

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

MONDAY

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PROJECT HERITAGE PARK WELL NO. CORE 1 DATE 12/4/89

BROWARD CO.

- CITY OF PLANTATION, FLA. -

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1530	ON SITE @ HERITAGE PARK. CHECKED IN WITH
	BILL HARTL - PARK MANAGER & PROCEEDED TO
	WORK AREA. (LEFT DISTRICT @ ~1345)
1600	RIGGING UP
1730	BUILDING CORE BOXES ETC. WHILE DRILLERS CONTINUE
	SITE SET UP.
1900	SECURED AREA - OFF SITE TO THE GOODLIFE MOTEL...

WELL DRILLER'S LOG

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. CORE #1 DATE 12/5/89 Tues.

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0630	AWAITING DELIVERY OF 'TRASH' PUMP FROM TRI-W RENTAL.
0715	RIGGING UP FOR SPLIT SPOON SAMPLING.
0810	0-2' → 70% RECOVERY : 1 st 6" BLACK, ORGANIC RICH QTZ SAND .5' - 2' = FINE PALE BROWN "BEACH" SAND.
0815	2-4' → 50% : FINE PALE BROWN SAND AS ABOVE
0818	4-6' → 75% : BRN, BLK QTZ SAND (WET) W.T. @ - 4'
0820	6-8' → 90% : AS ABOVE, "SOUPY" SAND (VERY SOFT)
0822	9-11' → 90% : 1' VOID SPACE (~8-9') PALE BROWN, FINE-MED GRAINED QTZ. SAND
0830	11-12' → 100% : AS ABOVE
0835	12-14' → 100% : AS ABOVE
0840	~ 15.8' "HARD" ZONE DURING HAMMERING
0845	14-16' → 100% : MOTTLED, MED BRN, MED-COARSE GRAINED QTZ SA
0900	16-18' → 100% : AS ABOVE
0910	TRI-W ON SITE W/ PUMP. PREPARING TO MIX MUD AND DRILL DOWN TO 18' WITH 4" DIA DRAG BIT & CLEAN HOLE.
0930	MUD MIXED - NO FURTHER PROGRESS DUE TO STUCK IMPELLER ON RIG MUD PUMP... ATTEMPTING TO FREE IT UP.
1030	D. FLETCHER PHONES HYDROWELL TO DISCUSS PLAN OF ACTION
1130	PUMP DISASSEMBLED & PUT ON STAKE TRUCK FOR TRANSPORT TO TONEY DRILLING SUPPLIES IN OPA-LOCKA.
1200	WB OFF SITE TO MOTEL TO STANDBY (WORK ON NOTES ETC) (2 HOURS).
1400	DRILLERS BACK FROM MIAMI - WE RESUME OPERATIONS AS SOON AS MUD PUMP REASSEMBLED & FLUSHED WITH DISHWASHING SOAP TO REMOISTURIZE INTERNAL RUBBER PARTS.
1600	REASSEMBLY CONTINUES... (TODAY?)
1730	TEST MUD PUMP & ADJUST.
1830	ALL IS SET FOR CONTINUED OPERATIONS TOMORROW SECURE SITE & PACK UP...

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PK. WELL NO. 1DATE WED. 12/6/89

