APPENDIX A

ENGINEERING APPENDIX

ATTACHMENT C
Resistivity Report

PART 2

Jacksonville Harbor Navigation Study, Duval County, Florida

DRAFT
INTEGRATED GENERAL REEVALUATION REPORT II AND SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

TEST CORE BORING NUMBER
“CB-JHPM09-7”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-7

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) SW BLOUNT WIDENER
2. BORING DESIGNATION	CB-JHPM09-7
LOCATION COORDINATES	X = 480,987 Y = 2,200,720
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	18.6 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 6 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	0
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-25-10 COMPLETED: 01-25-10
16. ELEVATION TOP OF BORING	-44.8 Ft.
17. TOTAL RECOVERY FOR BORING	82 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-44.8	0.0						-44.8		
-45.3	0.5		SILT, organic-L, nonplastic, soft, wet, 5Y 2.5/1 black (OL)						
		Slightly Weathered	LIMESTONE, sandy, sparsely fossiliferous, hard, slightly weathered, fine grained, porous, wet, 2.5Y 7/2 light gray	53	1		SPT Sampler -46.3	0 4 19	23
				80	2		-46.8 SPT Sampler	50	
			At El. -47.3 Ft., fossiliferous, moist				Advanced Boring -47.8		
			At El. -47.9 Ft., massive bedding, bedding orientation	0	3		-47.9 SPT Sampler	50/0.1'	
		Slightly Weathered	At El. -49.6 Ft., hard, slightly weathered	100	Run # 1	RQD 38	4 x 5-1/2" Diamond Impregnated Bit DT = 3 mins HP = 300 psi DFR = 50 %		
			At El. -50.8 Ft., pitted						
-52.9	8.1						-52.9		
		Moderately Weathered	LIMESTONE, soft, moderately weathered, massive bedding, bedding orientation						
			At El. -53.8 Ft., porous, sand filled pores	80	Run # 2	RQD 6	4 x 5-1/2" Diamond Impregnated Bit DT = 2 mins HP = 300 psi DFR = 50 %		
							-57.9		
				78	Run # 3	RQD 35	4 x 5-1/2" Diamond Impregnated Bit DT = 2 mins HP = 300 psi DFR = 50 %		

0 5 10 15

(Continued)

Boring Designation CB-JHPM09-7

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District	SHEET 2 OF 2 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Jacksonville Harbor General Reevaluation Report (GRR)	State Plane, FLE (U.S. Ft.)	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 480,987 Y = 2,200,720	-44.8 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-60.3	15.5								
		Slightly Weathered	LIMESTONE, sparsely fossiliferous, hard, slightly weathered, porous, sand filled pores	78	Run # 3	RQD 35	4 x 5-1/2" Diamond Impregnated Bit DT = 2 mins HP = 300 psi DFR = 50 %		
-62.3	17.5								
		Mod. Wea.	LIMESTONE, soft, moderately weathered, pitted, sand filled pits						
-63.4	18.6						-63.4		

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. Set 54.5 ft. of 6" flush joint steel casing

4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Dames Point Bridge.

5. Water depth of -46.2 ft. recorded at 08:15 AM on 1/25/2010. Tide gage reading of +1.4 ft. mllw

6. Compressive Strength Test of Rock Core At Elevation -47.8' to -48.6' = 2435 PSI.

7. Compressive Strength Test of Rock Core At Elevation -50.1' to -50.8' = 935 PSI.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

15
20
25
30
35

JACKSONVILLE HARBOR GRR

CB-JHPM09- 7

DEPTH: 0.0-1.5'

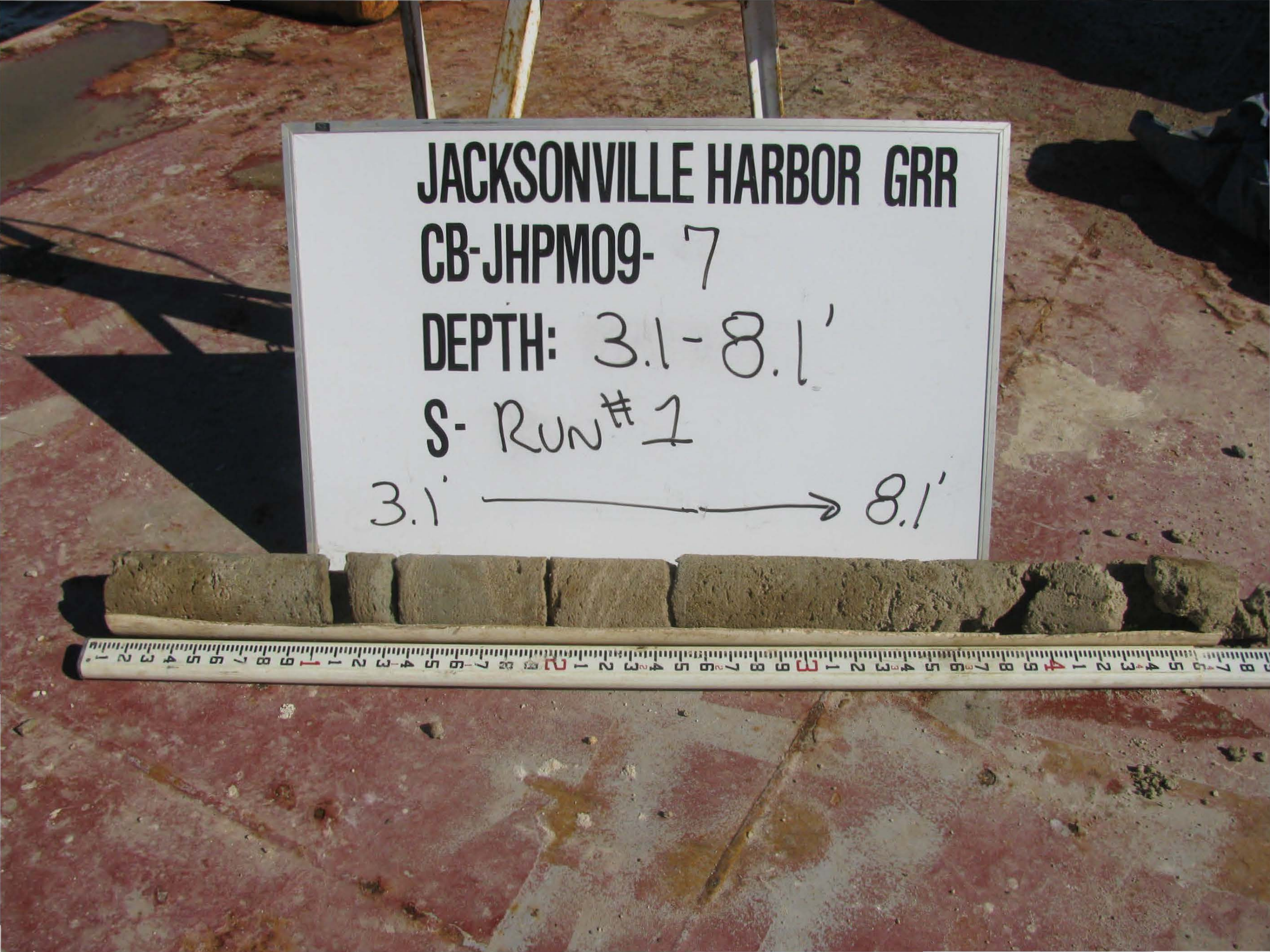
S- 1

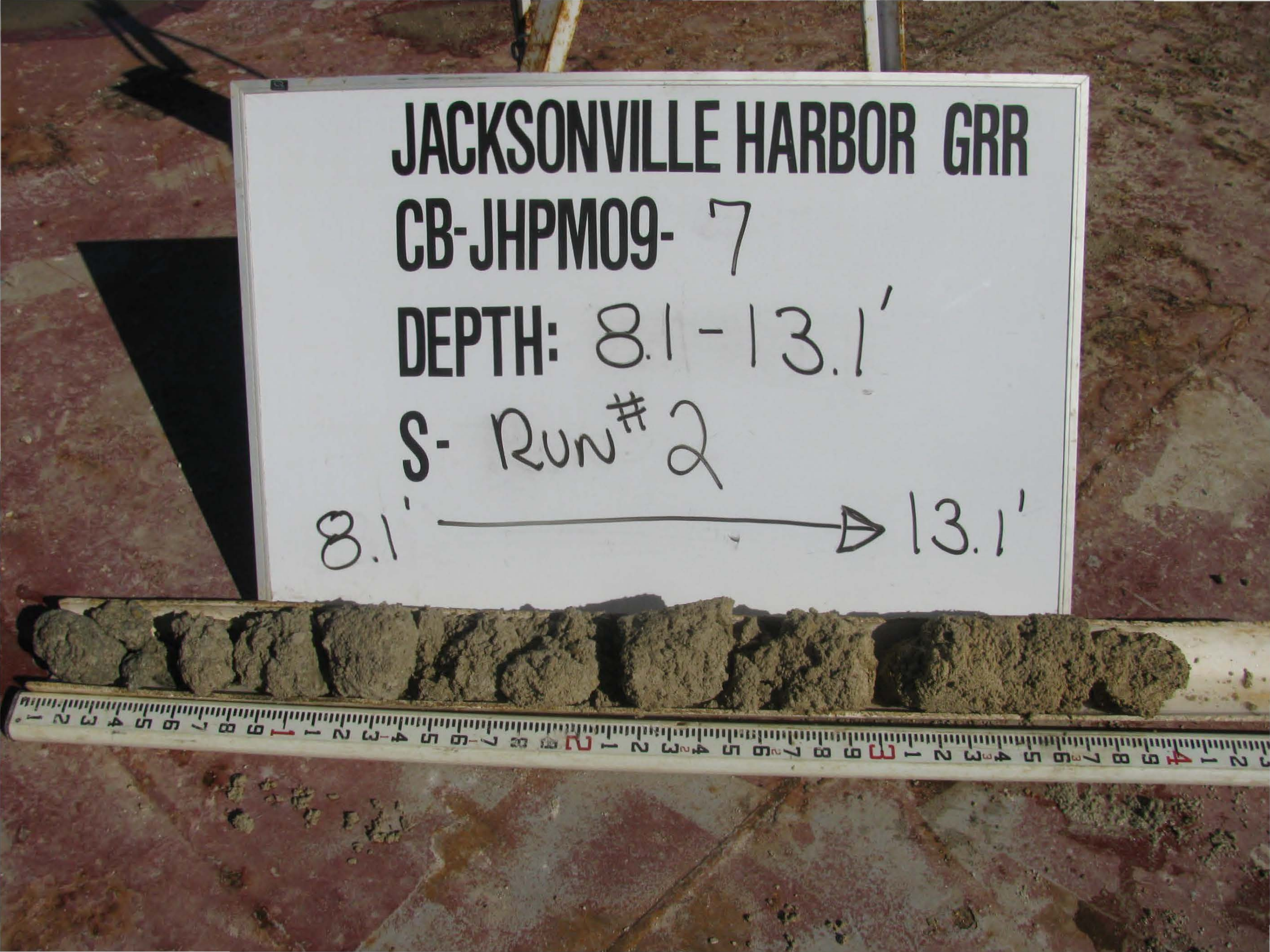
JACKSONVILLE HARBOR GRR

CB-JHPM09- 7

DEPTH: 1.5-3.0'

S- 2


JACKSONVILLE HARBOR GRR
CB-JHPM09- 7
DEPTH: 3.1-8.1'
S- RUN #1
3.1'
8.1'


JACKSONVILLE HARBOR GRR
CB-JHPM09- 7
DEPTH: 8.1-13.1'
S- Run# 2
8.1'
13.1'

JACKSONVILLE HARBOR GRR
CB-JHPM09- 7
DEPTH: 13.1-18.6'
S- RUN #3
13.1' → 18.6'

TEST CORE BORING NUMBER
“CB-JHPM09-8”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-8

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-8
LOCATION COORDINATES	X = 482,338 Y = 2,200,810
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	17.3 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 10 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	0
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-23-10 COMPLETED: 01-23-10
16. ELEVATION TOP OF BORING	-45.6 Ft.
17. TOTAL RECOVERY FOR BORING	73 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-45.6	0.0						-45.6		
			SAND, silty, mostly subrounded fine-grained sand-sized quartz, trace subangular shell up to 1/8", wet, 5Y 6/2 light olive gray (SM) At El. -46.4 Ft., 5Y 4/1 dark gray	80	1		SPT Sampler -47.1	4 4 6	10
				87	2		SPT Sampler -48.6	1 1 1	2
				47	3		SPT Sampler -50.1	1 1 1	2
-50.1	4.5	Highly Weathered	LIMESTONE, sandy, sparsely fossiliferous, very soft, highly weathered, fine grained, moist, 5Y 7/2 light gray	20	4		SPT Sampler -51.6	1 1 0	1
				60	5		SPT Sampler -53.1	2 2 1	3
				100	6		SPT Sampler -54.6	5 6 6	12
-55.2	9.6	S	At El. -54.9 Ft., fossiliferous, moderately hard, slightly weathered	0	7		-54.9 SPT Sampler	50/0.3'	
		Highly Weathered	LIMESTONE, sandy, sparsely fossiliferous, very soft, highly weathered, porous At El. -56.6 Ft., 5Y 6/1 gray At El. -57.9 Ft., soft, thick bedding, bedding orientation, solid	85	Run # 1	RQD 28	4 x 5-1/2" Diamond Impregnated Bit DT = 3 mins HP = 300 psi DFR = 25 % -60.4		

0 5 10 15

(Continued)

Boring Designation CB-JHPM09-8

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 2 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Jacksonville Harbor General Reevaluation Report (GRR)	State Plane, FLE (U.S. Ft.)	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 482,338 Y = 2,200,810	-45.6 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
		Highly Weathered	At El. -60.8 Ft., porous	80	8		-60.9 SPT Sampler	50	
							Advanced Boring -61.9		
-62.9	17.3			90	9		SPT Sampler -62.9	8 / 50	

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. Set 57.5 ft. of 6" flush joint steel casing

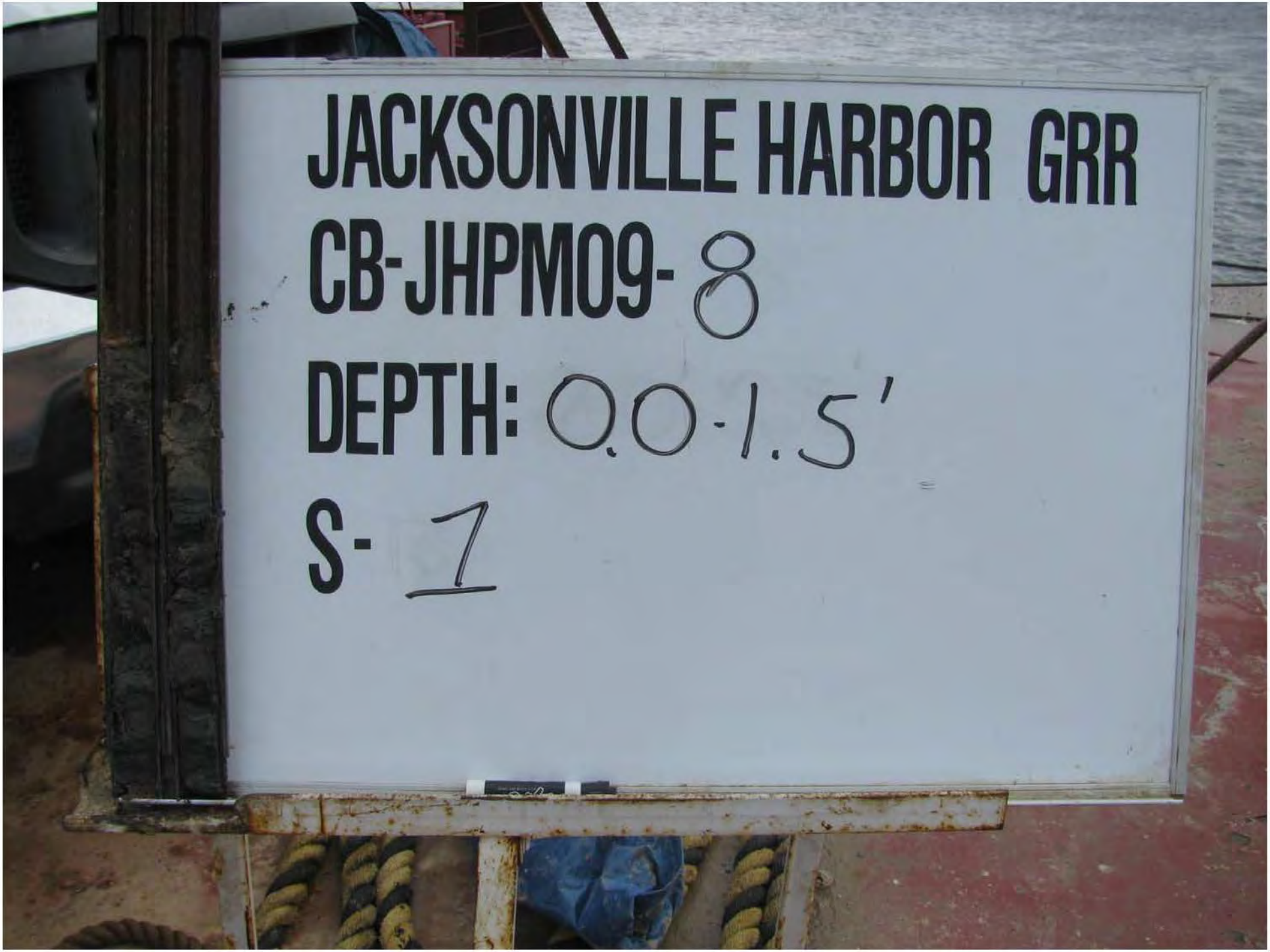
4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Dames Point Bridge.

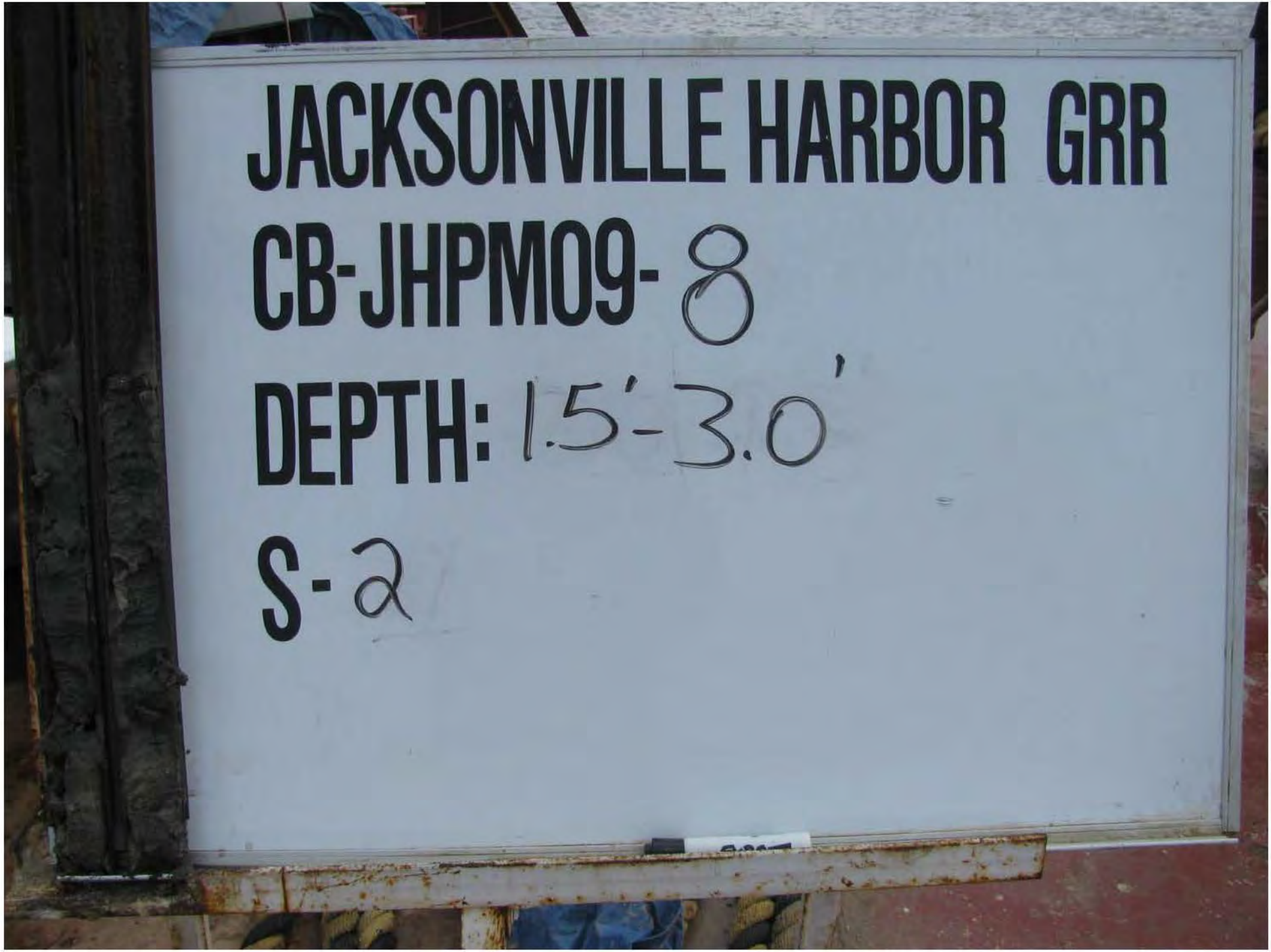
5. Water depth of -47.7 ft. recorded at 12:30 PM on 1/23/2010. Tide gage reading of +2.1 ft. mllw

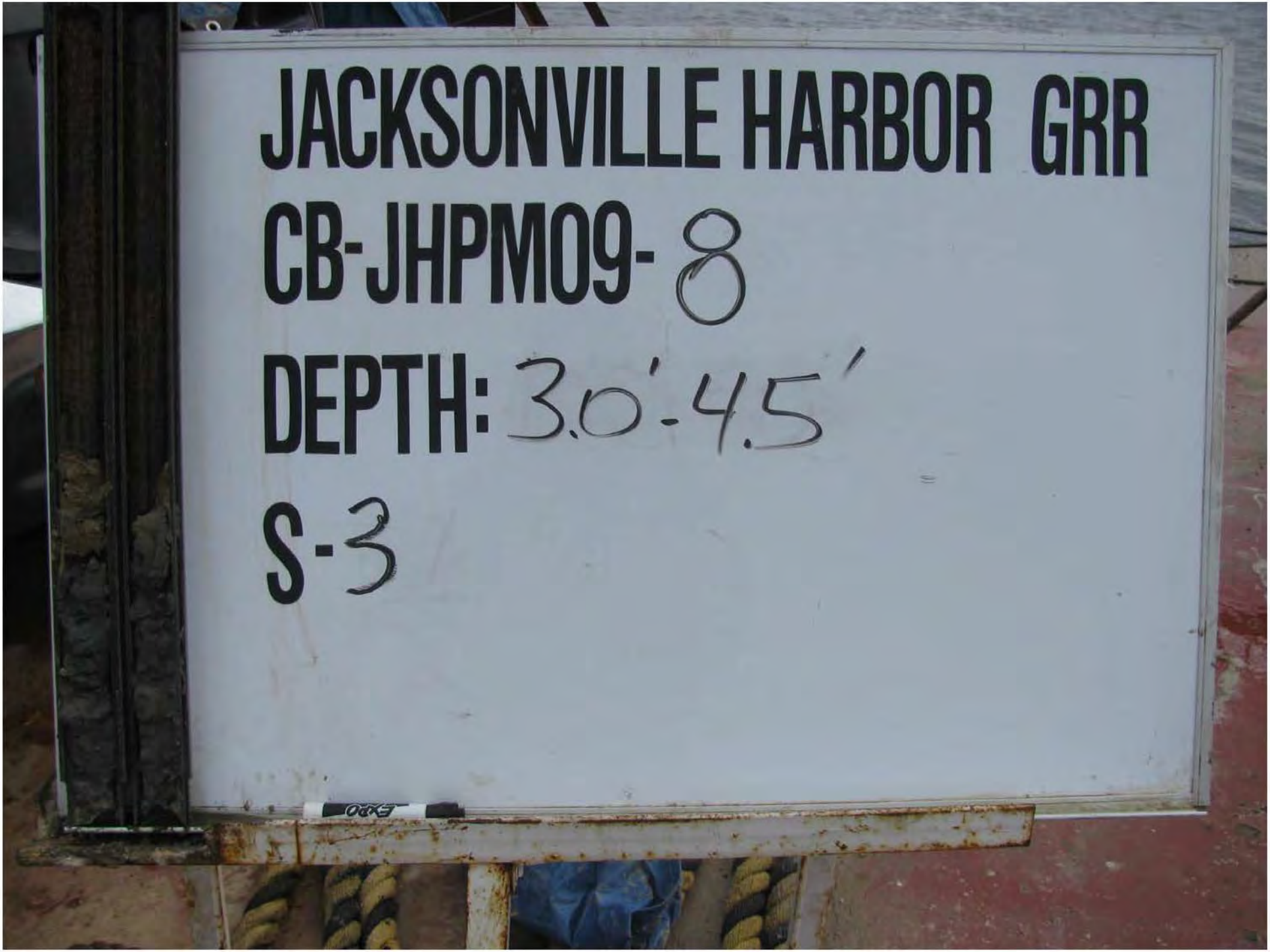
140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

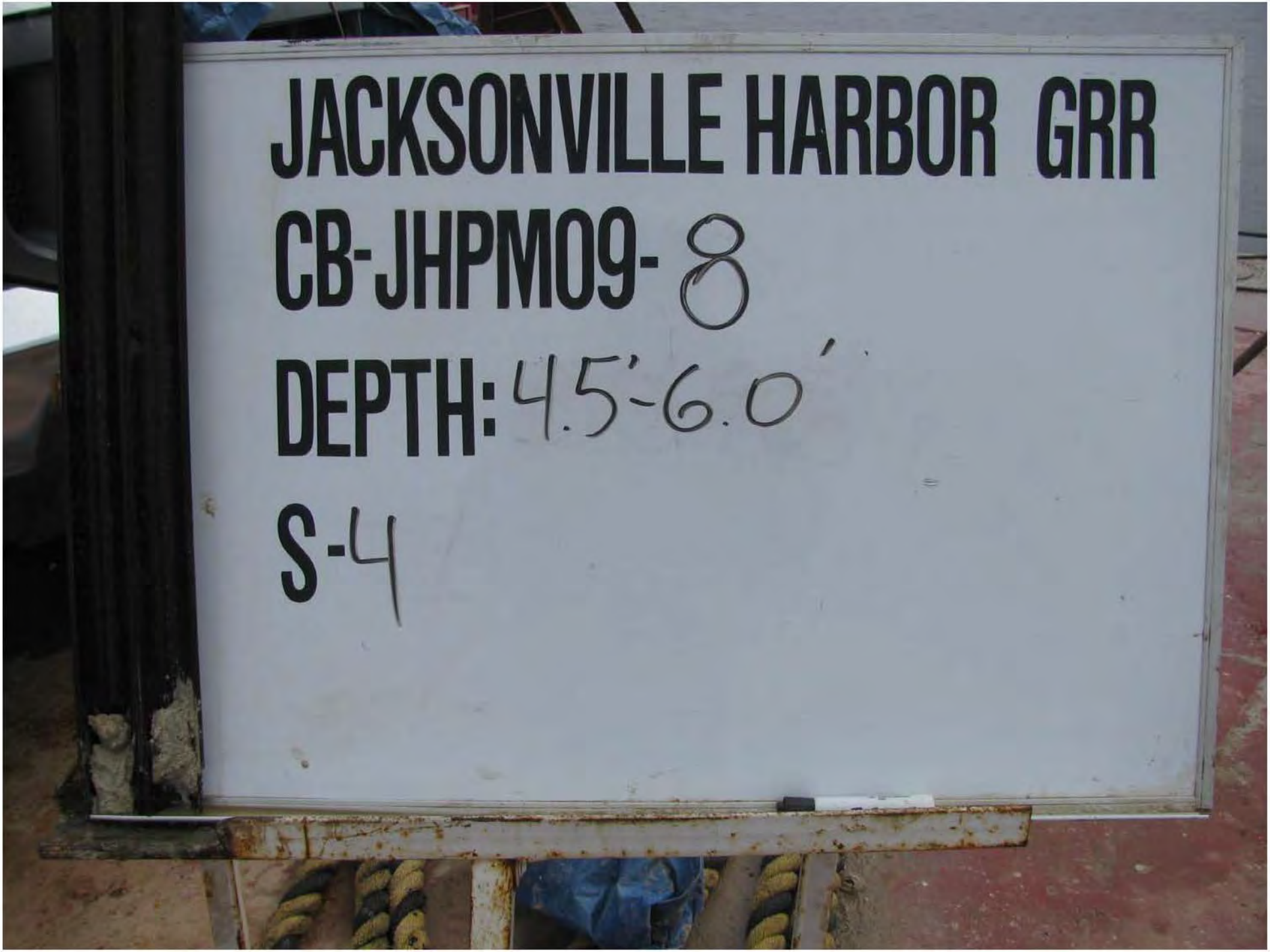
Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

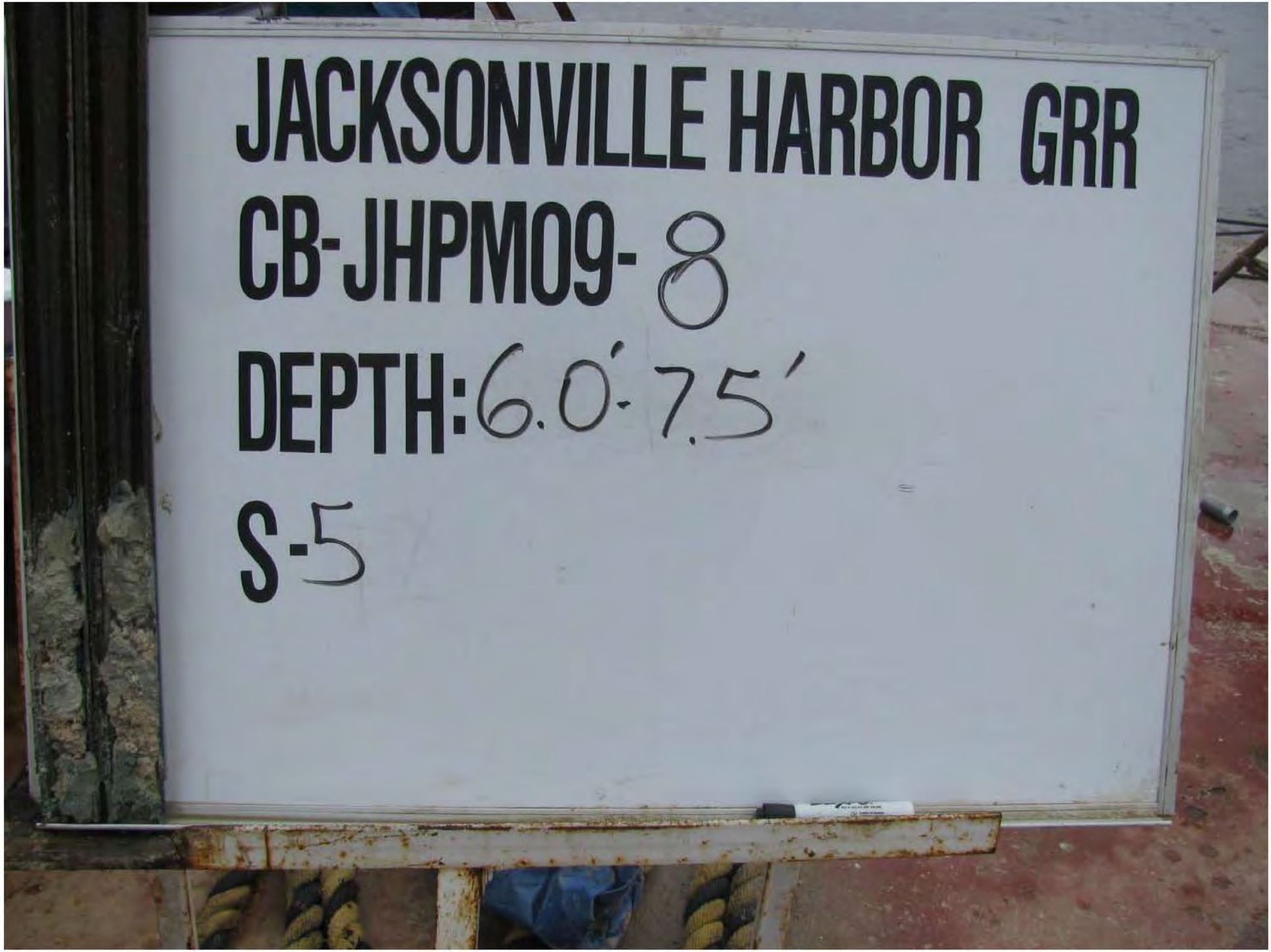
15 20 25 30 35

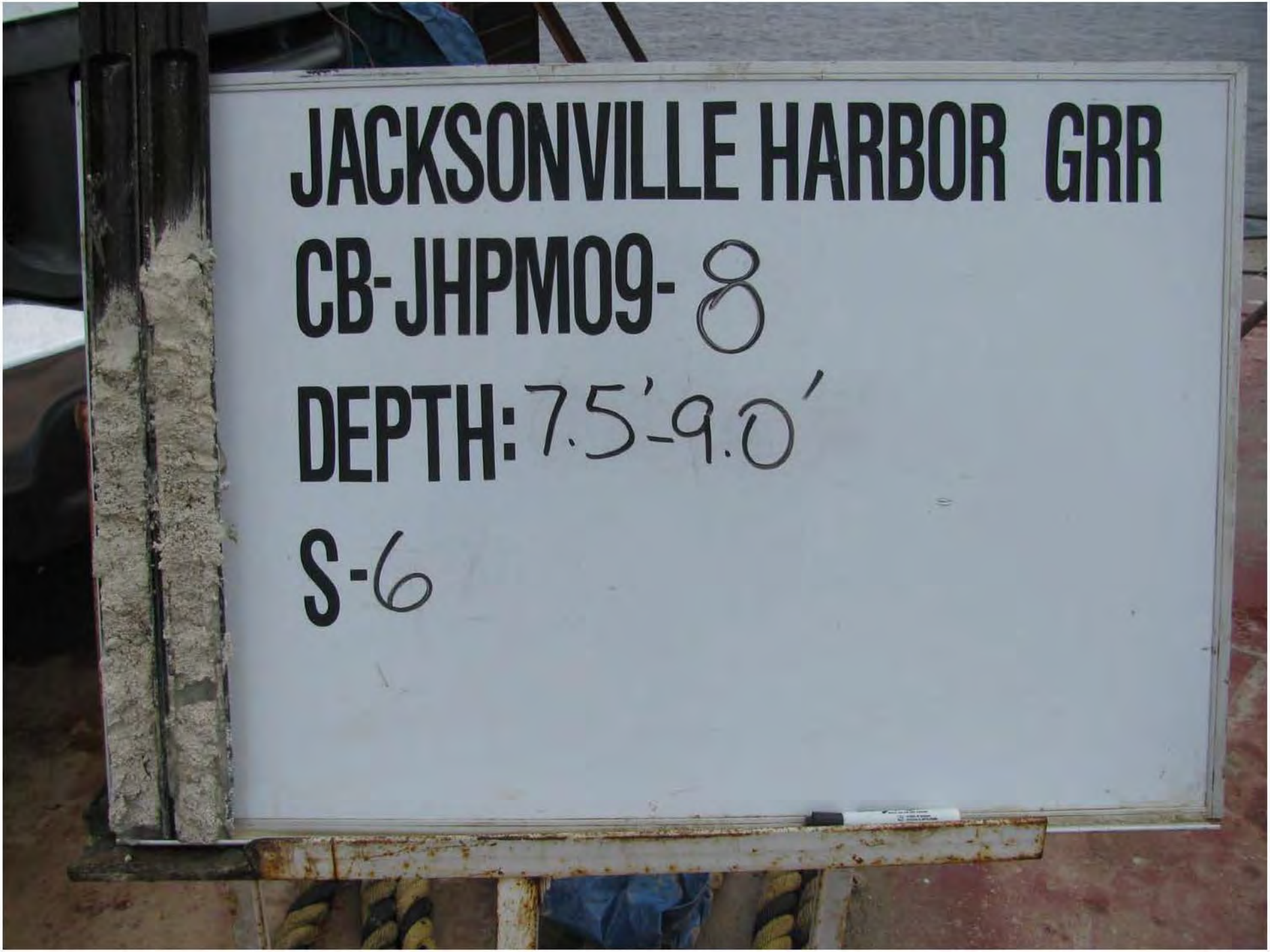

JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 0.0-1.5'
S-1

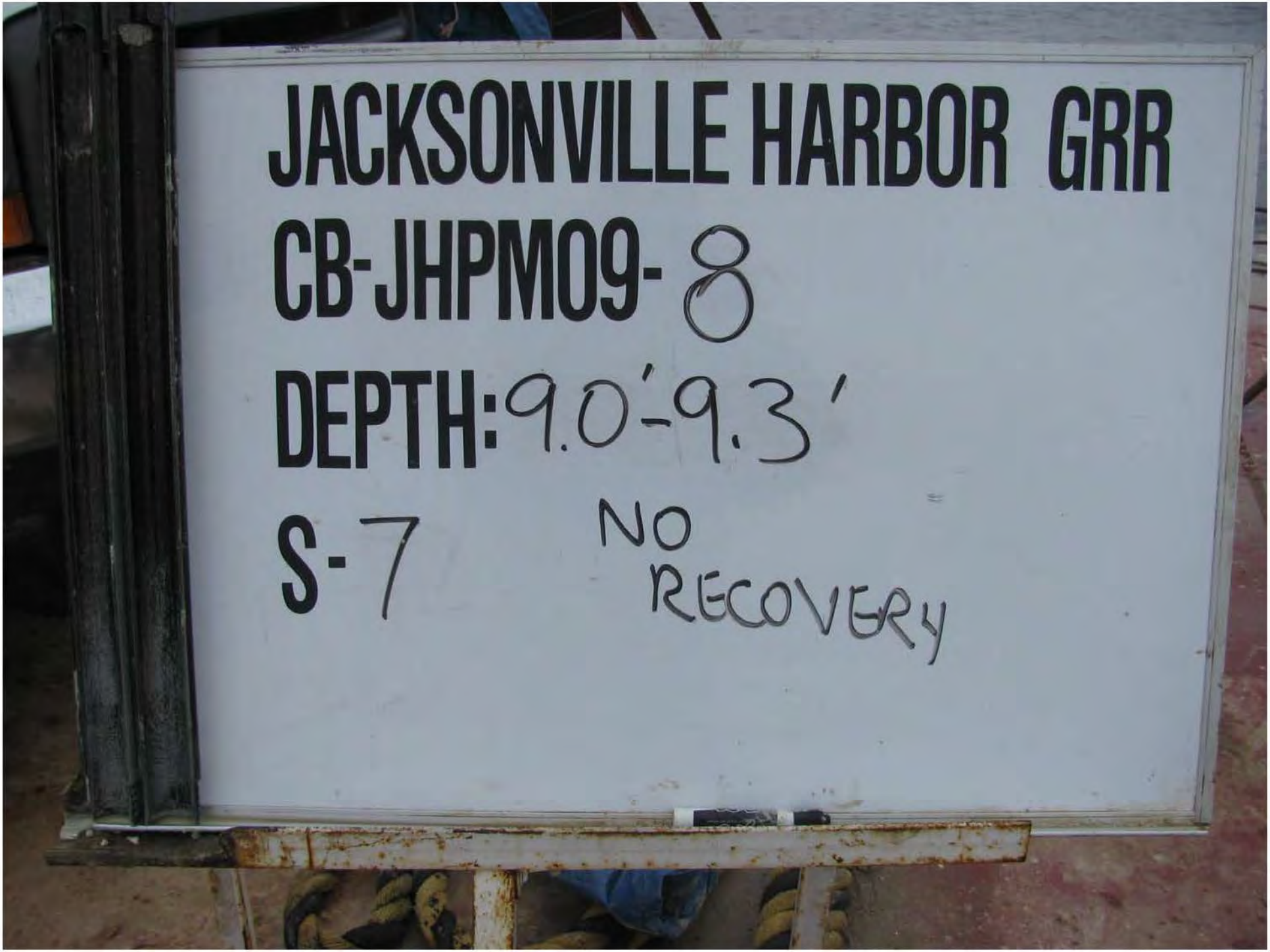

JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 1.5'-3.0'
S-2

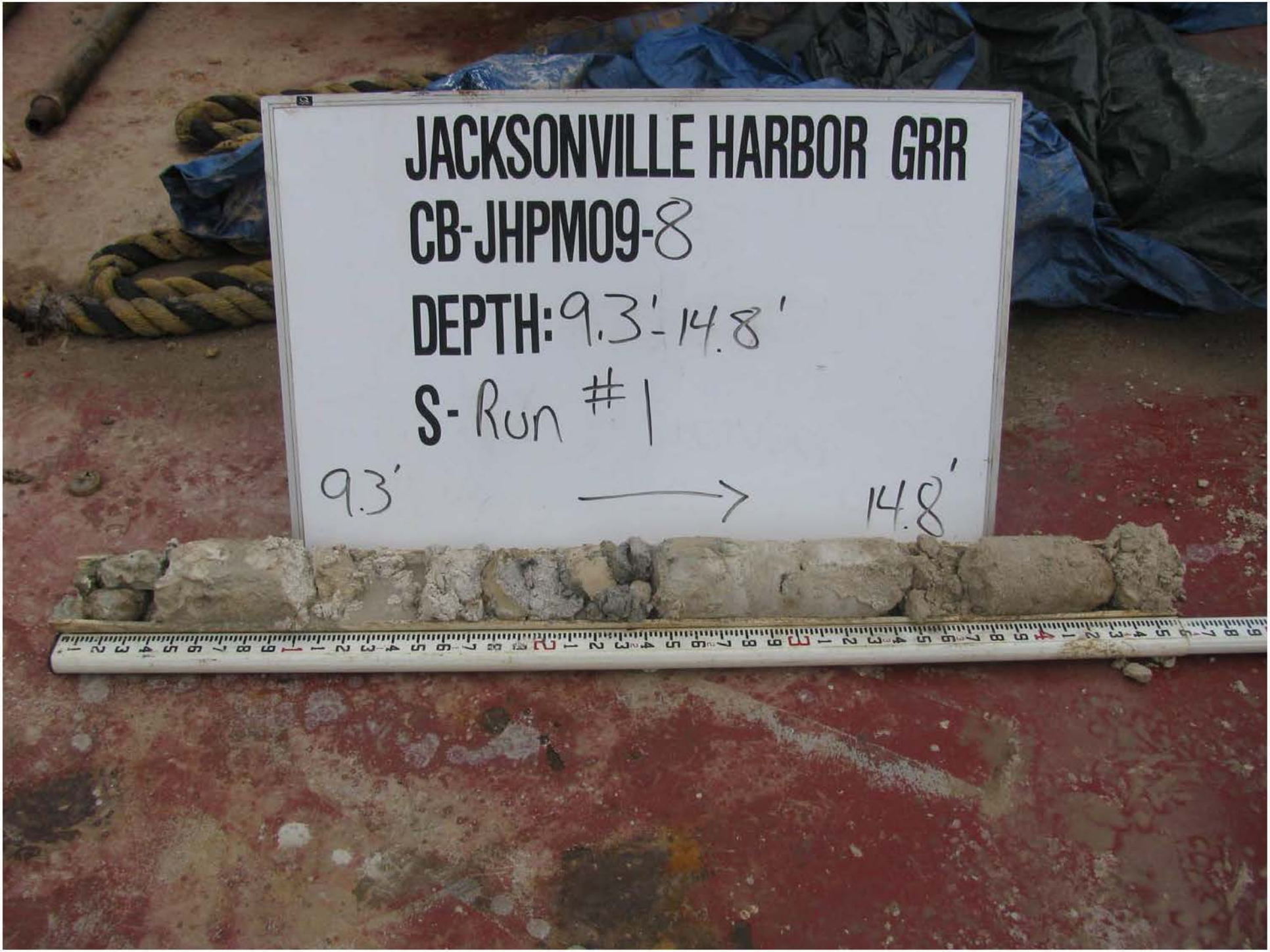

JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 3.0'-4.5'
S-3

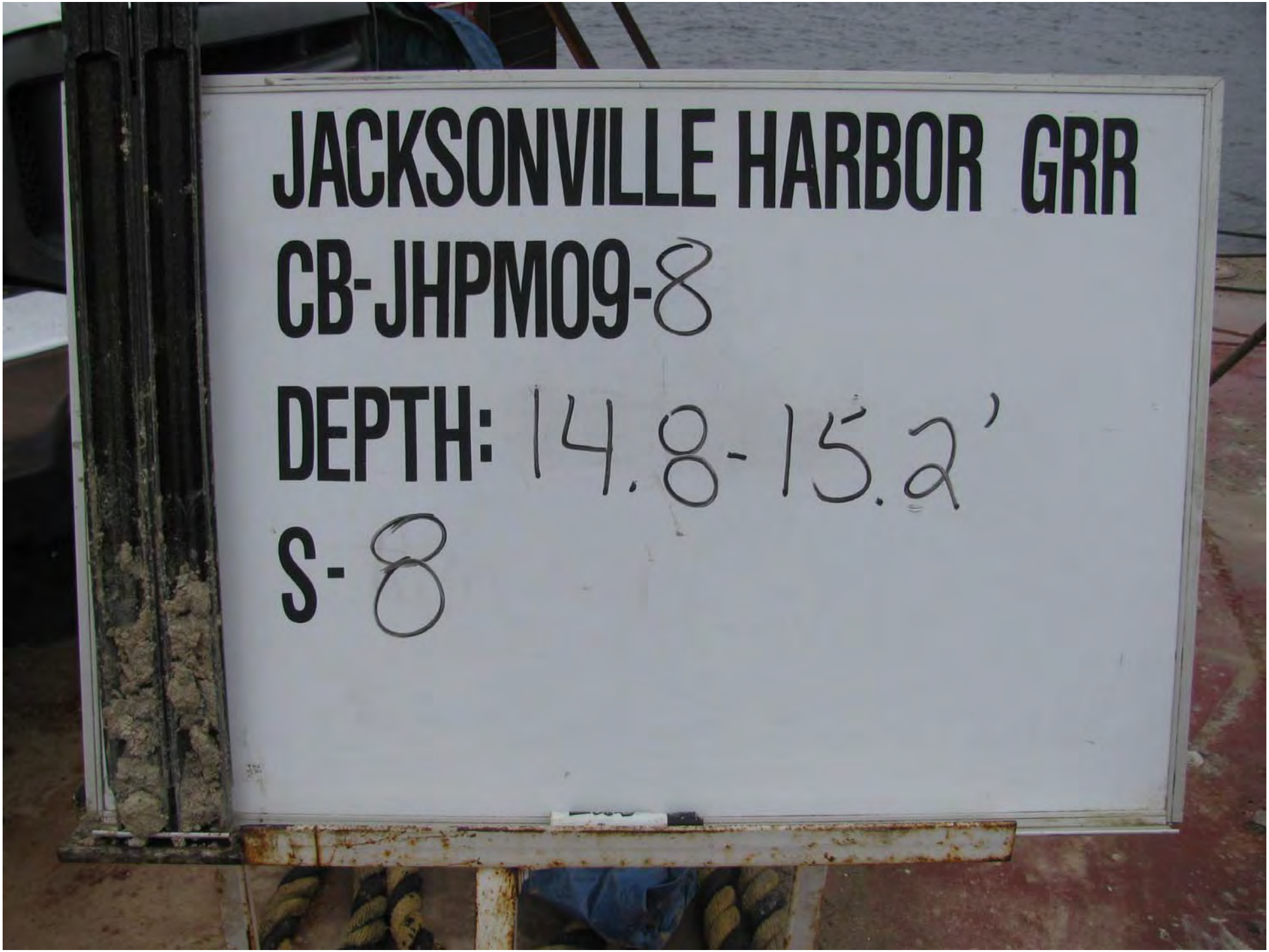

JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 4.5'-6.0'
S-4

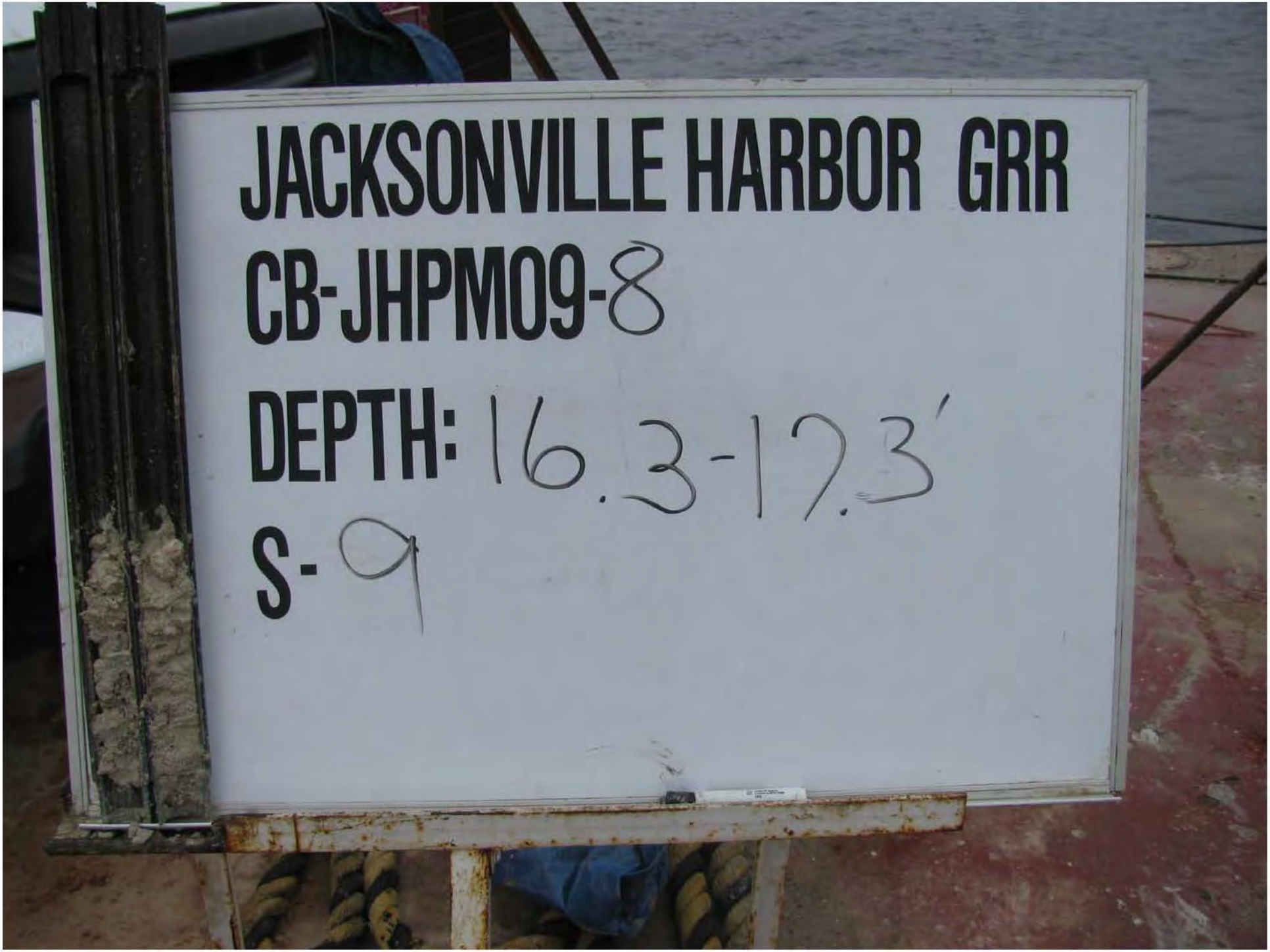

JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 6.0'-7.5'
S-5


JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 7.5'-9.0'
S-6


JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 9.0'-9.3'
S-7
NO RECOVERY


JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 9.3'-14.8'
S- Run #1
9.3'
14.8'


JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 14.8-15.2'
S-8


JACKSONVILLE HARBOR GRR
CB-JHPM09-8
DEPTH: 16.3-17.3'
S-9

TEST CORE BORING NUMBER
“CB-JHPM09-9”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-9

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-9
LOCATION COORDINATES	X = 487,318 Y = 2,201,495
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	20.0 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 10 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	0
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-24-10 COMPLETED: 01-24-10
16. ELEVATION TOP OF BORING	-43.0 Ft.
17. TOTAL RECOVERY FOR BORING	71 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-43.0	0.0						-43.0		
-45.0	2.0		SAND, poorly-graded, mostly angular to subangular fine to medium-grained sand-sized quartz, few angular to subangular shell up to 1/8", wet, 2.5Y 7/2 light gray (SP)	67	1		SPT Sampler -44.5	3 1 2	3
-49.5	6.5		SAND, poorly-graded with silt, mostly angular to subangular fine to medium-grained sand-sized quartz, few silt, wet, 2.5Y 6/1 gray (SP-SM)	80	2		SPT Sampler -46.0	3 4 4	8
				87	3		SPT Sampler -47.5	3 5 4	9
				73	4		SPT Sampler -49.0	4 3 4	7
-50.0	7.0		SAND, clayey, low plasticity, soft, some angular to subangular fine to medium-grained sand-sized quartz, little clay, wet, 5G 5/1 greenish gray (SC)	67	5		SPT Sampler -50.5	2 2 3	5
-52.0	9.0	Highly Weathered	LIMESTONE, sandy, sparsely fossiliferous, soft, highly weathered, fine grained, wet, 2.5Y 7/2 light gray	67	6		SPT Sampler -52.0	4 7 6	13
-55.0	12.0		SAND, poorly-graded with silt, mostly angular to subangular fine to medium-grained sand-sized quartz, few silt, wet, 5G 5/1 greenish gray (SP-SM)	67	7		SPT Sampler -53.5	2 2 2	4
				0			Free Fall of Sampler -55.5		
-57.5	14.5		SAND, silty, mostly angular to subangular fine to medium-grained sand-sized quartz, little silt, wet, 5B 5/1 bluish gray (SM)	87	8		SPT Sampler -57.0	1 1 1	2
			LIMESTONE, sandy, sparsely fossiliferous,	70	9		SPT Sampler -58.0	2 50	

(Continued)

Boring Designation CB-JHPM09-9

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District			SHEET 2 OF 2 SHEETS
PROJECT Jacksonville Harbor General Reevaluation Report (GRR)	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 487,318 Y = 2,201,495	ELEVATION TOP OF BORING -43.0 Ft.			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-63.0	20.0	Slightly Weathered	moderately hard, slightly weathered, fine grained, pitted, sand filled pits, moist, 5Y 7/2 light gray At El. -61.0 Ft., solid	90	RUN # 1	RQD 65	4 x 5-1/2" Diamond Impregnated Bit DT = 3 mins HP = 300 psi DFR = 25 % -63.0		

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. Set 50.5 ft. of 6" flush joint steel casing

4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Dames Point Bridge.

5. Water depth of -43.8 ft. recorded at 08:15 AM on 1/24/2010. Tide gage reading of +0.8 ft. mllw

6. Compressive Strength Test of Rock Core At Elevation -58.8' to -59.5'' = 340 PSI.

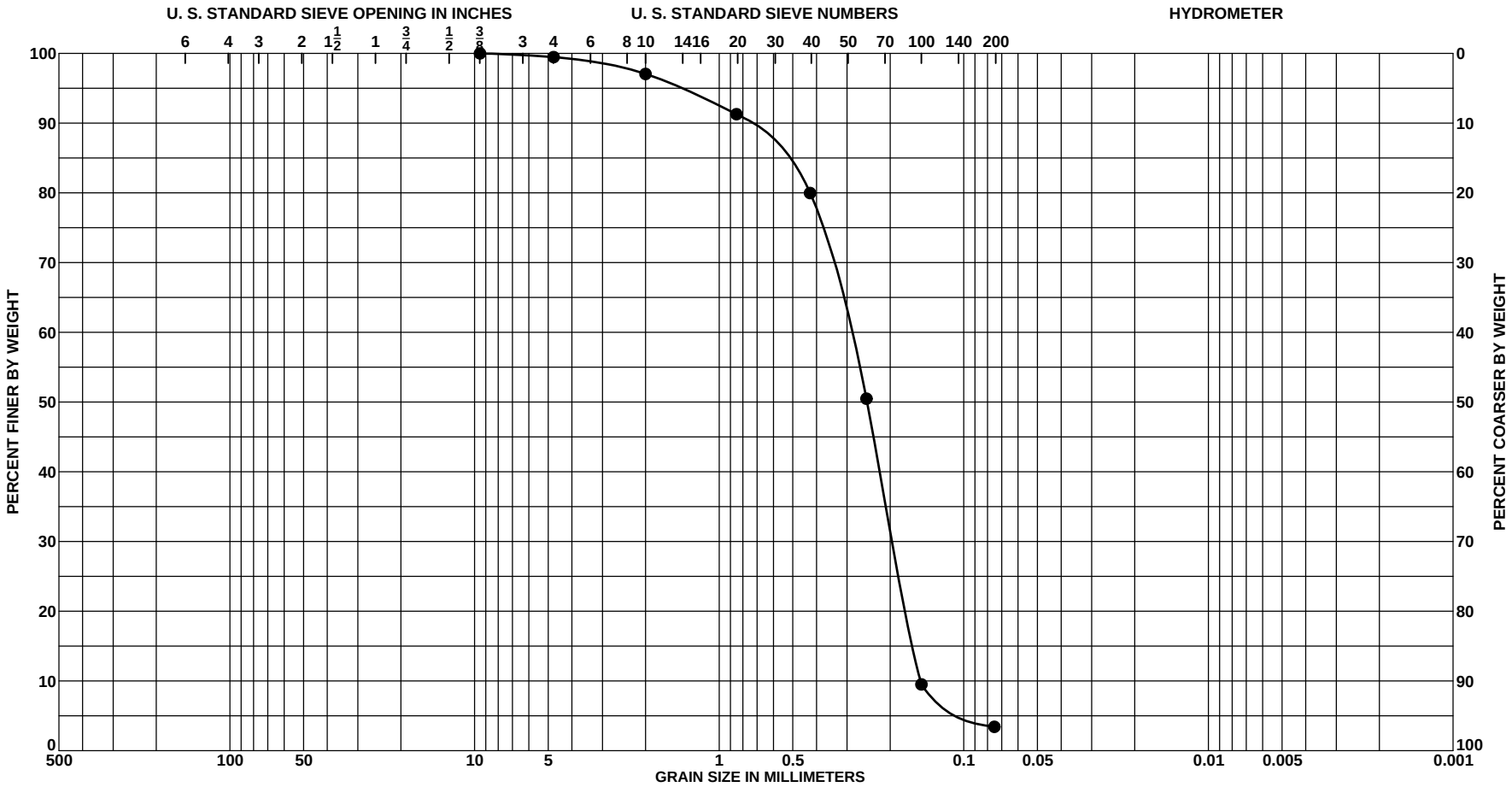
7. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	0.0/1.5	SP*

*Lab visual classification based on gradation curve. No Atterberg limits.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

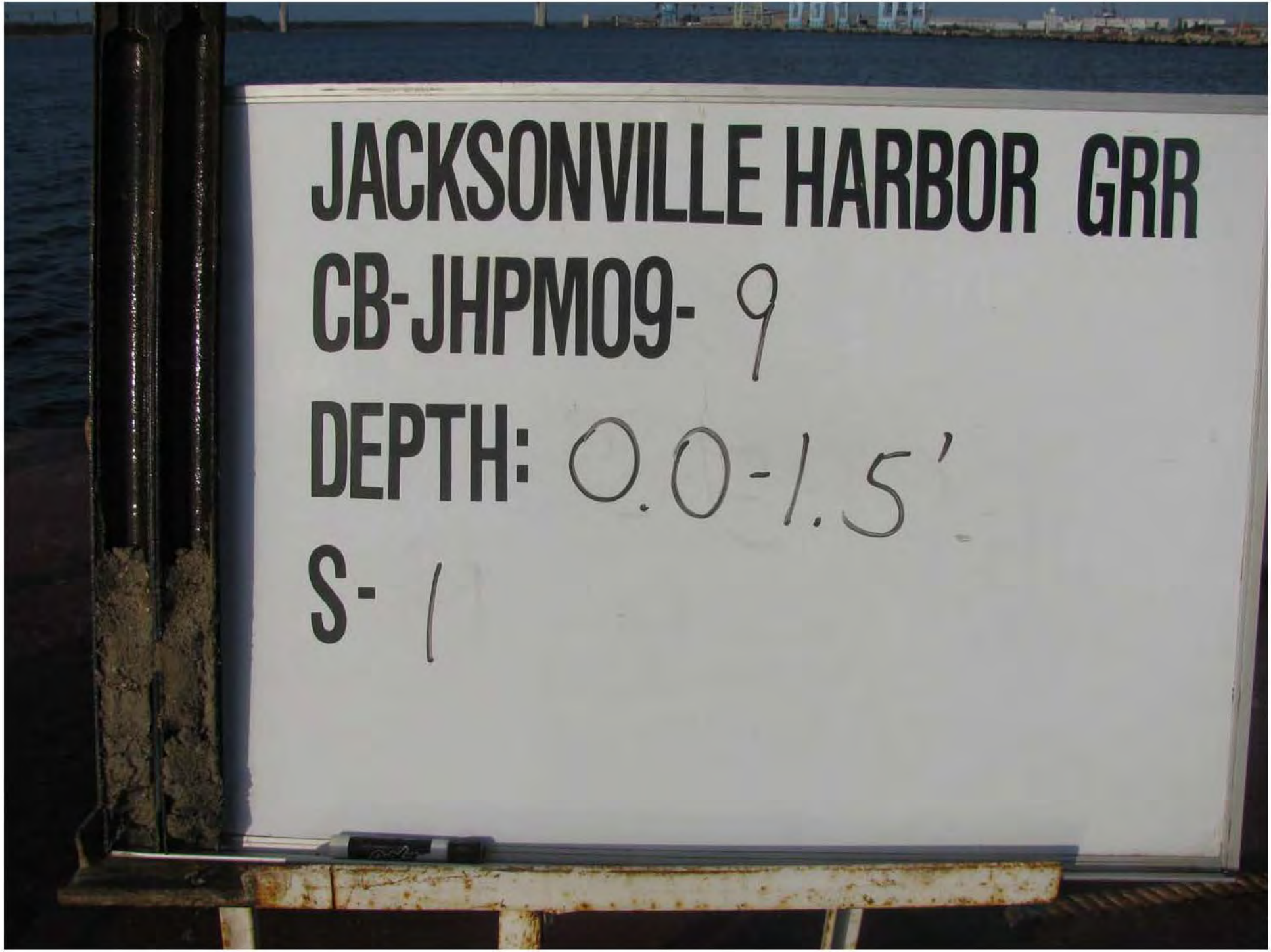


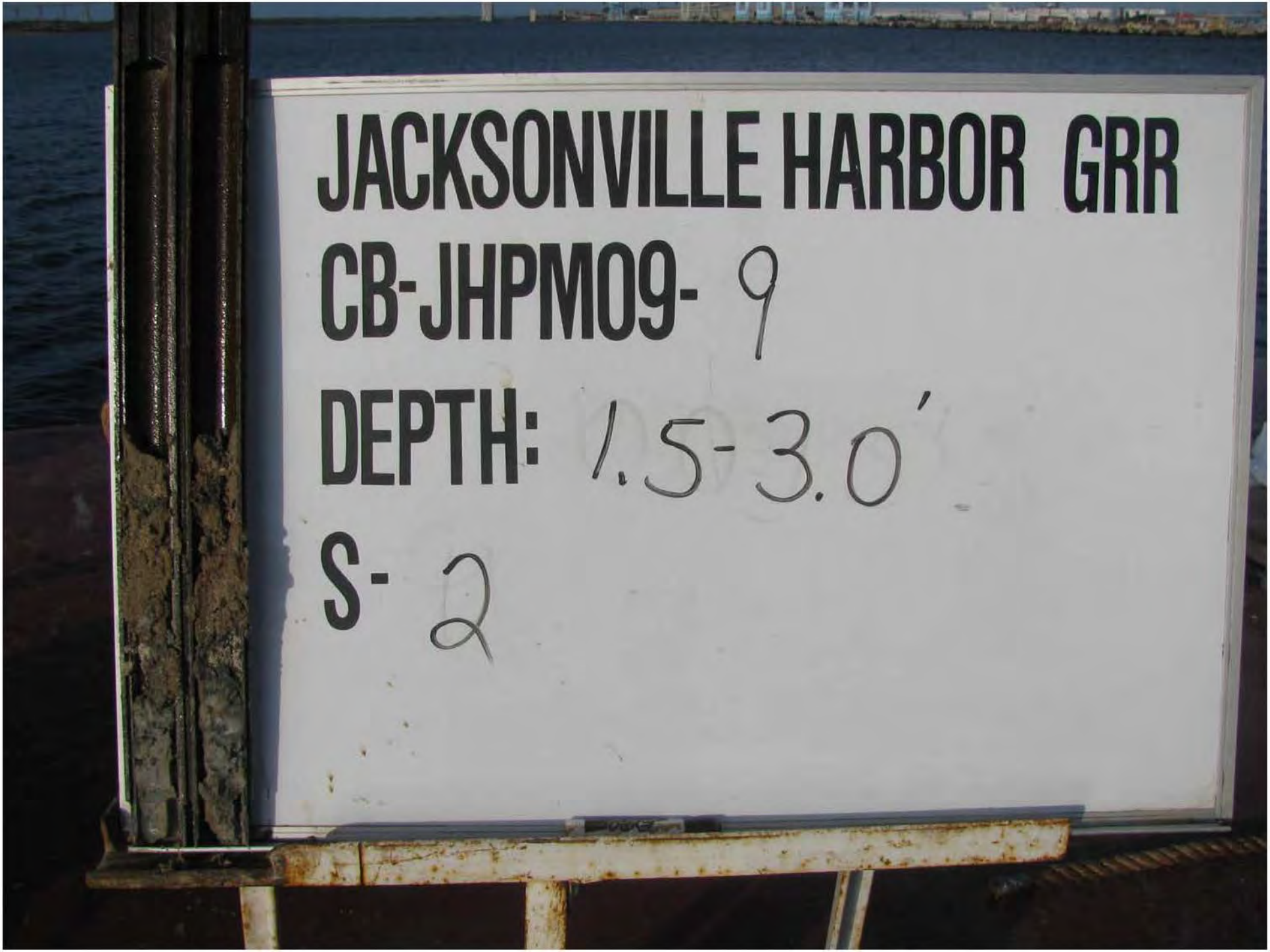
Sample No.	Depth	Classification	Munsell	CO_3 %	G_S	Org %	w_n	LL	PL	PI
○ 1	0.0 to 1.5 Ft.	SAND, poorly-graded, light gray (SP)	2.5Y 7/2	5 (est)						

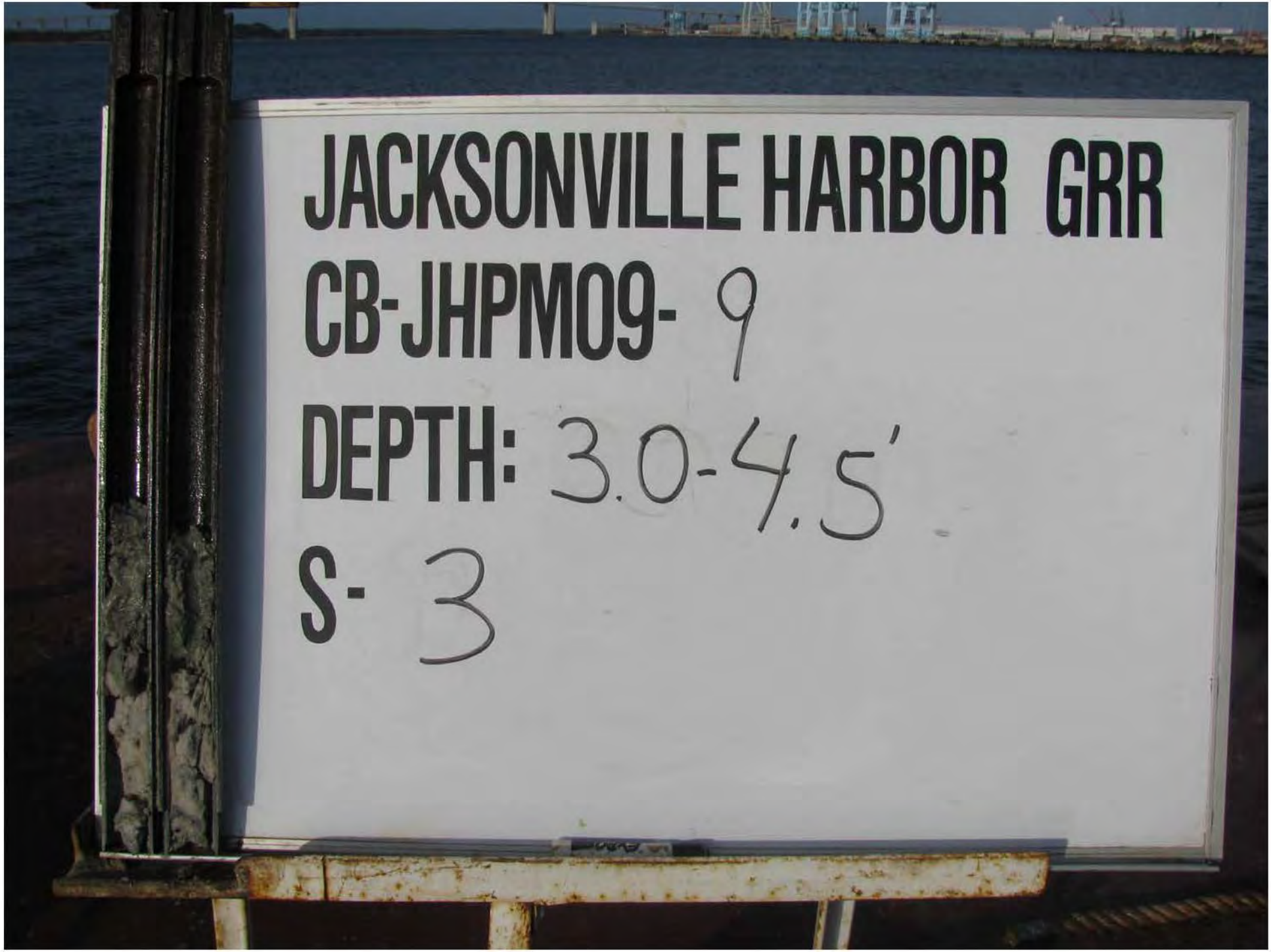
PROJECT	Jacksonville Harbor General Reeval. (GRR)
	ST. JOHN'S RIVER CHANNEL
BORING NO.	CB-JHPM09-9
BORING ELEV.	-43.0 Ft., MLLW
DATE	3/15/2010

