5	Coordinate System: Florida State Plane East	Elevation (ft): -11.1 MLLW
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USCS: SW-SM	Munsell:	Comments:
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Dry Weight (g): 154.81	Wash Weight (g): 131.06	Pan Retained (g): 0.01	Sieve Loss (%): 0.01	Fines (%): #200 - 15.99 #230 - 15.35	Organics (%):	Carbonates (%):	Shells (%): 0.00
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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
3/8"	-3.50	11.31	5.35	3.46	5.35	3.46
3.5	-2.50	5.66	2.55	1.65	7.90	5.10
4	-2.25	4.76	0.57	0.37	8.47	5.47
5	-2.00	4.00	0.81	0.52	9.28	5.99
7	-1.50	2.83	3.52	2.27	12.80	8.27
10	-1.00	2.00	5.90	3.81	18.70	12.08
14	-0.50	1.41	8.26	5.34	26.96	17.41
18	0.00	1.00	9.25	5.98	36.21	23.39
25	0.50	0.71	10.70	6.91	46.91	30.30
35	1.00	0.50	13.80	8.91	60.71	39.22
45	1.50	0.35	16.09	10.39	76.80	49.61
60	2.00	0.25	20.16	13.02	96.96	62.63
80	2.50	0.18	18.16	11.73	115.12	74.36
120	3.00	0.13	10.62	6.86	125.74	81.22
170	3.50	0.09	3.27	2.11	129.01	83.33
200	3.75	0.07	1.04	0.67	130.05	84.01
230	4.00	0.06	0.99	0.64	131.04	84.65

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
	3.75	2.55	1.51	0.12	-0.63	-2.56
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	0.79	0.58	1.71	-0.93	3.55	

GRANULARMETRIC REPORT, SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-10 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1132579.1		Longitude: 878603.8		Coordinate System: Florida State Plane East		Elevation (ft): -8.8 MLLW	
USCS: SW-SM		Munsell:		Comments:			
Dry Weight (g): 112.05	Wash Weight (g): 109.20	Pan Retained (g): 0.43	Sieve Loss (%): 0.43	Fines (%): #200 - 5.36 #230 - 3.36	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	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	0.14	0.12	0.16	0.14	
14	-0.50	1.41	0.16	0.14	0.32	0.29	
18	0.00	1.00	0.06	0.05	0.38	0.34	
25	0.50	0.71	0.68	0.61	1.06	0.95	
35	1.00	0.50	2.79	2.49	3.85	3.44	
45	1.50	0.35	9.17	8.18	13.02	11.62	
60	2.00	0.25	8.87	7.92	21.89	19.54	
80	2.50	0.18	10.67	9.52	32.56	29.06	
120	3.00	0.13	38.05	33.96	70.61	63.02	
170	3.50	0.09	28.78	25.68	99.39	88.70	
200	3.75	0.07	6.65	5.93	106.04	94.64	
230	4.00	0.06	2.25	2.01	108.29	96.64	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.80	3.41	3.23	2.81	2.29	1.78	1.10	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.62	0.16	0.78	-1.09	4.31		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report							
Depths and elevations based on measured values							
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-10 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude:		Longitude:		Coordinate System:		Elevation (ft):	
1132579.1		878603.8		Florida State Plane East		-12.9 MLLW	
USCS:		Munsell:		Comments:			
SW-SM							
Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
149.17	99.77	0.14	1.66	#200 - 35.43 #230 - 34.87			0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	4.18	2.80	4.18	2.80	
3.5	-2.50	5.66	5.23	3.51	9.41	6.31	
4	-2.25	4.76	1.14	0.76	10.55	7.07	
5	-2.00	4.00	1.84	1.23	12.39	8.31	
7	-1.50	2.83	3.28	2.20	15.67	10.50	
10	-1.00	2.00	3.92	2.63	19.59	13.13	
14	-0.50	1.41	3.76	2.52	23.35	15.65	
18	0.00	1.00	4.04	2.71	27.39	18.36	
25	0.50	0.71	4.92	3.30	32.31	21.66	
35	1.00	0.50	6.87	4.61	39.18	26.27	
45	1.50	0.35	10.88	7.29	50.06	33.56	
60	2.00	0.25	16.48	11.05	66.54	44.61	
80	2.50	0.18	16.42	11.01	82.96	55.61	
120	3.00	0.13	9.28	6.22	92.24	61.84	
170	3.50	0.09	3.05	2.04	95.29	63.88	
200	3.75	0.07	1.03	0.69	96.32	64.57	
230	4.00	0.06	0.84	0.56	97.16	65.13	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
			2.24	0.86	-0.44	-2.87	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	0.77	0.59	1.95	-0.91	2.85		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-11 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1132126.3		Longitude: 878873.3		Coordinate System: Florida State Plane East		Elevation (ft): -8.1 MLLW	
USCS: SW		Munsell:		Comments:			
Dry Weight (g): 165.70	Wash Weight (g): 161.42	Pan Retained (g): 0.20	Sieve Loss (%): 0.59	Fines (%): #200 - 3.96 #230 - 3.29	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	1.07	0.65	1.07	0.65	
4	-2.25	4.76	0.15	0.09	1.22	0.74	
5	-2.00	4.00	0.43	0.26	1.65	1.00	
7	-1.50	2.83	1.32	0.80	2.97	1.79	
10	-1.00	2.00	1.73	1.04	4.70	2.84	
14	-0.50	1.41	2.06	1.24	6.76	4.08	
18	0.00	1.00	2.52	1.52	9.28	5.60	
25	0.50	0.71	2.05	1.24	11.33	6.84	
35	1.00	0.50	2.50	1.51	13.83	8.35	
45	1.50	0.35	6.44	3.89	20.27	12.23	
60	2.00	0.25	31.66	19.11	51.93	31.34	
80	2.50	0.18	40.87	24.67	92.80	56.00	
120	3.00	0.13	40.18	24.25	132.98	80.25	
170	3.50	0.09	22.80	13.76	155.78	94.01	
200	3.75	0.07	3.35	2.02	159.13	96.04	
230	4.00	0.06	1.12	0.68	160.25	96.71	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.62	3.14	2.89	2.38	1.83	1.60	-0.20	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.17	0.22	1.08	-2.02	8.55		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report							
Depths and elevations based on measured values							
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-11 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1132126.3		Longitude: 878873.3		Coordinate System: Florida State Plane East		Elevation (ft): -10.1 MLLW	
USCS: SW		Munsell:		Comments:			
Dry Weight (g): 168.48	Wash Weight (g): 164.36	Pan Retained (g): 0.18	Sieve Loss (%): 0.17	Fines (%): #200 - 2.91 #230 - 2.72	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.99	0.59	0.99	0.59	
3.5	-2.50	5.66	0.23	0.14	1.22	0.72	
4	-2.25	4.76	0.37	0.22	1.59	0.94	
5	-2.00	4.00	0.54	0.32	2.13	1.26	
7	-1.50	2.83	0.96	0.57	3.09	1.83	
10	-1.00	2.00	0.43	0.26	3.52	2.09	
14	-0.50	1.41	1.09	0.65	4.61	2.74	
18	0.00	1.00	1.29	0.77	5.90	3.50	
25	0.50	0.71	4.79	2.84	10.69	6.34	
35	1.00	0.50	12.01	7.13	22.70	13.47	
45	1.50	0.35	22.46	13.33	45.16	26.80	
60	2.00	0.25	40.63	24.12	85.79	50.92	
80	2.50	0.18	45.56	27.04	131.35	77.96	
120	3.00	0.13	27.34	16.23	158.69	94.19	
170	3.50	0.09	4.25	2.52	162.94	96.71	
200	3.75	0.07	0.63	0.37	163.57	97.09	
230	4.00	0.06	0.33	0.20	163.90	97.28	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.16	2.69	2.45	1.98	1.43	1.09	0.26	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.8	0.29	0.98	-2.16	11.37		

