

**NAVIGATION STUDY FOR
LAKE WORTH INLET, FLORIDA**

**DRAFT INTEGRATED FEASIBILITY REPORT
AND ENVIRONMENTAL IMPACT STATEMENT**

**APPENDIX A
ENGINEERING**

Boring Logs and Laboratory Results:

Entrance Channel

Area A-1

Area B-2

Hole No. CB-PBH95-1

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
	1. PROJECT Palm Beach Harbor	10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=817,598 Y=887,290	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) CB-PBH95-1	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 2 undisturbed: 0		
5. NAME OF DRILLER C. Robbins	14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.	16. DATE HOLE STARTED COMPLETED 8/8/95 8/8/95		
8. DEPTH DRILLED INTO ROCK 0 Ft.	17. ELEVATION TOP OF HOLE -36.8 Ft.		
9. TOTAL DEPTH OF HOLE 4.5 Ft.	18. TOTAL CORE RECOVERY FOR BORING 33 %		
		19. SIGNATURE OF Geologist Jim Arthur	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/5'	
-36.8	0					-36.8	0	
		[Stippled Pattern]	SAND, gray fine poorly graded quartz sand, some small shell fragments (SP)	0		SPLIT SPOON	7 27 46	
					58	1	SPLIT SPOON	7 56 50+
				High blow counts shown are due to sand packing in casing	47	2	SPLIT SPOON	14 15 14
-41.3	4.5					-41.3		
			NOTE: Soils are field visually classified in accordance with the Unified Soils Classification System. Samples recovered using a 140# hammer with 30" drop used on a 2 foot split spoon (1-3/8" ID x 2" OD) SAMPLE LABORATORY ELEVATION CLASSIFICATION -35.3 to -33.8 (SP)			Set 6 inch casing to depth 2.4 feet, drilled using Basco salt water drilling mud.	5 7.5 10 12.5 15 17.5 20 22.5	

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. MAR 71	PROJECT Palm Beach Harbor	HOLE NUMBER CB-PBH95-1
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Hole No. CB-PBH95-2

DRILLING LOG		DIVISION	INSTALLATION		SHEET 1 OF 1		
1. PROJECT Palm Beach Harbor		South Atlantic	Jacksonville District				
2. LOCATION (Coordinates or Station) X=817,221 Y=887,325		10. SIZE AND TYPE OF BIT See Remarks		11. DATUM FOR ELEVATION SHOWN (TBM or NSL) MLW (FEET)			
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 2 undisturbed: 0			
4. HOLE NO. (As shown on drawing title and file number) CB-PBH95-2		14. TOTAL NUMBER OF CORE BOXES 1		15. ELEVATION GROUND WATER TIDAL			
5. NAME OF DRILLER C. Robbins		16. DATE HOLE STARTED COMPLETED 8/8/95 8/8/95		17. ELEVATION TOP OF HOLE -38.0 Ft.			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		18. TOTAL CORE RECOVERY FOR BORING 40 %		19. SIGNATURE OF Geologist Jim Arthur			
7. THICKNESS OF BURDEN Ft.		18. TOTAL CORE RECOVERY FOR BORING 40 %		19. SIGNATURE OF Geologist Jim Arthur			
8. DEPTH DRILLED INTO ROCK 0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 40 %		19. SIGNATURE OF Geologist Jim Arthur			
9. TOTAL DEPTH OF HOLE 3.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 40 %		19. SIGNATURE OF Geologist Jim Arthur			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ 'S
-38.0	.0					-38.0	0
		[Dotted pattern]	SAND, gray fine poorly graded quartz sand, some small shell fragments (SP)	47	1	SPLIT SPOON	5 22
							-39.5
				33	2	SPLIT SPOON	11 13
-41.0	3.0					-41.0	18 2.5
			NOTE: Soils are field visually classified in accordance with the Unified Soils Classification System. Samples recovered using a 140# hammer with 30" drop used on a 2 foot split spoon (1-3/8" ID x 2" OD) SAMPLE LABORATORY ELEVATION CLASSIFICATION -38.0 to -39.5 (SP)			Set 6 inch casing to depth 1.2 feet, drilled using Basco salt water drilling mud.	5 7.5 10 12.5 15 17.5 20 22.5

ENR FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. MAR 71

PROJECT
Palm Beach Harbor

HOLE NUMBER
CB-PBH95-2

Hole No. CB-PBH95-6

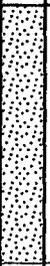
DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
	1. PROJECT Palm Beach Harbor	10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=815,526 Y=887,492	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314		
4. HOLE NO. (As shown on drawing title and file number) CB-PBH95-6	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 2 undisturbed: 0		
5. NAME OF DRILLER C. Robbins	14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.	16. DATE HOLE STARTED COMPLETED 8/9/95 8/9/95		
8. DEPTH DRILLED INTO ROCK 0 Ft.	17. ELEVATION TOP OF HOLE -35.6 Ft.		
9. TOTAL DEPTH OF HOLE 4.5 Ft.	18. TOTAL CORE RECOVERY FOR BORING 47 %		
	19. SIGNATURE OF Geologist Jim Arthur		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/5'
-35.6	0					-35.6	0
			SAND, gray fine to medium poorly graded quartz sand, trace small shell fragments (SP)	0		SPLIT SPOON	2
-37.1	1.5		below elevation -37.1, some shell fragments up to 3/8"				1
				67	1	SPLIT SPOON	0
			High blow counts shown are due to sand packing in casing				24
							36
							52
				77	2	SPLIT SPOON	14
-40.1	4.5					-40.1	48
							50+
			NOTE: Soils are field visually classified in accordance with the Unified Soils Classification System. Samples recovered using a 140# hammer with 30" drop used on a 2 foot split spoon (1-3/8" ID x 2" OD) SAMPLE LABORATORY ELEVATION CLASSIFICATION -37.1 to -38.6 (SP)			Set 6 inch casing to depth 6.1 feet, drilled using Basco salt water drilling mud.	5
							7.5
							10
							12.5
							15
							17.5
							20
							22.5

ENG FORM 1839 PREVIOUS EDITIONS ARE OBSOLETE. MAR 71	PROJECT Palm Beach Harbor	HOLE NUMBER CB-PBH95-6
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Hole No. CB-PBH95-7

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=814,926 Y=887,504		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) CB-PBH95-7		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 3 undisturbed: 0	
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/9/95 8/9/95	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -36.8 Ft.	
9. TOTAL DEPTH OF HOLE 4.5 Ft.		18. TOTAL CORE RECOVERY FOR BORING 58 %	
19. SIGNATURE OF Geologist Jim Arthur			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/5'	
-36.8	0					-36.8	0	
			SAND, gray fine to medium poorly graded quartz sand, some shell fragments up to 1/4 inch long (SP)	0		SPLIT SPOON	1 0 0	
					67	1	SPLIT SPOON	6 16 33
-39.8	3.0		below elevation -39.8, trace of shell fragments		77	2	SPLIT SPOON	7 14 49
-41.3	4.5		High blow counts shown are due to sand packing in casing					
			<p>NOTE: Soils are field visually classified in accordance with the Unified Soils Classification System.</p> <p>Samples recovered using a 140# hammer with 30" drop used on a 2 foot split spoon (1-3/8" ID x 2" OD)</p> <p>SAMPLE LABORATORY ELEVATION CLASSIFICATION</p> <p>-36.8 to -38.3 (SP) -38.3 to -39.8 (SP-SM)*</p> <p>* Visual classification based on gradation curve. No Atterberg Limits.</p>			Set 6 inch casing to depth 4.8 feet, drilled using Basco salt water drilling mud.	5 7.5 10 12.5 15 17.5 20 22.5	

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. MAR 71	PROJECT Palm Beach Harbor	HOLE NUMBER CB-PBH95-7
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Hole No. CB-PBH95-8

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=814,524 Y=887,582		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) CB-PBH95-8		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 2 undisturbed: 0	
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/9/95 8/9/95	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -35.8 Ft.	
9. TOTAL DEPTH OF HOLE 4.5 Ft.		18. TOTAL CORE RECOVERY FOR BORING 36 %	
19. SIGNATURE OF Geologist Jim Arthur			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ft.
-35.8	.0					-35.8	0
			SAND, grayish tan fine to medium poorly graded quartz sand, some small shell fragments to 1/8 inch (SP)	0		SPLIT SPOON	0
						-37.3	0
				60	1	SPLIT SPOON	6
-38.8	3.0		below elevation -38.8 grayish tan, gray, and dark gray, trace of silt and fine to coarse gravel and shell fragments.			-38.8	21
							49
				47	2	SPLIT SPOON	17
-40.3	4.5		High blow counts shown are due to sand packing in casing			-40.3	23
							56
			NOTE: Soils are field visually classified in accordance with the Unified Soils Classification System. Samples recovered using a 140# hammer with 30" drop used on a 2 foot split spoon (1-3/8" ID x 2" OD) SAMPLE LABORATORY ELEVATION CLASSIFICATION -37.3 to -38.8 (SP-SM)* * Visual classification based on gradation curve. No Atterberg Limits.			Set 6 inch casing to depth 3.4 feet, drilled using Basco salt water drilling mud.	5
							7.5
							10
							12.5
							15
							17.5
							20
							22.5

ENG FORM 1636 PREVIOUS EDITIONS ARE OBSOLETE. MAR 71	PROJECT Palm Beach Harbor	HOLE NUMBER CB-PBH95-8
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X = 815,920 Y = 887.550

MOLE NO. CB-1

DEPARTMENT OF THE ARMY DIVISION <u>Corps of Engineers</u> INSTALLATION <u>Jacksonville, Florida</u>			1- PROJECT PALM BEACH HARBOR		SHEET 1 OF 1	
DRILLING LOG			2- LOCATION (Coordinates or Station) STA: 42+00 RGE: 150			
4- HOLE NO. (As shown on drawing title and file no.) CB-1			3- DRILLING AGENCY Corps of Engineers			
6- DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED DEGREES WITH VERTICAL			7- THICKNESS OF OVER-BURDEN		8- DEPTH DRILLED INTO ROCK	9- TOTAL DEPTH OF HOLE <u>9.0</u>
10- SIZE AND TYPE OF BIT <u>SEE</u> <u>2" I.D. Spoon</u>			11- DATUM FOR ELEVATION SHOWN (TBM or MSL) <u>MLW</u>		12- MANUFACTURER'S DESIGNATION OF DRILL <u>Sprague & Henwood 40c</u>	
13- TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED		UNDISTURBED	14- TOTAL NO. CORE BOXES <u>1/2</u>	15- ELEV. GROUND WATER <u>tidal</u>	16- DATE MOLE STARTED <u>5-10-62</u> COMPLETED <u>5-10-62</u>	
17- ELEV. TOP OF HOLE -33.0		18- TOTAL CORE RECOVERY FOR BORING (%) 82%		19- XXXXXXXXXX <u>Geologist</u> <u>R. G. Kretzman</u>		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
-33.0	0.0					Bit & Barrel Bls/Ft
			SAND, medium to fine, quartz, gray, shelly, limestone fragments, compact bottom 5.0' (SP)		1	WSHD CASING
						-37.0
						16
						24
						25
						26
						32
-42.0	9.0					
						300# Hammer with 18" Drop Used on 2" I.D. Spoon

X = 815,120 Y = 887,590

SOLE NO. CB-2

DEPARTMENT OF THE ARMY DIVISION <u>Corps of Engineers</u> INSTALLATION <u>Jacksonville, Florida-</u>			1. PROJECT PALM BEACH HARBOR		SHEET <u>1</u> OF <u>1</u>	
DRILLING LOG			2. LOCATION (coordinates or Station) STA: 50+00 RGE: R.G.100			
4. HOLE NO. (As shown on drawing title and file No.) CB-2			5. NAME OF DRILLER G. M. Lineberger			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED DEGREES WITH VERTICAL			7. THICKNESS OF OVER-BURDEN		8. DEPTH DRILLED INTO ROCK	
10. SIZE AND TYPE OF BIT <u>SEE</u> 2" I.S. Spoon REMARKS			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		12. MANUFACTURER'S DESIGNATION OF DRILL (CD-21) SPRAGUE & HENWOOD 4.0C	
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED UNDISTURBED			14. TOTAL NO. CORE BOXES <u>1</u>		15. ELEV. GROUND WATER <u>tidal</u>	
17. ELEV. TOP OF HOLE -28.3 (bottom of inlet)			18. TOTAL CORE RECOVERY FOR BORING (%) <u>76</u>		19. Geologist Geologist R.G. Kretchman	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (drilling time, water loss, depth of weathering, etc., if significant)
-28.3	0.0					Bit & Barrel Bls/Ft
-33.3	5.0		SANDSTONE, Hard, tan, fossiliferous, very porous, very permeable, very friable, consists of 90% sand and 10% calcareous matrix	100		-28.3 -30.3 DRILLED CASING NX DIA
-36.0	7.7		SANDSTONE, medium hard and as above	88		2" I.D. Spoon 90 92
-38.7	10.4		SAND, medium to fine, quartz, tan, shelly (fine fragments), limestone fragments, wet, (SP)		1	53 56 77
-43.3	15.0		SANDSTONE - medium hard, tan, fossiliferous, very porous, very permeable, very friable, 90% sand, 10% matrix	80	2	90 32 85 105
						300# Hammer with 18" Drop used on 2" I.D. Spogn

DEPARTMENT OF THE ARMY Corps of Engineers DIVISION Jacksonville, Florida INSTALLATION		1- PROJECT Palm Beach Harbor		SHEET 1 OF 1		
DRILLING LOG		2- LOCATION (Coordinates or Station) Sta 50+00 Rge 400		3- DRILLING AGENCY Corps of Engineers		
4- HOLE NO. (As shown on drawing title and file No.) CB-3		5- NAME OF DRILLER G. M. Lineberger				
6- DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED DEGREES WITH VERTICAL		7- THICKNESS OF OVER-BURDEN		8- DEPTH DRILLED INTO ROCK		
10- SIZE AND TYPE OF BIT 2" I.D. Spoon-See remarks		11- DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		12- MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood 40C		
13- TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED UNDISTURBED		14- TOTAL NO. CORE BOXES 1		15- ELEV. GROUND WATER Tidal		
17- ELEV. TOP OF HOLE -20.7		18- TOTAL CORE RECOVERY FOR BORING (%) 76		16- DATE HOLE STARTED 5/24/62 COMPLETED 5/24/62		
19- SUPERVISOR R. G. Kretchman		19- INSPECTOR Geologist				
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
-20.7	0.0					Bit & Barrel Bls/Ft
			LIMESTONE hard, gray to tan, fossiliferous, very porous, friable, very permeable, consists of 90% sandy shells and 10% calcareous matrix, layers of sandstone from -28.9 to -29.3 and from -29.5 to -29.7	0		Drilled Casing
				80		NX DIA
				100		NX DIA
				68		NX DIA
				100		NX DIA
-31.7	11.0					-31.7
			SANDSTONE, medium hard, gray shelly, very porous, friable very permeable, 90% sand, 10% calcareous matrix	75		2" I.D. SPOON
-35.7	15.0					35
						70
						72
						90
			SANDSTONE, hard and as above	100		NX DIA
						-37.7
						NX DIA
-39.7	19.0		SANDSTONE, medium hard, gray shelly, friable, 90% sand, 10% matrix	10		-39.7
						40
-41.7	21.0					90
						300# Hammer w/18" Drop Used on 2" I.D. Spoon

X = 814,410 Y = 887,700

HOLE NO. CB-4

DEPARTMENT OF THE ARMY DIVISION Corps of Engineers JACKSONVILLE, Florida INSTALLATION _____			1. PROJECT PALM BEACH HARBOR		SHEET 1 OF 1	
			2. LOCATION (Coordinates or Station) STA: 57+20 RGE: -25			
DRILLING LOG			3. DRILLING AGENCY Corps of Engineers			
			5. NAME OF DRILLER G. M. Lineberger			
4. HOLE NO. (As shown on drawing title and file No.) CB-4			9. TOTAL DEPTH OF HOLE -23.2			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED DEGREES WITH VERTICAL			7. THICKNESS OF OVERBURDEN		8. DEPTH DRILLED INTO ROCK	
10. SIZE AND TYPE OF BIT See remarks		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood 40c		
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED UNDISTURBED		14. TOTAL NO. CORE BOXES 1		15. ELEV. GROUND WATER tidal		16. DATE HOLE STARTED / COMPLETED 5/9/62 / 5/9/62
17. ELEV. TOP OF HOLE -18.8		18. TOTAL CORE RECOVERY FOR BORING (%) 66%		19. Geologist R. G. Kretzman Geologist		
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (drilling time, water loss, depth of weathering, etc., if significant)
						Bit & Barrel Bls/Ft
-18.8	0.0			0	-	-18.8
-20.2	1.4		LIMESTONE, hard, tan to gray, fossiliferous, (shells), sandy, very porous, very permeable, friable	95		-19.8 Casing
			SANDSTONE, hard, gray, fossiliferous, very porous, very permeable, very friable, consists of 80% to 90% sand in a 10% to 20% calcareous matrix	97		-21.8 NX DIA
				92		-24.8 NX DIA
						-27.3
				92		-29.8 NX DIA
				50		-32.3 NX DIA
				65		-34.8 NX DIA
				NO		NX
				REC		-37.3 DIA
				50		-39.8 NX DIA
				36		-42.0 NX DIA
-42.0	23.2					

DEPARTMENT OF THE ARMY DIVISION <u>Corps of Engineers</u> INSTALLATION <u>Jacksonville, Florida</u>			1. PROJECT Palm Beach Harbor		SHEET 1 OF 1	
DRILLING LOG			2. LOCATION (Coordinates or Station) Sta 58+50 Rge - 300			
4. HOLE NO. (As shown on drawing title and title no.) CB-5			3. DRILLING AGENCY Corps of Engineers			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED DEGREES WITH VERTICAL			7. THICKNESS OF OVERBURDEN		8. DEPTH DRILLED INTO ROCK	9. TOTAL DEPTH OF HOLE 12
10. SIZE AND TYPE OF BIT See Remarks *			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood 40c	
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED UNDISTURBED			14. TOTAL NO. CORE BOXES 1/2	15. ELEV. GROUND WATER Tidal	16. DATE HOLE STARTED 5/12/62	COMPLETED 5/12/62
17. ELEV. TOP OF HOLE -30.0			18. TOTAL CORE RECOVERY FOR BORING (%) 70		19. Geologist Geologist R. G. Kretchman	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (drilling time, water loss, depth of weathering, etc., if significant)
-30.0	0.0					Bit & Barrel Bls/Ft -30.0
			SANDSTONE-hard, tan, fossiliferous, friable, very porous, very permeable; consists of 90% sand and 10% calcareous matrix.	40	-	-32.0 Drilled Casing
				40	-	-34.5 NX DIA
-37.0	7.0			40	-	-37.0 NX DIA
			SANDSTONE- medium hard and as above	100	-	2" I. D. Spoon 90
-42.0	12.0					-42.0 105 73 92 89
						* 300# Hammer with 18" Drop used on 2" I. D. Spoon

X=819,440 Y=887,590

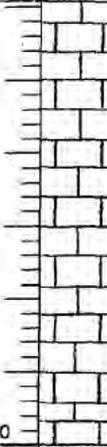
HOLE NO. CB-14

DEPARTMENT OF THE ARMY Corps of Engineers DIVISION _____ INSTALLATION <u>Jacksonville, Florida</u>			1. PROJECT Palm Beach Harbor		SHEET <u>1</u> OF <u>1</u>	
DRILLING LOG			2. LOCATION (Coordinates or Station) STA 56+80 RGE 110			
4. HOLE NO. (As shown on drawing title and file no.) CB-14			3. DRILLING AGENCY Corps of Engineers			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED DEGREES WITH VERTICAL _____			7. THICKNESS OF OVERBURDEN _____		8. DEPTH DRILLED INTO ROCK _____	
10. SIZE AND TYPE OF BIT See remarks			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		12. MANUFACTURER'S DESIGNATION OF DRILL Sprague & Henwood 40C	
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED _____ UNDISTURBED _____			14. TOTAL NO. CORE BOXES <u>1/2</u>		15. ELEV. GROUND WATER <u>Tidal</u>	
17. ELEV. TOP OF HOLE -28.5			18. TOTAL CORE RECOVERY FOR BORING (%) <u>88</u>		19. SIGNATURE OF INSPECTOR Robert G. Kretzman	
16. DATE HOLE STARTED <u>2/11/64</u> COMPLETED <u>2/11/64</u>			20. SIGNATURE OF GEOLOGIST _____			
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
-28.5	0.0					Bit & Barrel Bls/Ft
-30.5	2.0		SAND, fine, quartz, gray, loose	0		-28.5 2" I.D. Spoon Washed -30.5
			SANDSTONE, hard tan, fossiliferous porous, permeable, very friable, consists of 50% quartz sand and 50% sand-sized shell fragments with calcareous matrix	88		-31.5 " " Drilled Casing NX DIAMOND -36.5
				90		" " -39.5
-42.5	14.0			65		" " -42.5
						300# Hammer /with 18" Drop Used on 2" I.D. Spoon

X=214,915 Y=887,575

Hole No. CB-22

DRILLING LOG		DIVISION South Atlantic	INSTALLATION JACKSONVILLE DISTRICT	SHEET OF 1 SHEETS
1. PROJECT PALM BEACH HARBOR		10. SIZE AND TYPE OF BIT See remarks		
2. LOCATION (Coordinates or Station) Sta: 52+15 Rge: 115		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL JOY		
4. HOLE NO. (As shown on drawing title and file number) CB-22		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED: UNDISTURBED:		
5. NAME OF DRILLER B. J. Sealey		14. TOTAL NUMBER CORE BOXES 1/2		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED: 11/18/65 COMPLETED: 11/18/65		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE -27.4		
9. TOTAL DEPTH OF HOLE 15.0'		18. TOTAL CORE RECOVERY FOR BORING 82 %		
		19. SPACING OF SAMPLES Geologist J.S. Gentile		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
a	b	c	d	e	f	g	
-27.4	0.0					BIT & BARREL Bls/ft -27.4	
			LIMESTONE, hard, very porous, permeable, thin bedded, very fossiliferous (coquina), very sandy, tan, thin lenses of loose sand.	90		2" I.D. Spoon 80 133 272 388 366	
			dark gray, very sandy from -32.4 to -42.4				260 196 175 160 126
					100		-32.4 -37.4
							200 190 148 240 271
					56		-42.4
-42.4	15.0					300# Hammer with 18" drop used on 2" I.D. spoon.	