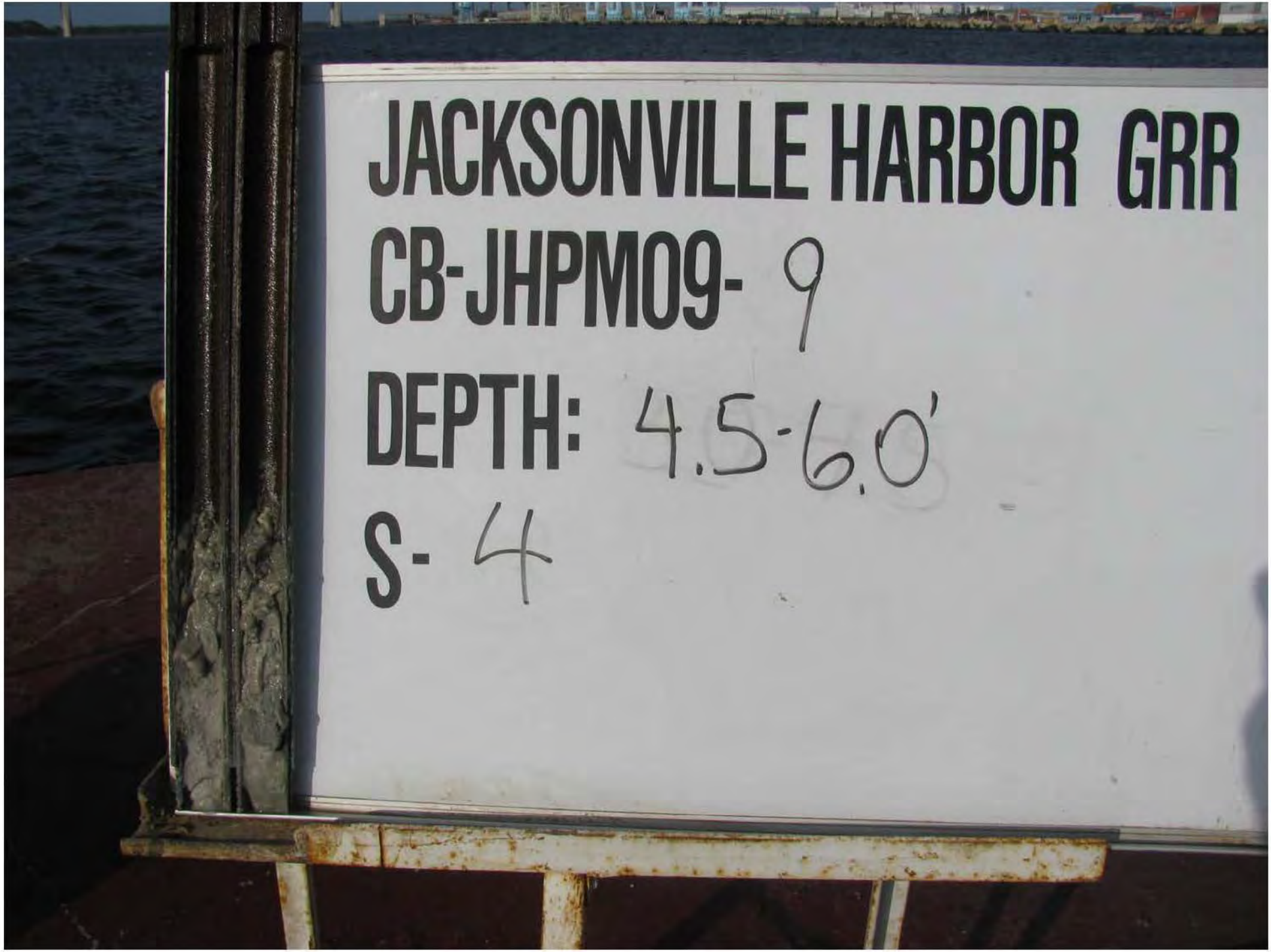
GRADATION CURVES

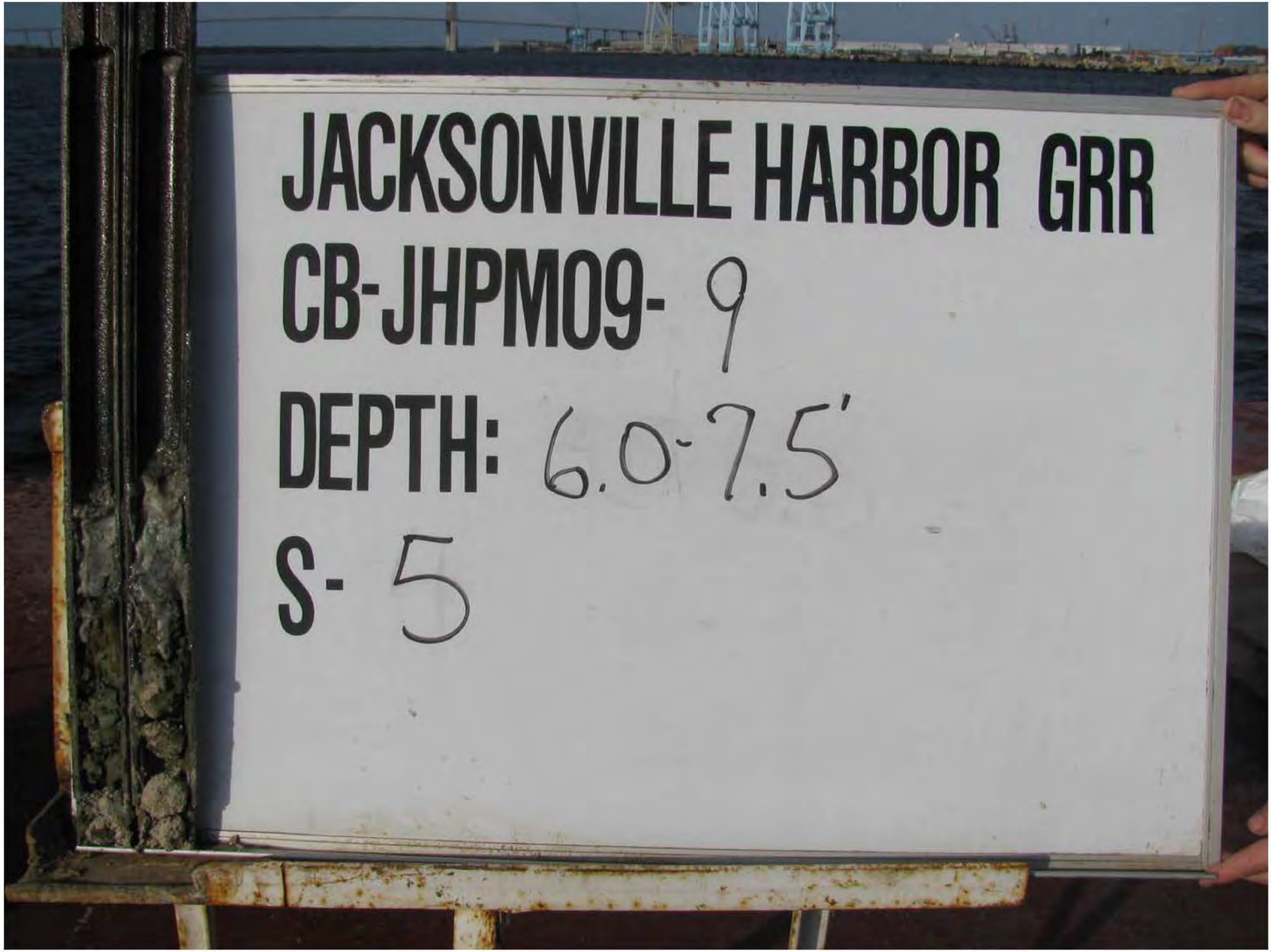
SAJ FORM 2087
JUN 02

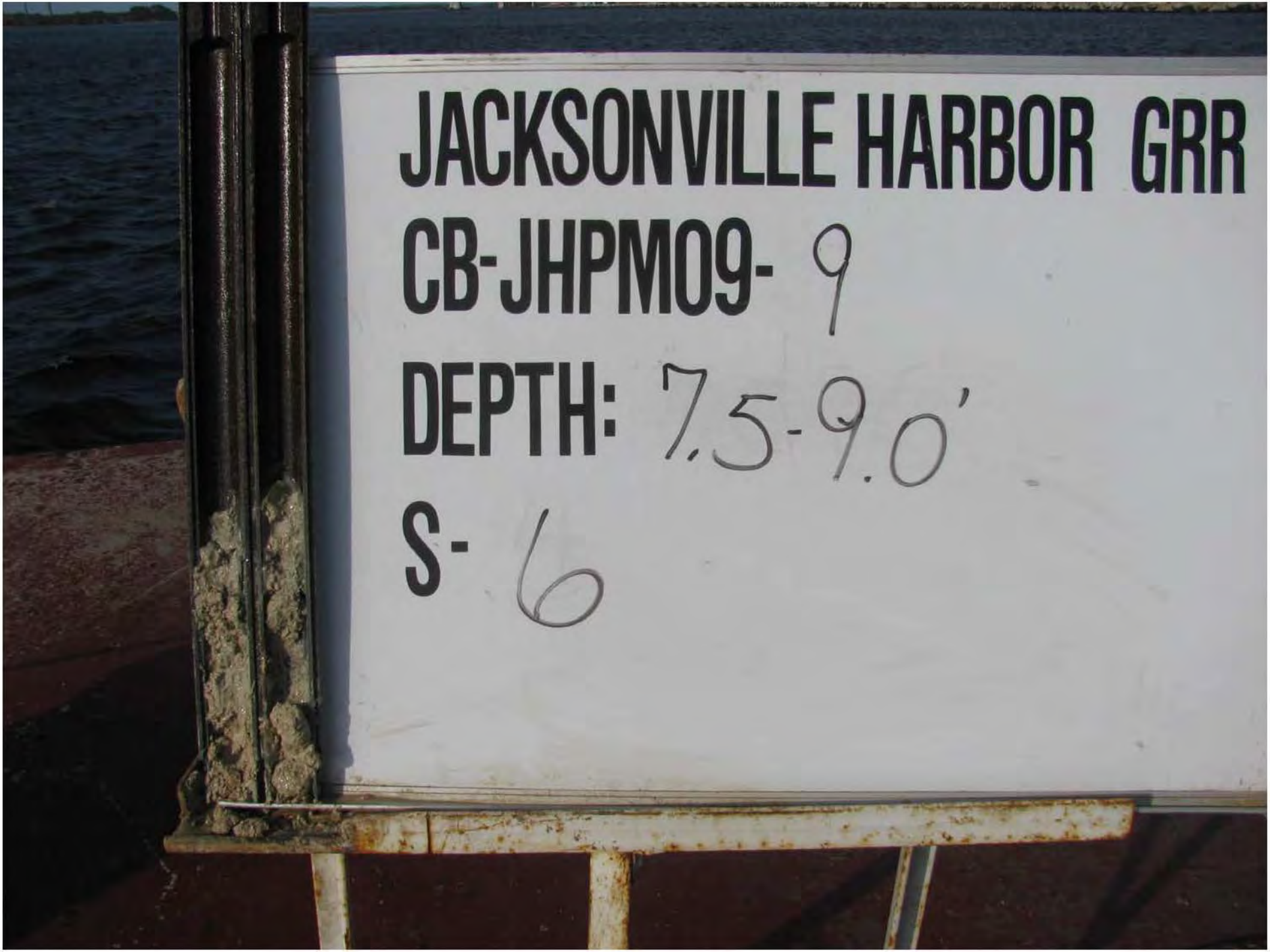

JACKSONVILLE HARBOR GRR
CB-JHPM09- 9
DEPTH: 0.0-1.5'
S- 1

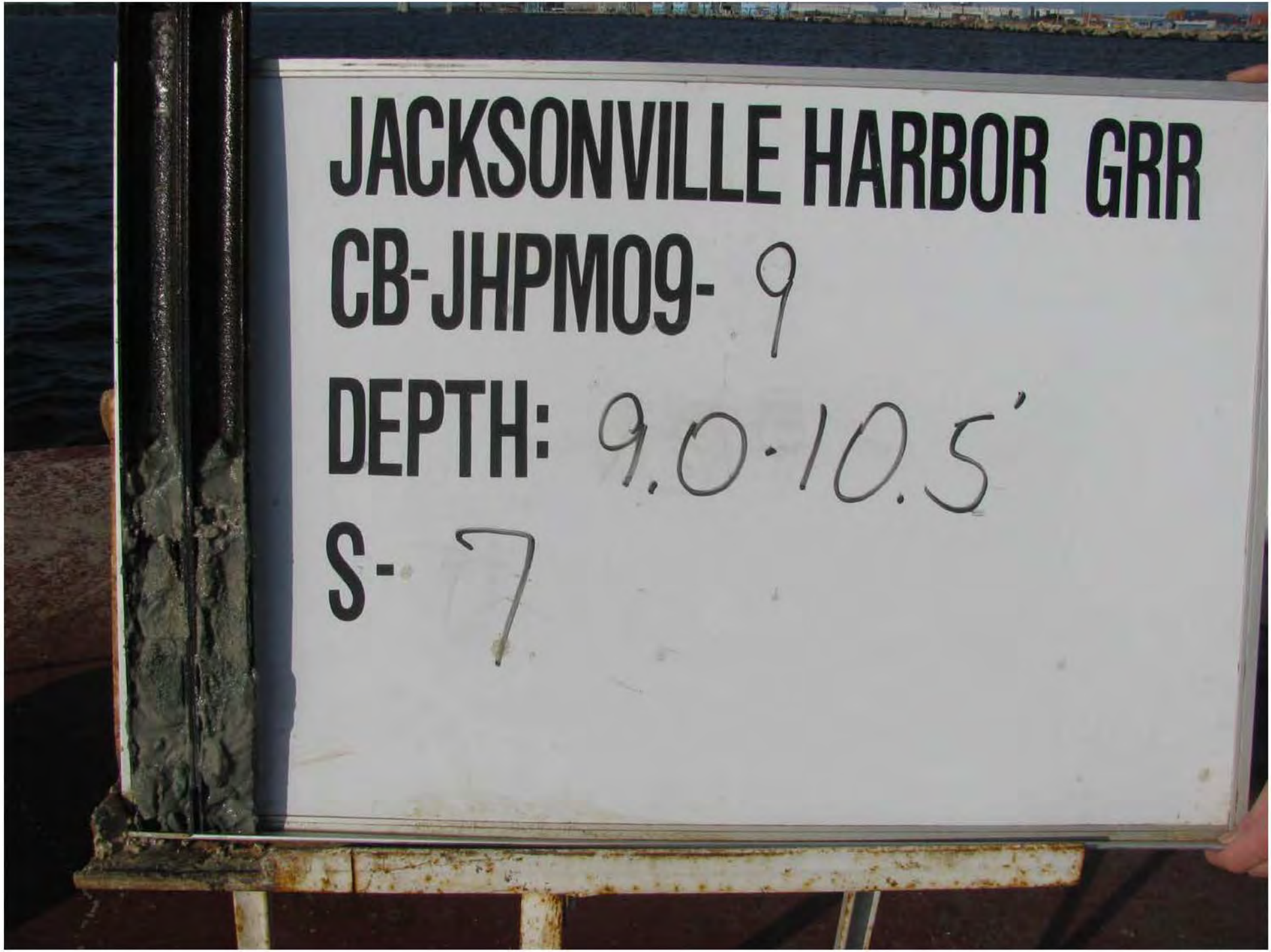

JACKSONVILLE HARBOR GRR
CB-JHPM09- 9
DEPTH: 1.5-3.0'
S- 2

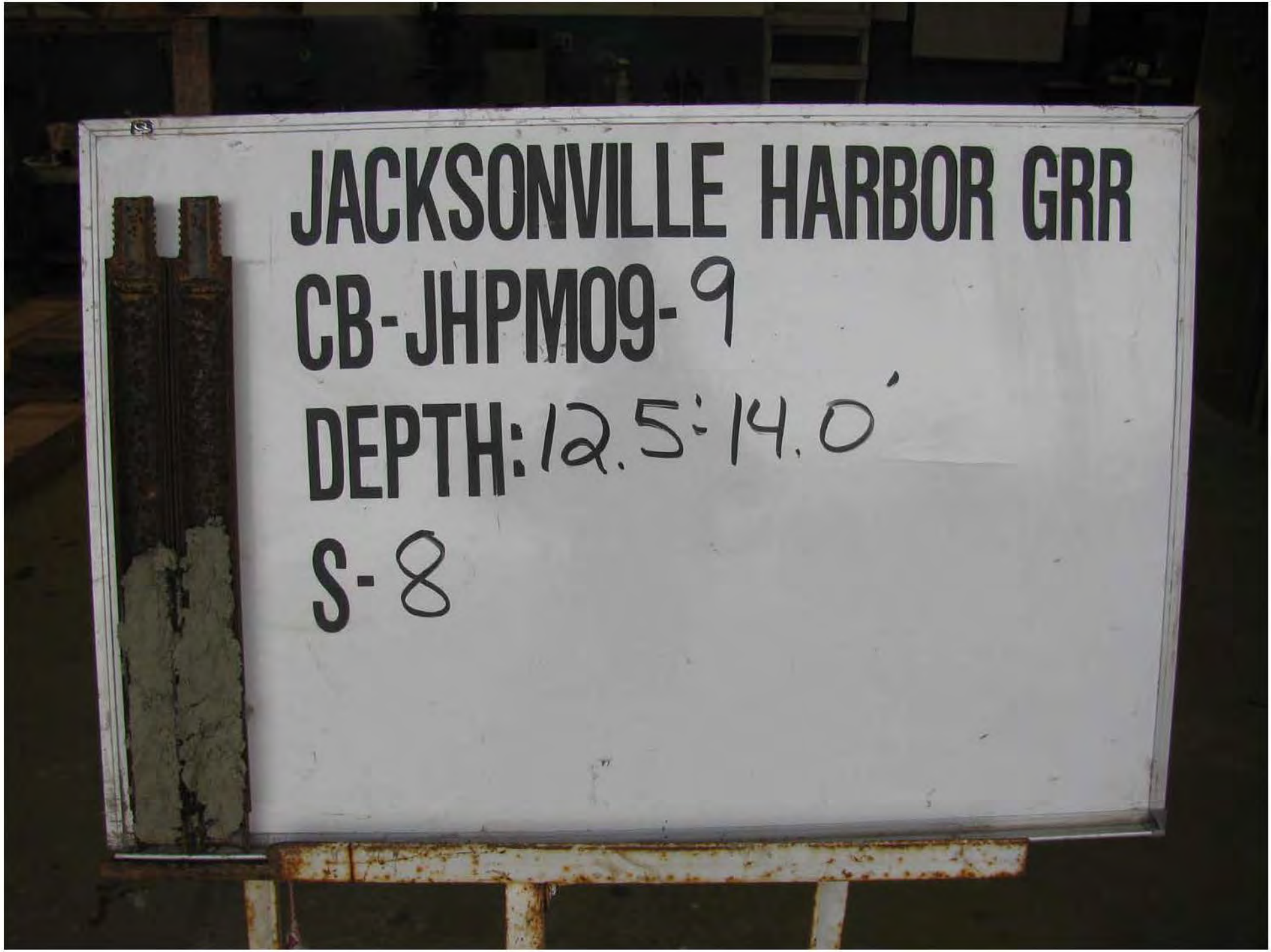

JACKSONVILLE HARBOR GRR
CB-JHPM09- 9
DEPTH: 3.0-4.5'
S- 3

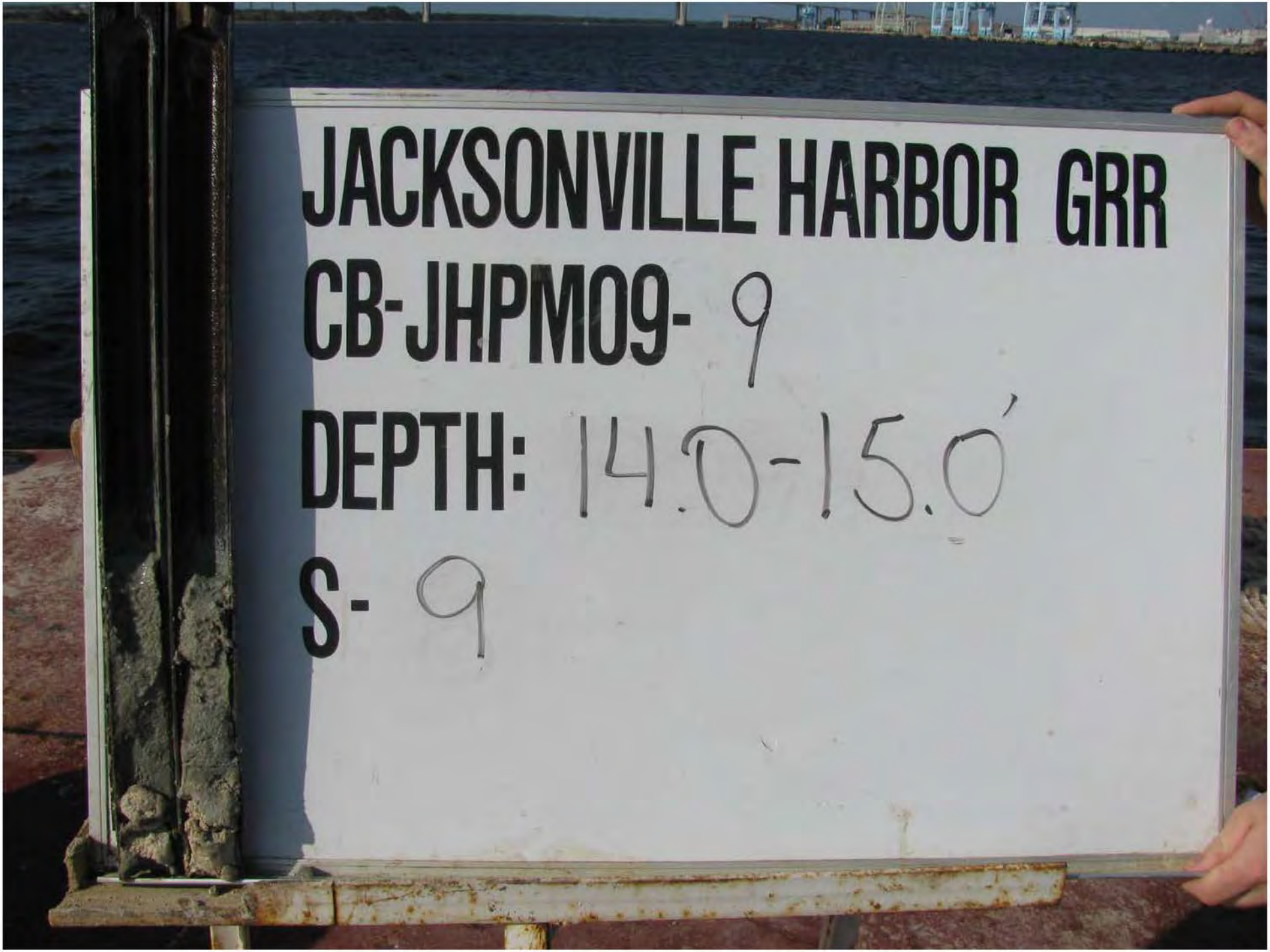

JACKSONVILLE HARBOR GRR
CB-JHPM09- 9
DEPTH: 4.5-6.0'
S- 4


JACKSONVILLE HARBOR GRR
CB-JHPM09- 9
DEPTH: 6.0-7.5'
S- 5


JACKSONVILLE HARBOR GRR
CB-JHPM09- 9
DEPTH: 7.5-9.0'
S- 6


JACKSONVILLE HARBOR GRR
CB-JHPM09- 9
DEPTH: 9.0-10.5'
S- 7


JACKSONVILLE HARBOR GRR
CB-JHPM09-9
DEPTH: 12.5-14.0'
S-8


JACKSONVILLE HARBOR GRR
CB-JHPM09- 9
DEPTH: 14.0-15.0'
S- 9

JACKSONVILLE HARBOR GRR
CB-JHPM09- 9
DEPTH: 15.0-20.0'
S- RUN#1
15.0' → 20.0'

TEST CORE BORING NUMBER
“CB-JHPM09-10”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-10

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 3 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) EAST MILL COVE WIDENER
2. BORING DESIGNATION	CB-JHPM09-10
LOCATION COORDINATES	X = 486,647 Y = 2,200,722
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	42.0 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 28 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	2
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-21-10 COMPLETED: 01-21-10
16. ELEVATION TOP OF BORING	-18.9 Ft.
17. TOTAL RECOVERY FOR BORING	84 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-18.9	0.0						-18.9		
-20.4	1.5		SAND, silty, mostly angular to subangular fine-grained sand-sized quartz, little silt, wet, 5Y 4/2 olive gray (SM)	53	1		SPT Sampler -20.4	0 0 0	0
			SILT, organic-L, nonplastic, very soft, trace angular to subangular fine-grained sand-sized quartz, wet, 5Y 4/2 olive gray (OL)	100	2		SPT Sampler -21.9	0 0 0	0
				67	3		SPT Sampler -23.4	0 0 0	0
				40	4		SPT Sampler -24.9	0 0 0	0
			At El. -24.9 Ft., moist	80	5		SPT Sampler -26.4	0 0 0	0
			At El. -26.4 Ft., low plasticity, trace angular shell up to 3/8", organic odor	67	6		SPT Sampler -27.9	0 0 0	0
			At El. -27.9 Ft., soft	100	7		SPT Sampler -29.4	0 1 1	2
				100	8		SPT Sampler -30.9	0 1 1	2
			At El. -30.9 Ft., discontinue shell	100	9		SPT Sampler -32.4	0 1 1	2
			At El. -32.4 Ft., medium plasticity, trace angular shell up to 1/8"	100	10		SPT Sampler -33.9	0 0 0	0

0 5 10 15

(Continued)

SAJ FORM 1836
JUN 02

Boring Designation CB-JHPM09-10

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 3 SHEETS
PROJECT: Jacksonville Harbor General Reevaluation Report (GRR)	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: MLLW
LOCATION COORDINATES: X = 486,647 Y = 2,200,722	ELEVATION TOP OF BORING: -18.9 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				100	11		SPT Sampler -35.4	2, 2, 1	3
				100	12		SPT Sampler -36.9	0, 1, 1	2
-38.2	19.3			93	13		SPT Sampler -38.4	3, 2, 3	5
-38.9	20.0		SAND, silty, mostly angular to subangular fine to medium-grained sand-sized quartz, little silt, trace angular to subangular shell up to 1/8", moist, 5Y 4/1 dark gray (SM)	80	14		SPT Sampler -39.9	3, 2, 3	5
			SILT, organic-L, low plasticity, soft, trace organic matter, moist, 5Y 4/1 dark gray (OL) At El. -39.9 Ft., few organic matter	87	15		SPT Sampler -41.4	1, 1, 2	3
				100	16		SPT Sampler -42.9	2, 1, 2	3
				100	17		SPT Sampler -44.4	0, 2, 3	5
-46.2	27.3			100	18		SPT Sampler -45.9	2, 3, 5	8
-46.7	27.8		CLAY, lean, low plasticity, soft, moist, 5GY 4/1 dark greenish gray (CL)	87	19		SPT Sampler -47.4	3, 2, 5	7
		Highly Weathered	LIMESTONE, sandy, sparsely fossiliferous, very soft, highly weathered, moist, 5Y 6/1 gray At El. -48.9 Ft., massive bedding, bedding orientation	73	20		SPT Sampler -48.9	11, 8, 42	50
				87	21		SPT Sampler -50.4	25, 16, 11	27
				73	22		SPT Sampler -51.9	11, 17, 4	21
				73	23		SPT Sampler -53.4	9, 9, 9	18
			At El. -53.4 Ft., moderately hard	100	24		SPT Sampler -53.9	50	

15 20 25 30 35

Boring Designation CB-JHPM09-10

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 3 OF 3 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Jacksonville Harbor General Reevaluation Report (GRR)	State Plane, FLE (U.S. Ft.)	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 486,647 Y = 2,200,722	-18.9 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
							Advanced Boring -54.9		
				67	25		-55.2 SPT Sampler	50/0.3'	
							Advanced Boring -56.4		
		Highly Weathered	At El. -56.4 Ft., soft	67	26		SPT Sampler -57.9	9 4 3	7
			At El. -57.9 Ft., 5Y 7/2 light gray	80	27		SPT Sampler -59.4	2 3 7	10
-60.9	42.0			80	28		SPT Sampler -60.9	9 28 50	78

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. Set 35.5 ft. of 6" flush joint steel casing

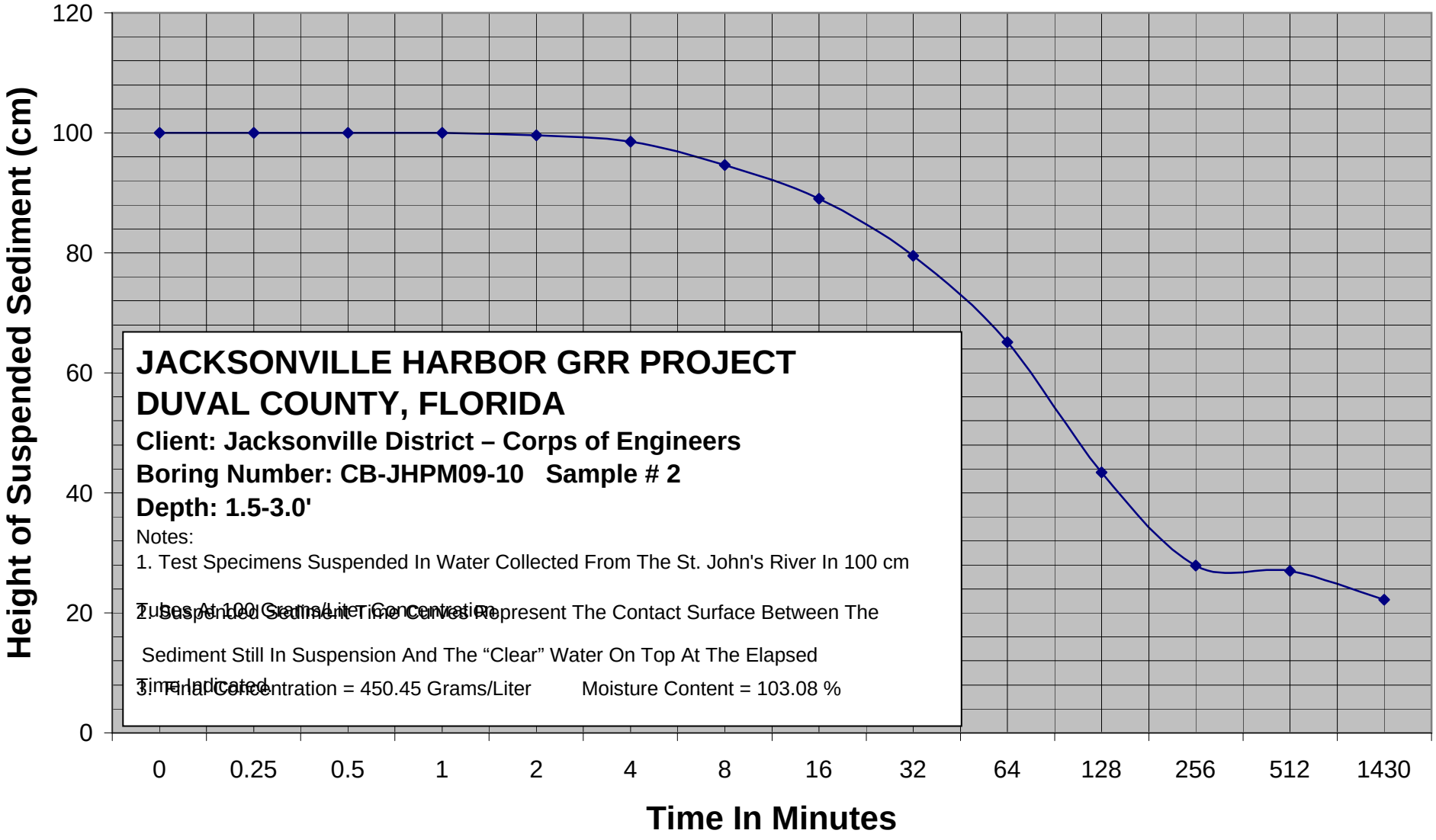
4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Blount Island Terminal.

5. Water depth of -19.6 ft. recorded at 08:25 AM on 1/21/2010. Tide gage reading of +0.7 ft. mllw

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

35 40 45 50 55

SUSPENDED SEDIMENTATION TIME CURVES



JACKSONVILLE HARBOR GRR PROJECT
DUVAL COUNTY, FLORIDA
Client: Jacksonville District – Corps of Engineers
Boring Number: CB-JHPM09-10 Sample # 2
Depth: 1.5-3.0'

Notes:
1. Test Specimens Suspended In Water Collected From The St. John's River In 100 cm Tubes At 100 Grams/Liter Concentration
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. Final Concentration = 450.45 Grams/Liter Moisture Content = 103.08 %

JACKSONVILLE HARBOR GRR

CB-JHPM09-10

DEPTH: 0.0'-1.5'

S-1

JACKSONVILLE HARBOR GRR

CB-JHPM09-10

DEPTH: 1.5'-3.0'

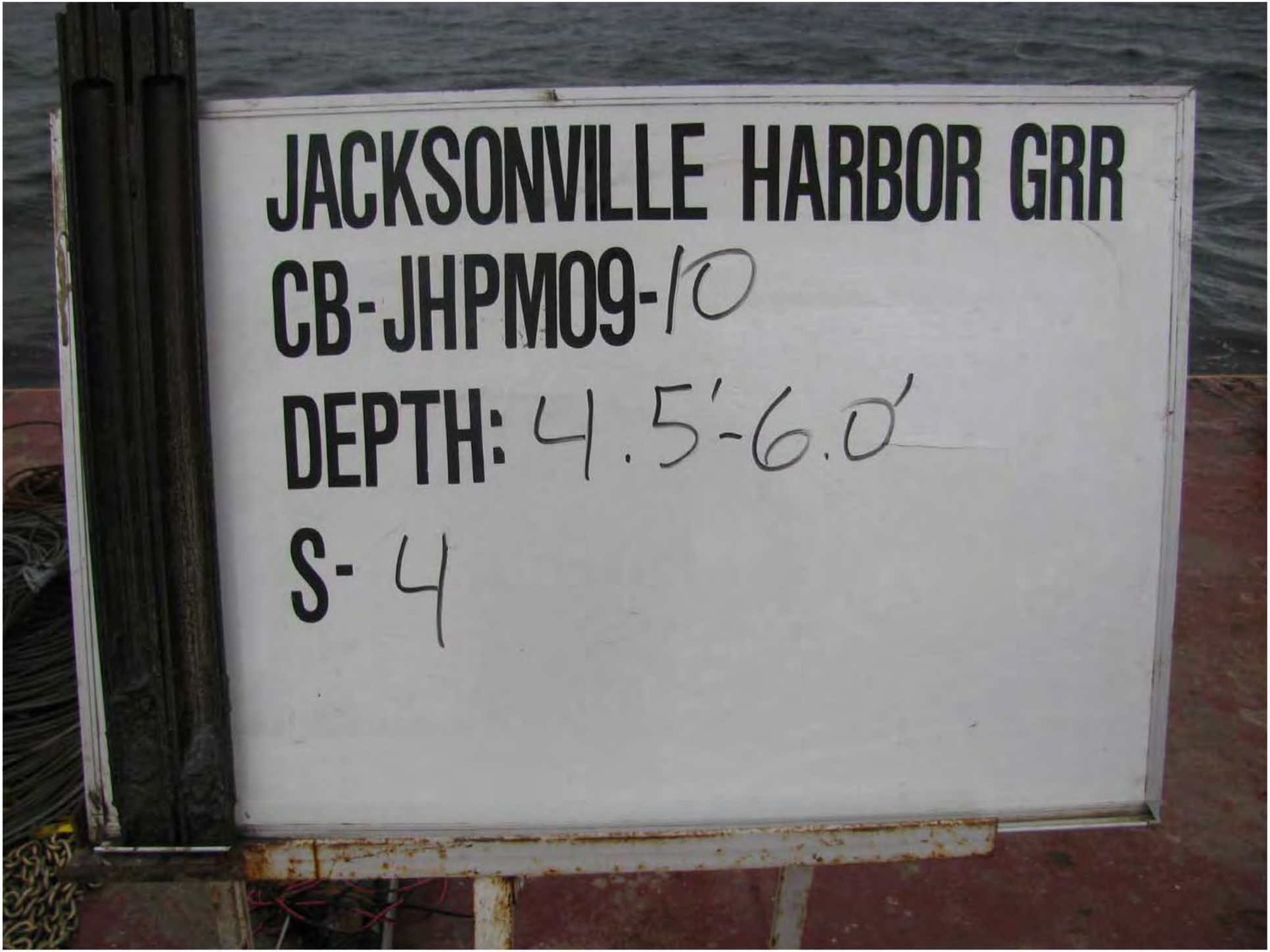
S-2

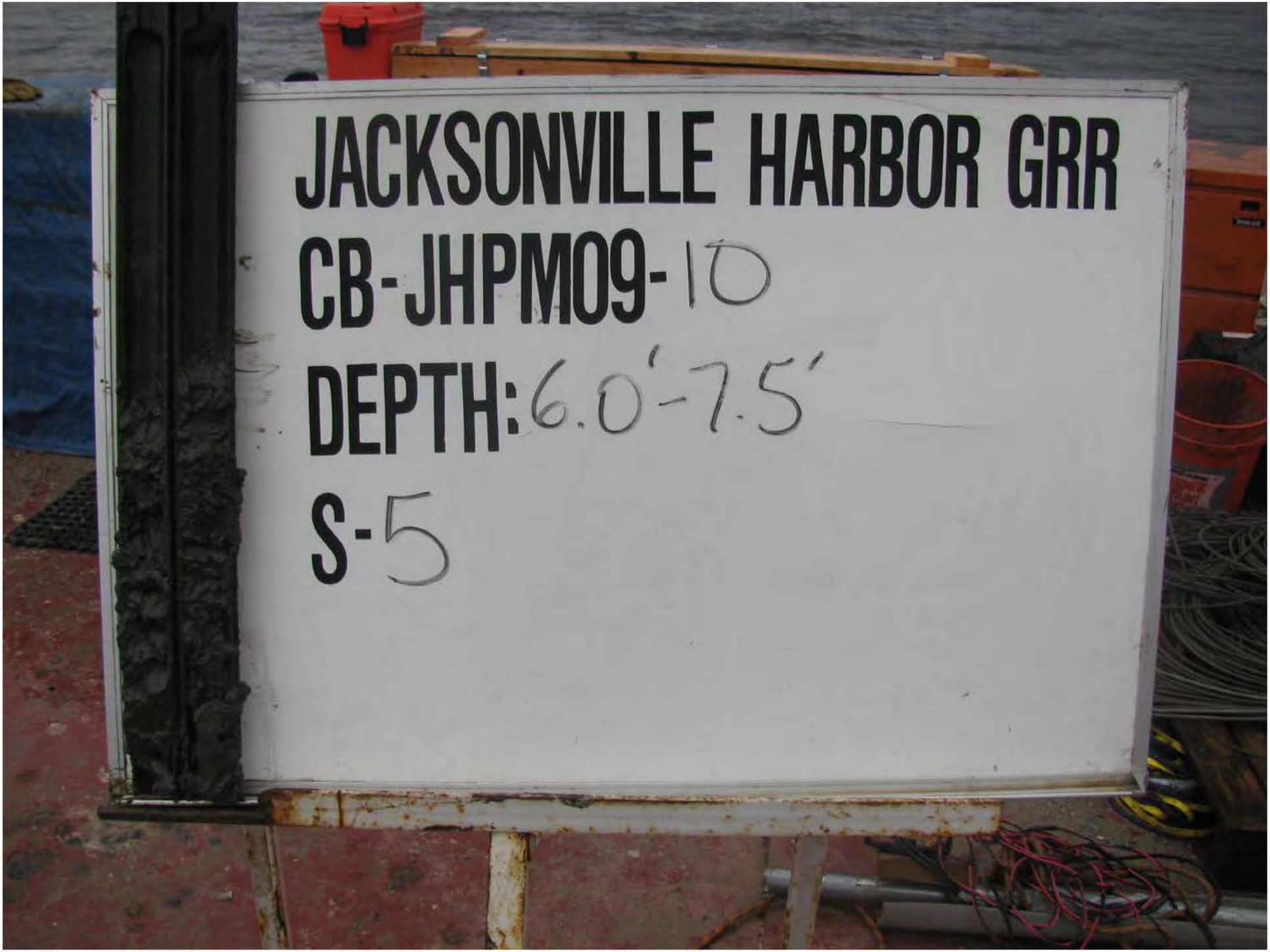
JACKSONVILLE HARBOR GRR

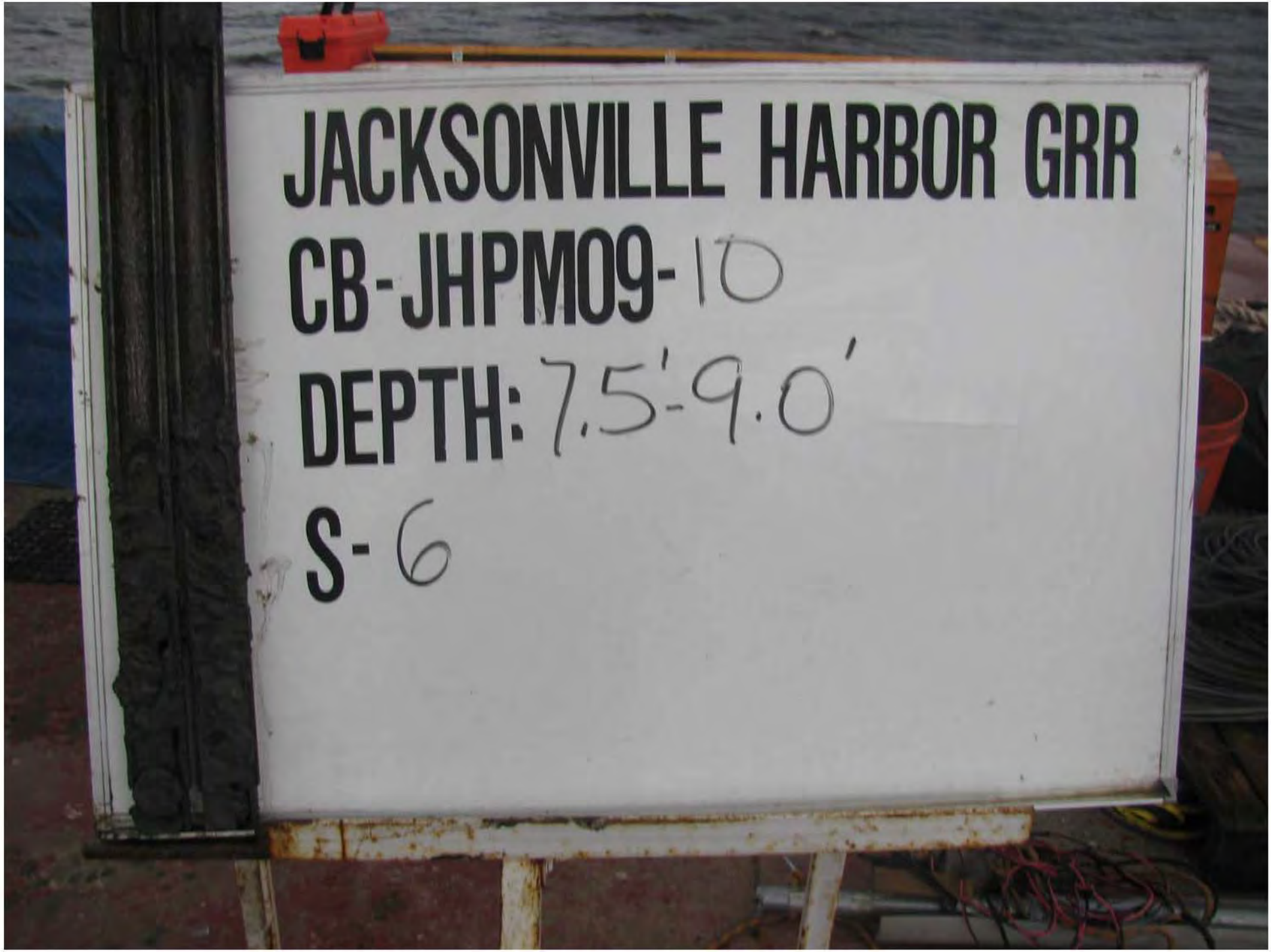
CB-JHPM09-10

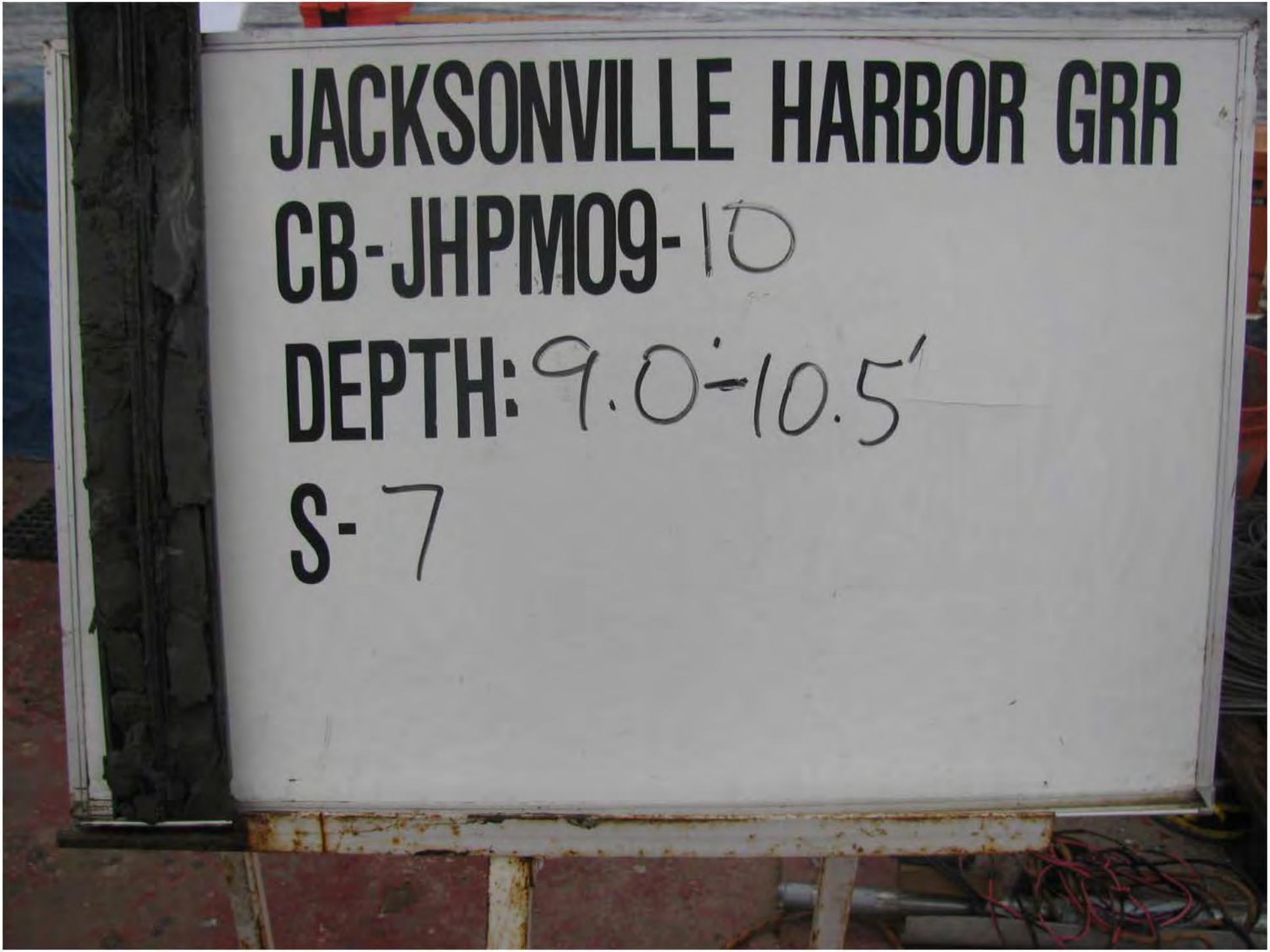
DEPTH: 3.0'-4.5'

