Sheet1

Recharge Test Data Record

Core Boring Number CB-RS-XX-2

Date Of Test 11-4-99

Test Performed by Nathan Bryan

Ground Water Level 1'3" bgs

Casing Size 75' of 4" + 95.5' of 3" (bgs)

Casing Depth 95.5' bgs

Hole Diameter at point of test 2 7/8"

				A	B		C	D	E	F
From Depth Elevation	To Depth Elevation	Time Start	Time Stop	Total Time	Depth to Ground Water before test	Depth to Ground Water after test	Stickup above Ground	Total Head	Total Water Injected	Gallons Per Minute
Feet (bgs)	Feet (bgs)	Min	Min	Min	Feet (bgs)	Feet (bgs)	Feet	Feet B+C	Gal	GPM E/A
95.5	100.5	0	5.0	5.0	1'3".	1'6.5"	5.0	6'3"	0.12	0.02

NOTES: 1. Record water take with the water maintained at the top of casing.
2. Water depth must be measured immediately before the recharge test.
3. Water depth shall be recorded after test, and noted if changed.
4. Typical test time is 5 minutes.

* The recharge test was in accordance w/ CDSF delivery order dated 29 october 1999. See note @ bottom of order.

ENG-4

Hole No. CB-RS-XX-Z

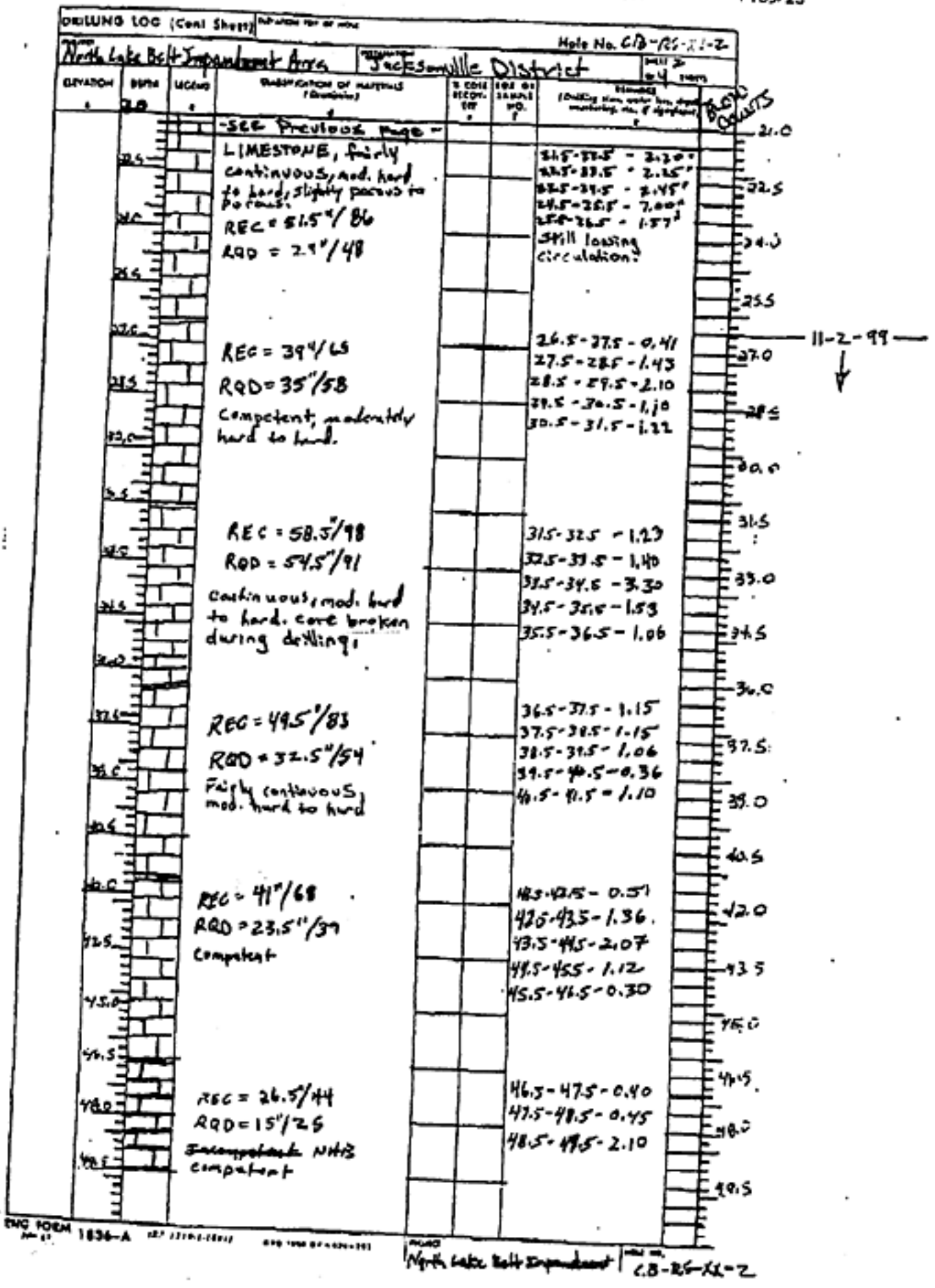
DRILLING LOG	DIVISION: SAD
1. PROJECT: North Lake Belt Impoundment Area	INSTALLATION: Jacksonville District
2. LOCATION: OPA Locka West Airport CSF "X"	SHEET 1 OF 4 SHEETS
3. DRILLING AGENCY: Mid-Atlantic Drilling	10. SIZE AND TYPE OF BIT: 3 7/8 in / 4 in Casing
4. HOLE NO.: CB-RS-XX-Z	11. DATUM FOR ELEVATION SHOWN: No Information
5. NAME OF DRILLER: Jeffrey A. Stewart	12. MANUFACTURER'S DESIGNATION OF DRILL: D-25 Track Rig
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED ___ DEG. FROM VERT.	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: 19
7. THICKNESS OF OVERBURDEN: 30.0-ft	14. TOTAL NUMBER CORE BOXES: 1
8. DEPTH DRILLED INTO ROCK: 70.5-ft	15. ELEVATION GROUND WATER: 1' 3" bgs
9. TOTAL DEPTH OF HOLE: 100.5-ft	16. DATE HOLE: STARTED 11-1-99; COMPLETED 11-4-99
	17. ELEVATION TOP OF HOLE: No Information
	18. TOTAL CORE RECOVERY FOR BORING: 67 %
	19. SIGNATURE OF INSPECTOR: Nathan H. Berg