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-11 #S-3							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1132126.3		Longitude: 878873.3		Coordinate System: Florida State Plane East		Elevation (ft): -11.6 MLLW	
USCS: SW		Munsell:		Comments:			
Dry Weight (g): 183.20	Wash Weight (g): 179.12	Pan Retained (g): 0.75	Sieve Loss (%): -0.08	Fines (%): #200 - 3.14 #230 - 2.56	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.71	0.39	0.71	0.39	
3.5	-2.50	5.66	0.92	0.50	1.63	0.89	
4	-2.25	4.76	0.12	0.07	1.75	0.96	
5	-2.00	4.00	0.33	0.18	2.08	1.14	
7	-1.50	2.83	0.46	0.25	2.54	1.39	
10	-1.00	2.00	0.47	0.26	3.01	1.64	
14	-0.50	1.41	0.27	0.15	3.28	1.79	
18	0.00	1.00	0.27	0.15	3.55	1.94	
25	0.50	0.71	0.79	0.43	4.34	2.37	
35	1.00	0.50	1.89	1.03	6.23	3.40	
45	1.50	0.35	5.08	2.77	11.31	6.17	
60	2.00	0.25	13.19	7.20	24.50	13.37	
80	2.50	0.18	42.00	22.93	66.50	36.30	
120	3.00	0.13	63.81	34.83	130.31	71.13	
170	3.50	0.09	37.30	20.36	167.61	91.49	
200	3.75	0.07	9.83	5.37	177.44	96.86	
230	4.00	0.06	1.07	0.58	178.51	97.44	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.66	3.32	3.10	2.70	2.25	2.06	1.29	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.54	0.17	0.93	-3.38	20.42		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-12 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1131640.1		Longitude: 879012.3		Coordinate System: Florida State Plane East		Elevation (ft): -9.8 MLLW	
USCS: SW		Munsell:		Comments:			
Dry Weight (g): 151.38	Wash Weight (g): 148.42	Pan Retained (g): 0.12	Sieve Loss (%): 0.51	Fines (%): #200 - 2.78 #230 - 2.54	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.52	0.34	0.52	0.34	
4	-2.25	4.76	0.43	0.28	0.95	0.63	
5	-2.00	4.00	1.12	0.74	2.07	1.37	
7	-1.50	2.83	2.18	1.44	4.25	2.81	
10	-1.00	2.00	3.97	2.62	8.22	5.43	
14	-0.50	1.41	5.93	3.92	14.15	9.35	
18	0.00	1.00	7.58	5.01	21.73	14.35	
25	0.50	0.71	7.41	4.89	29.14	19.25	
35	1.00	0.50	10.48	6.92	39.62	26.17	
45	1.50	0.35	26.61	17.58	66.23	43.75	
60	2.00	0.25	43.81	28.94	110.04	72.69	
80	2.50	0.18	15.04	9.94	125.08	82.63	
120	3.00	0.13	13.45	8.88	138.53	91.51	
170	3.50	0.09	7.43	4.91	145.96	96.42	
200	3.75	0.07	1.21	0.80	147.17	97.22	
230	4.00	0.06	0.36	0.24	147.53	97.46	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.36	2.58	2.12	1.61	0.92	0.17	-1.08	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.36	0.39	1.21	-0.87	3.79		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-12 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1131640.1		Longitude: 879012.3		Coordinate System: Florida State Plane East		Elevation (ft): -12.5 MLLW	
USCS: SW		Munsell:		Comments:			
Dry Weight (g): 192.19	Wash Weight (g): 185.14	Pan Retained (g): 0.23	Sieve Loss (%): 0.21	Fines (%): #200 - 4.47 #230 - 4.00	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	2.22	1.16	2.22	1.16	
4	-2.25	4.76	1.52	0.79	3.74	1.95	
5	-2.00	4.00	1.21	0.63	4.95	2.58	
7	-1.50	2.83	2.62	1.36	7.57	3.94	
10	-1.00	2.00	1.92	1.00	9.49	4.94	
14	-0.50	1.41	2.09	1.09	11.58	6.03	
18	0.00	1.00	3.36	1.75	14.94	7.77	
25	0.50	0.71	4.82	2.51	19.76	10.28	
35	1.00	0.50	9.77	5.08	29.53	15.37	
45	1.50	0.35	21.65	11.26	51.18	26.63	
60	2.00	0.25	54.26	28.23	105.44	54.86	
80	2.50	0.18	39.94	20.78	145.38	75.64	
120	3.00	0.13	26.50	13.79	171.88	89.43	
170	3.50	0.09	10.14	5.28	182.02	94.71	
200	3.75	0.07	1.58	0.82	183.60	95.53	
230	4.00	0.06	0.91	0.47	184.51	96.00	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.59	2.80	2.48	1.91	1.43	1.03	-0.97	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.7	0.31	1.2	-1.71	6.76		