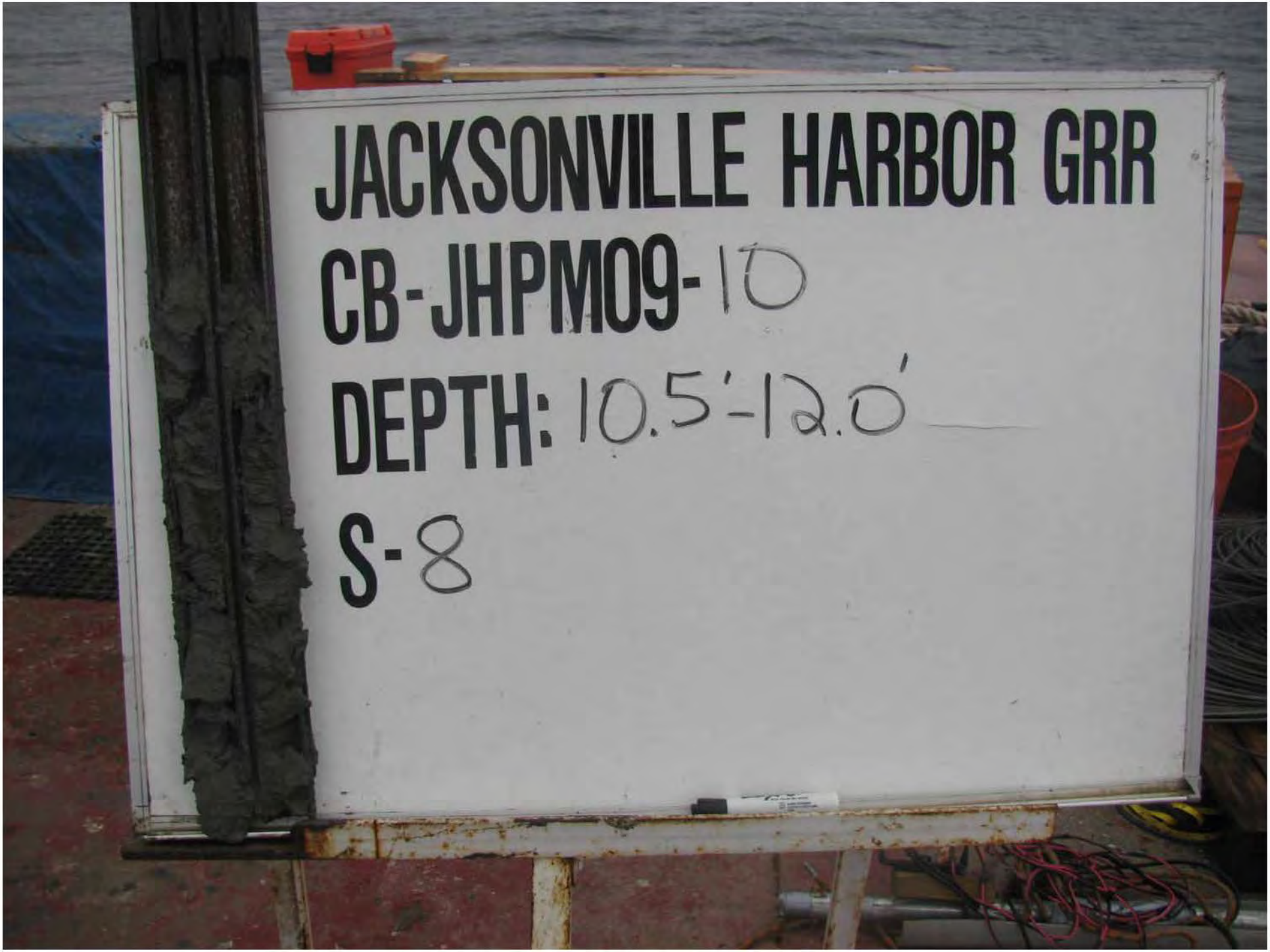
S-3

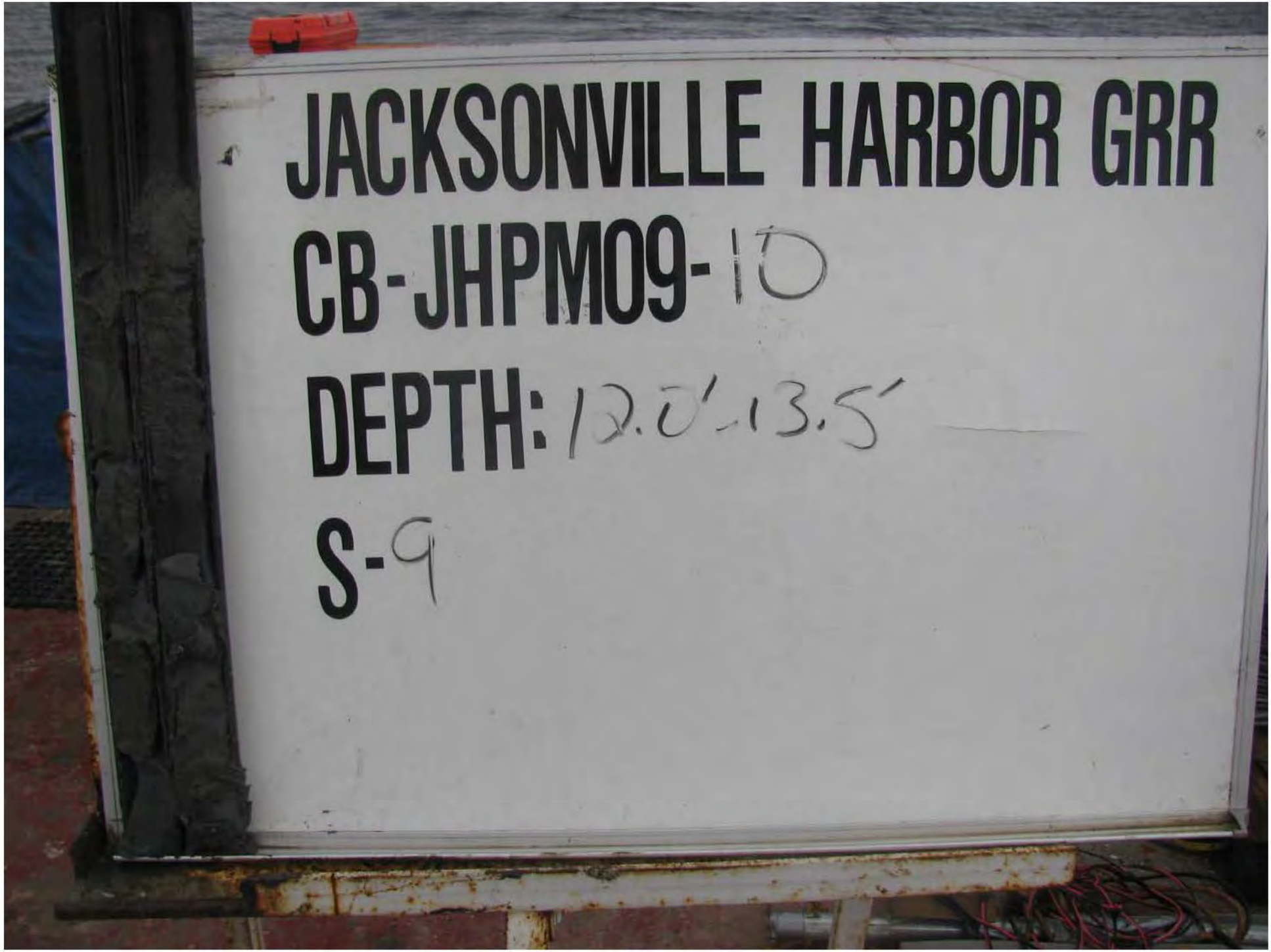

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 4.5'-6.0'
S- 4

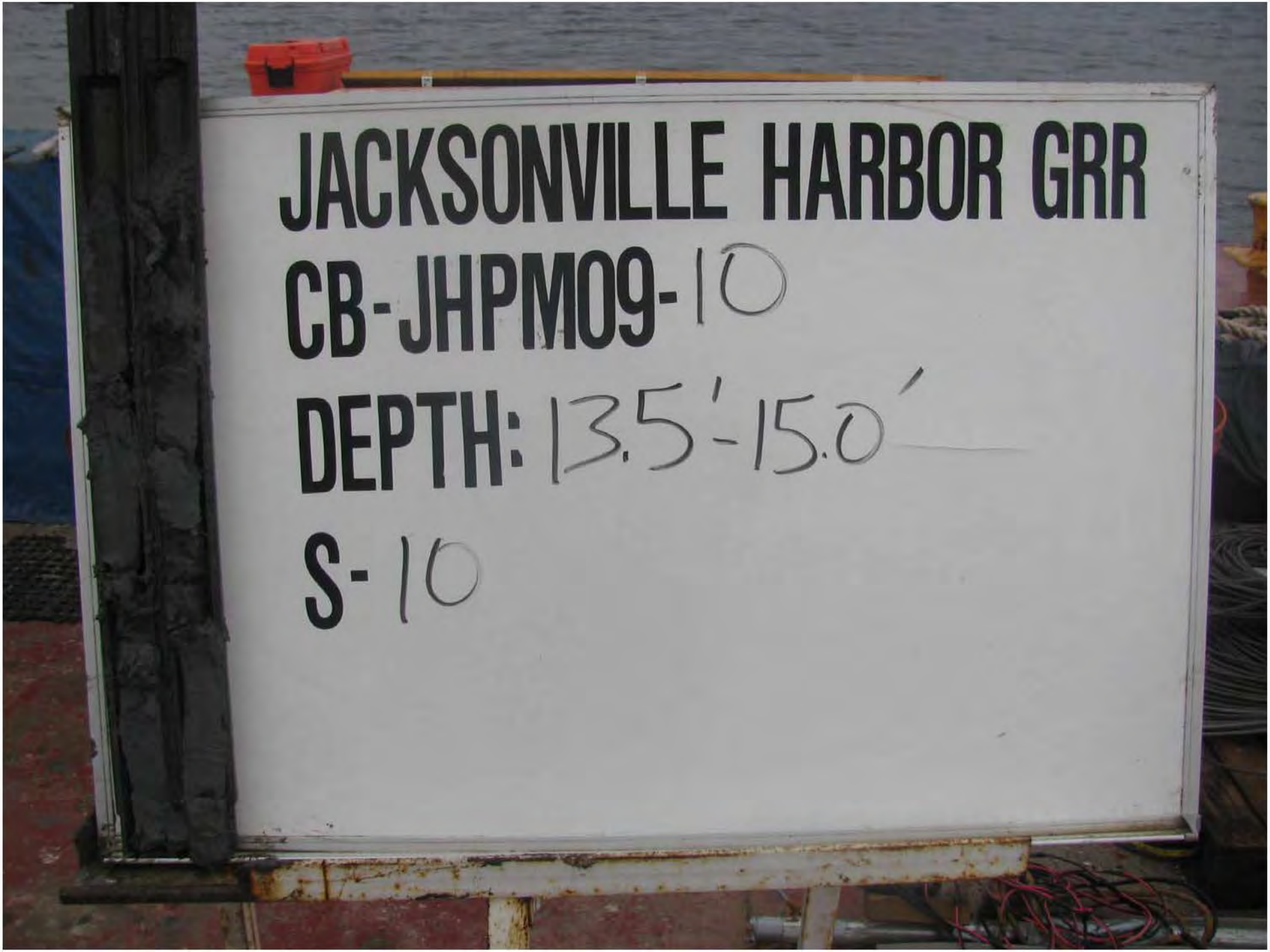

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 6.0'-7.5'
S-5

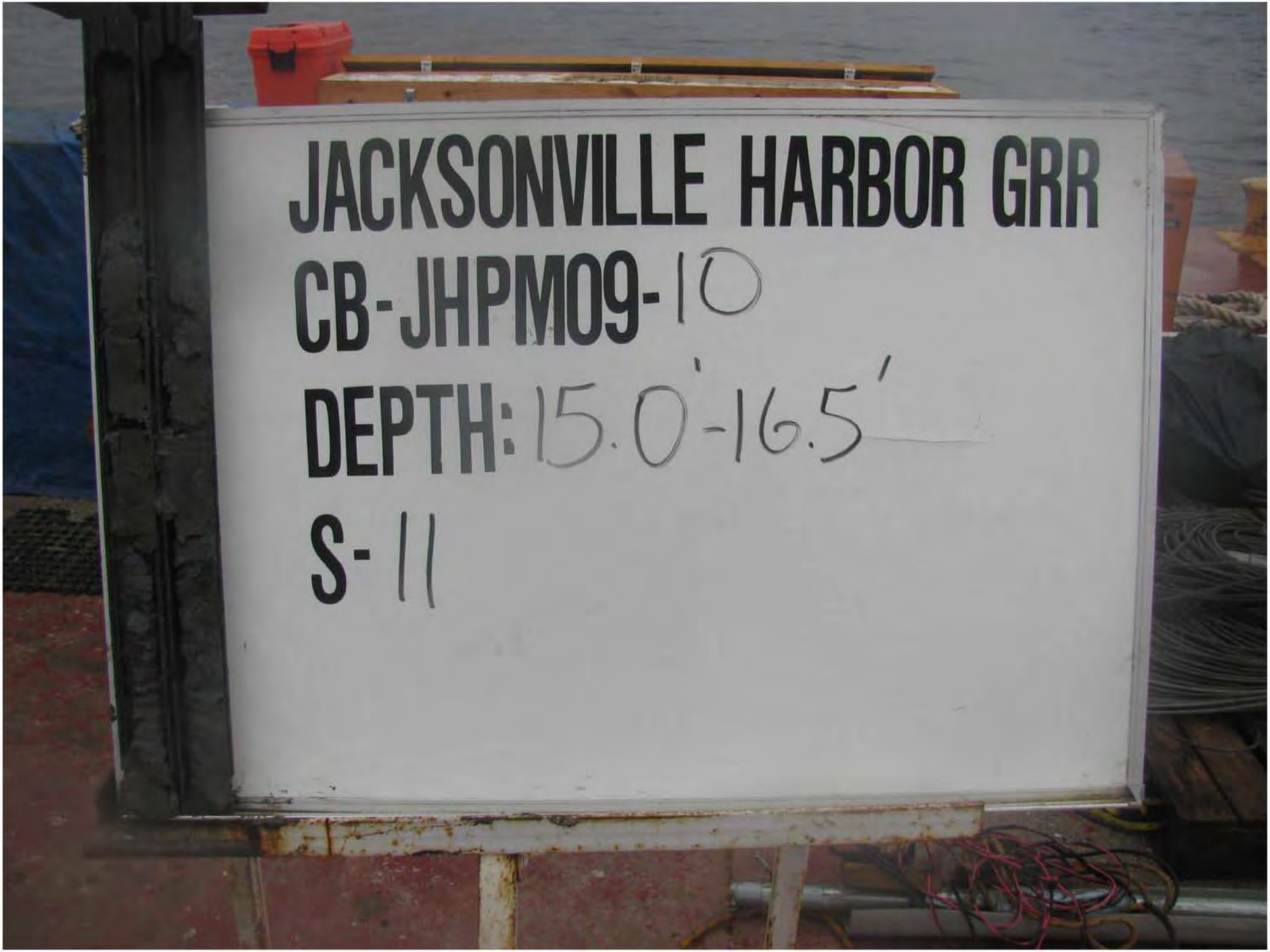

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 7.5'-9.0'
S-6

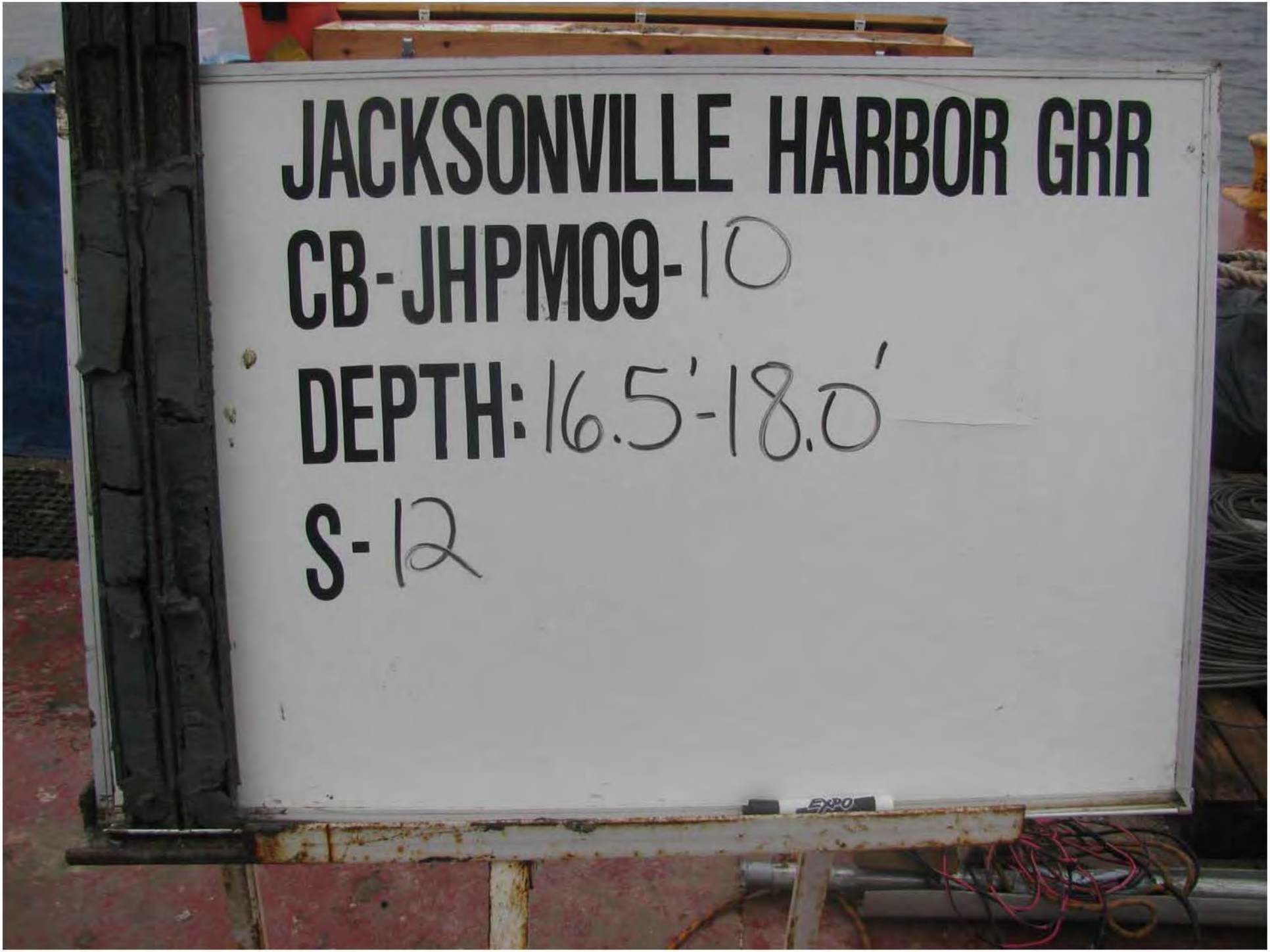

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 9.0-10.5'
S-7

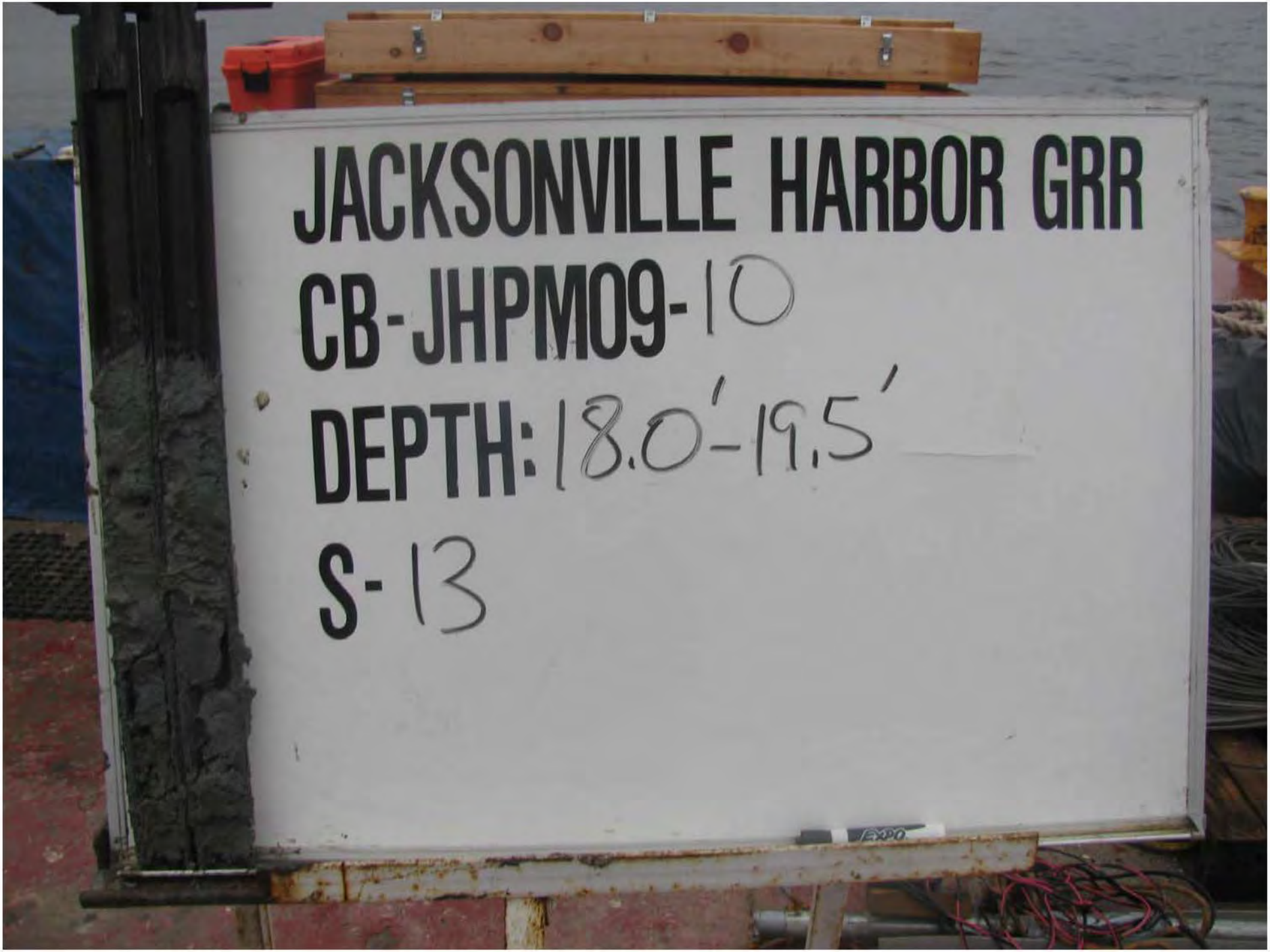

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 10.5'-12.0'
S-8

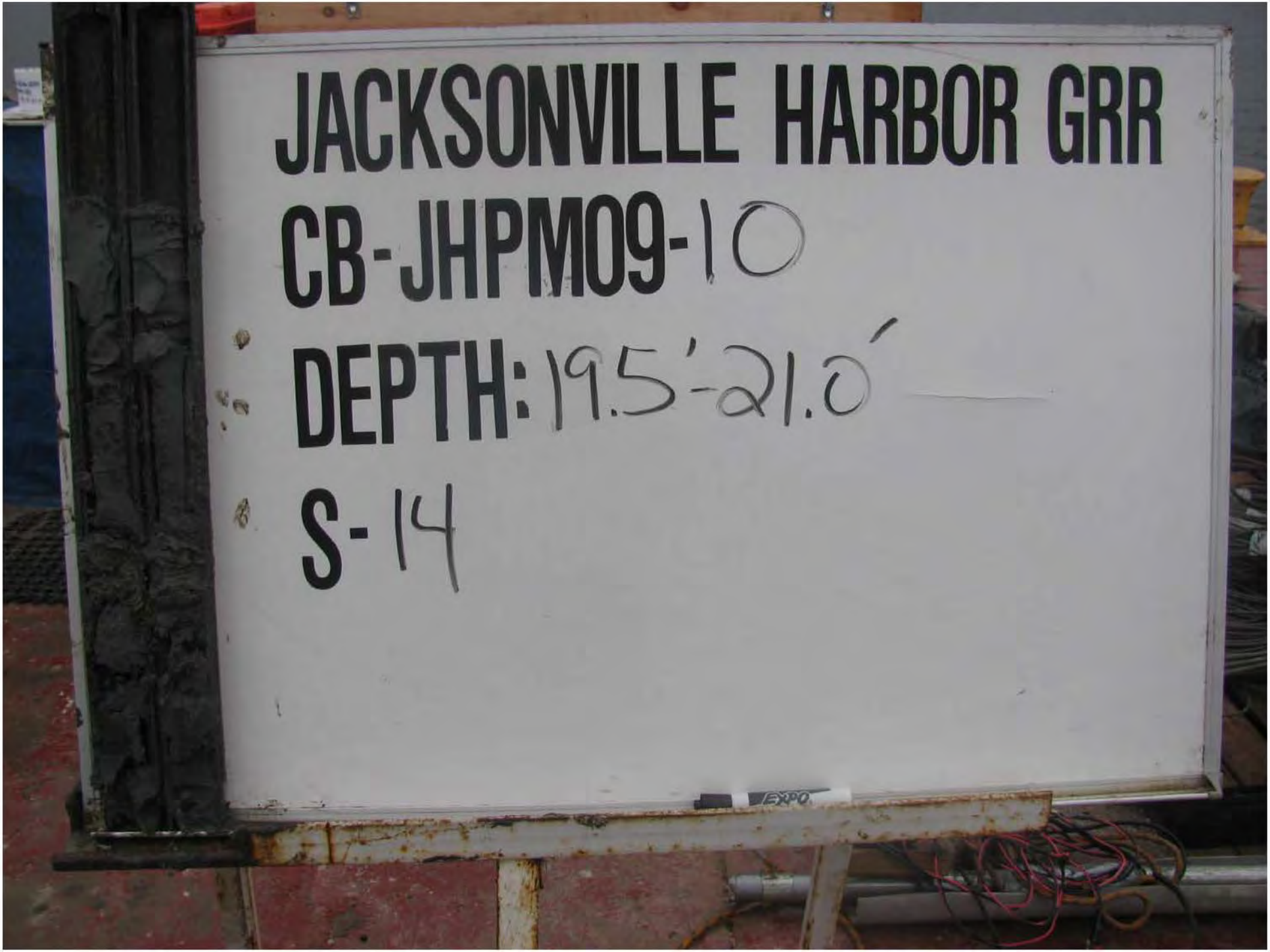

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 12.0'-13.5'
S-9

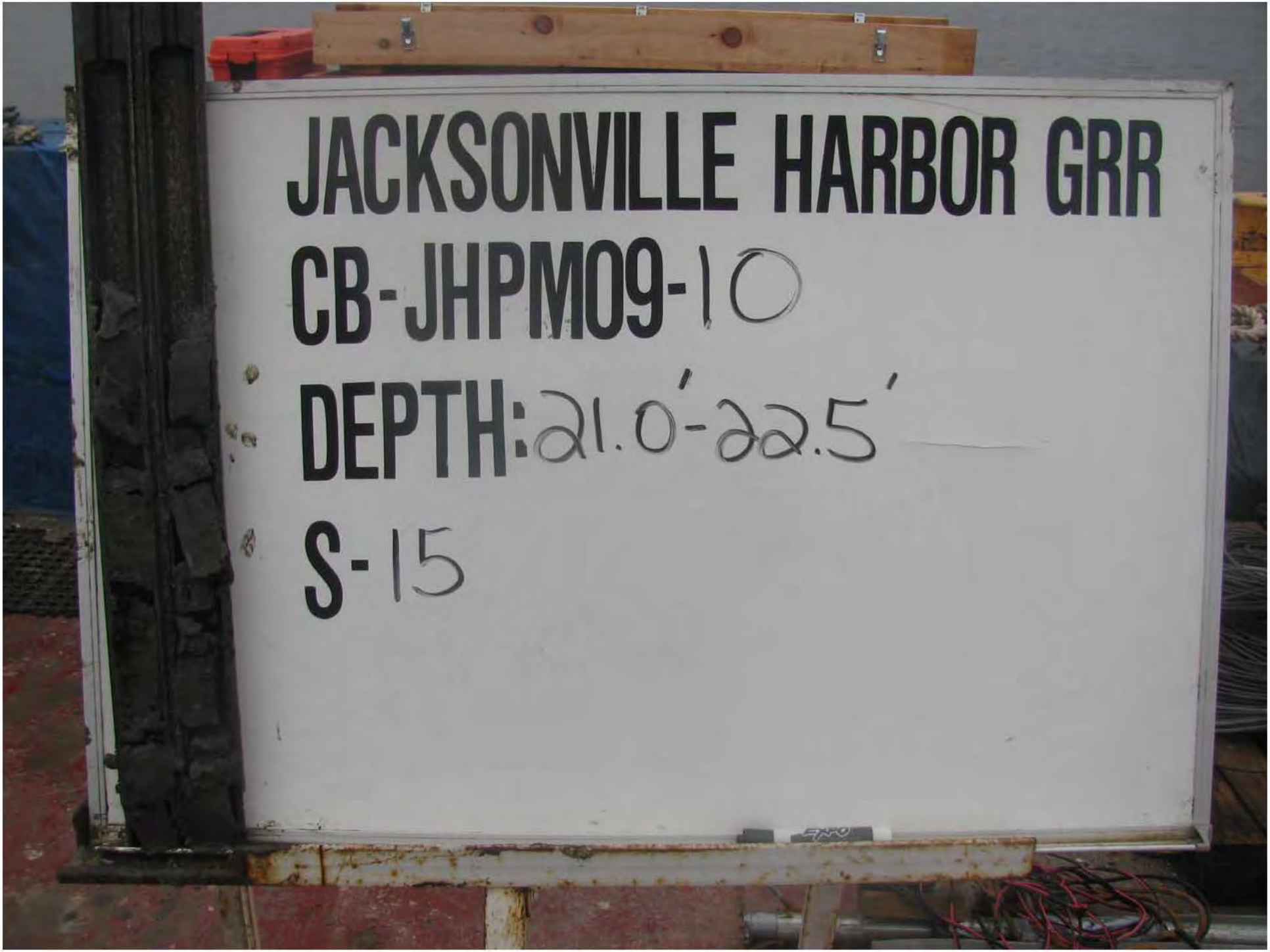

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 13.5'-15.0'
S-10

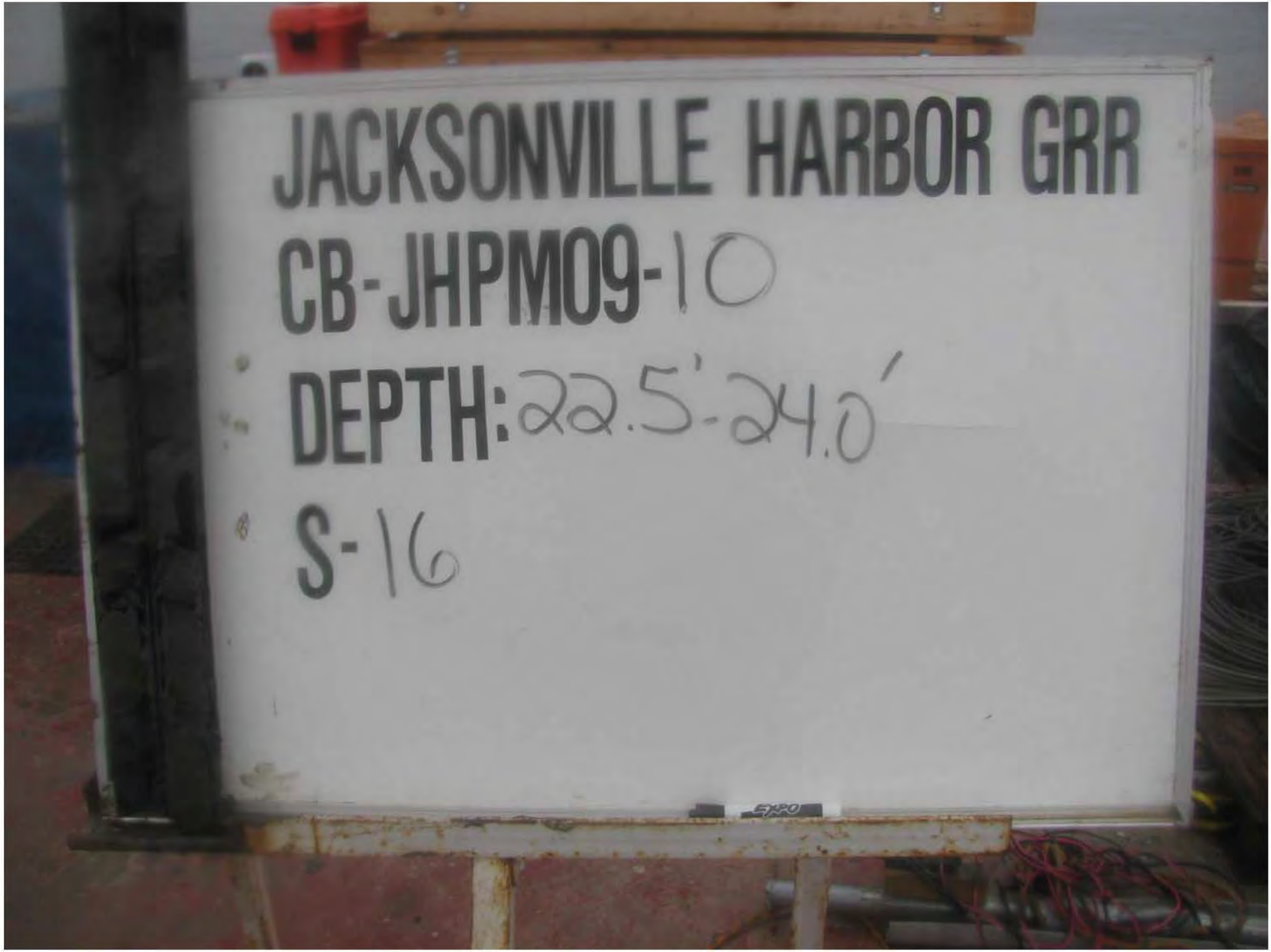

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 15.0'-16.5'
S-11

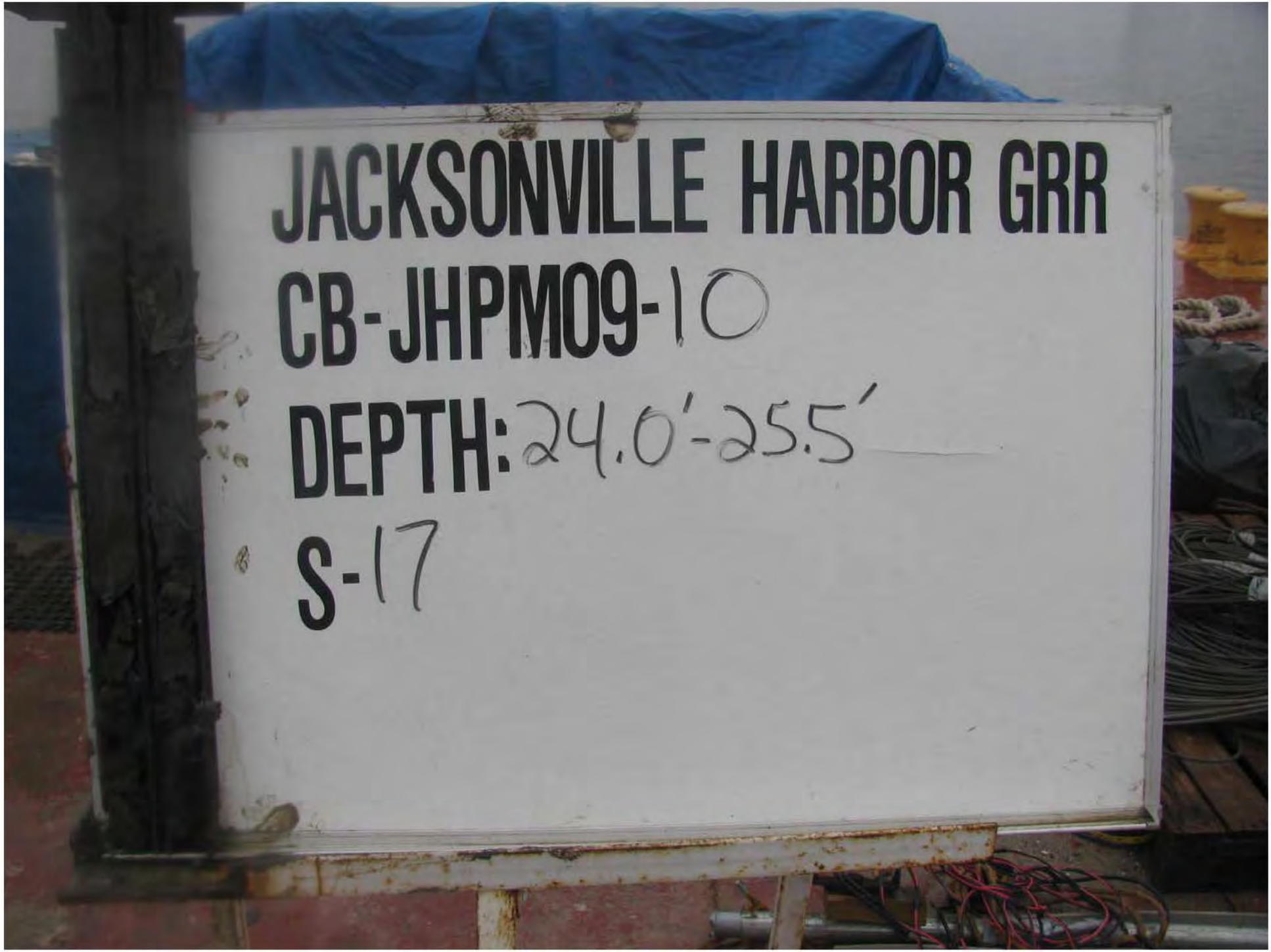

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 16.5'-18.0'
S-12
EXPO

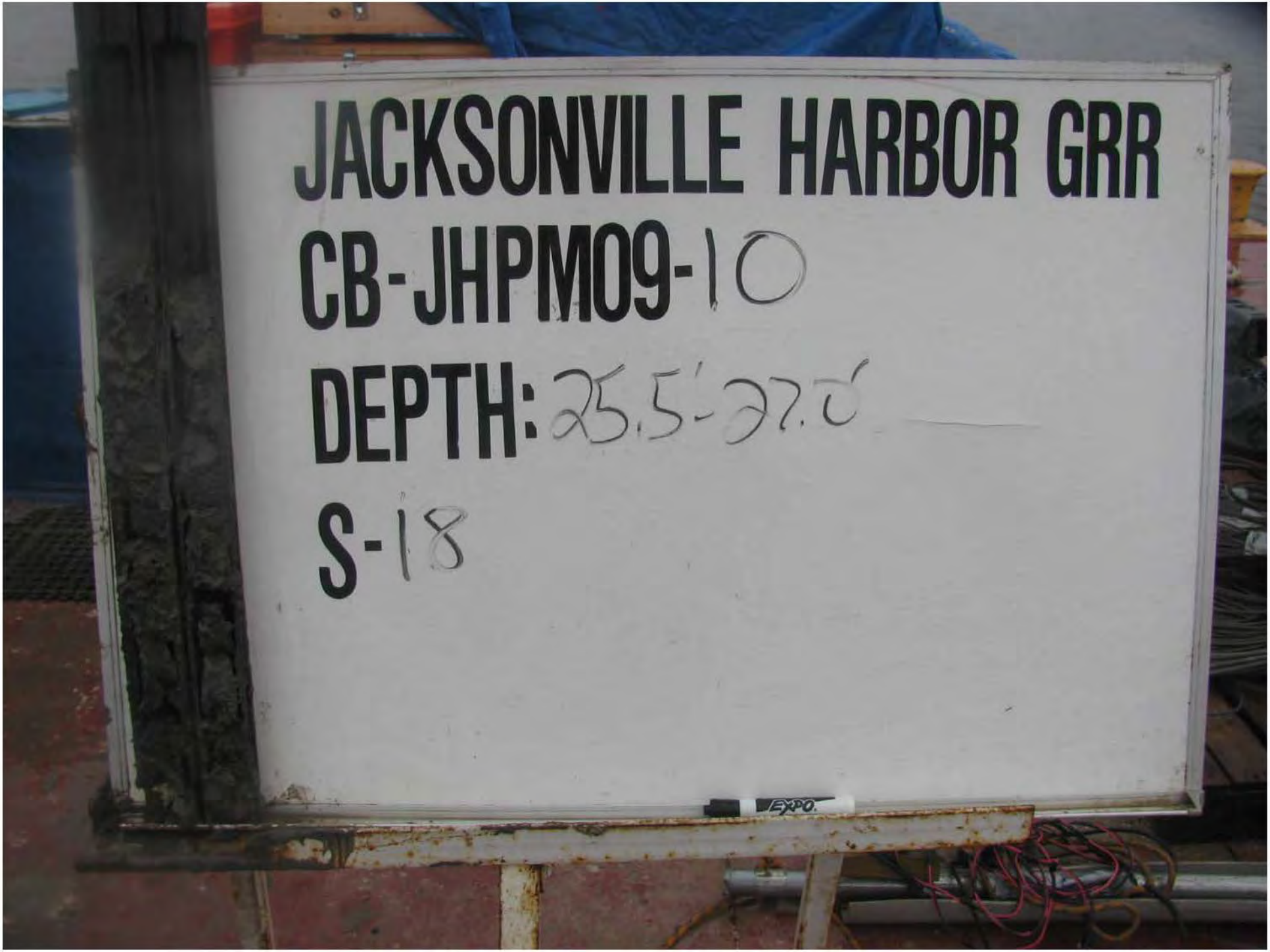

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 18.0'-19.5'
S-13

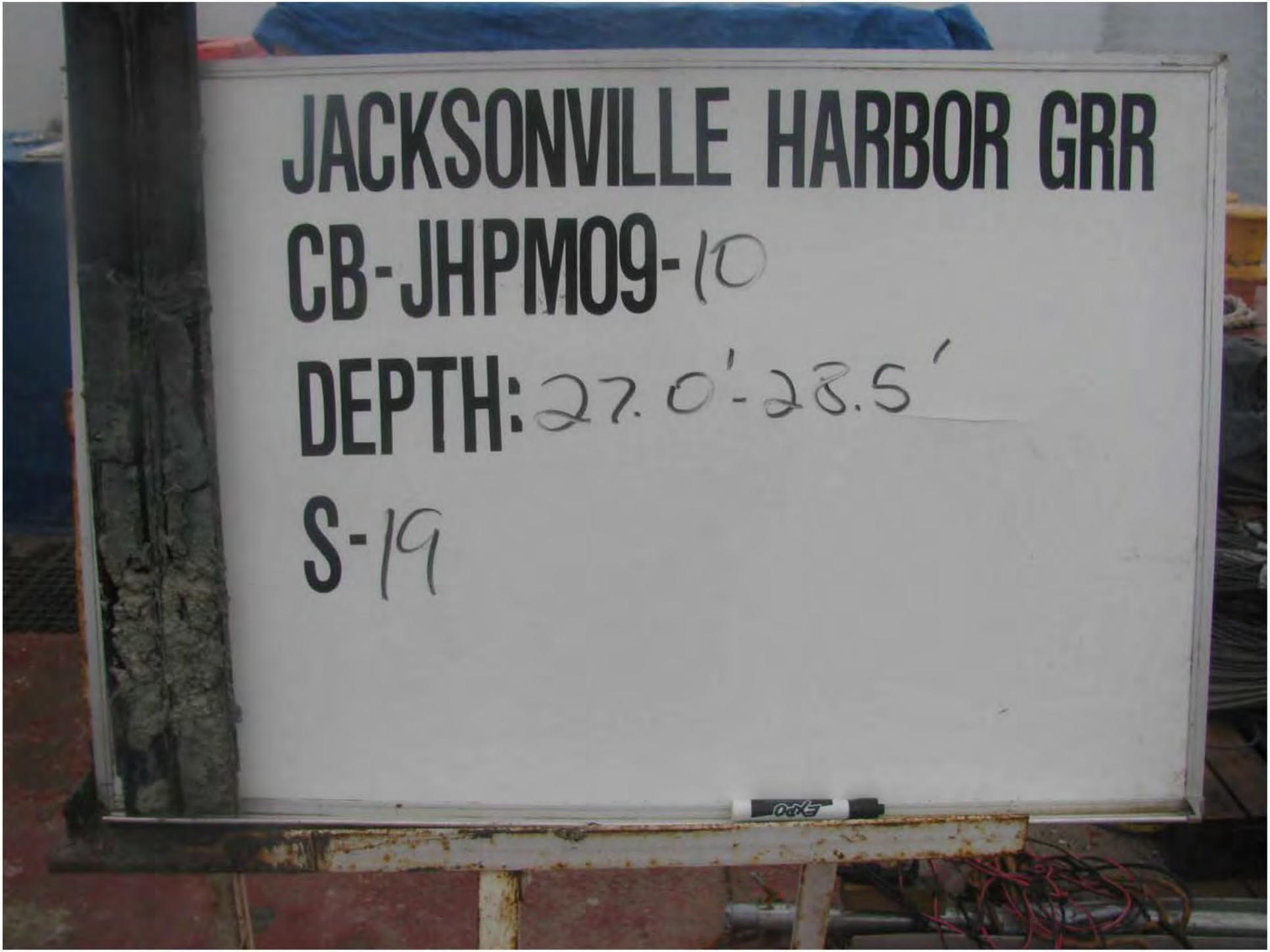

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 19.5'-21.0'
S-14
EXPO

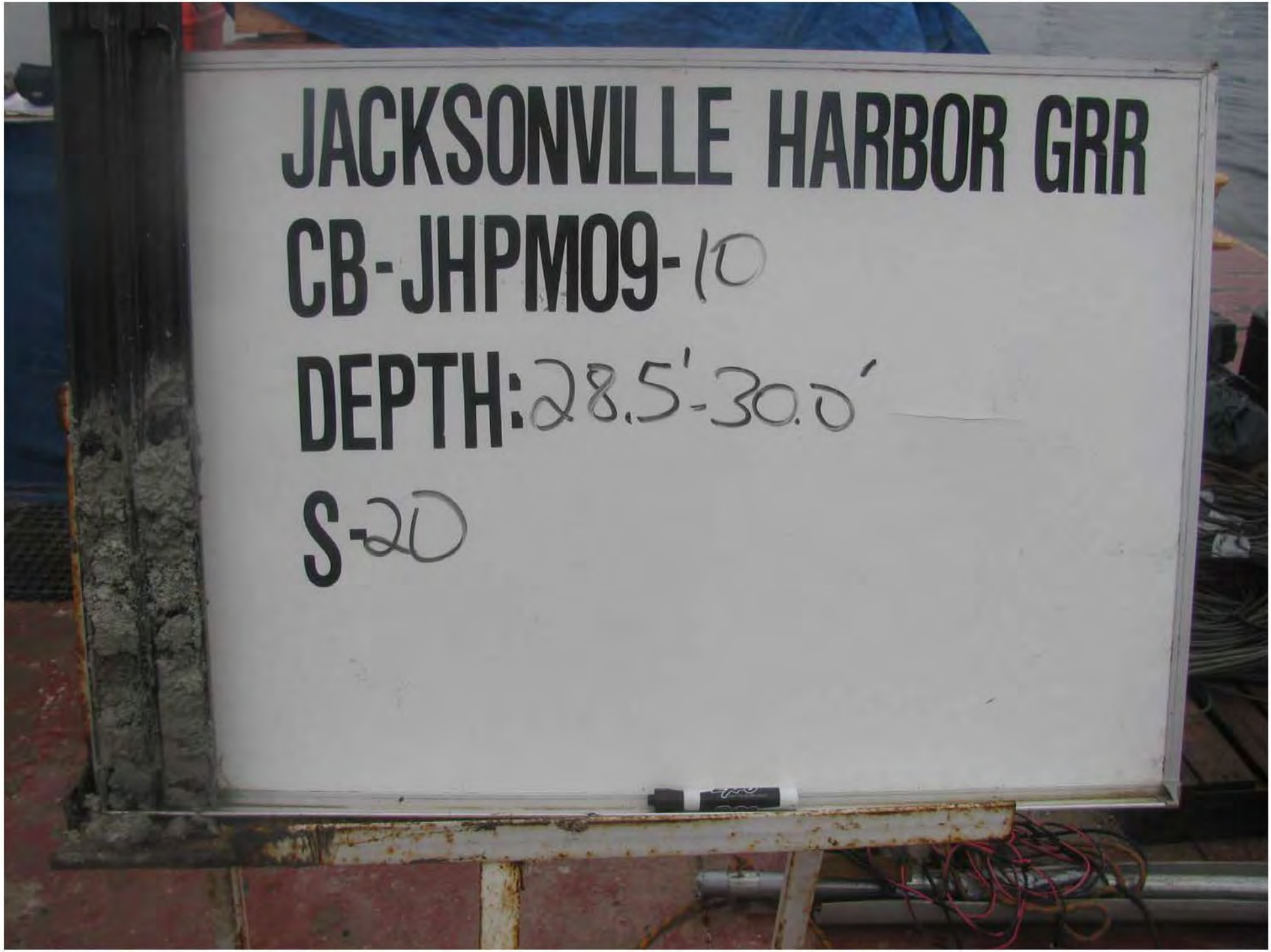

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 21.0'-22.5'
S-15

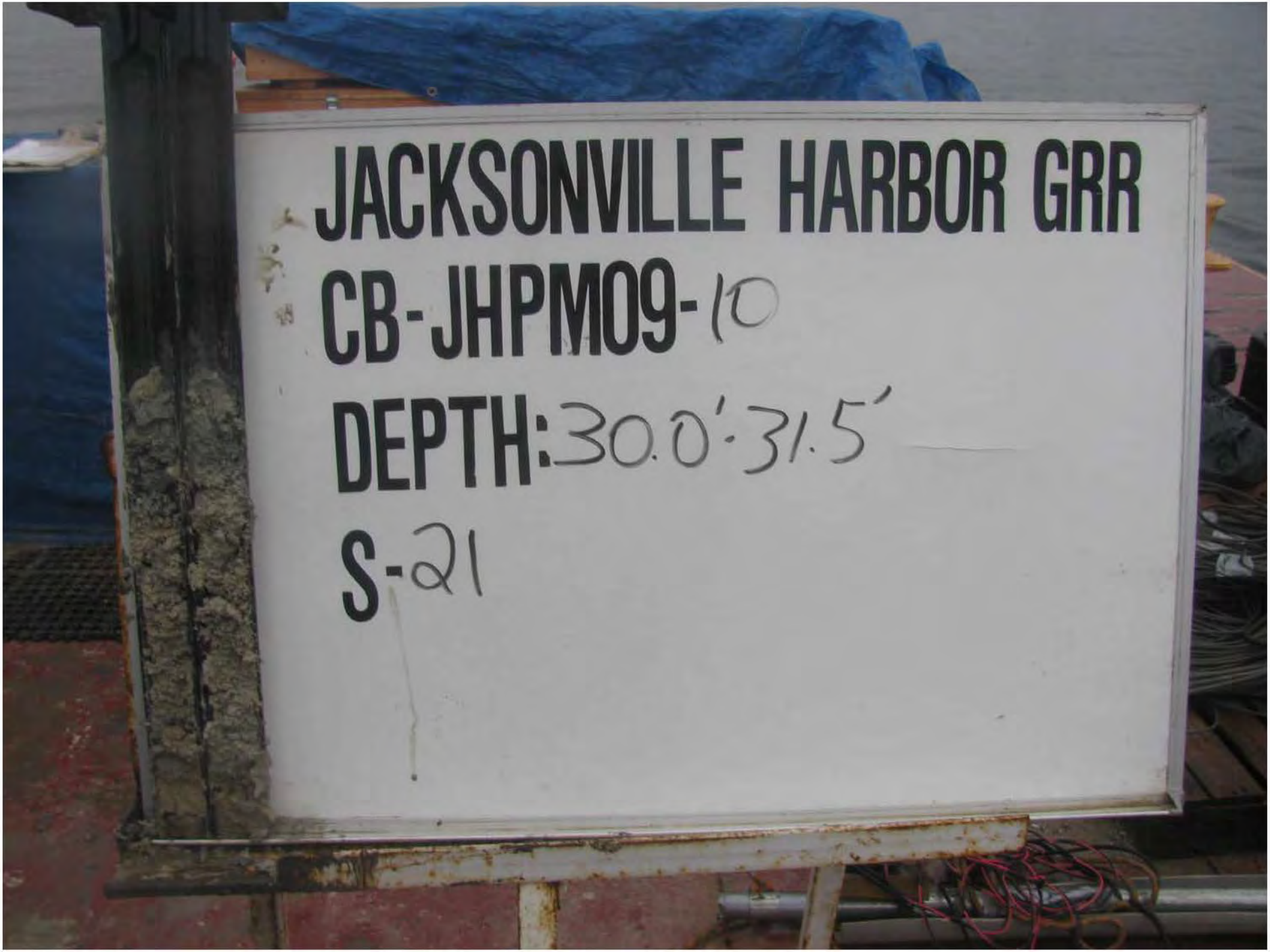

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 22.5'-24.0'
S-16

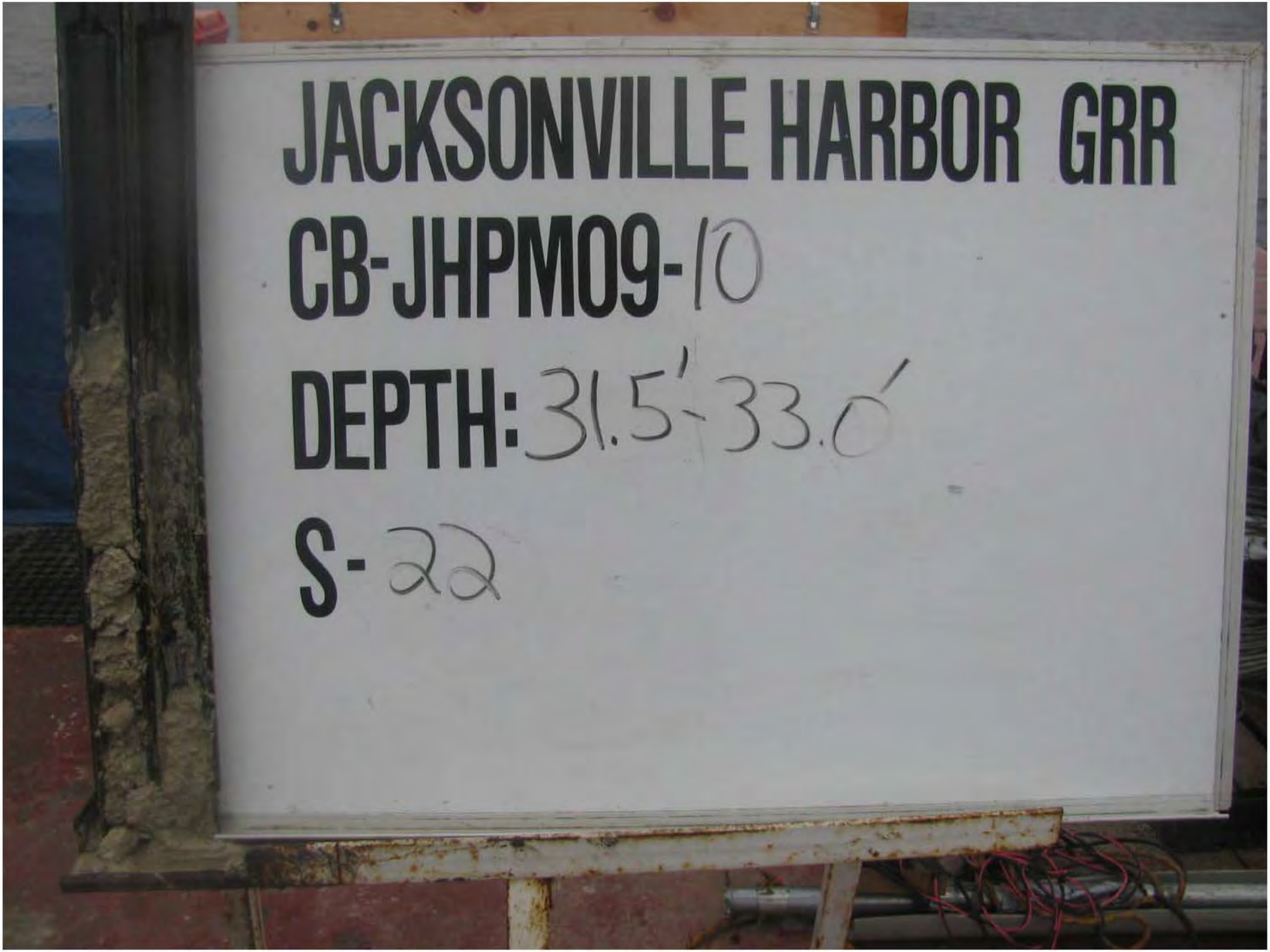

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 24.0'-25.5'
S-17

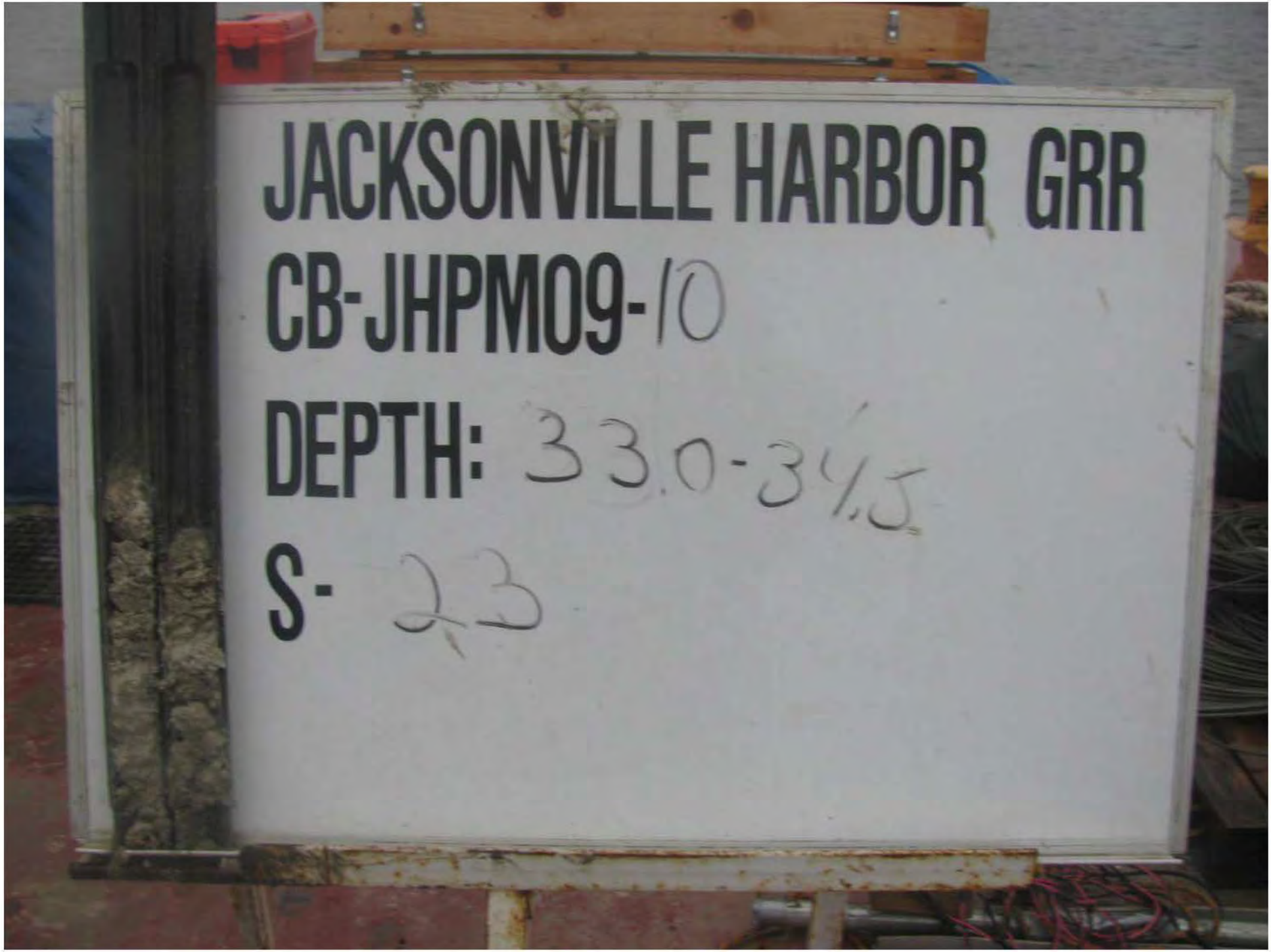

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 25.5-27.0
S-18
EXPO.


JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 27.0'-28.5'
S-19


JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 28.5'-30.0'
S-20


JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH:30.0'-31.5'
S-21


JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 31.5'-33.0'
S-22

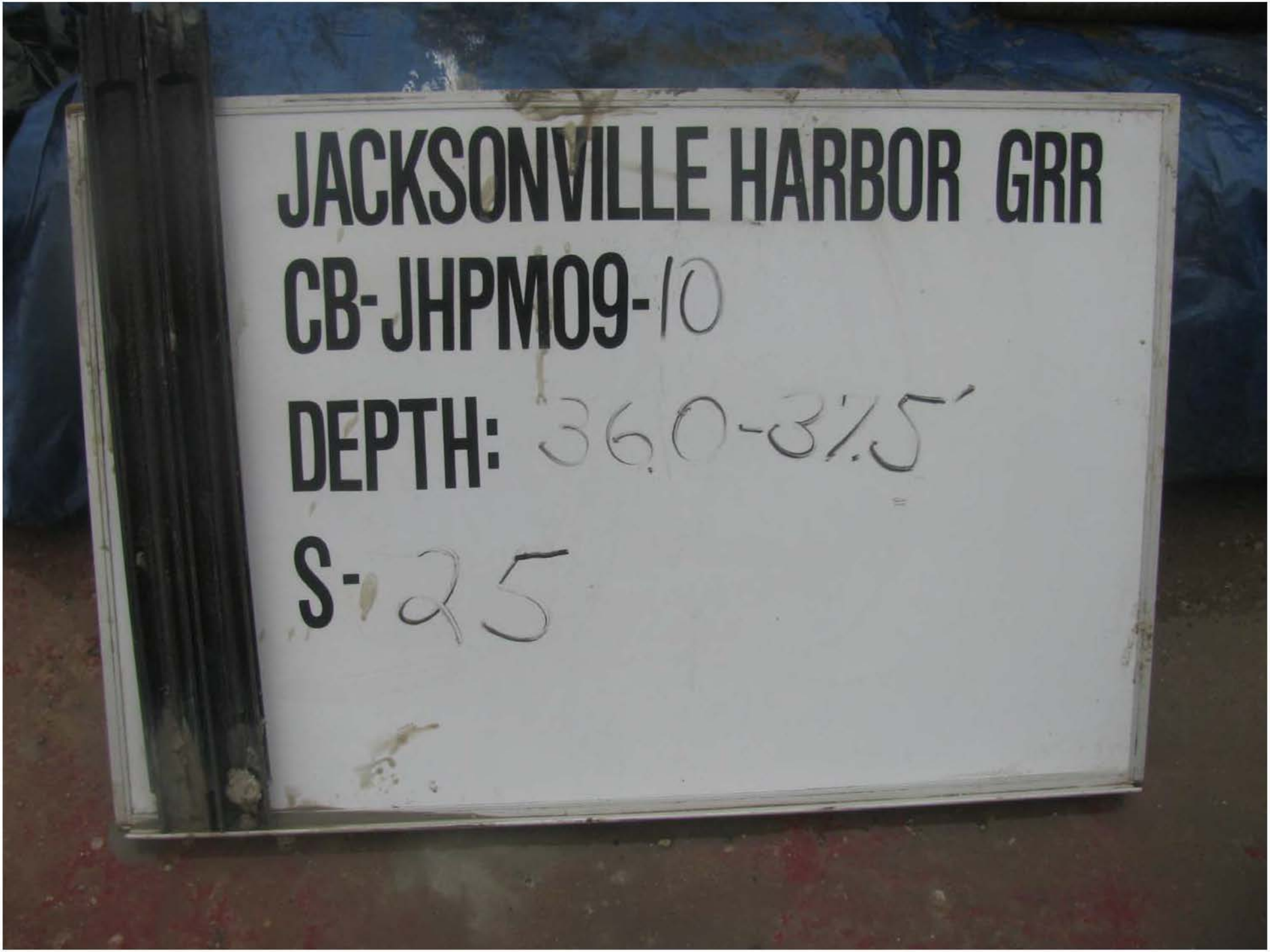

JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 33.0-34.5
S- 23

JACKSONVILLE HARBOR GRR

CB-JHPM09-10

DEPTH: 34.5-36.0'

S- 24


JACKSONVILLE HARBOR GRR
CB-JHPM09-10
DEPTH: 360-375
S-25

JACKSONVILLE HARBOR GRR

CB-JHPM09-10

DEPTH: 375-390'

S-96

JACKSONVILLE HARBOR GRR

CB-JHPM09-10

DEPTH: 39.0-40.5'

S- 27

JACKSONVILLE HARBOR GRR

CB-JHPM09-10

DEPTH: 405-420'

S- 28

TEST CORE BORING NUMBER
“CB-JHPM09-11”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-11

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-11
LOCATION COORDINATES	X = 488,659 Y = 2,201,799
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	19.8 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 11 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	0
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-20-10 COMPLETED: 01-20-10
16. ELEVATION TOP OF BORING	-45.1 Ft.
17. TOTAL RECOVERY FOR BORING	75 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-45.1	0.0						-45.1		
-45.3	0.2		SAND, silty, mostly angular to subangular fine to medium-grained sand-sized quartz, little silt, few angular to subangular shell up to 1-1/2", wet, 5Y 4/3 olive (SM)	73	1		SPT Sampler -46.6	9 8 7	15
-47.1	2.0		SAND, poorly-graded with silt, mostly angular to subangular fine to medium-grained sand-sized quartz, little angular to subangular shell up to 3/8", few silt, wet, 5Y 5/1 gray (SP-SM)	67	2		SPT Sampler -48.1	4 3 6	9
-48.4	3.3	Highly Wea.	LIMESTONE, very soft, highly weathered, fine grained, 5Y 7/4 pale yellow	93	3		SPT Sampler -49.6	8 7 23	30
-50.1	5.0		CLAY, fat, medium plasticity, hard, dry, 5BG 5/1 greenish gray (CH) At El. -49.1 Ft., 5Y 7/1 light gray At El. -49.9 Ft., some angular to subangular fine to medium-grained sand-sized quartz	93	4		SPT Sampler -51.1	7 47 31	78
-53.4	8.3	Highly Weathered	LIMESTONE, sparsely fossiliferous, soft, highly weathered, fine grained, moist, 5Y 8/2 pale yellow At El. -52.6 Ft., moderately hard, slightly weathered	67	5		SPT Sampler -52.6	20 25 30	55
-54.1	9.0		LIMESTONE, sandy, non-fossiliferous, very soft	100	6		SPT Sampler -53.4	37 50/0.3'	
-57.1	12.0	Slightly Weathered	LIMESTONE, sparsely fossiliferous, hard, slightly weathered, thick bedding, bedding orientation, porous	58	RUN # 1	RQD 25	4 x 5-1/2" Diamond Impregnated Bit DT = 4 mins HP = 300 psi DFR = 25 % -58.9		
		Highly Weathered	LIMESTONE, soft, highly weathered	53	7		SPT Sampler	6 7	14

0 5 10 15

(Continued)

SAJ FORM 1836
JUN 02

Boring Designation CB-JHPM09-11

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 2 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Jacksonville Harbor General Reevaluation Report (GRR)	State Plane, FLE (U.S. Ft.)	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 488,659 Y = 2,201,799	-45.1 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
		Highly Weathered	At El. -60.4 Ft., very soft	53	7		-60.4 SPT Sampler	7	
				100	8		SPT Sampler	8, 12, 18	30
			At El. -61.9 Ft., moderately hard, slightly weathered	100	9		-61.9 -62.2 SPT Sampler	50/0.3'	
		Slightly Weathered					Advanced Boring -63.4		
-64.9	19.8			100	10		SPT Sampler -64.9	6, 11, 12	23

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. Set 55.5 ft. of 6" flush joint steel casing

4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Blount Island Terminal.

5. Water depth of -47.2 ft. recorded at 10:41 AM on 1/20/2010. Tide gage reading of +2.1 ft. mllw

6. Compressive Strength Test of Rock Core At Elevation -54.6' to -55.1' = 815 PSI.

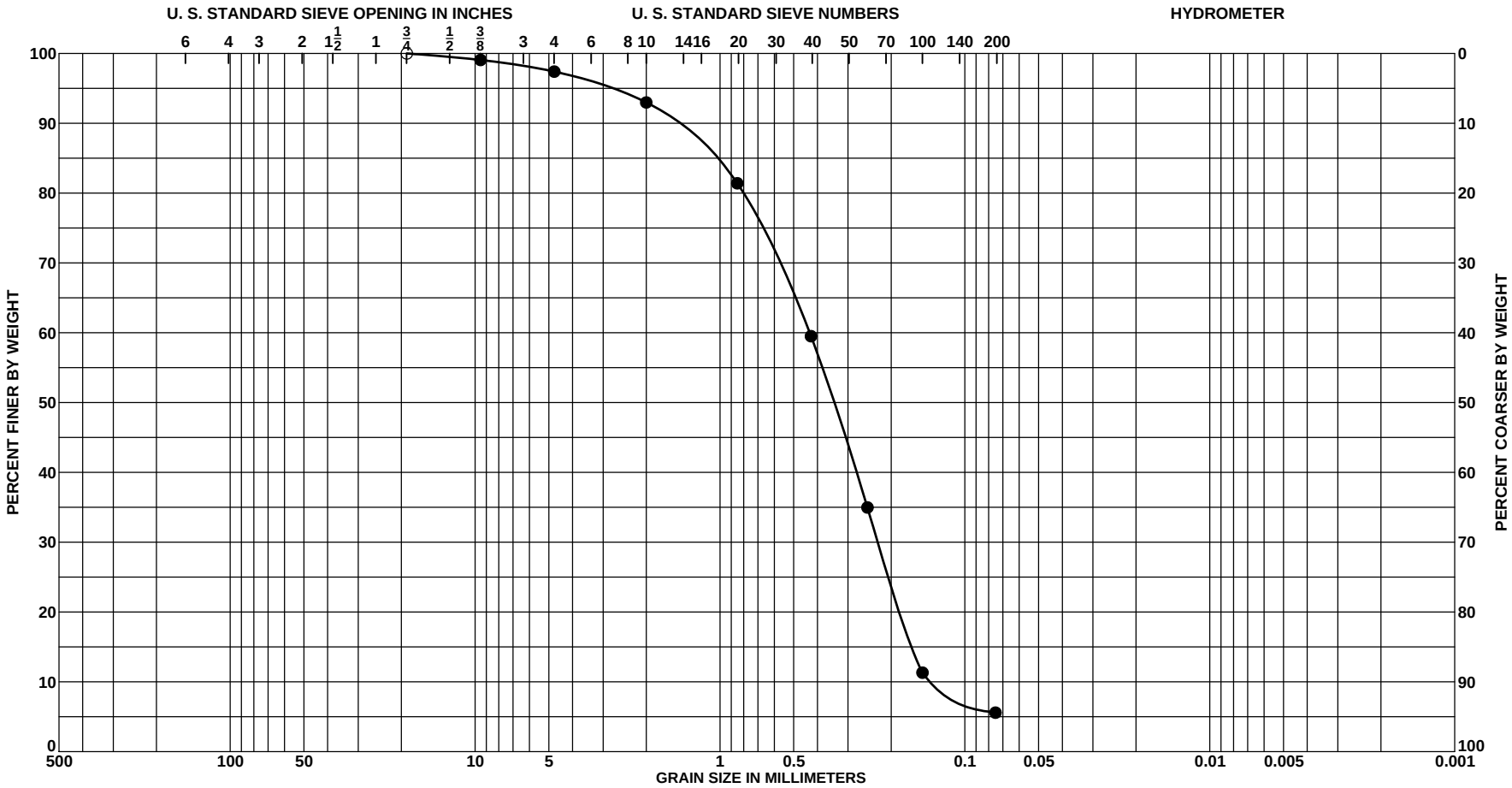
7. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	0.0/1.5	SP-SM*

*Lab visual classification based on gradation curve. No Atterberg limits.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

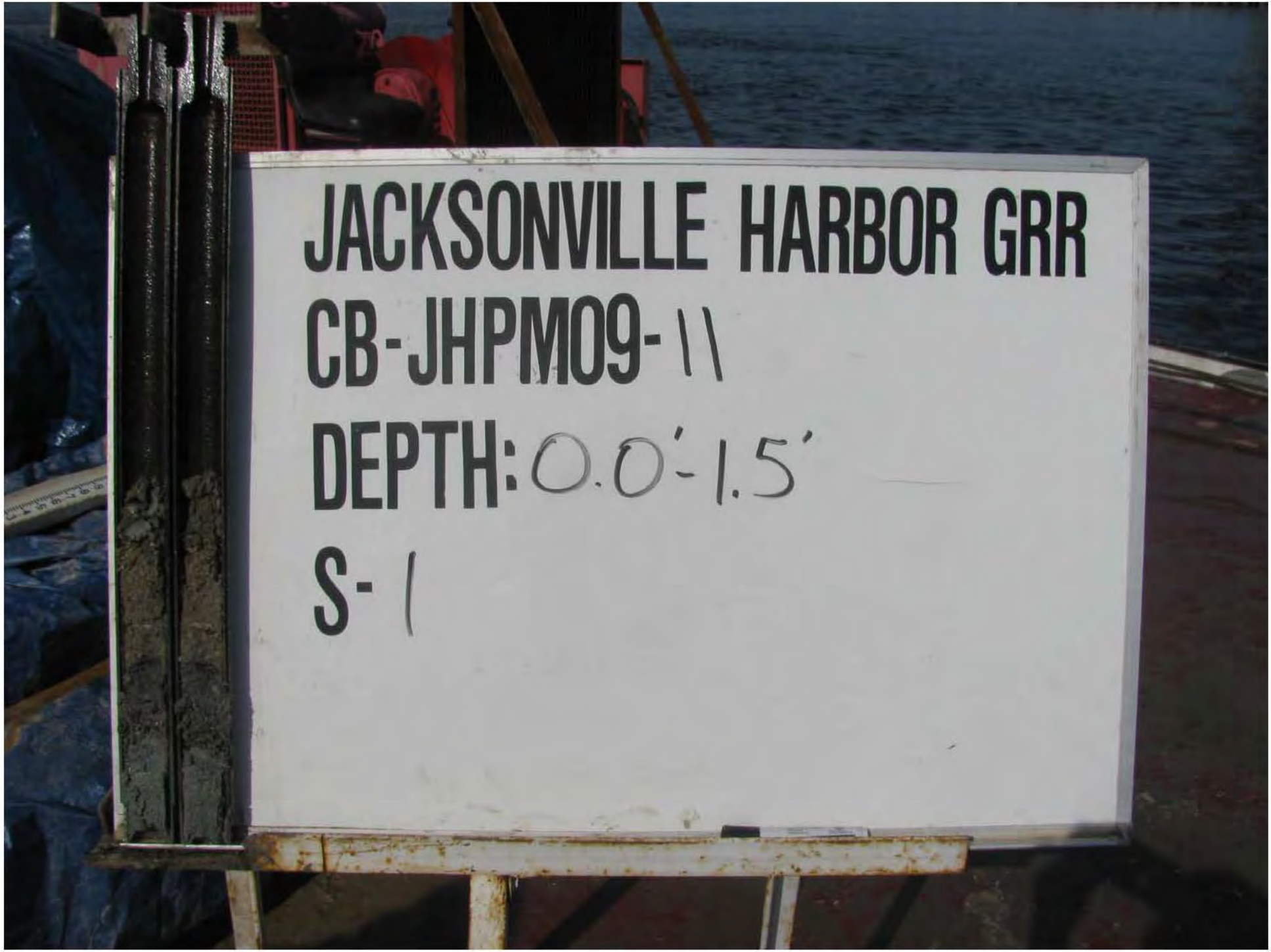


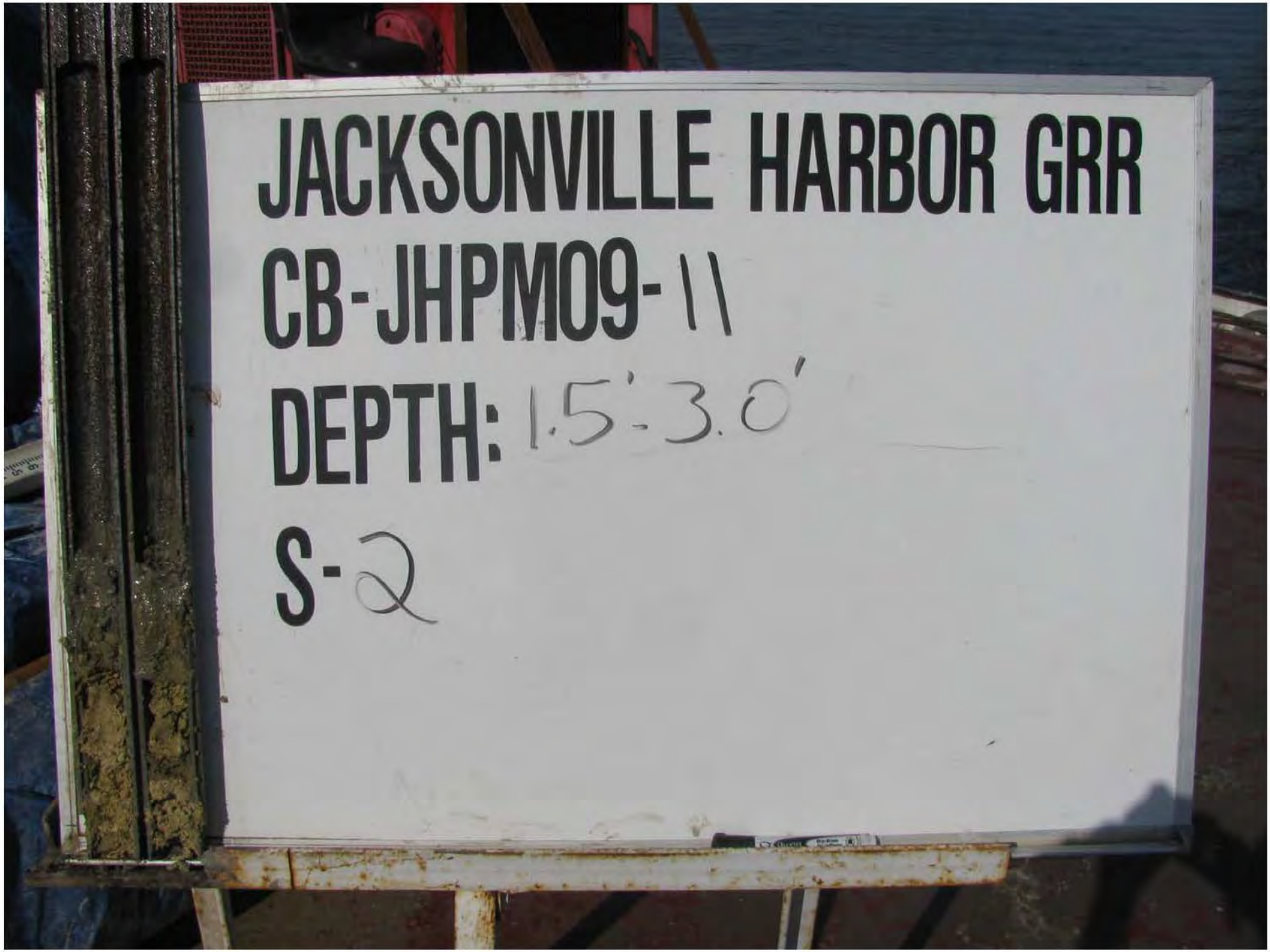
Sample No.	Depth	Classification	Munsell	CO_3 %	G_S	Org %	w_n	LL	PL	PI
● 1	0.0 to 1.5 Ft.	, gray (SP-SM)	5Y 5/1	15 (est)						

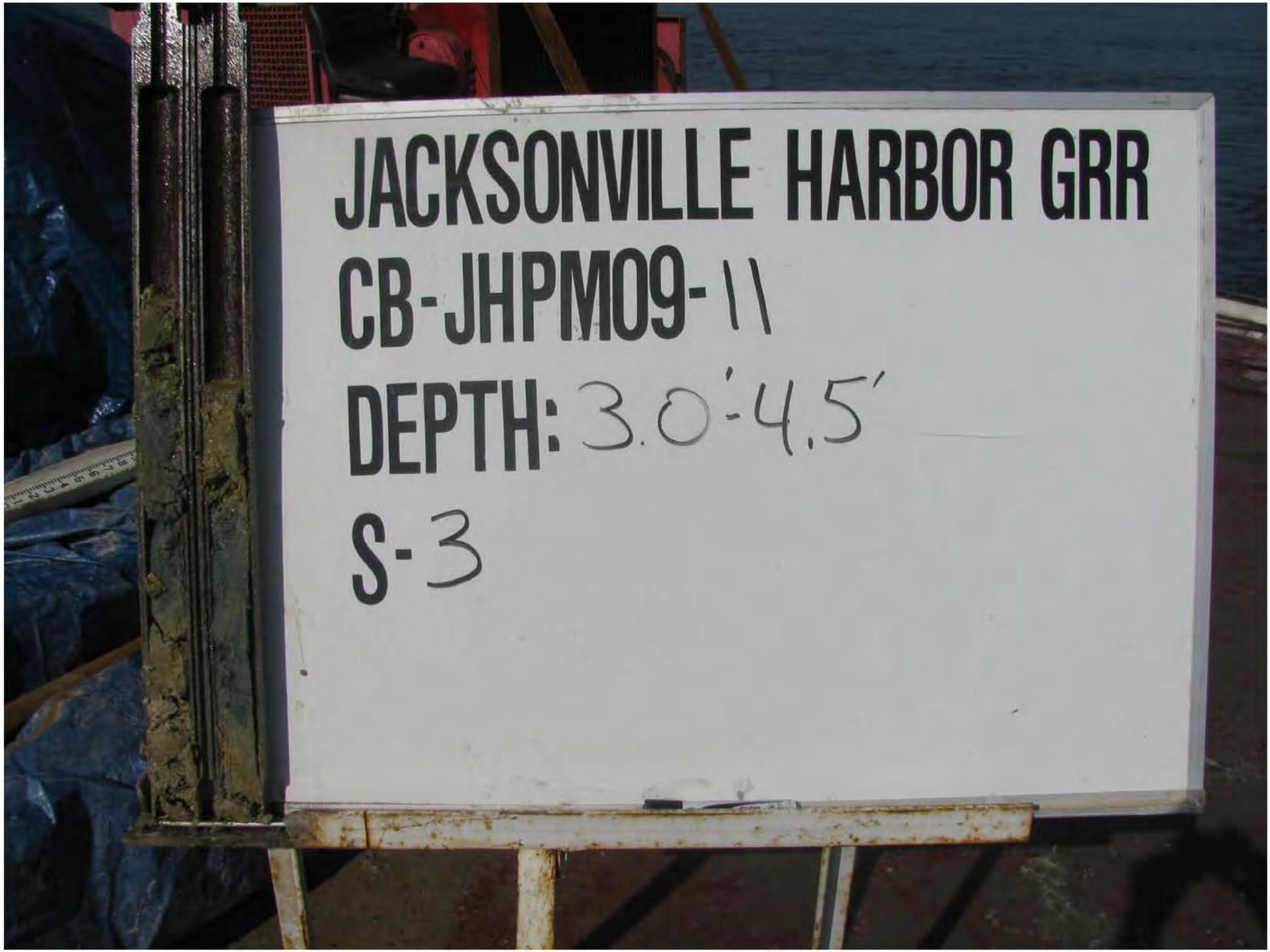
PROJECT	Jacksonville Harbor General Reeval. (GRR)
	ST. JOHN'S RIVER CHANNEL
BORING NO.	CB-JHPM09-11
BORING ELEV.	-45.1 Ft., MLLW
DATE	3/15/2010

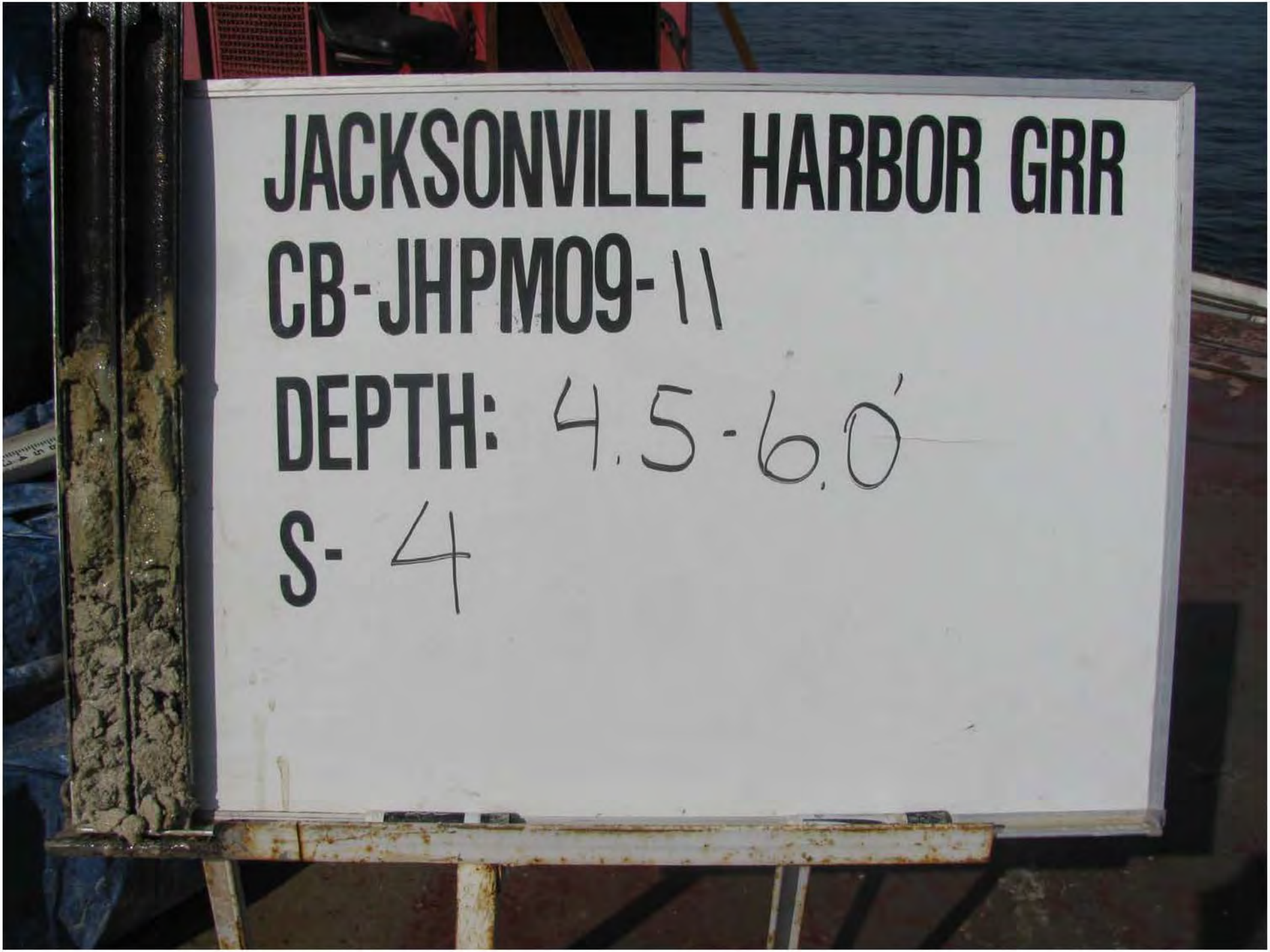
GRADATION CURVES

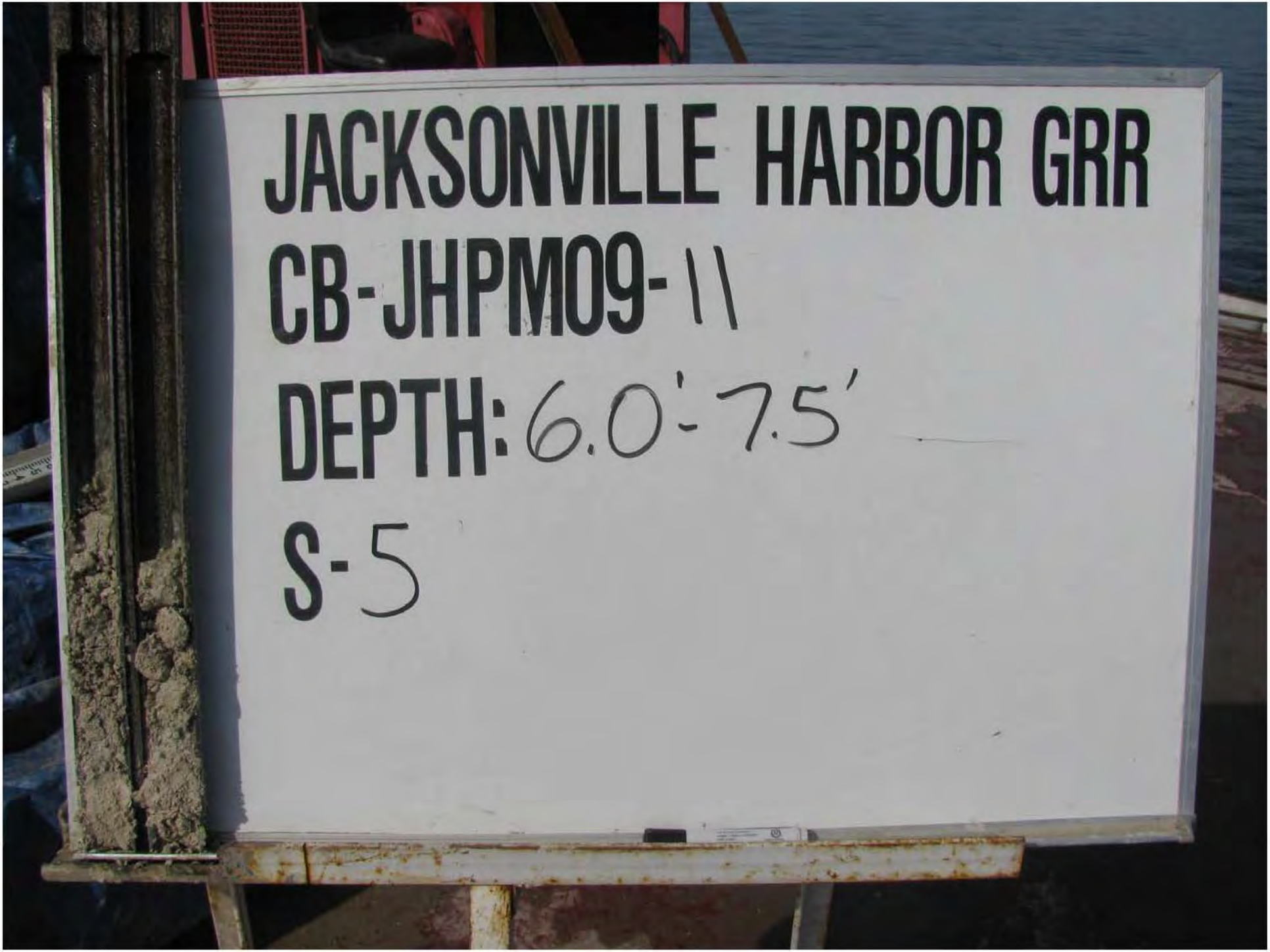
SAJ FORM 2087
JUN 02

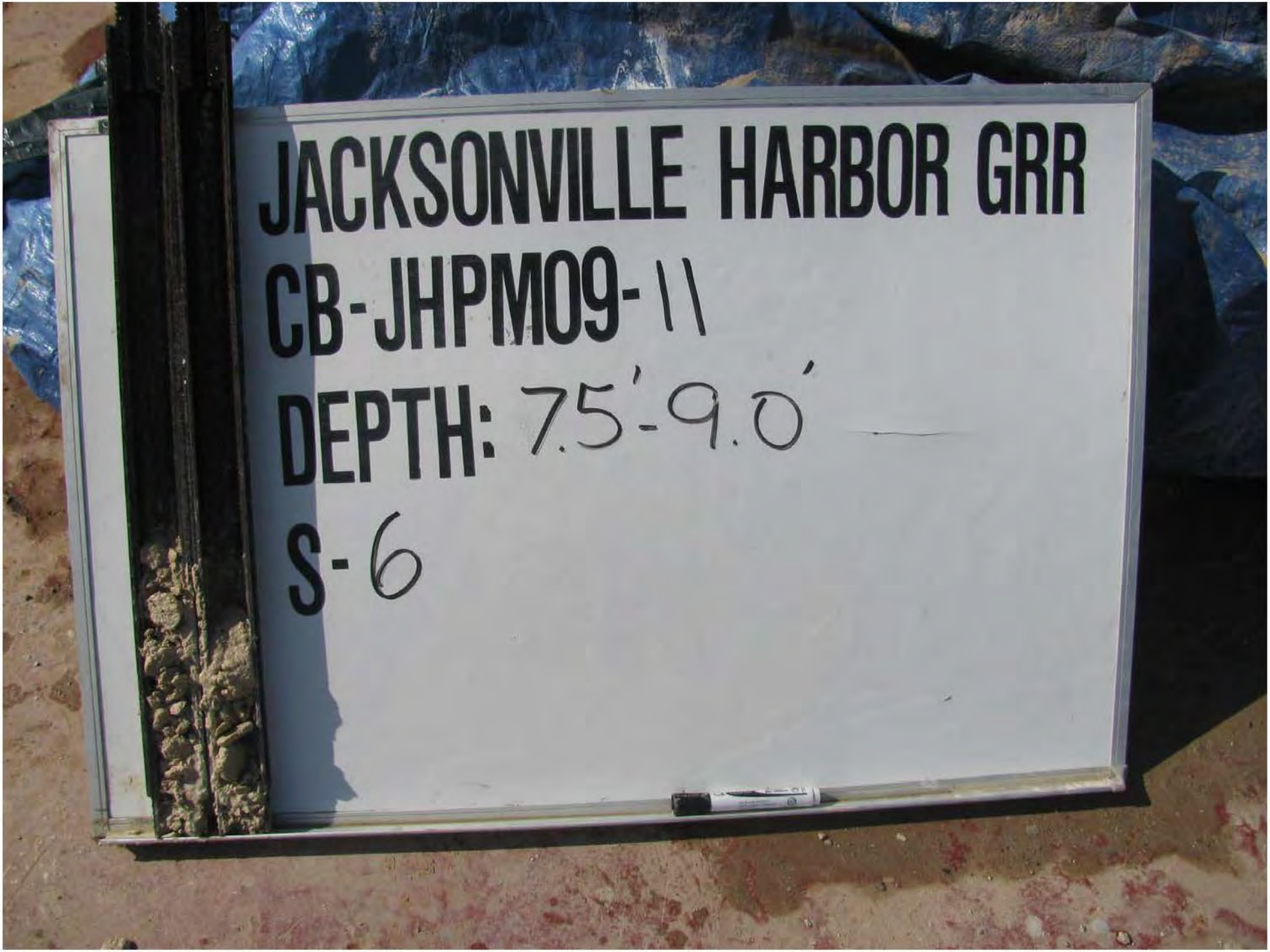

JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 0.0'-1.5'
S-1

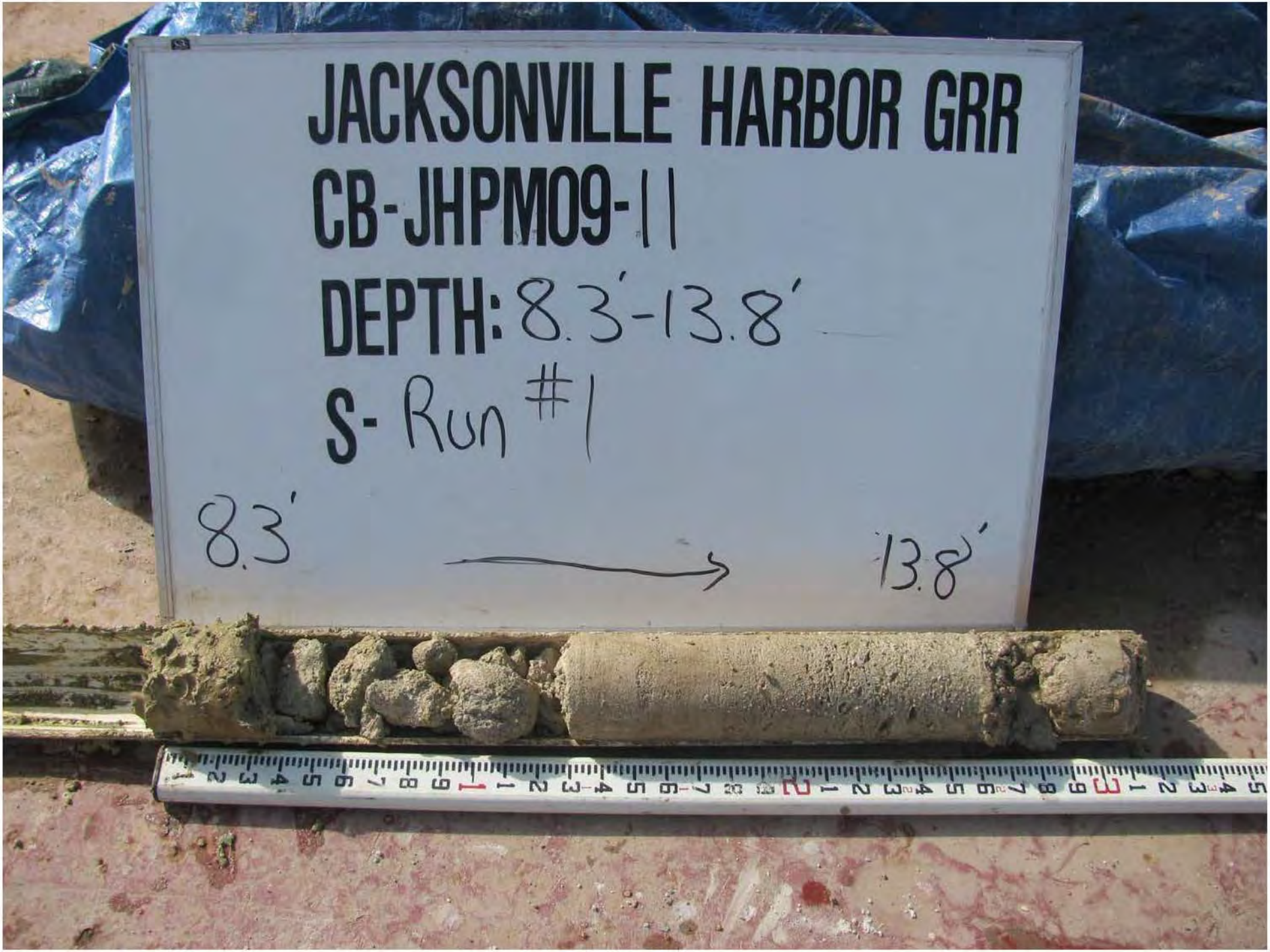

JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 1.5'-3.0'
S-2

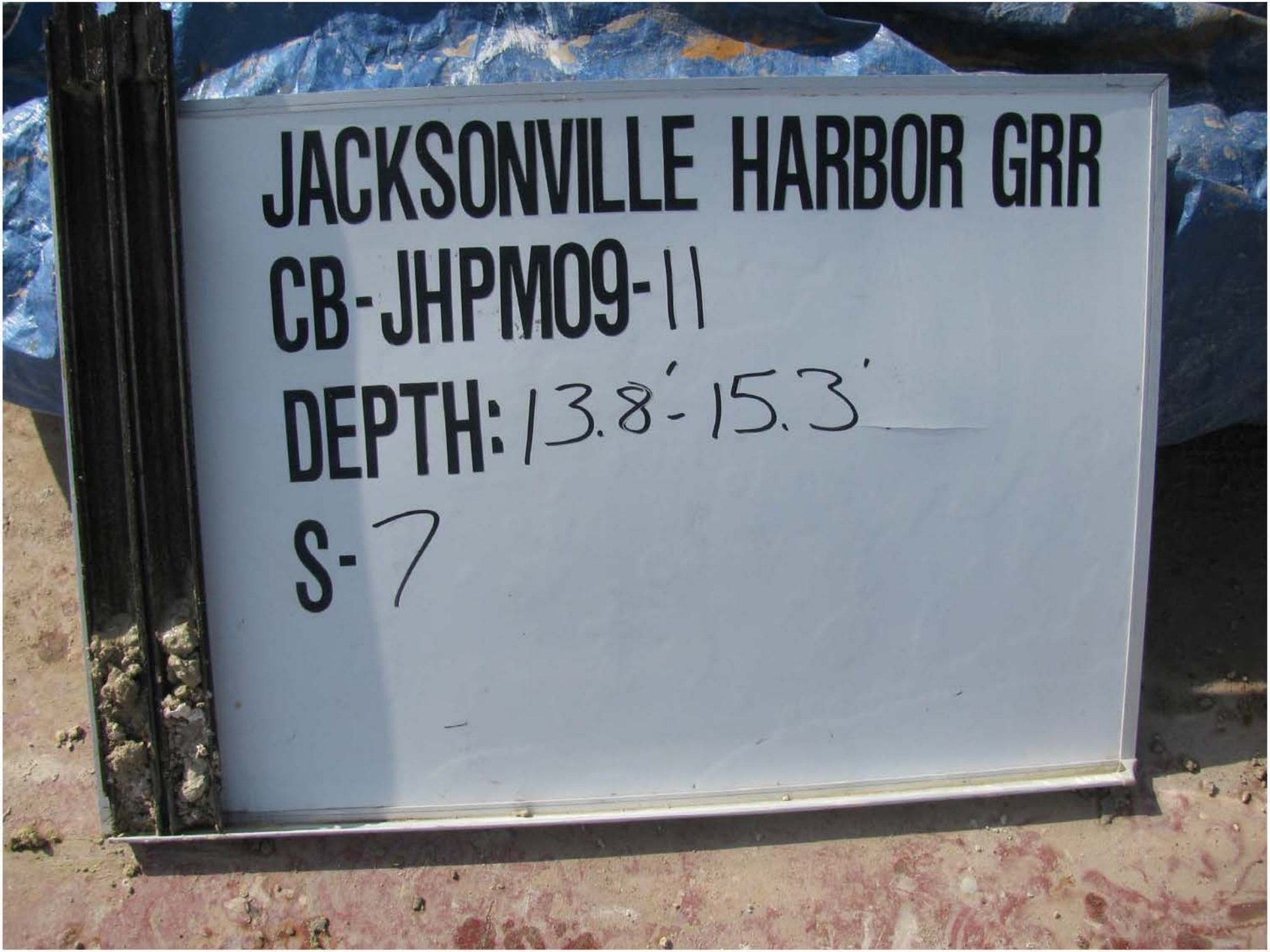

JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 3.0'-4.5'
S-3

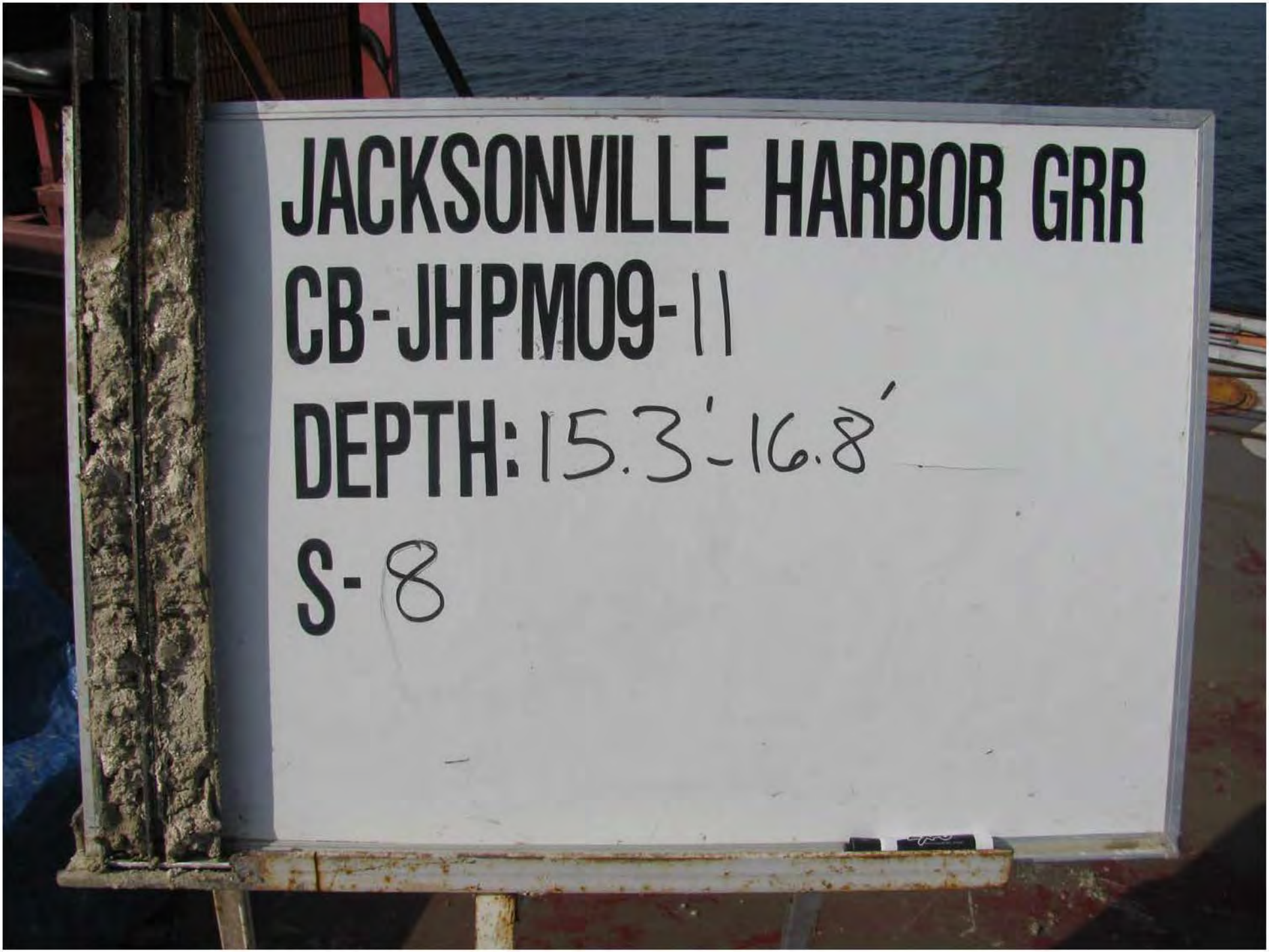

JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 4.5-6.0'
S- 4

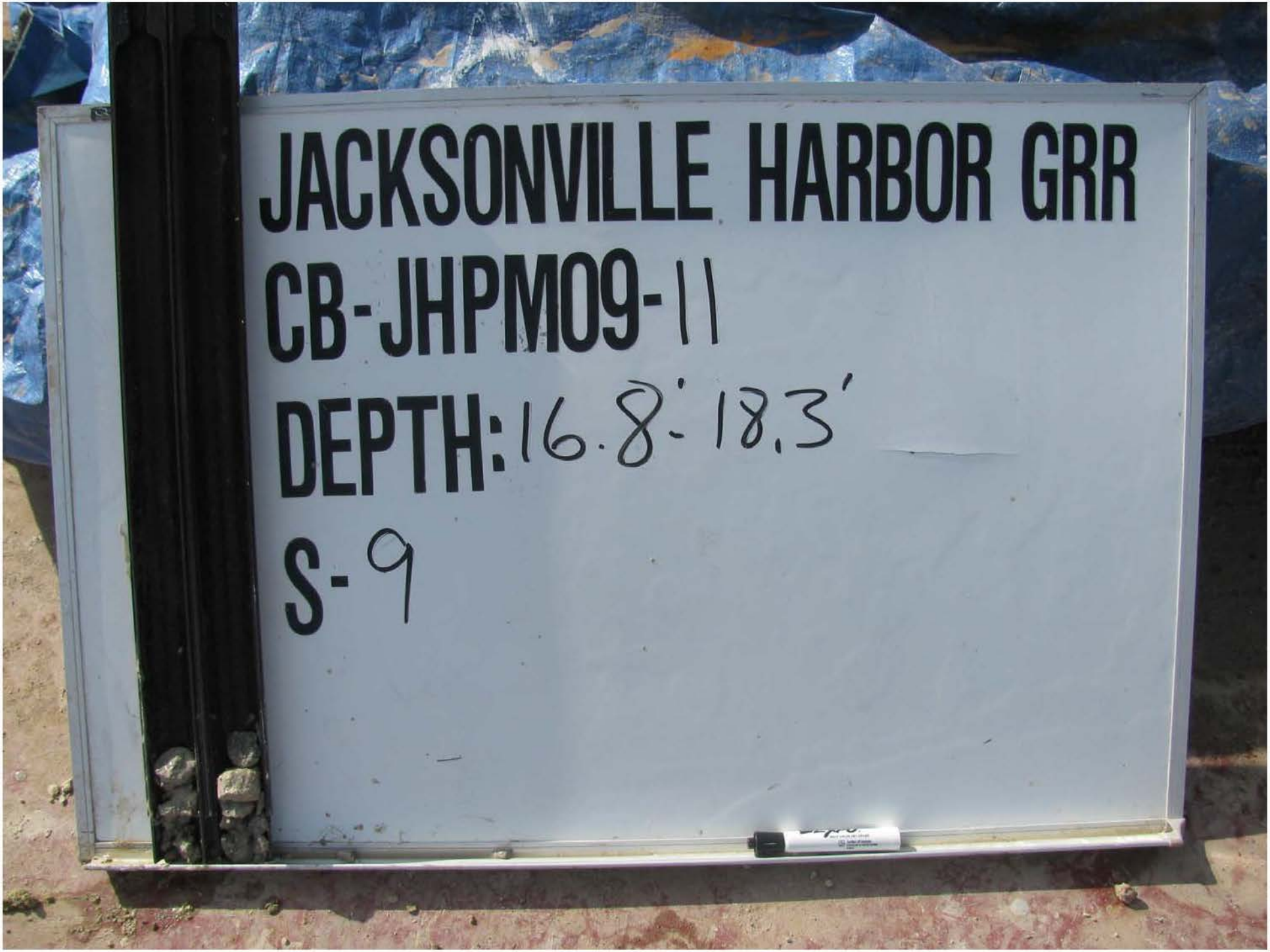

JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 6.0'-7.5'
S-5


JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 7.5'-9.0'
S-6


JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 8.3'-13.8'
S- Run #1
8.3'
13.8'


JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 13.8'-15.3'
S-7


JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 15.3'-16.8'
S-8


JACKSONVILLE HARBOR GRR
CB-JHPM09-11
DEPTH: 16.8'-18.3'
S-9

JACKSONVILLE HARBOR GRR

CB-JHPM09-11

DEPTH: 18.3'-19.8'

S-10

TEST CORE BORING NUMBER
“CB-JHPM09-12”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-12

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-12
LOCATION COORDINATES	X = 490,672 Y = 2,201,783
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	19.9 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 14 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	1
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-20-10 COMPLETED: 01-20-10
16. ELEVATION TOP OF BORING	-44.0 Ft.
17. TOTAL RECOVERY FOR BORING	87 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-44.0	0.0						-44.0		
			SAND, silty, mostly angular to subangular fine to medium-grained sand-sized quartz, little silt, few angular to subangular shell up to 3/4", wet, 5Y 4/4 olive (SM)	67	1		SPT Sampler -45.5	0 2 3	5
			At El. -46.0 Ft., moist	100	2		SPT Sampler -47.0	4 5 5	10
			At El. -47.0 Ft., few angular to subangular shell up to 1"	100	3		SPT Sampler -48.5	5 5 8	13
			At El. -48.5 Ft., discontinue shell	80	4		SPT Sampler -50.0	2 3 4	7
				87	5		SPT Sampler -51.5	5 7 9	16
			At El. -51.5 Ft., 5Y 3/2 dark olive gray	67	6		SPT Sampler -53.0	5 7 7	14
			At El. -53.0 Ft., 10Y 2.5/1 greenish black	100	7		SPT Sampler -54.5	2 2 3	5
				87	8		SPT Sampler -56.0	5 11 11	22
				93	9		SPT Sampler -57.5	6 12 12	24
-58.5	14.5			93	10		SPT Sampler -59.0	14 16 23	39
			LIMESTONE, sandy, sparsely fossiliferous,						

0 5 10 15

(Continued)

Boring Designation CB-JHPM09-12

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 2 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Jacksonville Harbor General Reevaluation Report (GRR)	State Plane, FLE (U.S. Ft.)	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 490,672 Y = 2,201,783	-44.0 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
		Highly Weath.	soft, highly weathered, porous, moist, 5Y 6/3 pale olive	80	11		SPT Sampler	21, 13, 10	23
		Sl. Weathered	At El. -60.5 Ft., moderately hard, slightly weathered	75	12		-60.5 -60.9 SPT Sampler	50/0.4'	
-62.0	18.0						Advanced Boring -62.0		
			SILT, inorganic-H, nonplastic, very hard, dry, 5Y 6/3 pale olive (MH)	93	13		SPT Sampler -63.5	26, 14, 17	31
-63.9	19.9			75	14		-63.9 SPT Sampler	50/0.4'	

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. Set 55.5 ft. of 6" flush joint steel casing

4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Blount Island Terminal.