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth weathering, etc., if significant)	Blow counts
			TOPSOIL (2-in.)	4" / 22	1	1.5-2.5 - 0.48"	2
	1.5		SAND, gravel size limestone fragments, small rocks, fine to medium			2.5-3.5 - 0.52"	25
						3.5-4.5 - 2.53"	50/3
						4.5-5.5 - 1.00"	
						5.5-6.5 - 4.10"	
	3.0		CONCRETE / Grout (8-in)				
			LIMESTONE, mod. Hard to hard, competent, small voids, trace clayey silt			Trace clayey silt in limestone voids.	
	4.5		CONCRETE / Grout (2-in)				
	6.0		REC = 31"/56 RQD = 15.5"/26				
	7.5		REC = 29"/48 RQD = 26"/43 competent			6.5-7.5 - 1.42" 7.5-8.5 - 2.11" 8.5-9.5 - 1.24" 9.5-10.5 - 0.20" 10.5-11.5 - 2.35"	
	9.0						
	10.5					10' of 4 in Ø casing installed	
	12.0					11.5-12.5 - 3.30" 12.5-13.5 - 2.00" 13.5-14.5 - 2.10" 14.5-15.5 - 1.10" 15.5-16.5 - 2.56" Circulation Lost Between 12.5'-13.5' bgs.	
	13.5		REC = 35"/58 RQD = 21.5"/36 Competent				
	15.0						
	16.5		~~competent~~ NGB			16.5-17.5 - 2.50" 17.5-18.5 - 2.30" 18.5-19.5 - 1.54" 19.5-20.5 - 1.50" 20.5-21.5 - 3.50"	
	18.0		REC = 53"/88 RQD = 46"/77 Fairly continuous				
	19.5						
	21.0						

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT: North Lake Impoundment Area

HOLE NO. CB-RS-XX-Z


DRILLING LOG (Cont Sheet)
Hole No. CB-RC-XL-2
North Lake Belt Impoundment Area
Jacksonville District
-SEE Previous Page-
LIMESTONE, fairly continuous, mod. hard to hard, slightly porous to porous.
REC = 51.5"/86
RQD = 2.9"/48
REC = 39"/65
RQD = 35"/58
Competent, moderately hard to hard.
REC = 58.5"/98
RQD = 54.5"/91
Continuous, mod. hard to hard. core broken during drilling!
REC = 49.5"/83
RQD = 32.5"/54
Fairly continuous, mod. hard to hard
REC = 41"/68
RQD = 23.5"/39
Competent
REC = 26.5/44
RQD = 15"/25
Incompetent NHR competent
Still loosing circulation!
11-2-99
ENG FORM 1836-A
North Lake Belt Impoundment
CB-RC-XL-2