GRANULARMETRIC REPORT - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-13 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1131107.1		Longitude: 879275.7		Coordinate System: Florida State Plane East		Elevation (ft): -9.1 MLLW	
USCS: SW-SM		Munsell:		Comments:			
Dry Weight (g): 128.50	Wash Weight (g): 119.43	Pan Retained (g): 0.15	Sieve Loss (%): 0.88	Fines (%): #200 - 8.50 #230 - 8.05	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.22	0.17	0.22	0.17	
3.5	-2.50	5.66	1.30	1.01	1.52	1.18	
4	-2.25	4.76	0.63	0.49	2.15	1.67	
5	-2.00	4.00	0.54	0.42	2.69	2.09	
7	-1.50	2.83	2.09	1.63	4.78	3.72	
10	-1.00	2.00	2.77	2.16	7.55	5.88	
14	-0.50	1.41	4.30	3.35	11.85	9.22	
18	0.00	1.00	8.70	6.77	20.55	15.99	
25	0.50	0.71	10.52	8.19	31.07	24.18	
35	1.00	0.50	11.46	8.92	42.53	33.10	
45	1.50	0.35	14.18	11.04	56.71	44.13	
60	2.00	0.25	24.17	18.81	80.88	62.94	
80	2.50	0.18	19.50	15.18	100.38	78.12	
120	3.00	0.13	12.14	9.45	112.52	87.56	
170	3.50	0.09	4.19	3.26	116.71	90.82	
200	3.75	0.07	0.87	0.68	117.58	91.50	
230	4.00	0.06	0.57	0.44	118.15	91.95	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	2.81	2.40	1.66	0.55	0.00	-1.20	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.25	0.42	1.33	-0.85	3.7		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-13 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1131107.1		Longitude: 879275.7		Coordinate System: Florida State Plane East		Elevation (ft): -11.4 MLLW	
USCS: SW-SM		Munsell:		Comments:			
Dry Weight (g): 182.79		Wash Weight (g): 122.74		Pan Retained (g): 0.84		Sieve Loss (%): 0.24	
				Fines (%): #200 - 34.71 #230 - 33.55		Organics (%): Carbonates (%): Shells (%): 0.00	
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	8.69	4.75	8.69	4.75	
3/8"	-3.50	11.31	4.80	2.63	13.49	7.38	
3.5	-2.50	5.66	7.59	4.15	21.08	11.53	
4	-2.25	4.76	1.10	0.60	22.18	12.13	
5	-2.00	4.00	1.21	0.66	23.39	12.80	
7	-1.50	2.83	2.91	1.59	26.30	14.39	
10	-1.00	2.00	3.89	2.13	30.19	16.52	
14	-0.50	1.41	3.88	2.12	34.07	18.64	
18	0.00	1.00	5.66	3.10	39.73	21.74	
25	0.50	0.71	7.21	3.94	46.94	25.68	
35	1.00	0.50	8.51	4.66	55.45	30.34	
45	1.50	0.35	11.61	6.35	67.06	36.69	
60	2.00	0.25	20.75	11.35	87.81	48.04	
80	2.50	0.18	15.47	8.46	103.28	56.50	
120	3.00	0.13	8.72	4.77	112.00	61.27	
170	3.50	0.09	4.88	2.67	116.88	63.94	
200	3.75	0.07	2.46	1.35	119.34	65.29	
230	4.00	0.06	2.12	1.16	121.46	66.45	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
			2.12	0.41	-1.12	-4.18	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	0.41	0.75	1.95	-0.26	2.43		