X = 814,370 Y = 887,340

Hole No. CB-23

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1 SHEETS
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See remarks		
2. LOCATION (Coordinates or Station) Sta: 57+50 Rge 325		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY CORPS OF ENGINEERS		12. MANUFACTURER'S DESIGNATION OF DRILL JOY		
4. HOLE NO. (As shown on drawing title and file number) CB-23		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
5. NAME OF DRILLER B. J. Sealey		14. TOTAL NUMBER CORE BOXES 1/2		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER Tidal		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED 10/26/65 COMPLETED 10/26/65		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE -38.4		
9. TOTAL DEPTH OF HOLE 5.0		18. TOTAL CORE RECOVERY FOR BORING 66 %		
		19. LOGGING SUPERVISOR Geologist J. S. Gentile		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
-38.4	0.0					BIT & BARREL Bls/Pt
-39.2	0.8		SAND, fine to medium, quartz, tan, shelly (SP)		1	2" I.D. Spoon
			LIMESTONE, hard, very porous, very fossiliferous (Coquina) sandy, tan	66		
-43.4	5.0					300# Hammer with 18" drop used on 2" I.D. Spoon

3
16

X=815,380 Y=887,560

Hole No. CB-38

DRILLING LOG			DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1 SHEETS	
1. PROJECT Palm Beach Harbor			10. SIZE AND TYPE OF BIT See remarks			
2. LOCATION (Coordinates or Station) STA: 47/50 RGE: 150			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW			
3. DRILLING AGENCY Corps of Engineers			12. MANUFACTURER'S DESIGNATION OF DRILL Joy			
4. HOLE NO. (As shown on drawing title and file number) CB-38			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN			
5. NAME OF DRILLER B. J. Sealey			14. TOTAL NUMBER CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER Tidal			
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED 11/16/65 COMPLETED 11/16/65			
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE -32.8			
9. TOTAL DEPTH OF HOLE 10.0'			18. TOTAL CORE RECOVERY FOR BORING 55 %			
			19. Geologist: J. S. Gentile			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
-32.8	0.0					Bit & Barrel Bls/Ft -32.8
			Sand, fine to medium, quartz very shelly, tan (SP)	58	1	2" I. D. Spoon 5 8 11 14
			Gray very tight from -38.0 to -40.8			-37.8 20
			Lenses of sandy limestone, light gray from -40.8 to -42.8, thin layer of compacted, dark brown peat from -40.8 to -41.1	52	2	" " 38 74 89 40 48
-42.8	10.0					-42.8 300# hammer with 18" drop used on 2" I. D. Spoon

X = 815,730 Y = 887,485

Hole No. CB-39

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET OF 1 SHEETS 1
1. PROJECT PALM BEACH HARBOR		10. SIZE AND TYPE OF BIT See remarks		
2. LOCATION (Coordinates or Station) Sta. 44+00 Rge: 200		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL JOY		
4. HOLE NO. (As shown on drawing title and file number) CB-39		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED: UNDISTURBED:		
5. NAME OF DRILLER B. J. Sealey		14. TOTAL NUMBER CORE BOXES 1/2		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED: 11/17/65 COMPLETED: 11/17/65		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE -29.2		
9. TOTAL DEPTH OF HOLE 14.0'		18. TOTAL CORE RECOVERY FOR BORING 33 %		
		19. NAME OF DRILLER Geologist J.S. Gentile		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
-29.2	0.0					BIT & BARREL Bls/ft. -29.2
			SAND, fine to medium, quartz, shelly, tan, loose, (SP)	48	1	2" I.D. Spoon SETTLED 5
			tight, gray, shelly, from -37.2 to -43.2			7 10 -34.2
				36	2	" " 9 12 14 26 -39.2
				22	3	" " 18 40 45 -43.2
-43.2	14.0					300# Hammer with 18" drop used on 2" I.D. spoon.

X=815,880 Y=887,620

Hole No. CB-40

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1 SHEETS
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See remarks		
2. LOCATION (Coordinates or Station) Sta 42+50 Rge: 50		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL JOY		
4. HOLE NO. (As shown on drawing title and file number) CB-40		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED	UNDISTURBED
5. NAME OF DRILLER B. J. SKEALEY		14. TOTAL NUMBER CORE BOXES 1/3		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER Tidal	16. DATE HOLE STARTED 10/27/65 COMPLETED 10/27/65	17. ELEVATION TOP OF HOLE -34.1
7. THICKNESS OF OVERBURDEN		18. TOTAL CORE RECOVERY FOR BORING 41%		
8. DEPTH DRILLED INTO ROCK		19. NAME OF DRILLER Geologist J. S. Gentile		
9. TOTAL DEPTH OF HOLE 9.0				

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	SAMPLE NO. f	REMARKS (Drilling time, water lost, depth of weathering, etc., if significant) g
-34.1	0.0					BIT & BARREL Bls/Ft -34.1
			SAND, fine to medium, quartz, shelly, brownish gray, (SP)	22	1	2" I.D. Spoon 12 16 28 35 -39.1 48
		I.I.	thin bed of medium hard, porous, sandy, fossiliferous limestone from -38.6 to -39.0			25
-43.1	9.0		very tight, clean and light gray from -41.1 to -43.1	60	2	38 73 -43.1 87
						300# Hammer with 18" drop used on 2" I.D. Spoon

X = 816,780 Y = 887,600

Hole No. CB-41

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District		SHEET 1 OF 1 SHEETS	
1. PROJECT Palm Beach Harbor				10. SIZE AND TYPE OF BIT See remarks			
2. LOCATION (Coordinates or Station) Sta: 3450 Rge: 50				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW			
3. DRILLING AGENCY Corps of Engineers				12. MANUFACTURER'S DESIGNATION OF DRILL Joy			
4. HOLE NO. (As shown on drawing title and file number) CB-41				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER B. J. Sealey				14. TOTAL NUMBER CORE BOXES 1/3			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER Tidal		16. DATE HOLE STARTED 11/9/65 COMPLETED 11/9/65	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE -32.8			
8. DEPTH DRILLED INTO ROCK				18. TOTAL CORE RECOVERY FOR BORING 19 %			
9. TOTAL DEPTH OF HOLE 10.0'				19. NAME OF GEOLOGIST J. S. Gentile			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
-32.8	0.0					Bit & Barrel Bls/Ft -32.8	
			SAND, fine to medium, quartz and shells, gray (SP)	22	1	2" I. D. Spoon 7 10 7 21 -37.8 34	
			very tight, fine grained, light gray, no shells, from -38.3 to -42.8	16	2	" " 50 72 86 99 -42.8 101	
						300# hammer with 18" drop used on 2" I. D. Spoon.	

X = 817,320 Y = 827,400

Hole No. CB-42

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District		SHEET I OF 1 SHEETS	
1. PROJECT Palm Beach Harbor				10. SIZE AND TYPE OF BIT see remarks			
2. LOCATION (Coordinates or Station) Sta: 28+00 Rge: 50				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW			
3. DRILLING AGENCY Corps of Engineers				12. MANUFACTURER'S DESIGNATION OF DRILL Joy			
4. HOLE NO. (As shown on drawing title and file number) CB-42				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED UNDISTURBED	
5. NAME OF DRILLER B. J. Sealey				14. TOTAL NUMBER CORE BOXES 1/2			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER Tidal		16. DATE HOLE STARTED 10/22/65 COMPLETED 10/22/65	
7. THICKNESS OF OVERBURDEN				17. ELEVATION TOP OF HOLE -32.5			
8. DEPTH DRILLED INTO ROCK				18. TOTAL CORE RECOVERY FOR BORING 58%			
9. TOTAL DEPTH OF HOLE 10.0'				19. LOGGED BY Geologist J. S. Gentile			
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	
-32.5	0.0					Bit and Barrel Bls/ft -32.5	
			SAND, fine to medium, quartz, tan, slightly shelly, (SP)	56	1	2" I.D. spoon Settled 10 19 22	
			Very tight, gray, from -38.5 to -42.5	60	2	" " 31 84 90 126 193	
-42.5	10.0					300# hammer with 18" drop used on 2" I.D. spoon	

X = 814,700 Y = 887,690

Hole No. CB-43

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1 SHEETS
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See remarks		
2. LOCATION (Coordinates or Station) Sta: 54+50 Bgt: 0.5		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Joy		
4. HOLE NO. (As shown on drawing title and file number) CB-43		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		
5. NAME OF DRILLER L. D. Johnson		14. TOTAL NUMBER CORE BOXES 1/2		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER Tidal		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED 10/19/65 COMPLETED 10/19/65		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE -28.5		
9. TOTAL DEPTH OF HOLE -15.0'		18. TOTAL CORE RECOVERY FOR BORING 56 %		
		19. SOLOGRAPHIC SKETCH Geologist J. S. Gentile		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	SAMPLE NO.	REMARKS (Drilling time, water lost, depth of weathering, etc. if significant)
a	b	c	d	e	f	g
						Bit & Barrel Bls/ft.
-27.5	0.0					-27.5
-28.5	1.0	SAND, medium, quartz, tan, clean (SP)		1	2" I.D. spoon 4
				50		150
			LIMESTONE, hard, very porous, permeable, very sandy, fossiliferous, gray, could be considered a hard calcareous sandstone			170
						330
						-32.5 400
				40		144
						188
						240
						433
						-37.5 230
						71
				78		86
						90
						73
-42.5	15.0					-42.5 77
						300# hammer with 18" drop used on 2" I.D. spoon

X=814,680 Y=887,320

Hole No. CB-44

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1 SHEETS
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See remarks		
2. LOCATION (Coordinates or Station) Sta: 54+50 Rge: 375		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Joy		
4. HOLE NO. (As shown on drawing title and file number) CB-44		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED _____ UNDISTURBED _____		
5. NAME OF DRILLER B. J. Sealey		14. TOTAL NUMBER CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER Tidal		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED 11/22/65 COMPLETED 11/23/65		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE -11.6		
9. TOTAL DEPTH OF HOLE 30.0'		18. TOTAL CORE RECOVERY FOR BORING 69%		
		19. Geologist: Geologist: J. S. Gentile		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
-11.6	0.0					Bit & Barrel Bls/Ft
-12.8	1.2		Sand, fine to medium, quartz, shelly (Sp)		1	Settled
			Limestone - (calcareous sandstone or coquina) very porous, thin bedded, light gray, very fossiliferous, very permeable	70		2" I. D. Spoon
						41
						86
						190
						240
						-16.6
				80		" "
						70
						67
						116
						100
						170
						-21.6
						" "
						188
						116
				62		162
						183
						200
						-26.6
						" "
						146
						168
				96		136
						114
						196
						-31.6
						" "
						250
						161
				50		130
						119
						134
						-36.6
						" "
						122
						103
				56		205
						261
-41.6	30.0					-41.6
						300# hammer with 18" drop used on 2" I. D. Spoon

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=814,427 Y=887,420		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-1		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/5/95 8/5/95		
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -41.0 Ft.		
9. TOTAL DEPTH OF HOLE 1.3 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %		
		19. SIGNATURE OF Geologist Jim Arthur		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC	SAMPLE NUMBER	REMARKS Bit or Barrel
-41.0	.0					-41.0
-42.3	1.3		SAND Washed to top of rock at elevation -42.3.	0		-42.3 NX DRILL RODS
						Set 6 inch casing to depth 0.8 feet.

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=814,520 Y=887,577		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-2		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/5/95 8/5/95	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -35.3 Ft.	
9. TOTAL DEPTH OF HOLE 5.2 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %	
		19. SIGNATURE OF Geologist Jim Arthur	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-35.3	.0					-35.3
			SAND, gray fine to medium poorly graded quartz sand, large amount of small shell fragments (SP)	0		NX DRILL RODS
			Washed to top of rock at elevation -40.5.			
-40.5	5.2					-40.5
			Note: Soils are field classified in accordance with the Unified Soils Classification System.			Set 6 inch casing to depth 4.7 feet.

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=814,722 Y=887,585		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314	
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-3		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/5/95 8/5/95	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -39.5 Ft.	
9. TOTAL DEPTH OF HOLE 2.2 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %	
19. SIGNATURE OF Geologist Jim Arthur			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-39.5	.0					-39.5
			SAND, gray fine poorly graded quartz sand (SP) Washed to top of rock at elevation -41.7.	0		NX DRILL RODS
-41.7	2.2					-41.7
			Note: Soils are field classified in accordance with the Unified Soils Classification System.			Set 6 inch casing to depth 2.0 feet.

Hole No. WB-PBH95-4

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor	10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=814,927 Y=887,313	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-4	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER C. Robbins	14. TOTAL NUMBER OF CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.	16. DATE HOLE STARTED COMPLETED 8/5/95 8/5/95		
8. DEPTH DRILLED INTO ROCK 0 Ft.	17. ELEVATION TOP OF HOLE -37.3 Ft.		
9. TOTAL DEPTH OF HOLE 4.9 Ft.	18. TOTAL CORE RECOVERY FOR BORING 0 %		
19. SIGNATURE OF Geologist Jim Arthur			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-37.3	.0					-37.3
			SAND, gray fine medium poorly graded quartz sand, (SP)	0		NX DRILL RODS
-42.2	4.9		Washed to top of rock at elevation -42.2.			-42.2
			Note: Soils are field classified in accordance with the Unified Soils Classification System.			Set 6 inch casing to depth 3.8 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-4

Hole No. WB-PBH95-5

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=815,032 Y=887,665		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314		
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-5		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/5/95 8/5/95		
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -38.0 Ft.		
9. TOTAL DEPTH OF HOLE 3.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %		
19. SIGNATURE OF Geologist Jim Arthur				

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-38.0	.0					-38.0
			SAND			
			Washed to top of rock at elevation -41.0	0		NX DRILL RODS
-41.0	3.0					-41.0
						Set 6 inch casing to depth 2.7 feet.

Hole No. WB-PBH95-6

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1		
1. PROJECT Palm Beach Harbor		South Atlantic	Jacksonville District			
2. LOCATION (Coordinates or Station) X=815,220 Y=887,385			10. SIZE AND TYPE OF BIT See Remarks			
3. DRILLING AGENCY Corps of Engineers			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)			
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-6			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
5. NAME OF DRILLER C. Robbins			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			14. TOTAL NUMBER OF CORE BOXES			
7. THICKNESS OF BURDEN Ft.			15. ELEVATION GROUND WATER TIDAL			
8. DEPTH DRILLED INTO ROCK 0 Ft.			16. DATE HOLE STARTED COMPLETED 8/5/95 8/5/95			
9. TOTAL DEPTH OF HOLE 10.5 Ft.			17. ELEVATION TOP OF HOLE -37.0 Ft.			
			18. TOTAL CORE RECOVERY FOR BORING 0 %			
			19. SIGNATURE OF Geologist Jim Arthur			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-37.0	.0					-37.0
			SAND, gray fine poorly graded quartz sand, some small shell fragments (SP)			
				0		NX DRILL RODS
			Washed to top of rock at elevation -47.5			
-47.5	10.5					-47.5
			Note: Soils are field classified in accordance with the Unified Soils Classification System.			Set 6 inch casing to depth 3.7, then 6.5 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-6

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=815,422 Y=887,549		11. DATUM FOR ELEVATION SHOWN (TBM or NSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314		
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-7		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/5/95 8/5/95		
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -36.4 Ft.		
9. TOTAL DEPTH OF HOLE 5.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %		
		19. SIGNATURE OF Geologist Jim Arthur		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-36.4	.0					-36.4
		[Dotted Pattern]	SAND, gray fine poorly graded quartz sand (SP)			
				0		NX DRILL RODS
-41.4	5.0		Washed to top of rock at elevation -41.4			-41.4
			Note: Soils are field classified in accordance with the Unified Soils Classification System.			Set 6 inch casing to depth 4.5 feet.

Hole No. WB-PBH95-8

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=815,675 Y=887,370		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-8		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/5/95 8/5/95	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -36.0 Ft.	
9. TOTAL DEPTH OF HOLE 5.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %	
19. SIGNATURE OF Geologist Jim Arthur			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-36.0	.0					-36.0
			SAND	0		NX DRILL RODS
-41.0	5.0		Washed to elevation -41.0, no rock encountered			-41.0
						Set 6 inch casing to depth 6.5 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-8

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=815,813 Y=887,596		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-9		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/6/95 8/6/95		
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -45.8 Ft.		
9. TOTAL DEPTH OF HOLE 6.2 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %		
		19. SIGNATURE OF Geologist Jim Arthur		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-45.8	.0					-45.8
			SAND			
				0		NX DRILL RODS
			Washed to elevation -52.0, no rock encountered			
-52.0	6.2					-52.0
						Set 6 inch casing to depth 5.4 feet.

Hole No. WB-PBH95-10

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1		
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks				
2. LOCATION (Coordinates or Station) X=816,118 Y=887,317		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)				
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314				
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-10		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0				
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES				
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL				
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/6/95 8/6/95				
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -47.3 Ft.				
9. TOTAL DEPTH OF HOLE 5.1 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %				
		19. SIGNATURE OF Geologist Jim Arthur				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-47.3	.0		SAND			-47.3
		[Dotted Pattern]		0		NX DRILL RODS
-52.4	5.1		Washed to elevation -52.4, no rock encountered			-52.4
						Set 6 inch casing to depth 1.2 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-10

Hole No. WB-PBH95-12

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1		
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks				
2. LOCATION (Coordinates or Station) X=816,328 Y=887,597		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)				
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314				
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-12		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0				
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES				
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL				
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/6/95 8/6/95				
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -38.4 Ft.				
9. TOTAL DEPTH OF HOLE 7.5 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %				
		19. SIGNATURE OF Geologist Jim Arthur				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-38.4	.0		SAND			-38.4
				0		NX DRILL RODS
			Washed to elevation -45.9, no rock encountered			
-45.9	7.5					-45.9
						Set 6 inch casing to depth 3.4 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-12

Hole No.WB-PBH95-13

DRILLING LOG		DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=816,422 Y=887,322		11. DATUM FOR ELEVATION SHOWN (TBN or MSL) MLW (FEET)		
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-13		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0		
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL		
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/6/95 8/6/95		
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -43.8 Ft.		
9. TOTAL DEPTH OF HOLE 5.2 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %		
		19. SIGNATURE OF Geologist Jim Arthur		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-43.8	.0					-43.8
			SAND			
				0		NX DRILL RODS
			Washed to elevation -49.0; no rock encountered			
-49.0	5.2					-49.0
						Set 6 inch casing to depth 1.1 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-13

Hole No. WB-PBH95-15

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1		
1. PROJECT Palm Beach Harbor		South Atlantic	Jacksonville District			
2. LOCATION (Coordinates or Station) X=816,624 Y=887,432			10. SIZE AND TYPE OF BIT See Remarks			
3. DRILLING AGENCY Corps of Engineers			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)			
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-15			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
5. NAME OF DRILLER C. Robbins			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			14. TOTAL NUMBER OF CORE BOXES			
7. THICKNESS OF BURDEN Ft.			15. ELEVATION GROUND WATER TIDAL			
8. DEPTH DRILLED INTO ROCK 0 Ft.			16. DATE HOLE STARTED COMPLETED 8/6/95 8/6/95			
9. TOTAL DEPTH OF HOLE 8.4 Ft.			17. ELEVATION TOP OF HOLE -38.7 Ft.			
			18. TOTAL CORE RECOVERY FOR BORING 0 %			
			19. SIGNATURE OF Geologist Jim Arthur			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-38.7	.0		SAND			-38.7
				0		NX DRILL RODS
			Washed to elevation -47.1, no rock encountered			
-47.1	8.4					-47.1
						Set 6 inch casing to depth 4.0 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-15

Hole No. WB-PBH95-17

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=816,721 Y=887,590		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314	
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-17		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/7/95 8/7/95	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -37.3 Ft.	
9. TOTAL DEPTH OF HOLE 9.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %	
		19. SIGNATURE OF Geologist Jim Arthur	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-37.3	.0		SAND			-37.3
				0		NX DRILL RODS
			Washed to elevation -45.7, no rock encountered			
-45.7	8.4					-45.7
						Set 6 inch casing to depth 1.4 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-17

Hole No. WB-PBH95-18

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=816,925 Y=887,375		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314	
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-18		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/7/95 8/7/95	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -36.4 Ft.	
9. TOTAL DEPTH OF HOLE 9.1 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %	
		19. SIGNATURE OF Geologist Jim Arthur	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-36.4	.0		SAND			-36.4
				0		NX DRILL RODS
			Washed to elevation -45.5, no rock encountered			
-45.5	9.1					-45.5
						Set 6 inch casing to depth 4.0 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-18

Hole No. WB-PBH95-19

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	<i>SHEET 1</i> <i>OF 1</i>
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=817,127 Y=887,554		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-19		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/7/95 8/7/95	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -38.3 Ft.	
9. TOTAL DEPTH OF HOLE 9.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %	
		19. SIGNATURE OF Geologist Jim Arthur	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-38.3	.0					-38.3
			SAND	0		NX DRILL RODS
			Washed to elevation -47.3, no rock encountered			
-47.3	9.0					-47.3
						Set 6 inch casing to depth 3.6 feet.