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TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0630	SETTING UP FOR MUD PUMP TESTING & SPLIT SPOON SAMPLING. ^{CONTINUED}
0720	CALL SFWMD W/ STATUS REPORT ... MUD PUMP ^{STILL} OK ...
0830	CONTINUING TO MIX MUD & CONDITION HOLE. W/ 4" DRAG BIT
0900	HOLE CLEANED TO 18' → PREP. TO SPLIT SPOON
0930	18-20' → 50% : MED BROWN MED GRAINED QTZ SAND
0940	20-22' → 60% : MED BRN QTZ SAND (20'-21.75') UNDERLAIN BY COMPACTED MED GREY QTZ SAND ^{WITH CLAY} (21.75'-22')
0942	22-24' → 70% : MED TO LT. GREY QTZ SAND W/ SMALL AMT OF CLAY,
0945	24-26' → 80% : AS ABOVE W/ ^{MOTTLED} POCKETS OF WHIT. QTZ SAND
0950	26-28' → 100% : FINE GRAINED WHITE QTZ SAND.
	RUN BACK IN WITH 4" DRAG BIT → CLEAN HOLE TO 28'
1035	28-30' → 50% : FINE, WHITE QTZ SAND.
1040	30-32' → 50% : AS ABOVE
1045	32-34' → 50% : AS ABOVE
1050	34-36' → 60% : COARSE GRAINED LT GREY - WHITE QTZ SAND.
1105	36-38' → 60% : AS ABOVE
1115	38-40' → 100% : AS ABOVE
1120	40-42' → 100% : COARSE TO 41' UNDERLAIN BY WHIT. FINE QTZ SAND
1140	42-44' → 100% : FINE TO MED. WHIT. QTZ SAND.
1145	TRIP IN " DRAG BIT & CLEAN / CONDITION HOLE TO 44'
1240	STOP CIRCULATING ; TRIP OUT.
1255	44-46' → 80% : FINE TO MED. WHITE QTZ SAND
1305	46-48' → 60% : AS ABOVE
1315	48-50' → 60% : AS ABOVE, BUT W/ BROWN MOTTLED COLOR @ 50
1325	50-52' → 60% : MOTTLED BRN TO WHITE SAND W/ FINE YELLOW AND GREEN LAYERING (SAND & CLAY)
1330	52-54' → 100% : MOTTLED BRN - GREEN QTZ SAND W/ CLAY. UNDERLAIN BY CROSS BEDDED GREEN SAND (53' TO 53.6') WITH ABRUPT COLOR/LITHOLOGY CHANGE @ 53.6' → HAS BECOME WHIT - ORANGE LIMESTONE, QTZ SAND & LIMEMUD INTERVAL. → HARD "REFUSAL" @ 54' - WILL NOW GO IN WITH 4" BIT AND REAM TO 54' IN PREP. FOR CORING.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. 1

DATE Thursday 12/7/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0730	CIRCULATING OUT RUBBLE @ 59' AFTER YESTERDAY'S CASING R
0830	KELLY HOSE BLOWS OFF...
0905	REPAIRS COMPLETED; CONTINUE CIRCULATION
0930	START CORE RUN # 2 @ 59'. LOW RPM @ START (~ 50 rpm) LOW MUD PRESSURE (50 PSI) EASY MUD POLYMER
0940	LOST CIRCULATION RETURNS @ ~ 61'. CONTINUE CORING SLOWLY.
0945	INCREASE RPM TO ~ 100/min
0955	STOP RUN # 2 (4' in 25 minutes)
	(100% RECOVERY) WHT, FRIABLE, SILTY, SHELLY SANDY LIMESTONE
1000	START RUN # 3 → STILL NO RETURNS
1020	STOP → CORED 63-73' in 20 minutes very fast thru fracture SOFT LIMESTONE
	* LOSSES DUE TO LOTS OF SAND
	(40% RECOVERY) (2 OF 10') SOLUTIONED, FRACTURED WHT. SILTY LS.
1030	TRIPPED CORE BARREL BACK IN ... TD @ 71' (2' HIGH).
1042	START RUN # 4 @ 73' CORING SLOWLY
1107	STOP → 4' CORED in 30 minutes
	(100% RECOVERY) CORED 6' OF SAND ON A 4' RUN - WILL INCREASE DETITAL CARBONATE
	RUN # 3 % TO 40%. → SAND (SHELLY & COARSE GRAINED QTZ ... SOME LS. A BOTTL
1125	MIXING AQUAGEL (ADDING 1 BAG TO MUD TANK)
1148	START RUN # 5 (* FINALLY GETTING CIRCULATION RETURNS... BRIEFL
1208	STOP → (3.5' in 20 minutes)
	(72% RECOVERY) WHITE SILTY LIMESTONE & CARBONATE SAND
1230	START RUN # 6 CORING QUICKLY THRU SOFT SEDIMENT WITH NO WT. ON BIT, 50 PSI, 50 RPM'S.
1252	STOP RUN 2.5' in 22 minutes
	(100% RECOVERY) SILTY WHITE CORALLINE LIMESTONE w/SAND.
13	START RUN # 7 @ 83'
143	STOP → 8' CORED in 75 minutes (4' OF 8' RECOVERED)
	(50% RECOVERY) WHT - LT. GREY SOLUTIONED CORALLINE LIMESTONE w/SAND
14	START CORE RUN # 8
	INALLING VOID
150	STOP RUN → 2' in 35 minutes
	(100% RECOVERY) SOLUTIONED, FRACTURED GREY LIMESTONE w/SAND
15	TEAR DOWN CORE BARREL FOR MAINTENANCE.