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Project Name: Saint Lucie County Reach 1 Permitting							
Sample Name: SL-17-V-14 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude:		Longitude:		Coordinate System:		Elevation (ft):	
1130656.5		879359.2		Florida State Plane East		-8.8 MLLW	
USCS:		Munsell:		Comments:			
SW							
Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
203.64	197.16	0.27	0.45	#200 - 4.76 #230 - 3.77			0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.30	0.15	0.30	0.15	
4	-2.25	4.76	0.05	0.02	0.35	0.17	
5	-2.00	4.00	0.13	0.06	0.48	0.24	
7	-1.50	2.83	0.67	0.33	1.15	0.56	
10	-1.00	2.00	1.41	0.69	2.56	1.26	
14	-0.50	1.41	2.17	1.07	4.73	2.32	
18	0.00	1.00	3.34	1.64	8.07	3.96	
25	0.50	0.71	3.48	1.71	11.55	5.67	
35	1.00	0.50	4.96	2.44	16.51	8.11	
45	1.50	0.35	18.60	9.13	35.11	17.24	
60	2.00	0.25	83.18	40.85	118.29	58.09	
80	2.50	0.18	29.27	14.37	147.56	72.46	
120	3.00	0.13	20.02	9.83	167.58	82.29	
170	3.50	0.09	20.82	10.22	188.40	92.52	
200	3.75	0.07	5.55	2.73	193.95	95.24	
230	4.00	0.06	2.02	0.99	195.97	96.23	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.73	3.08	2.63	1.90	1.59	1.43	0.30	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.96	0.26	0.93	-0.93	6.06		

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-14 #S-2

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude:

1130656.5

Longitude:

879359.2

Coordinate System:

Florida State Plane East

Elevation (ft):

-12.2 MLLW

USCS:

SW-SM

Munsell:

Comments:

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%): #200 - 8.16 #230 - 7.43	Organics (%):	Carbonates (%):	Shells (%):
119.51	111.54	0.24	0.56				0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	4.66	3.90	4.66	3.90	
3.5	-2.50	5.66	2.84	2.38	7.50	6.28	
4	-2.25	4.76	0.02	0.02	7.52	6.29	
5	-2.00	4.00	0.56	0.47	8.08	6.76	
7	-1.50	2.83	1.40	1.17	9.48	7.93	
10	-1.00	2.00	1.83	1.53	11.31	9.46	
14	-0.50	1.41	2.73	2.28	14.04	11.75	
18	0.00	1.00	4.16	3.48	18.20	15.23	
25	0.50	0.71	6.02	5.04	24.22	20.27	
35	1.00	0.50	8.57	7.17	32.79	27.44	
45	1.50	0.35	16.35	13.68	49.14	41.12	
60	2.00	0.25	32.75	27.40	81.89	68.52	
80	2.50	0.18	17.23	14.42	99.12	82.94	
120	3.00	0.13	6.36	5.32	105.48	88.26	
170	3.50	0.09	3.18	2.66	108.66	90.92	
200	3.75	0.07	1.10	0.92	109.76	91.84	
230	4.00	0.06	0.87	0.73	110.63	92.57	

Phi 5

Phi 16

Phi 25

Phi 50

Phi 75

Phi 84

Phi 95

2.60

2.22

1.66

0.83

0.08

-3.04

Moment

Mean Phi

Mean mm

Sorting

Skewness

Kurtosis

Statistics

1.12

0.46

1.63

-1.58

5.35

GRANULARMETRIC REPORT - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-15 #S-1							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1130184.1		Longitude: 879639.2		Coordinate System: Florida State Plane East		Elevation (ft): -9.7 MLLW	
USCS: SW		Munsell:		Comments:			
Dry Weight (g): 170.55	Wash Weight (g): 165.52	Pan Retained (g): 0.20	Sieve Loss (%): 0.48	Fines (%): #200 - 4.23 #230 - 3.55	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	9.04	5.30	9.04	5.30	
3.5	-2.50	5.66	28.65	16.80	37.69	22.10	
4	-2.25	4.76	9.47	5.55	47.16	27.65	
5	-2.00	4.00	6.95	4.08	54.11	31.73	
7	-1.50	2.83	12.01	7.04	66.12	38.77	
10	-1.00	2.00	8.08	4.74	74.20	43.51	
14	-0.50	1.41	4.77	2.80	78.97	46.30	
18	0.00	1.00	3.15	1.85	82.12	48.15	
25	0.50	0.71	2.34	1.37	84.46	49.52	
35	1.00	0.50	3.13	1.84	87.59	51.36	
45	1.50	0.35	8.77	5.14	96.36	56.50	
60	2.00	0.25	23.76	13.93	120.12	70.43	
80	2.50	0.18	15.22	8.92	135.34	79.36	
120	3.00	0.13	12.46	7.31	147.80	86.66	
170	3.50	0.09	12.70	7.45	160.50	94.11	
200	3.75	0.07	2.83	1.66	163.33	95.77	
230	4.00	0.06	1.17	0.69	164.50	96.45	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.63	2.82	2.26	0.63	-2.37	-2.86	-3.54	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	-0.08	1.06	2.44	-0.05	1.44		