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-19

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=817,331 Y=887,372		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)	
3. DRILLING AGENCY Corps of Engineers		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-20		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0	
5. NAME OF DRILLER C. Robbins		14. TOTAL NUMBER OF CORE BOXES	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER TIDAL	
7. THICKNESS OF BURDEN Ft.		16. DATE HOLE STARTED COMPLETED 8/7/95 8/7/95	
8. DEPTH DRILLED INTO ROCK 0 Ft.		17. ELEVATION TOP OF HOLE -36.7 Ft.	
9. TOTAL DEPTH OF HOLE 9.9 Ft.		18. TOTAL CORE RECOVERY FOR BORING 0 %	
		19. SIGNATURE OF Geologist Jim Arthur	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-36.7	.0		SAND			-36.7
				0		NX DRILL RODS
			Washed to elevation -46.6, no rock encountered			
-46.6	9.9					-46.6
						Set 8 inch casing to depth 4.6 feet.

DRILLING LOG		DIVISION	INSTALLATION	SHEET 1 OF 1		
1. PROJECT Palm Beach Harbor		South Atlantic	Jacksonville District			
2. LOCATION (Coordinates or Station) X=817,514 Y=887,450		10. SIZE AND TYPE OF BIT See Remarks				
3. DRILLING AGENCY Corps of Engineers		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)				
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-21		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314				
6. NAME OF DRILLER C. Robbins		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0				
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		14. TOTAL NUMBER OF CORE BOXES				
7. THICKNESS OF BURDEN Ft.		15. ELEVATION GROUND WATER TIDAL				
8. DEPTH DRILLED INTO ROCK 0 Ft.		16. DATE HOLE STARTED COMPLETED 8/7/95 8/7/95				
9. TOTAL DEPTH OF HOLE 9.6 Ft.		17. ELEVATION TOP OF HOLE -37.5 Ft.				
		18. TOTAL CORE RECOVERY FOR BORING 0 %				
		19. SIGNATURE OF Geologist Jim Arthur				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel
-37.5	.0		SAND			-37.5
				0		NX DRILL RODS
			Washed to elevation -47.1, no rock encountered			
-47.1	9.6					-47.1
						Set 6 inch casing to depth 4.2 feet.

Hole No. WB-PBH95-22

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District		SHEET 1 OF 1	
1. PROJECT Palm Beach Harbor				10. SIZE AND TYPE OF BIT See Remarks			
2. LOCATION (Coordinates or Station) X=817,603 Y=887,300				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)			
3. DRILLING AGENCY Corps of Engineers				12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number) WB-PBH95-22				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 0 undisturbed: 0			
5. NAME OF DRILLER C. Robbins				14. TOTAL NUMBER OF CORE BOXES			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				15. ELEVATION GROUND WATER TIDAL			
7. THICKNESS OF BURDEN Ft.				16. DATE HOLE STARTED COMPLETED 8/7/95 8/7/95			
8. DEPTH DRILLED INTO ROCK 0 Ft.				17. ELEVATION TOP OF HOLE -36.2 Ft.			
9. TOTAL DEPTH OF HOLE 10.5 Ft.				18. TOTAL CORE RECOVERY FOR BORING 0 %			
				19. SIGNATURE OF Geologist Jim Arthur			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	
-36.2	.0		SAND			-36.2	0
				0		NX DRILL RODS	2.5
			Washed to elevation 46.7, no rock encountered				5
-46.7	10.5					-46.7	7.5
						Set 6 inch casing to depth 5.1 feet.	10
							12.5
							15
							17.5
							20
							22.5

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PROJECT
Palm Beach Harbor

HOLE NUMBER
WB-PBH95-22

Hole No. CB-LWI-SJ01-3

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 2
1. PROJECT Lake Worth Inlet, Palm Beach Harbor	10. SIZE AND TYPE OF BIT See Remarks		
2. LOCATION (Coordinates or Station) X=816,104 Y=887,141	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLLW NAD-27 FL-E		
3. DRILLING AGENCY Corps of Engineers - Savannah District	12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500		
4. HOLE NO. (As shown on drawing title and file number) CB-LWI-SJ01-3	13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 18 undisturbed: 0		
5. NAME OF DRILLER Pickett	14. TOTAL NUMBER OF CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED	15. ELEVATION GROUND WATER n/a		
7. THICKNESS OF BURDEN 27.0 Ft.	16. DATE HOLE STARTED COMPLETED 04/02/01 04/02/01		
8. DEPTH DRILLED INTO ROCK 3.0 Ft.	17. ELEVATION TOP OF HOLE -31.9 Ft.		
9. TOTAL DEPTH OF HOLE 30.0 Ft.	18. TOTAL CORE RECOVERY FOR BORING 71.7 %		
	19. SIGNATURE OF INSPECTOR J. Arthur, PG		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit & Barrel	BLOWS/ft ²		
-31.9	0.0					-31.9	0		
			SAND, poorly graded, fine to medium grained, some coarse limestone gravel, trace of silt and small shell fragments, calcareous, gray, (SP)	60	1	SPT	32		
								38	
								19	
								8	
						40	2	SPT	9
								17	
								8	
						40	3	SPT	8
								14	
					From -36.4 trace of fine limestone gravel, dark gray.	47	4	SPT	13
								18	
					From -37.4 grey to dark grey.	40	5	SPT	20
								27	
					From -39.5 grey, no gravel.	40	5	SPT	27
								28	
				53	6	SPT	10		
						21			
-40.9	9.0					-40.9	24		
			SAND, silty, fine grained, trace of small shell fragments, calcareous, gray, (SM).	40	7	SPT	5		
							20		
							24		
							12		
					40	8	SPT	20	
							25		
							16		
					27	9	SPT	31	
							50		
					33	10	SPT	15	
							22		
							46		
					47	11	SPT	15	
							28		
							34		
				40	12	SPT	24		
						35			
						50			
				67	13	SPT	18		
						44			
			From -51.4 fine to medium grained.	40	14	SPT	56		
						15			
						32			
-52.9	21.0					-52.9	21		
			SAND, clayey, fine to medium grained, calcareous, gray (SC).	40	15	SPT	4		
							3		
							4		
						-54.4	4		
						(continued)			

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PROJECT
Lake Worth Inlet, Palm Beach Harbor

HOLE NUMBER
CB-LWI-SJ01-3

DRILLING LOG (Cont. Sheet)		ELEVATION TOP OF HOLE		SHEET 2 OF 2			
PROJECT Lake Worth Inlet, Palm Beach Harbor			INSTALLATION Jacksonville District				
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit & Barrel	BLOWS/ft
-54.4	22.5					-54.4	7
				40	16	SPT	14
						-55.9	19
				47	17	SPT	15
						-57.4	14
							20
			From -58.4, some light grey to white fine to medium silty sand.	47	18	SPT	3
						-58.9	14
							66
-58.9	27.0		LIMESTONE, hard, highly weathered, porous, pitted and vuggy with small to large vugs, highly jointed, light gray, fossiliferous.	54	Box-1	4" x 5 1/2" Diamond Set Bit Hyd. Press: 200 PSI RGD = 0% D.T. = 5 min.	
			Moderately hard: 0.4 - 1.0 ft, 1.4 - 2.1 ft. Poorly cemented, badly broken: 2.1 - 2.7 ft. Low angle horizontal open joints: -58.9, -59.3, -59.5, -59.9, -60.1 -60.3, -60.5, -60.6, -61.2 ft. Low angle horizontal healed joints: -59.7, -60.0, -60.2, -60.6 -60.8ft Fragmented: -60.3 - -60.5 ft.			-61.9	
-61.9	30.0						
						140# hammer w/30" drop used with 2.0' split spoon (1 3/8" I.D. X 2" O.D.).	
			Notes: 1. Soils are field visually classified in accordance with the Unified Soils Classification System.				

Hole No. CB-LWI-SJ01-6

DRILLING LOG	DIVISION South Atlantic	INSTALLATION Jacksonville District	SHEET 1 OF 1
1. PROJECT Lake Worth Inlet, Palm Beach Harbor		10. SIZE AND TYPE OF BIT See Remarks	
2. LOCATION (Coordinates or Station) X=816,469 Y=887,125		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLLW NAD-27 FI-E	
3. DRILLING AGENCY Corps of Engineers - Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 1500	
4. HOLE NO. (As shown on drawing title and file number) CB-LWI-SJ01-6		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 8 undisturbed: 0	
6. NAME OF DRILLER Pickett		14. TOTAL NUMBER OF CORE BOXES n/a	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		15. ELEVATION GROUND WATER n/a	
7. THICKNESS OF BURDEN 15.0 Ft.		16. DATE HOLE STARTED COMPLETED 03/14/01 03/14/01	
8. DEPTH DRILLED INTO ROCK 0.0 Ft.		17. ELEVATION TOP OF HOLE -37.2 Ft.	
9. TOTAL DEPTH OF HOLE 15.0 Ft.		18. TOTAL CORE RECOVERY FOR BORING 29 %	
		19. SIGNATURE OF INSPECTOR J. Arthur, PG	

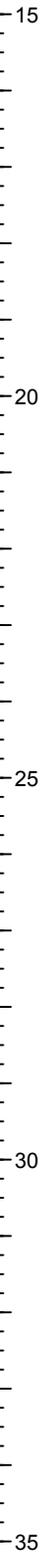
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit & Barrel	BLOWS/ft	
-37.2	0.0					-37.2	0	
		[Dotted pattern]	SAND, poorly graded, fine grained, calcareous, brownish gray, (SP).	0		SPT	10 8	
					0		-38.7	8 10
							SPT	9 10
							-40.2	7 12
				From -41.7 some small shell fragments, gray.	11	1	SPT	28 15
				From -43.2 fine grained, trace of shell fragments.	47	2	SPT	16 19
				From -44.7 grey and light grey.	47	3	SPT	18 25
				From -46.2 light grey, no shell fragments.	27	4	SPT	17 15
				27	5	SPT	20 15	
				27	6	SPT	23 27	
				27	7	SPT	20 36	
				47	8	SPT	44 20	
				47	7	SPT	40 40	
				33	8	SPT	26 25	
-52.2	15.0					-52.2	18	
			Notes: 1. Soils are field visually classified in accordance with the Unified Soils Classification System. 2. No initial splitspoon recovery on drives from 0.0 - 1.5 ft. and 1.5 - 3.0 ft. Re-drove from 0.0 - 3.0 ft then continued drive to 4.5 ft. Recovered 0.5 ft of sand for Jar #1.			140# hammer w/30" drop used with 2.0' split spoon (1 3/8" I.D. X 2" O.D.).	17.5 20 22.5	

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PROJECT
Lake Worth Inlet, Palm Beach Harbor

HOLE NUMBER
CB-LWI-SJ01-6

DRILLING LOG (Cont. Sheet)			INSTALLATION			SHEET 2 OF 2 SHEETS																					
PROJECT Lake Worth Inlet Snell Vibracoring 2012			COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW																					
LOCATION COORDINATES X = 973,877 Y = 887,228			ELEVATION TOP OF BORING -34.8 Ft.																								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE																		
-51.4	16.6		-At El. -49.8 Ft., few fine-grained sand-sized shell, N 5/ gray		4		-51.4																				
			<p>NOTES:</p> <ol style="list-style-type: none"> USACE Jacksonville is the custodian for these original files. Soils are field visually classified in accordance with the Unified Soils Classification System. 20 ft. ft. penetration Laboratory Testing Results <table border="1"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.0/3.5</td> <td>SP*</td> </tr> <tr> <td>1-post</td> <td>3.0/3.5</td> <td>SP*</td> </tr> <tr> <td>2</td> <td>8.0/8.5</td> <td>SP*</td> </tr> <tr> <td>3</td> <td>12.0/12.5</td> <td>SP*</td> </tr> <tr> <td>4</td> <td>15.0/15.5</td> <td>SP*</td> </tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	3.0/3.5	SP*	1-post	3.0/3.5	SP*	2	8.0/8.5	SP*	3	12.0/12.5	SP*	4	15.0/15.5	SP*				Abbreviations: - NR = Not Recorded. -		
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																									
1	3.0/3.5	SP*																									
1-post	3.0/3.5	SP*																									
2	8.0/8.5	SP*																									
3	12.0/12.5	SP*																									
4	15.0/15.5	SP*																									



DRILLING LOG		DIVISION South Atlantic	INSTALLATION		SHEET 1 OF 2 SHEETS
1. PROJECT Lake Worth Inlet Snell Vibracoring 2012 Vibracore Borings			9. SIZE AND TYPE OF BIT See Remarks		
2. BORING DESIGNATION VB-LWI2012-02		LOCATION COORDINATES X = 973,295 Y = 887,326		10. COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - Willmington		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			12. TOTAL SAMPLES		DISTURBED 5
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL		BEARING
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD) 0
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 16.0 Ft.			15. DATE BORING		STARTED 06-13-12
			16. ELEVATION TOP OF BORING -37.1 Ft.		COMPLETED 06-13-12
			17. TOTAL RECOVERY FOR BORING 80 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Barbara Nist, Geologist		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-37.1	0.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few fine to medium-grained sand-sized shell, trace silt, moist, 2.5Y 6/2 light brownish gray (SP)				-37.1		
			At El. -38.9 Ft., little shell, N 5/ gray	NR			Vibracore		
			At El. -39.6 Ft., strong reaction with HCl, One 3" subangular limestone fragment						
			At El. -40.6 Ft., some fine to medium-grained sand-sized quartz, some fine to coarse gravel-sized shell, 5Y 7/1 light gray		1		-41.1		
			At El. -41.1 Ft., some fine to medium-grained sand-sized limestone, few fine to medium-grained sand-sized shell		-post		-41.1		
			At El. -41.3 Ft., N 5/ gray						
			At El. -42.1 Ft., trace shell, N 6/ gray						
			From El. -44.1 to -44.6 Ft., little fine-grained sand-sized shell		2		-44.1		
			At El. -44.9 Ft., One 2" subrounded limestone fragment						
			At El. -46.4 Ft., some medium to coarse-grained sand-sized shell, 10G 5/1 greenish gray						
			At El. -47.5 Ft., 5Y 6/4 pale olive						
			At El. -48.0 Ft., weak reaction with HCl, N 6/ gray		3		-48.1		
			At El. -48.9 Ft., Two 1" to 2" subangular beachrock fragment						
			At El. -49.1 Ft., trace shell						
-51.3	14.2								
-52.1	15.0	MW	LIMESTONE, moderately hard, moderately weathered, fragmented up tp 2", N 6/ gray				-52.1		

DRILLING LOG (Cont. Sheet)			INSTALLATION				SHEET 2 OF 2 SHEETS																				
PROJECT Lake Worth Inlet Snell Vibracoring 2012			COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW																					
LOCATION COORDINATES X = 971,934 Y = 887,366			ELEVATION TOP OF BORING -29.0 Ft.																								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE																		
-47.7	18.7		-At El. -44.0 Ft., little fine to medium-grained sand-sized shell		4																						
			<p>NOTES:</p> <ol style="list-style-type: none"> USACE Jacksonville is the custodian for these original files. Soils are field visually classified in accordance with the Unified Soils Classification System. 19 ft. ft. penetration Laboratory Testing Results <table border="1"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.0/3.5</td> <td>SP*</td> </tr> <tr> <td>2</td> <td>8.0/8.5</td> <td>SP*</td> </tr> <tr> <td>2-post</td> <td>8.0/8.5</td> <td>SP*</td> </tr> <tr> <td>3</td> <td>12.0/12.5</td> <td>SP*</td> </tr> <tr> <td>4</td> <td>15.0/15.5</td> <td>SP*</td> </tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	3.0/3.5	SP*	2	8.0/8.5	SP*	2-post	8.0/8.5	SP*	3	12.0/12.5	SP*	4	15.0/15.5	SP*				Abbreviations: - NR = Not Recorded. -		
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																									
1	3.0/3.5	SP*																									
2	8.0/8.5	SP*																									
2-post	8.0/8.5	SP*																									
3	12.0/12.5	SP*																									
4	15.0/15.5	SP*																									

DRILLING LOG		DIVISION South Atlantic	INSTALLATION		SHEET 1 OF 2 SHEETS
1. PROJECT Lake Worth Inlet Snell Vibracoring 2012 Vibracore Borings			9. SIZE AND TYPE OF BIT See Remarks		
2. BORING DESIGNATION VB-LWI2012-04		LOCATION COORDINATES X = 973,545 Y = 887,690		10. COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - Wilmington		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			12. TOTAL SAMPLES		DISTURBED 5
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL		UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		14. ELEVATION GROUND WATER
7. DEPTH DRILLED INTO ROCK N/A			15. DATE BORING		STARTED 06-13-12
8. TOTAL DEPTH OF BORING 17.5 Ft.			16. ELEVATION TOP OF BORING -39.8 Ft.		COMPLETED 06-13-12
			17. TOTAL RECOVERY FOR BORING 87 %		18. SIGNATURE AND TITLE OF INSPECTOR Barbara Nist, Geologist

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-39.8	0.0		SAND, poorly-graded, mostly fine-grained sand-sized quartz, trace shell, weak reaction with HCl, moist, 10Y 6/1 greenish gray (SP)	NR			Vibracore		
			At El. -41.8 Ft., little fine to medium-grained sand-sized shell, few fine to medium-grained sand-sized limestone		1				
			At El. -44.2 Ft., little fine to coarse gravel-sized shell						
			At El. -44.8 Ft., few fine to coarse gravel-sized shell, N 4/ dark gray						
			At El. -45.8 Ft., some fine to medium-grained sand-sized shell		2				
			At El. -46.1 Ft., little fine to coarse-grained sand-sized shell		2-post				
			At El. -46.7 Ft., few fine to coarse-grained sand-sized shell						
			At El. -48.8 Ft., little fine to coarse-grained sand-sized shell						
			At El. -51.4 Ft., some fine-grained sand-sized shell						
			At El. -51.6 Ft., few fine to medium-grained sand-sized shell		3				
			At El. -51.8 Ft., some fine to medium-grained sand-sized shell, little fine to medium-grained sand-sized limestone						
			At El. -53.4 Ft., little fine to coarse-grained sand-sized shell						
			At El. -54.1 Ft., few fine to coarse-grained sand-sized shell						