2
59-63'

3
63-73'

4
73-77'

5
77-80.5'

6
80.5-83'

83-91'

8
91-93'

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. 1 DATE 12/7/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1635	START CORE RUN #9 @ 93'
1710	STOP CORING @ 101' (7' OF CORE IN 45 min)
1711	CORE BARREL LODGED DOWN HOLE - USING WINCH - SLOW PROGR ^{RIG}
1740	TRIPPING OUT OK - PROBABLY NO CORE LEFT IN BARREL...
1800	~ 3' OF CORE RECOVERED, SECURE SITE
1815	<div style="border: 1px solid black; border-radius: 50%; display: inline-block; padding: 2px; margin-right: 10px;">43% RECOVERY</div> COARSE LT. BRN. CARBONATE SAND UNDERLAIN BY LT. GREY LIMESTONE. THE SAND ZONE HEAVED IN AGAINST CORE BARREL CAUSING THE HANG UP DOWN HOLE.
1830	OFF SITE.

93-101'

WELL DRILLER'S LOG

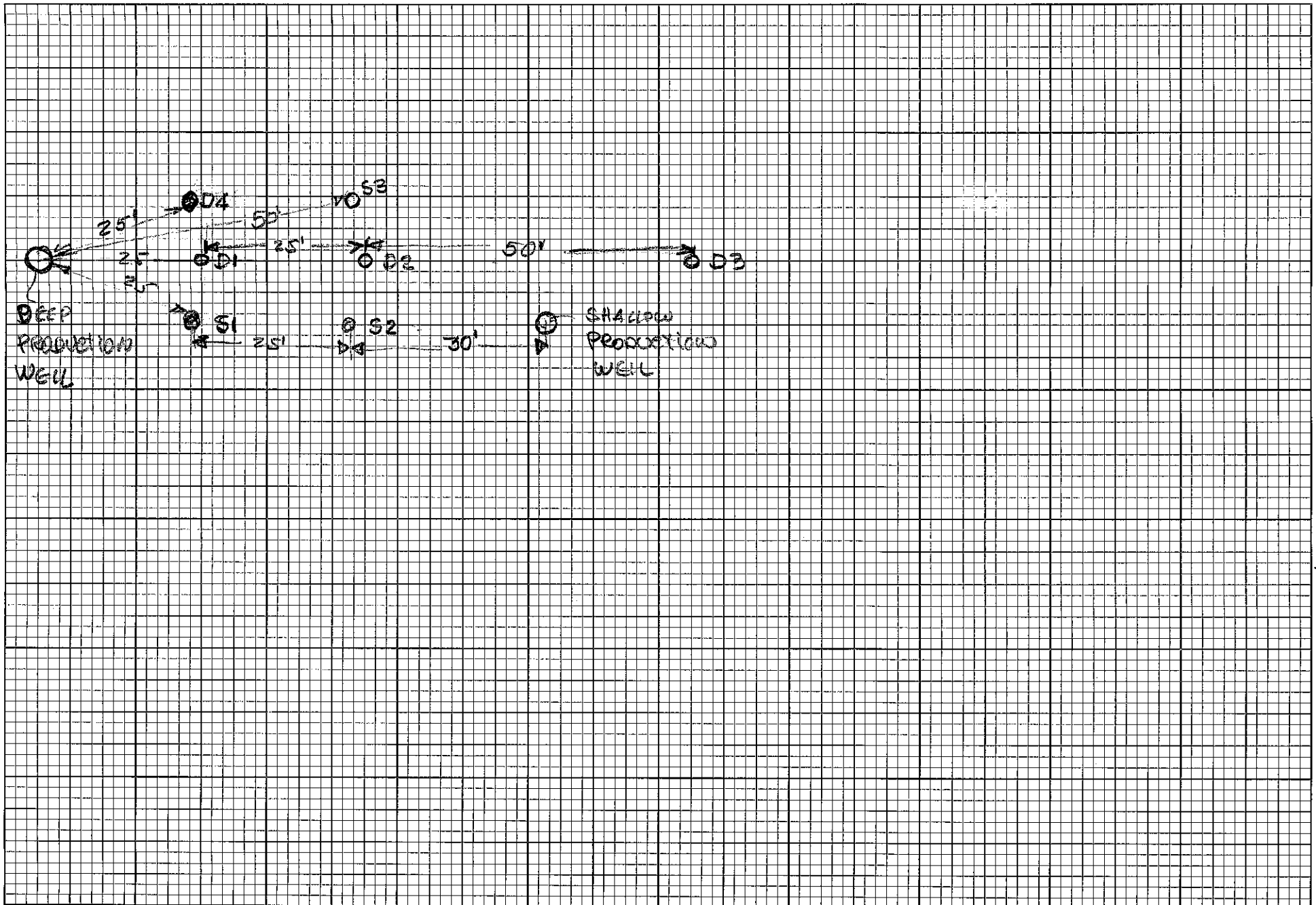
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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. 1 DATE FRIDAY 12/8/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0700	RUNNING 4" DRAG BIT DOWN HOLE TO CLEAN / CONDITION.
0720	MIXING ANOTHER (#2) BAG OF AQUAGEL IN MUD TANKS.
0730	CALL IN STATUS REPORT TO SPWMD.