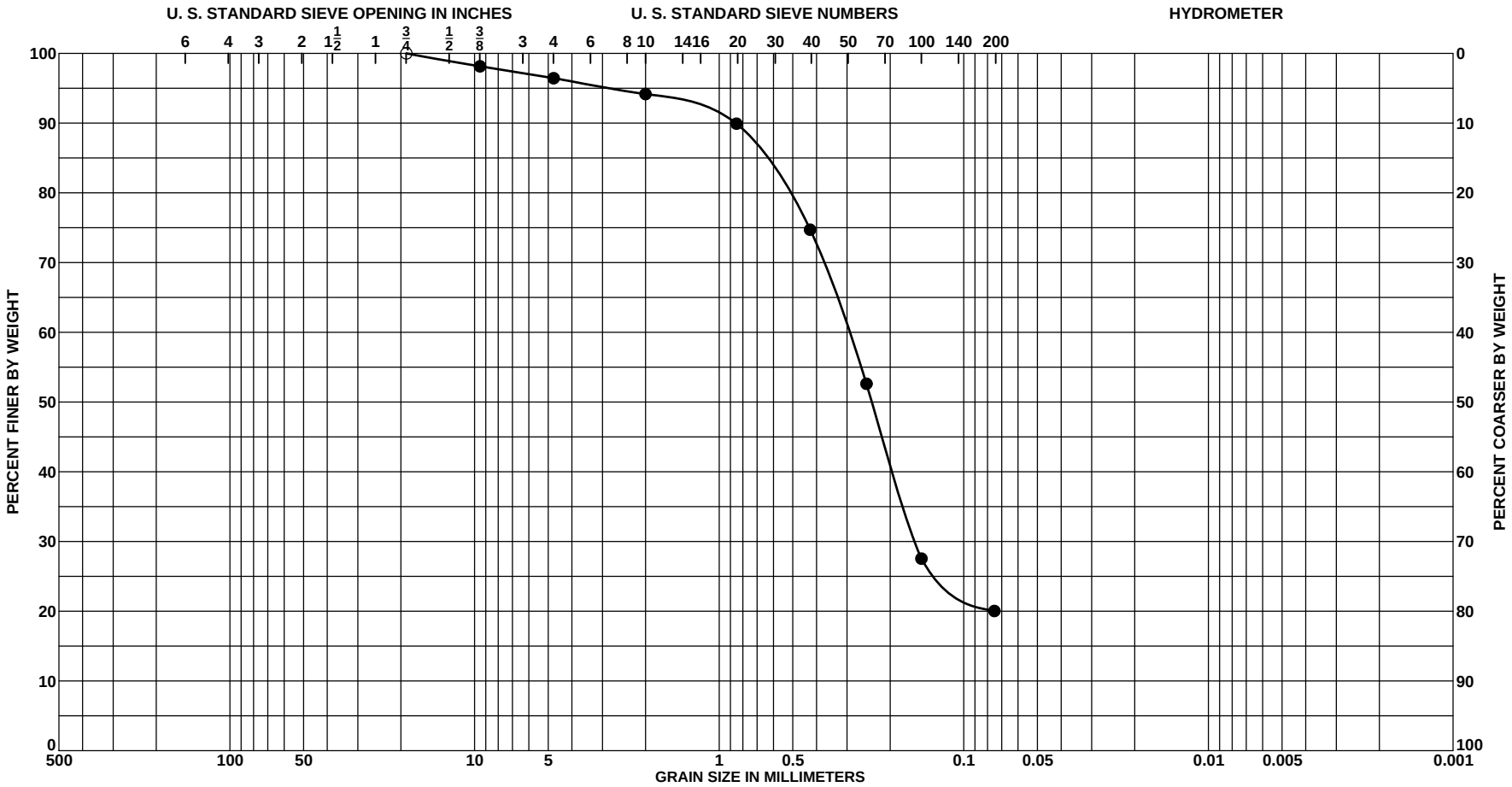
5. Water depth of -45.2 ft. recorded at 08:08 AM on 1/20/2010. Tide gage reading of +1.2 ft. mllw

6. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
2	1.5/3.0	SM*

*Lab visual classification based on gradation curve. No Atterberg limits.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

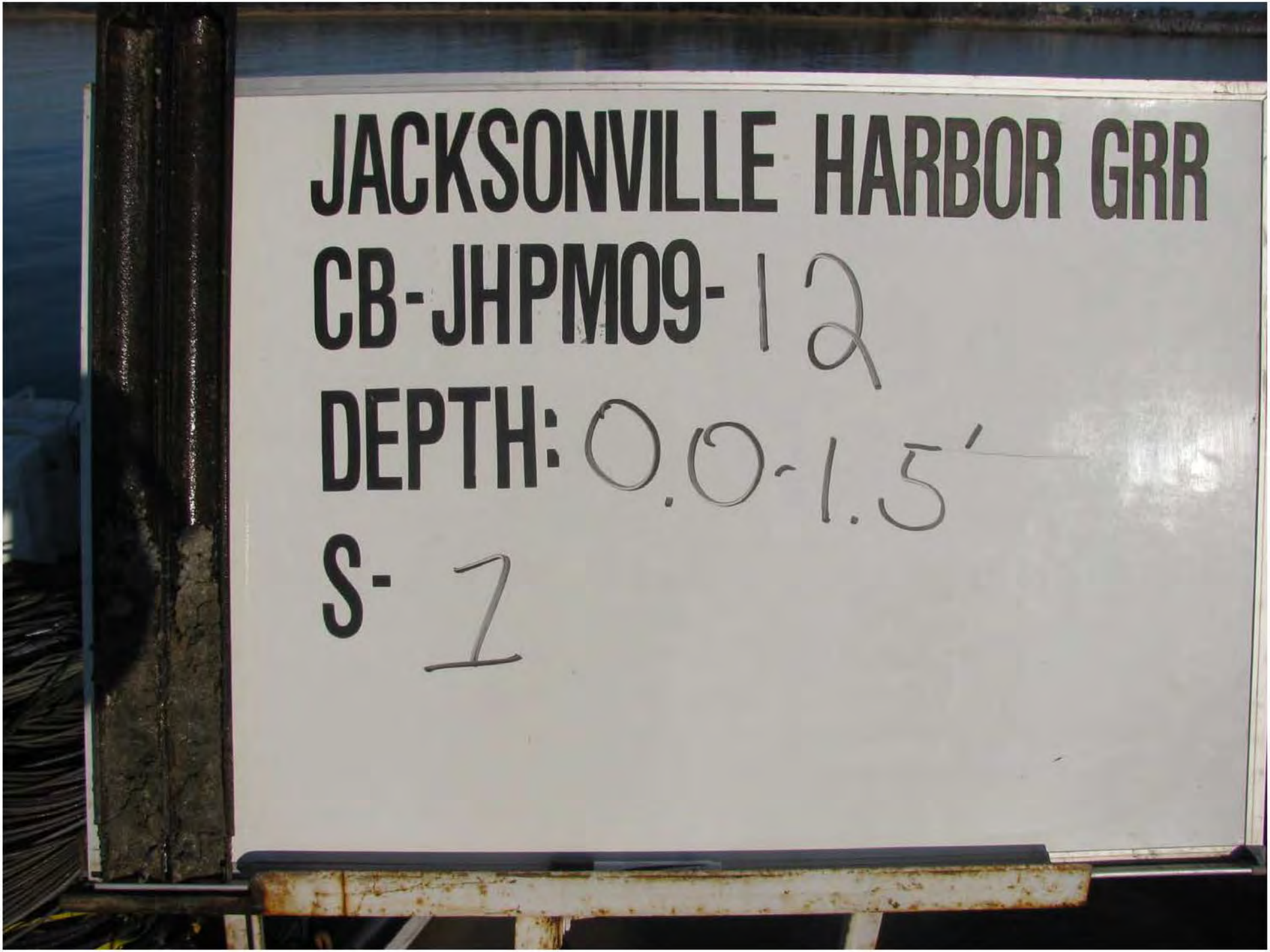


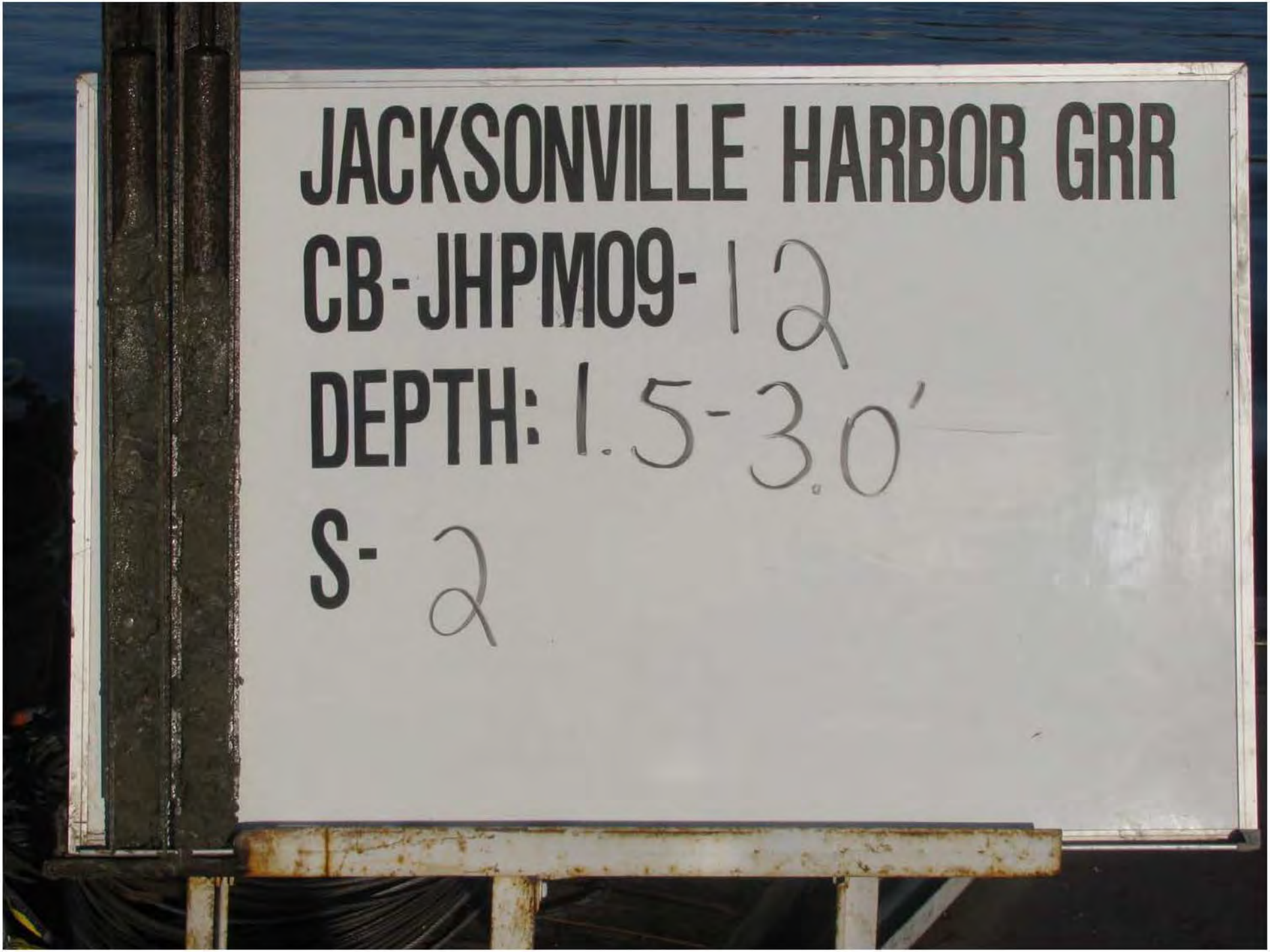
Sample No.	Depth	Classification	Munsell	CO_3 %	G_S	Org %	w_n	LL	PL	PI
● 2	1.5 to 3.0 Ft.	, olive (SM)	5Y 4/4	10 (est)						

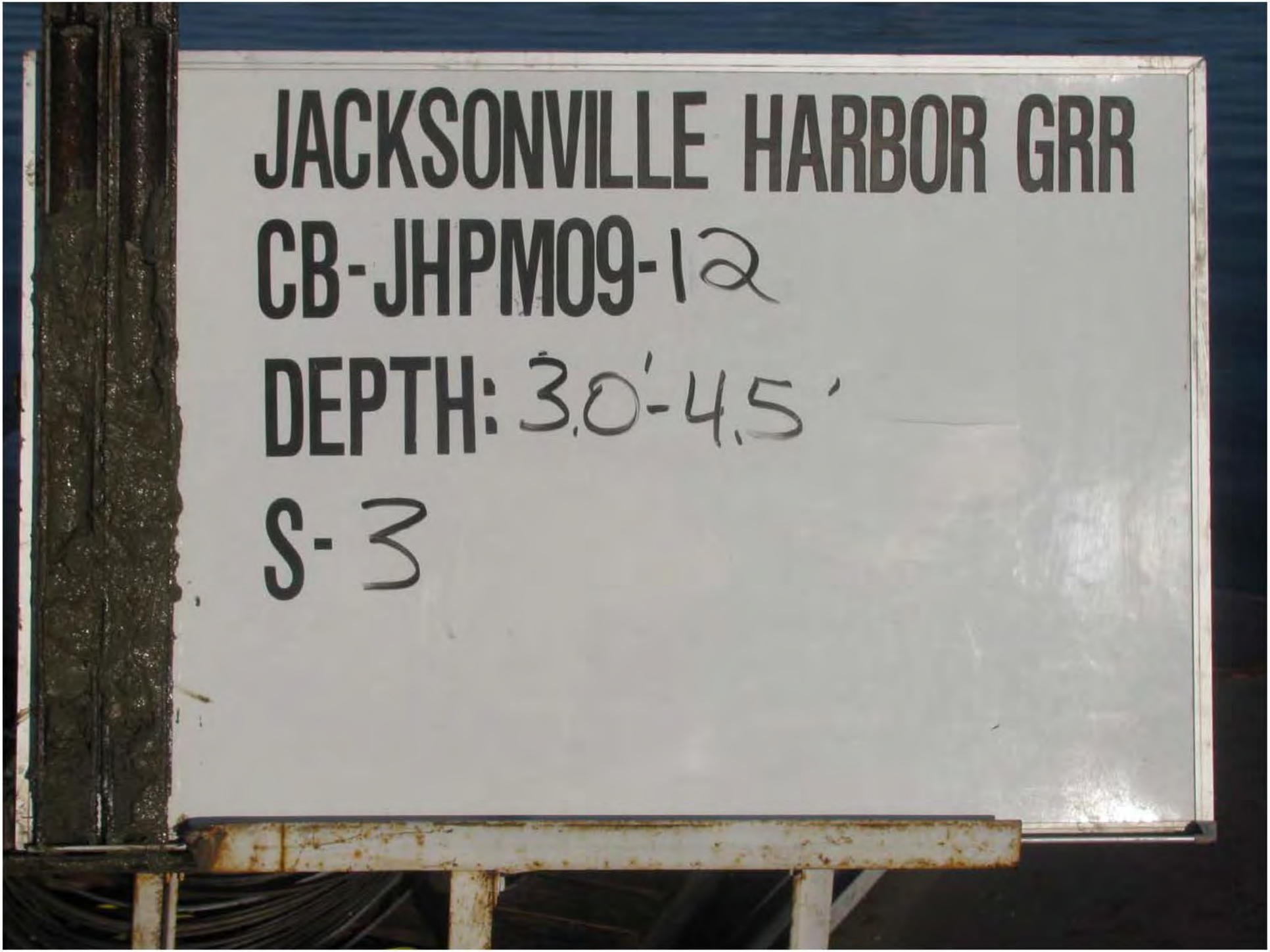
PROJECT	Jacksonville Harbor General Reeval. (GRR)
	ST. JOHN'S RIVER CHANNEL
BORING NO.	CB-JHPM09-12
BORING ELEV.	-44.0 Ft., MLLW
DATE	3/15/2010

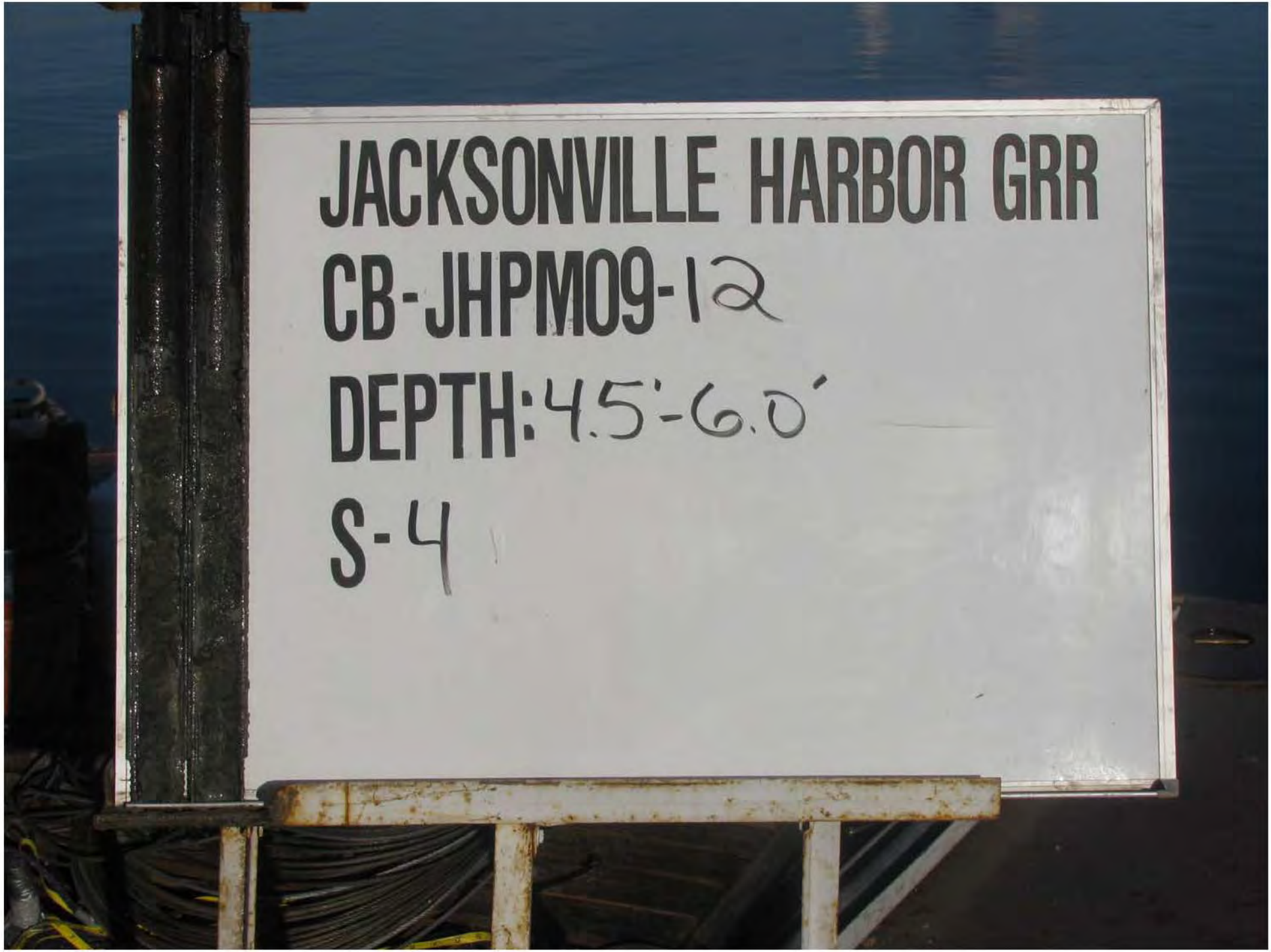
GRADATION CURVES

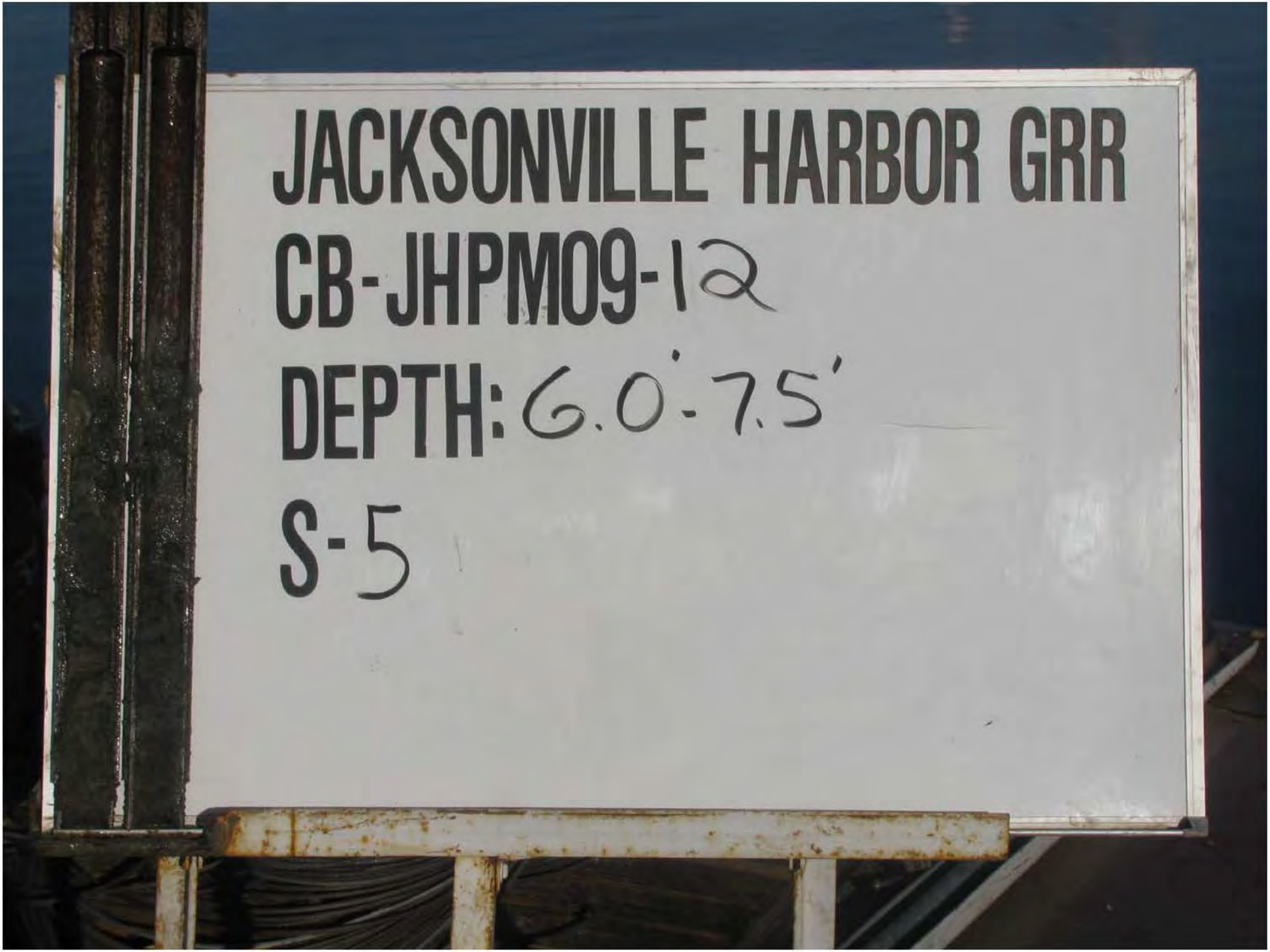
SAJ FORM 2087
JUN 02

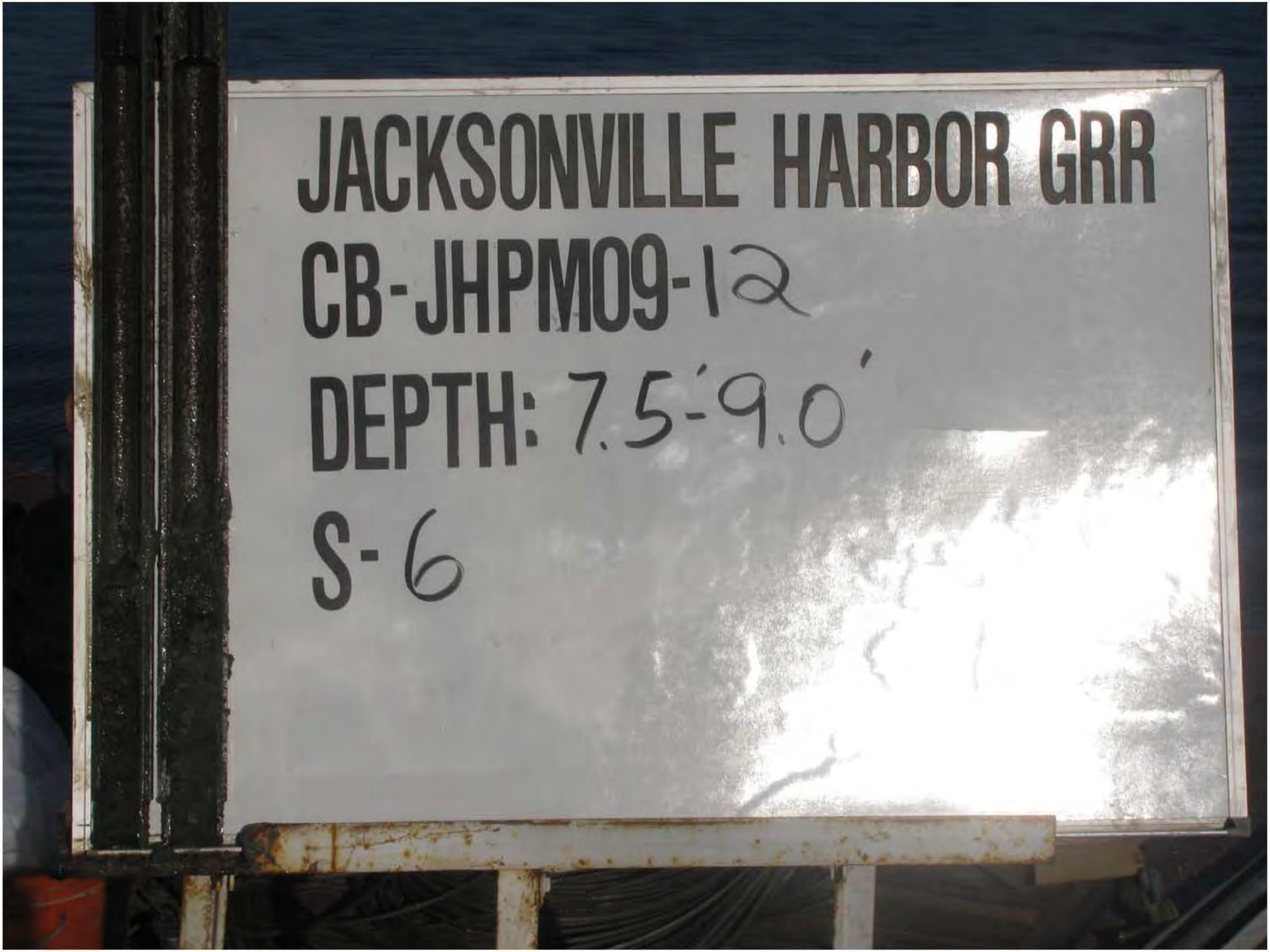

JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 0.0-1.5'
S-1

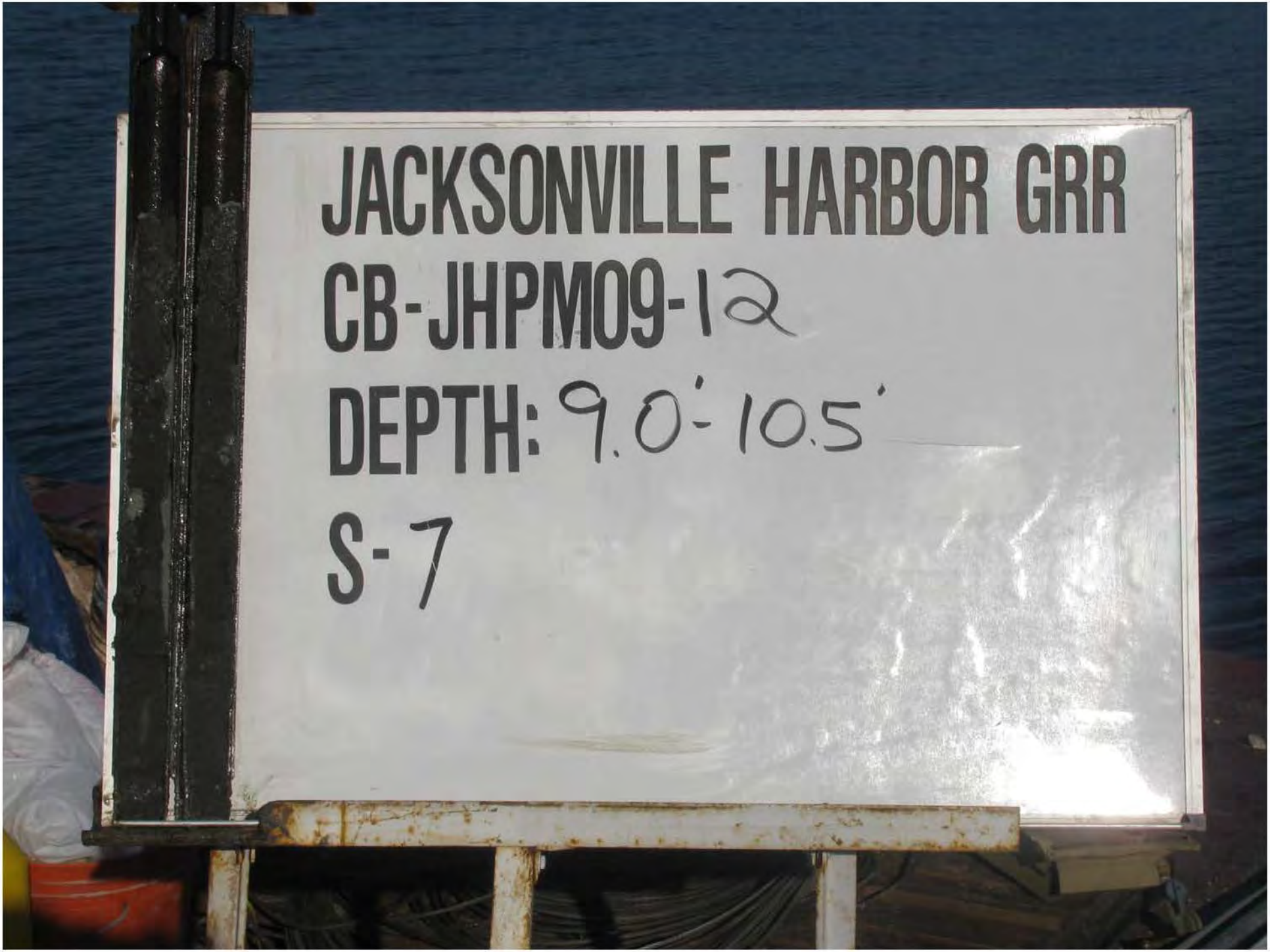

JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 1.5-3.0'
S- 2

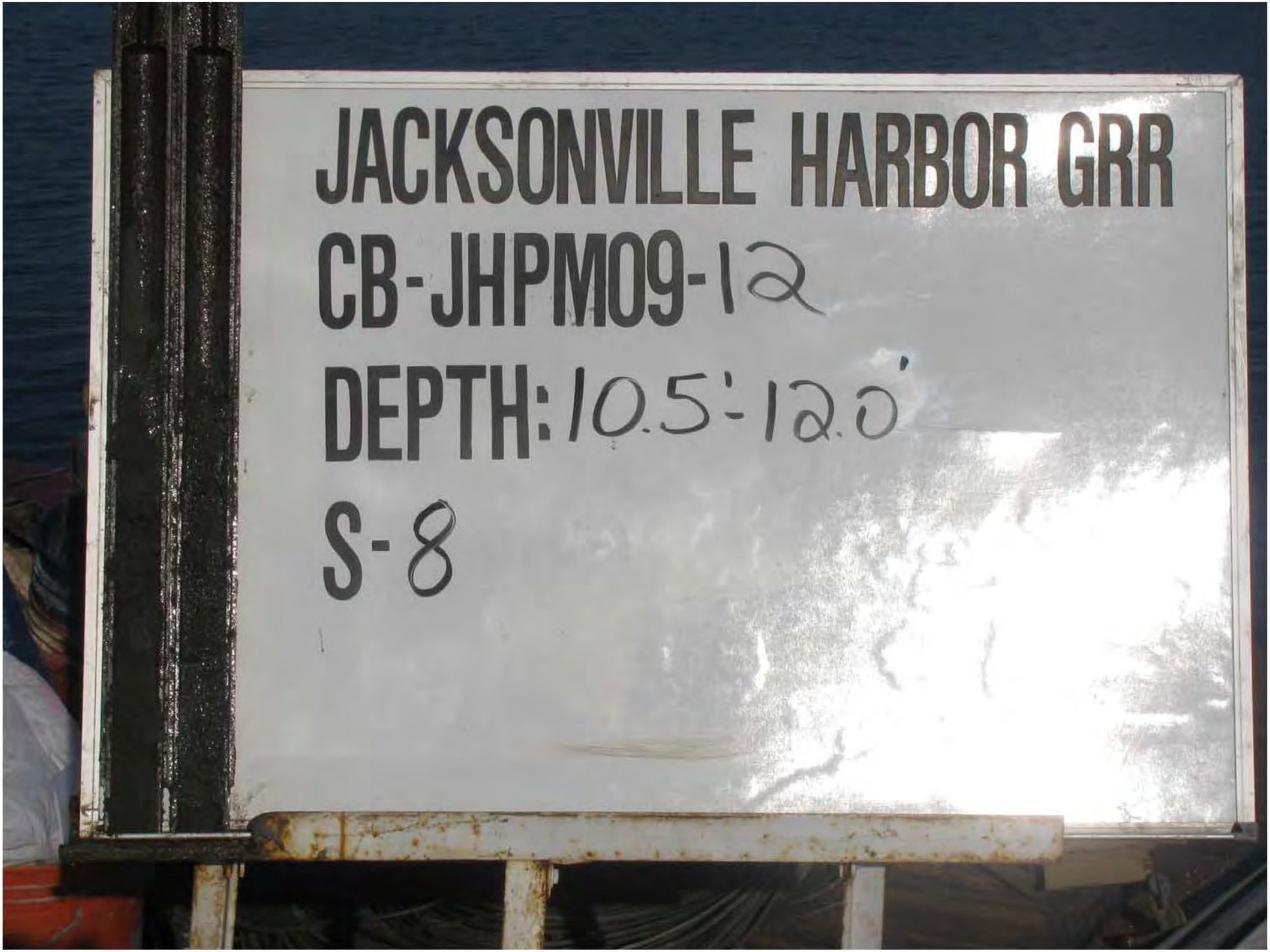

JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 3.0'-4.5'
S-3

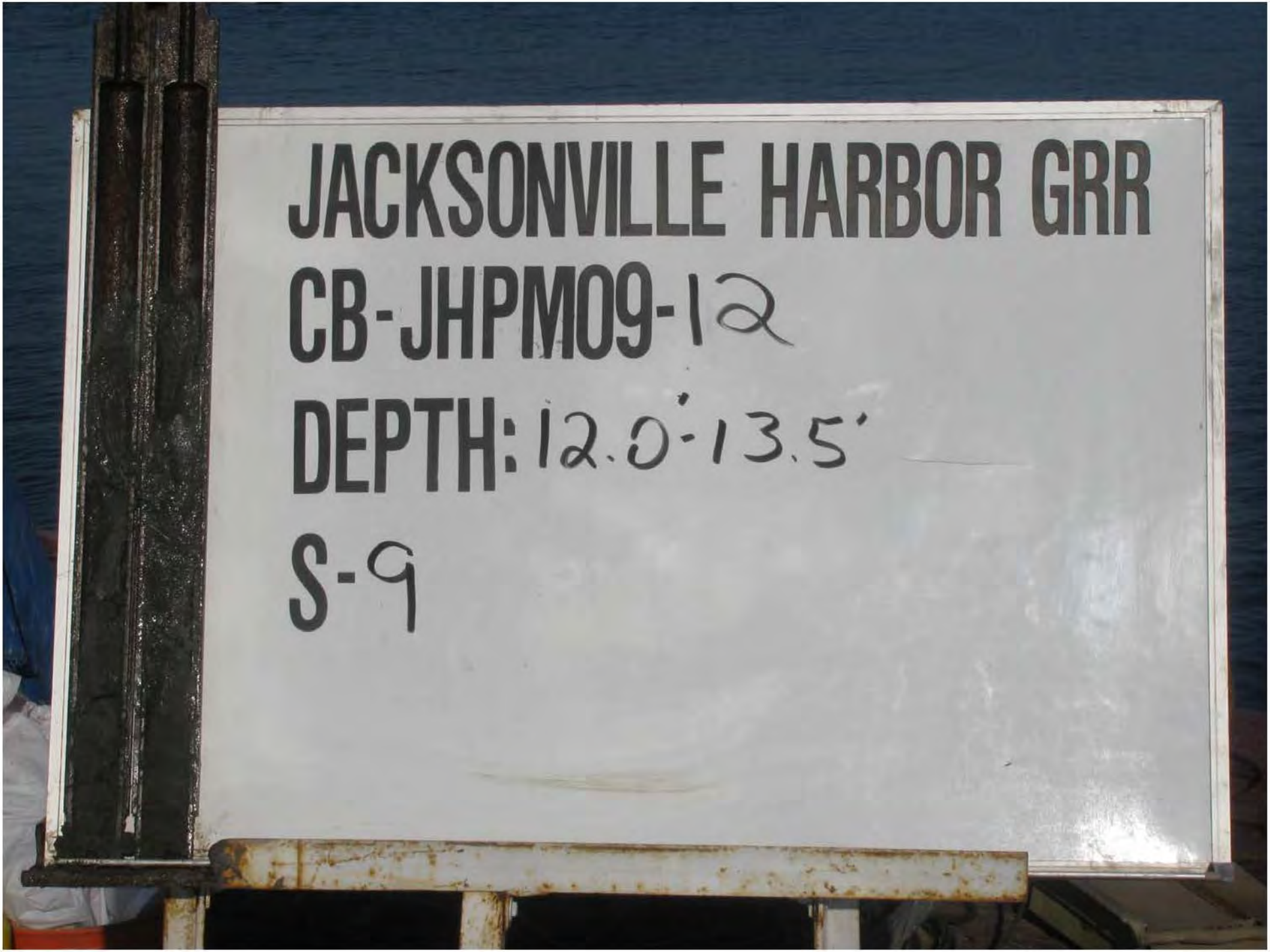

JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 4.5'-6.0'
S-4

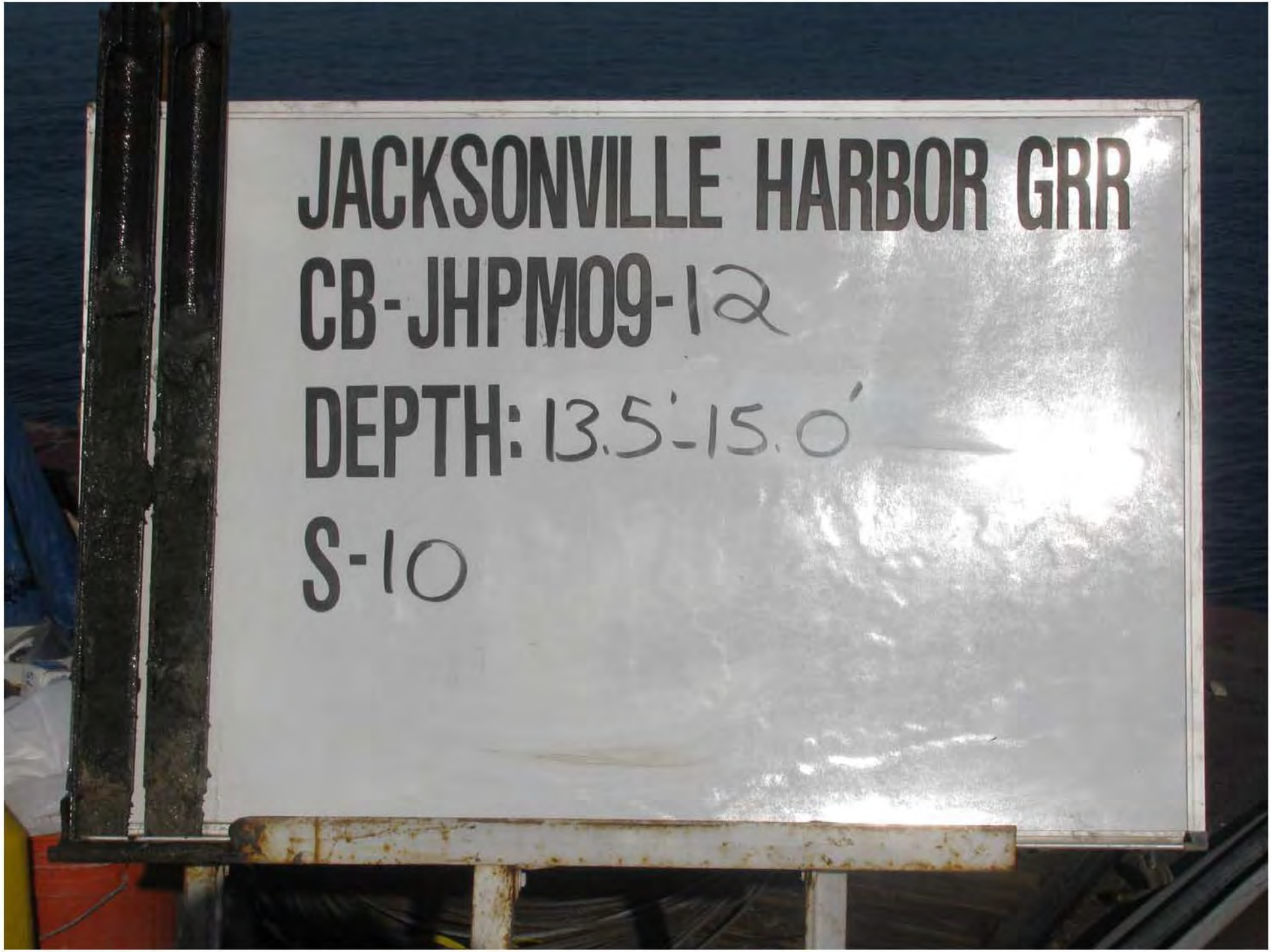

JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 6.0'-7.5'
S-5

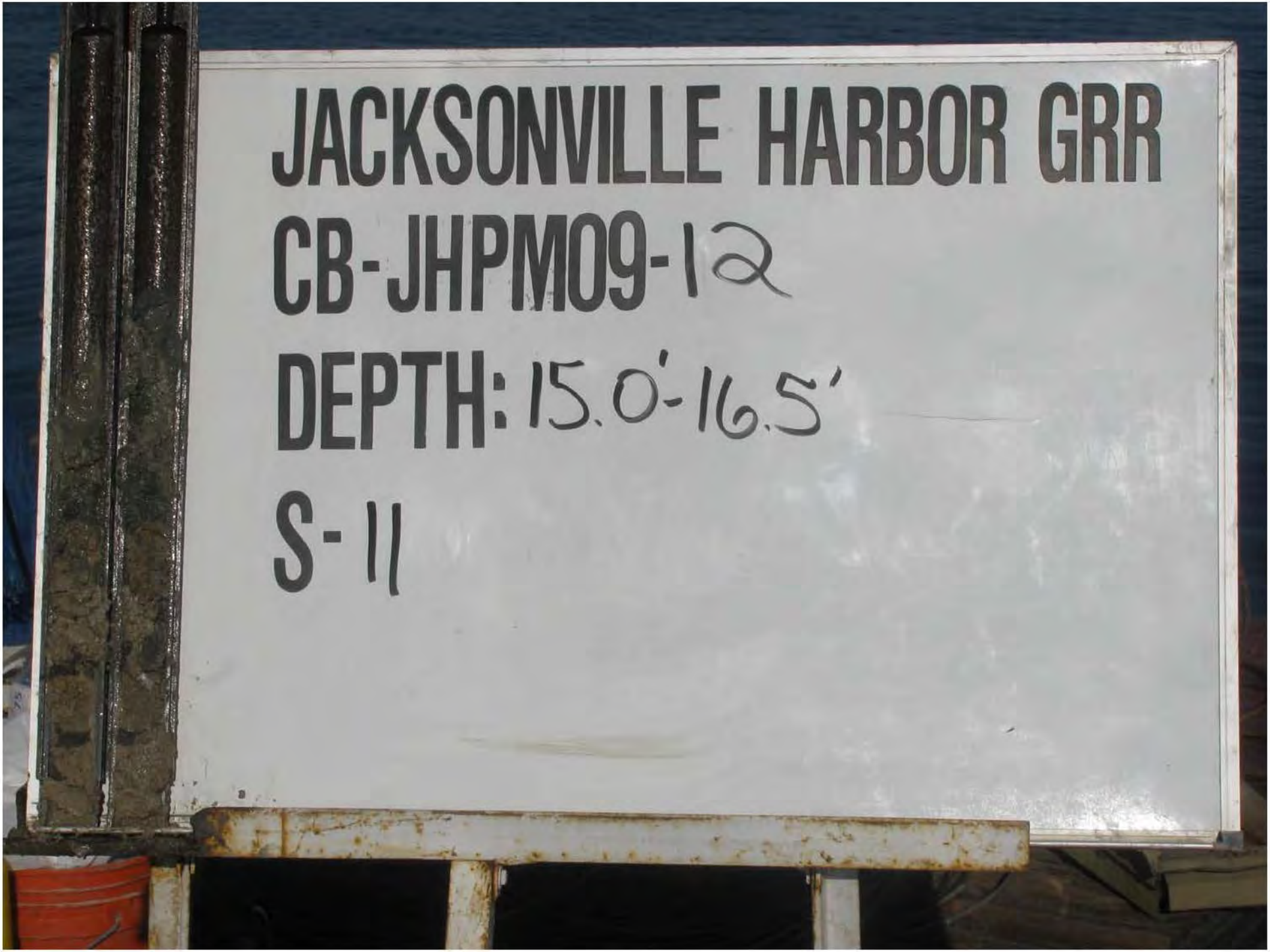

JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 7.5'-9.0'
S-6


JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 9.0'-10.5'
S-7


JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 10.5'-12.0'
S-8


JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 12.0'-13.5'
S-9


JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 13.5'-15.0'
S-10

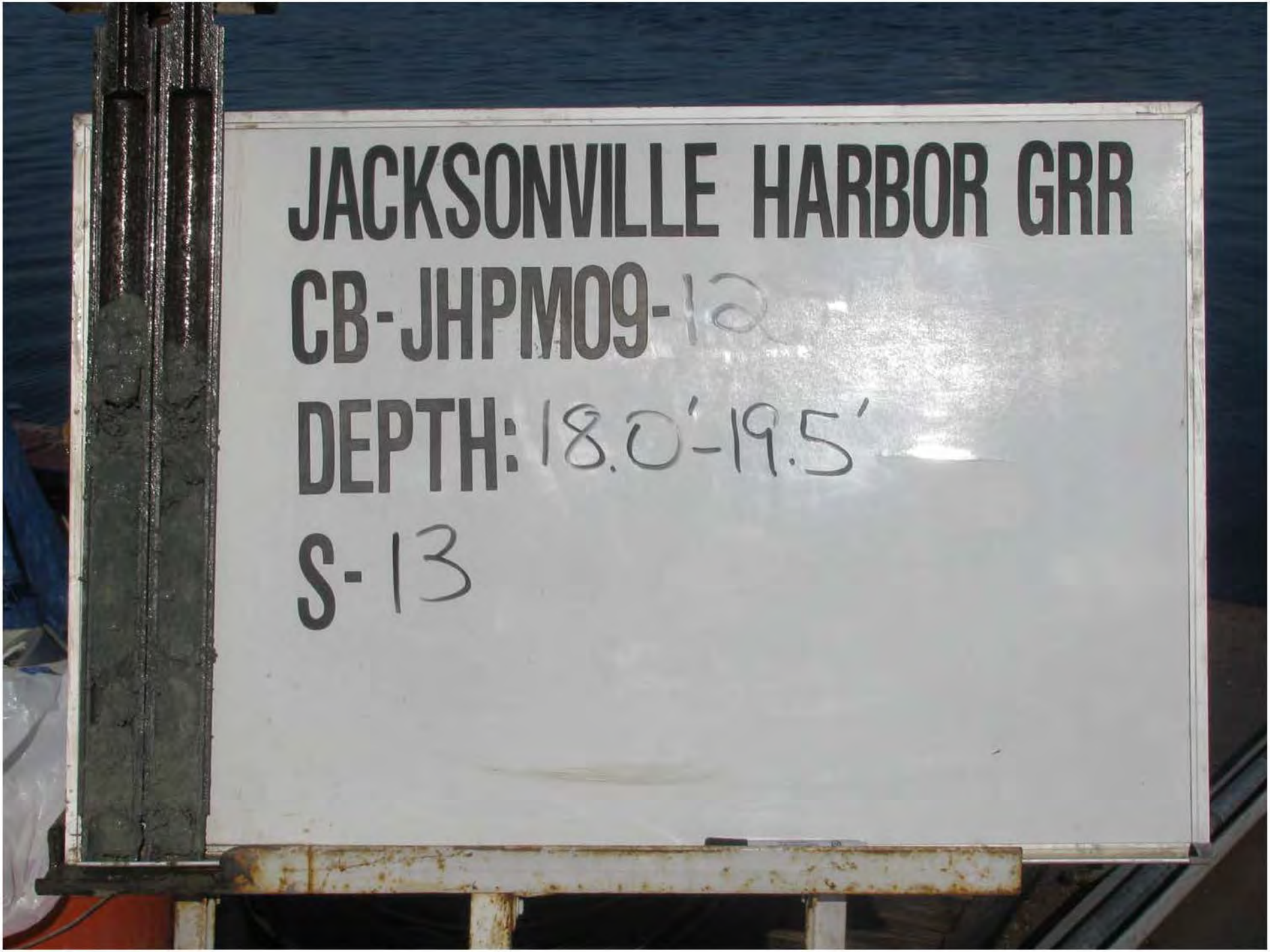

JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 15.0'-16.5'
S-11

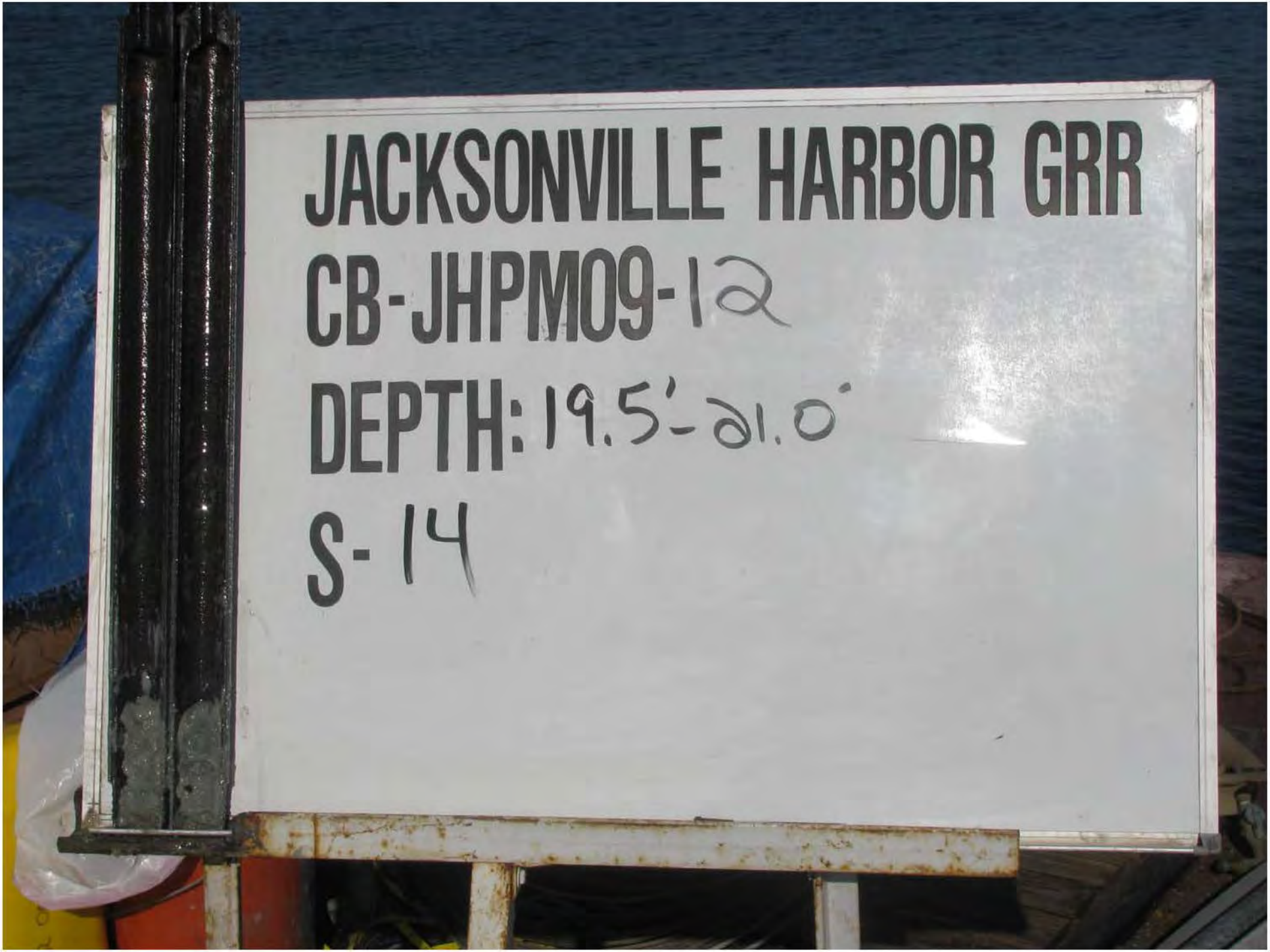
JACKSONVILLE HARBOR GRR

CB-JHPM09-12

DEPTH: 16.5-18.0'

S-12


JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 18.0'-19.5'
S-13


JACKSONVILLE HARBOR GRR
CB-JHPM09-12
DEPTH: 19.5'-21.0'
S-14

TEST CORE BORING NUMBER
“CB-JHPM09-13”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-13

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-13
LOCATION COORDINATES	X = 492,489 Y = 2,202,538
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	15.0 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 10 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	1
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-19-10 COMPLETED: 01-19-10
16. ELEVATION TOP OF BORING	-49.7 Ft.
17. TOTAL RECOVERY FOR BORING	83 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-49.7	0.0						-49.7		
			SAND, poorly-graded, mostly angular to subangular fine to medium-grained sand-sized quartz, little angular to subangular shell up to 3/8", wet, 5Y 5/3 olive (SP)	80	1		SPT Sampler -51.2	6 8 9	17
-52.0	2.3			100	2		SPT Sampler -52.7	9 11 10	21
-52.7	3.0		SAND, poorly-graded with silt, mostly angular to subangular fine-grained sand-sized quartz, few silt, few angular to subangular shell up to 1/8", wet, 5Y 5/1 gray (SP-SM)	93	3		SPT Sampler -54.2	4 6 7	13
			SAND, silty, mostly angular to subangular fine-grained sand-sized quartz, some angular to subangular shell up to 3/4", little silt, wet, 5Y 4/1 dark gray (SM)	67	4		SPT Sampler -55.7	8 9 9	18
				73	5		SPT Sampler -57.2	4 4 6	10
				87	6		SPT Sampler -58.7	9 10 9	19
				100	7		SPT Sampler -60.2	2 2 3	5
				73	8		SPT Sampler -61.7	9 8 50	58
-61.7	12.0		At El. -61.2 Ft., strong cementation, 2.5Y 4/4 olive brown						
			SILT, inorganic-L, medium plasticity, hard, moist, 2.5Y 4/4 olive brown (ML)	89	9		SPT Sampler -62.6	23 50/0.4'	
-63.2	13.5		At El. -62.7 Ft., very hard				-63.2 Advanced Boring		
			SAND, silty, mostly medium to coarse-grained sand-sized quartz, little silt, moist, 5Y 6/4 pale olive (SM)	73	10		SPT Sampler -64.7	31 10 14	24
-64.7	15.0								

0 5 10 15

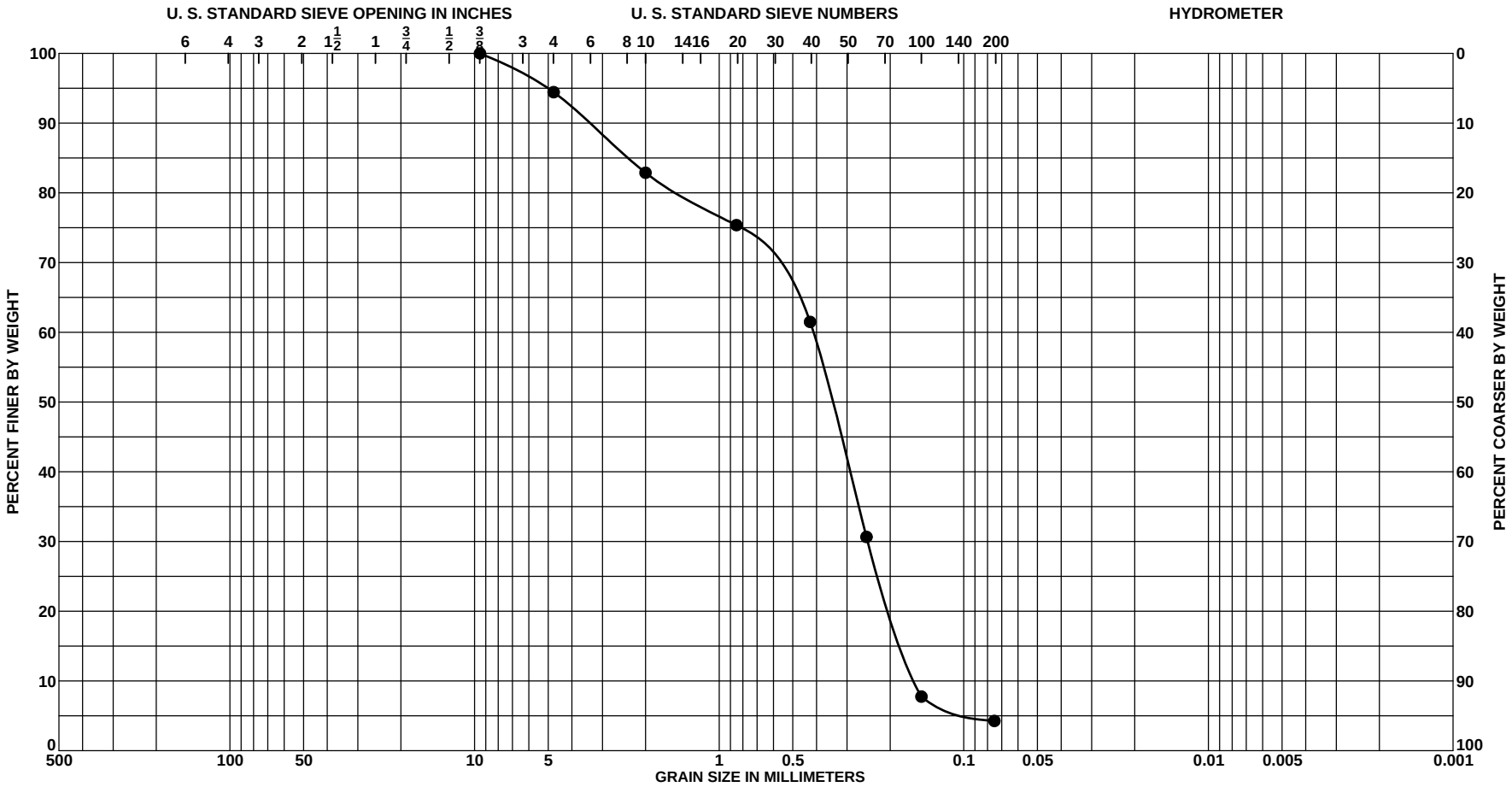
(Continued)

Boring Designation CB-JHPM09-13

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District			SHEET 2 OF 2 SHEETS
PROJECT Jacksonville Harbor General Reevaluation Report (GRR)	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 492,489 Y = 2,202,538	ELEVATION TOP OF BORING -49.7 Ft.			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			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. Set 59.5 ft. of 6" flush joint steel casing 4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Blount Island Terminal. 5. Water depth of -51.4 ft. recorded at 08:38 AM on 1/19/2010. Tide gage reading of +1.7 ft. mllw 6. Laboratory Testing Results SAMPLE ID — SAMPLE DEPTH — LABORATORY CLASSIFICATION 1 — 0.0/1.5 — SP* *Lab visual classification based on gradation curve. No Atterberg limits.				140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).		

15
20
25
30
35

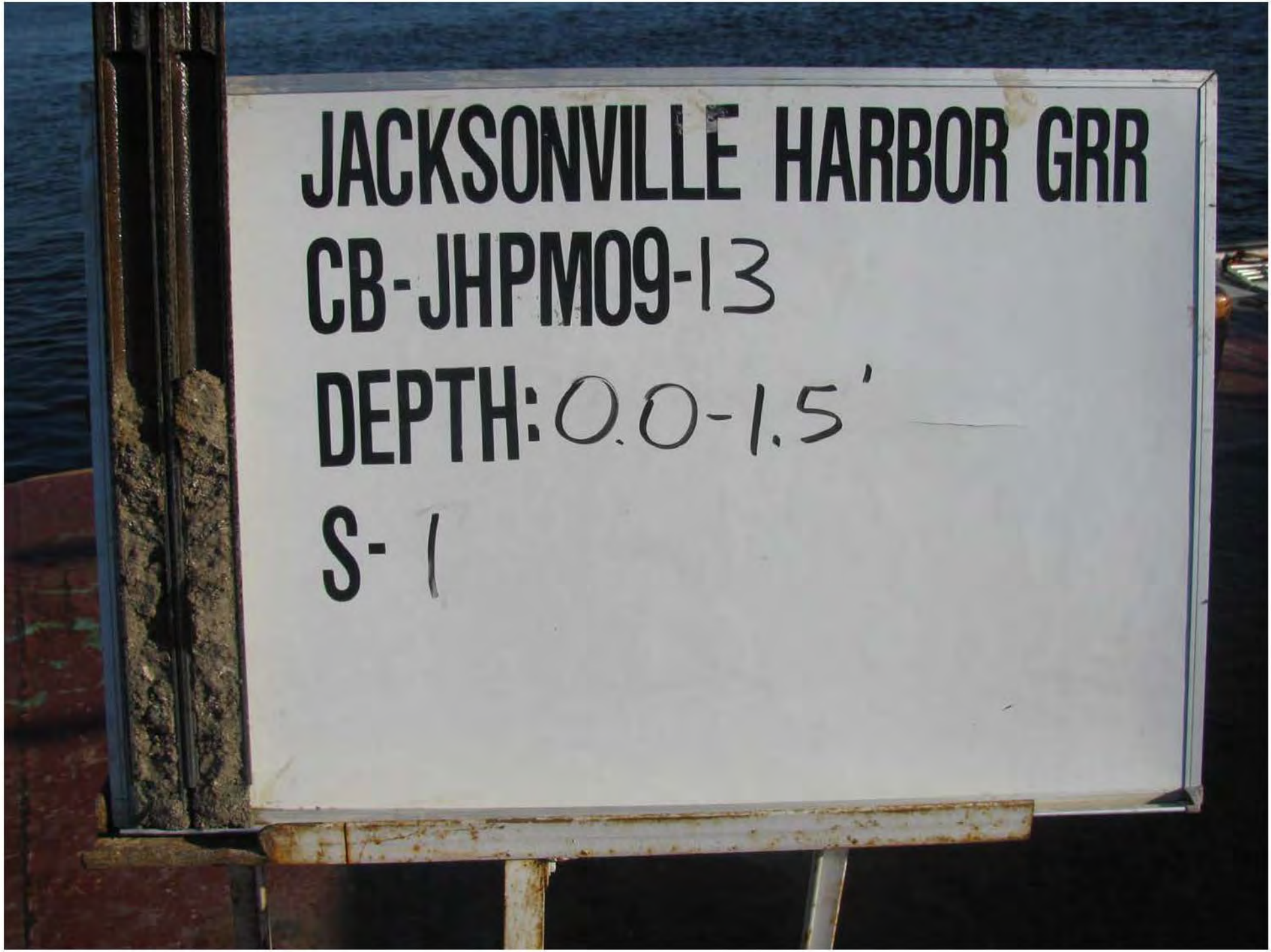


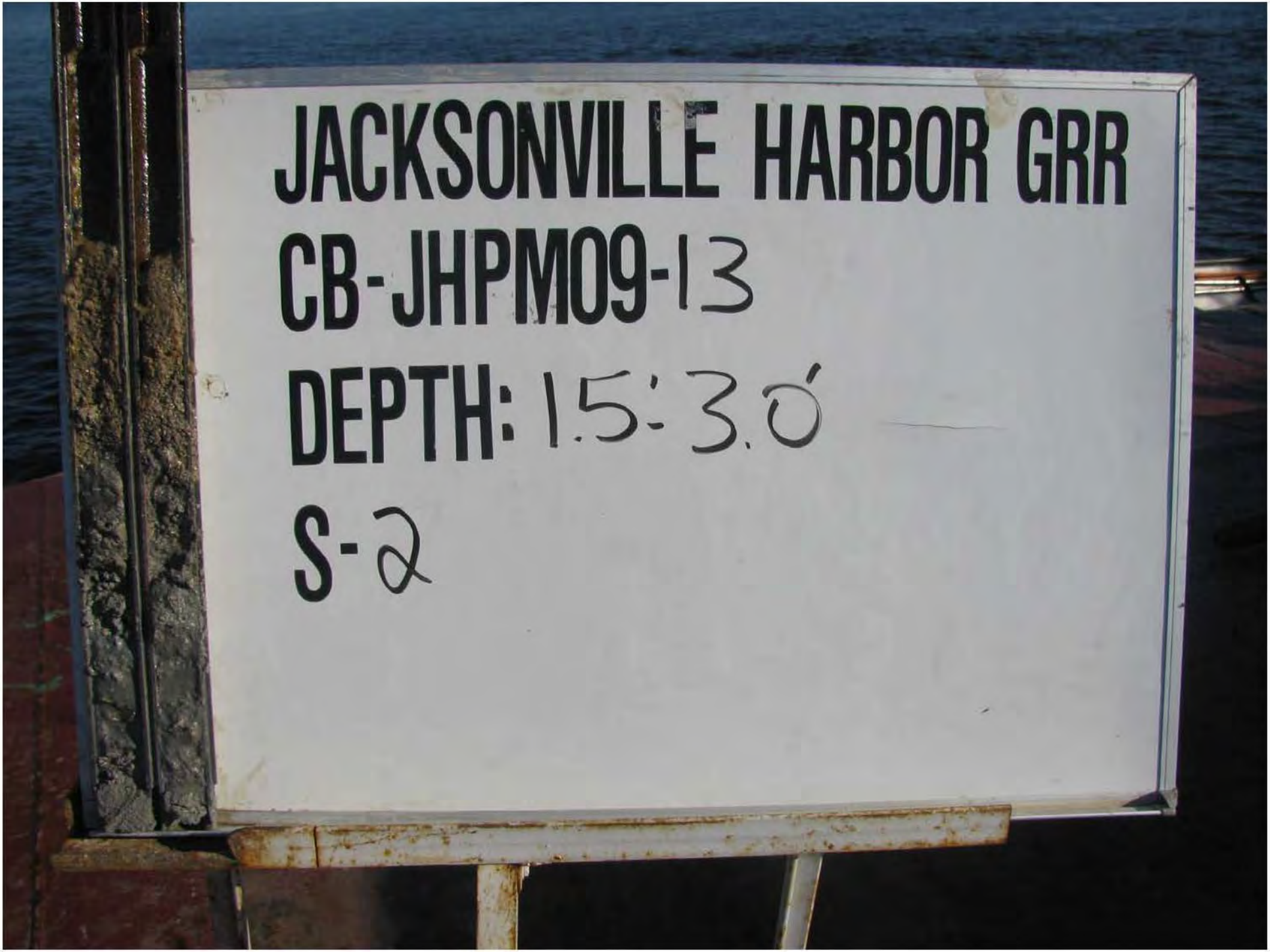
Sample No.	Depth	Classification	Munsell	CO_3 %	G_S	Org %	w_n	LL	PL	PI
○ 1	0.0 to 1.5 Ft.	SAND, poorly-graded, olive (SP)	5Y 5/3	25 (est)						

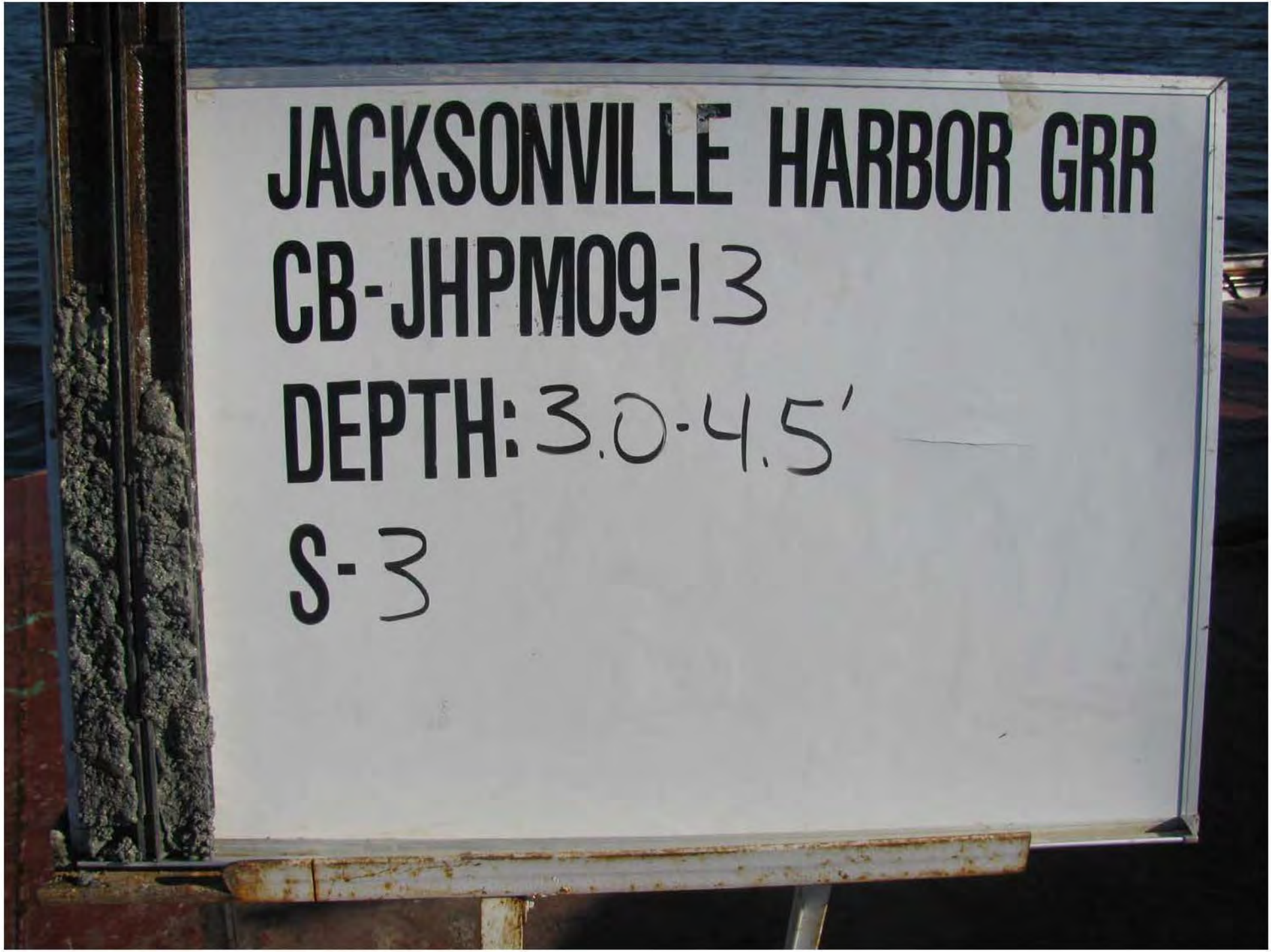
PROJECT	Jacksonville Harbor General Reeval. (GRR)
	ST. JOHN'S RIVER CHANNEL
BORING NO.	CB-JHPM09-13
BORING ELEV.	-49.7 Ft., MLLW
DATE	3/15/2010