DRILLING LOG (Cont. Sheet)			INSTALLATION			SHEET 2 OF 2 SHEETS																					
PROJECT			COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL																					
Lake Worth Inlet Snell Vibracoring 2012			State Plane, FLN (U.S. Ft.)		NAD83	MLLW																					
LOCATION COORDINATES			ELEVATION TOP OF BORING																								
X = 973,545 Y = 887,690			-39.8 Ft.																								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE																		
-57.3	17.5		At El. -55.8 Ft., few fine to medium-grained sand-sized shell		4		-55.8																				
			At El. -56.8 Ft., little sand to gravel-sized shell				-57.3																				
			<p>NOTES:</p> <ol style="list-style-type: none"> USACE Jacksonville is the custodian for these original files. Soils are field visually classified in accordance with the Unified Soils Classification System. 19 ft. ft. penetration Laboratory Testing Results <table border="1"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2.0/2.5</td> <td>SP* -</td> </tr> <tr> <td>2</td> <td>6.0/6.5</td> <td>SP* -</td> </tr> <tr> <td>2-post</td> <td>6.0/6.5</td> <td>SP* -</td> </tr> <tr> <td>3</td> <td>12.0/12.5</td> <td>SP* -</td> </tr> <tr> <td>4</td> <td>16.0/16.5</td> <td>SP* -</td> </tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	2.0/2.5	SP* -	2	6.0/6.5	SP* -	2-post	6.0/6.5	SP* -	3	12.0/12.5	SP* -	4	16.0/16.5	SP* -				Abbreviations: - NR = Not Recorded. -		
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																									
1	2.0/2.5	SP* -																									
2	6.0/6.5	SP* -																									
2-post	6.0/6.5	SP* -																									
3	12.0/12.5	SP* -																									
4	16.0/16.5	SP* -																									

DRILLING LOG		DIVISION South Atlantic	INSTALLATION		SHEET 1 OF 2 SHEETS
1. PROJECT Lake Worth Inlet Snell Vibracoring 2012 Vibracore Borings			9. SIZE AND TYPE OF BIT See Remarks		
2. BORING DESIGNATION VB-LWI2012-05		LOCATION COORDINATES X = 972,557 Y = 887,706		10. COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - Willmington		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			12. TOTAL SAMPLES 7		DISTURBED 7
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL		BEARING
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		UNDISTURBED (UD) 0
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 20.0 Ft.			15. DATE BORING		STARTED 06-13-12
			16. ELEVATION TOP OF BORING -40.6 Ft.		COMPLETED 06-13-12
			17. TOTAL RECOVERY FOR BORING 100 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Barbara Nist, Geologist		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-40.6	0.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few fine to medium-grained sand-sized shell, weak reaction with HCl, moist, 5Y 6/3 pale olive (SP)	NR			Vibracore		0
			-At El. -43.0 Ft., N 4/ dark gray						
			From El. -43.6 to -44.1 Ft., little fine to medium-grained sand-sized limestone		1	-post			
			-At El. -45.9 Ft., 5Y 6/3 pale olive						5
			-At El. -46.4 Ft., N 5/ gray						
			-At El. -47.4 Ft., trace shell, N 6/ gray		2				
			-At El. -47.6 Ft., few fine to coarse gravel-sized shell, N 7/ light gray						
			-At El. -48.2 Ft., trace shell						
			-At El. -52.4 Ft., little fine to medium-grained sand-sized shell, little fine to medium-grained sand-sized limestone		3				10
			-At El. -54.1 Ft., trace shell						
-54.7	14.1				4				
-55.4	14.8		SAND, silty, low plasticity, mostly fine-grained sand-sized quartz, little silt, little shell, weak reaction with HCl, moist,						15

DRILLING LOG (Cont. Sheet)			INSTALLATION			SHEET 2 OF 2 SHEETS																											
PROJECT Lake Worth Inlet Snell Vibracoring 2012			COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)		HORIZONTAL NAD83	VERTICAL MLLW																											
LOCATION COORDINATES X = 972,557 Y = 887,706			ELEVATION TOP OF BORING -40.6 Ft.																														
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE																								
-55.6	15.0	[Dotted pattern]	N 7/ light gray (SM) SAND, poorly-graded with silt, mostly fine-grained sand-sized quartz, few silt, no reaction with HCl, moist, N 6/ gray (SP-SM) SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few silt, few organic matter, no odor, 5Y 3/1 very dark gray (SP) At El. -56.7 Ft., little fine to medium-grained sand-sized shell, trace silt, weak reaction with HCl, moist, N 6/ gray		5																												
								-57.6																									
							6																										
-60.6	20.0						-60.6																										
			NOTES: 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. 20 ft. ft. penetration 4. Laboratory Testing Results			Abbreviations: NR = Not Recorded.																											
			<table border="1"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.0/3.5</td> <td>SP*</td> </tr> <tr> <td>1-post</td> <td>3.0/3.5</td> <td>SP* -</td> </tr> <tr> <td>2</td> <td>7.0/7.5</td> <td>SP* -</td> </tr> <tr> <td>3</td> <td>12.0/12.5</td> <td>SP* -</td> </tr> <tr> <td>4</td> <td>14.1/14.6</td> <td>SM* -</td> </tr> <tr> <td>5</td> <td>15.0/15.5</td> <td>SP* -</td> </tr> <tr> <td>6</td> <td>17.0/17.5</td> <td>SP* -</td> </tr> </tbody> </table>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	3.0/3.5	SP*	1-post	3.0/3.5	SP* -	2	7.0/7.5	SP* -	3	12.0/12.5	SP* -	4	14.1/14.6	SM* -	5	15.0/15.5	SP* -	6	17.0/17.5	SP* -						
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																															
1	3.0/3.5	SP*																															
1-post	3.0/3.5	SP* -																															
2	7.0/7.5	SP* -																															
3	12.0/12.5	SP* -																															
4	14.1/14.6	SM* -																															
5	15.0/15.5	SP* -																															
6	17.0/17.5	SP* -																															
			*Lab visual classification based on gradation curve. No Atterberg limits.																														

DRILLING LOG		DIVISION South Atlantic	INSTALLATION		SHEET 1 OF 2 SHEETS
1. PROJECT Lake Worth Inlet Snell Vibracoring 2012 Vibracore Borings			9. SIZE AND TYPE OF BIT See Remarks		
2. BORING DESIGNATION VB-LWI2012-06		LOCATION COORDINATES X = 972,193 Y = 887,927		10. COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)	
3. DRILLING AGENCY Corps of Engineers - Wilmington		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			12. TOTAL SAMPLES		13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER	
6. THICKNESS OF OVERBURDEN N/A			15. DATE BORING		STARTED 06-13-12 COMPLETED 06-13-12
7. DEPTH DRILLED INTO ROCK N/A			16. ELEVATION TOP OF BORING -25.0 Ft.		17. TOTAL RECOVERY FOR BORING 100 %
8. TOTAL DEPTH OF BORING 15.7 Ft.			18. SIGNATURE AND TITLE OF INSPECTOR Barbara Nist, Geologist		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-25.0	0.0	[Dotted pattern legend]	SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little fine to coarse gravel-sized shell, weak reaction with HCl, moist, N 5/ gray (SP)	NR			Vibracore		
			From El. -28.0 to -28.5 Ft., mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, little fine to medium-grained sand-sized limestone		1				
			At El. -28.8 Ft., some sand to gravel-sized shell, 5Y 6/2 light olive gray						
			At El. -30.0 Ft., few fine to coarse gravel-sized shell, N 4/ dark gray						
			At El. -30.5 Ft., few sand to gravel-sized shell						
			At El. -32.0 Ft., few fine to coarse gravel-sized shell						
			At El. -32.5 Ft., little fine to coarse gravel-sized shell, 5Y 6/3 pale olive						
			At El. -33.1 Ft., some fine-grained sand-sized quartz, some fine to medium-grained sand-sized limestone, little fine to medium-grained sand-sized shell, 10G 6/1 greenish gray		2	2-post			
			At El. -35.0 Ft., little fine to coarse gravel-sized shell, 10G 4/1 dark greenish gray						
			At El. -37.0 Ft., mostly fine to medium-grained sand-sized quartz, few fine to medium-grained sand-sized shell, trace silt		3				

DRILLING LOG (Cont. Sheet)			INSTALLATION				SHEET 2 OF 2 SHEETS																	
PROJECT			COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL																		
Lake Worth Inlet Snell Vibracoring 2012			State Plane, FLN (U.S. Ft.)		NAD83	MLLW																		
LOCATION COORDINATES			ELEVATION TOP OF BORING																					
X = 972,193 Y = 887,927			-25.0 Ft.																					
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE															
-40.7	15.7					-40.7																	
			NOTES: 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. 20 ft. ft. penetration 4. Laboratory Testing Results <table border="1"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.0/3.5</td> <td>SP* -</td> </tr> <tr> <td>2</td> <td>8.0/8.5</td> <td>SP* -</td> </tr> <tr> <td>2-post</td> <td>8.0/8.5</td> <td>SP* -</td> </tr> <tr> <td>3</td> <td>12.0/12.5</td> <td>SP* -</td> </tr> </tbody> </table> *Lab visual classification based on gradation curve. No Atterberg limits.	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	3.0/3.5	SP* -	2	8.0/8.5	SP* -	2-post	8.0/8.5	SP* -	3	12.0/12.5	SP* -				Abbreviations: NR = Not Recorded.		
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																						
1	3.0/3.5	SP* -																						
2	8.0/8.5	SP* -																						
2-post	8.0/8.5	SP* -																						
3	12.0/12.5	SP* -																						

15
20
25
30
35

DRILLING LOG		DIVISION South Atlantic	INSTALLATION		SHEET 1 OF 1 SHEETS
1. PROJECT Lake Worth Inlet Snell Vibracoring 2012 - Vibracore Borings -			9. SIZE AND TYPE OF BIT See Remarks		
2. BORING DESIGNATION VB-LWI2012-07		LOCATION COORDINATES X = 970,832 Y = 887,855		10. COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY - Corps of Engineers - Wilmington		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			12. TOTAL SAMPLES		DISTURBED 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 1.0 Ft.			15. DATE BORING		STARTED 06-13-12
			16. ELEVATION TOP OF BORING -41.5 Ft.		COMPLETED 06-13-12
			17. TOTAL RECOVERY FOR BORING 100 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Barbara Nist, Geologist		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-41.5	0.0		LIMESTONE, hard, slightly weathered, fragmented,	NR			-41.5 Vibracore		0
-42.5	1.0	Sl. Wea.	BORING TERMINATED IN REFUSAL				Abbreviations: NR = Not Recorded.		
			NOTES: 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. 1 ft. ft. penetration						

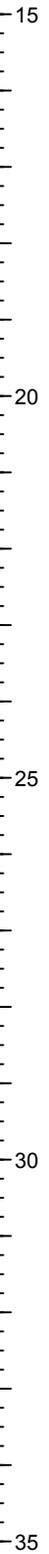
DRILLING LOG		DIVISION South Atlantic	INSTALLATION		SHEET 1 OF 1 SHEETS
1. PROJECT Lake Worth Inlet Snell Vibracoring 2012 Vibracore Borings			9. SIZE AND TYPE OF BIT See Remarks		
2. BORING DESIGNATION VB-LWI2012-08		LOCATION COORDINATES X = 970,279 Y = 887,494		10. COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)	HORIZONTAL NAD83
3. DRILLING AGENCY Corps of Engineers - Willmington		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			12. TOTAL SAMPLES		DISTURBED 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED			DEG. FROM VERTICAL	BEARING	UNDISTURBED (UD) 0
6. THICKNESS OF OVERBURDEN N/A			13. TOTAL NUMBER CORE BOXES 0		
7. DEPTH DRILLED INTO ROCK N/A			14. ELEVATION GROUND WATER		
8. TOTAL DEPTH OF BORING 2.0 Ft.			15. DATE BORING		STARTED 06-13-12
			16. ELEVATION TOP OF BORING -41.1 Ft.		COMPLETED 06-13-12
			17. TOTAL RECOVERY FOR BORING 100 %		
			18. SIGNATURE AND TITLE OF INSPECTOR Barbara Nist, Geologist		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-41.1	0.0	Mod. Weathered	SANDSTONE, soft, moderately weathered, fragmented, 2.5Y 6/3 light yellowish brown	NR			-41.1		
-43.1	2.0						-43.1		
			BORING TERMINATED IN REFUSAL				Abbreviations: NR = Not Recorded.		
			NOTES: 1. USACE Jacksonville is the custodian for these original files. 2. Soils are field visually classified in accordance with the Unified Soils Classification System. 3. 2 ft. ft. penetration						

DRILLING LOG		DIVISION South Atlantic	INSTALLATION		SHEET 1 OF 2 SHEETS
1. PROJECT Lake Worth Inlet Snell Vibracoring 2012 Vibracore Borings			9. SIZE AND TYPE OF BIT See Remarks		
2. BORING DESIGNATION VB-LWI2012-20E		LOCATION COORDINATES X = 972,342 Y = 887,957		10. COORDINATE SYSTEM/DATUM State Plane, FLN (U.S. Ft.)	
3. DRILLING AGENCY Corps of Engineers - Willmington		CONTRACTOR FILE NO.		11. MANUFACTURER'S DESIGNATION OF DRILL <input type="checkbox"/> AUTO HAMMER <input type="checkbox"/> MANUAL HAMMER	
4. NAME OF DRILLER			12. TOTAL SAMPLES		13. TOTAL NUMBER CORE BOXES 0
5. DIRECTION OF BORING <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED		DEG. FROM VERTICAL	BEARING	14. ELEVATION GROUND WATER	
6. THICKNESS OF OVERBURDEN N/A			15. DATE BORING		STARTED 06-14-12 COMPLETED 06-14-12
7. DEPTH DRILLED INTO ROCK N/A			16. ELEVATION TOP OF BORING -16.6 Ft.		17. TOTAL RECOVERY FOR BORING 67 %
8. TOTAL DEPTH OF BORING 13.4 Ft.			18. SIGNATURE AND TITLE OF INSPECTOR Barbara Nist, Geologist		

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/1 FT.	N-VALUE
-16.6	0.0		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, little fine to medium-grained sand-sized shell, weak reaction with HCl, moist, 2.5Y 6/6 olive yellow (SP)	NR			Vibracore		
-19.6	3.0		At El. -19.3 Ft., few medium to coarse-grained sand-sized shell SAND, poorly-graded, mostly fine to medium-grained sand-sized shell, some fine-grained sand-sized quartz (SP)		1	-post			
-22.8	6.2		At El. -21.6 Ft., 2.5Y 6/4 light yellowish brown						
-25.0	8.4		SAND, poorly-graded with silt, some fine to medium-grained sand-sized quartz, some fine to medium-grained sand-sized shell, little fine to medium-grained sand-sized limestone, few silt, 5Y 6/1 gray (SP-SM)		2				
-27.0	10.4		SAND, poorly-graded, some fine to medium-grained sand-sized shell, some fine to medium-grained sand-sized quartz, little coarse gravel-sized limestone, N 6/ gray (SP)		3				
-27.7	11.1	MW	At El. -25.9 Ft., 5Y 6/2 light olive gray At El. -26.6 Ft., some fine to medium-grained sand-sized shell, little fine to medium-grained sand-sized limestone, strong reaction with HCl, moist, 10Y 7/1 light greenish gray						
-28.6	12.0		LIMESTONE, soft, moderately weathered, fragmented up to 2", sandy, few shell, 10Y 7/1 light greenish gray		4				
-30.0	13.4		SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, few fine to medium-grained sand-sized shell, weak reaction with HCl, 10Y 7/1 light greenish gray (SP)						
			SAND, poorly-graded, mostly fine to medium-grained sand-sized shell, some fine-grained sand-sized quartz, little fine to						
							Abbreviations: NR = Not Recorded.		

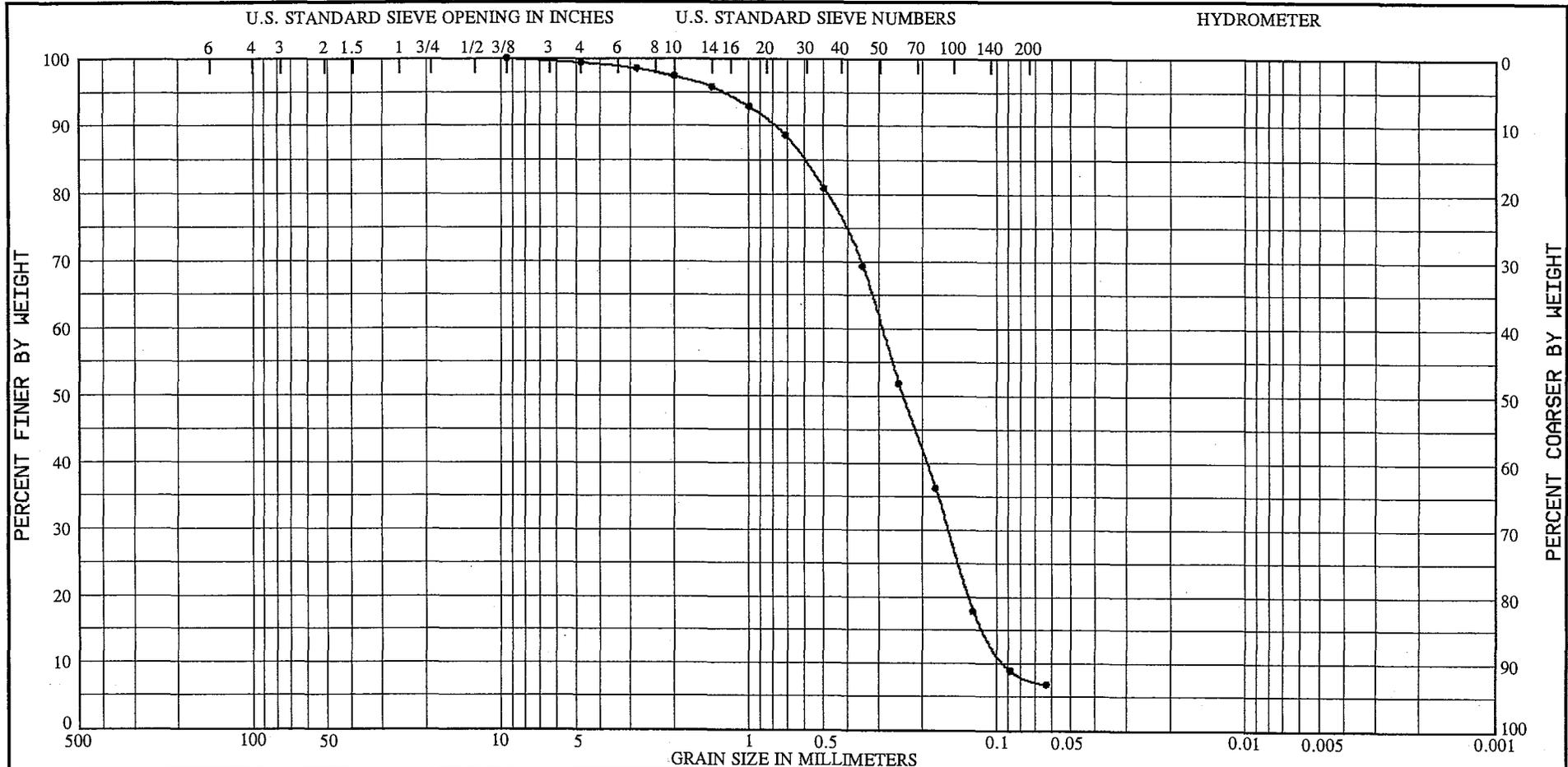
DRILLING LOG (Cont. Sheet)			INSTALLATION				SHEET 2 OF 2 SHEETS																				
PROJECT			COORDINATE SYSTEM/DATUM		HORIZONTAL	VERTICAL																					
Lake Worth Inlet Snell Vibracoring 2012			State Plane, FLN (U.S. Ft.)		NAD83	MLLW																					
LOCATION COORDINATES			ELEVATION TOP OF BORING																								
X = 972,342 Y = 887,957			-16.6 Ft.																								
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 1 FT.	N-VALUE																		
			medium-grained sand-sized limestone (SP)																								
			<p>NOTES:</p> <ol style="list-style-type: none"> USACE Jacksonville is the custodian for these original files. Soils are field visually classified in accordance with the Unified Soils Classification System. 20 ft. ft. penetration Laboratory Testing Results <table border="1"> <thead> <tr> <th>SAMPLE ID</th> <th>SAMPLE DEPTH</th> <th>LABORATORY CLASSIFICATION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.0/3.5</td> <td>SP*</td> </tr> <tr> <td>1-post</td> <td>3.0/3.5</td> <td>SP* -</td> </tr> <tr> <td>2</td> <td>6.0/6.5</td> <td>SP-SM* -</td> </tr> <tr> <td>3</td> <td>9.0/9.5</td> <td>SP* -</td> </tr> <tr> <td>4</td> <td>12.0/12.5</td> <td>SP* -</td> </tr> </tbody> </table> <p>*Lab visual classification based on gradation curve. No Atterberg limits.</p>	SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION	1	3.0/3.5	SP*	1-post	3.0/3.5	SP* -	2	6.0/6.5	SP-SM* -	3	9.0/9.5	SP* -	4	12.0/12.5	SP* -						
SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION																									
1	3.0/3.5	SP*																									
1-post	3.0/3.5	SP* -																									
2	6.0/6.5	SP-SM* -																									
3	9.0/9.5	SP* -																									
4	12.0/12.5	SP* -																									