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-16 #S-1

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude:

1129758.4

Longitude:

879688.4

Coordinate System:

Florida State Plane East

Elevation (ft):

-9.7 MLLW

USCS:

SP

Munsell:

Comments:

Dry Weight (g):

153.65

Wash Weight (g):

153.26

Pan Retained (g):

0.15

Sieve Loss (%):

0.73

Fines (%):

#200 - 1.21
#230 - 1.08

Organics (%):

Carbonates (%):

Shells (%):

0.00

Sieve Number

Sieve Size
(Phi)

Sieve Size
(Millimeters)

Grams
Retained

% Weight
Retained

Cum. Grams
Retained

C. % Weight
Retained

3/4"

-4.25

19.03

0.00

0.00

0.00

0.00

3/8"

-3.50

11.31

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

0.09

0.06

0.09

0.06

10

-1.00

2.00

0.40

0.26

0.49

0.32

14

-0.50

1.41

1.43

0.93

1.92

1.25

18

0.00

1.00

4.13

2.69

6.05

3.94

25

0.50

0.71

7.43

4.84

13.48

8.77

35

1.00

0.50

14.08

9.16

27.56

17.94

45

1.50

0.35

40.06

26.07

67.62

44.01

60

2.00

0.25

57.34

37.32

124.96

81.33

80

2.50

0.18

17.75

11.55

142.71

92.88

120

3.00

0.13

6.05

3.94

148.76

96.82

170

3.50

0.09

2.53

1.65

151.29

98.46

200

3.75

0.07

0.50

0.33

151.79

98.79

230

4.00

0.06

0.20

0.13

151.99

98.92

Phi 5

Phi 16

Phi 25

Phi 50

Phi 75

Phi 84

Phi 95

2.77

2.12

1.92

1.58

1.14

0.89

0.11

Moment

Mean Phi

Mean mm

Sorting

Skewness

Kurtosis

Statistics

1.5

0.35

0.73

-0.5

4.54

GRANULARMETRIC REPORT - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-16 #S-2

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude:

1129758.4

Longitude:

879688.4

Coordinate System:

Florida State Plane East

Elevation (ft):

-12.5 MLLW

USCS:

SW-SM

Munsell:

Comments:

Dry Weight (g):

231.72

Wash Weight (g):

208.87

Pan Retained (g):

0.26

Sieve Loss (%):

0.55

Fines (%):

#200 - 11.18
#230 - 10.52

Organics (%):

Carbonates (%):

Shells (%):

0.00

Sieve Number

Sieve Size
(Phi)

Sieve Size
(Millimeters)

Grams
Retained

% Weight
Retained

Cum. Grams
Retained

C. % Weight
Retained

3/4"

-4.25

19.03

13.01

5.61

13.01

5.61

3/8"

-3.50

11.31

28.50

12.30

41.51

17.91

3.5

-2.50

5.66

22.66

9.78

64.17

27.69

4

-2.25

4.76

5.24

2.26

69.41

29.95

5

-2.00

4.00

5.03

2.17

74.44

32.12

7

-1.50

2.83

7.72

3.33

82.16

35.46

10

-1.00

2.00

6.08

2.62

88.24

38.08

14

-0.50

1.41

4.96

2.14

93.20

40.22

18

0.00

1.00

4.24

1.83

97.44

42.05

25

0.50

0.71

3.72

1.61

101.16

43.66

35

1.00

0.50

5.83

2.52

106.99

46.17

45

1.50

0.35

16.06

6.93

123.05

53.10

60

2.00

0.25

37.49

16.18

160.54

69.28

80

2.50

0.18

22.59

9.75

183.13

79.03

120

3.00

0.13

10.35

4.47

193.48

83.50

170

3.50

0.09

9.65

4.16

203.13

87.66

200

3.75

0.07

2.68

1.16

205.81

88.82

230

4.00

0.06

1.53

0.66

207.34

89.48

Phi 5

Phi 16

Phi 25

Phi 50

Phi 75

Phi 84

Phi 95

3.06

2.29

1.28

-2.78

-3.62

Moment

Mean Phi

Mean mm

Sorting

Skewness

Kurtosis

Statistics

-0.34

1.27

2.44

0.02

1.54

GRANULARMETRIC REPORT - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2 GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report

Depths and elevations based on measured values



American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-16 #S-3

Analysis Date: 02-27-17

Analyzed By: FW

Latitude:

1129758.4

Longitude:

879688.4

Coordinate System:

Florida State Plane East

Elevation (ft):

-14.5 MLLW

USCS:

PT

Munsell:

Comments:

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
132.36	53.19	0.34	0.03	#200 - 61.28 #230 - 60.10			0.00