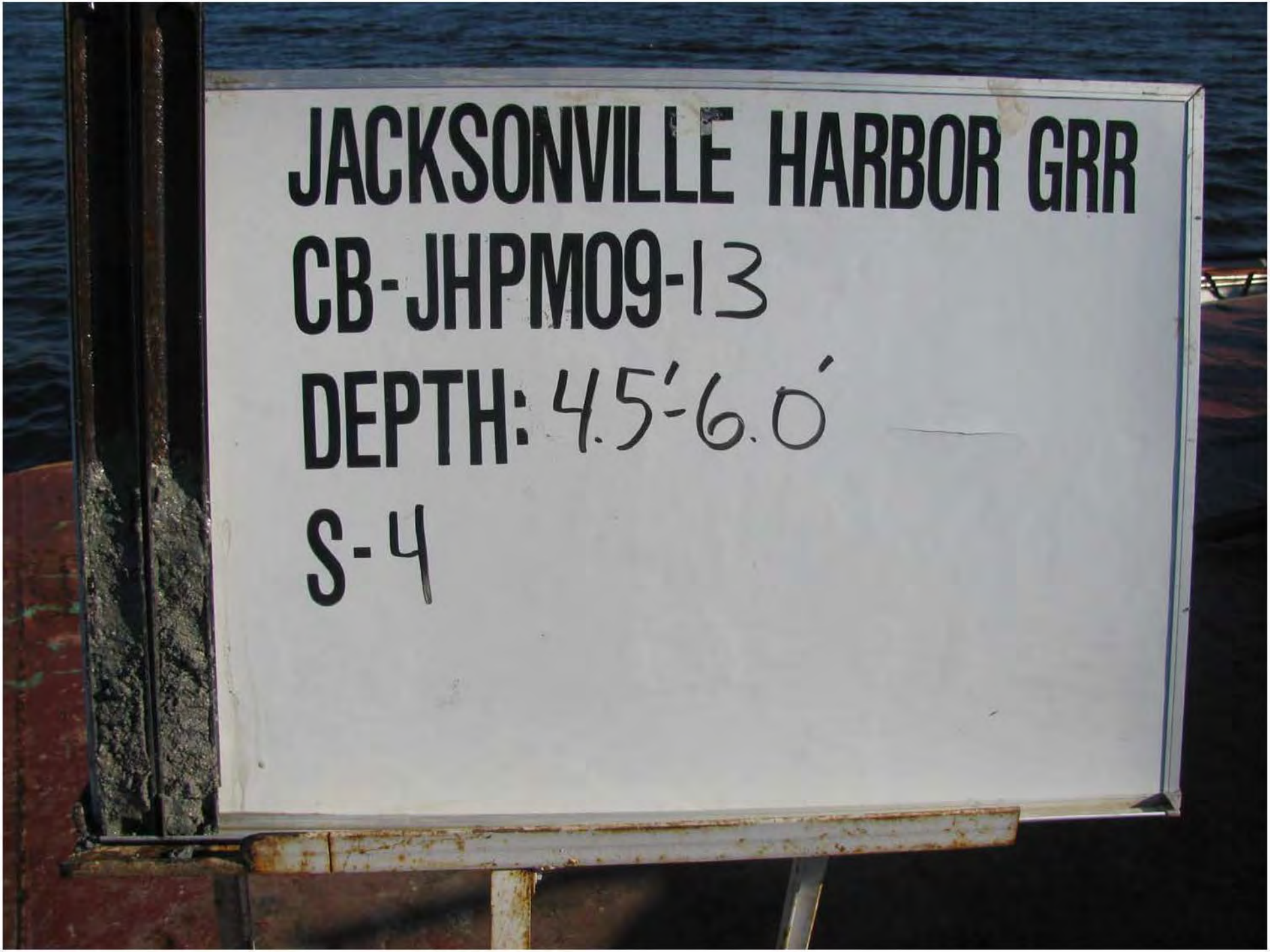
GRADATION CURVES

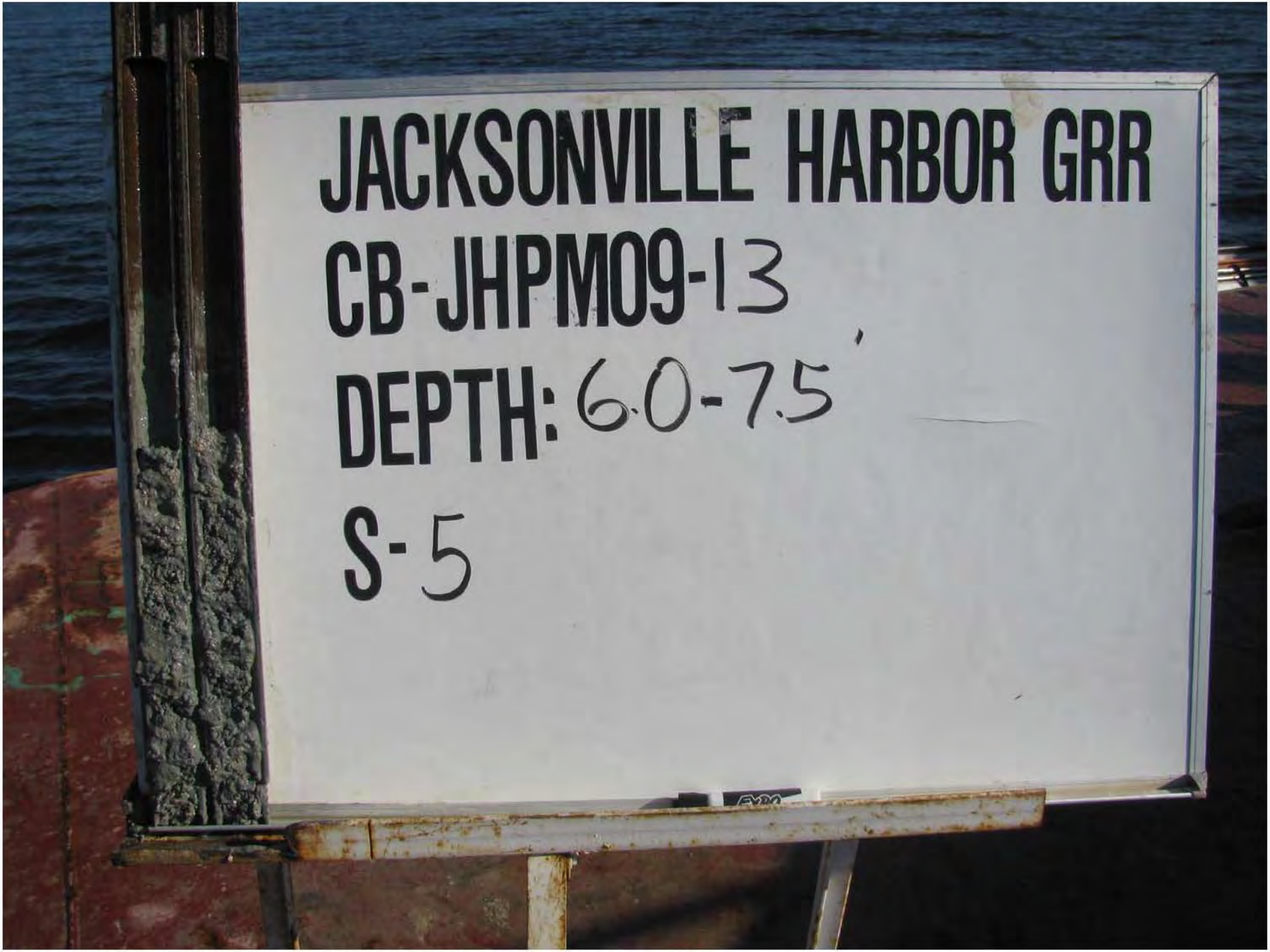
SAJ FORM 2087
JUN 02

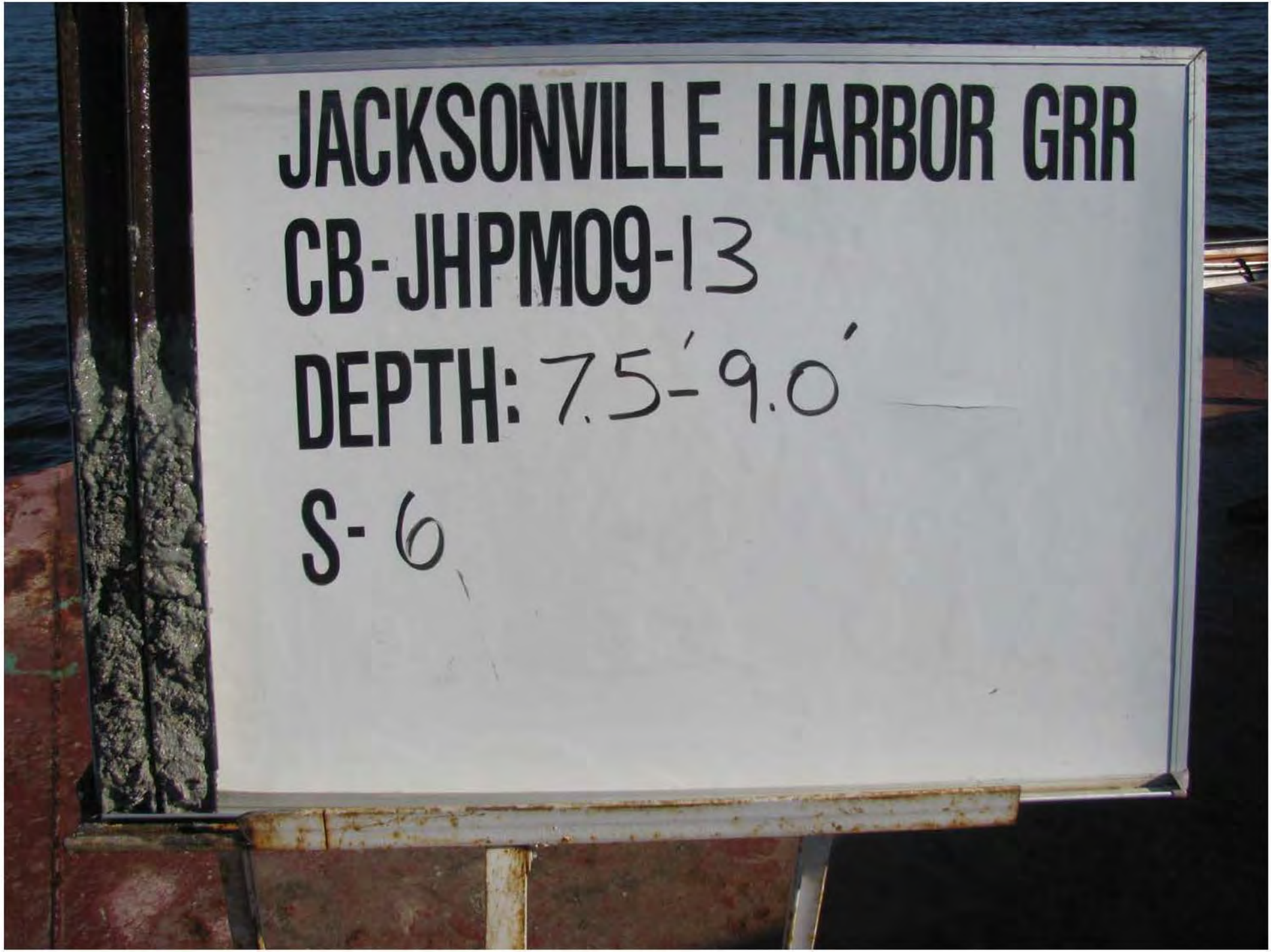

JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH: 0.0-1.5'
S-1

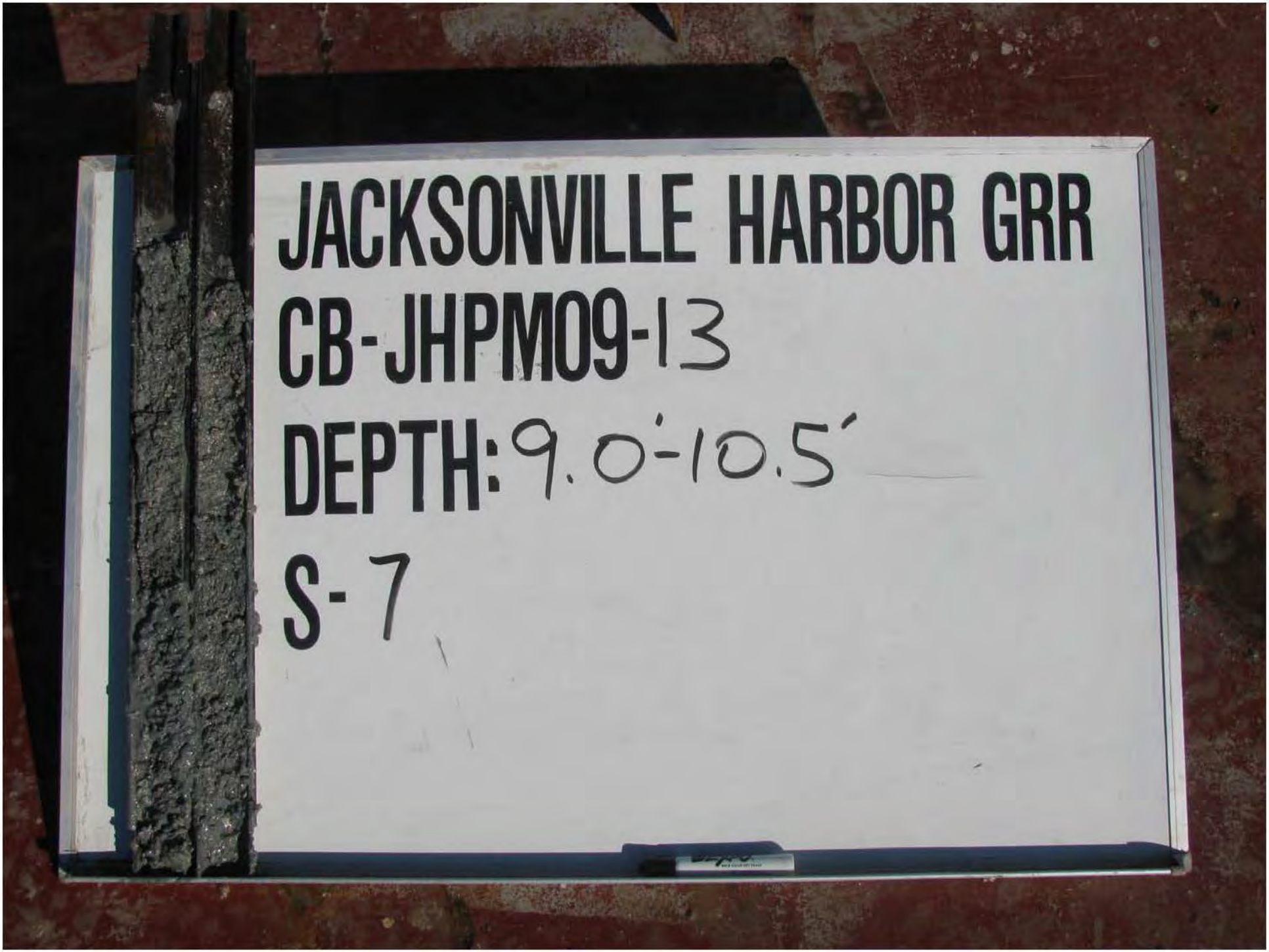

JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH: 1.5'-3.0'
S-2

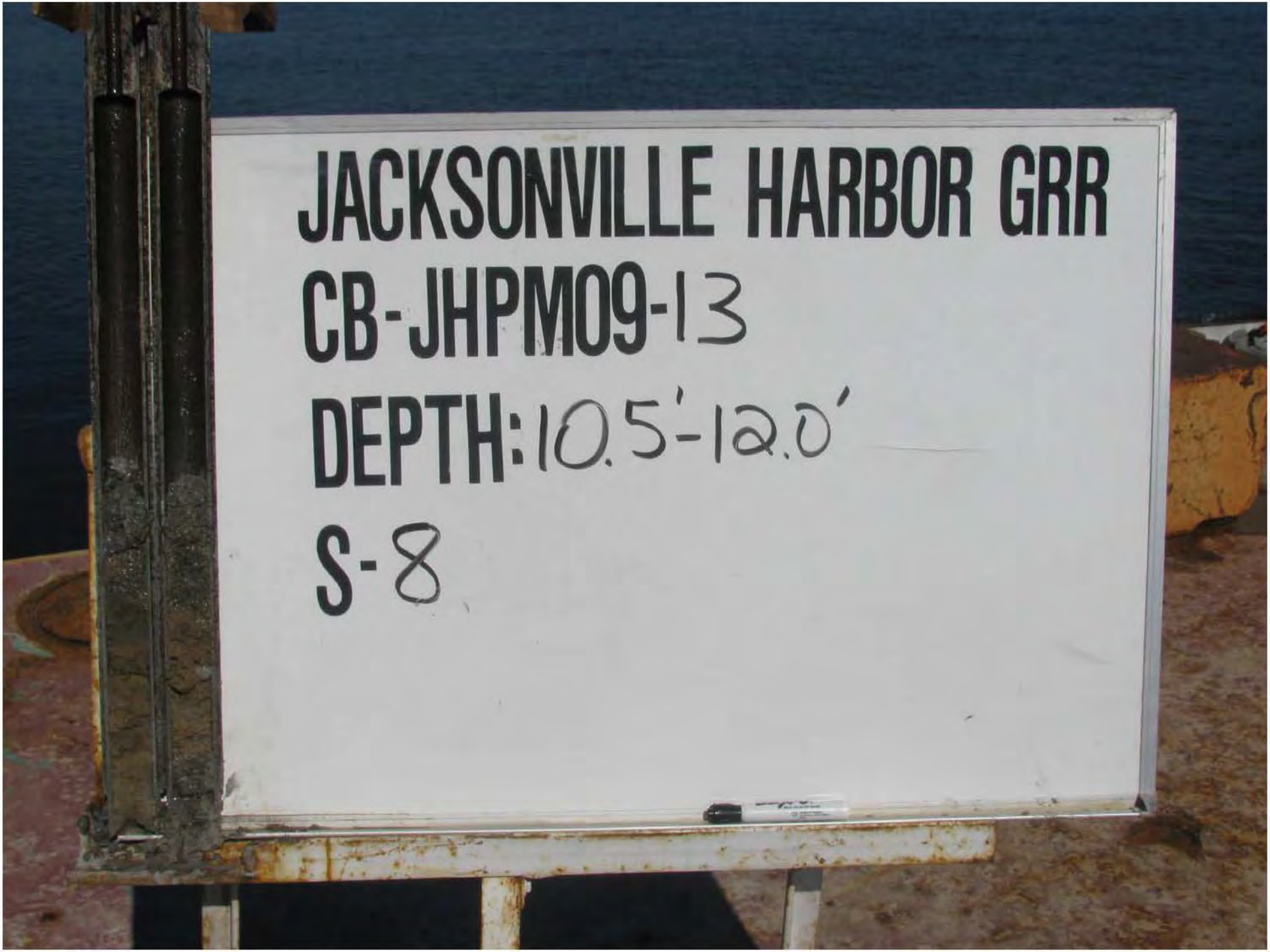

JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH: 3.0-4.5'
S-3

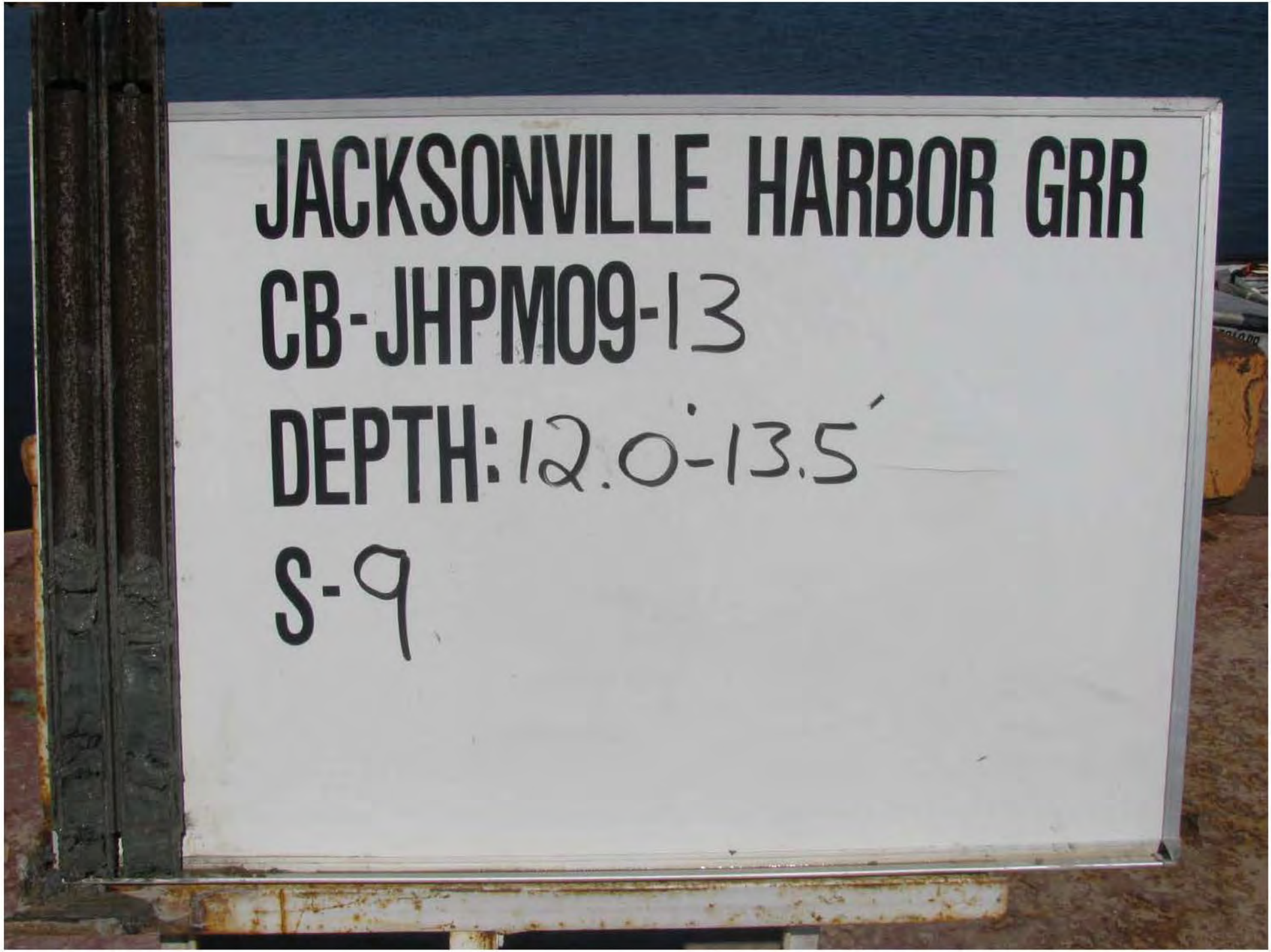

JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH: 4.5'-6.0'
S-4

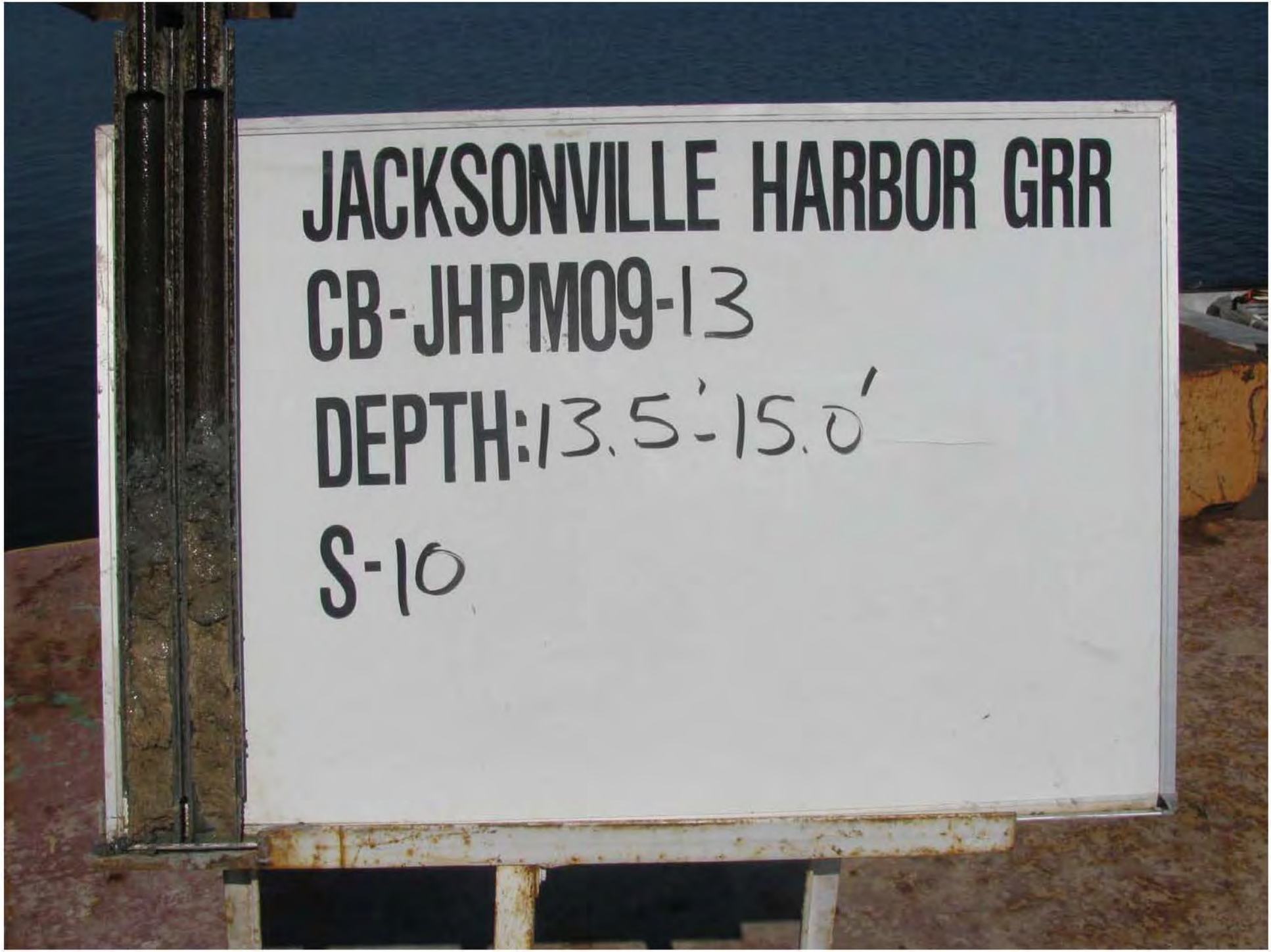

JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH: 6.0-7.5'
S-5


JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH: 7.5'-9.0'
S-6


JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH: 9.0'-10.5'
S-7


JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH: 10.5'-12.0'
S-8


JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH: 12.0'-13.5'
S-9


JACKSONVILLE HARBOR GRR
CB-JHPM09-13
DEPTH:13.5'-15.0'
S-10

TEST CORE BORING NUMBER
“CB-JHPM09-14”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-14

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-14
LOCATION COORDINATES	X = 494,732 Y = 2,202,376
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	18.9 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 13 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	1
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-15-10 COMPLETED: 01-15-10
16. ELEVATION TOP OF BORING	-42.4 Ft.
17. TOTAL RECOVERY FOR BORING	85 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-42.4	0.0						-42.4		
-43.9	1.5		SAND, silty, mostly angular to subangular fine-grained sand-sized quartz, little silt, wet, 5Y 3/2 dark olive gray (SM)	60	1		SPT Sampler -43.9	0 7 3	10
-46.9	4.5		SAND, poorly-graded, mostly angular to subangular fine to medium-grained sand-sized quartz, trace angular to subangular shell up to 1/4", wet, 5Y 6/2 light olive gray (SP)	80	2		SPT Sampler -45.4	2 0 0	0
			At El. -46.2 Ft., 5Y 4/1 dark gray	87	3		SPT Sampler -46.9	2 2 3	5
-48.4	6.0		CLAY, lean, low plasticity, firm, few angular shell up to 2", trace angular to subangular fine-grained sand-sized quartz, moist, 5Y 7/2 light gray (CL)	80	4		SPT Sampler -48.4	7 6 7	13
-49.9	7.5		SAND, clayey, nonplastic, hard, mostly fine-grained sand-sized quartz, little angular shell up to 2", little clay, moist, 5Y 7/2 light gray (SC)	80	5		SPT Sampler -49.9	15 23 32	55
		Slightly Weathered	LIMESTONE, sandy, sparsely fossiliferous, very soft, slightly weathered, fine grained, thick bedding, bedding orientation, moist, 2.5Y 8/2 pale yellow	80	6		SPT Sampler -51.4	8 14 8	22
				73	7		SPT Sampler -52.9	5 10 7	17
				87	8		SPT Sampler -54.4	8 10 11	21
				100	9		SPT Sampler -55.9	11 12 9	21
				100	10		SPT Sampler -57.4	8 10 7	17

0 5 10 15

(Continued)

Boring Designation CB-JHPM09-14

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 2 SHEETS
PROJECT: Jacksonville Harbor General Reevaluation Report (GRR)	COORDINATE SYSTEM/DATUM: State Plane, FLE (U.S. Ft.)	HORIZONTAL: NAD83 / VERTICAL: MLLW
LOCATION COORDINATES: X = 494,732 Y = 2,202,376	ELEVATION TOP OF BORING: -42.4 Ft.	

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-58.9	16.5			100	11		SPT Sampler -58.9	6 / 21 / 32	53
-61.3	18.9		SAND, poorly-graded, mostly angular to subangular fine to medium-grained sand-sized quartz, trace angular shell up to 1/8", trace subrounded phosphate up to 1/8", moist, 5Y 8/1 white (SP)	93	12		SPT Sampler -60.3	9 / 31 / 50/0.4'	81+
							-60.4 Advanced Boring		
				89	13		SPT Sampler -61.3	18 / 50/0.4'	

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. Set 54.5 ft. of 6" flush joint steel casing

4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Blount Island Terminal.

5. Water depth of -45.6 ft. recorded at 08:14 AM on 1/15/2010. Tide gage reading of +3.2 ft. mllw

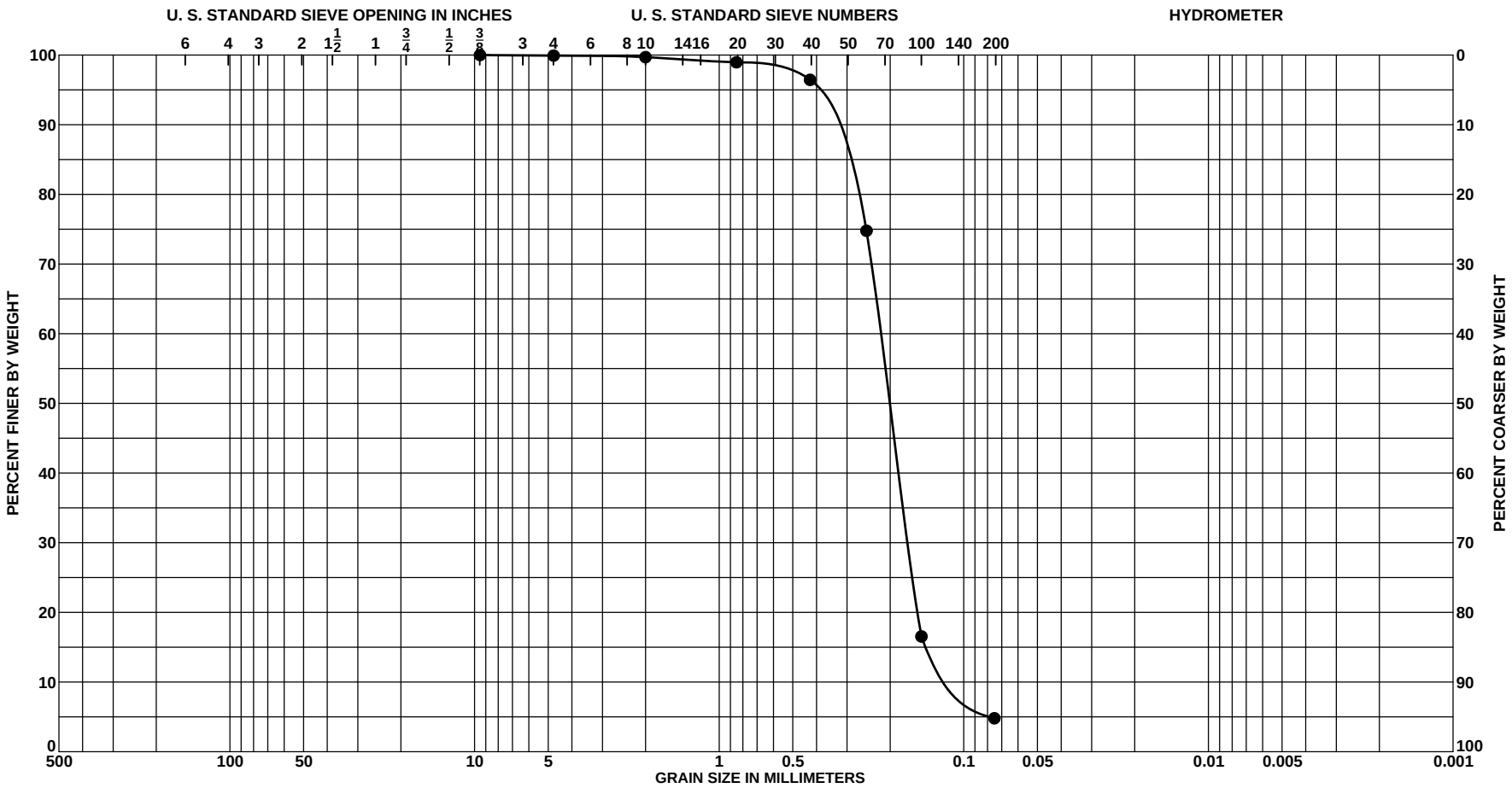
6. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
3	3.0/4.5	SP*

*Lab visual classification based on gradation curve. No Atterberg limits.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

15 20 25 30 35



Sample No.	Depth	Classification	Munsell	CO_3 %	G_S	Org %	w_n	LL	PL	PI
○ 3	3.0 to 4.5 Ft.	SAND, poorly-graded, light olive gray (SP)	5Y 6/2	0 (est)						

PROJECT	Jacksonville Harbor General Reeval. (GRR)
	ST. JOHN'S RIVER CHANNEL
BORING NO.	CB-JHPM09-14
BORING ELEV.	-42.4 Ft., MLLW
DATE	3/15/2010

GRADATION CURVES

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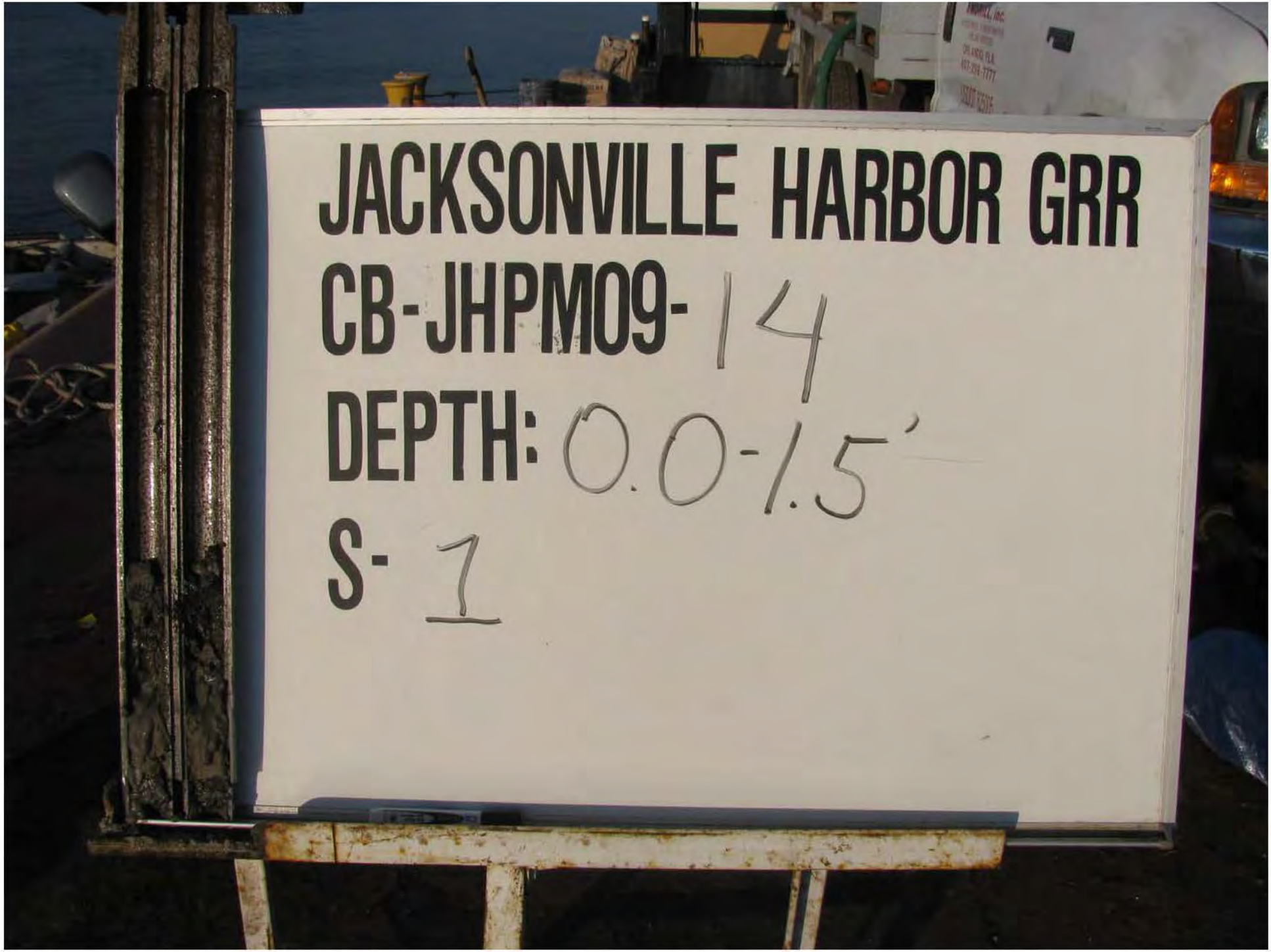
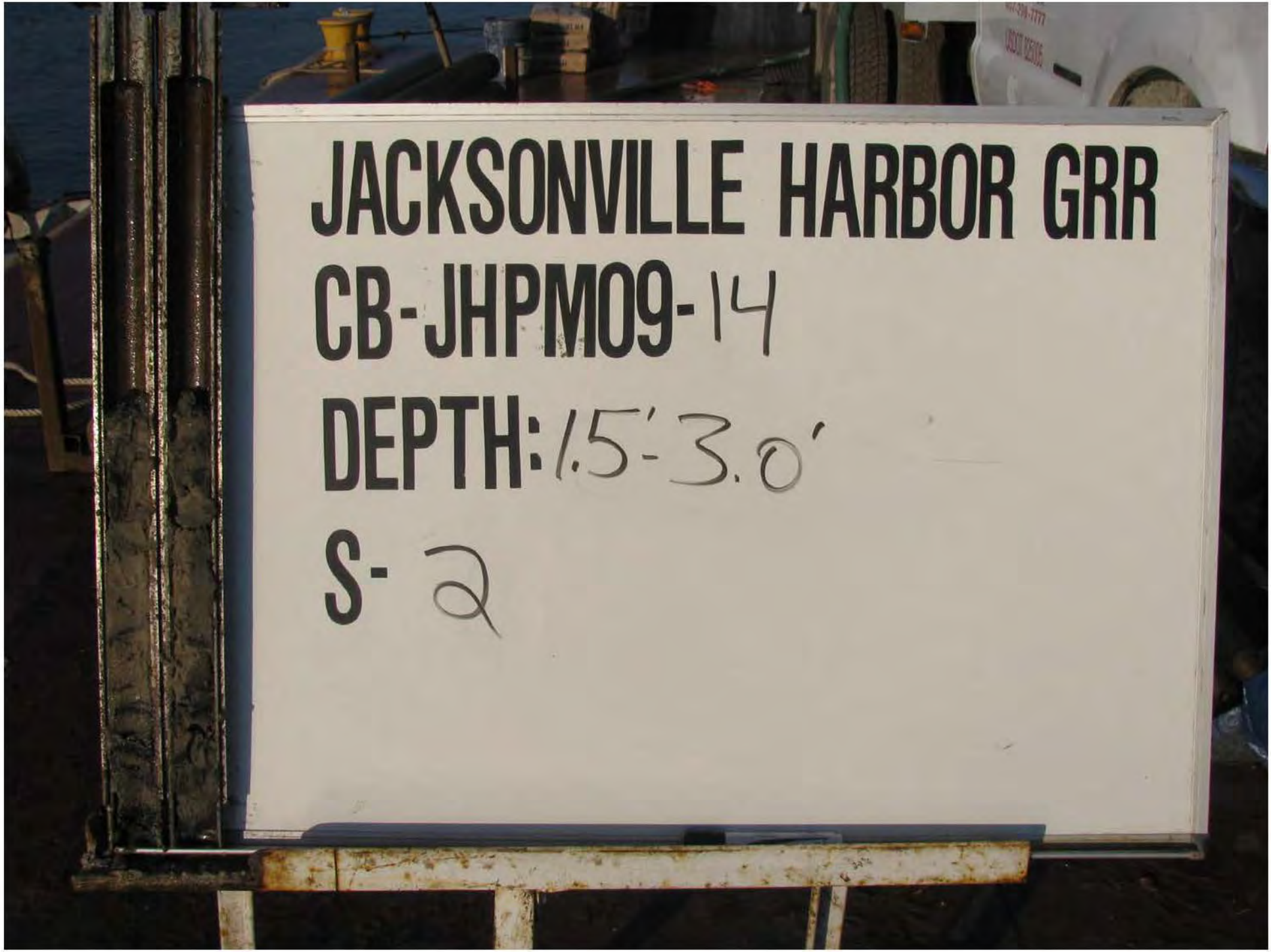
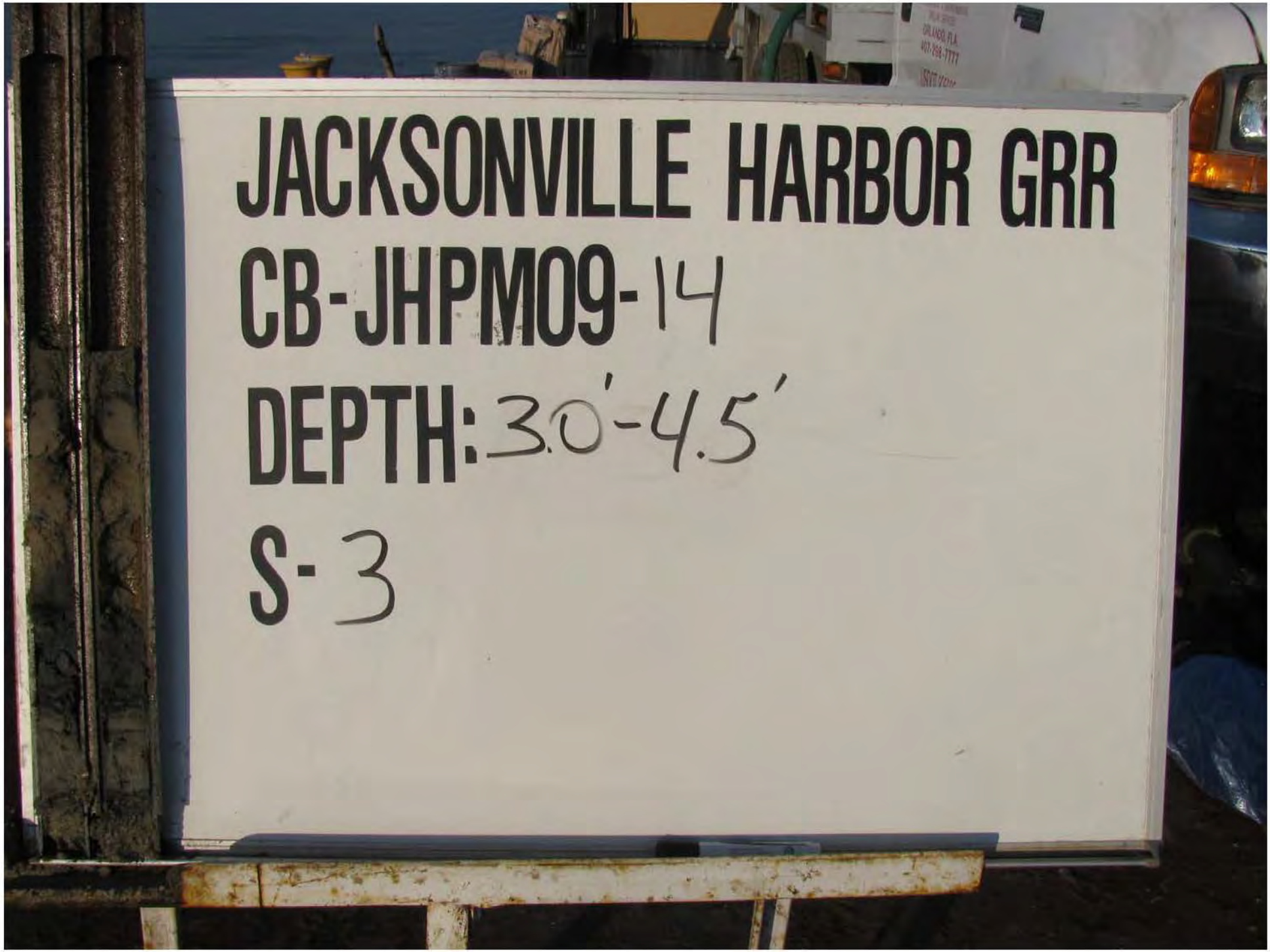
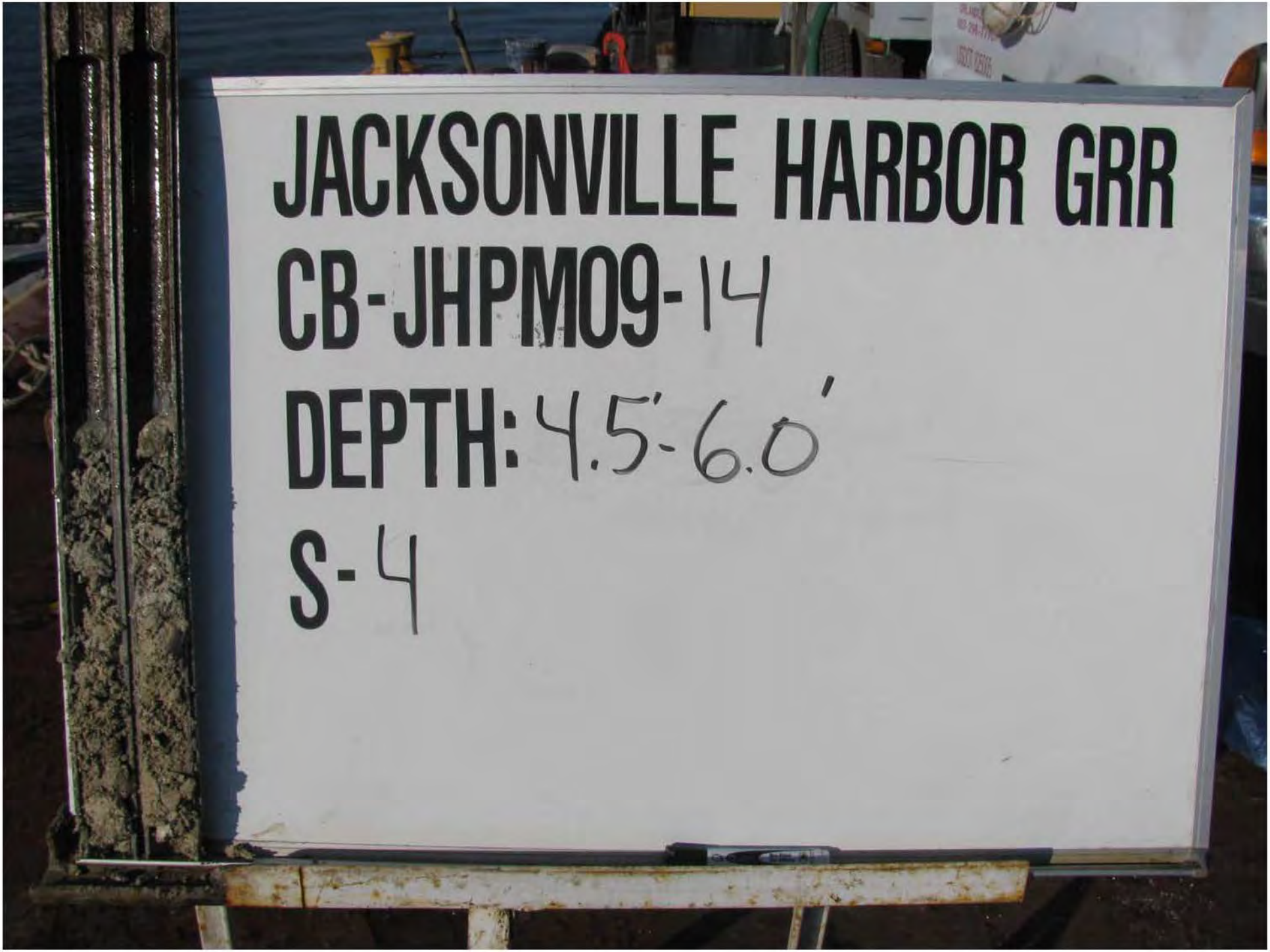
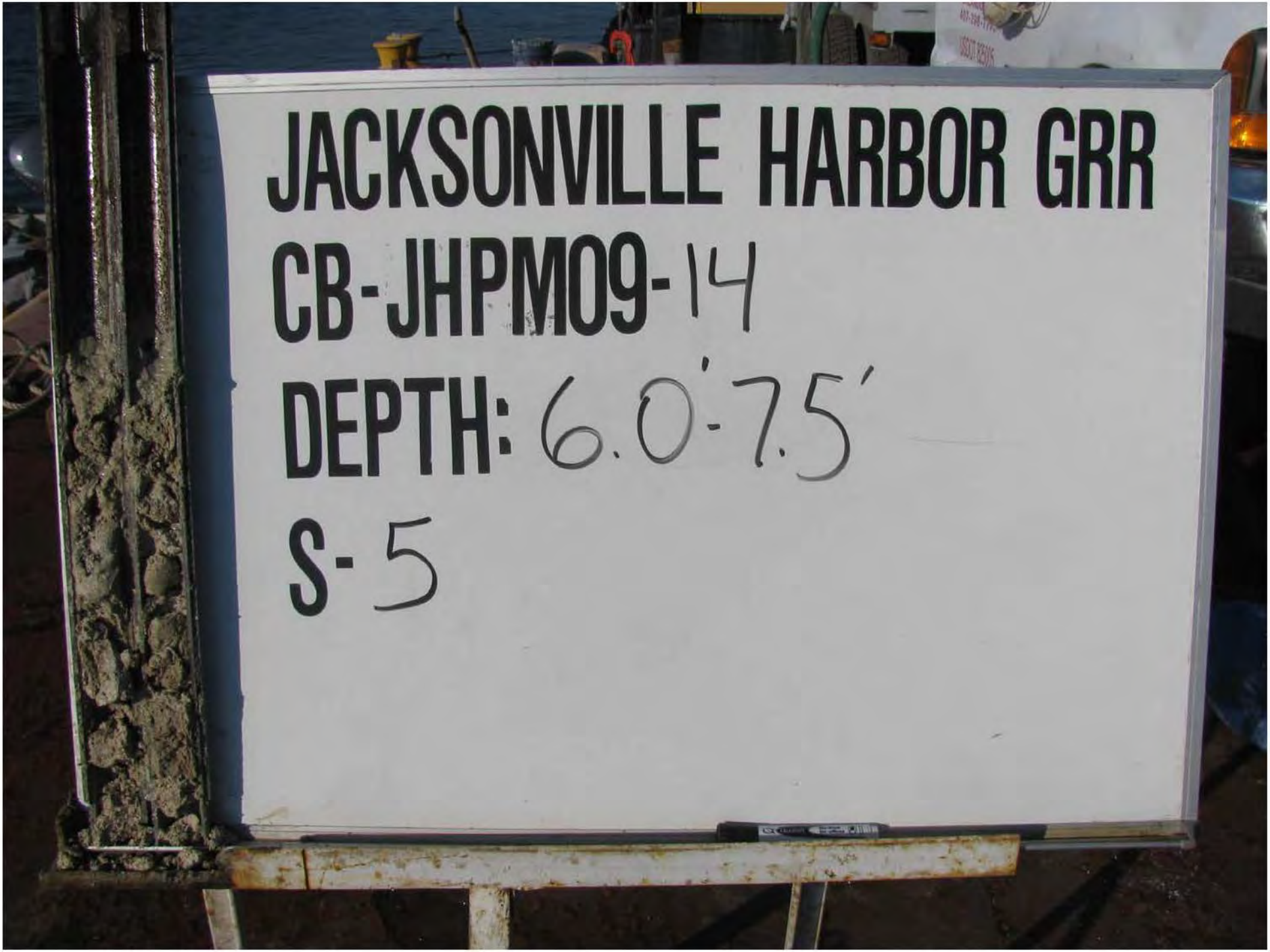
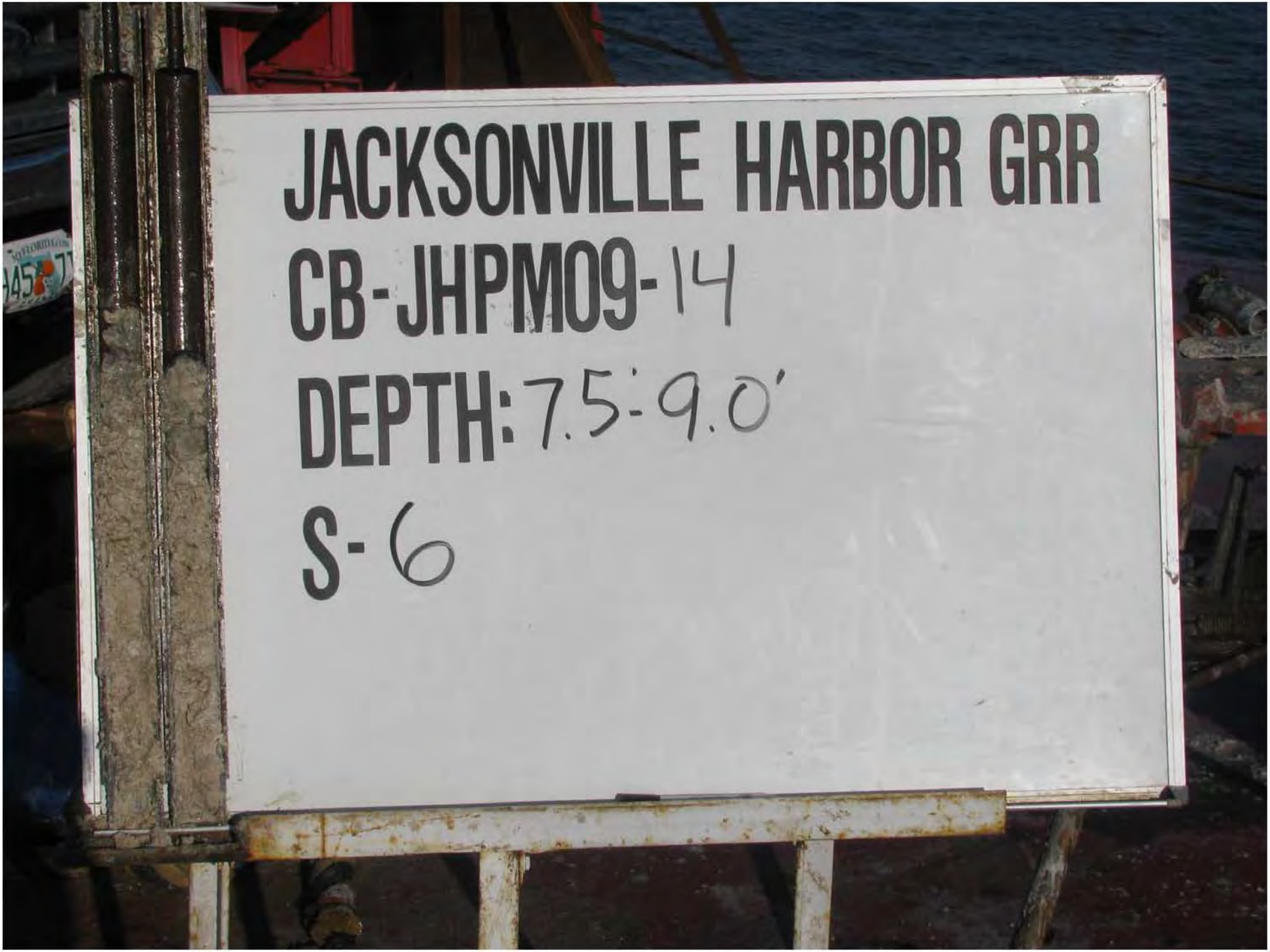

JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 0.0-1.5'
S-1

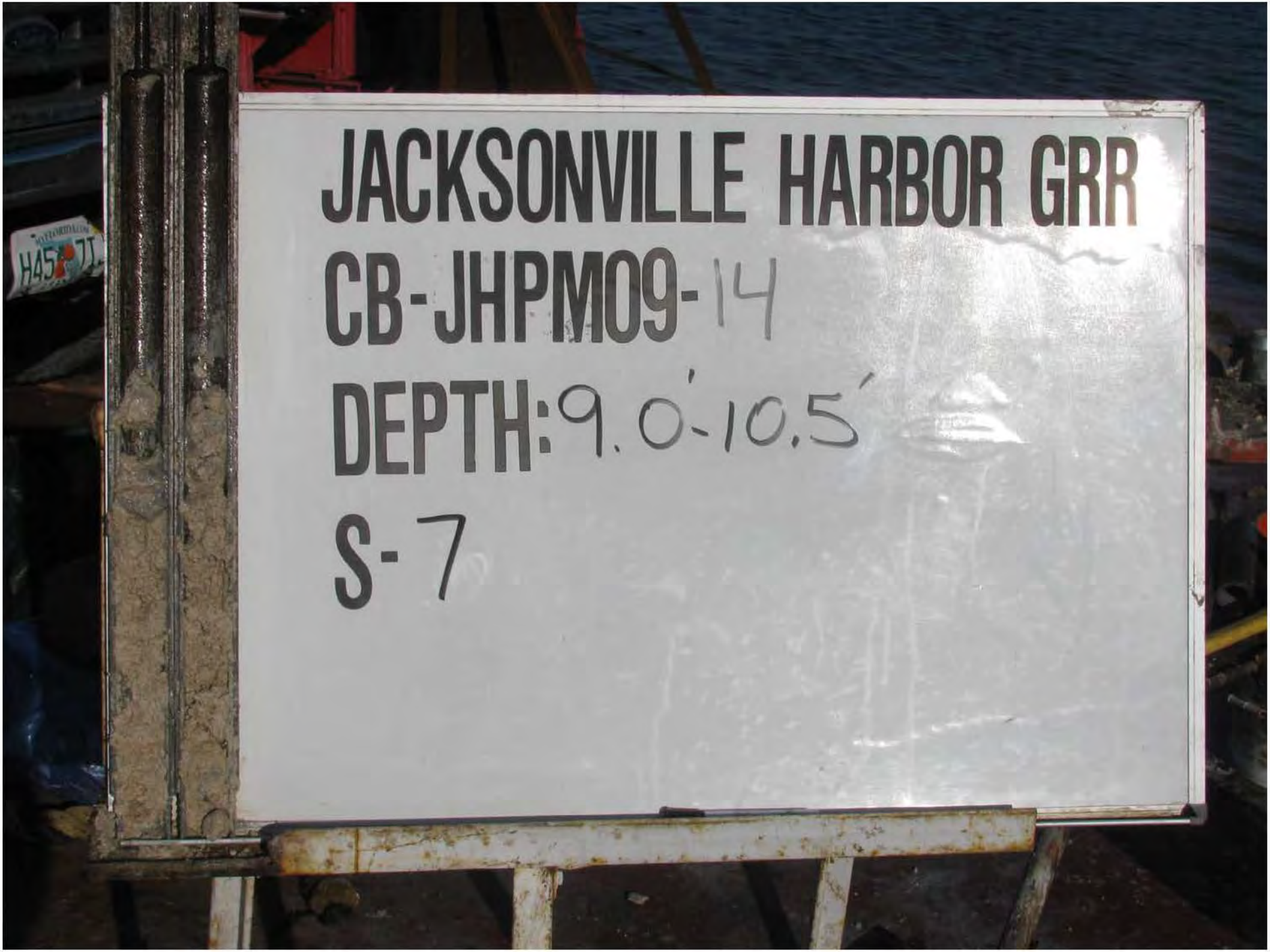

JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 1.5'-3.0'
S-2

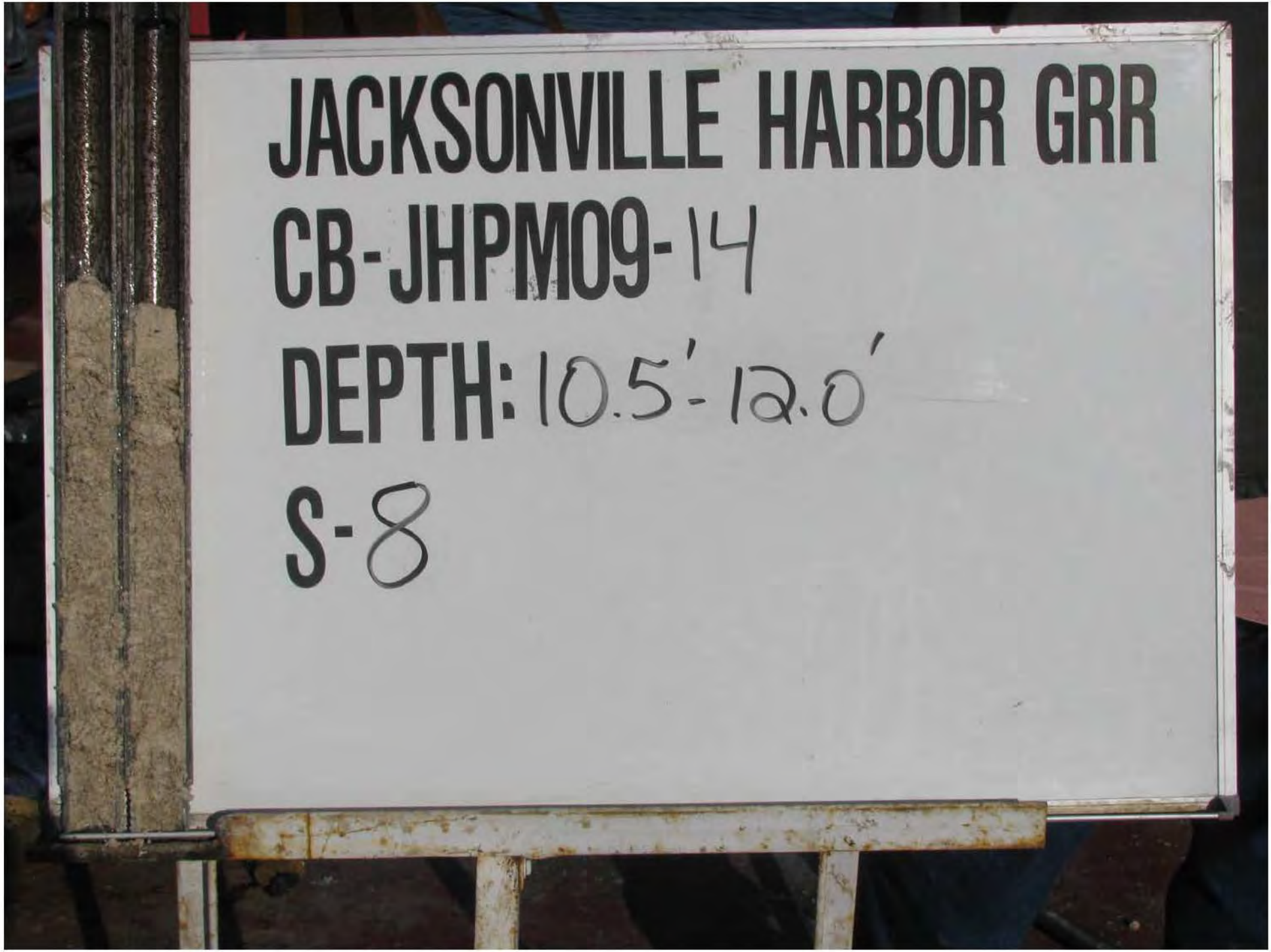

JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 3.0'-4.5'
S-3

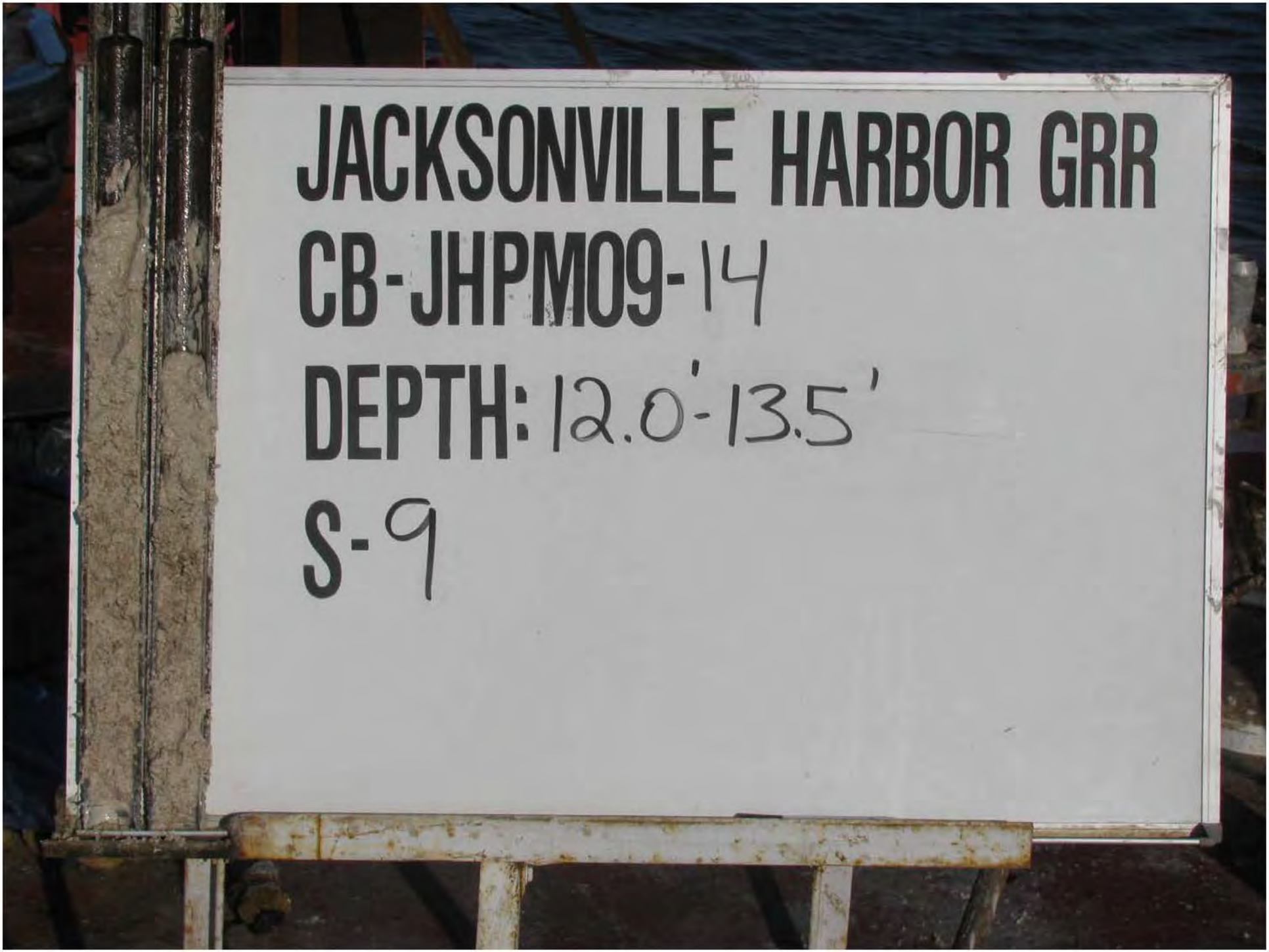

JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 4.5'-6.0'
S-4

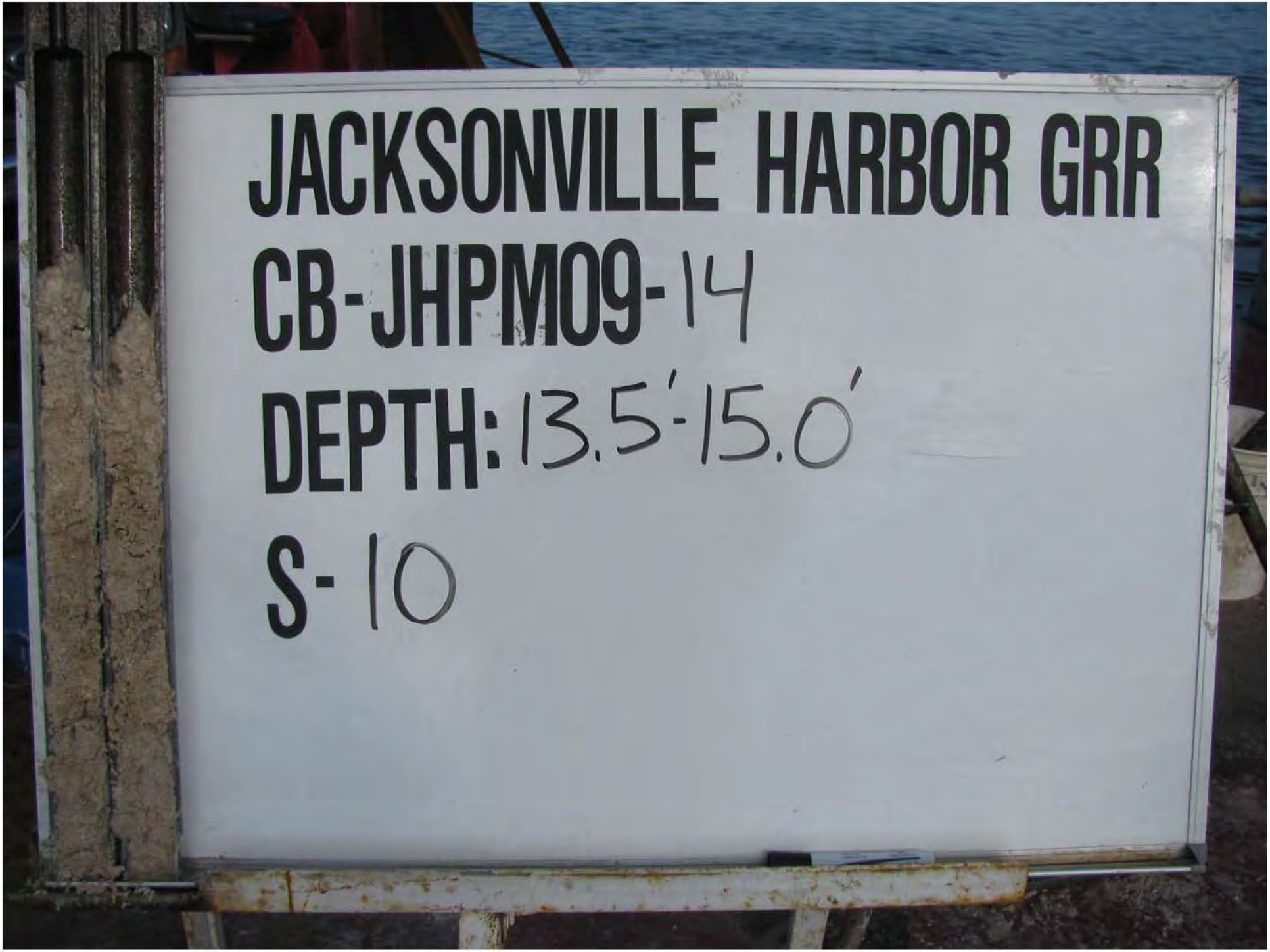

JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 6.0'-7.5'
S-5

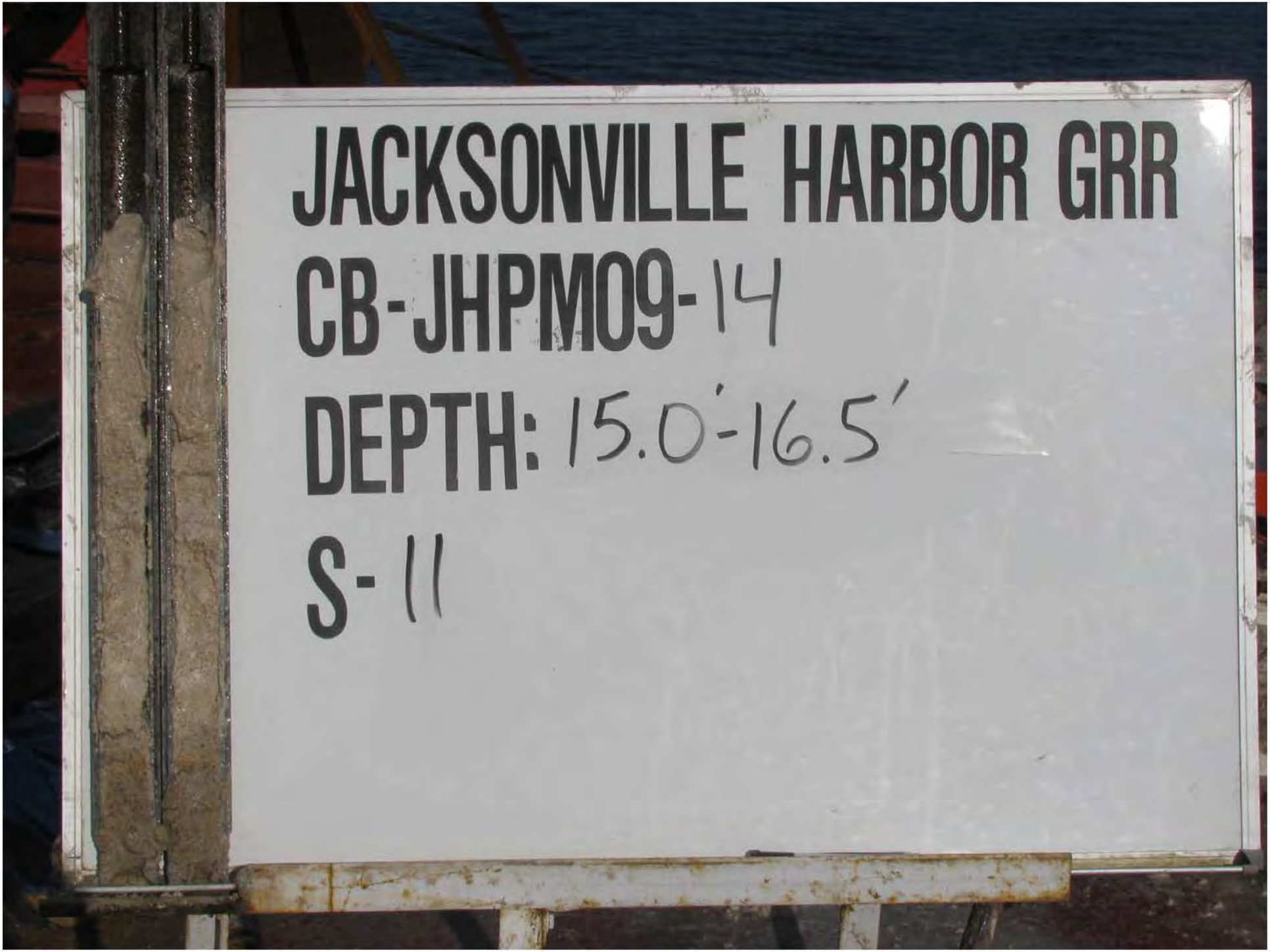

JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 7.5-9.0'
S-6

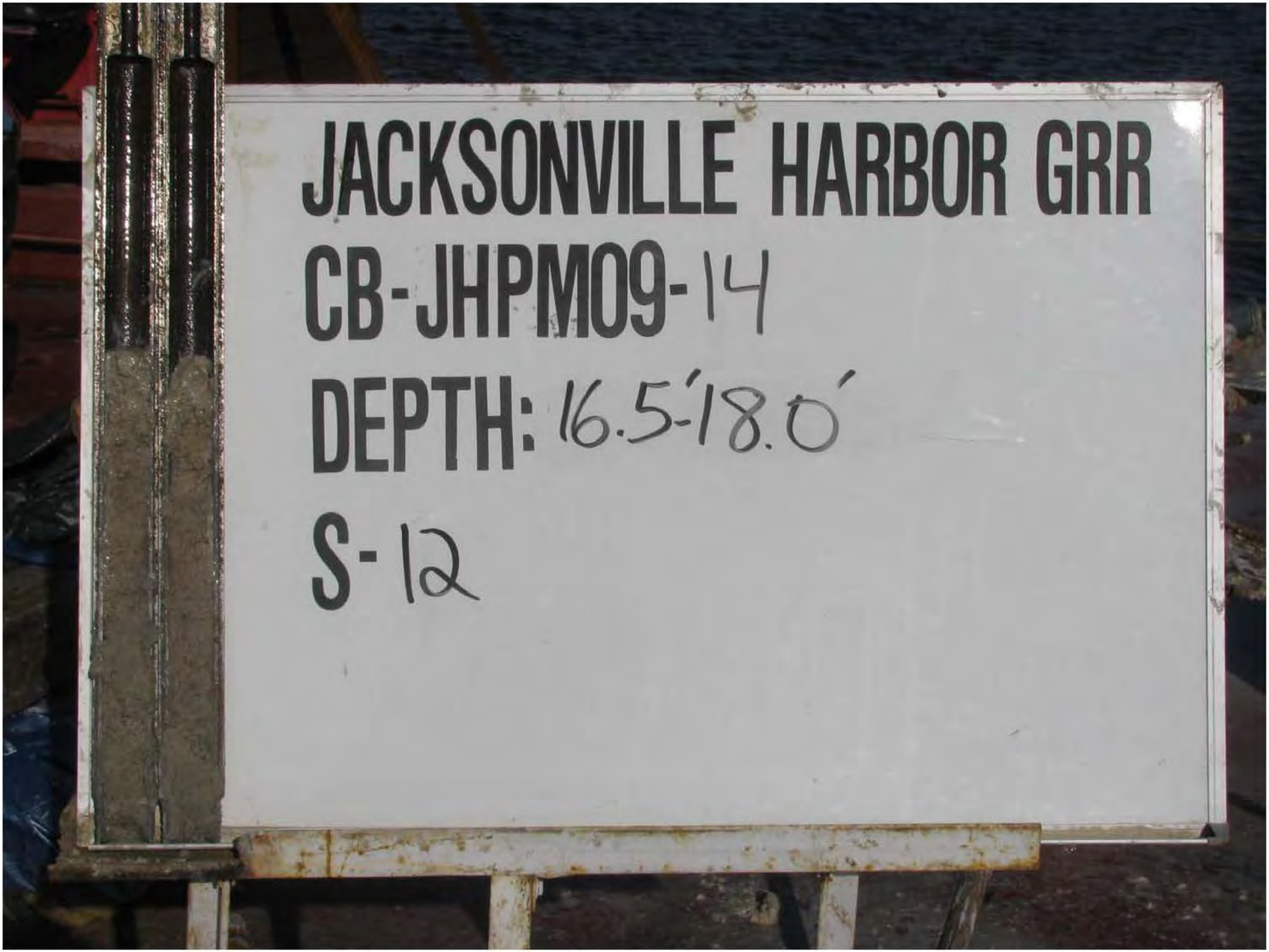

JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 9.0'-10.5'
S-7

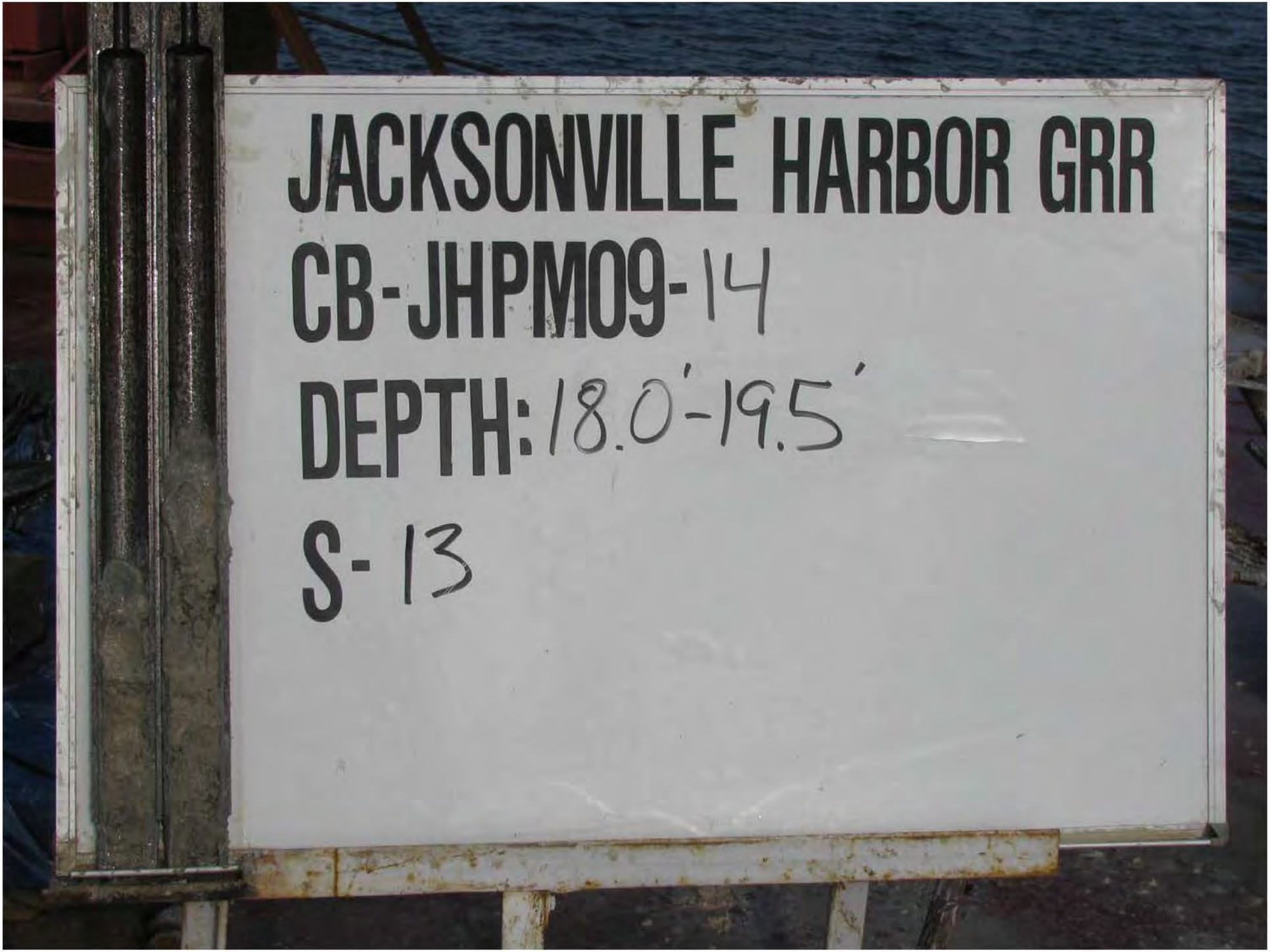

JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 10.5'-12.0'
S-8


JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 12.0'-13.5'
S-9


JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 13.5'-15.0'
S-10


JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 15.0'-16.5'
S-11


JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 16.5'-18.0'
S-12


JACKSONVILLE HARBOR GRR
CB-JHPM09-14
DEPTH: 18.0'-19.5'
S-13

TEST CORE BORING NUMBER
“CB-JHPM09-15”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-15

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 3 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-15
LOCATION COORDINATES	X = 497,199 Y = 2,203,050
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	31.5 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
☐ AUTO HAMMER ☒ MANUAL HAMMER	
12. TOTAL SAMPLES	DISTURBED: 21 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	1
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-14-10 COMPLETED: 01-14-10
16. ELEVATION TOP OF BORING	-31.1 Ft.
17. TOTAL RECOVERY FOR BORING	80 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-31.1	0.0						-31.1		
-32.6	1.5		SAND, silty, mostly angular to subangular fine to medium-grained sand-sized quartz, little silt, few angular to subangular shell up to 1-1/2", wet, 5Y 5/2 olive gray (SM)	60	1		SPT Sampler -32.6	1 3 2	5
-34.1	3.0		SAND, poorly-graded, mostly angular to subangular medium to coarse-grained sand-sized quartz, little angular shell up to 1/8", wet, 5Y 5/3 olive (SP)	73	2		SPT Sampler -34.1	3 1 1	2
			SAND, silty, mostly angular to subangular fine to medium-grained sand-sized quartz, little silt, trace angular to subangular shell up to 1/4", wet, strongly cemented 2" nodule, 5Y 5/2 olive gray (SM)	53	3		SPT Sampler -35.6	4 5 7	12
				60	4		SPT Sampler -37.1	5 6 3	9
			At El. -37.1 Ft., little angular shell up to 3/8"	67	5		SPT Sampler -38.6	1 2 2	4
-40.1	9.0		SAND, poorly-graded with silt, mostly angular to subangular coarse-grained sand-sized quartz, little angular shell up to 3/8", few silt, wet, 5Y 4/2 olive gray (SP-SM) At El. -39.6 Ft., trace angular shell up to 1/8"	67	6		SPT Sampler -40.1	2 3 3	6
			SAND, silty, mostly angular to subangular fine to medium-grained sand-sized quartz, little silt, trace angular to subangular shell up to 1/8", wet, 5Y 4/2 olive gray (SM)	67	7		SPT Sampler -41.6	2 1 2	3
			At El. -41.6 Ft., 5Y 3/2 dark olive gray	80	8		SPT Sampler -43.1	2 4 4	8
-44.6	13.5		SAND, poorly-graded, mostly angular to subangular fine to medium-grained sand-sized quartz, trace angular shell up to 1/8", wet, 5Y 5/1 gray (SP)	60	9		SPT Sampler -44.6	3 5 7	12
		Sl. Weathered	LIMESTONE, sandy, sparsely fossiliferous, soft, slightly weathered, fine grained, thick bedding, bedding orientation, moist, 5Y 5/1 gray	13	10		SPT Sampler -46.1	10 6 7	13

0 5 10 15

(Continued)

Boring Designation CB-JHPM09-15

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 3 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Jacksonville Harbor General Reevaluation Report (GRR)	State Plane, FLE (U.S. Ft.)	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 497,199 Y = 2,203,050	-31.1 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
		Sl. Weathered	At El. -46.1 Ft., moderately hard	100	11		-46.5 SPT Sampler	50/0.4'	
-47.6	16.5						Advanced Boring -47.6		
-49.1	18.0		SAND, poorly-graded with silt, mostly angular to subangular fine to medium-grained sand-sized quartz, few subrounded limestone up to 1", moist, 5Y 6/2 light olive gray (SP-SM)	100	12		SPT Sampler -49.1	40 41 42	83
			SAND, silty, mostly angular to subangular fine to medium-grained sand-sized quartz, little silt, trace subangular phosphate up to 1/8", moist, 5Y 6/2 light olive gray (SM)	100	13		SPT Sampler -50.6	12 9 11	20
				100	14		SPT Sampler -52.1	11 12 12	24
				100	15		SPT Sampler -53.6	7 10 15	25
			At El. -53.6 Ft., 5Y 5/2 olive gray	100	16		SPT Sampler -55.1	9 12 14	26
				100	17		SPT Sampler -56.6	3 5 9	14
				100	18		SPT Sampler -58.1	8 8 15	23
				100	19		SPT Sampler -59.6	5 6 9	15
				100	20		SPT Sampler -61.1	7 8 12	20
-62.6	31.5			93	21		SPT Sampler -62.6	3 6 10	16

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. Set 42.5 ft. of 6" flush joint steel casing

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Boring Designation CB-JHPM09-15

DRILLING LOG (Cont. Sheet)	INSTALLATION Jacksonville District			SHEET 3 OF 3 SHEETS
PROJECT Jacksonville Harbor General Reevaluation Report (GRR)	COORDINATE SYSTEM/DATUM State Plane, FLE (U.S. Ft.)	HORIZONTAL NAD83	VERTICAL MLLW	
LOCATION COORDINATES X = 497,199 Y = 2,203,050	ELEVATION TOP OF BORING -31.1 Ft.			