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 7760
 REQUISITION: RM-CW-95-0159

Lake Worth Inlet Feasibility Study, Attachment C, Geotechnical



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elevation (ft)	Classification	Nat w%	LL	PL	PI	Project
1	-38.7 to -39.8	(VISUAL) LT. TAN, POORLY GRADED SILTY SAND (SP-SM), WITH A LITTLE SAND SIZE SHELL FRAGMENTS. SPECIFIC GRAVITY = 2.74. VISUAL PERCENT SHELL IS APPROX. = 17%.					PALM BEACH HARBOR MAINTENANCE DREDGING
							Lab No. 73/7089
							Boring No. CB-PBH-95-1
							Date 08/26/95

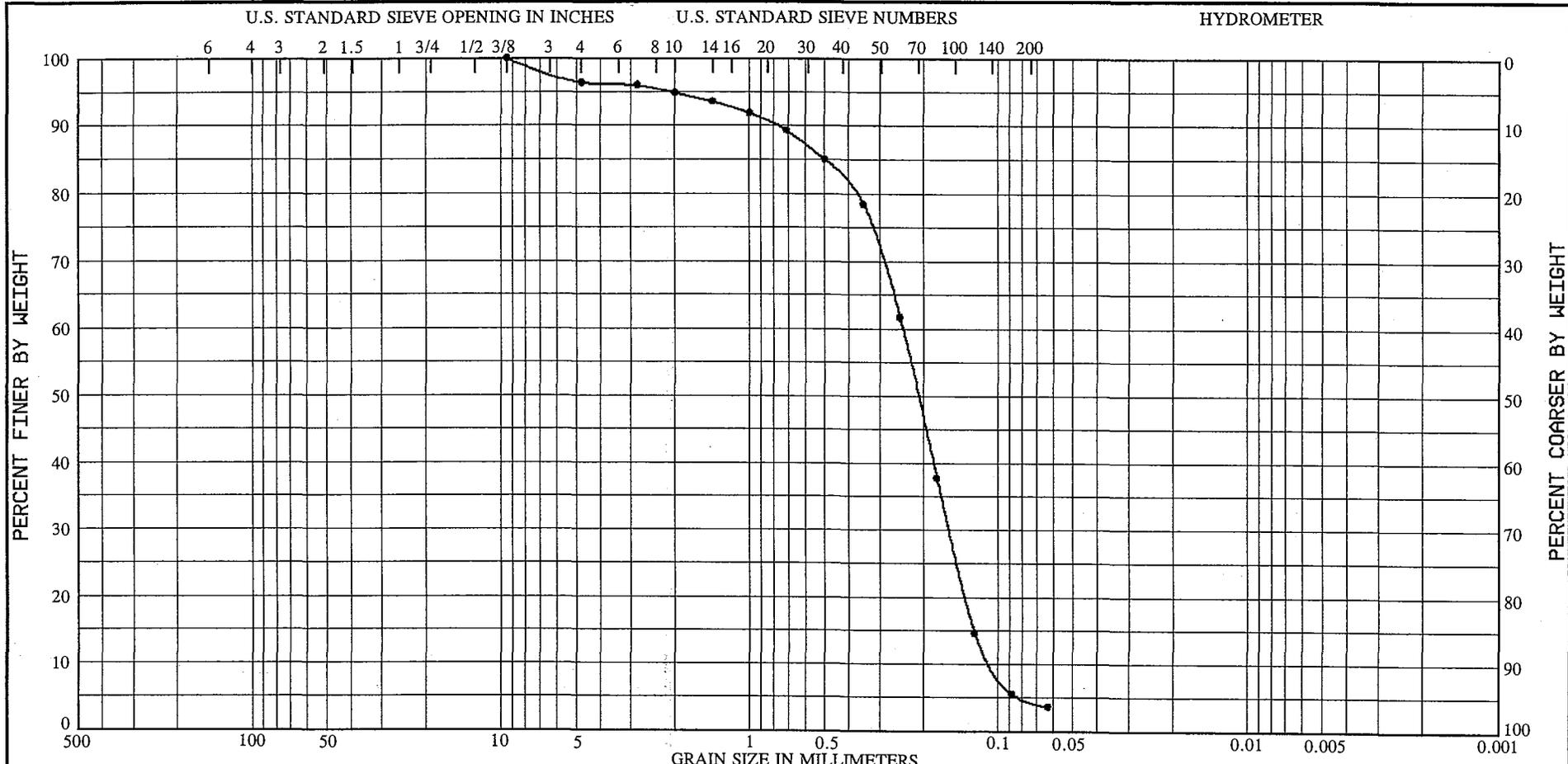
GRADATION CURVES



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 7760
 REQUISITION: RM-CW-95-0159

Lake Worth Inlet Feasibility Study, Attachment C, Geotechnical



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elevation (ft)	Classification	Nat w%	LL	PL	PI	Project
1	-38.0 to -39.5	(VISUAL) TAN, POORLY GRADED SAND (SP), WITH A TRACE OF GRAVEL SIZE SHELL AND SAND SIZE SHELL FRAGMENTS. SPECIFIC GRAVITY = 2.73. VISUAL PERCENT SHELL IS APPROX. = 4%.					PALM BEACH HARBOR MAINTENANCE DREDGING
							Lab No. 73/7090
							Boring No. CB-PBH-95-2

GRADATION CURVES

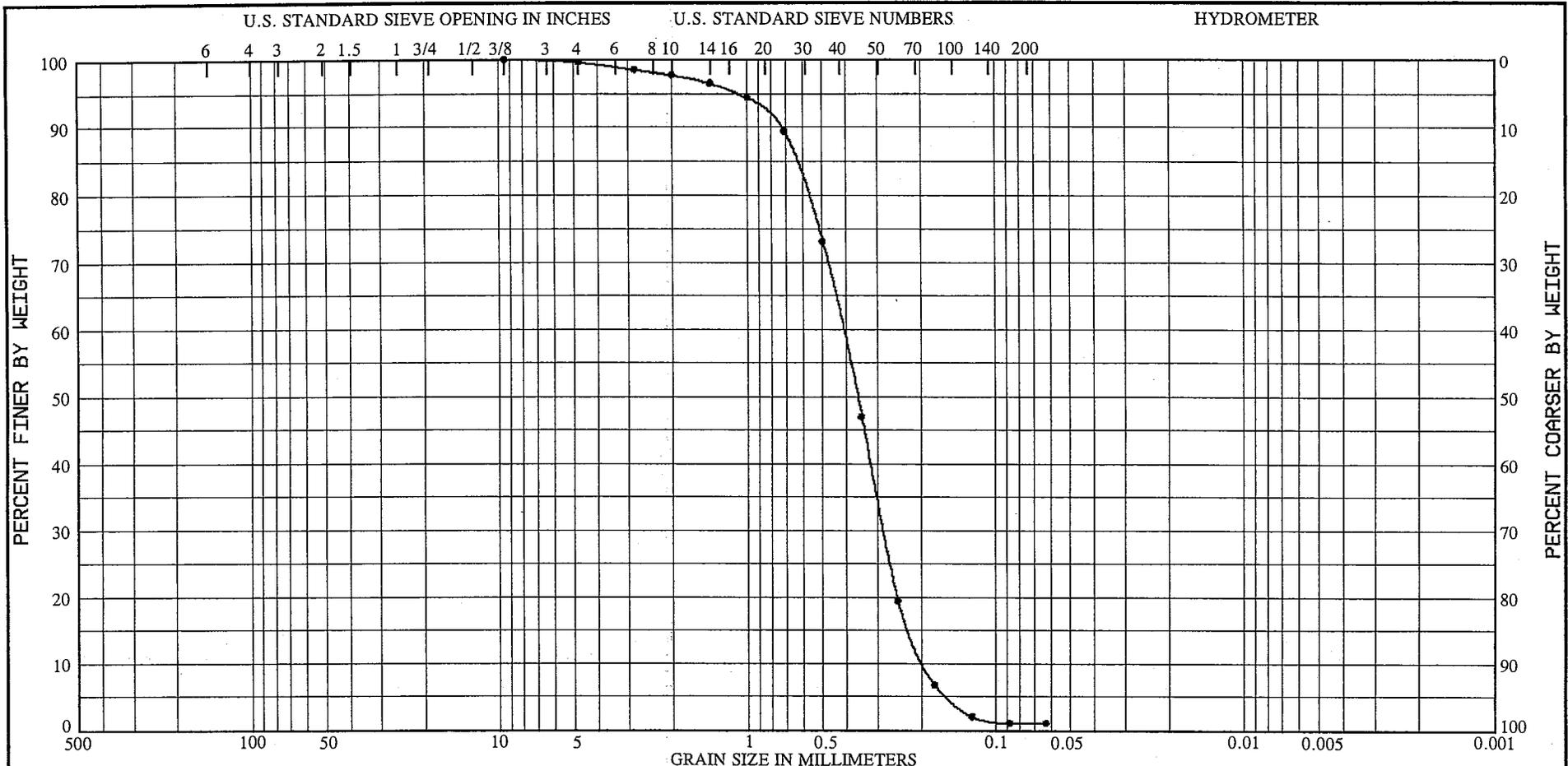
Date 08/26/95



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
 CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 7760
 REQUISITION: RM-CW-95-0159

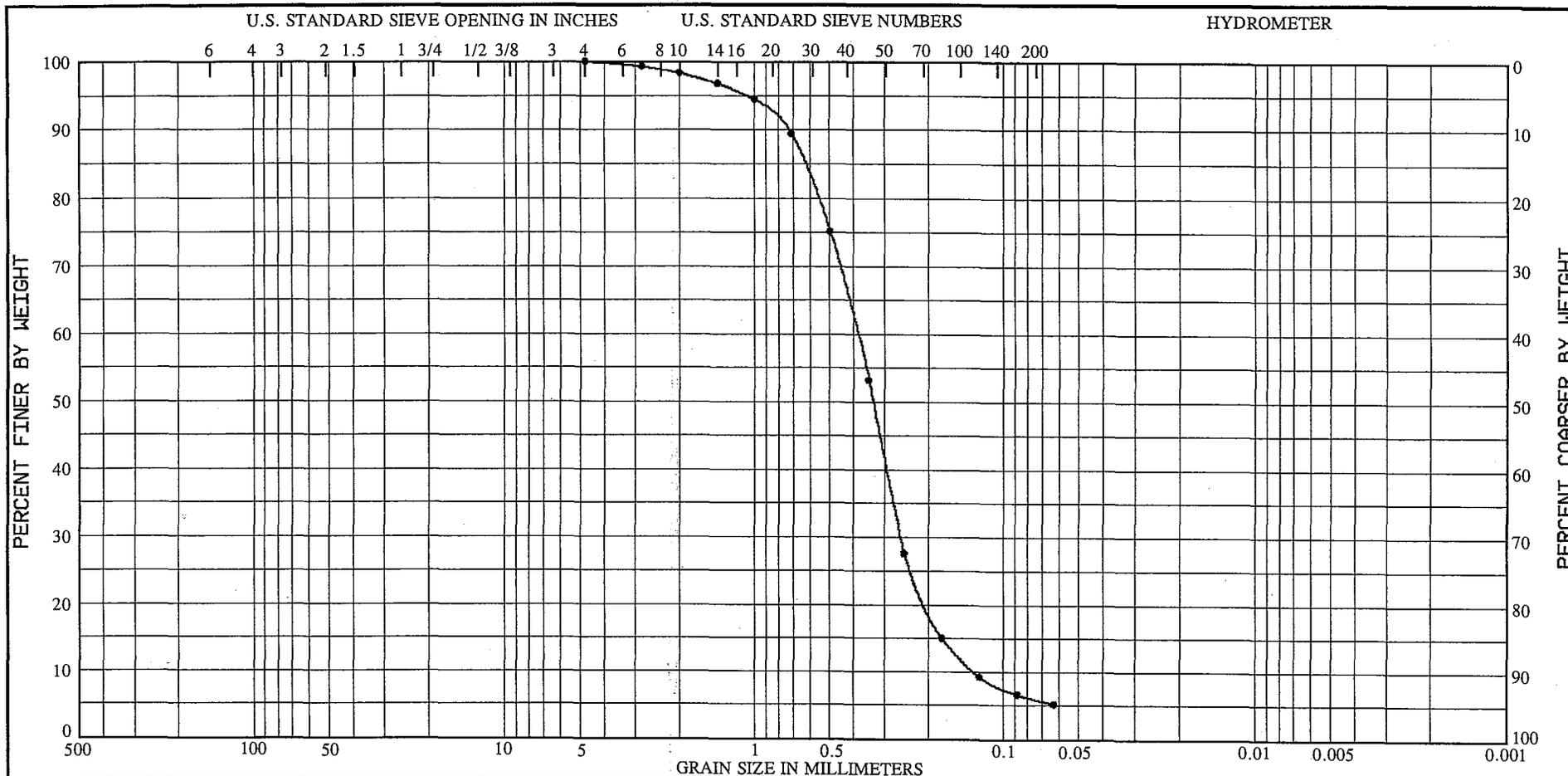
Lake Worth Inlet Feasibility Study, Attachment C, Geotechnical



DEPARTMENT OF THE ARMY, SOUTH ATLANTIC DIVISION LABORATORY
CORPS OF ENGINEERS, 611 SOUTH COBB DRIVE, MARIETTA, GA. 30060

WORK ORDER: 7760
REQUISITION: RM-CW-95-0159

Lake Worth Inlet Feasibility Study, Attachment C, Geotechnical

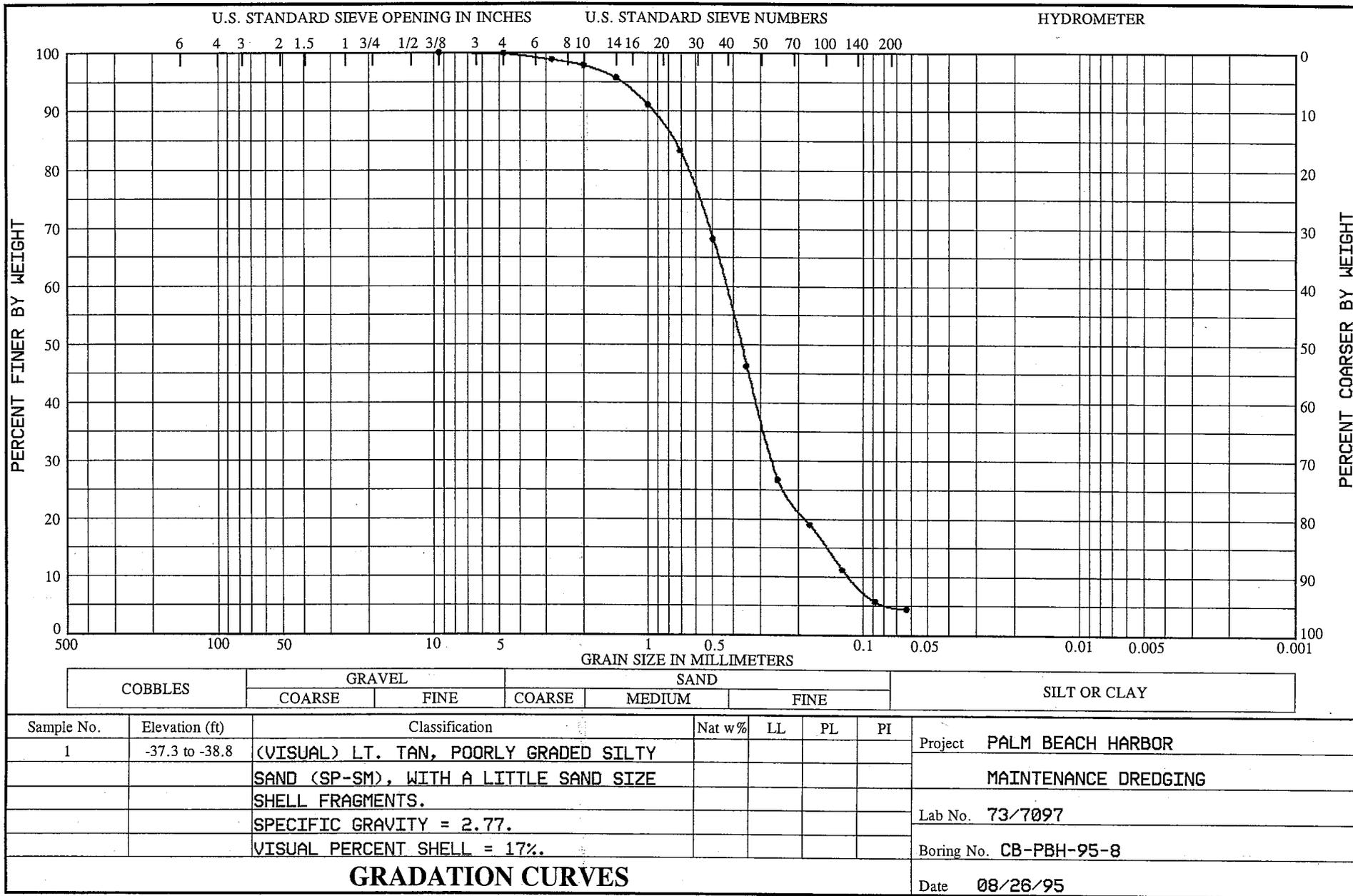


COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Sample No.	Elevation (ft)	Classification	Nat w%	LL	PL	PI	Project
2	-38.3 to -39.8	(VISUAL) LT. TAN, POORLY GRADED SILTY SAND (SP-SM), WITH A LITTLE SAND SIZE SHELL FRAGMENTS. SPECIFIC GRAVITY = 2.71. VISUAL PERCENT SHELL IS APPROX. = 11%.					PALM BEACH HARBOR MAINTENANCE DREDGING
							Lab No. 73/7096
							Boring No. CB-PBH-95-7
							Date 08/26/95

GRADATION CURVES

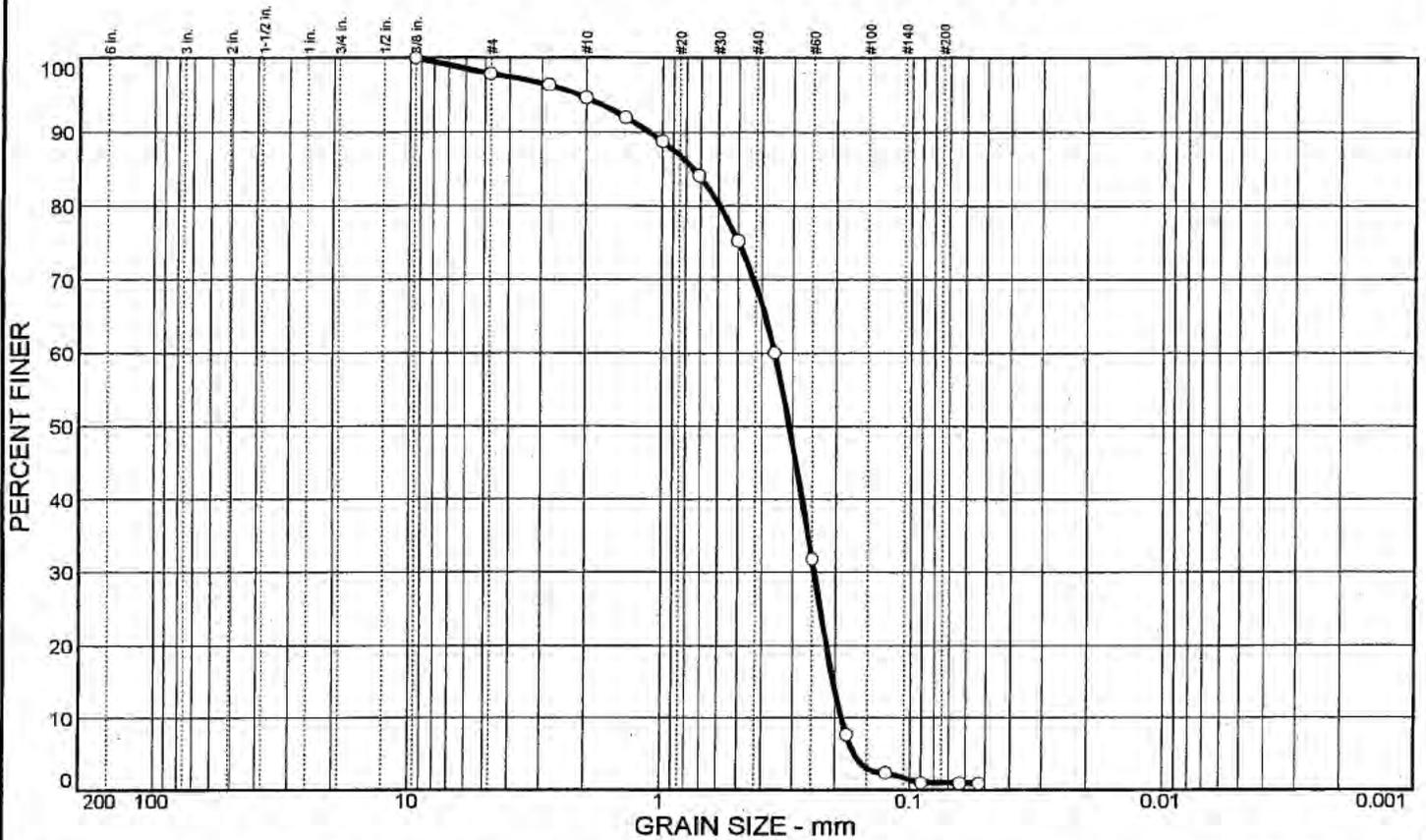




GRADATION CURVES



Grain Size Distribution Report



% COBBLES	% GRAVEL	% SAND	% SILT	% CLAY	USCS	AASHTO	PL	LL
0	2.1	97.0	0.9		SP	A-3		

SIEVE	PERCENT FINER		SIEVE	PERCENT FINER		SOIL DESCRIPTION
inches size	○		number size	○		○ SAND, fine quartz, trace shell, trace silt, gray
3/8	100.0		#4	97.9		REMARKS: ○
X	GRAIN SIZE		#7	96.3		
D60	0.355		#10	94.6		
D30	0.245		#14	91.9		
D10	0.189		#18	88.7		
X	COEFFICIENTS		#25	84.0		
C _c	0.90		#35	75.2		
C _u	1.88		#45	60.0		
			#60	31.8		
			#80	7.6		
			#120	2.3		
			#170	1.0		
			#230	0.9		
			#270	0.9		