0800	CIRCULATION CONTINUES (W/ RETURNS) AND ANOTHER BAG OF AQUAGEL IS MIXED.
	ADDITIVES: MUD TOTALS (SO FAR) : 3 BAGS AQUAGEL THIS WEEK : 5 GALS. EASY MUD.
0900	APPLYING A HEAVY WALL CAKE W/ EXTRATHICK MUD.
0945	TRIPPING OUT DRAG BIT.
1000	ATTEMPTING TO GET BACK TO BOTTOM W/ CORE BARREL HAVING TROUBLE GETTING PAST 90'-95' INTERVAL.
1030	WASHED DOWN TO BOTTOM
1035	START CORE RUN # 10. @ 101'
1055	CORING CONTINUES @ 120 RPM'S, 175 PSI AND GOOD RETURNS.
1120	STOP CORING → 2' in 45 minutes.
	(100% RECOVERY) IMPORTANT TO NOTE THAT THIS FRACTURE RUBBLE IS LT. GREY SPARRY LIMESTONE WITH CARBONATE SAND PACKED INTO NUMEROUS LARGE VUGS. & SOLN. HOLES. SAND WAS ALMOST ENTIRELY WASHED AWAY DURING CORING.
1145	START RUN # 11 - LOST 2' OF HOLE & WASHING BACK TO 103'
1155	INTERRUPT CORING (MAKING LITTLE/NO PROGRESS) TO CALL SPWMD & DISCUSS SITUATION → WILL CALL BACK @ 1300
1205	CORE BIT PULLED UP INTO CASING WHILE WE AWAIT WORD DRILLER SUGGESTS RUNNING MORE CASING - THEY HAVE 60' IN HOLE & 20' ON TRUCK - NOT ENOUGH TO CASE OFF PROBLEM AREAS.
1300	M. BRAUN (SPWMD) RECOMMENDS STABILIZING HOLE. & SHUTTING DOWN FOR THE TIME BEING - DRILLERS NEED TO BRING ADDITIONAL CASING TO FINISH THE JOB NEXT WEEK.