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
			4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Blount Island Terminal. 5. Water depth of -34.6 ft. recorded at 08:50 AM on 1/14/2010. Tide gage reading of +3.5 ft. mllw 6. Laboratory Testing Results SAMPLE ID — SAMPLE DEPTH — LABORATORY CLASSIFICATION 2 — 1.5/3.0 — SP* *Lab visual classification based on gradation curve. No Atterberg limits.						

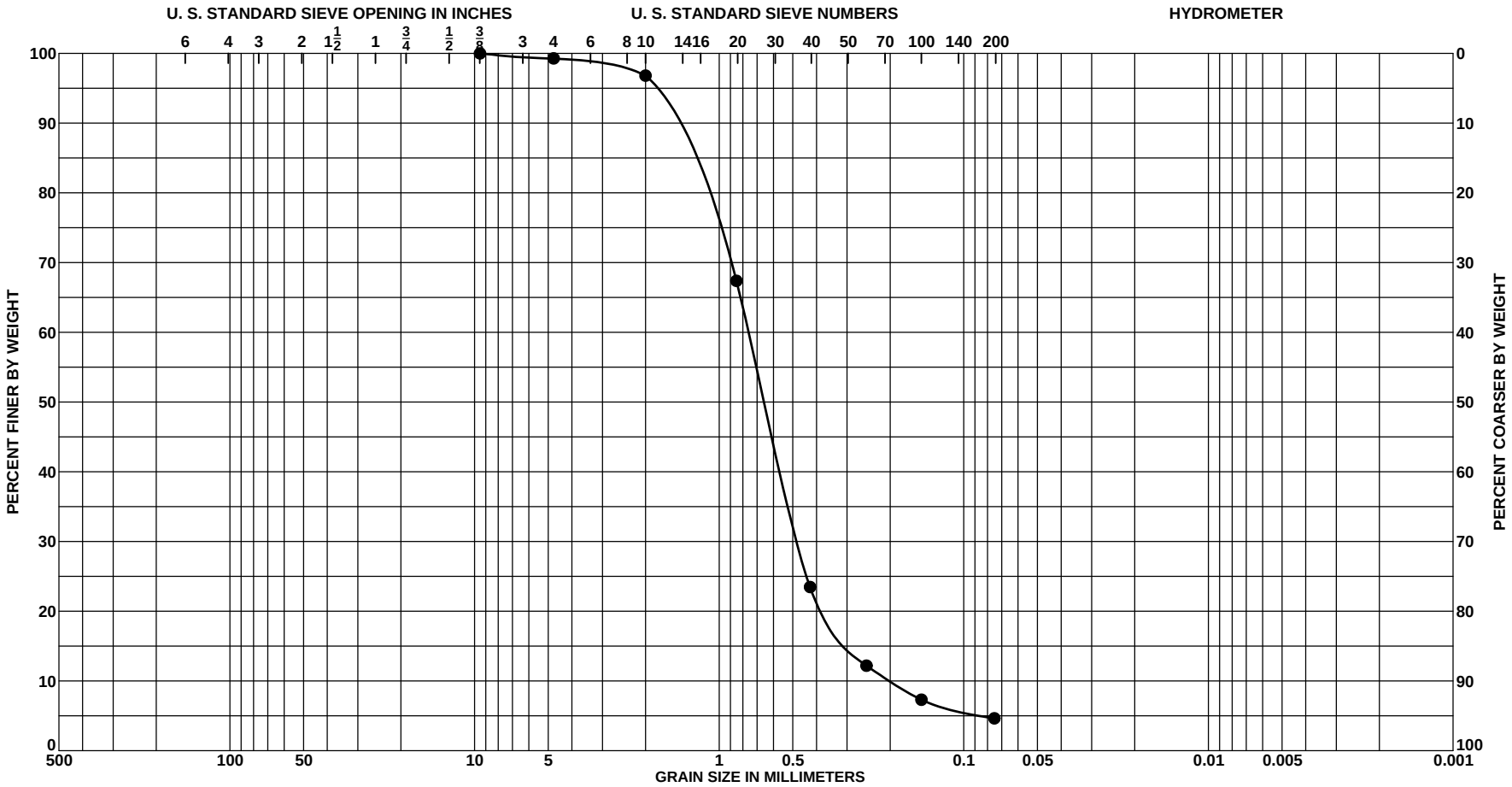
35

40

45

50

55

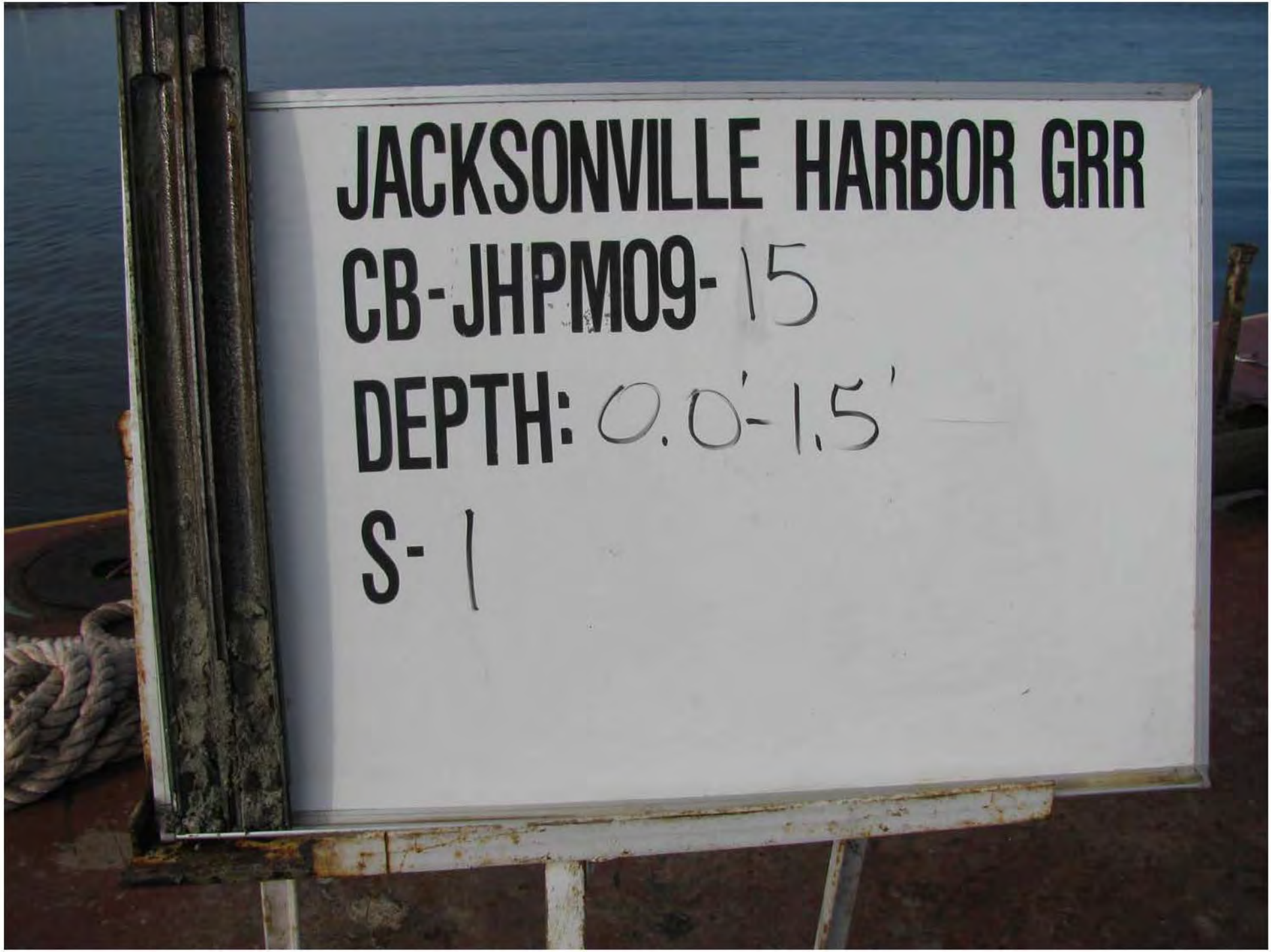


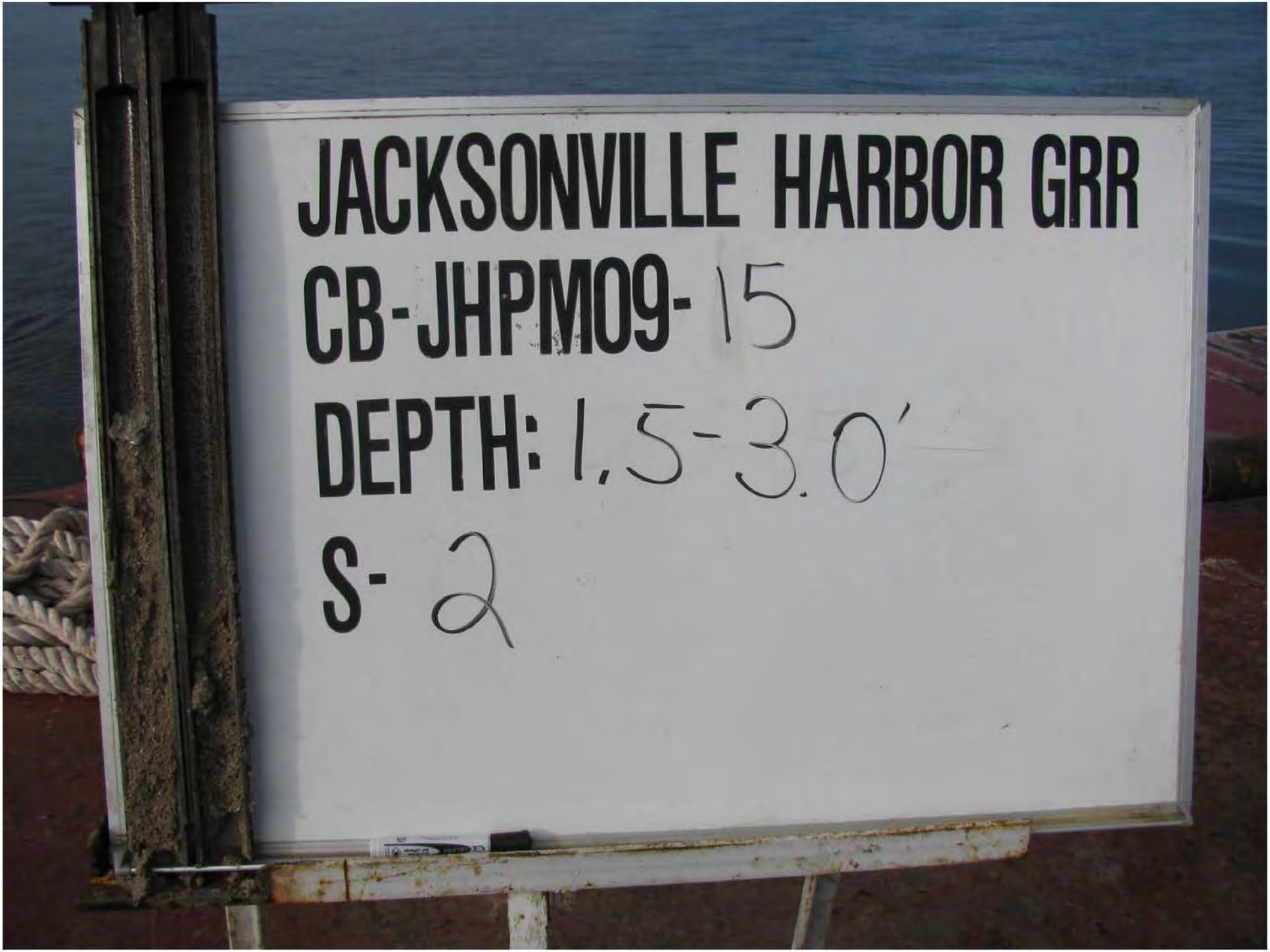
Sample No.	Depth	Classification	Munsell	CO_3 %	G_S	Org %	w_n	LL	PL	PI
○ 2	1.5 to 3.0 Ft.	SAND, poorly-graded, olive (SP)	5Y 5/3	15 (est)						

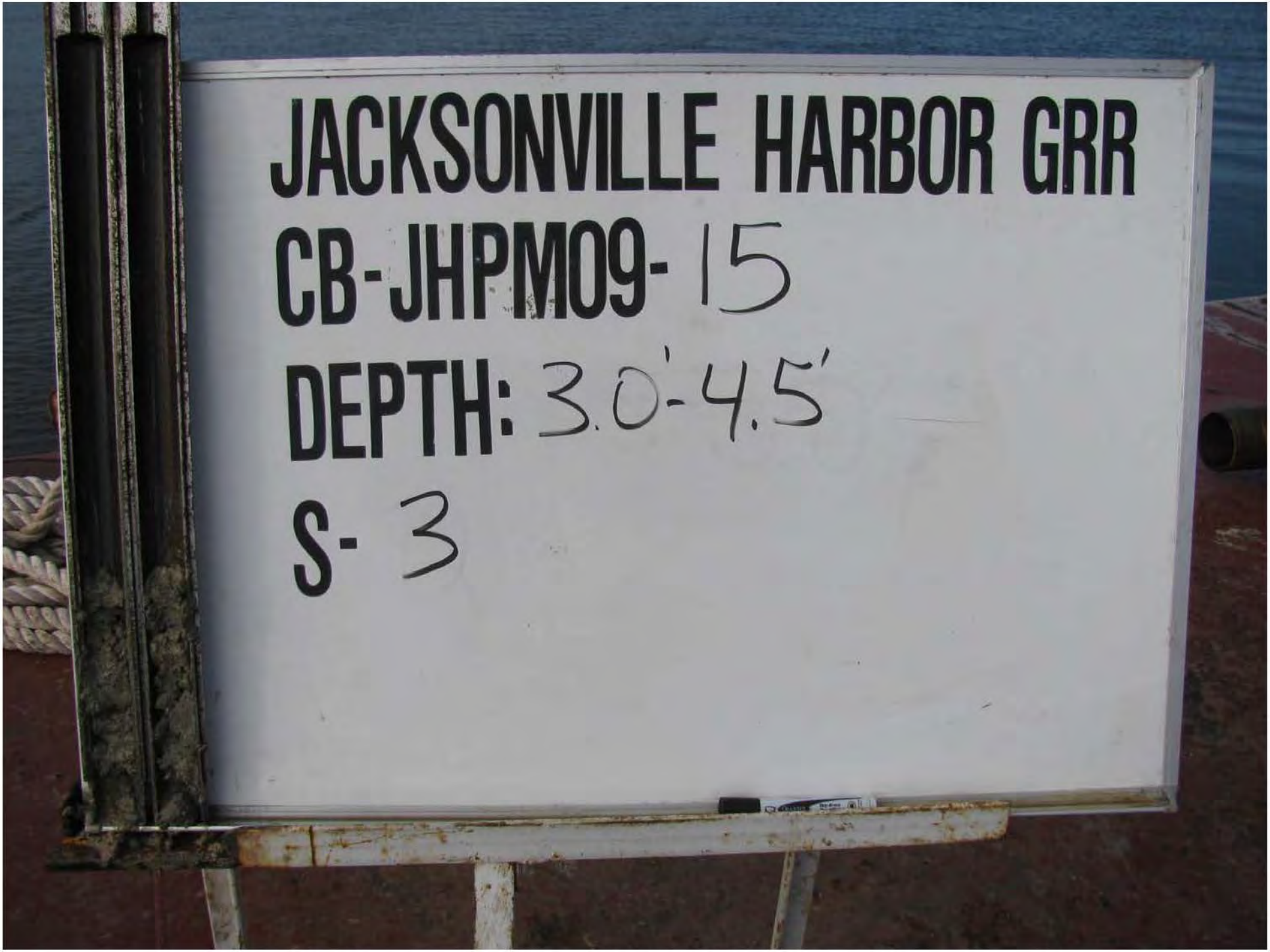
PROJECT	Jacksonville Harbor General Reeval. (GRR)
	ST. JOHN'S RIVER CHANNEL
BORING NO.	CB-JHPM09-15
BORING ELEV.	-31.1 Ft., MLLW
DATE	3/15/2010

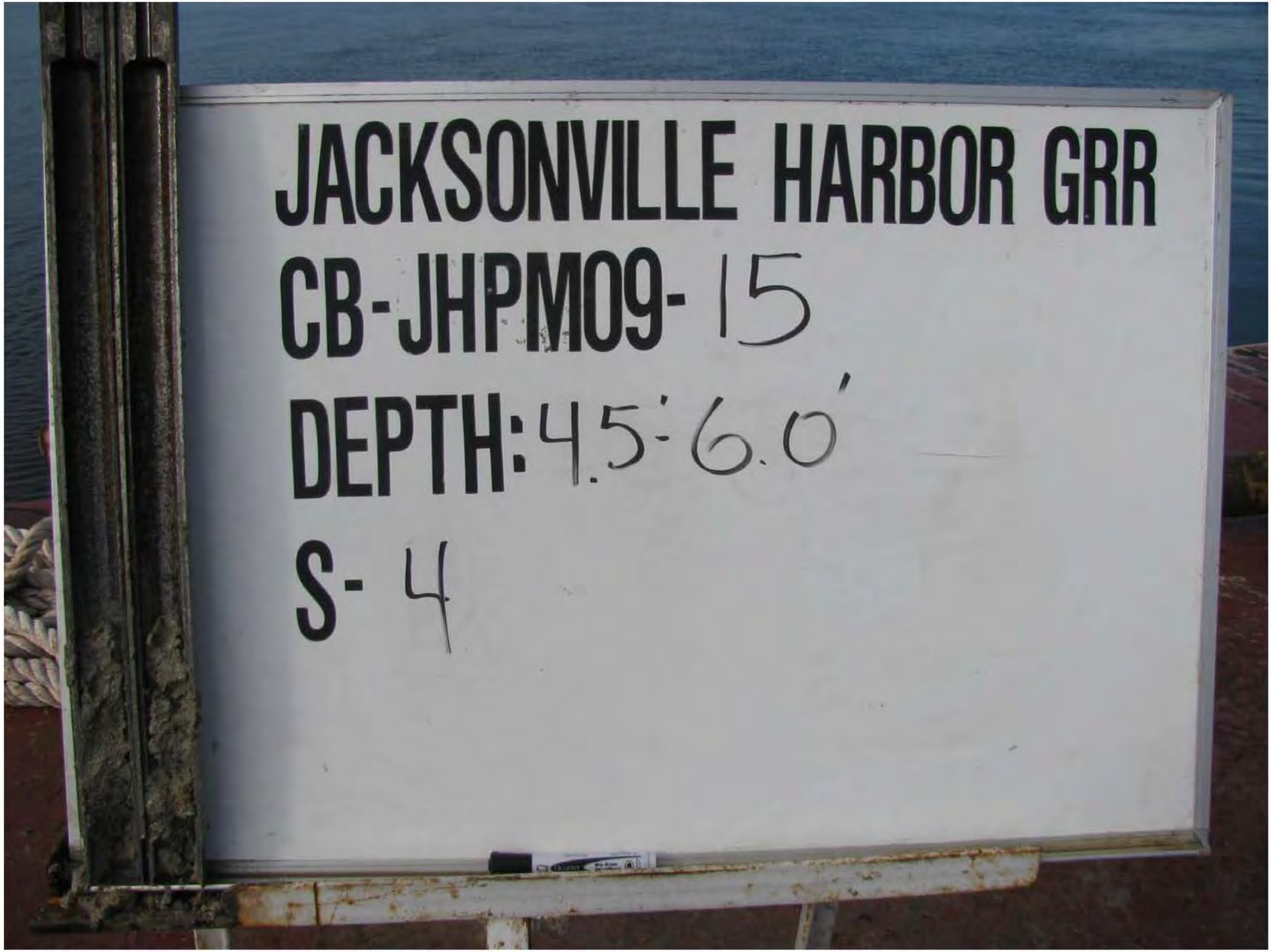
GRADATION CURVES

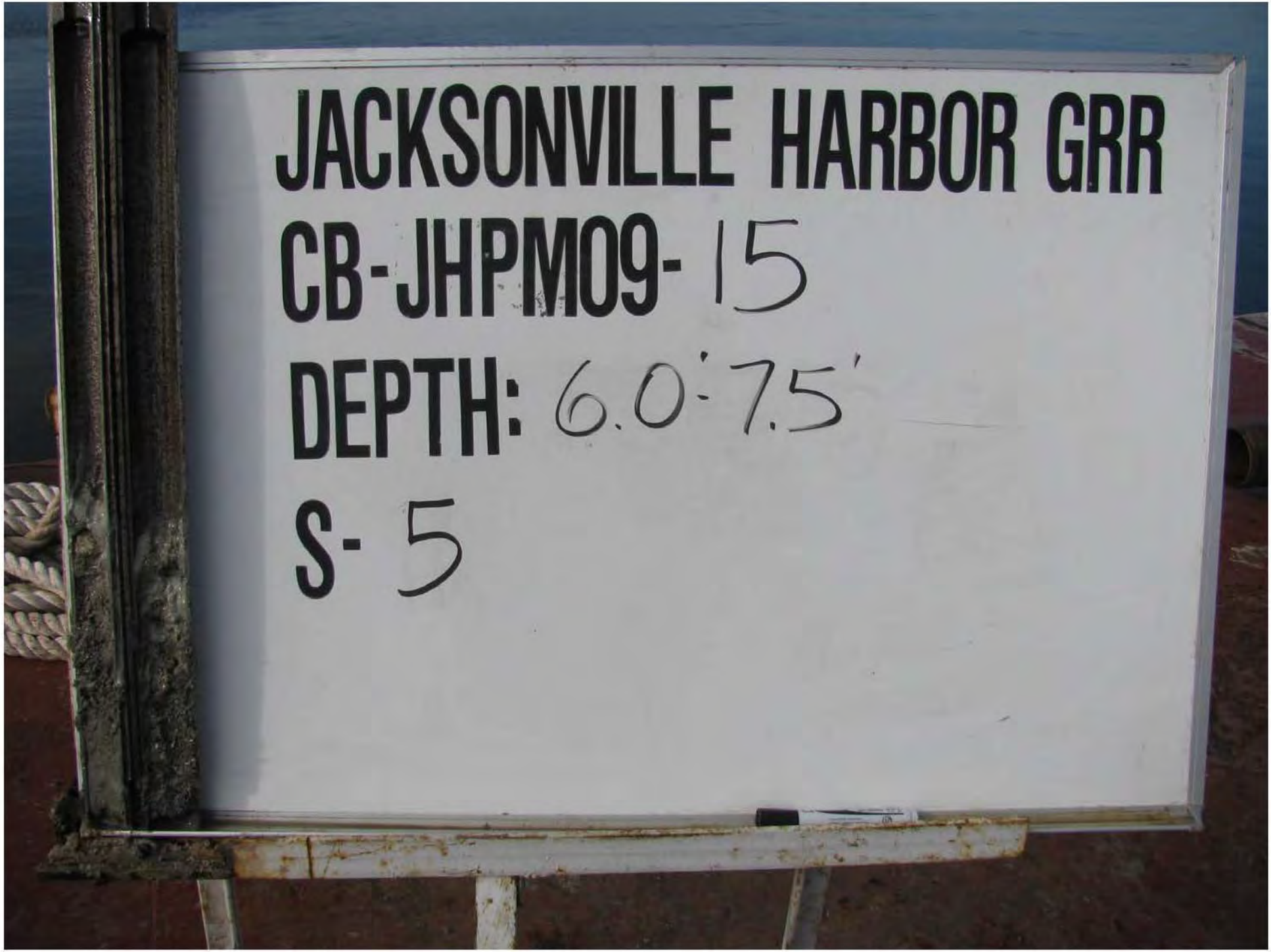
SAJ FORM 2087
JUN 02

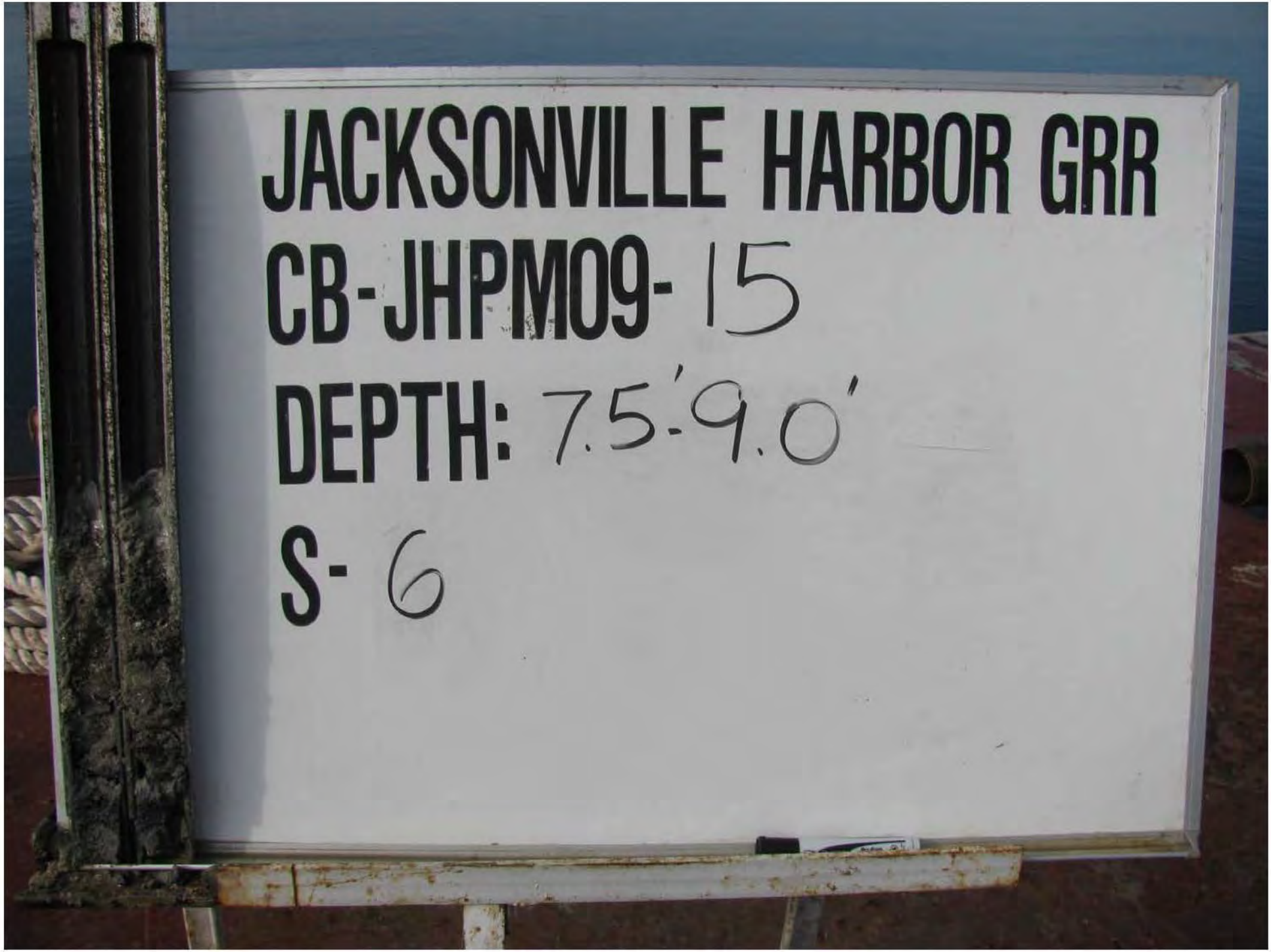

JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 0.0'-1.5'
S-1


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 1.5-3.0'
S- 2


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 3.0'-4.5'
S-3


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 4.5-6.0'
S-4


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 6.0-7.5'
S-5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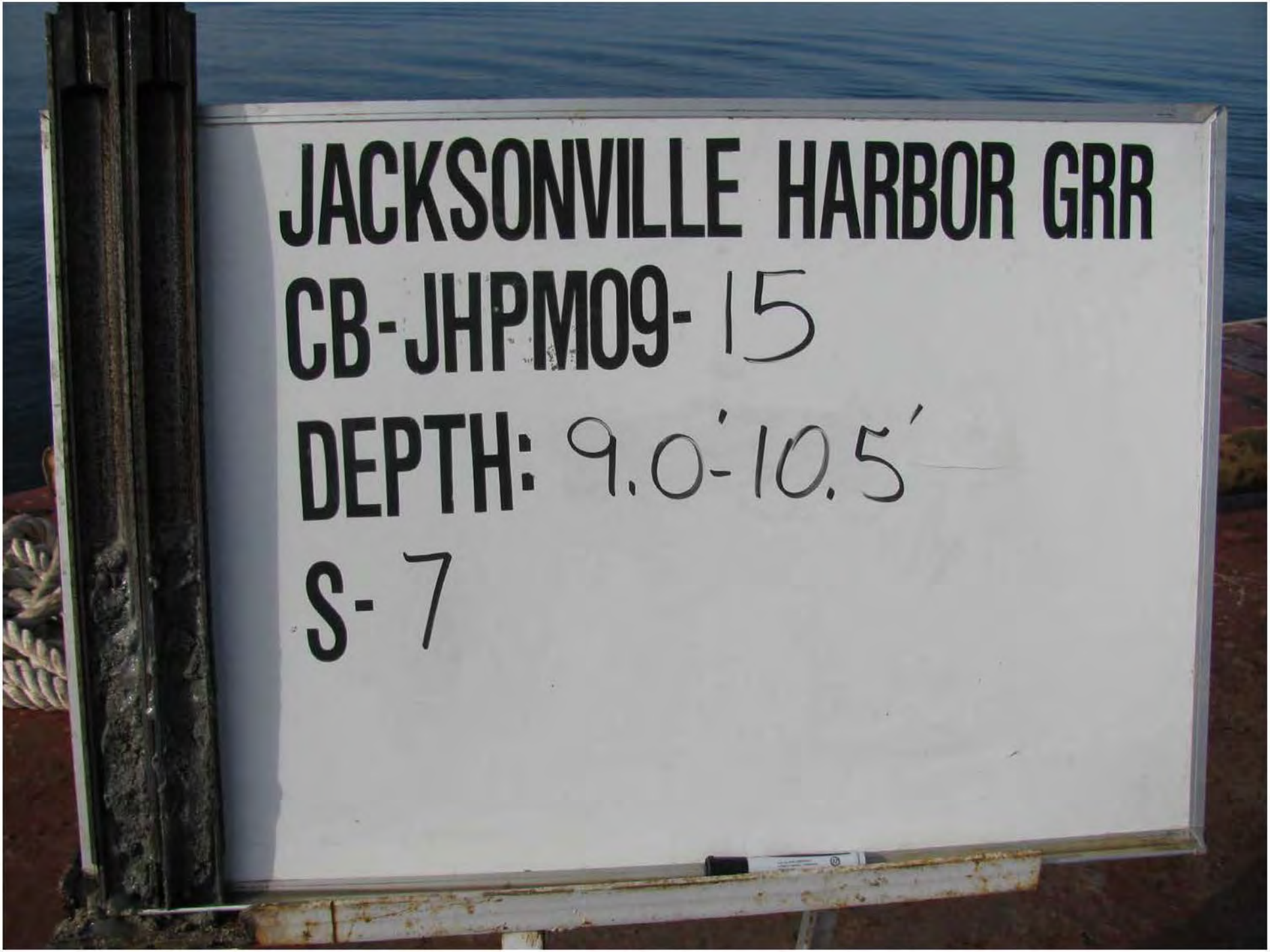
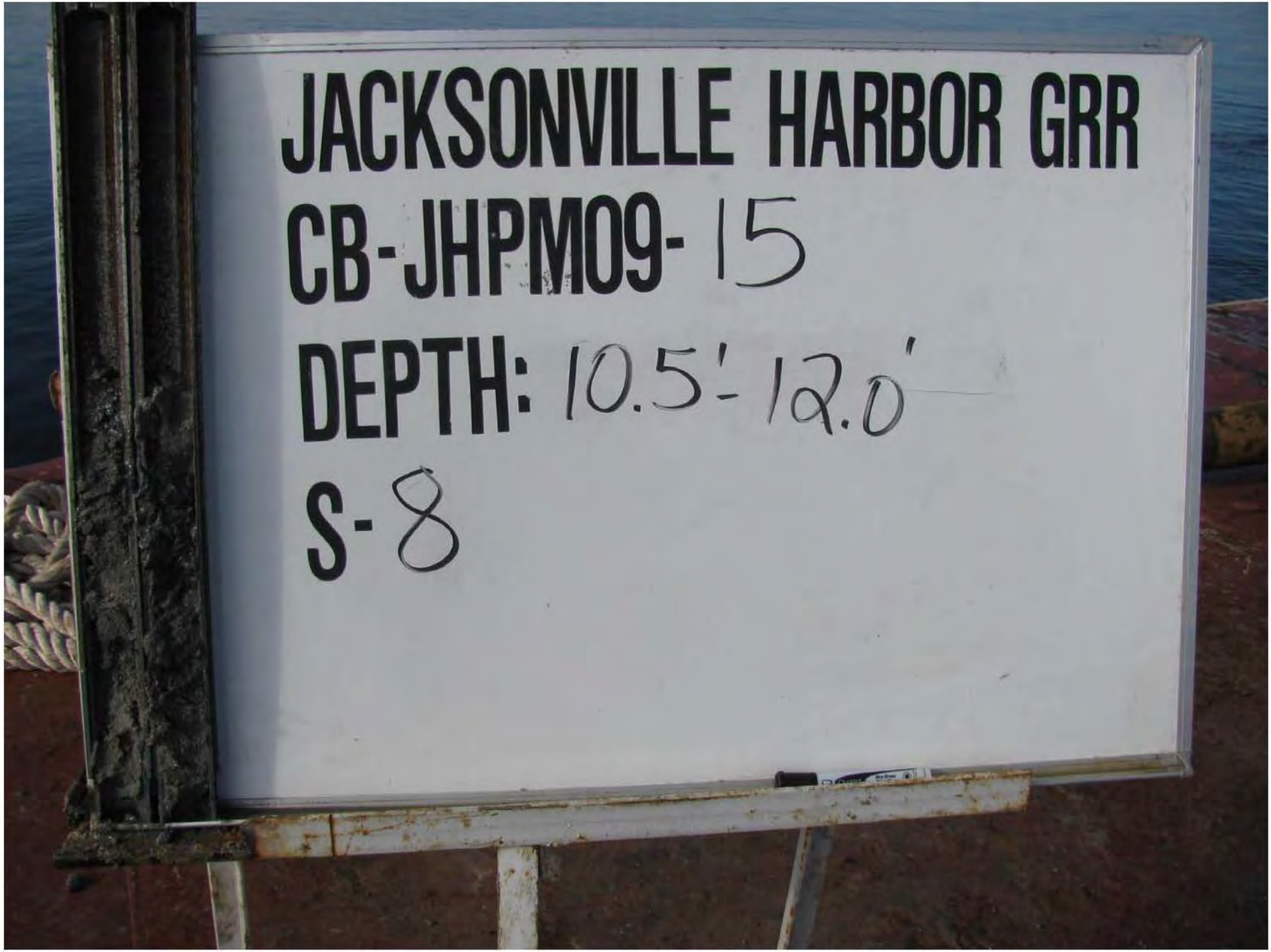
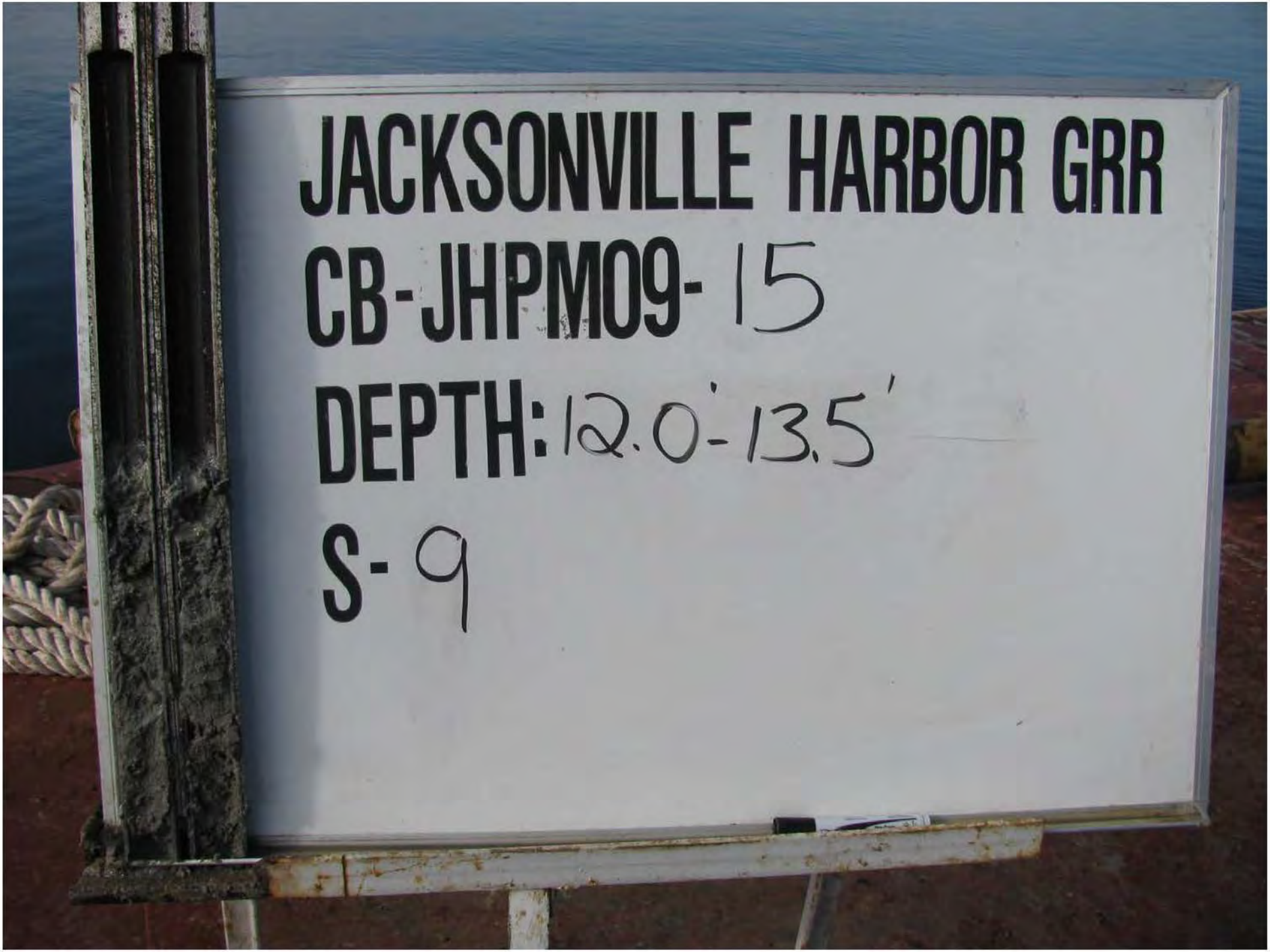
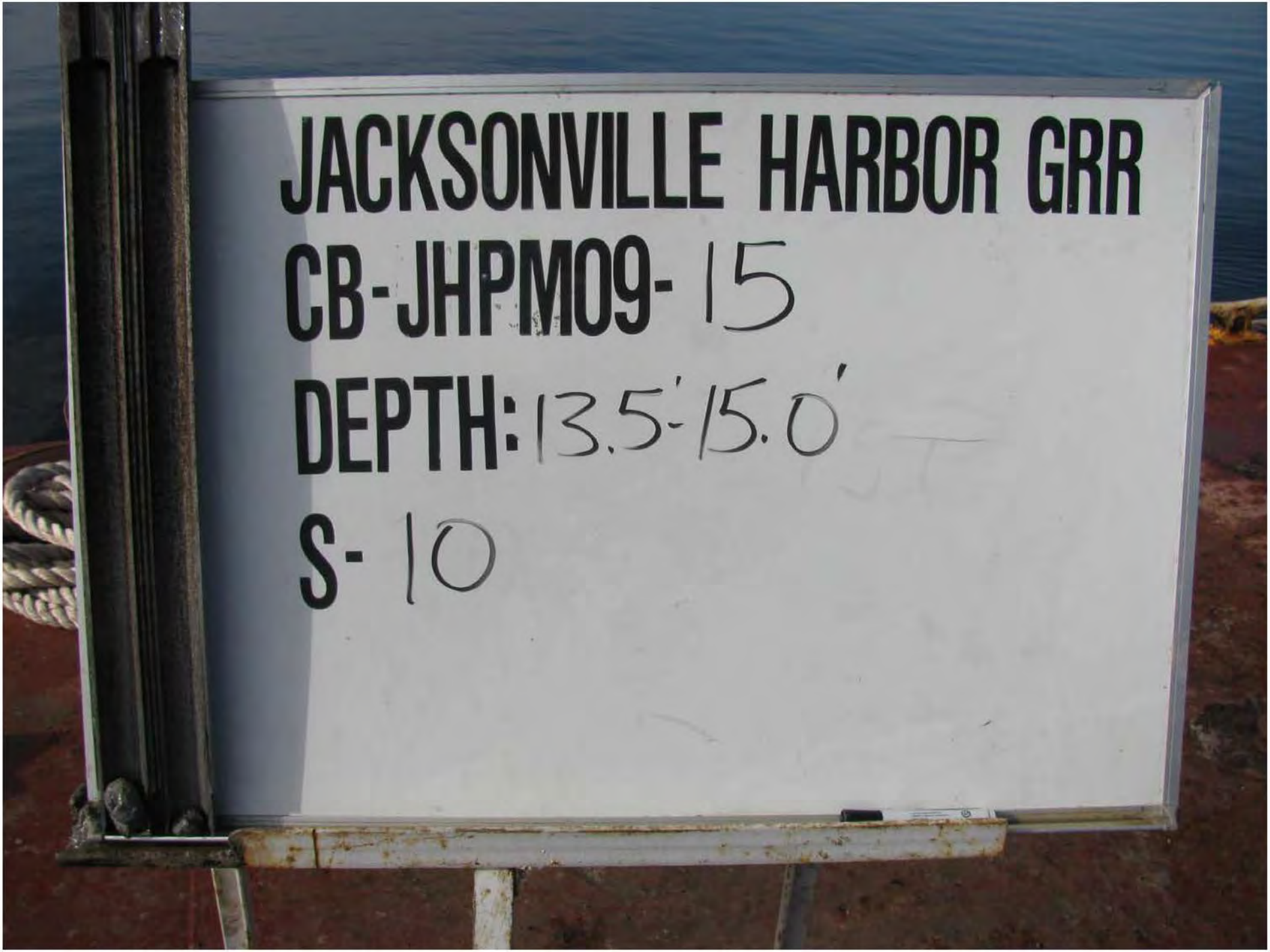
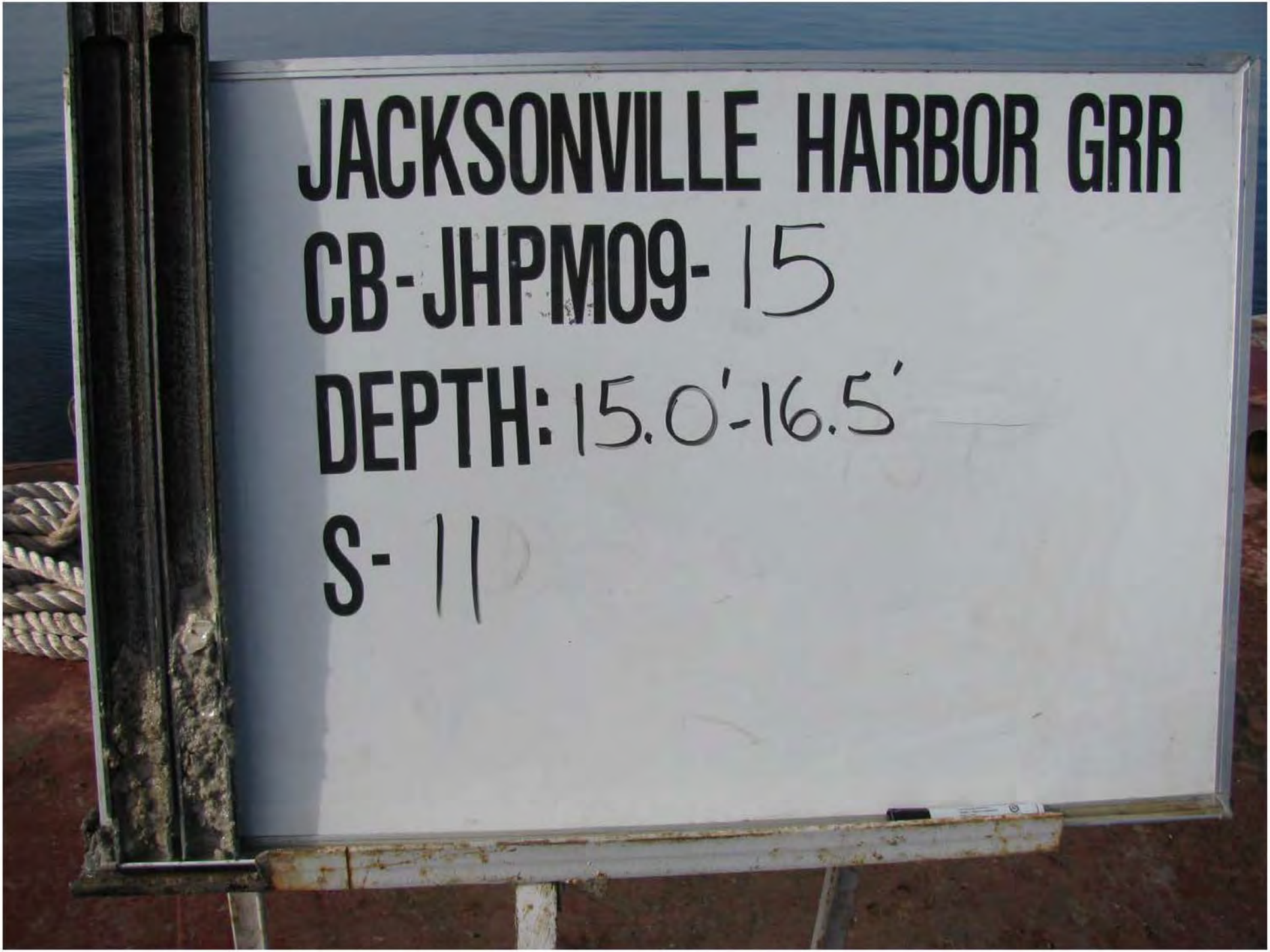
CB-JHPM09-15
DEPTH: 7.5'-9.0'
S-6