○ Source: CB PB00-5

Sample No.: 1

Elev./Depth: 40.0-45.0

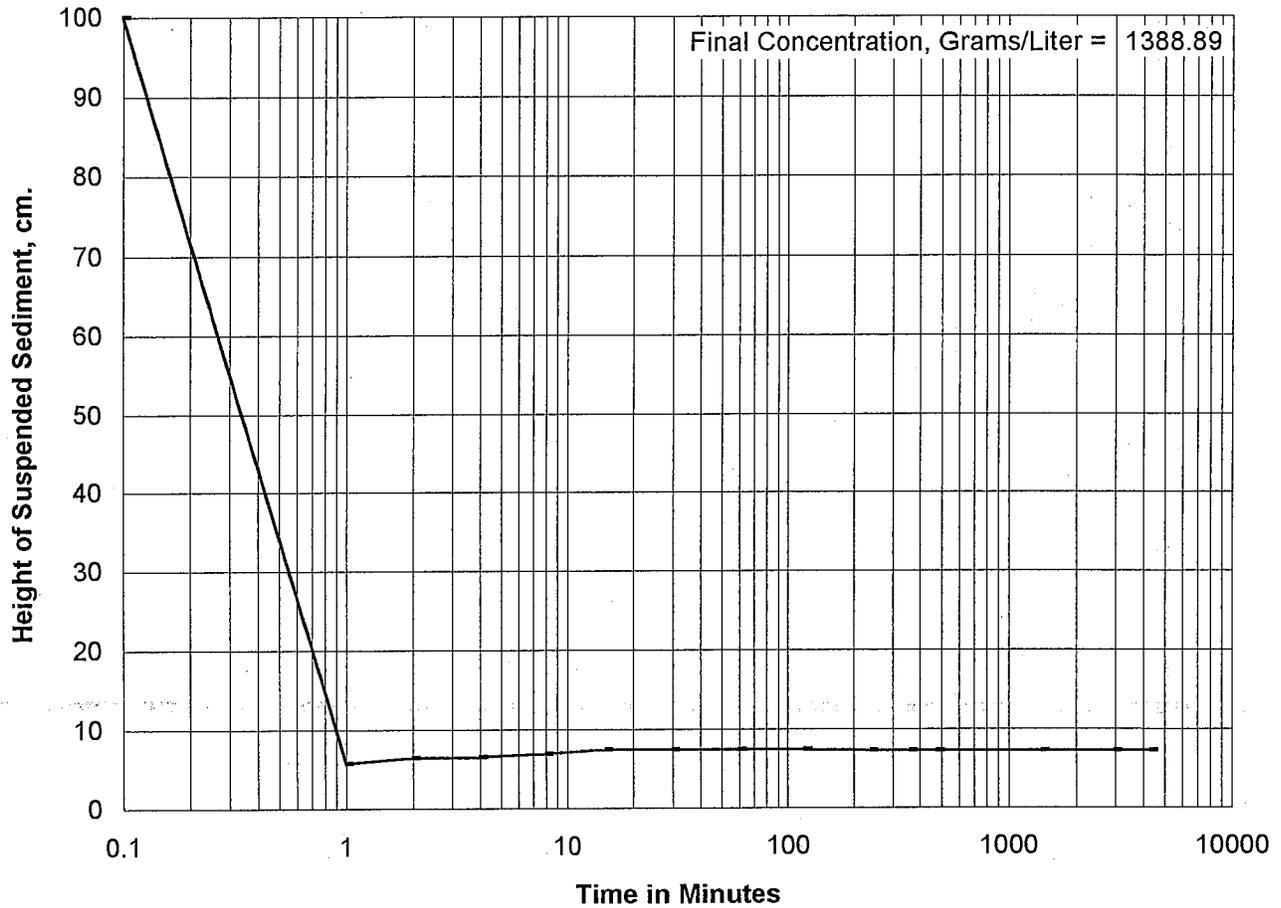
DRIVE SAMPLE

-36.9 to -41.9

Law Engineering and Environmental Services, Inc.	Client: US Army Corp of Engineers Project: Palm Beach Harbor (Lakeworth Inlet) Clam Bucket Samples Project No.: 40521-8-8051-30
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U.S. ARMY CORPS OF ENGINEERS
SOUTH ATLANTIC DIVISION LABORATORY
MARIETTA, GEORGIA

SUSPENDED SEDIMENT-TIME CURVE

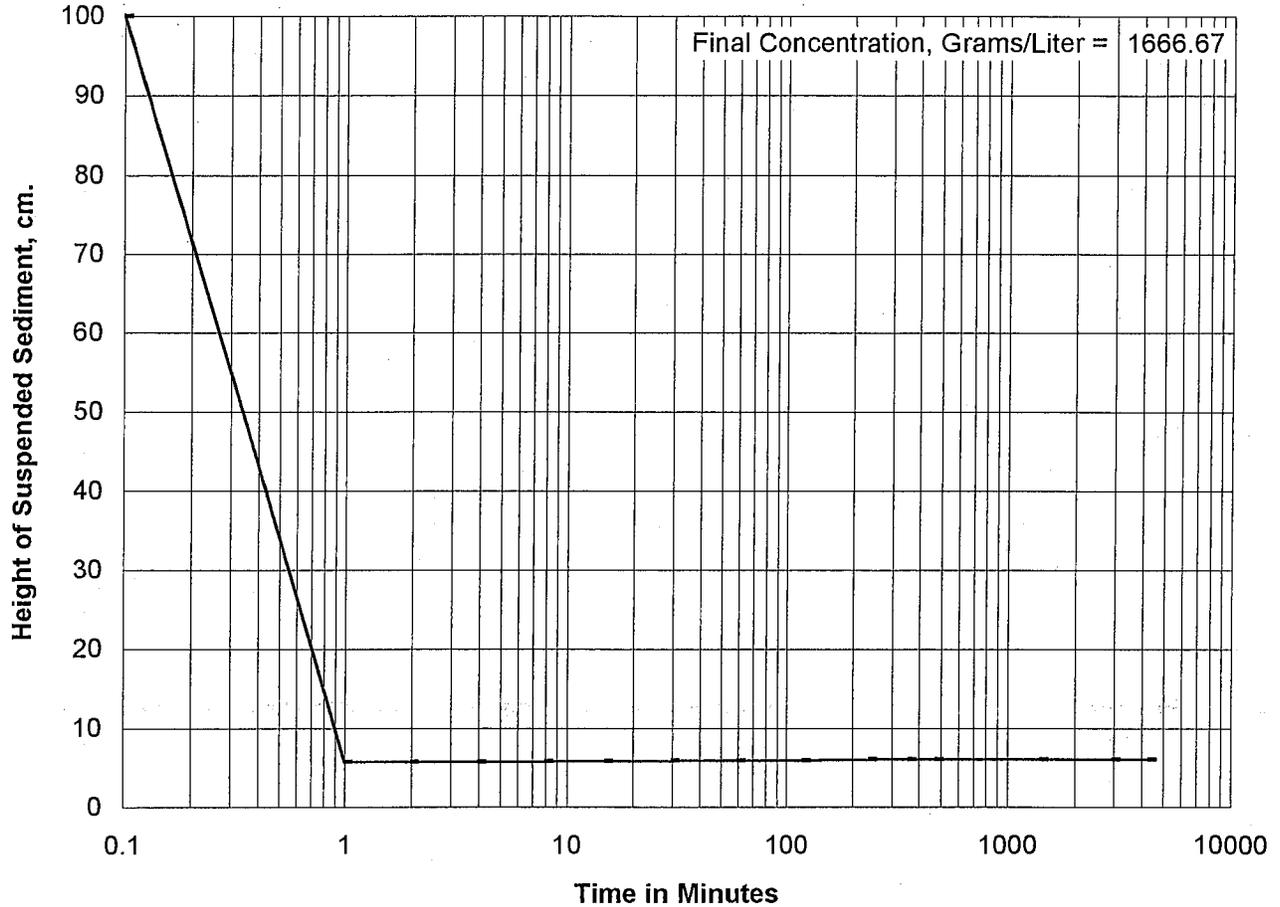


- NOTES:**
1. Test specimens (100 grams/ liter ,moist weight of specimen) suspended in sea water(salinity about 11 ppt) in 100 cm. long bottom withdrawal tubes.
 2. Suspended sediment-time curves represent the contact surface between the sediment still in suspension and the "clear" water on top at the elapsed time indicated.
 3. See grain-size data on enclosed gradation curve.
 4. Percent Solids = 89.64

PROJECT	PALM BEACH HARBOR MAINTENANCE DREDGING	REQ'N NO.	RM-CW-95-0159
		W.O. NO.	7760
AREA		DATE RECEIVED	21-Aug-95
		DATE REPORTED	28-Aug-95
BORING NO.	CB-PBH-95-2	ELEVATION	-38.0 to -39.5
SAMPLE NO.	1	LAB NO.	73/7090

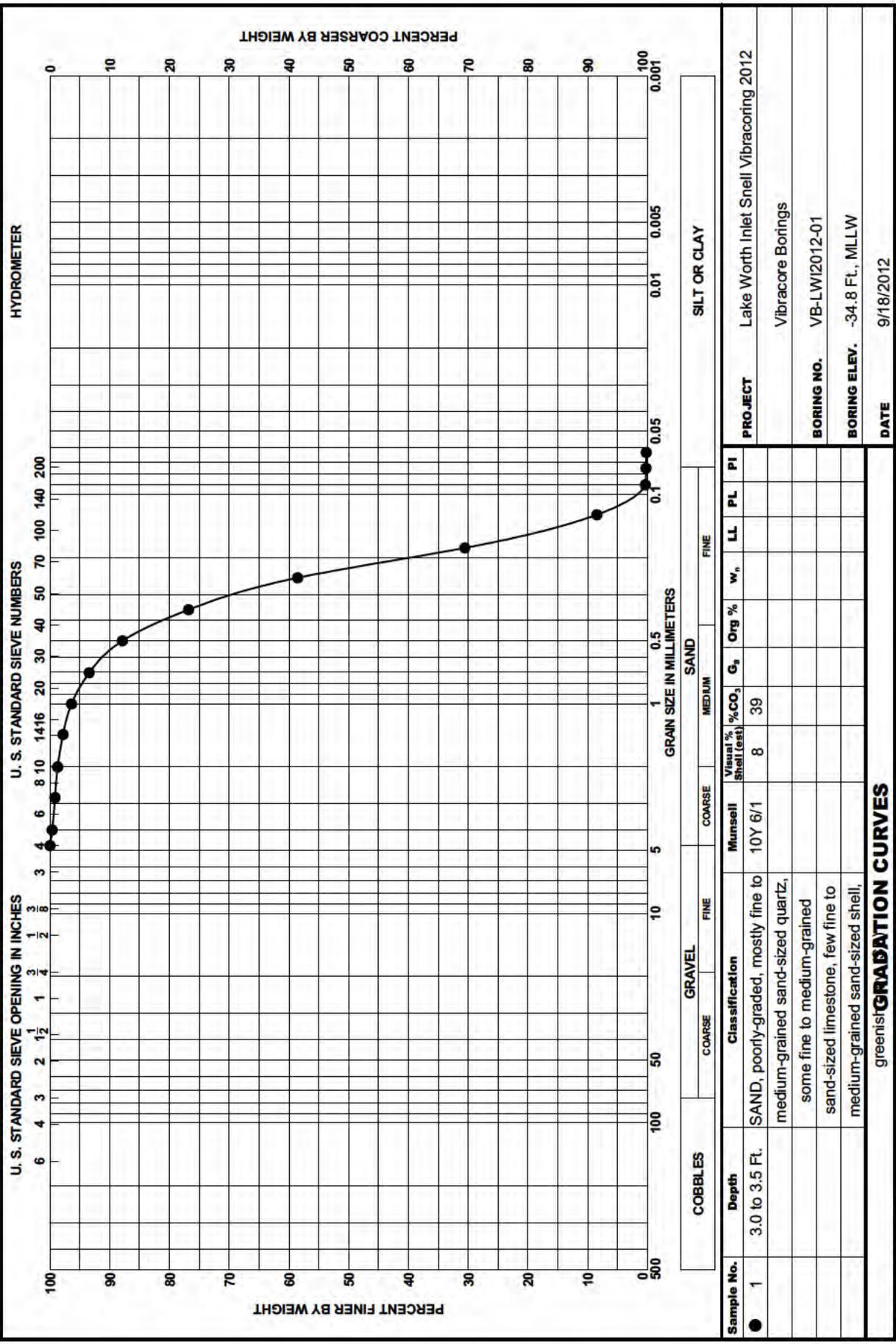
U.S. ARMY CORPS OF ENGINEERS
SOUTH ATLANTIC DIVISION LABORATORY
MARIETTA, GEORGIA

SUSPENDED SEDIMENT-TIME CURVE



- NOTES:**
1. Test specimens (100 grams/ liter ,moist weight of specimen) suspended in sea water(salinity about 11 ppt) in 100 cm. long bottom withdrawal tubes.
 2. Suspended sediment-time curves represent the contact surface between the sediment still in suspension and the "clear" water on top at the elapsed time indicated.
 3. See grain-size data on enclosed gradation curve.
 4. Percent Solids = 90.02

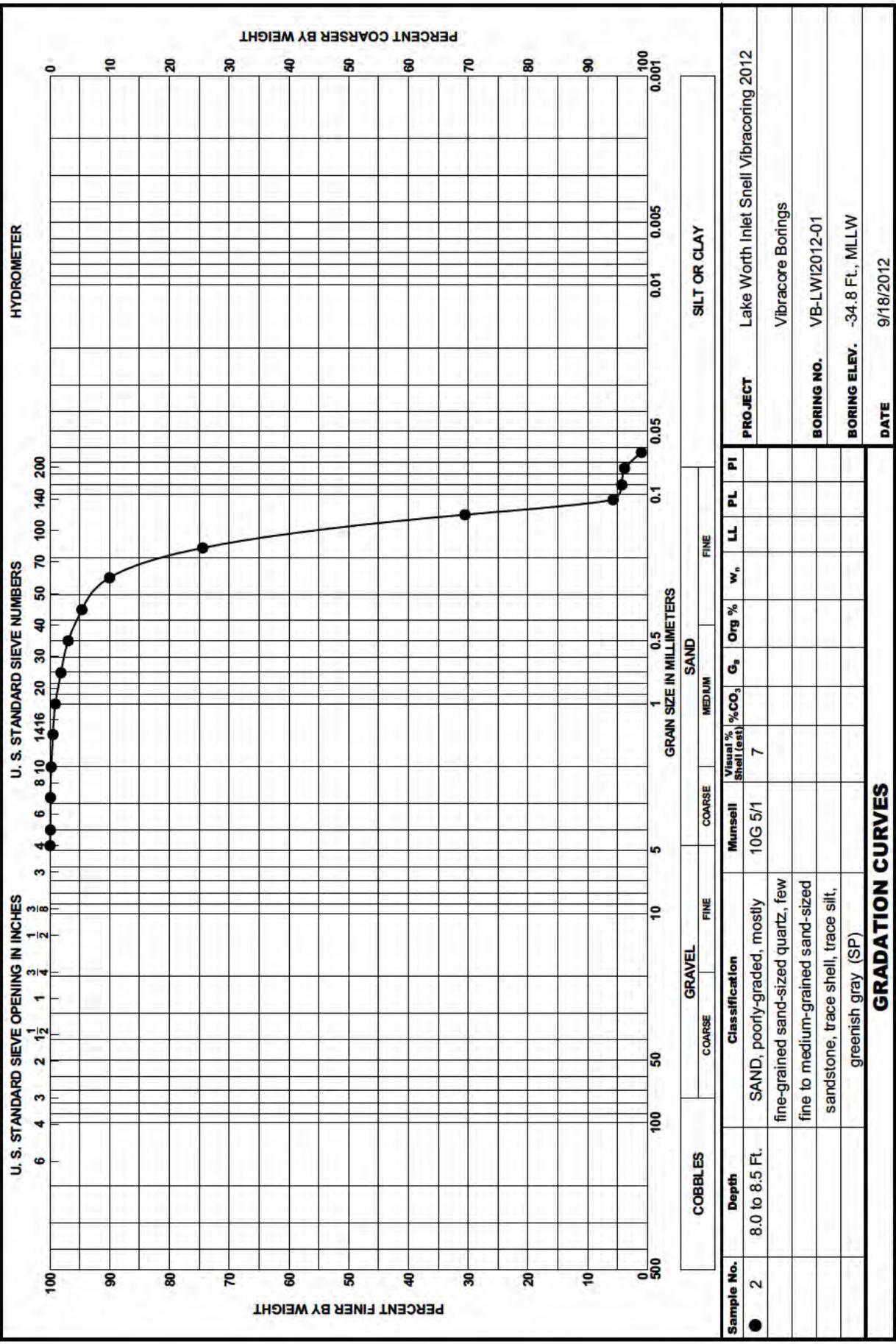
PROJECT	PALM BEACH HARBOR MAINTENANCE DREDGING	REQ'N NO.	RM-CW-95-0159
		W.O. NO.	7760
AREA		DATE RECEIVED	21-Aug-95
		DATE REPORTED	28-Aug-95
BORING NO.	CB-PBH-95-7	ELEVATION	-36.8 to -38.3
SAMPLE NO.	1	LAB NO.	73/7095



PROJECT	Lake Worth Inlet Snell Vibracoring 2012
BORING NO.	Vibracore Borings
BORING NO.	VB-LWI2012-01
BORING ELEV.	-34.8 Ft., MLLW
DATE	9/18/2012

Sample No.	Depth	Classification	Munsell	Visat % Shell (est)	%CO ₂	G _s	Org %	w _p	LL	PL	PI
● 1	3.0 to 3.5 FL.	SAND, poorly-graded, mostly fine to medium-grained sand-sized quartz, some fine to medium-grained sand-sized limestone, few fine to medium-grained sand-sized shell, greenish	10Y 6/1	8	39						