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00
3.5	-2.50	5.66	0.18	0.14	0.18	0.14
4	-2.25	4.76	0.17	0.13	0.35	0.26
5	-2.00	4.00	0.10	0.08	0.45	0.34
7	-1.50	2.83	0.44	0.33	0.89	0.67
10	-1.00	2.00	0.91	0.69	1.80	1.36
14	-0.50	1.41	1.34	1.01	3.14	2.37
18	0.00	1.00	2.21	1.67	5.35	4.04
25	0.50	0.71	3.39	2.56	8.74	6.60
35	1.00	0.50	4.74	3.58	13.48	10.18
45	1.50	0.35	7.40	5.59	20.88	15.78
60	2.00	0.25	11.50	8.69	32.38	24.46
80	2.50	0.18	7.94	6.00	40.32	30.46
120	3.00	0.13	5.38	4.06	45.70	34.53
170	3.50	0.09	3.83	2.89	49.53	37.42
200	3.75	0.07	1.72	1.30	51.25	38.72
230	4.00	0.06	1.56	1.18	52.81	39.90

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
				2.05	1.51	0.19
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.64	0.32	1.25	-0.62	3.6	

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-17 #S-1

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude:

1129231.6

Longitude:

880021.6

Coordinate System:

Florida State Plane East

Elevation (ft):

-9.8 MLLW

USCS:

SW

Munsell:

Comments:

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%): #200 - 5.04 #230 - 3.88	Organics (%):	Carbonates (%):	Shells (%):
214.05	206.66	0.59	0.15				0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	0.05	0.02	0.05	0.02	
4	-2.25	4.76	0.07	0.03	0.12	0.06	
5	-2.00	4.00	0.21	0.10	0.33	0.15	
7	-1.50	2.83	0.46	0.21	0.79	0.37	
10	-1.00	2.00	0.87	0.41	1.66	0.78	
14	-0.50	1.41	0.94	0.44	2.60	1.21	
18	0.00	1.00	1.42	0.66	4.02	1.88	
25	0.50	0.71	2.10	0.98	6.12	2.86	
35	1.00	0.50	2.80	1.31	8.92	4.17	
45	1.50	0.35	8.64	4.04	17.56	8.20	
60	2.00	0.25	37.02	17.30	54.58	25.50	
80	2.50	0.18	57.39	26.81	111.97	52.31	
120	3.00	0.13	52.47	24.51	164.44	76.82	
170	3.50	0.09	32.16	15.02	196.60	91.85	
200	3.75	0.07	6.66	3.11	203.26	94.96	
230	4.00	0.06	2.49	1.16	205.75	96.12	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
3.76	3.24	2.96	2.46	1.99	1.73	1.10	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	2.36	0.19	0.81	-1.49	8.01		

GRANULARMETRIC REPORT - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS GDT 2/27/17

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-17 #S-2

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude:

1129231.6

Longitude:

880021.6

Coordinate System:

Florida State Plane East

Elevation (ft):

-12.5 MLLW

USCS:

SW

Munsell:

Comments:

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%): #200 - 2.43 #230 - 1.80	Organics (%):	Carbonates (%):	Shells (%):
153.24	149.68	0.15	-0.62				0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	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	0.17	0.11	0.17	0.11	
5	-2.00	4.00	0.52	0.34	0.69	0.45	
7	-1.50	2.83	1.06	0.69	1.75	1.14	
10	-1.00	2.00	1.01	0.66	2.76	1.80	
14	-0.50	1.41	1.69	1.10	4.45	2.90	
18	0.00	1.00	2.26	1.47	6.71	4.38	
25	0.50	0.71	2.62	1.71	9.33	6.09	
35	1.00	0.50	3.84	2.51	13.17	8.59	
45	1.50	0.35	8.97	5.85	22.14	14.45	
60	2.00	0.25	29.07	18.97	51.21	33.42	
80	2.50	0.18	42.65	27.83	93.86	61.25	
120	3.00	0.13	36.80	24.01	130.66	85.26	
170	3.50	0.09	16.15	10.54	146.81	95.80	
200	3.75	0.07	2.70	1.76	149.51	97.57	
230	4.00	0.06	0.97	0.63	150.48	98.20	

Phi 5

Phi 16

Phi 25

Phi 50

Phi 75

Phi 84

Phi 95

3.46

2.97

2.79

2.30

1.78

1.54

0.18

Moment

Mean Phi

Mean mm

Sorting

Skewness

Kurtosis

Statistics

2.14

0.23

0.96

-1.66

7.16

GRANULARMETRIC REPORT - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS GDT 2/27/17

Granularmetric Report

Depths and elevations based on measured values



American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-18 #S-1

Analysis Date: 02-27-17

Analyzed By: FW

Latitude:

1128787.2

Longitude:

880094.4

Coordinate System:

Florida State Plane East

Elevation (ft):

-10.0 MLLW

USCS:

SW

Munsell:

Comments:

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
176.27	170.62	0.33	0.85	#200 - 5.08 #230 - 4.24			0.00

Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00
3/8"	-3.50	11.31	0.24	0.14	0.24	0.14
3.5	-2.50	5.66	1.50	0.85	1.74	0.99
4	-2.25	4.76	1.11	0.63	2.85	1.62
5	-2.00	4.00	1.17	0.66	4.02	2.28
7	-1.50	2.83	3.51	1.99	7.53	4.27
10	-1.00	2.00	4.89	2.77	12.42	7.05
14	-0.50	1.41	4.76	2.70	17.18	9.75
18	0.00	1.00	4.76	2.70	21.94	12.45
25	0.50	0.71	3.58	2.03	25.52	14.48
35	1.00	0.50	3.46	1.96	28.98	16.44
45	1.50	0.35	11.49	6.52	40.47	22.96
60	2.00	0.25	25.96	14.73	66.43	37.69
80	2.50	0.18	32.77	18.59	99.20	56.28
120	3.00	0.13	40.90	23.20	140.10	79.48
170	3.50	0.09	22.95	13.02	163.05	92.50
200	3.75	0.07	4.26	2.42	167.31	94.92
230	4.00	0.06	1.48	0.84	168.79	95.76

Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95
3.77	3.17	2.90	2.33	1.57	0.89	-1.37
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis	
Statistics	1.88	0.27	1.43	-1.47	4.74	

GRANULARMETRIC REPORT - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

GRANULARMETRIC REPORT - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report							
Depths and elevations based on measured values							
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-18 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude:		Longitude:		Coordinate System:		Elevation (ft):	
1128787.2		880094.4		Florida State Plane East		-13.5 MLLW	
USCS:		Munsell:		Comments:			
SW-SM							
Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%):	Organics (%):	Carbonates (%):	Shells (%):
192.83	174.60	0.55	0.27	#200 - 10.48 #230 - 10.01			0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	4.58	2.38	4.58	2.38	
3.5	-2.50	5.66	8.55	4.43	13.13	6.81	
4	-2.25	4.76	1.28	0.66	14.41	7.47	
5	-2.00	4.00	1.05	0.54	15.46	8.02	
7	-1.50	2.83	1.52	0.79	16.98	8.81	
10	-1.00	2.00	1.80	0.93	18.78	9.74	
14	-0.50	1.41	1.96	1.02	20.74	10.76	
18	0.00	1.00	3.18	1.65	23.92	12.40	
25	0.50	0.71	3.98	2.06	27.90	14.47	
35	1.00	0.50	7.99	4.14	35.89	18.61	
45	1.50	0.35	31.20	16.18	67.09	34.79	
60	2.00	0.25	67.62	35.07	134.71	69.86	
80	2.50	0.18	15.64	8.11	150.35	77.97	
120	3.00	0.13	10.59	5.49	160.94	83.46	
170	3.50	0.09	9.76	5.06	170.70	88.52	
200	3.75	0.07	1.92	1.00	172.62	89.52	
230	4.00	0.06	0.91	0.47	173.53	89.99	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	3.05	2.32	1.72	1.20	0.68	-2.91	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.24	0.42	1.63	-1.7	5.55		

Granularmetric Report

Depths and elevations based on measured values



American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-19 #S-1

Analysis Date: 02-27-17

Analyzed By: FW

Latitude:

1128322.1

Longitude:

880358.8

Coordinate System:

Florida State Plane East

Elevation (ft):

-10.1 MLLW

USCS:

SW

Munsell:

Comments:

Dry Weight (g):

147.81

Wash Weight (g):

142.66

Pan Retained (g):

0.15

Sieve Loss (%):

0.11

Fines (%):

#200 - 4.68
#230 - 3.69

Organics (%):

Carbonates (%):

Shells (%):

0.00

Sieve Number

Sieve Size
(Phi)

Sieve Size
(Millimeters)

Grams
Retained

% Weight
Retained

Cum. Grams
Retained

C. % Weight
Retained

3/4"

-4.25

19.03

0.00

0.00

0.00

0.00

3/8"