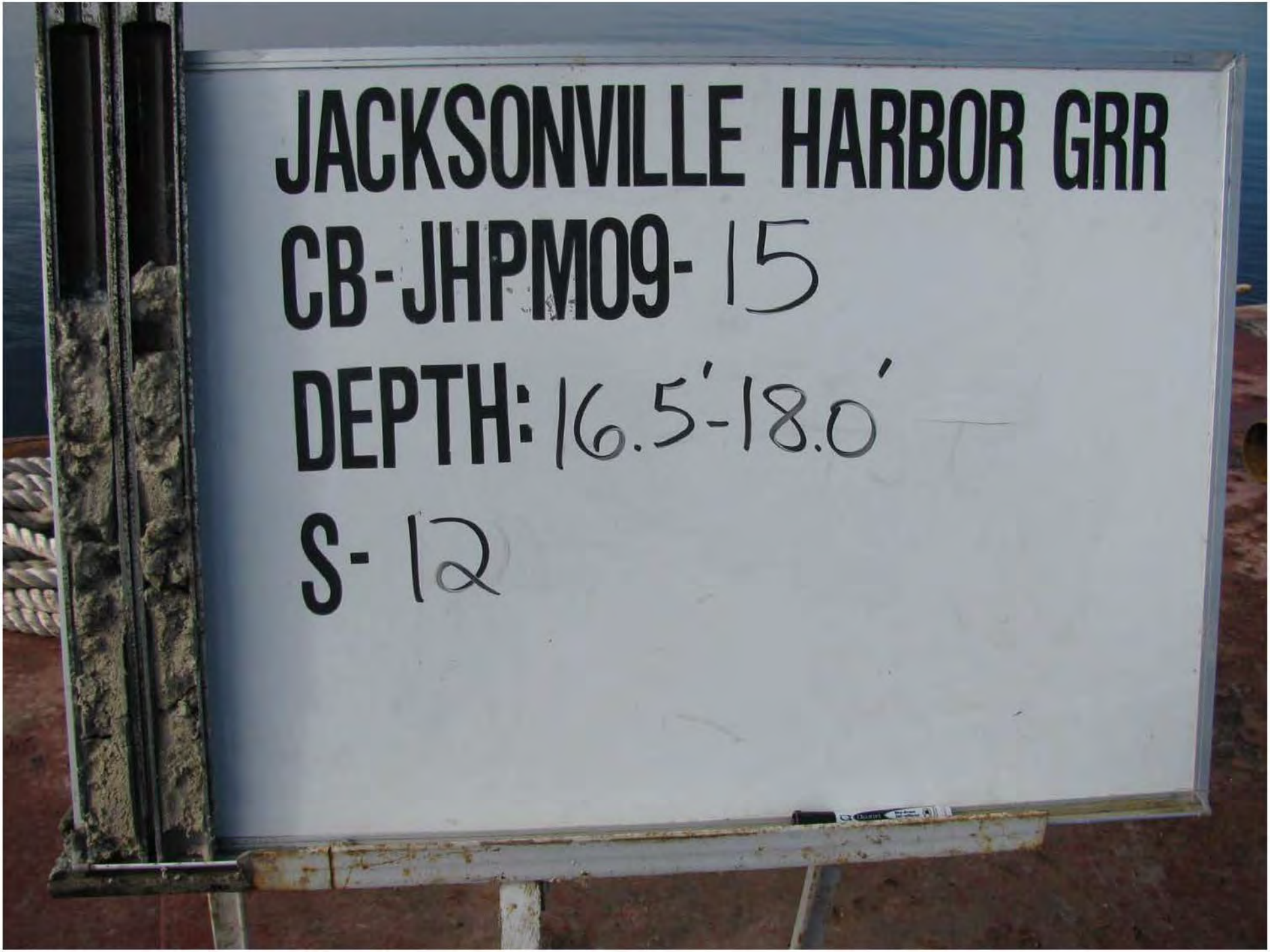

JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 9.0'-10.5'
S-7

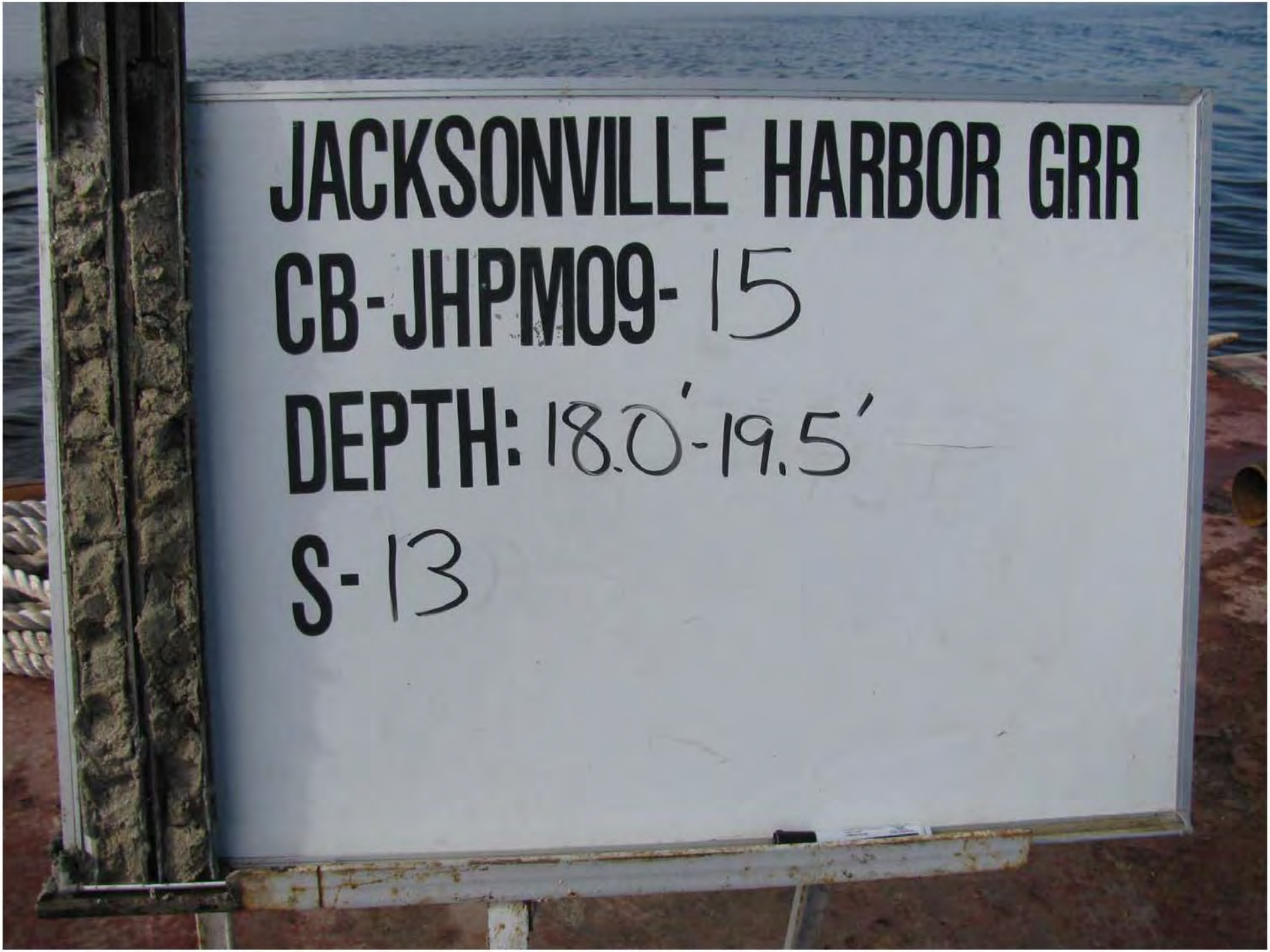

JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 10.5'-12.0'
S-8

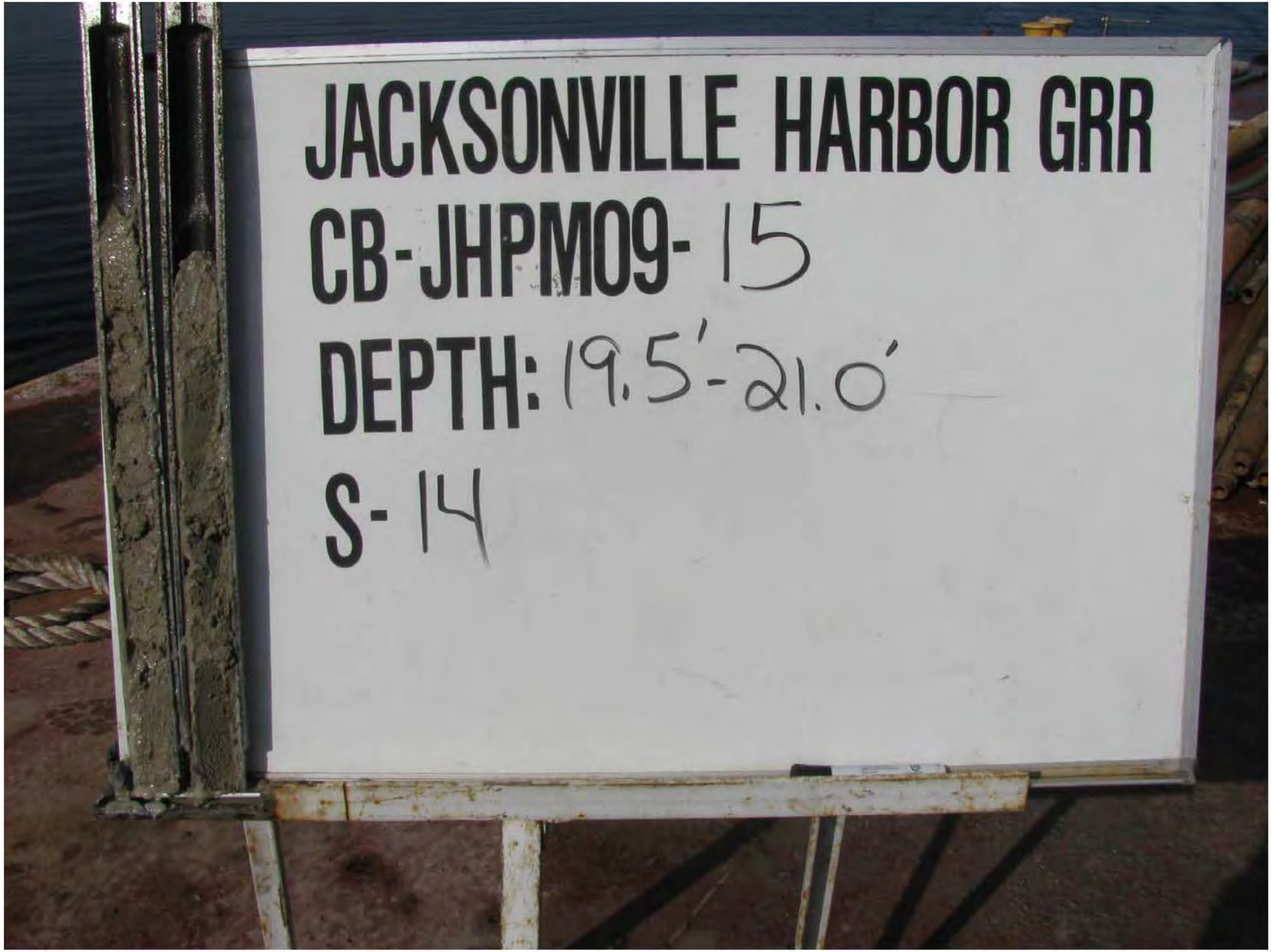

JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 12.0'-13.5'
S-9

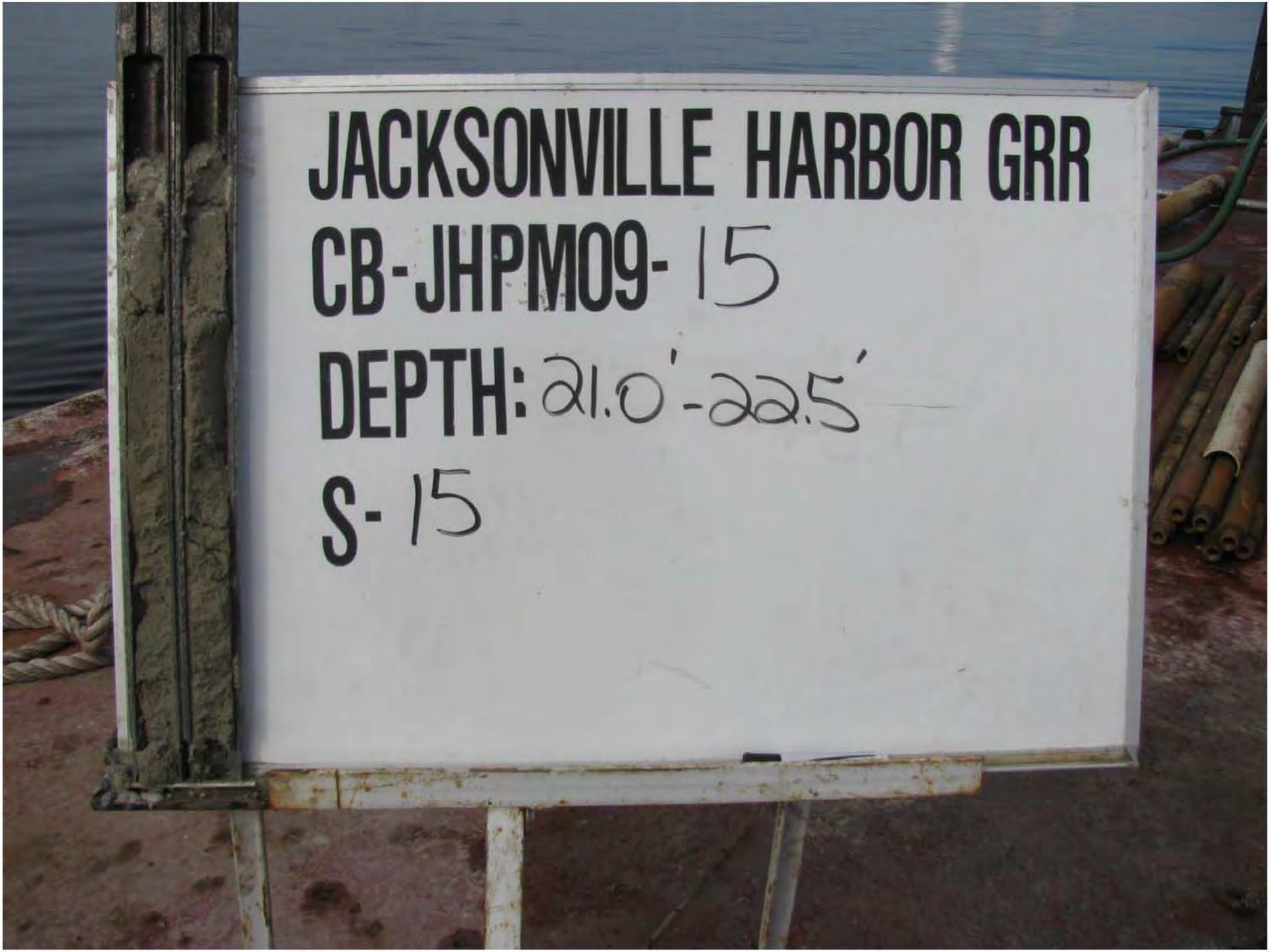

JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 13.5'-15.0'
S-10


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 15.0'-16.5'
S-11


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 16.5'-18.0'
S-12


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 18.0'-19.5'
S-13


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 19.5'-21.0'
S-14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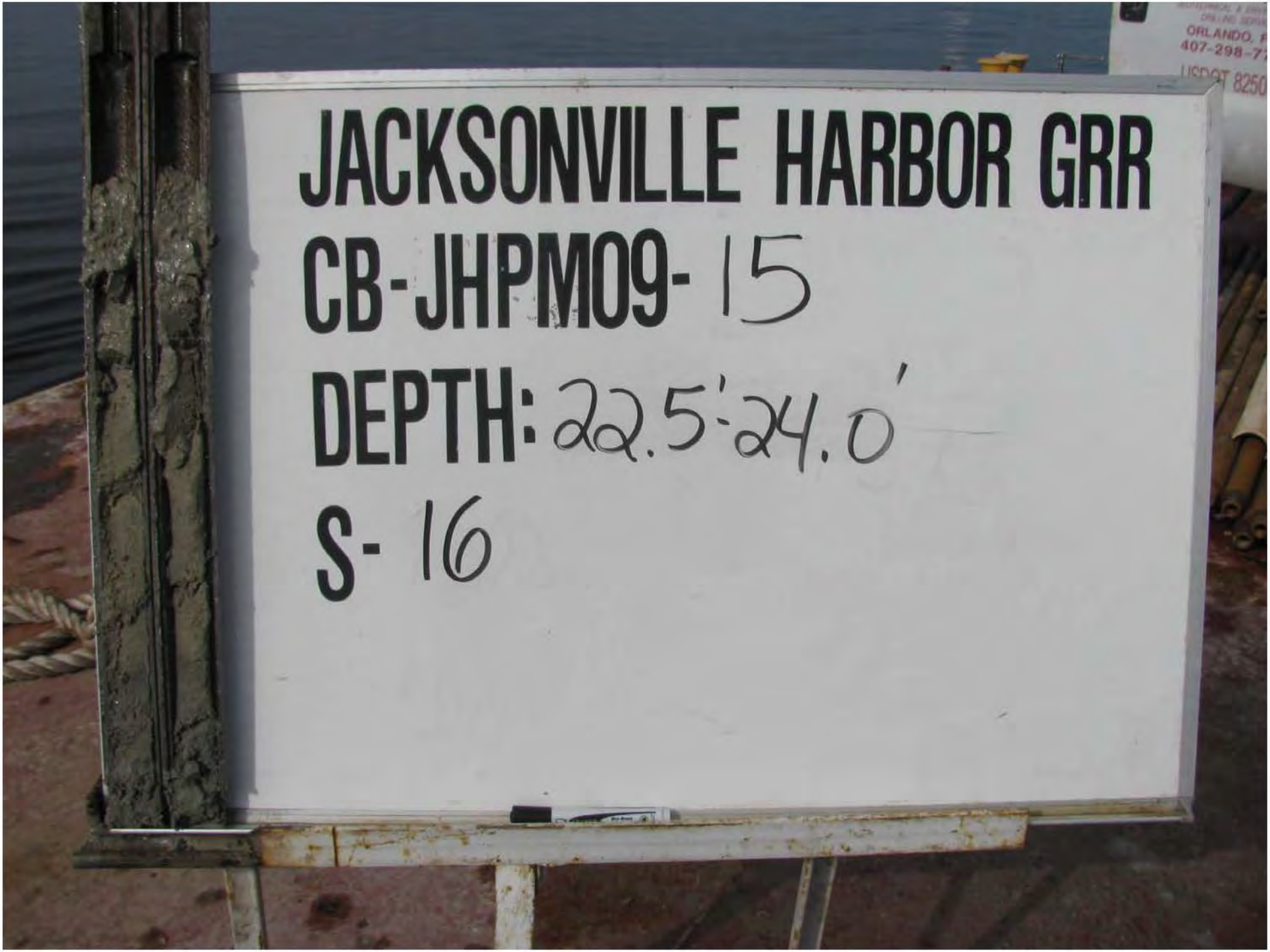
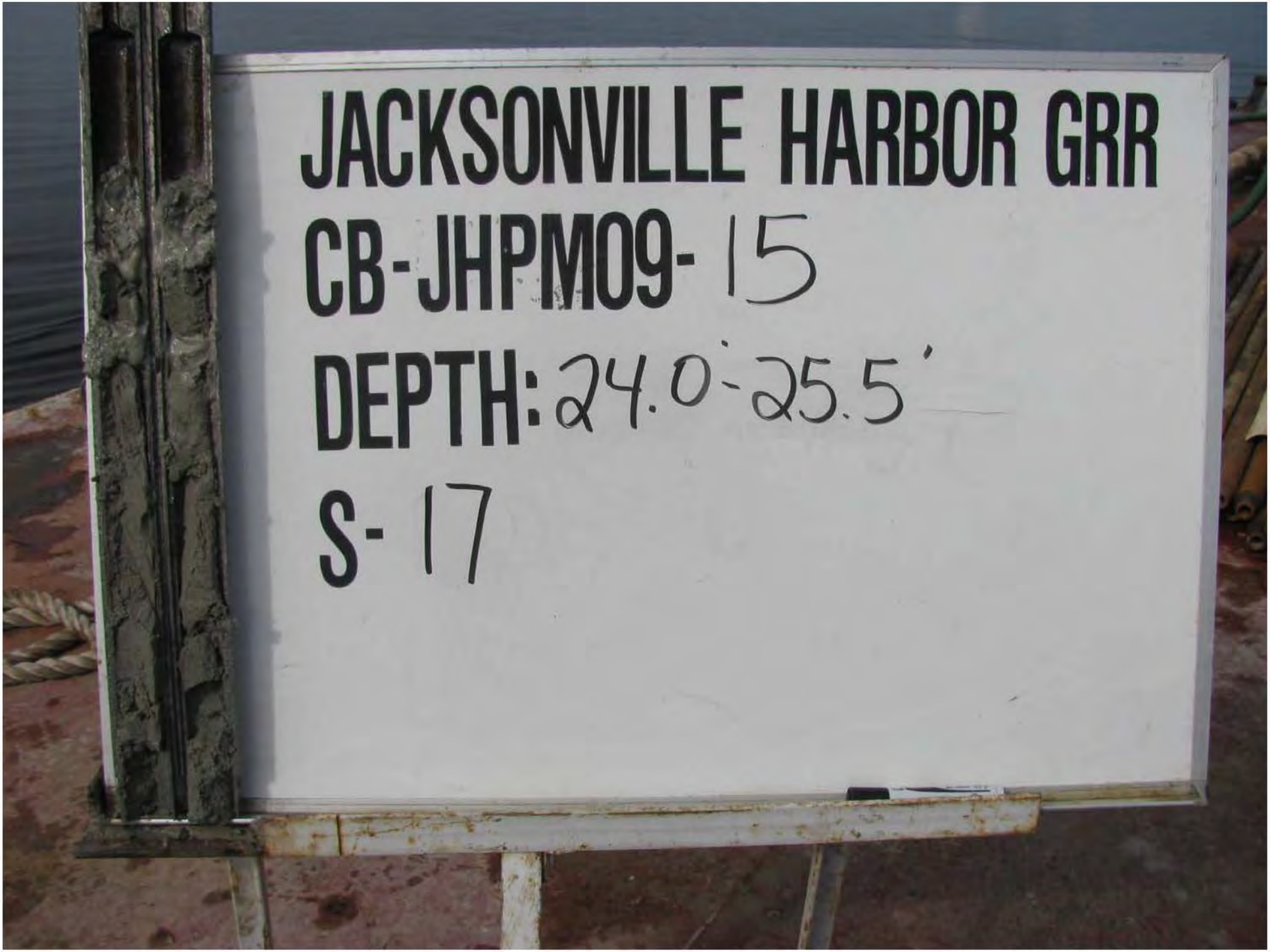
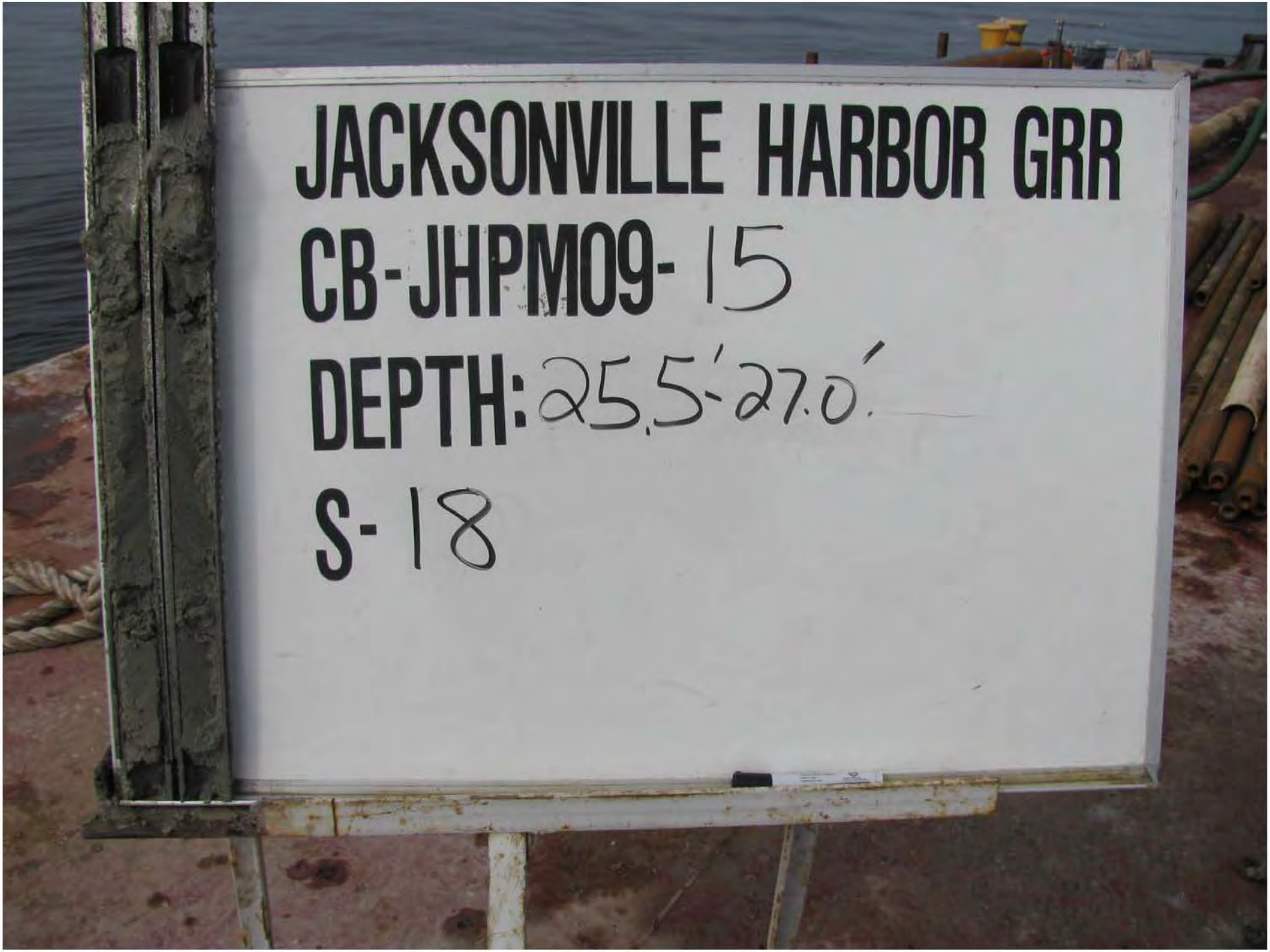
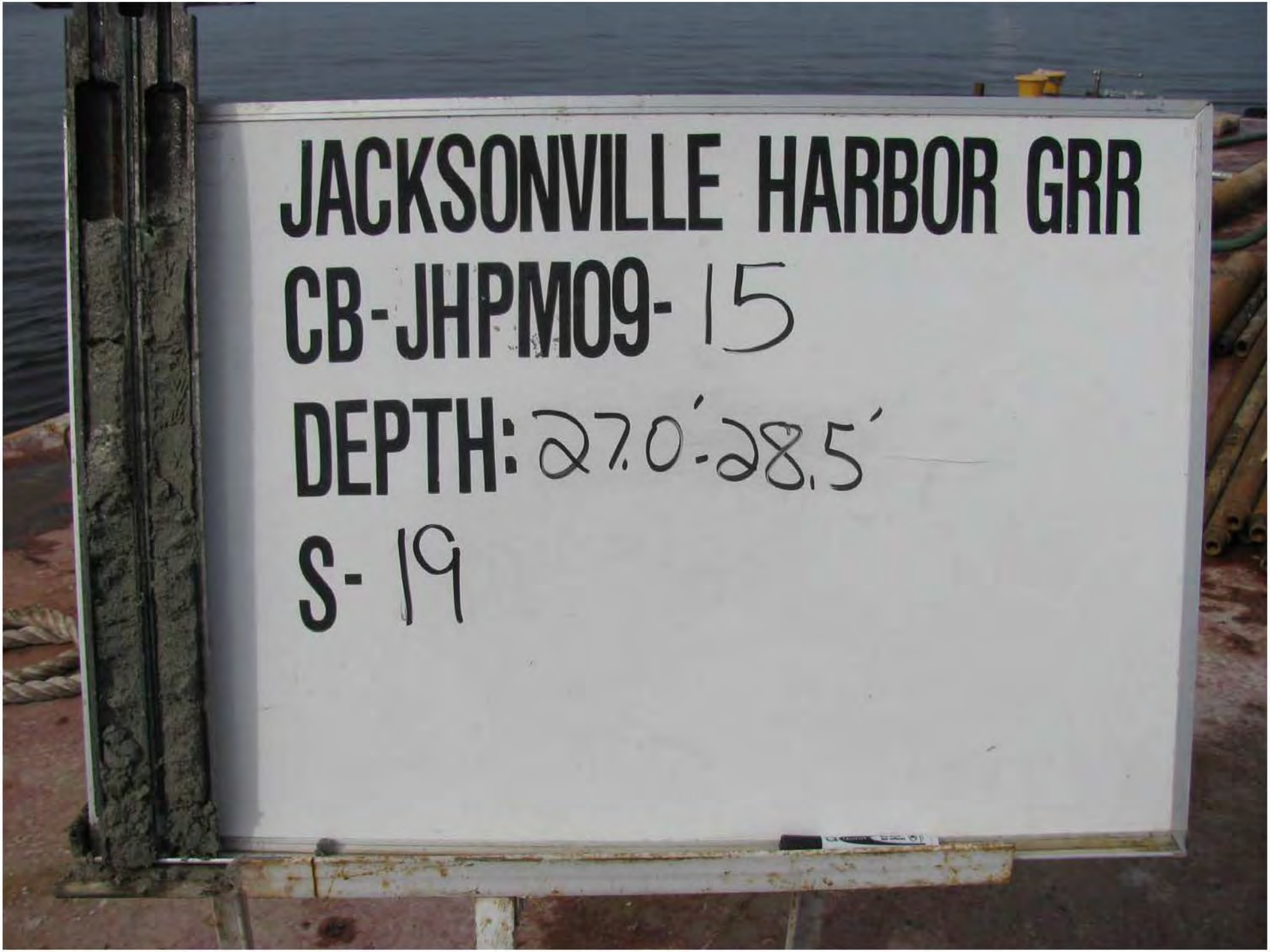
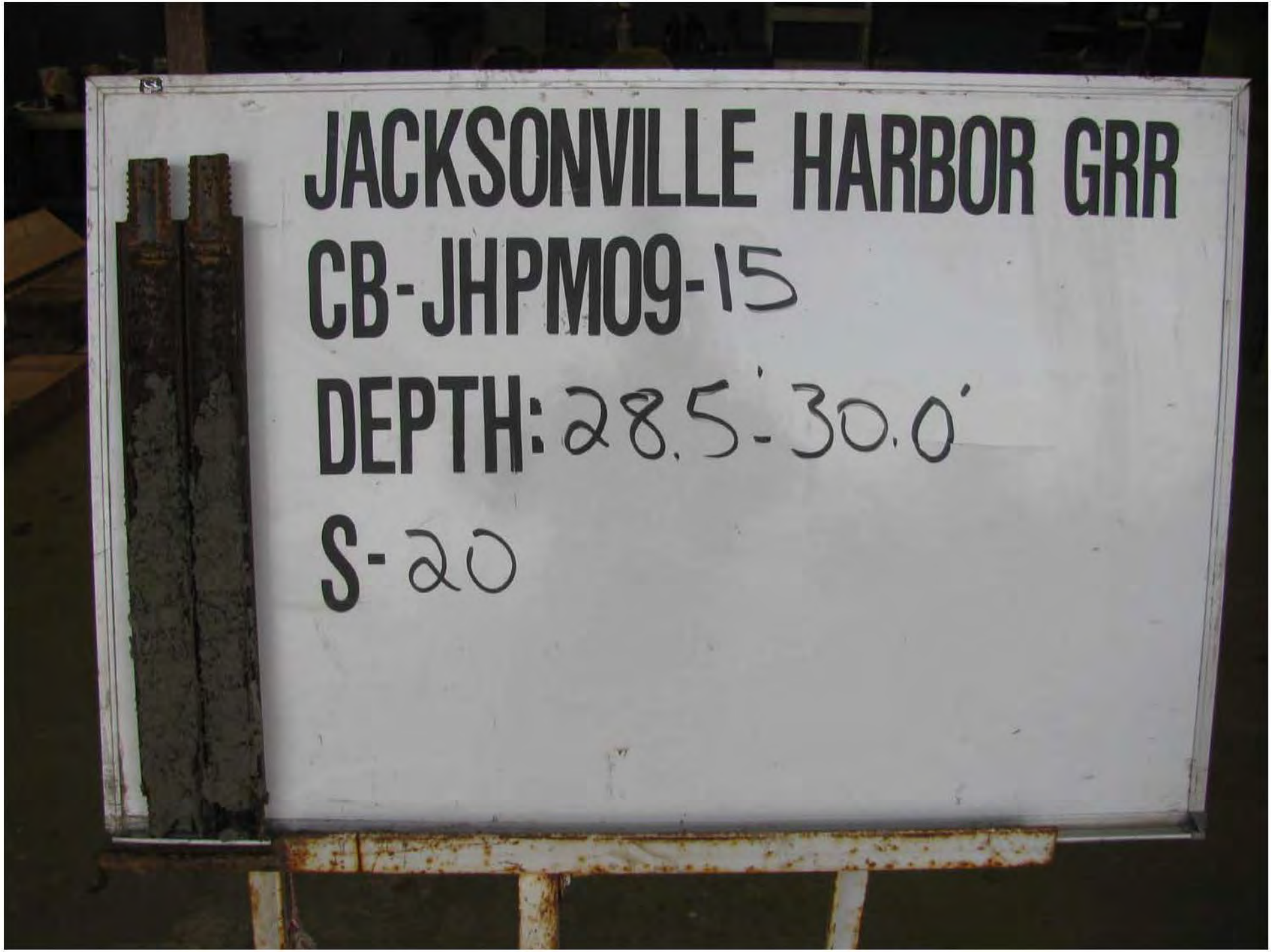
CB-JHPM09-15
DEPTH: 21.0'-22.5'
S-15

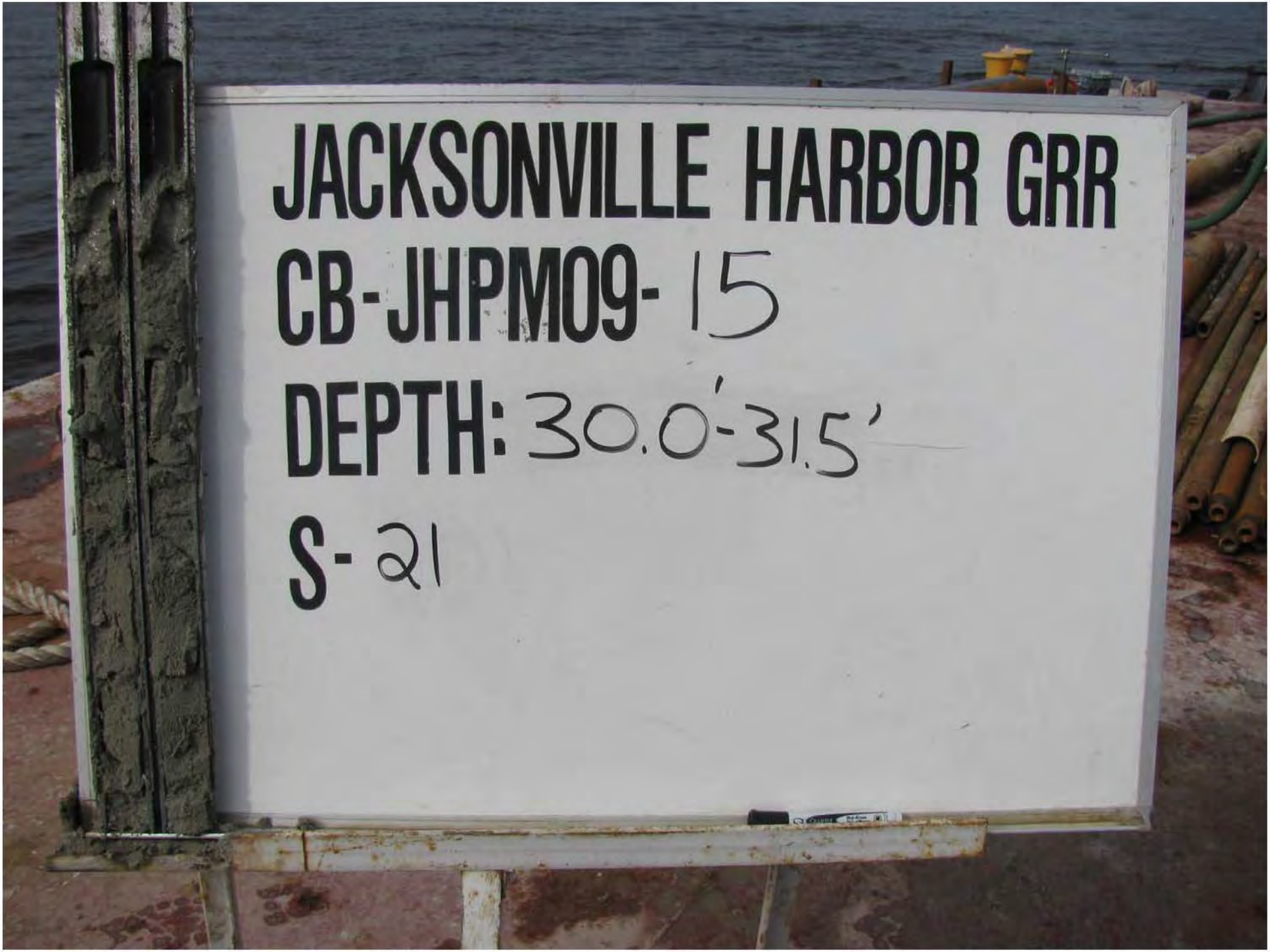

JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 22.5'-24.0'
S-16


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 24.0'-25.5'
S-17


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 25.5'-27.0'
S-18


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 27.0'-28.5'
S-19


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 28.5'-30.0'
S-20


JACKSONVILLE HARBOR GRR
CB-JHPM09-15
DEPTH: 30.0'-31.5'
S-21

TEST CORE BORING NUMBER
“CB-JHPM09-16”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-16

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-16
LOCATION COORDINATES	X = 498,983 Y = 2,202,272
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	21.4 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
☐ AUTO HAMMER ☒ MANUAL HAMMER	
12. TOTAL SAMPLES	DISTURBED: 12 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	0
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-18-10 COMPLETED: 01-18-10
16. ELEVATION TOP OF BORING	-42.9 Ft.
17. TOTAL RECOVERY FOR BORING	89 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-42.9	0.0						-42.9		
-44.4	1.5		SAND, poorly-graded, mostly angular to subangular fine to medium-grained sand-sized quartz, few angular to subangular shell up to 1/8", wet, 5Y 6/2 light olive gray (SP)	80	1		SPT Sampler -44.4	4 / 12 / 15	27
-45.4	2.5		SAND, poorly-graded with silt, mostly angular to subangular fine to medium-grained sand-sized quartz, little angular shell up to 1/4", wet, 5Y 6/2 light olive gray (SP-SM) At El. -44.9 Ft., 5Y 5/1 gray	100	2		SPT Sampler -45.6	9 / 44 / 50/0.2'	94+
							-45.9 Advanced Boring		
			LIMESTONE, sandy, fossiliferous, moderately hard, slightly weathered, fine grained, thick bedding, bedding orientation, moist, 2.5Y 7/3 pale yellow	40	3		SPT Sampler -46.9	10 / 50	
-52.3	9.4		Slightly Weathered; Slightly Weathered; At El. -49.3 Ft., non-fossiliferous, soft, slightly weathered, solid	83	RUN # 1	RQD 42	4 x 5-1/2" Diamond Impregnated Bit DT = 9 mins HP = 300 psi DFR = 10 % -52.3		
			SAND, silty, mostly angular to subangular fine to medium-grained sand-sized quartz, little silt, trace subrounded phosphate up to 1/8", moist, 5Y 7/2 light gray (SM)	100	4		SPT Sampler -53.8	3 / 3 / 5	8
			At El. -53.9 Ft., discontinue phosphate	100	5		SPT Sampler -55.3	12 / 18 / 28	46
				87	6		SPT Sampler -56.8	4 / 4 / 3	7
				93	7		SPT Sampler	5 / 7	

0 5 10 15

(Continued)

SAJ FORM 1836
JUN 02

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 2 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Jacksonville Harbor General Reevaluation Report (GRR)	State Plane, FLE (U.S. Ft.)	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 498,983 Y = 2,202,272	-42.9 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				93	7		-58.3 SPT Sampler	10	17
				100	8		SPT Sampler -59.8	4 4 21	25
			At El. -59.9 Ft., 5Y 5/2 olive gray	100	9		SPT Sampler -61.3	10 10 17	27
				93	10		SPT Sampler -62.8	6 7 10	17
-64.3	21.4			87	11		SPT Sampler -64.3	5 12 20	32

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. Set 54.5 ft. of 4" flush joint steel casing

4. Water depth recorded at start of drilling operations and referenced to the tidal station at the Blount Island Terminal.

5. Water depth of -45.1 ft. recorded at 08:21 AM on 1/18/2010. Tide gage reading of +2.2 ft. mllw

6. Compressive Strength Test of Rock Core At Elevation -48.4' to -49.1' = 1201 PSI.

7. Compressive Strength Test of Rock Core At Elevation -49.7' to -50.1' = 135 PSI.

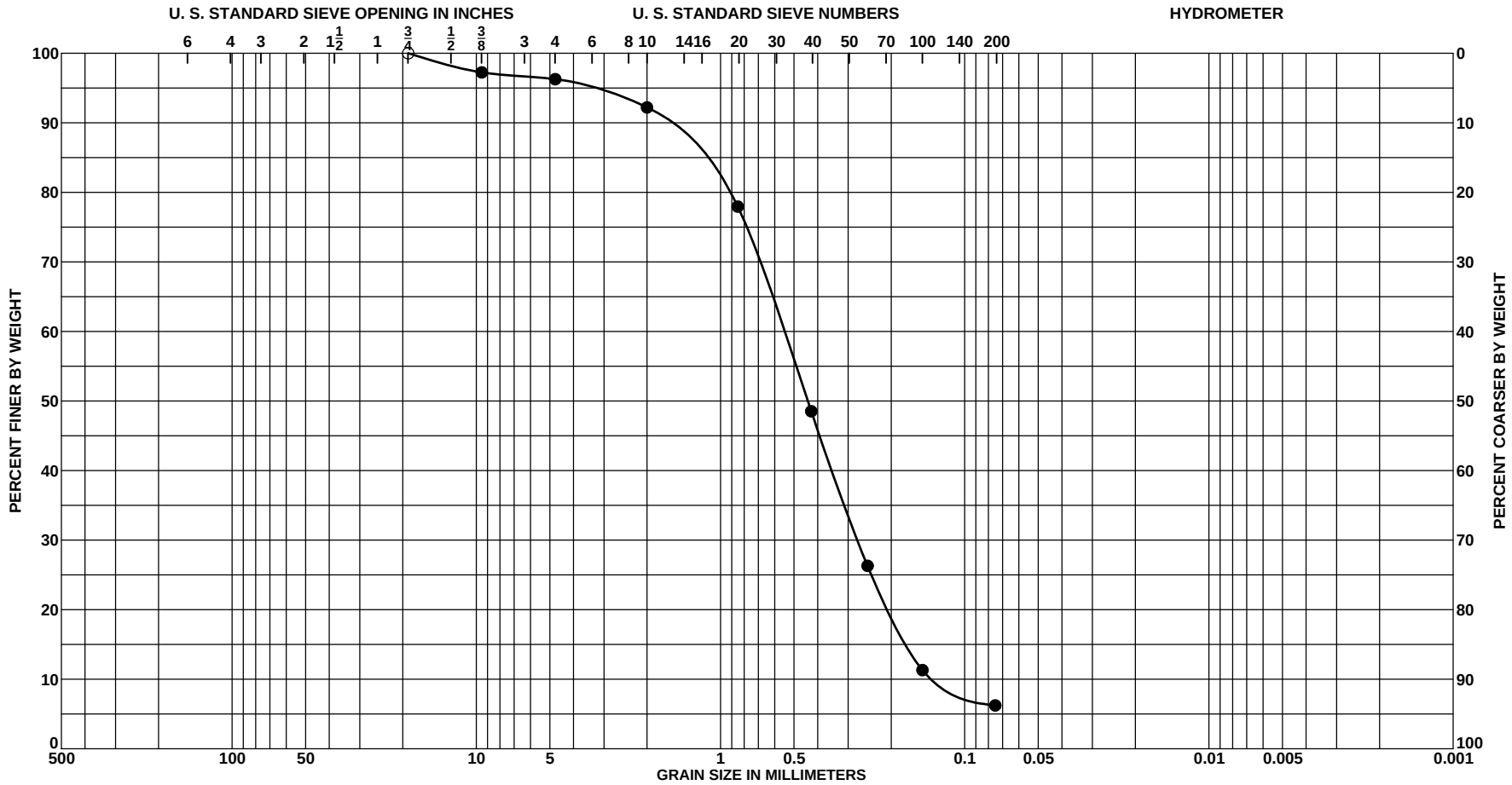
8. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
2	1.5/2.7	SP-SM*

*Lab visual classification based on gradation curve. No Atterberg limits.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.



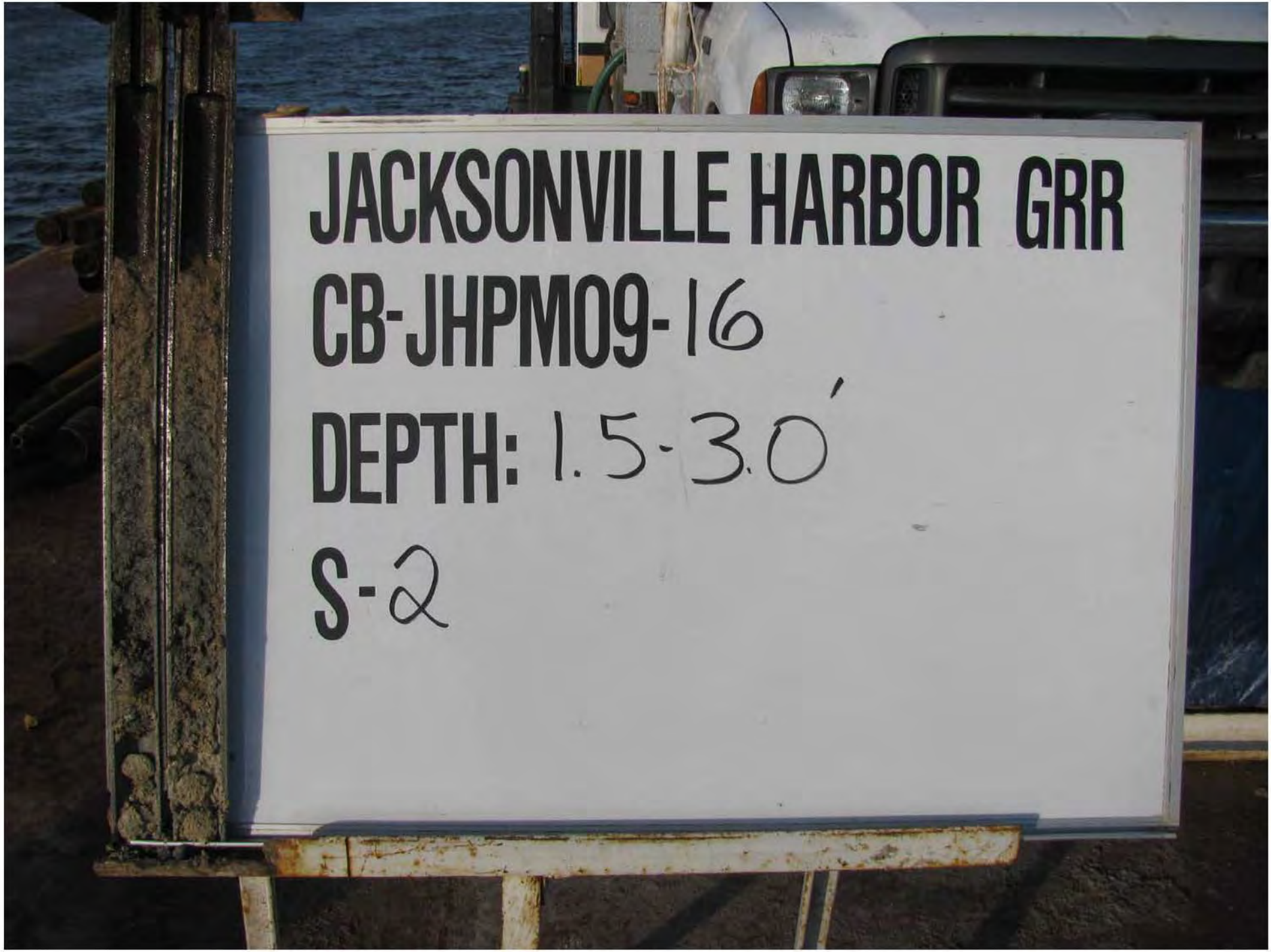
Sample No.	Depth	Classification	Munsell	CO_3 %	G_S	Org %	w_n	LL	PL	PI
● 2	1.5 to 2.7 Ft.	, light olive gray (SP-SM)	5Y 6/2	20 (est)						

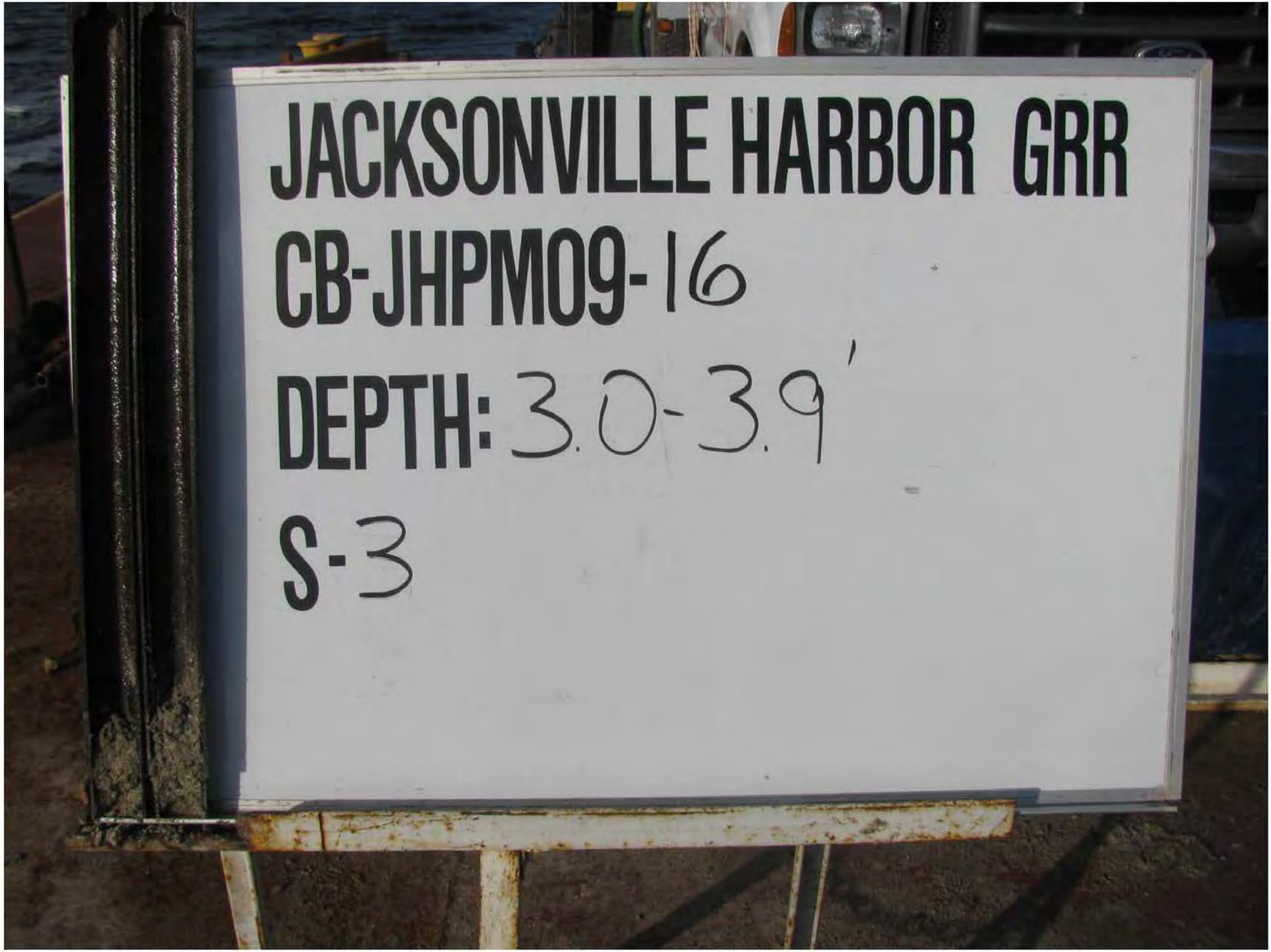
PROJECT	Jacksonville Harbor General Reeval. (GRR)
	ST. JOHN'S RIVER CHANNEL
BORING NO.	CB-JHPM09-16
BORING ELEV.	-42.9 Ft., MLLW
DATE	3/15/2010

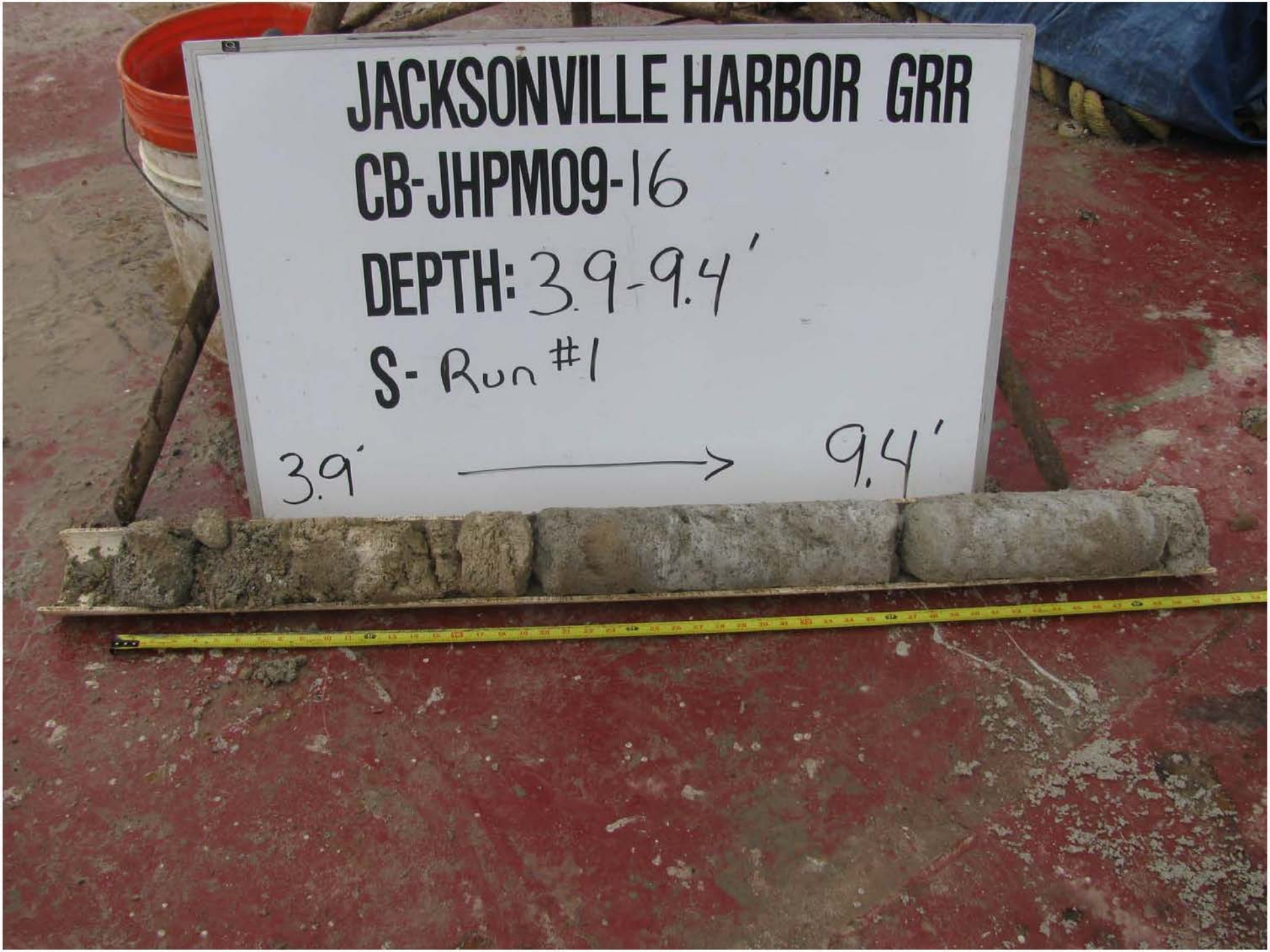
GRADATION CURVES

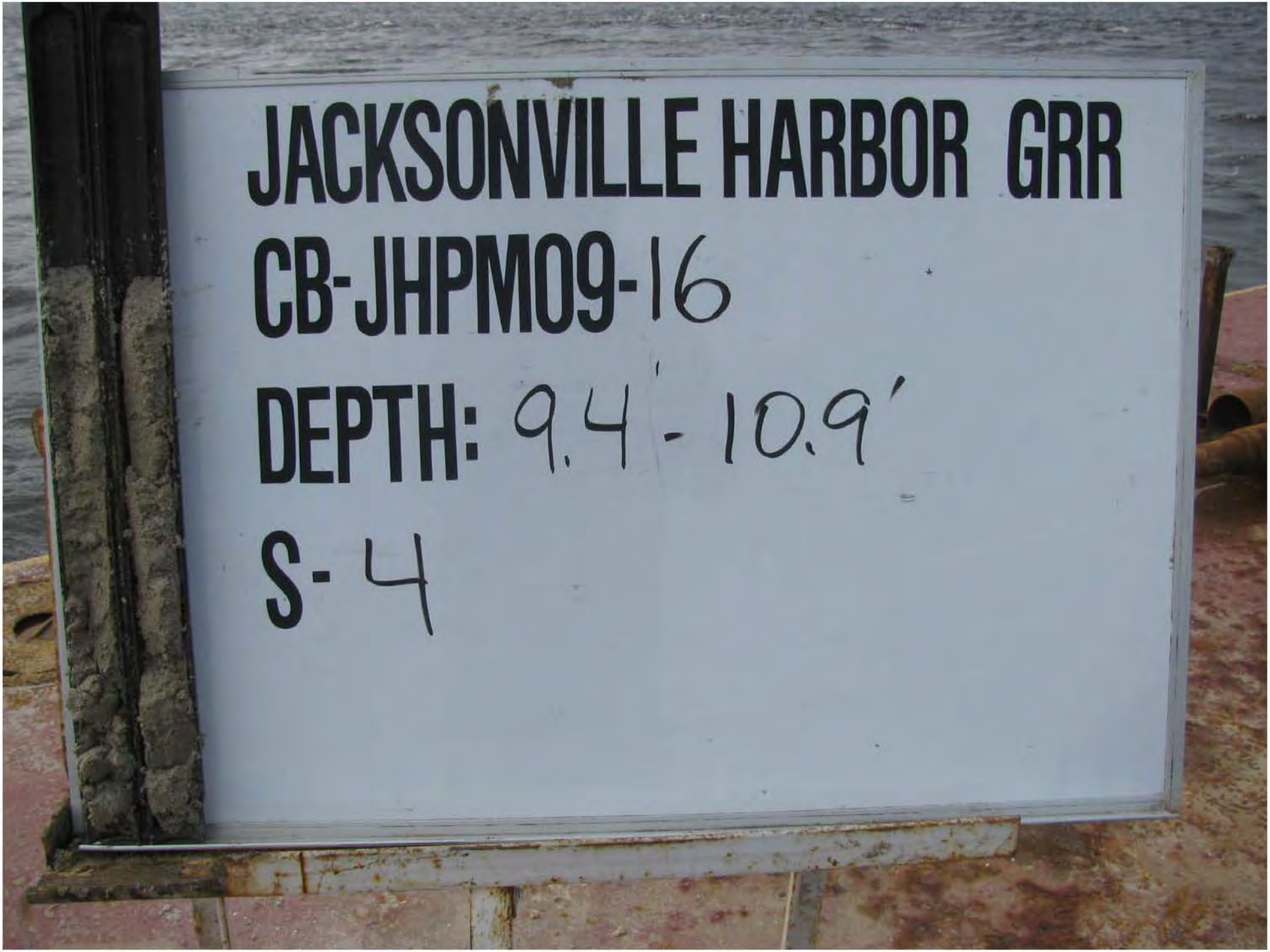
SAJ FORM 2087
JUN 02

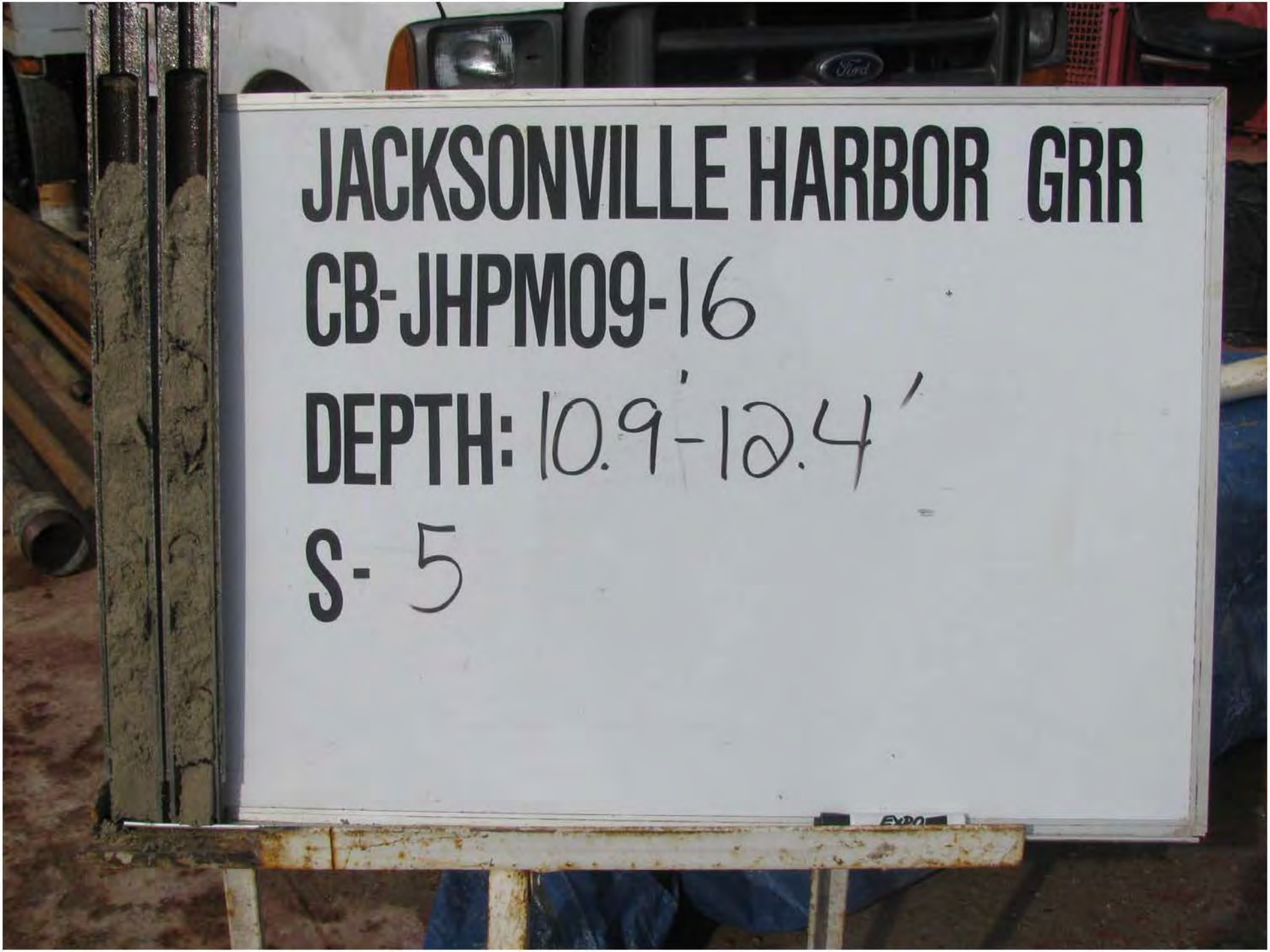
JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 0.0'-1.5'
S-1

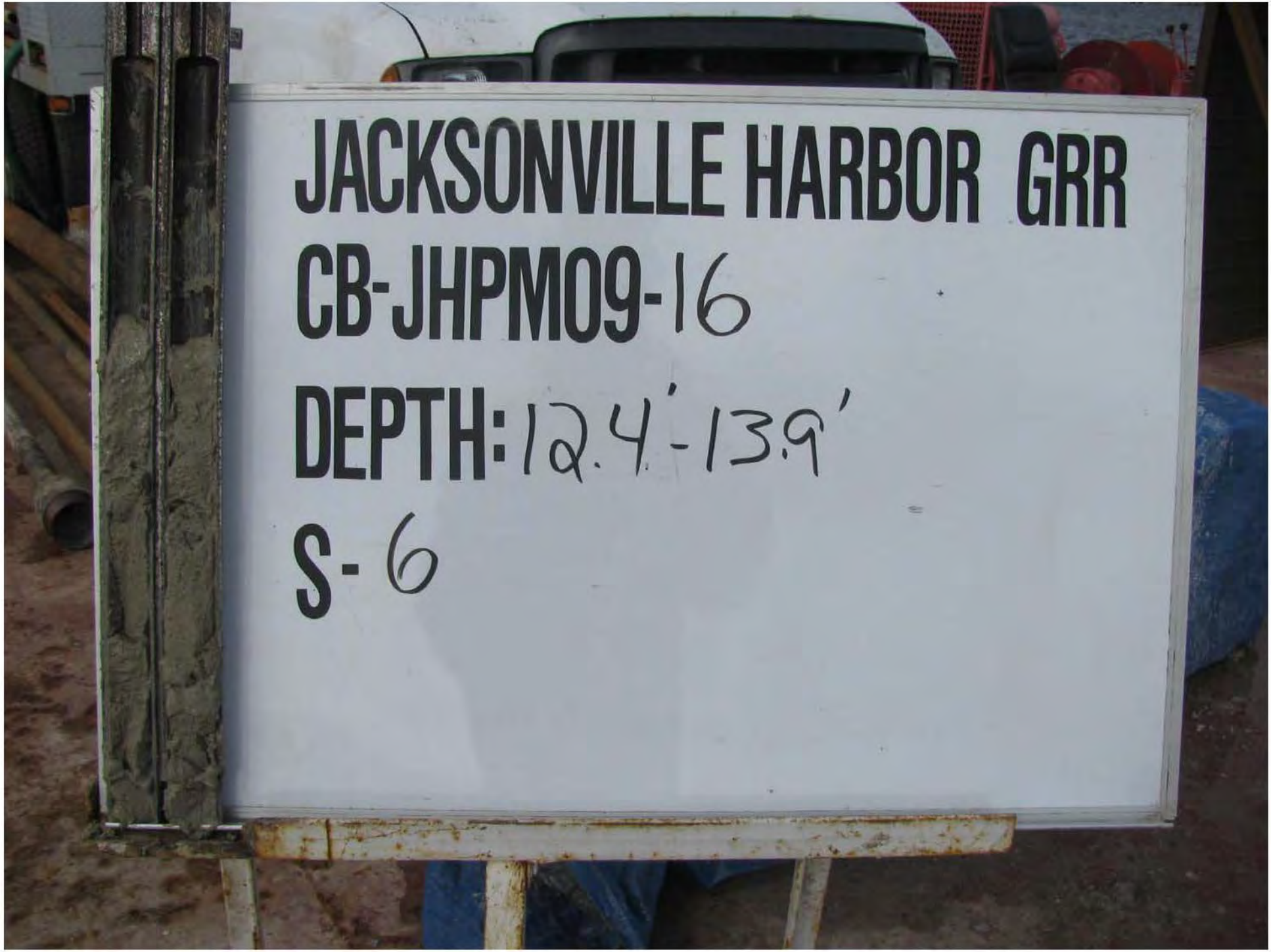

JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 1.5-3.0'
S-2

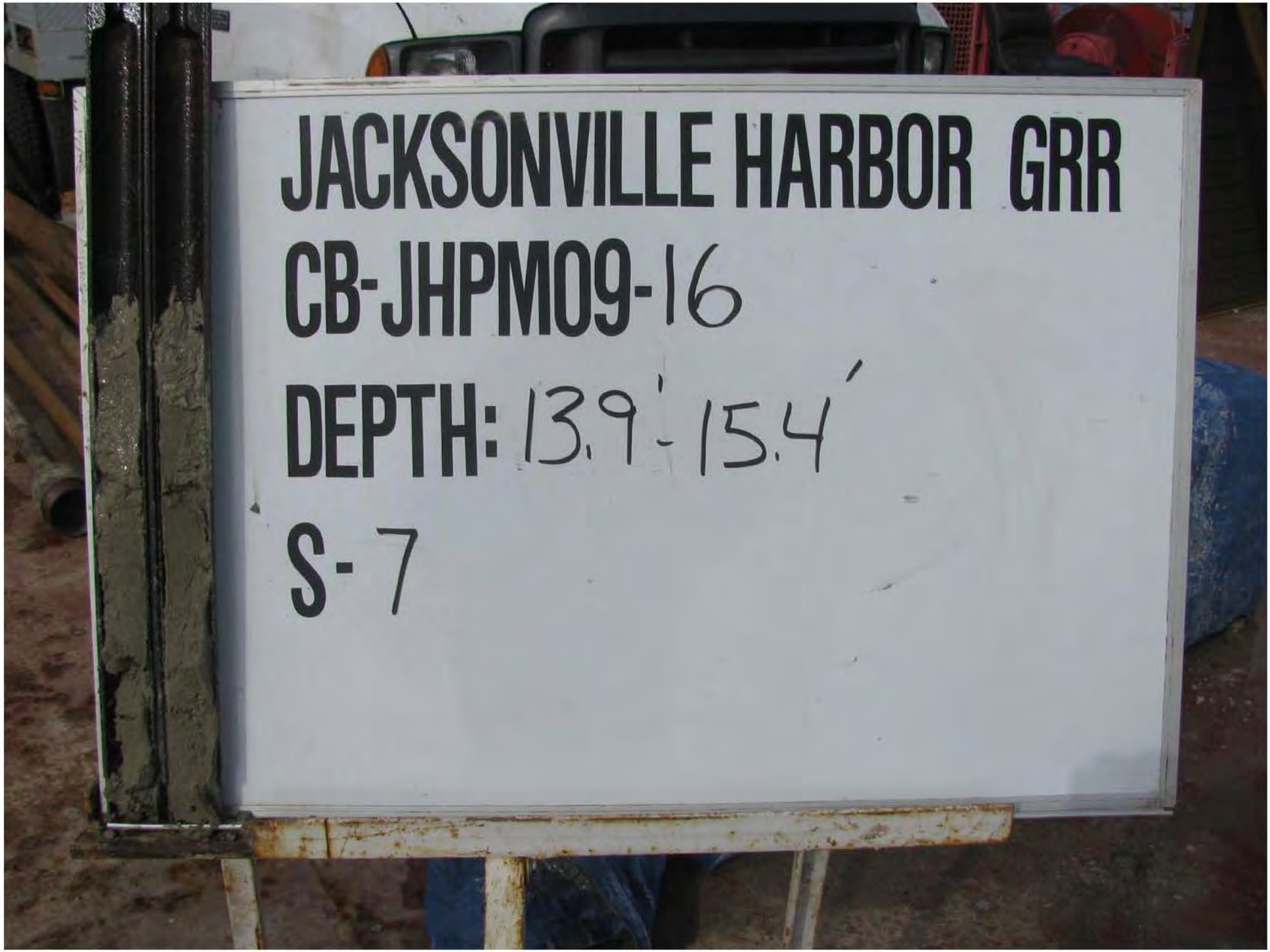

JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 3.0-3.9'
S-3

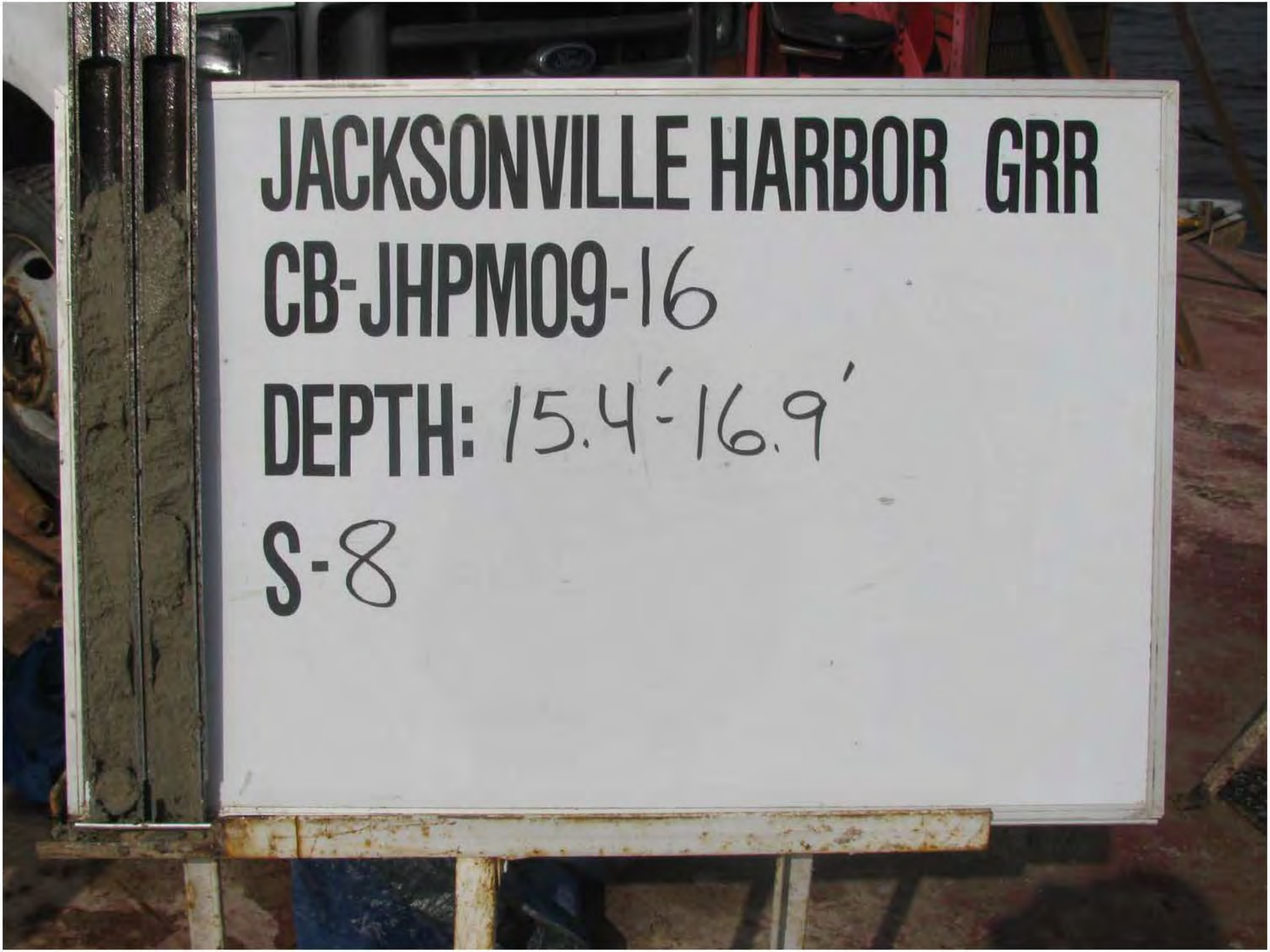

JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 3.9-9.4'
S- Run #1
3.9'
9.4'

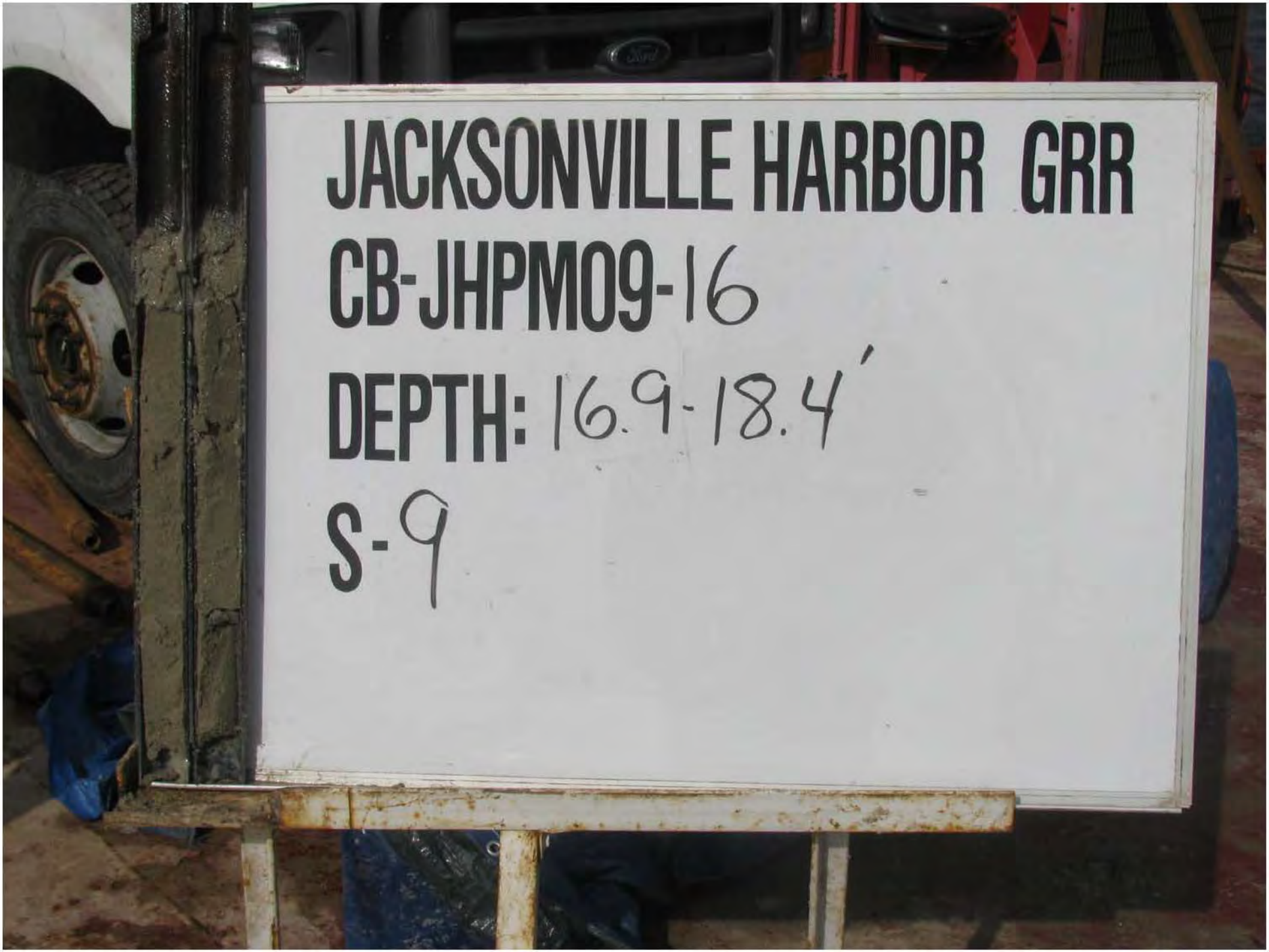

JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 9.4' - 10.9'
S-4

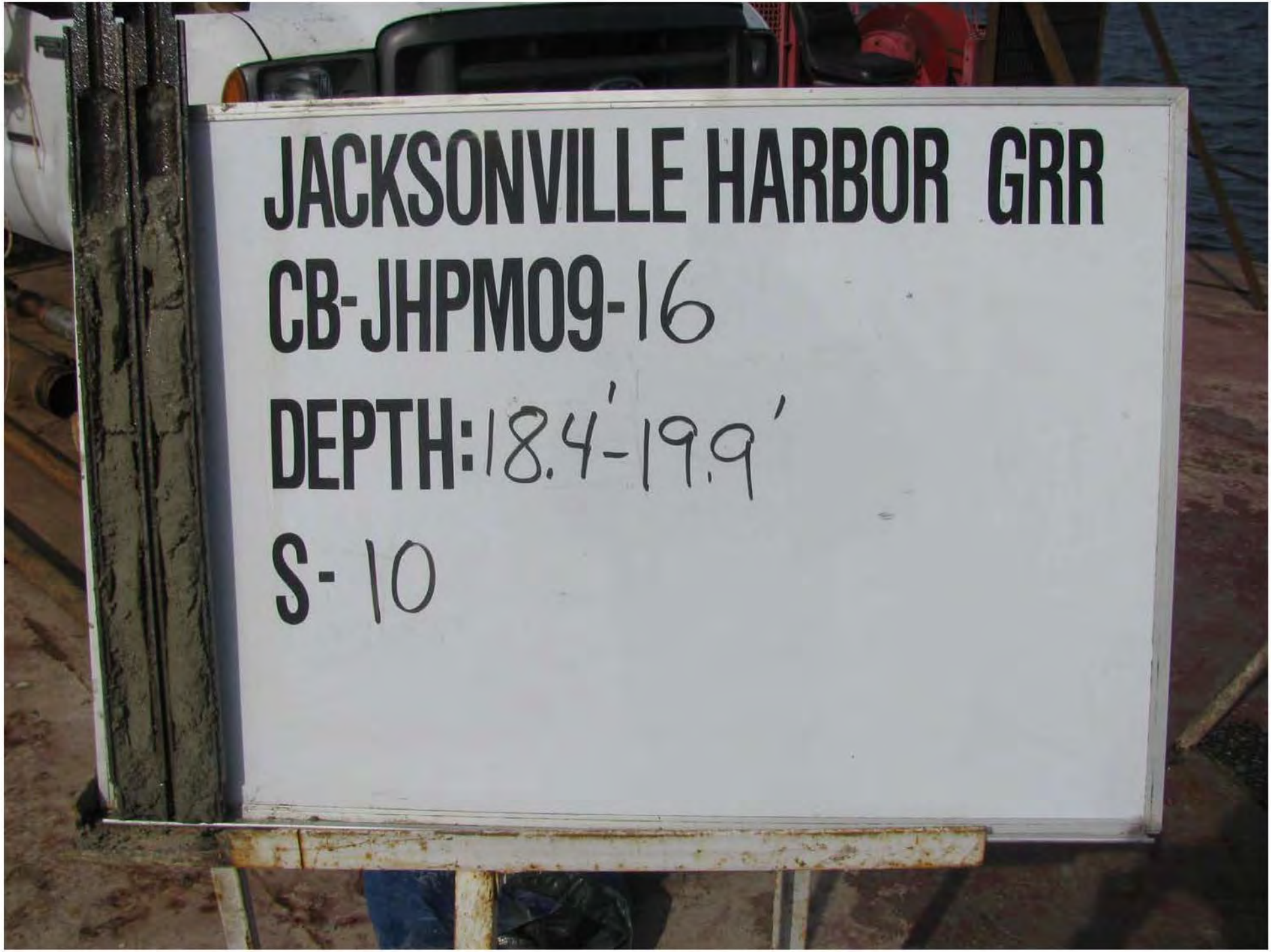

JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 10.9'-12.4'
S- 5

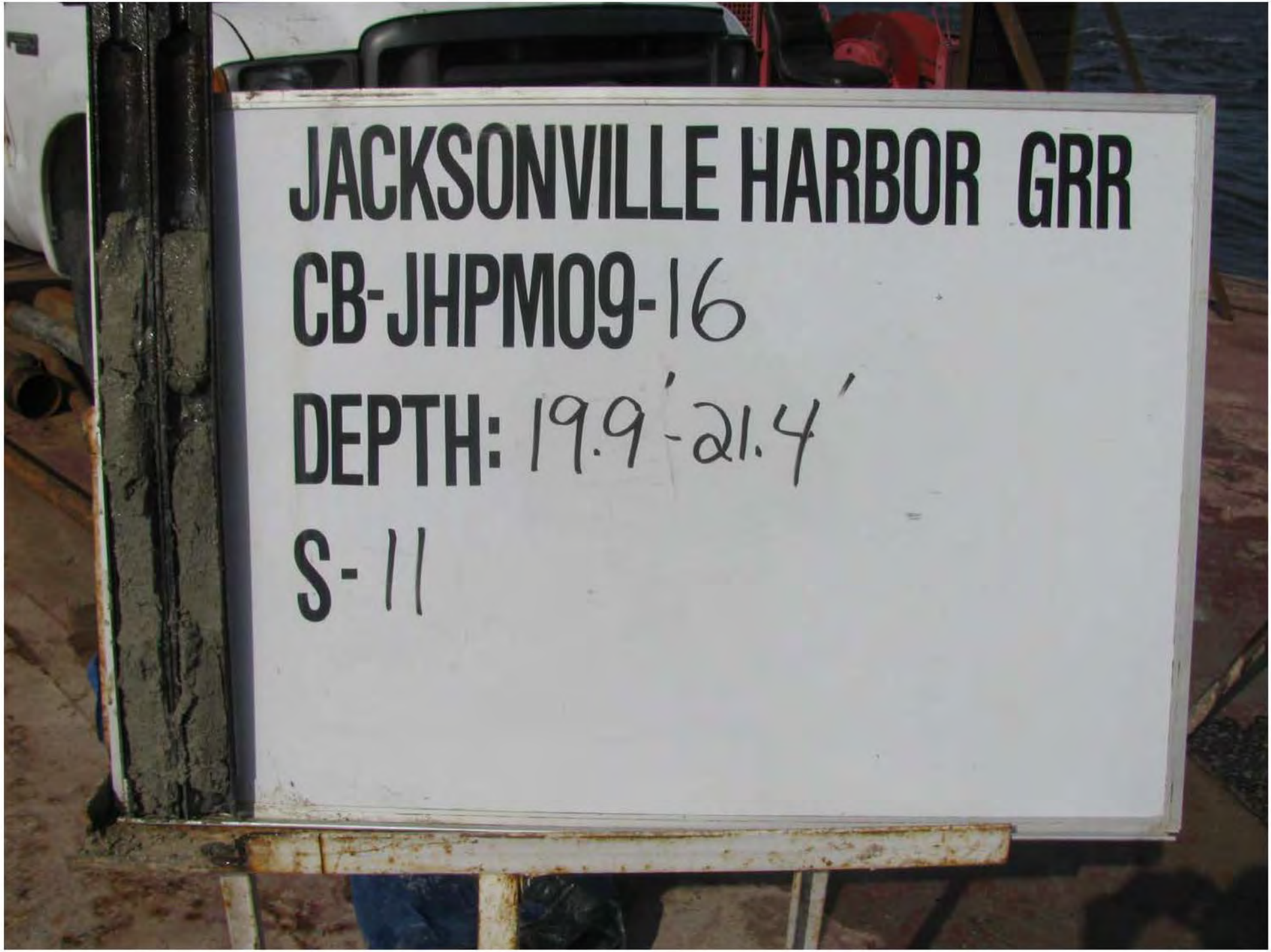

JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 12.4'-13.9'
S-6


JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 13.9'-15.4'
S-7


JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 15.4'-16.9'
S-8


JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 16.9-18.4'
S-9


JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 18.4'-19.9'
S-10


JACKSONVILLE HARBOR GRR
CB-JHPM09-16
DEPTH: 19.9'-21.4'
S-11

TEST CORE BORING NUMBER
“CB-JHPM09-17”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-17

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-17
LOCATION COORDINATES	X = 500,552 Y = 2,201,768
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	21.5 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 12 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	0
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-18-10 COMPLETED: 01-18-10
16. ELEVATION TOP OF BORING	-44.4 Ft.
17. TOTAL RECOVERY FOR BORING	82 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-44.4	0.0						-44.4		
-45.9	1.5		SAND, poorly-graded, mostly angular to subangular medium to coarse-grained sand-sized quartz, few angular to subangular shell up to 1/4", wet, 5Y 5/2 olive gray (SP)	67	1		SPT Sampler -45.9	4 2 4	6
-50.4	6.0	Slightly Weathered	LIMESTONE, sandy, sparsely fossiliferous, moderately hard, slightly weathered, fine grained, thick bedding, bedding orientation, solid, moist, 5Y 5/2 olive gray	60	RUN # 1	RQD 26	4 x 5-1/2" Diamond Impregnated Bit DT = 3 mins HP = 300 psi DFR = 25 % -50.9		
			SAND, silty, mostly angular to subangular fine-grained sand-sized quartz, little silt, few subrounded phosphate up to 1/8", moist, 5Y 6/2 light olive gray (SM)	87	2		SPT Sampler -52.4	8 10 11	21
				87	3		SPT Sampler -53.9	7 13 17	30
				80	4		SPT Sampler -55.4	4 5 11	16
				100	5		SPT Sampler -56.9	5 8 11	19
			At El. -56.9 Ft., discontinue phosphate	100	6		SPT Sampler -58.4	3 4 6	10
				87	7		SPT Sampler	6 10	

0 5 10 15

(Continued)

SAJ FORM 1836
JUN 02

Boring Designation CB-JHPM09-17

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 2 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Jacksonville Harbor General Reevaluation Report (GRR)	State Plane, FLE (U.S. Ft.)	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 500,552 Y = 2,201,768	-44.4 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				87	7		-59.9 SPT Sampler	18	28
				100	8		SPT Sampler	4 / 9 / 31	40
-61.4	17.0		At El. -60.9 Ft., moderate cementation				-61.4		
			SILT, inorganic-H, low plasticity, hard, few angular to subangular fine-grained sand-sized quartz, moist, 5Y 6/2 light olive gray (MH)	100	9		-61.8 SPT Sampler	50/0.4'	
							Advanced Boring -62.9		
				89	10		SPT Sampler -63.8	14 / 50/0.4'	
							-64.4 Advanced Boring		
			At El. -64.4 Ft., discontinue fine-grained sand-sized quartz	100	11		SPT Sampler	12 / 14 / 18	32
-65.9	21.5						-65.9		

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. Set 55.5 ft. of 6" flush joint steel casing

4. Water depth recorded at start of drilling operations and referenced to the tidal station at Sister's Creek.

5. Water depth of -47.5 ft. recorded at 12:04 PM on 1/18/2010. Tide gage reading of +3.1 ft. mllw

6. Compressive Strength Test of Rock Core At Elevation -46.4' to -47.1' = 414 PSI.

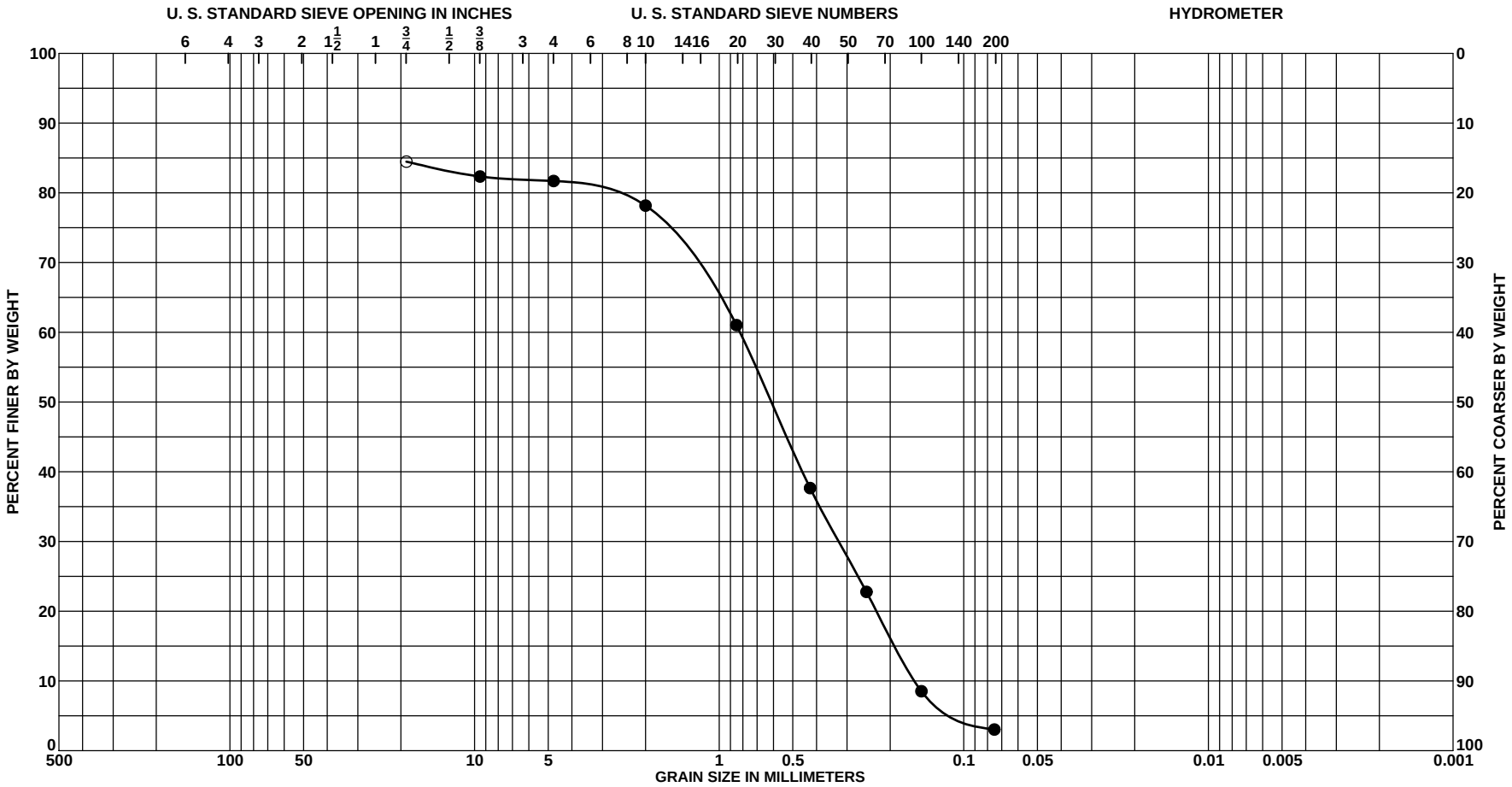
7. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	0.0/1.5	SP*

*Lab visual classification based on gradation curve. No Atterberg limits.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