GRADATION CURVES

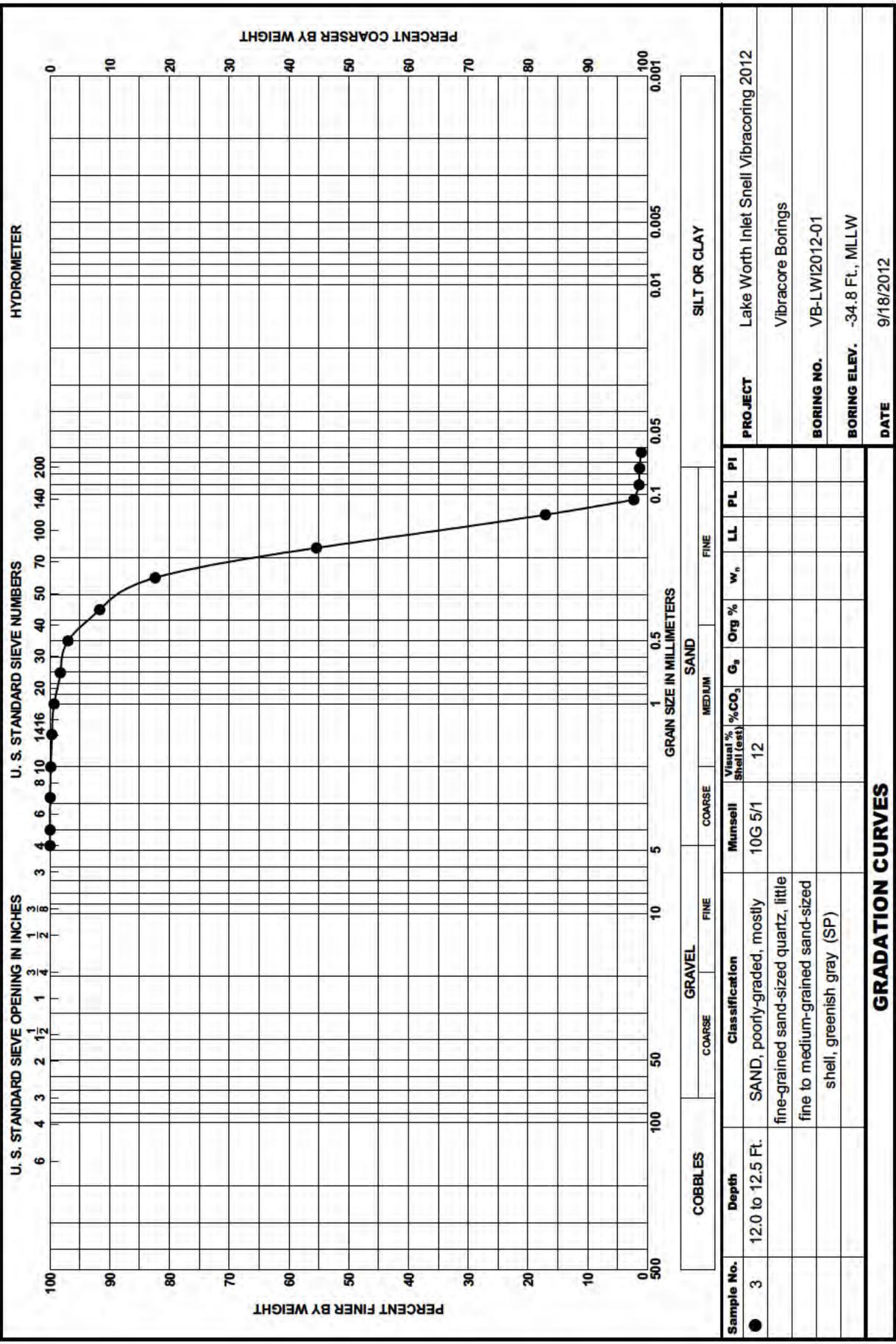


PROJECT	Lake Worth Inlet Snell Vibracoring 2012
BORING NO.	Vibracore Borings
BORING NO.	VB-LWI2012-01
BORING ELEV.	-34.8 Ft., MLLW
DATE	9/18/2012

Sample No.	Depth	Classification	Munsell	Visat % Shell (est)	%CO ₂	G _s	Org %	w _p	LL	PL	PI
● 2	8.0 to 8.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine to medium-grained sand-sized sandstone, trace shell, trace silt, greenish gray (SP)	10G 5/1	7							

GRADATION CURVES

SAJ FORM 2087
JUN 02

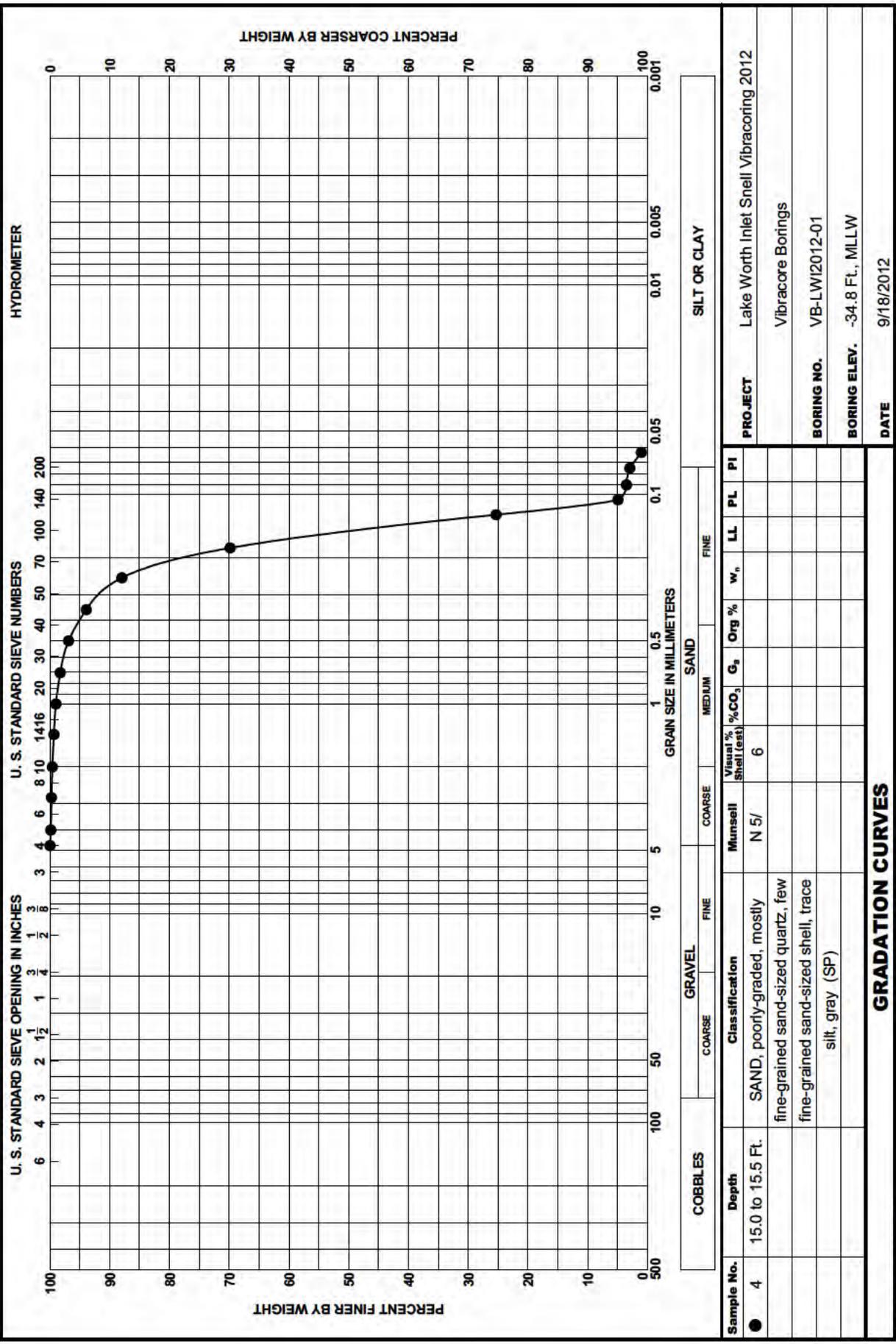


PROJECT	Lake Worth Inlet Snell Vibracoring 2012
BORING NO.	Vibracore Borings
BORING NO.	VB-LWI2012-01
BORING ELEV.	-34.8 Ft., MLLW
DATE	9/18/2012

Sample No.	Depth	Classification	Munsell	Visual % Shell (est)	%CO ₂	G _s	Org %	w _p	LL	PL	PI
			COARSE	FINE	COARSE	FINE	COARSE	FINE			
● 3	12.0 to 12.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, greenish gray (SP)	10G 5/1	12							

GRADATION CURVES

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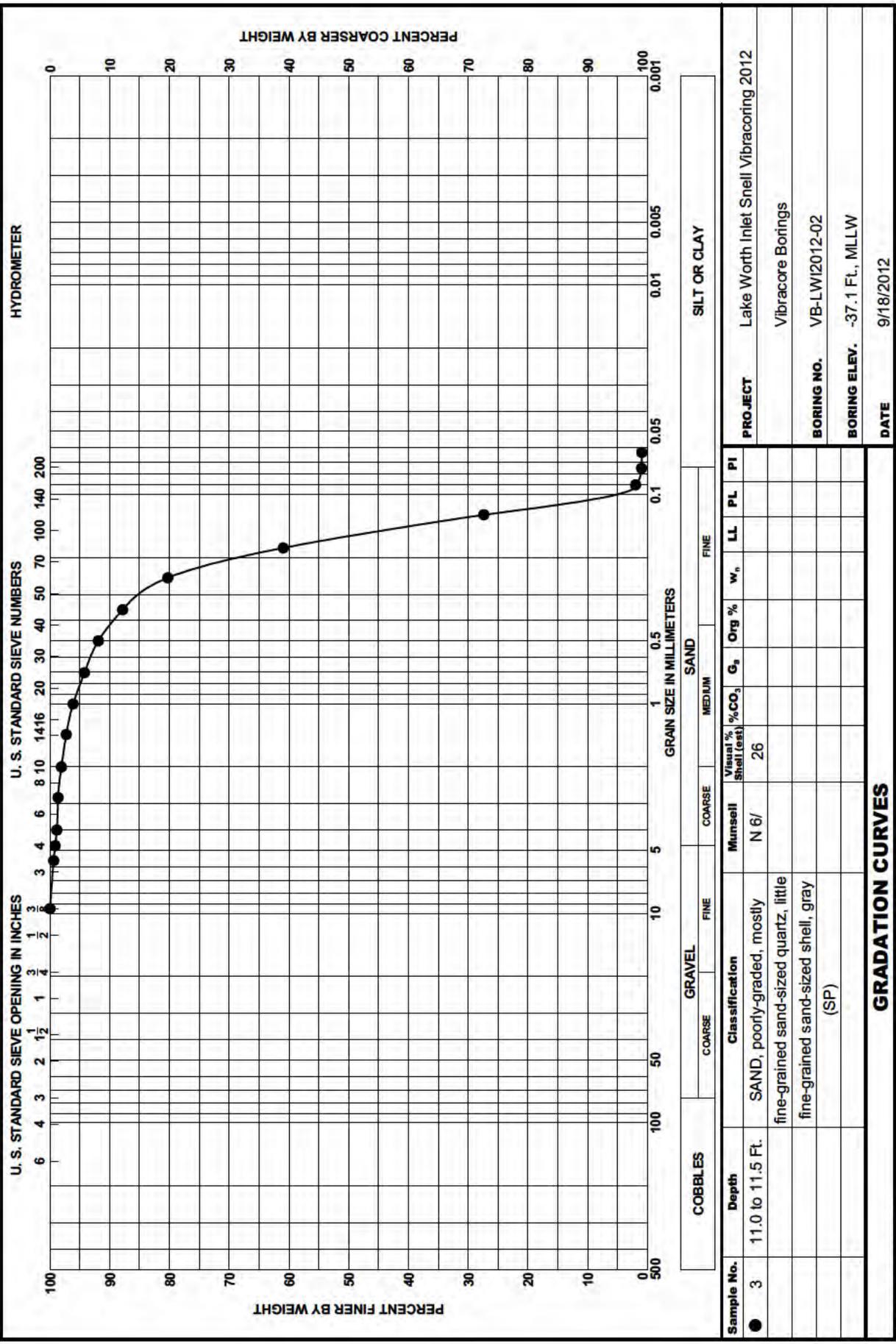


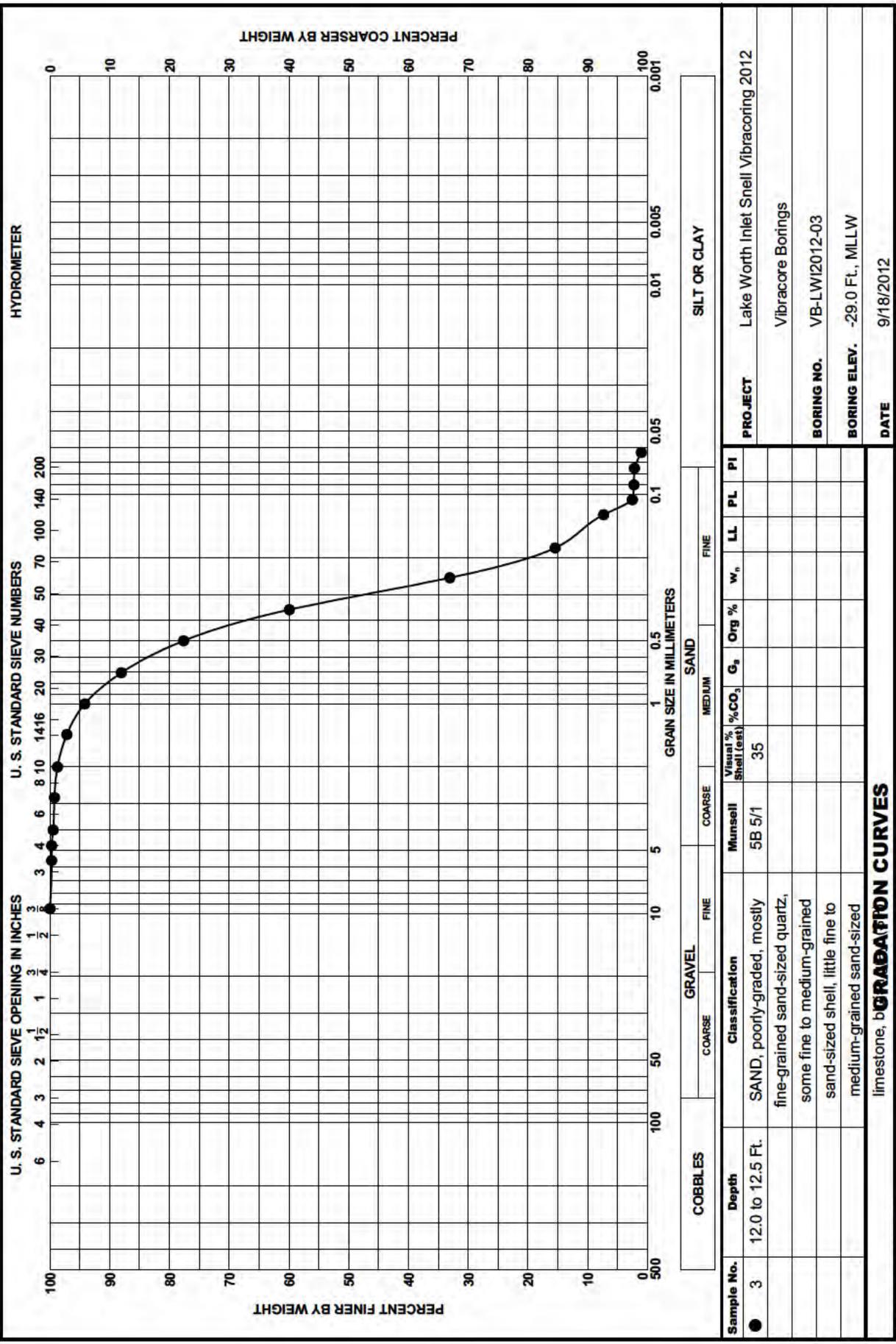
PROJECT	Lake Worth Inlet Snell Vibracoring 2012
BORING NO.	Vibracore Borings
BORING NO.	VB-LWI2012-01
BORING ELEV.	-34.8 Ft., MLLW
DATE	9/18/2012

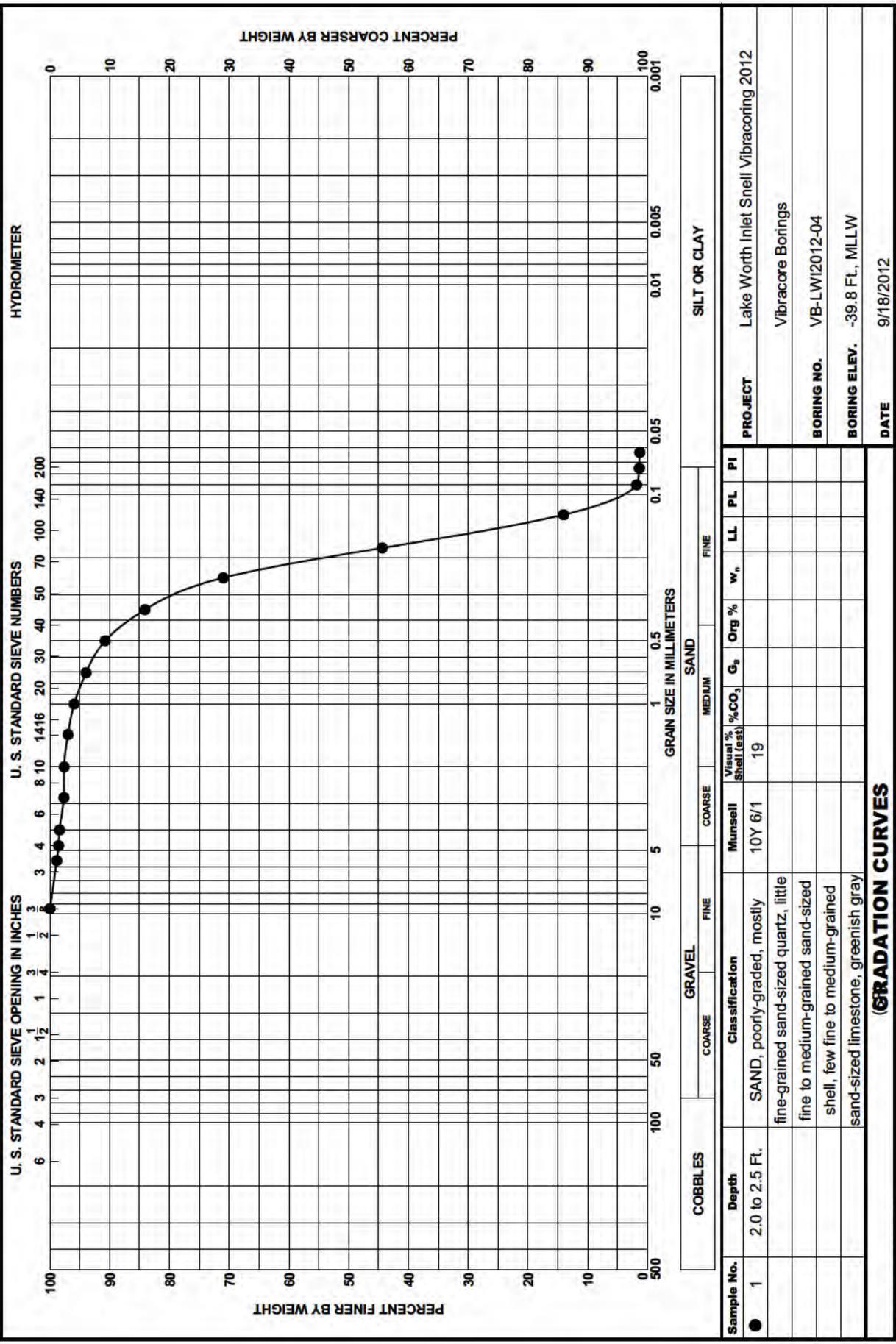
Sample No.	Depth	Classification	Munsell	Viscat % Shell (est)	%CO ₂	G _s	Org %	w _p	LL	PL	PI
● 4	15.0 to 15.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, few fine-grained sand-sized shell, trace silt, gray (SP)	N 5/	6							