-3.50

11.31

0.00

0.00

0.00

0.00

3.5

-2.50

5.66

0.40

0.27

0.40

0.27

4

-2.25

4.76

0.07

0.05

0.47

0.32

5

-2.00

4.00

0.29

0.20

0.76

0.51

7

-1.50

2.83

0.59

0.40

1.35

0.91

10

-1.00

2.00

1.03

0.70

2.38

1.61

14

-0.50

1.41

0.44

0.30

2.82

1.91

18

0.00

1.00

0.86

0.58

3.68

2.49

25

0.50

0.71

0.83

0.56

4.51

3.05

35

1.00

0.50

1.05

0.71

5.56

3.76

45

1.50

0.35

3.08

2.08

8.64

5.85

60

2.00

0.25

11.62

7.86

20.26

13.71

80

2.50

0.18

29.69

20.09

49.95

33.79

120

3.00

0.13

54.41

36.81

104.36

70.60

170

3.50

0.09

32.54

22.01

136.90

92.62

200

3.75

0.07

3.99

2.70

140.89

95.32

230

4.00

0.06

1.46

0.99

142.35

96.31

Phi 5

Phi 16

Phi 25

Phi 50

Phi 75

Phi 84

Phi 95

3.72

3.30

3.10

2.72

2.28

2.06

1.30

Moment

Mean Phi

Mean mm

Sorting

Skewness

Kurtosis

Statistics

2.55

0.17

0.86

-2.77

14.47

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17

GRANULARMETRIC REPORT - SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2 GPJ BIG CARLOS PASS.GDT 2/27/17

Granularmetric Report Depths and elevations based on measured values				 AMERICAN VIBRACORE SERVICES			
Project Name: Saint Lucie County Reach 1 Permitting				American Vibracore Services, Inc. 1215 Wallace Drive Delray Beach, FL 33444			
Sample Name: SL-17-V-19 #S-2							
Analysis Date: 02-27-17							
Analyzed By: FW							
Latitude: 1128322.1		Longitude: 880358.8		Coordinate System: Florida State Plane East		Elevation (ft): -12.2 MLLW	
USCS: SW-SM		Munsell:		Comments:			
Dry Weight (g): 171.81	Wash Weight (g): 158.19	Pan Retained (g): 0.11	Sieve Loss (%): 0.48	Fines (%): #200 - 8.72 #230 - 8.47	Organics (%):	Carbonates (%):	Shells (%): 0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	2.63	1.53	2.63	1.53	
3.5	-2.50	5.66	2.49	1.45	5.12	2.98	
4	-2.25	4.76	0.29	0.17	5.41	3.15	
5	-2.00	4.00	0.42	0.24	5.83	3.39	
7	-1.50	2.83	1.14	0.66	6.97	4.06	
10	-1.00	2.00	1.40	0.81	8.37	4.87	
14	-0.50	1.41	1.64	0.95	10.01	5.83	
18	0.00	1.00	2.50	1.46	12.51	7.28	
25	0.50	0.71	4.05	2.36	16.56	9.64	
35	1.00	0.50	9.51	5.54	26.07	15.17	
45	1.50	0.35	34.17	19.89	60.24	35.06	
60	2.00	0.25	69.04	40.18	129.28	75.25	
80	2.50	0.18	19.65	11.44	148.93	86.68	
120	3.00	0.13	5.39	3.14	154.32	89.82	
170	3.50	0.09	1.87	1.09	156.19	90.91	
200	3.75	0.07	0.63	0.37	156.82	91.28	
230	4.00	0.06	0.44	0.26	157.26	91.53	
Phi 5	Phi 16	Phi 25	Phi 50	Phi 75	Phi 84	Phi 95	
	2.38	2.00	1.69	1.25	1.02	-0.93	
Moment	Mean Phi	Mean mm	Sorting	Skewness	Kurtosis		
Statistics	1.37	0.39	1.19	-2.51	10.78		

Granularmetric Report

Depths and elevations based on measured values



Project Name: Saint Lucie County Reach 1 Permitting

Sample Name: SL-17-V-19 #S-3

Analysis Date: 02-27-17

Analyzed By: FW

American Vibracore Services, Inc.
1215 Wallace Drive
Delray Beach, FL 33444

Latitude:

1128322.1

Longitude:

880358.8

Coordinate System:

Florida State Plane East

Elevation (ft):

-13.0 MLLW

USCS:

SW-SM

Munsell:

Comments:

Dry Weight (g):	Wash Weight (g):	Pan Retained (g):	Sieve Loss (%):	Fines (%): #200 - 9.38 #230 - 8.82	Organics (%):	Carbonates (%):	Shells (%):
196.62	179.94	0.02	0.33				0.00
Sieve Number	Sieve Size (Phi)	Sieve Size (Millimeters)	Grams Retained	% Weight Retained	Cum. Grams Retained	C. % Weight Retained	
3/4"	-4.25	19.03	0.00	0.00	0.00	0.00	
3/8"	-3.50	11.31	0.00	0.00	0.00	0.00	
3.5	-2.50	5.66	1.12	0.57	1.12	0.57	
4	-2.25	4.76	0.24	0.12	1.36	0.69	
5	-2.00	4.00	0.34	0.17	1.70	0.86	
7	-1.50	2.83	1.09	0.55	2.79	1.42	
10	-1.00	2.00	1.98	1.01	4.77	2.43	
14	-0.50	1.41	2.07	1.05	6.84	3.48	
18	0.00	1.00	3.64	1.85	10.48	5.33	
25	0.50	0.71	5.80	2.95	16.28	8.28	
35	1.00	0.50	12.04	6.12	28.32	14.40	
45	1.50	0.35	40.72	20.71	69.04	35.11	
60	2.00	0.25	78.59	39.97	147.63	75.08	
80	2.50	0.18	21.30	10.83	168.93	85.92	
120	3.00	0.13	6.78	3.45	175.71	89.37	
170	3.50	0.09	1.79	0.91	177.50	90.28	
200	3.75	0.07	0.68	0.35	178.18	90.62	
230	4.00	0.06	1.10	0.56	179.28	91.18	

Phi 5

Phi 16

Phi 25

Phi 50

Phi 75

Phi 84

Phi 95

2.41

2.00

1.69

1.26

1.04

-0.09

Moment

Mean Phi

Mean mm

Sorting

Skewness

Kurtosis

Statistics

1.49

0.36

0.88

-1.72

9.13

GRANULARMETRIC REPORT SAINT LUCIE COUNTY - REACH 1 PERMITTING AND DREDGING ENGINEERING SERVICES 2.GPJ BIG CARLOS PASS.GDT 2/27/17