DRILLING LOG (Cont Sheet) | Hole No. CB-RS-XI-2

Project: North Lake Belt Impoundment Area | Jacksonville District | Sheet 3 of 4 sheets

Elevation	Depth	Legend	Classification of Materials (Description)	% Core Recovery	Box or Sample No.	Remarks (Drilling time, water loss, depth of weathering, etc., if significant)	Blow Count
	49.5		LIMESTONE, competent, moderately hard to hard, slightly porous to porous			Coring 49.5-50.5 - 1.15" 50.5-51.5 - 0.55" Caved to 49.5' bgs. 51-ft of 4" ø casing installed	49.5 — still losing circulation.
	52.0						51.0
	52.5						52.5
	54.0		REC = 10.5'/17.5 RQD = 0% Incompetent			51.5-52.5 - 0.55" 52.5-53.5 - 1.05" 53.5-54.5 - 1.05" 54.5-55.5 - 0.41 55.5-56.5 - 0.58	54.0
	55.5						55.5
	57.0					56.5-57.5 - 0.31" 57.5-58.5 - 1.30" 58.5-59.5 - 1.46" 59.5-60.5 - 1.79" 60.5-61.5 - 1.25" Caved to 59.5' bgs.	11-3-99
	58.5		REC = 38'/63 RQD = 29"/48 competent				57.0
	60.0						58.5 — approx. 1/2 of the circulation lost between 58.5 & 61.5
	61.5					circulation lost @ 61.5 61.5-62.5 - 1.25" 62.5-63.5 - 1.16" 63.5-64.5 - 0.37" 64.5-65.5 - 0.58 65.5-66.5 - 0.11	60.0
	63.0		REC = 31.5'/53 RQD = 85"/14 competent				61.5
	64.5						63.0
	66.0					66.5-67.5 - 0.15" 67.5-68.5 - 0.30" 68.5-69.5 - 0.20" 69.5-70.5 - 0.23" 70.5-71.5 - 0.21"	64.5
	67.5		REC = 14"/23 RQD = 0% Incompetent				66.0
	69.0						67.5
	70.5						69.0
	72.0		SAND, white-grey, fine to medium. Trace gravel size limestone fragments, silty	75"/42	2	71' of 4-in diameter casing installed. Water return @ 71.5' bgs.	70.5
	73.5			18"/100	3		72.0
	75.0			8"/44	4		73.5
	76.5			18"/100	5		75.0
	78.0			85"/47	6		76.5
	79.5						78.0
							11-4-99
							79.5

→ see following page

N. Lake Belt Impoundment Area

ENG FORM 1836-A

DRILLING LOG (Cont Sheet) Hole No. CB-BS-XY-2

N. Lake Belt Impoundment Area — Jacksonville District

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS	% CORE RECOV.	SOIL SAMPLE NO.	REMARKS	BLOW COUNTS
	79.0		Same as previous 71.5' to 79.5'	18"/100	7	76-ft of 4-in diameter casing installed.	5 5 7 8 10
	81.0		SILT, grey, clayey, trace sand-fine	18"/100	8		
	82.5		SAND, silty, grey medium size limestone fragments. -see remarks-	18"/100	9	Probable silt w/ trace fine sand from 82' to 82.5'. Fluff from drilling entered spoon.	5 8 9 9 6
	84.0			18"/100	10		
	85.5			13"/72	11	Hole Re-Washed	6 4 5 8 10
	87.0			19"/94	12		7 8 5 6 9
	88.5			15"/64	13		
	90.0			11"/61	14		8 12 14 6 7
	91.5		Transition zone from Sand to Silt	18"/100	15		
	92.0		SILT, light grey, some medium to fine shell fragments	18"/100	16		7 4 4 5 6
	93.5			18"/100	17		8 10
	96.0	4D TUBE				3" Shelby Tube from 95.5' to 97.5' bgs.	
	97.5		some fine sand to Sandy from 97.5' to a. 100.5' bgs.	16"/100	18	Recharge Test from 95.5' to 100.5' bgs. (0.02 GPM)	4 6 10 7 9
	99.0			15"/100	19		11
	100.5		Boring Terminated @ 100.5-ft bgs			95-ft of 3-in casing installed. Boring drilled to 100.5 ft bgs. 2 7/8" hole from 97.5' to 100.5'	

ENG FORM 1836-A (ER 1110-1-1803)

L = 5'
R = 3"

$$K = \frac{q}{2\pi L h} \ln\left(\frac{L}{r}\right)$$

q = 0.02 gpm
= 4 ft³/day
0.4 ft/day

$$K = \frac{4}{2.3.14 \cdot 5(6.2)} \ln(\quad)$$

K_N = 0.06 ft/day