GRADATION CURVES

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JUN 02



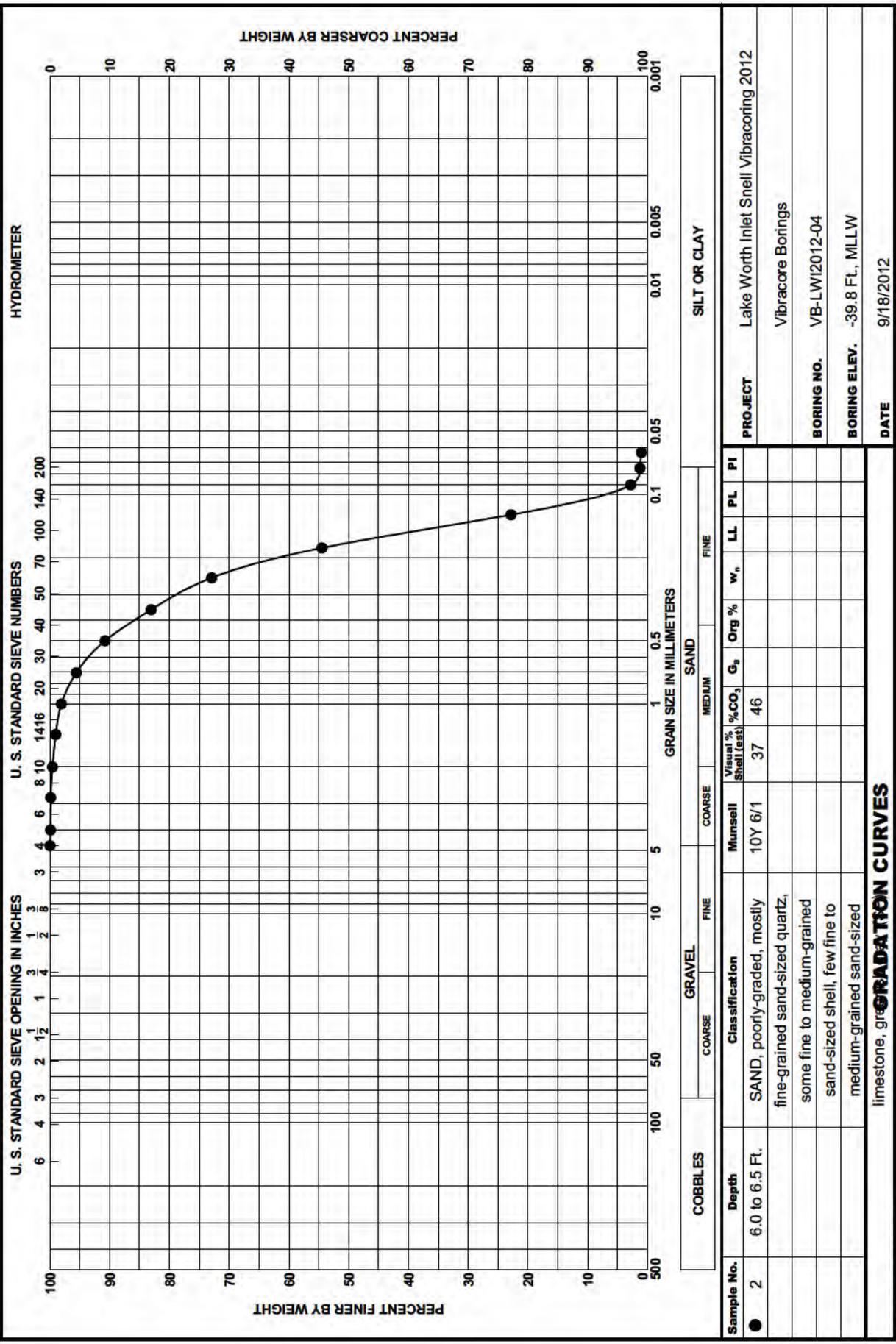


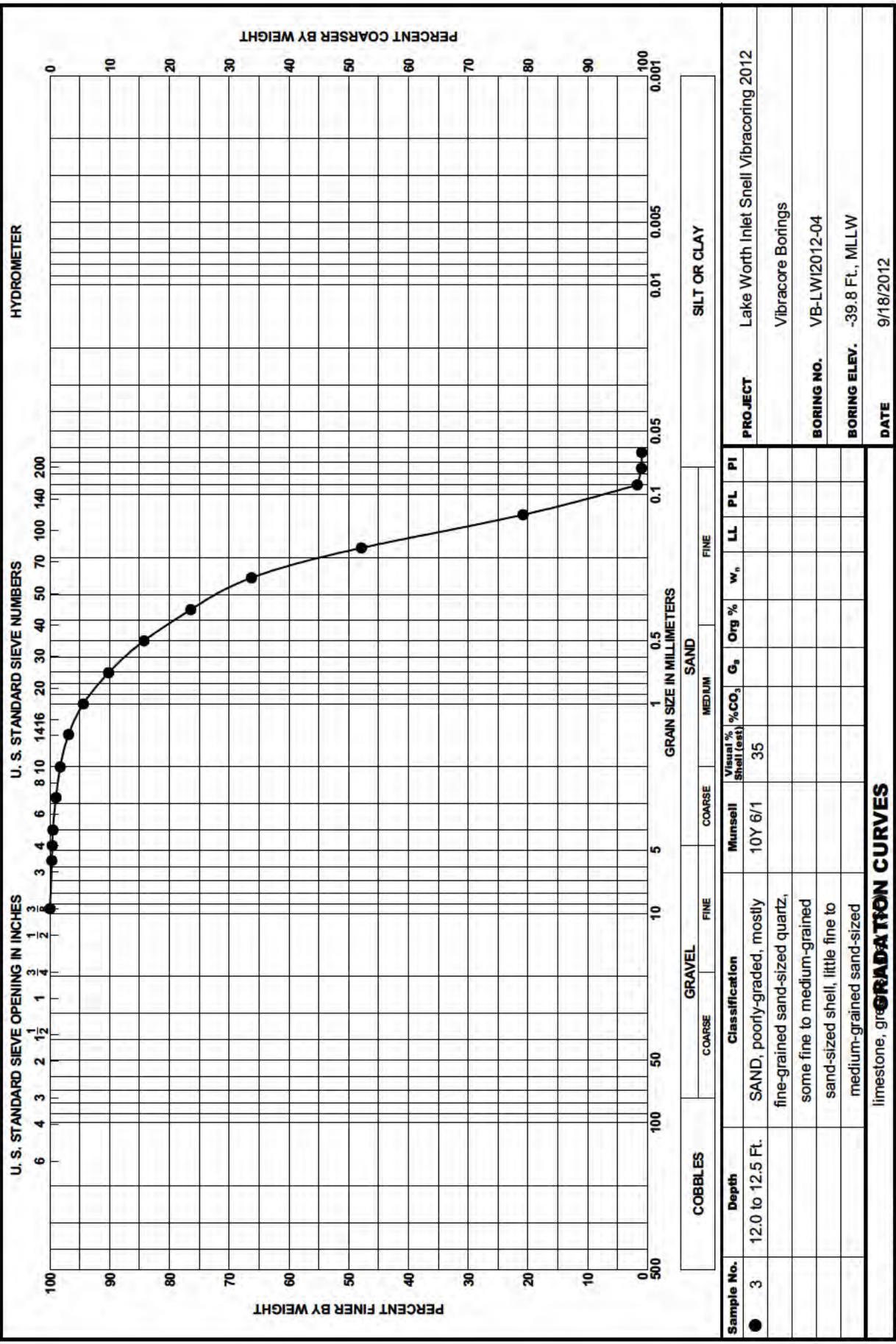


PROJECT	Lake Worth Inlet Snell Vibracoring 2012
BORING NO.	Vibracore Borings
BORING NO.	VB-LWI2012-04
BORING ELEV.	-39.8 Ft., MLLW
DATE	9/18/2012

Sample No.	Depth	Classification	Munsell		Vicat % Shell (est)	%CO ₂	G _s	Org %	w _p	LL	PL	PI
			COARSE	FINE								
● 1	2.0 to 2.5 Ft.	SAND, poorly-graded, mostly fine-grained sand-sized quartz, little fine to medium-grained sand-sized shell, few fine to medium-grained sand-sized limestone, greenish gray	10Y	6/1	19							

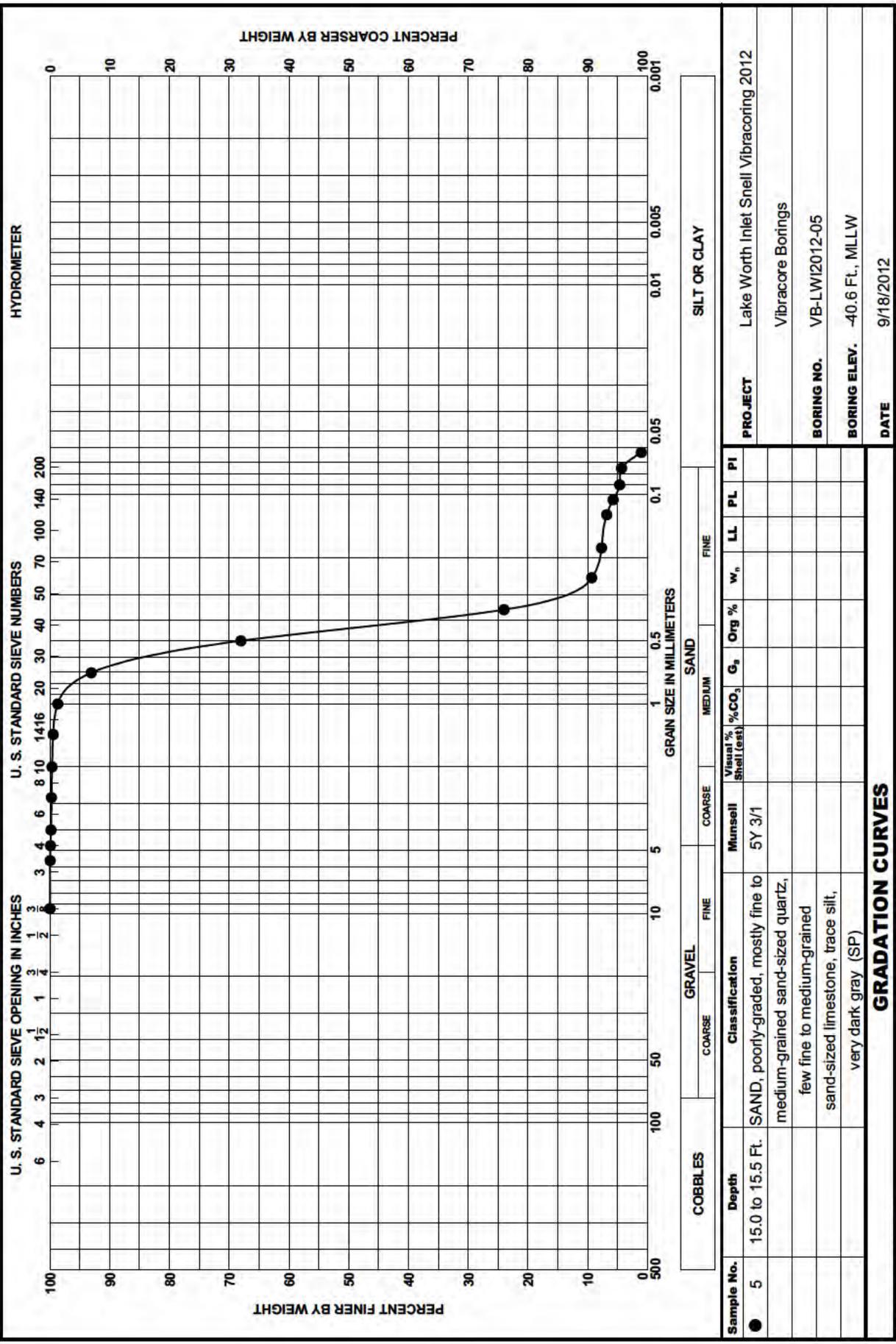
GRADATION CURVES

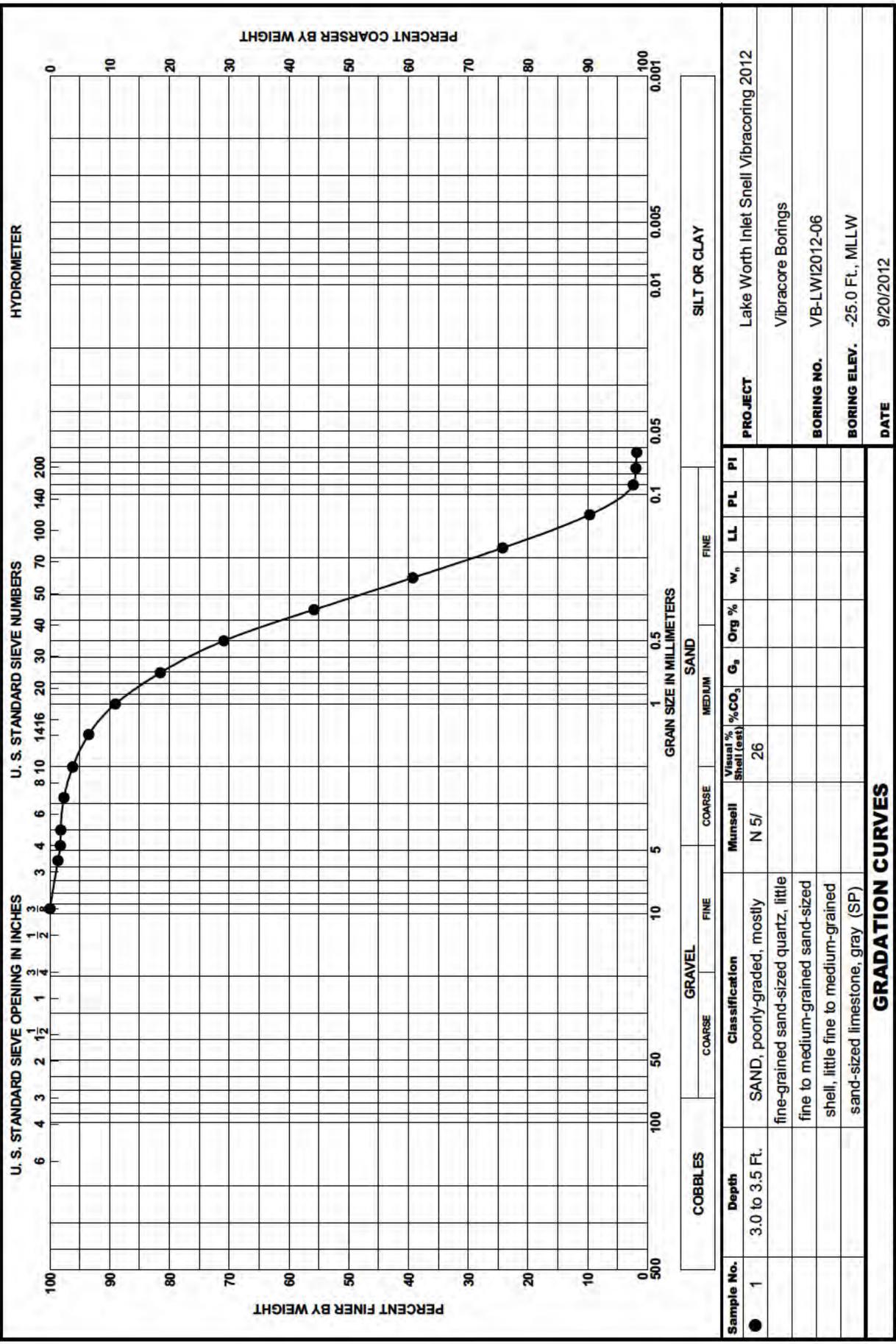




PROJECT Lake Worth Inlet Snell Vibracoring 2012
BORING NO. VB-LWI2012-04
BORING ELEV. -39.8 Ft., MLLW
DATE 9/18/2012

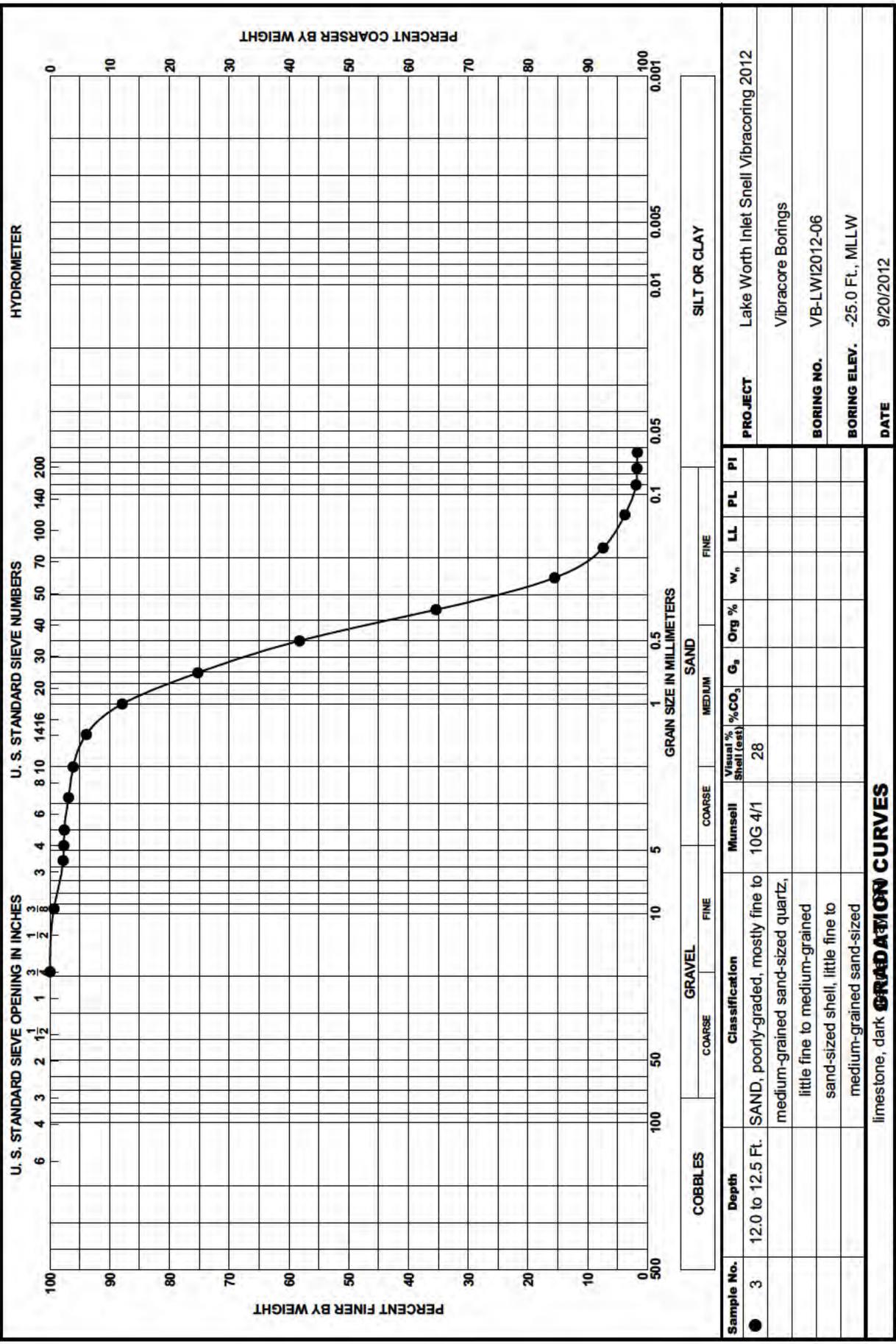
SAJ FORM 2087
 JUN 02





GRADATION CURVES

SAJ FORM 2087
JUN 02



PROJECT Lake Worth Inlet Snell Vibracoring 2012
BORING NO. VB-LWI2012-06
BORING ELEV. -25.0 Ft., MLLW
DATE 9/20/2012

GRADATION CURVES

**Boring Logs and Laboratory Results:
Settling Basins**

Hole No. CB-PBH95-4

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Jacksonville District		SHEET 1 OF 1	
1. PROJECT Palm Beach Harbor				10. SIZE AND TYPE OF BIT See Remarks			
2. LOCATION (Coordinates or Station) X=816,821 Y=887,739				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW (FEET)			
3. DRILLING AGENCY Corps of Engineers				12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number) CB-PBH95-4				13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN disturbed: 2 undisturbed: 0			
5. NAME OF DRILLER C. Robbins				14. TOTAL NUMBER OF CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED				15. ELEVATION GROUND WATER TIDAL			
7. THICKNESS OF BURDEN Ft.				16. DATE HOLE STARTED COMPLETED 8/8/95 8/8/95			
8. DEPTH DRILLED INTO ROCK 0 Ft.				17. ELEVATION TOP OF HOLE -32.1 Ft.			
9. TOTAL DEPTH OF HOLE 4.5 Ft.				18. TOTAL CORE RECOVERY FOR BORING 47 %			
				19. SIGNATURE OF Geologist Jim Arthur			
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS Bit or Barrel	BLOWS/ ft.
-32.1	.0					-32.1	0
		SAND, gray fine poorly graded quartz sand (SP)		0		SPLIT SPOON	3
-33.6	1.5		Below elevation -33.6 trace of small shell fragments				4
				67	1	SPLIT SPOON	9
							17
						-35.1	2.5
				73	2	SPLIT SPOON	30
-36.6	4.5					-36.6	50
			NOTE: Soils are field visually classified in accordance with the Unified Soils Classification System. Samples recovered using a 140# hammer with 30" drop used on a 2 foot split spoon (1-3/8" ID x 2" OD) SAMPLE ELEVATION LABORATORY CLASSIFICATION -33.6 to -35.1 (SP-SM)* -35.1 to -36.6 (SP-SM)* * Visual classification based on gradation curve. No Atterberg Limits.			Set 6 inch casing to depth 5.1 feet, drilled using Basco salt water drilling mud.	5
							7.5
							10
							12.5
							15
							17.5
							20
							22.5