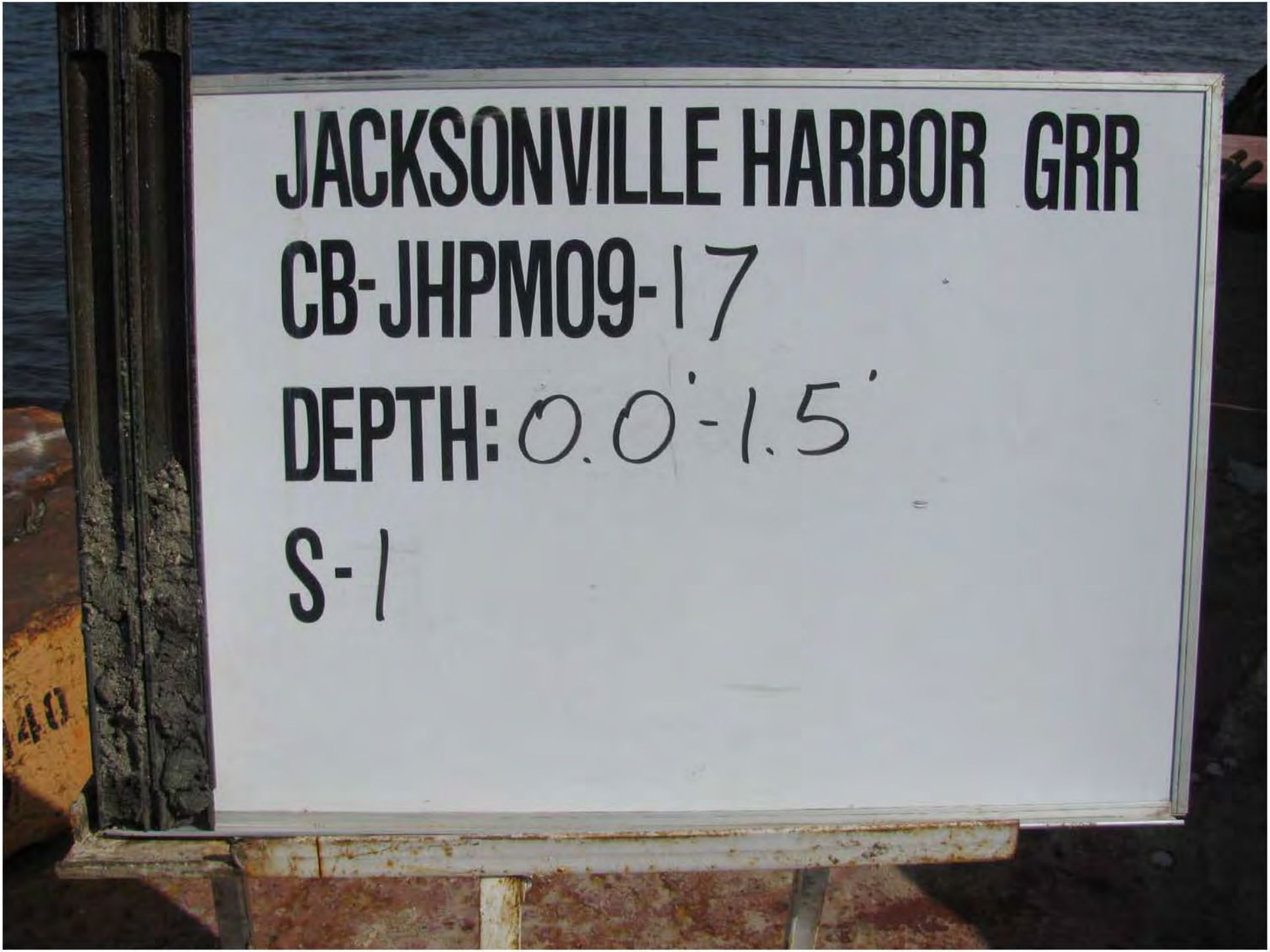


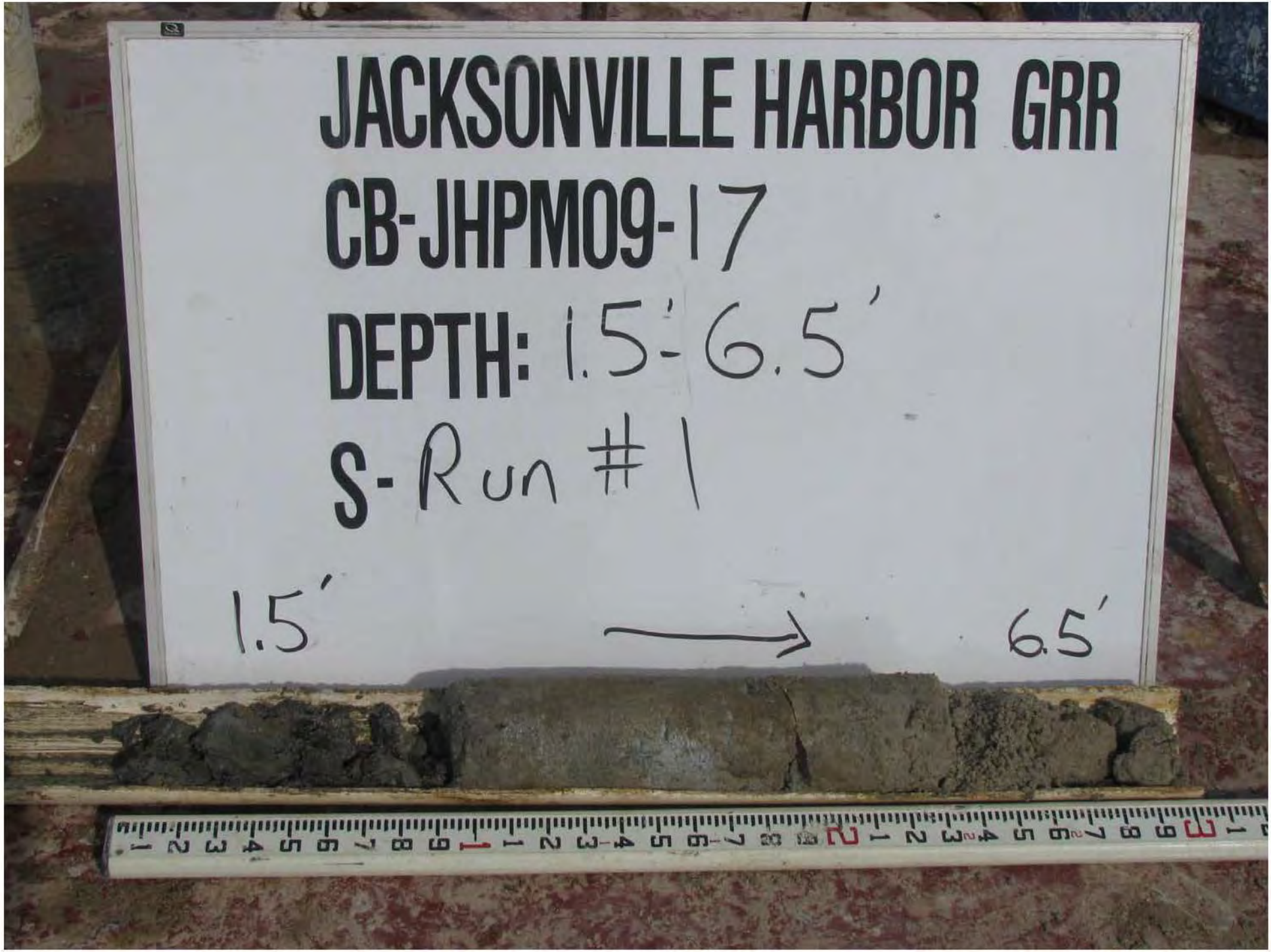
Sample No.	Depth	Classification	Munsell	CO_3 %	G_S	Org %	w_n	LL	PL	PI
● 1	0.0 to 1.5 Ft.	SAND, poorly-graded, olive gray (SP)	5Y 5/2	15 (est)						

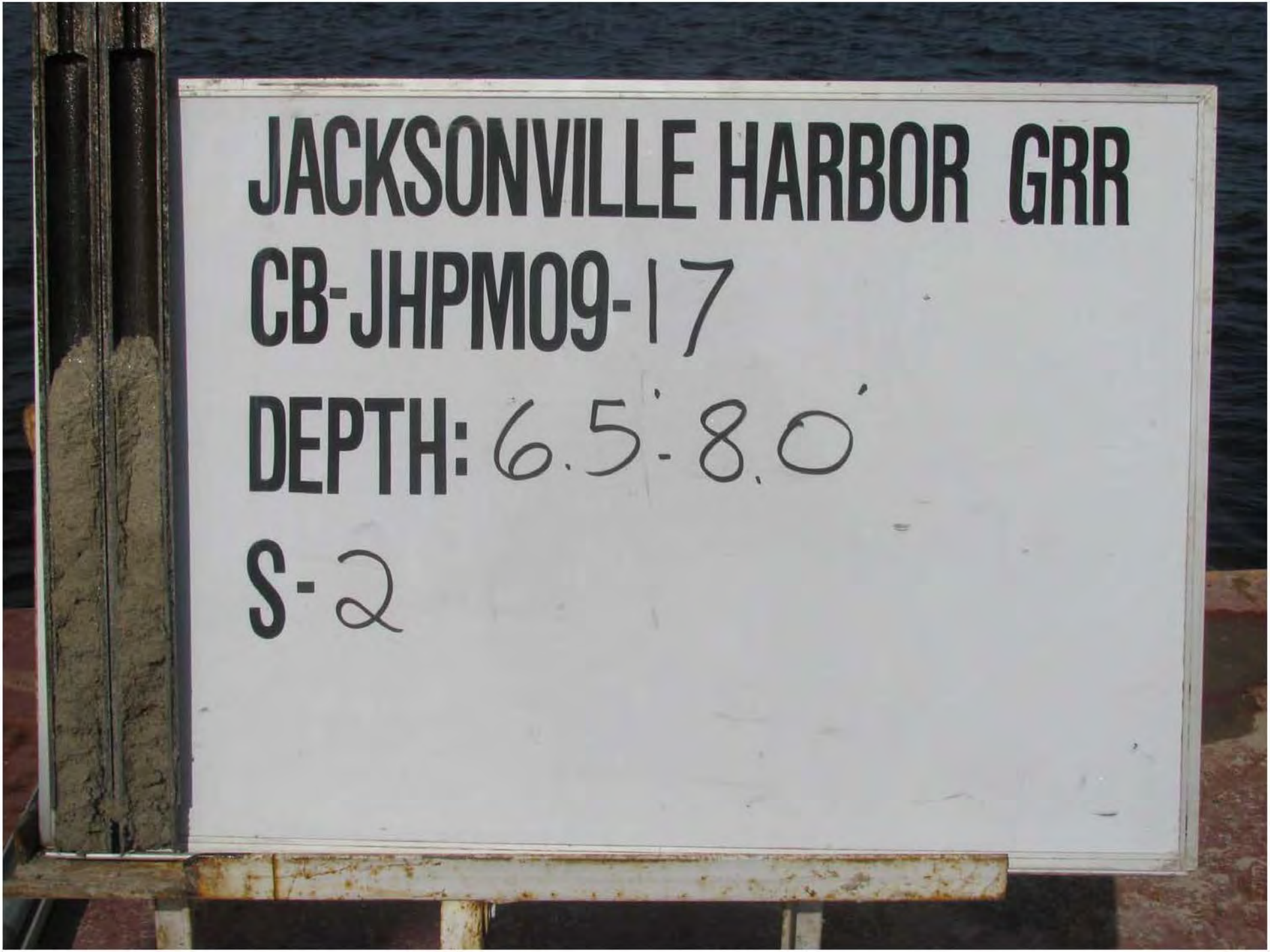
PROJECT	Jacksonville Harbor General Reeval. (GRR)
	ST. JOHN'S RIVER CHANNEL
BORING NO.	CB-JHPM09-17
BORING ELEV.	-44.4 Ft., MLLW
DATE	3/15/2010

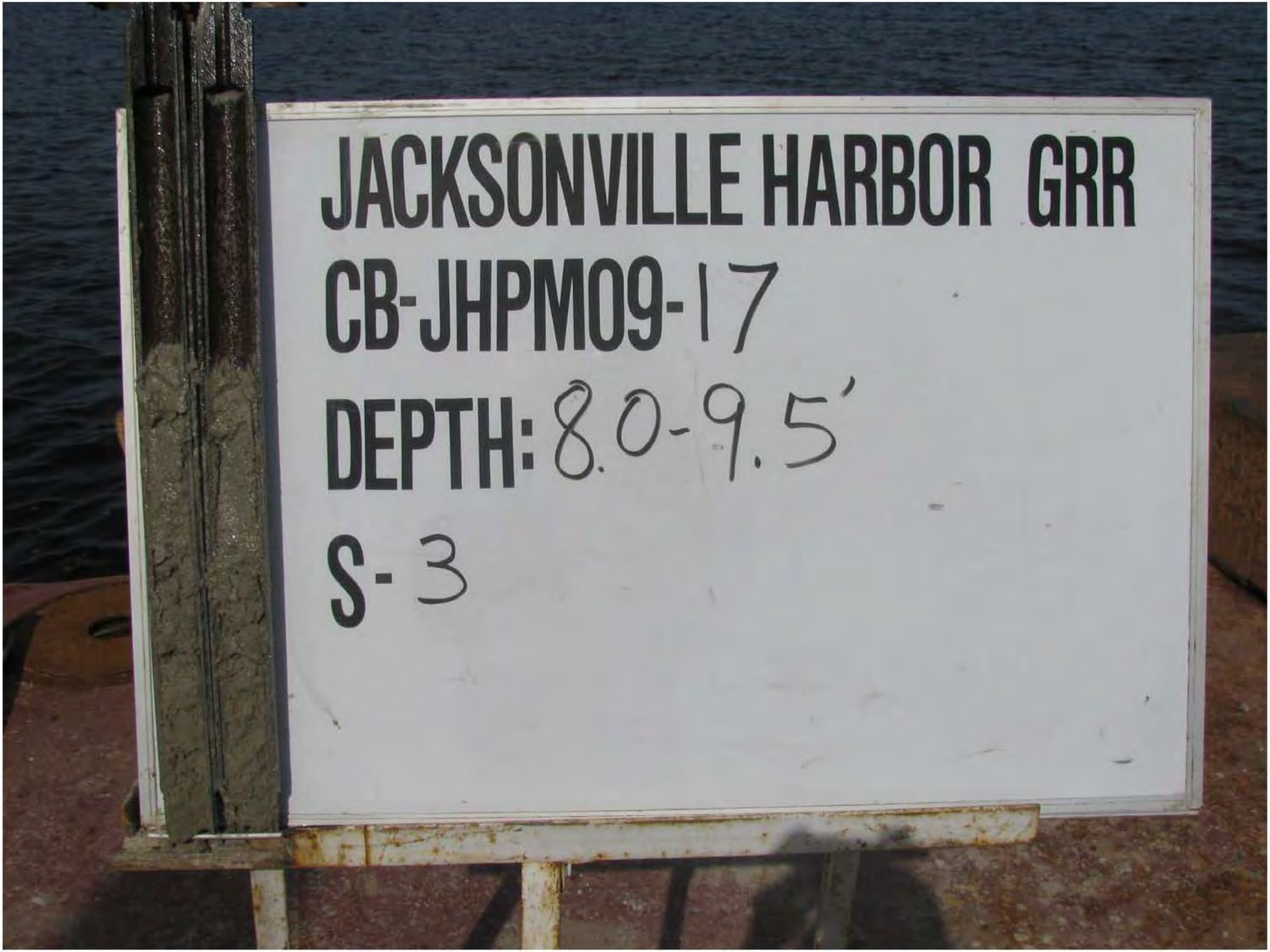
GRADATION CURVES

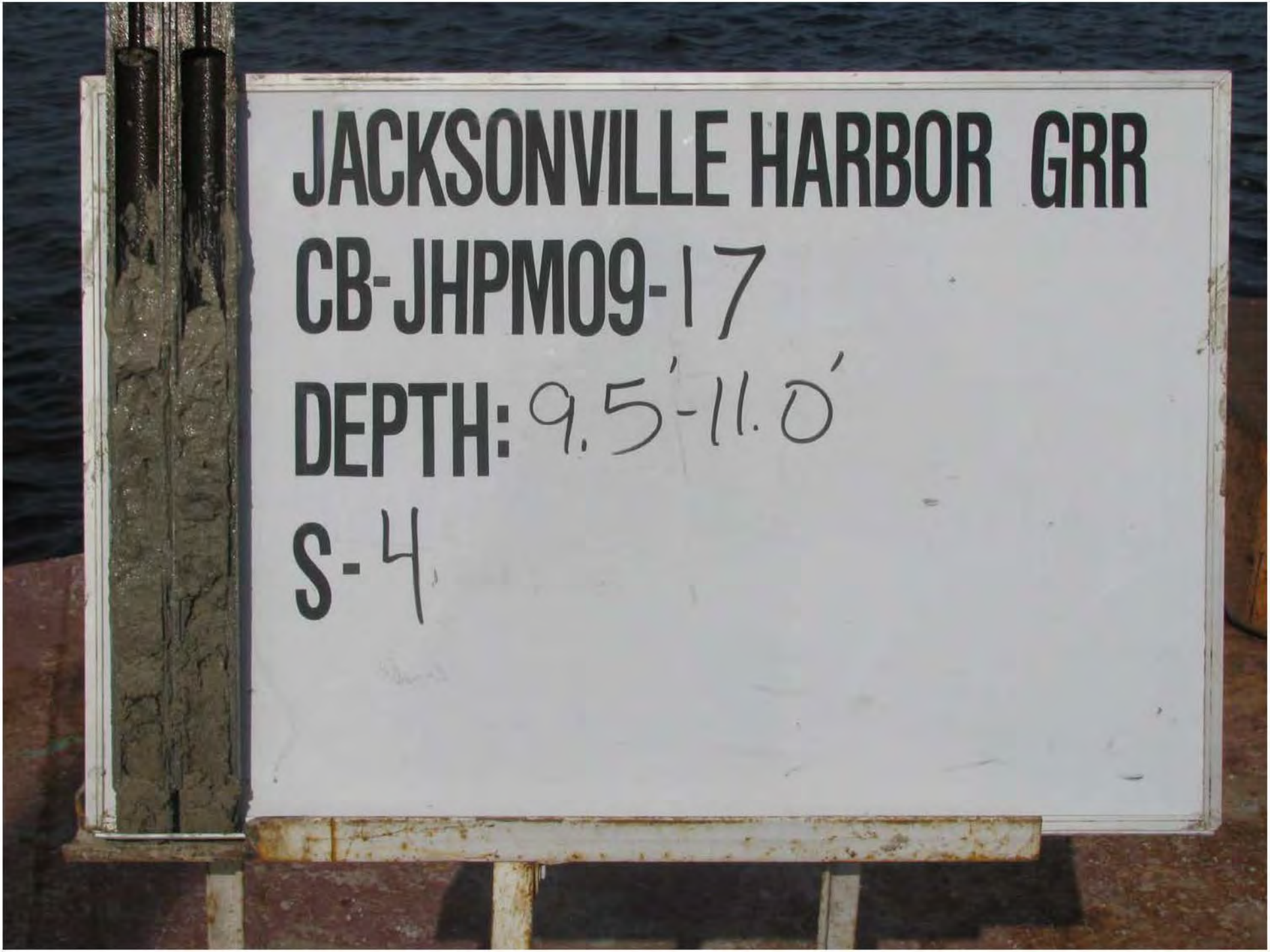
SAJ FORM 2087
JUN 02

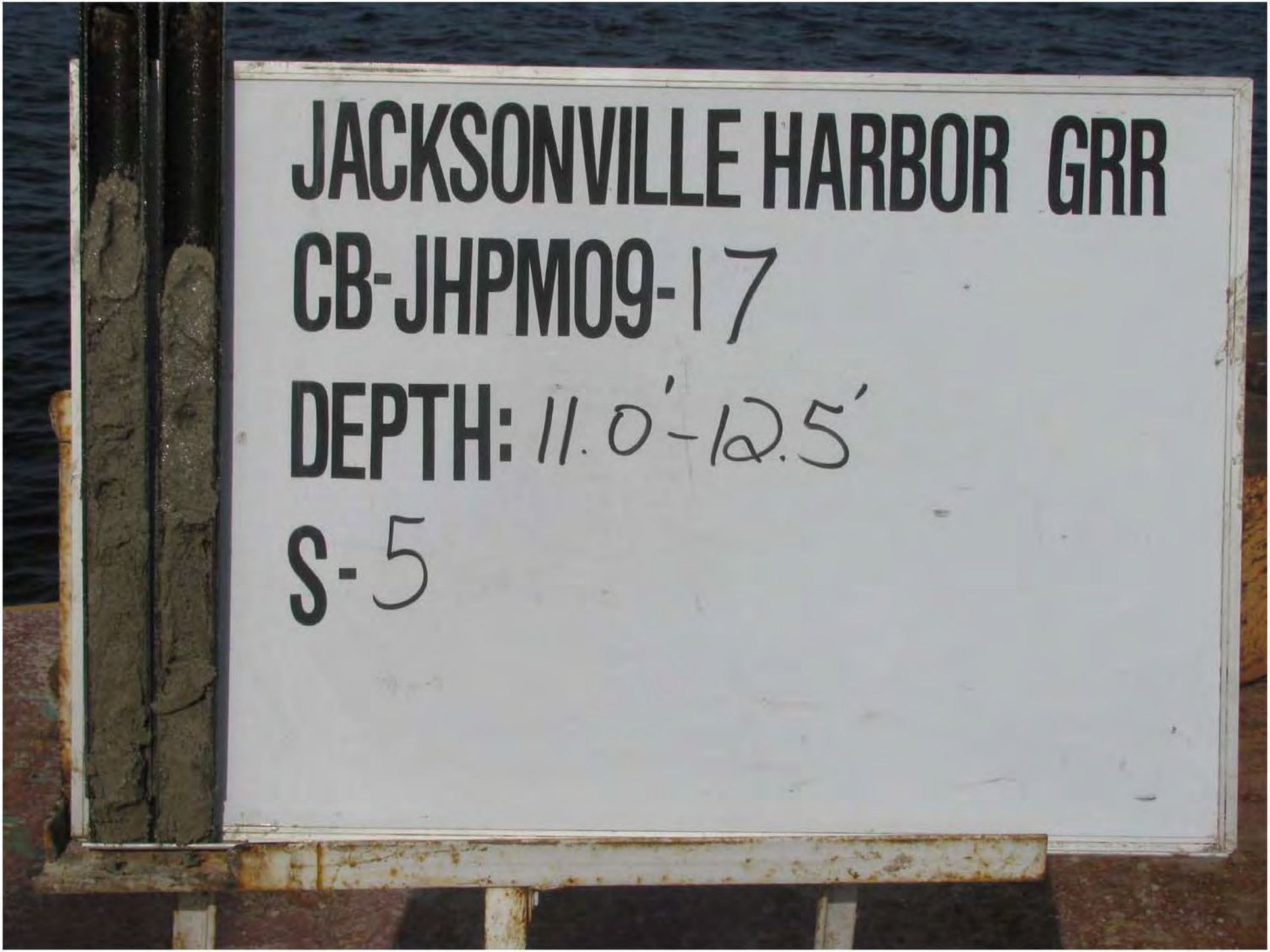

JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 0.0'-1.5'
S-1

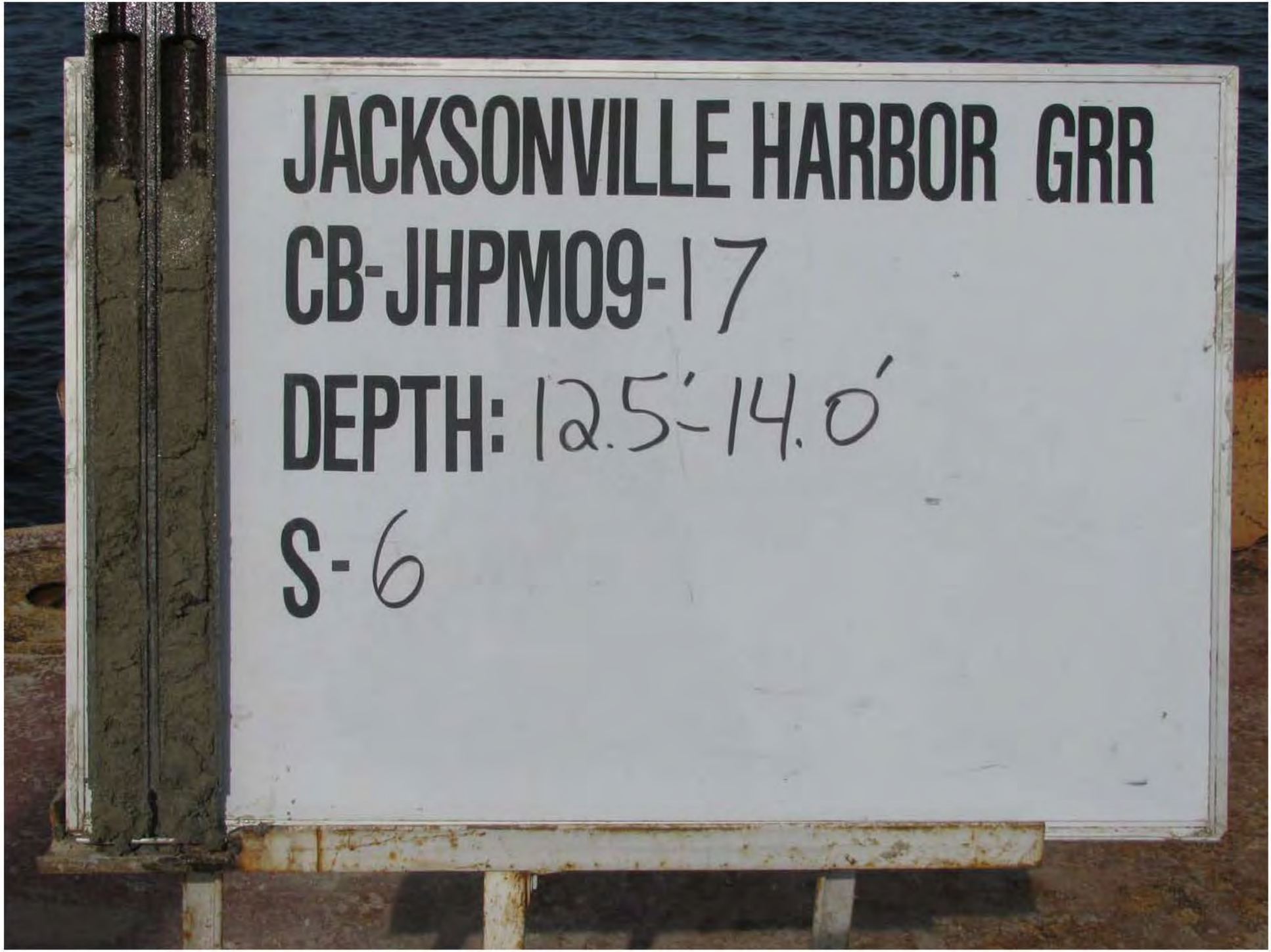

JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 1.5'-6.5'
S-Run #1
1.5'
6.5'

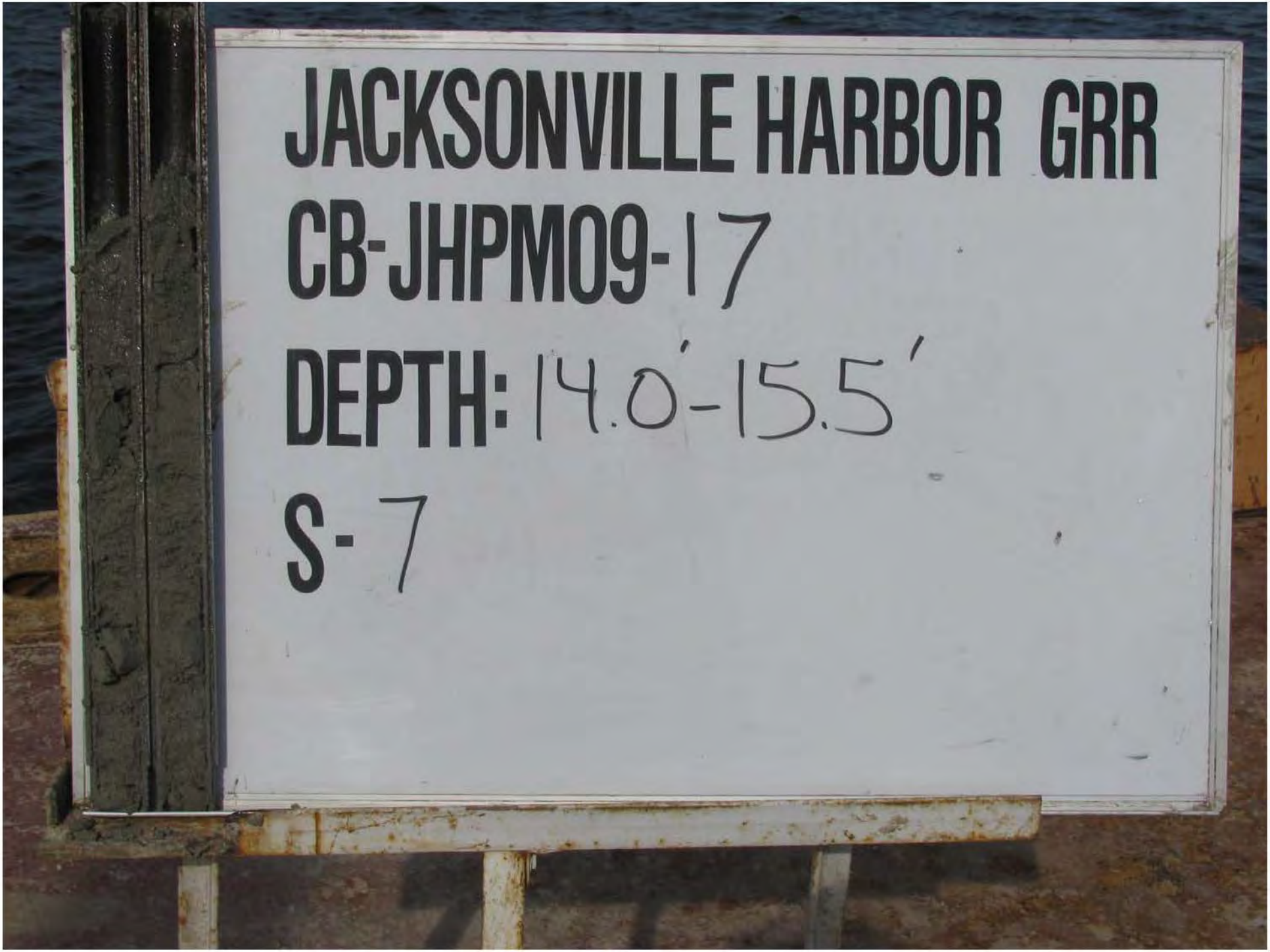

JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 6.5'-8.0'
S-2

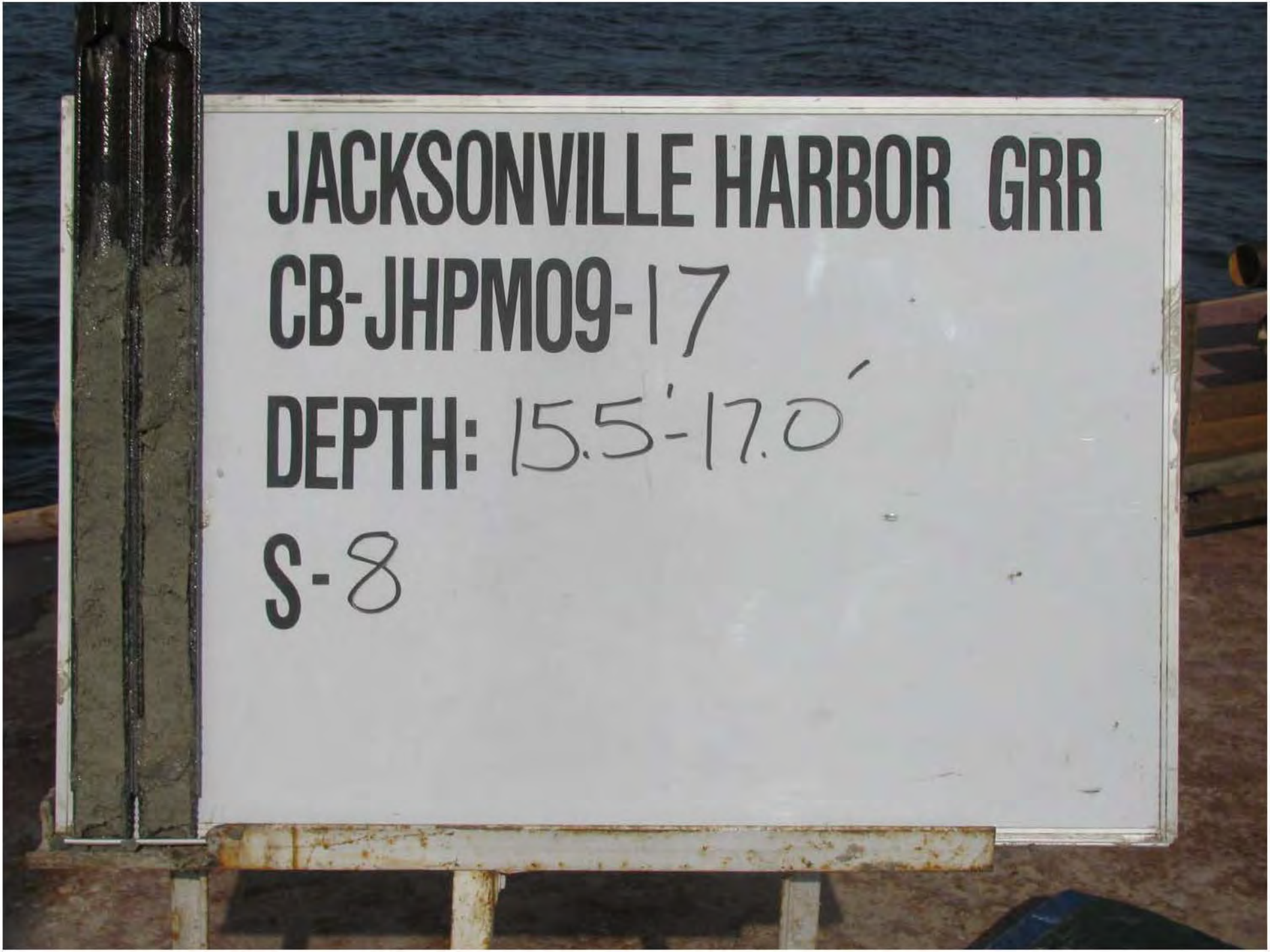

JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 8.0-9.5'
S-3

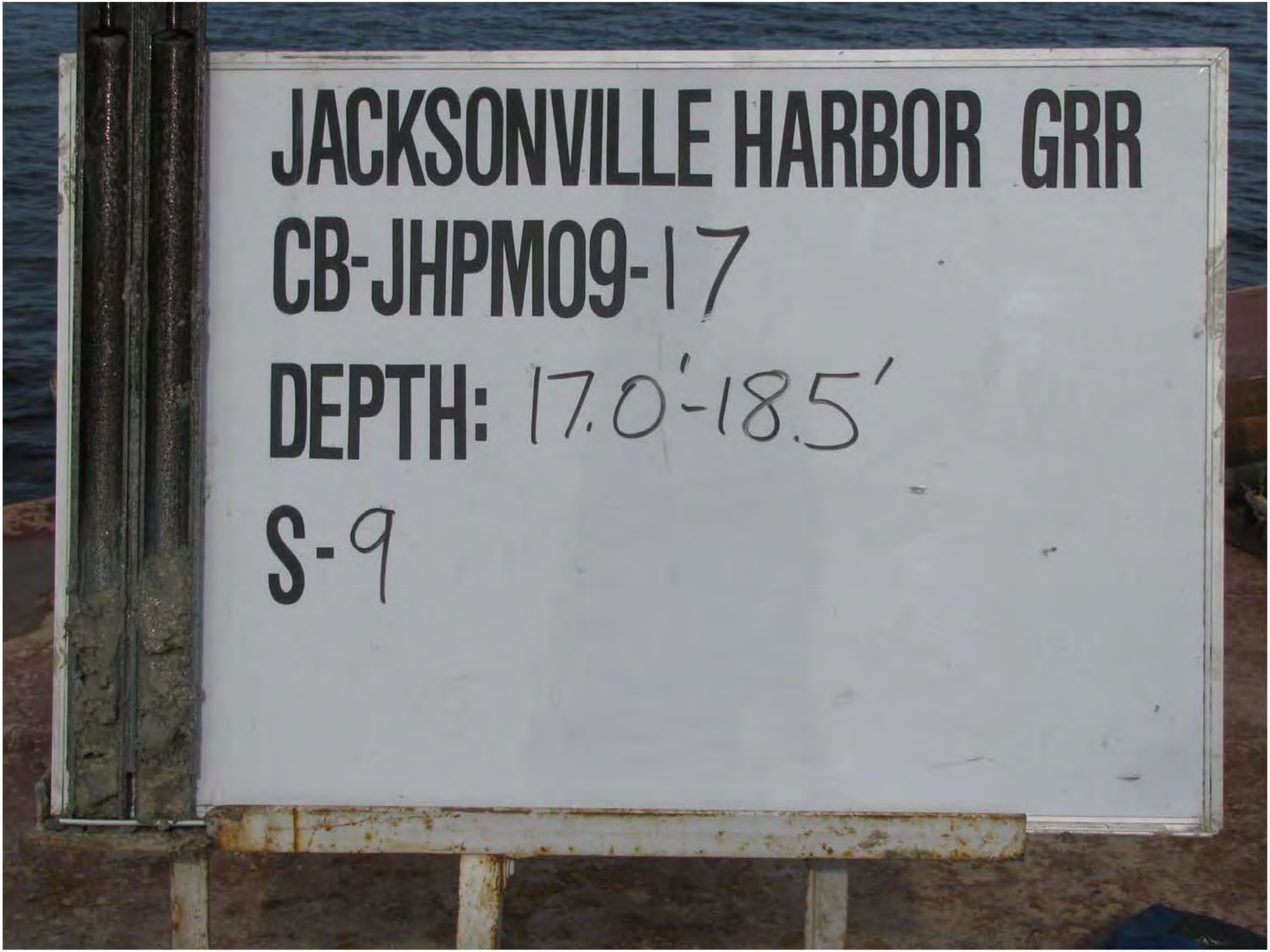

JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 9.5'-11.0'
S-4

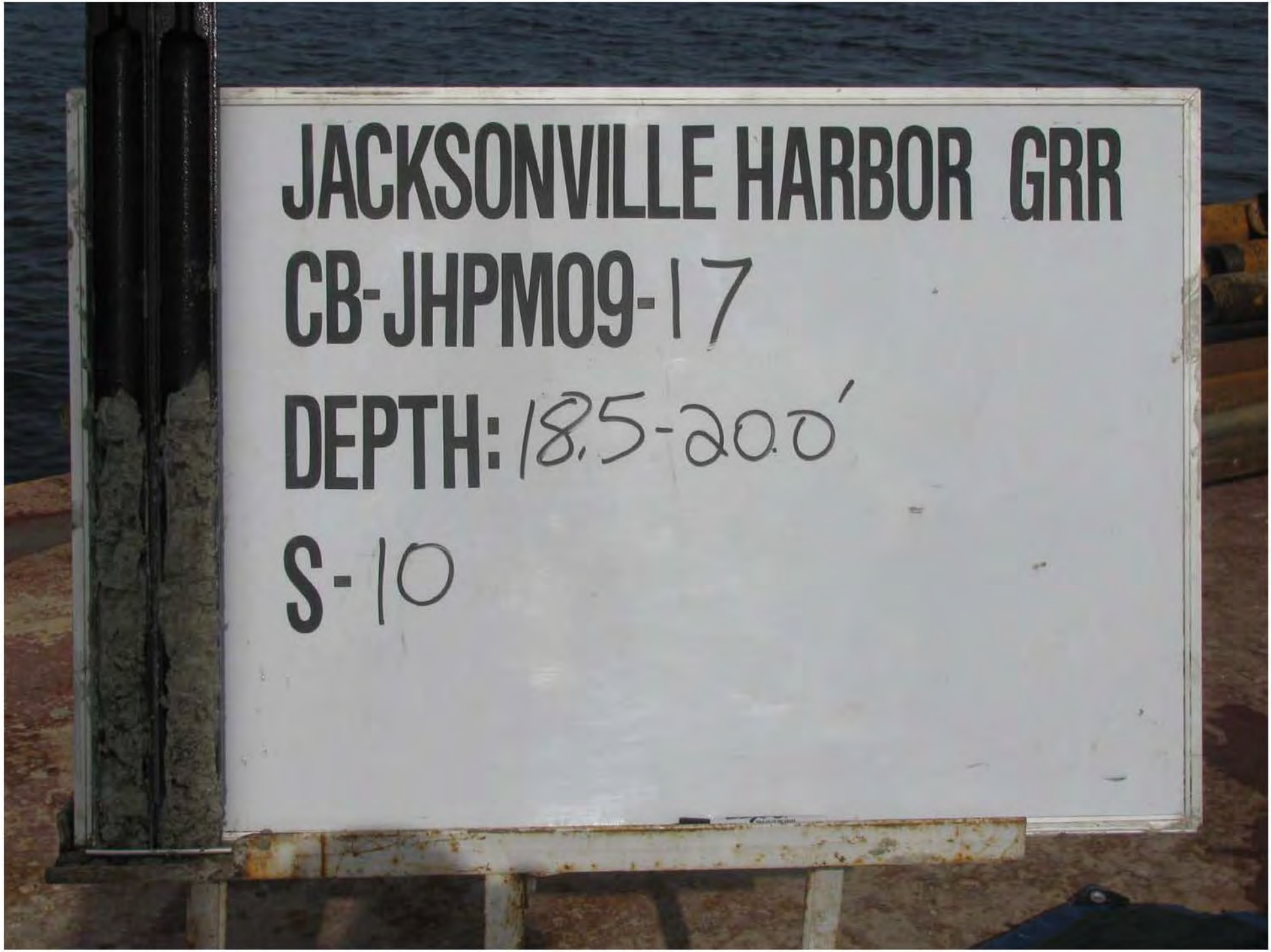

JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 11.0'-12.5'
S-5

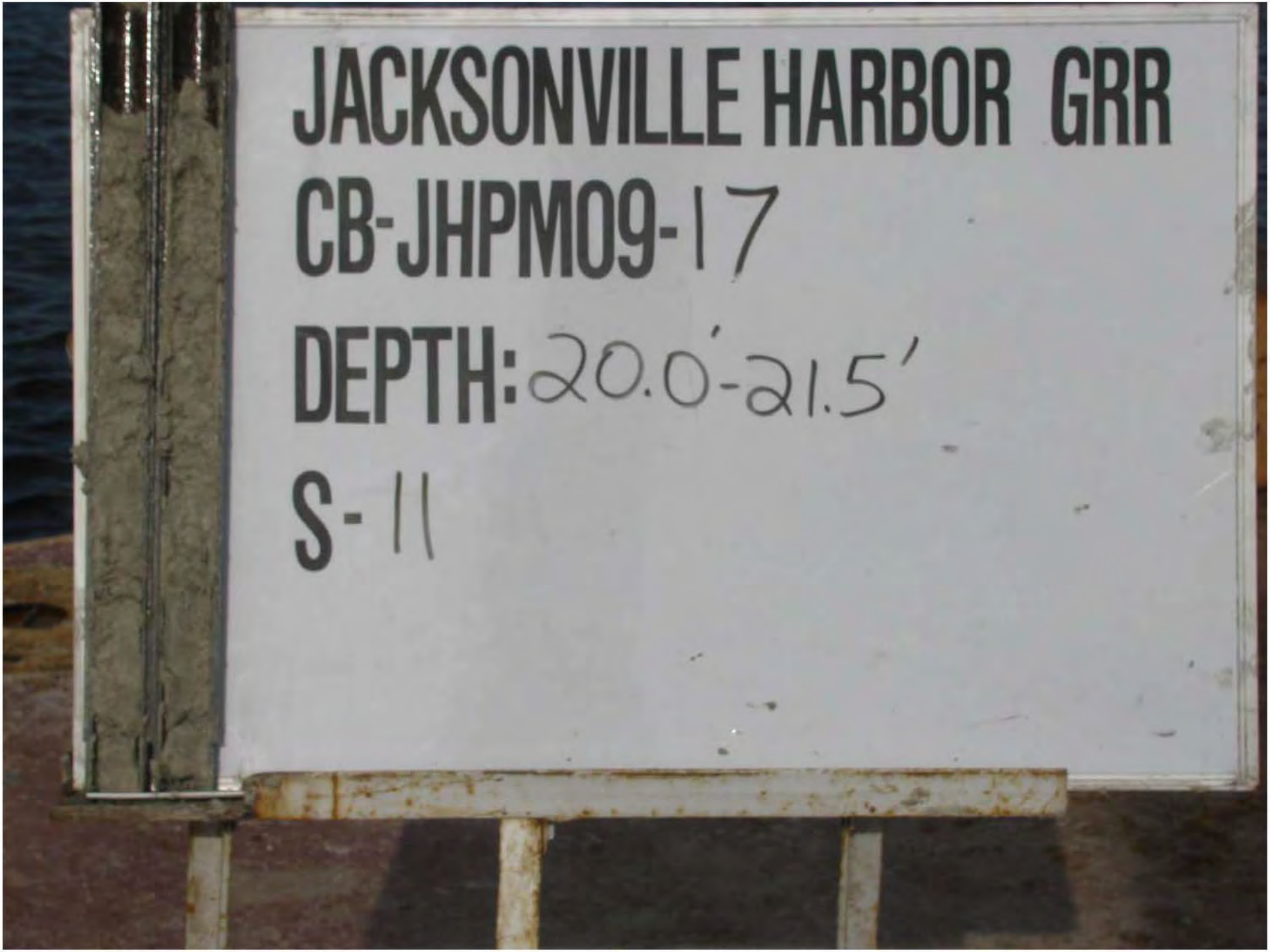

JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 12.5'-14.0'
S-6


JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 14.0'-15.5'
S-7


JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 15.5'-17.0'
S-8


JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 17.0'-18.5'
S-9


JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 18.5-20.0'
S-10


JACKSONVILLE HARBOR GRR
CB-JHPM09-17
DEPTH: 20.0'-21.5'
S-11

TEST CORE BORING NUMBER
“CB-JHPM09-18”

gINT Boring Log
Laboratory Curves
Sample Photographs

Boring Designation CB-JHPM09-18

DRILLING LOG	DIVISION: South Atlantic	INSTALLATION: Jacksonville District	SHEET 1 OF 2 SHEETS

1. PROJECT	Jacksonville Harbor General Reevaluation Report (GRR) ST. JOHN'S RIVER CHANNEL
2. BORING DESIGNATION	CB-JHPM09-18
LOCATION COORDINATES	X = 502,018 Y = 2,203,023
3. DRILLING AGENCY	Challenge Engineering & Testing, Inc.
CONTRACTOR FILE NO.	2009D08
4. NAME OF DRILLER	Marvin Strickland
5. DIRECTION OF BORING	☒ VERTICAL ☐ INCLINED
DEG. FROM VERTICAL	
BEARING	
6. THICKNESS OF OVERBURDEN	N/A
7. DEPTH DRILLED INTO ROCK	N/A
8. TOTAL DEPTH OF BORING	18.5 Ft.
9. SIZE AND TYPE OF BIT	See Remarks
10. COORDINATE SYSTEM/DATUM	State Plane, FLE (U.S. Ft.)
HORIZONTAL	NAD83
VERTICAL	MLLW
11. MANUFACTURER'S DESIGNATION OF DRILL	Diedrich D-50 Truckrig
	☐ AUTO HAMMER ☒ MANUAL HAMMER
12. TOTAL SAMPLES	DISTURBED: 8 UNDISTURBED (UD): 0
13. TOTAL NUMBER CORE BOXES	2
14. ELEVATION GROUND WATER	TIDAL
15. DATE BORING	STARTED: 01-17-10 COMPLETED: 01-17-10
16. ELEVATION TOP OF BORING	-44.1 Ft.
17. TOTAL RECOVERY FOR BORING	76 %
18. SIGNATURE AND TITLE OF INSPECTOR	V. J. Thompson I I I, Civil Engineer

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
-44.1	0.0						-44.1		
-45.8	1.7		SAND, poorly-graded with silt, mostly angular to subangular fine to medium-grained sand-sized quartz, few angular to subangular shell up to 3/8", few silt, wet, 5Y 2.5/1 black (SP-SM) At El. -44.4 Ft., 5Y 5/2 olive gray At El. -45.5 Ft., Cored Thru 3" Steel Bar In Borehole Encrusted In Cemented Sand/Limestone	71	1		SPT Sampler -45.5	6 8 50/0.4'	58+
-51.1	7.0	Slightly Weathered	LIMESTONE, sandy, sparsely fossiliferous, moderately hard, slightly weathered, fine grained, thick bedding, bedding orientation, pitted, moist, 5Y 5/2 olive gray	36	RUN # 1 BOX 1	RQD 22	4 x 5-1/2" Diamond Impregnated Bit DT = 6 mins HP = 300 psi DFR = 25 % -50.1		
-55.9	11.8		SAND, poorly-graded, mostly angular to subangular fine to medium-grained sand-sized quartz, moist, weak cementation, 5Y 7/2 light gray (SP) At El. -53.6 Ft., no cementation	78	RUN # 2 BOX 2	RQD 0	4 x 5-1/2" Diamond Impregnated Bit DT = 2 mins HP = 250 psi DFR = 0 % -55.1		
			SAND, silty, mostly angular to subangular fine-grained sand-sized quartz, little silt, moist, 5Y 6/2 light olive gray (SM) At El. -56.6 Ft., strong cementation, 5Y 5/2 olive gray	100	2		SPT Sampler -56.6	10 21 15	36
				100	3		SPT Sampler -58.1	28 31 32	63
				93	4		SPT Sampler	8 8	

0 5 10 15

(Continued)

SAJ FORM 1836
JUN 02

DRILLING LOG (Cont. Sheet)	INSTALLATION: Jacksonville District	SHEET 2 OF 2 SHEETS

PROJECT	COORDINATE SYSTEM/DATUM	HORIZONTAL	VERTICAL
Jacksonville Harbor General Reevaluation Report (GRR)	State Plane, FLE (U.S. Ft.)	NAD83	MLLW

LOCATION COORDINATES	ELEVATION TOP OF BORING
X = 502,018 Y = 2,203,023	-44.1 Ft.

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% REC.	BOX OR SAMPLE	RQD OR UD	REMARKS	BLOWS/ 0.5 FT.	N-VALUE
				93	4		-59.6 SPT Sampler	16	24
			At El. -60.6 Ft., few angular to subangular shell up to 1-1/2"	100	5		SPT Sampler -61.1	9, 13, 23	36
-62.6	18.5			100	6		SPT Sampler -62.6	14, 36, 50	86

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. Set 55.5 ft. of 6" flush joint steel casing

4. Water depth recorded at start of drilling operations and referenced to the tidal station at Sister's Creek.

5. Water depth of -46.7 ft. recorded at 08:13 AM on 1/17/2010. Tide gage reading of +2.6 ft. mllw

6. Compressive Strength Test of Rock Core At Elevation -45.9' to -46.6' = 406 PSI.

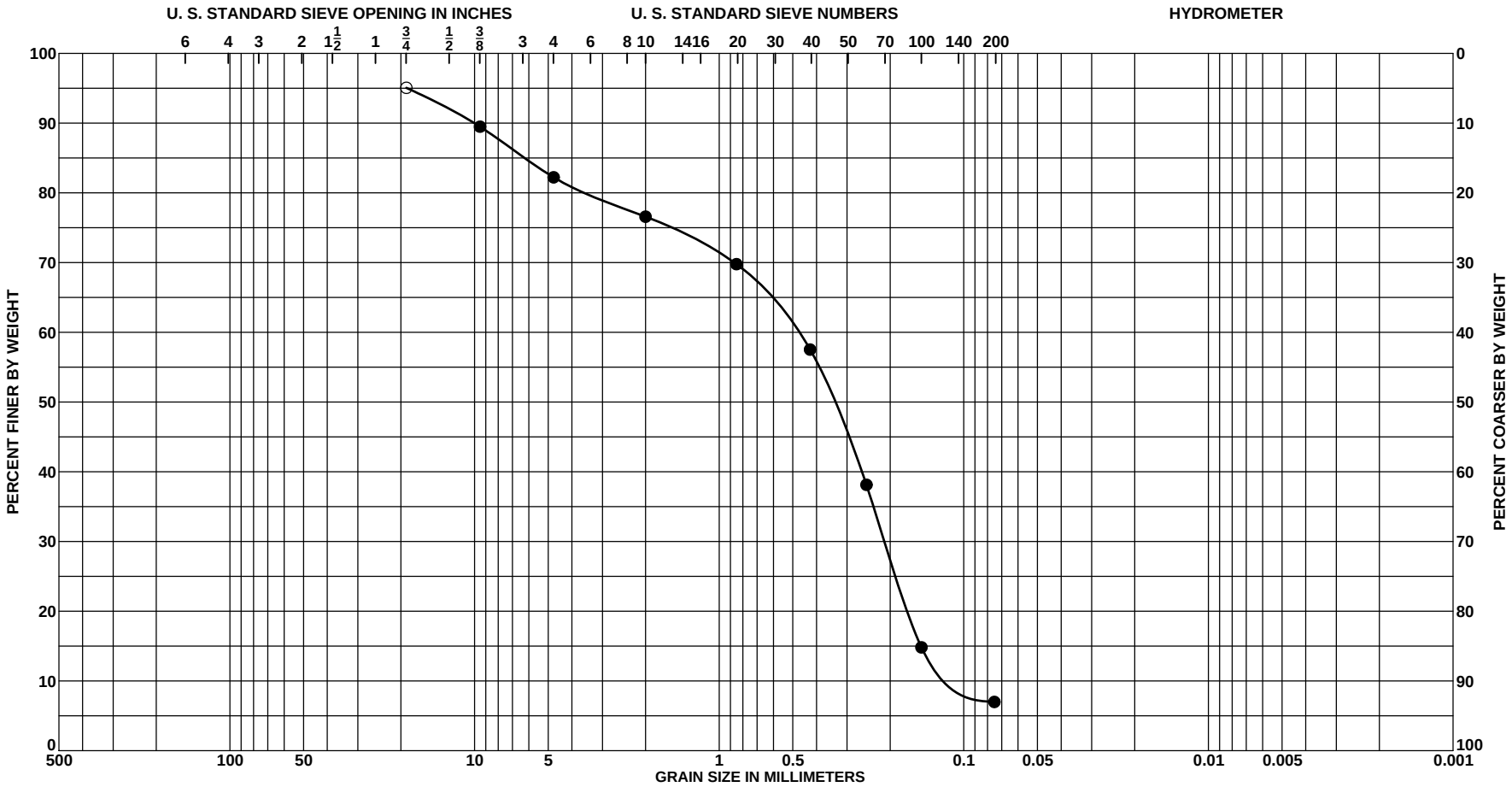
7. Laboratory Testing Results

SAMPLE ID	SAMPLE DEPTH	LABORATORY CLASSIFICATION
1	0.0/1.4	SP-SM*

*Lab visual classification based on gradation curve. No Atterberg limits.

140# hammer w/30" drop used with 2.0' split spoon (1-3/8" I.D. x 2" O.D.).

Abbreviations:
DT = Drill Time.
HP = Hydraulic Pressure.
DFR = Drill Fluid Return.

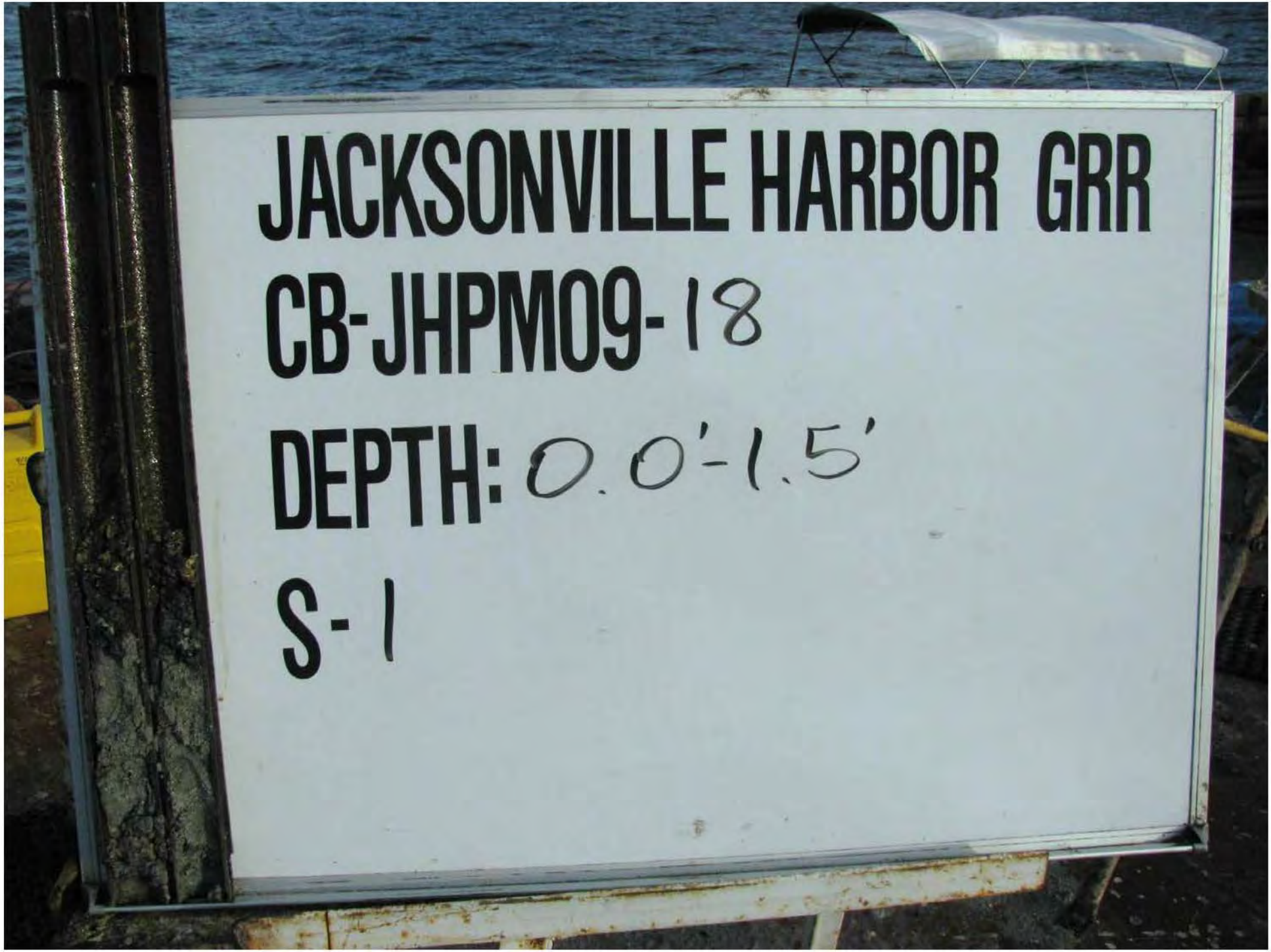


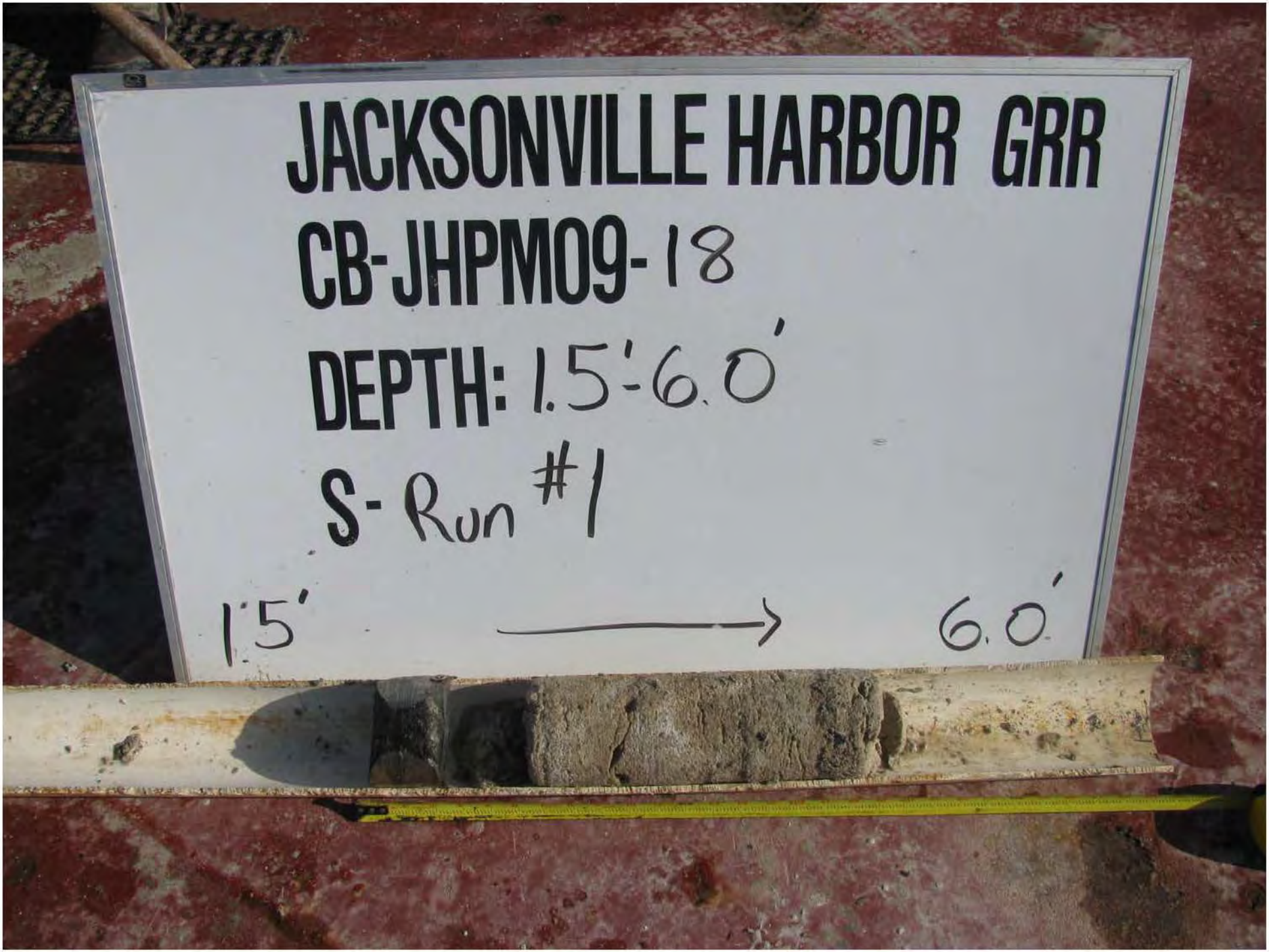
Sample No.	Depth	Classification	Munsell	CO_3 %	G_S	Org %	w_n	LL	PL	PI
● 1	0.0 to 1.4 Ft.	, black (SP-SM)	5Y 2.5/1	10 (est)						

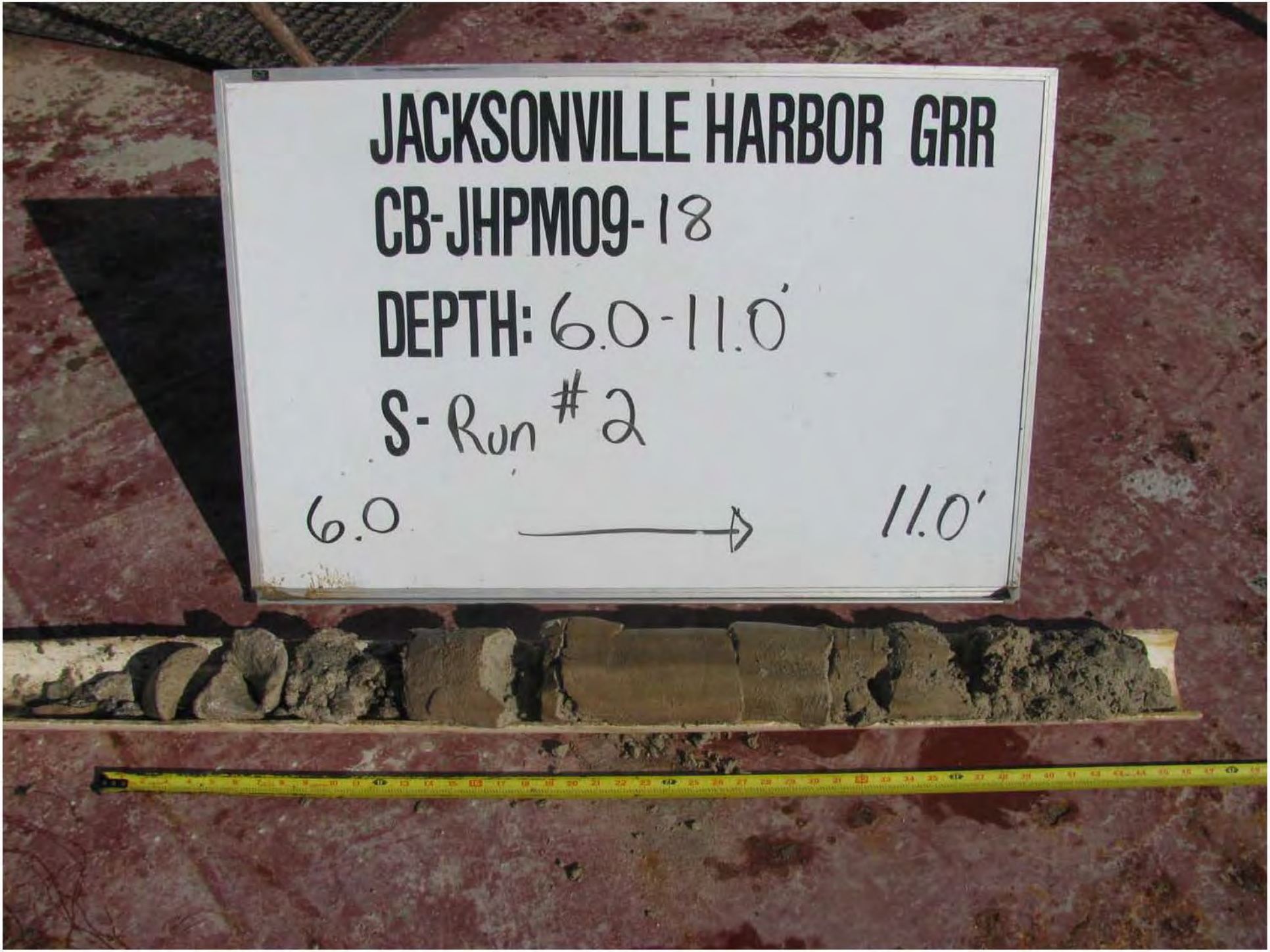
PROJECT	Jacksonville Harbor General Reeval. (GRR)
	ST. JOHN'S RIVER CHANNEL
BORING NO.	CB-JHPM09-18
BORING ELEV.	-44.1 Ft., MLLW
DATE	3/15/2010

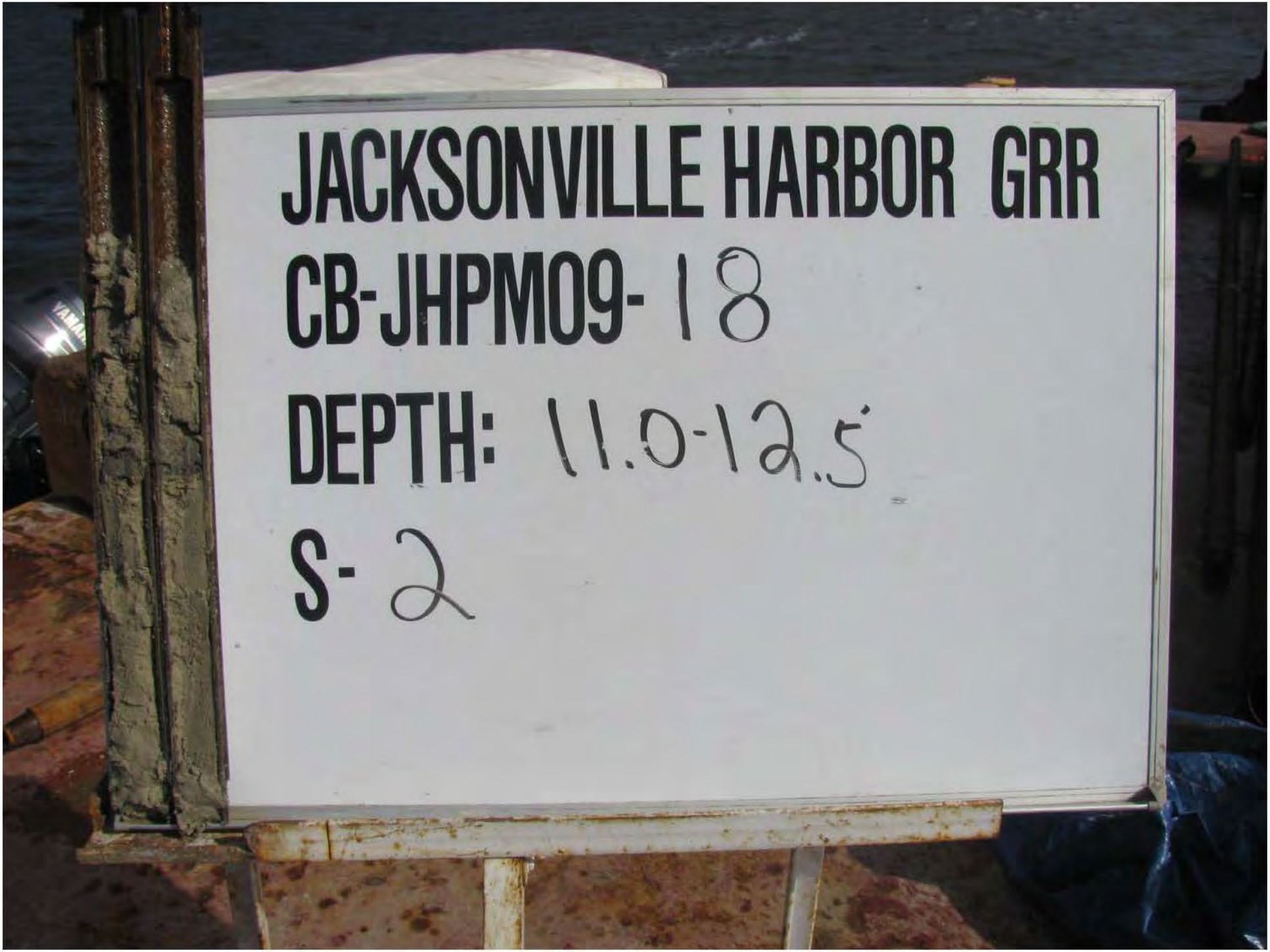
GRADATION CURVES

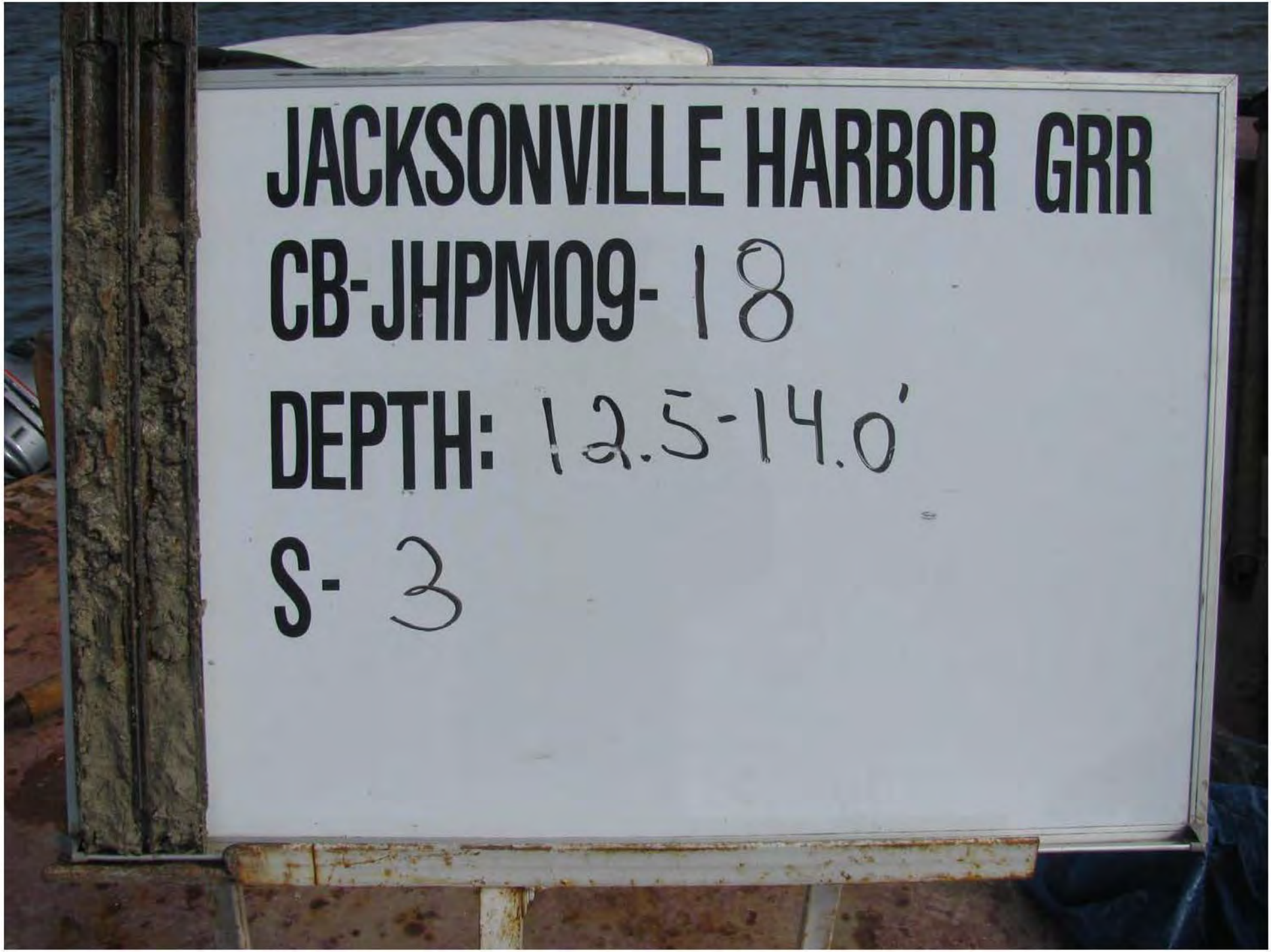
SAJ FORM 2087
JUN 02

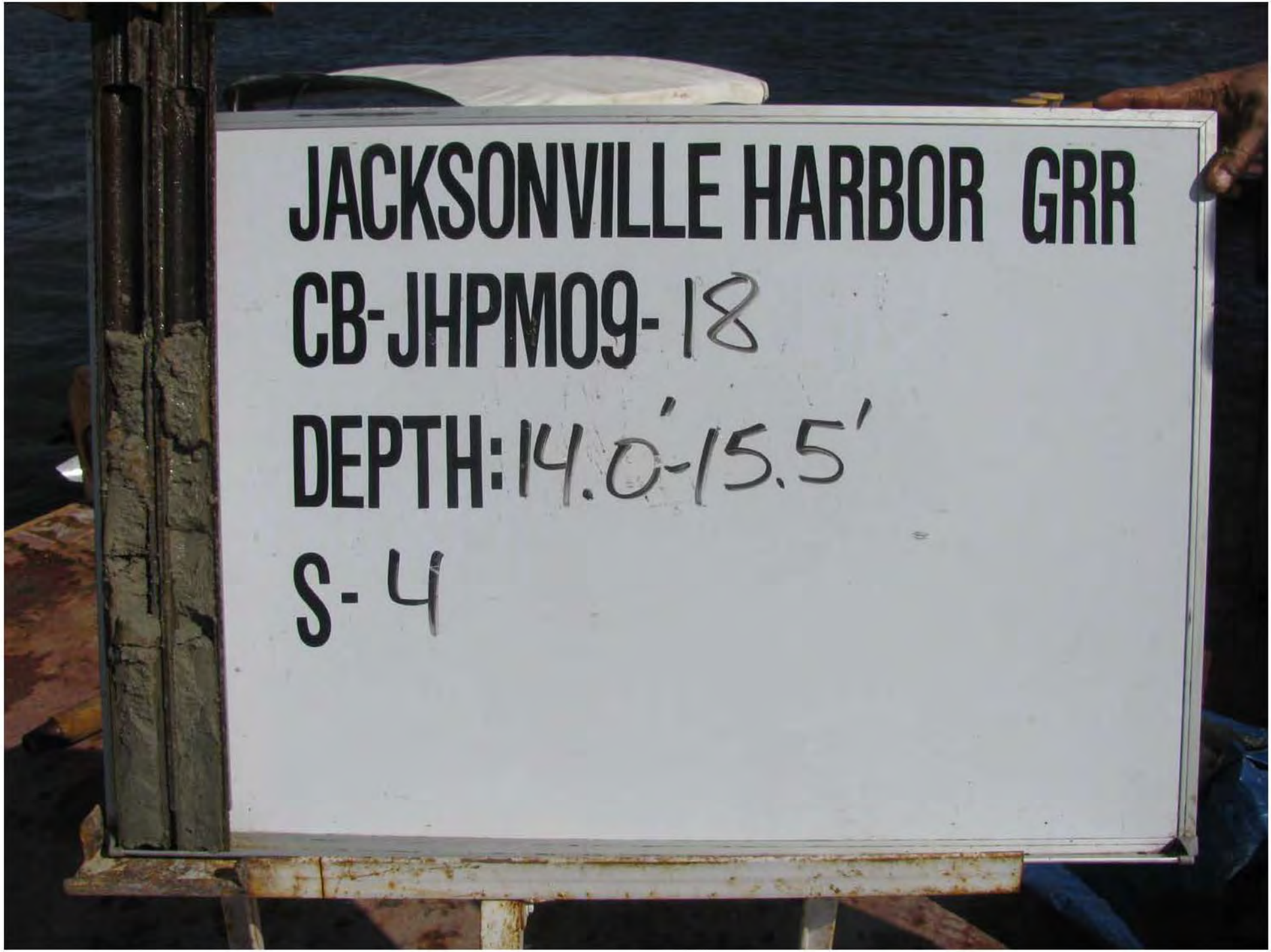

JACKSONVILLE HARBOR GRR
CB-JHPM09-18
DEPTH: 0.0'-1.5'
S-1


JACKSONVILLE HARBOR GRR
CB-JHPM09-18
DEPTH: 1.5'-6.0'
S-Run #1
1.5'
6.0'


JACKSONVILLE HARBOR GRR
CB-JHPM09-18
DEPTH: 6.0-11.0'
S-Run #2
6.0
11.0'


JACKSONVILLE HARBOR GRR
CB-JHPM09-18
DEPTH: 11.0-12.5
S-2


JACKSONVILLE HARBOR GRR
CB-JHPM09-18
DEPTH: 12.5-14.0'
S-3


JACKSONVILLE HARBOR GRR
CB-JHPM09-18
DEPTH: 14.0'-15.5'
S-4