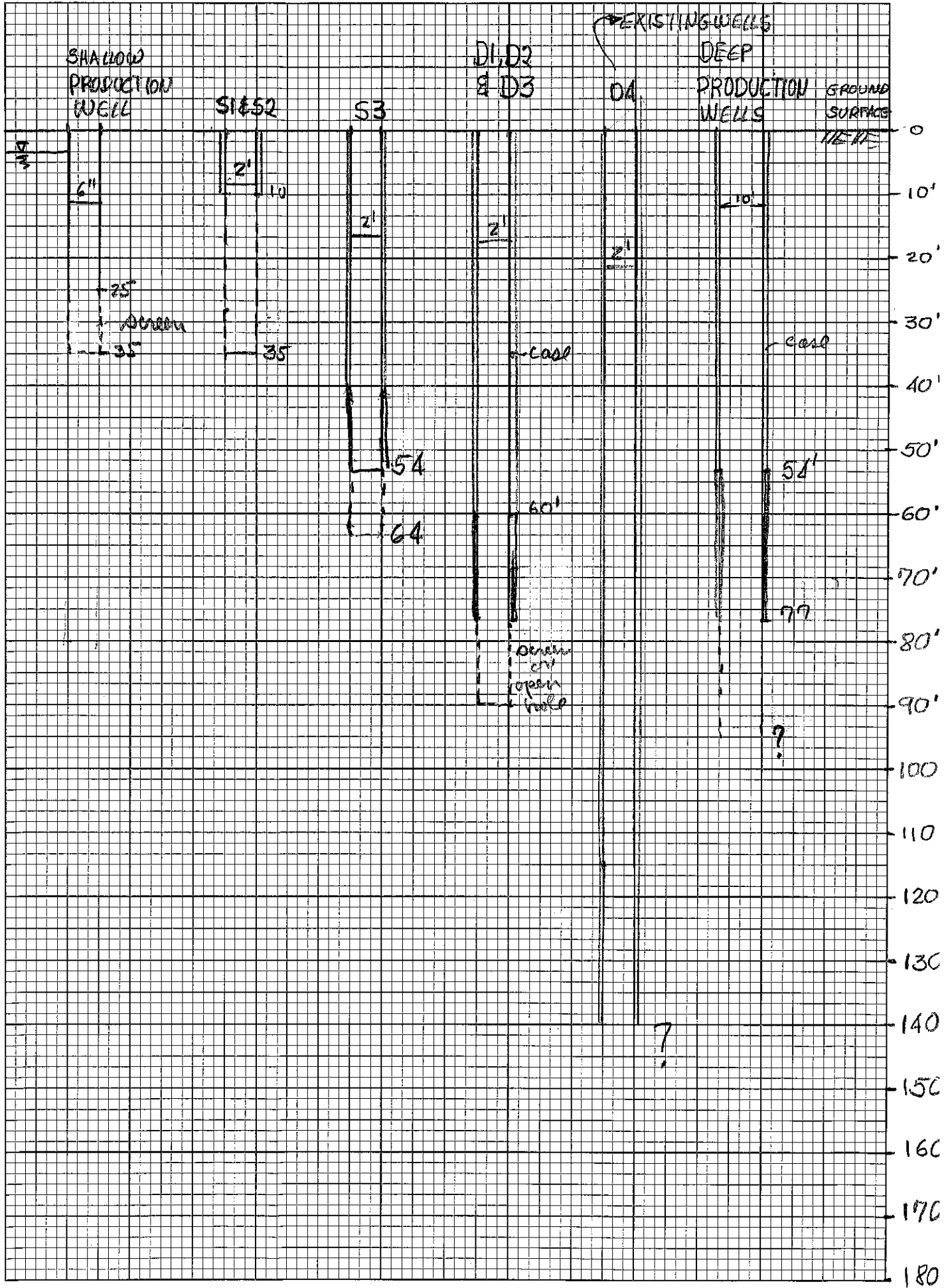
#10
101-103



Alvynge Hall

46 0940

12 X 12 TO THE INCH • 7 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.



WELL DRILLER'S LOG

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. CORE #1 DATE 12/5/89 Tues.

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0630	AWAITING DELIVERY OF 'TRASH' PUMP FROM TRI-W RENTAL.
0715	RIGGING UP FOR SPLIT SPOON SAMPLING.
0810	0-2' → 70% RECOVERY : 1 st 6" BLACK, ORGANIC RICH QTZ SAND 5'-2' = FINE PALE BROWN "BEACH" SAND.
0815	2-4' → 50% : FINE PALE BROWN SAND AS ABOVE
0818	4-6' → 75% : BRN, BLK QTZ SAND (WET) W.T. @ ~ 4'
0820	6-8' → 90% : AS ABOVE, "SOUPY" SAND (VERY SOFT)
0822	9-11' → 90% : 1' VOID SPACE (~ 8'-9') PALE BROWN, FINE-MED GRAINED QTZ. SAND
0830	11-12' → 100% : AS ABOVE
0835	12-14' → 100% : AS ABOVE
0840	~ 15.8' "HARD" ZONE DURING HAMMERING
0845	14-16' → 100% : MOTTLED, MED BRN, MED-COARSE GRAINED QTZ SAND
0900	16-18' → 100% : AS ABOVE
0910	TRI-W ON SITE W/ PUMP. PREPARING TO MIX MUD AND DRILL DOWN TO 18' WITH 4" DIA DRAG BIT & CLEAN HOLE.
0930	MUD MIXED - NO FURTHER PROGRESS DUE TO STUCK IMPELLER ON RIG MUD PUMP... ATTEMPTING TO FREE IT UP.
1030	D. FLETCHER PHONES HYDROWELL TO DISCUSS PLAN OF ACTION
1130	PUMP DISASSEMBLED & PUT ON STAKE TRUCK FOR TRANSPORT TO TONEY DRILLING SUPPLIES IN OPA-LOCKA.
1200	WB OFF SITE TO MOTEL TO STANDBY (WORK ON NOTES etc) (2 HOURS).
1400	DRILLERS BACK FROM MIAMI - WE RESUME OPERATIONS AS SOON AS MUD PUMP REASSEMBLED & FLUSHED WITH DISHWASHING SOAP TO REMOISTURIZE INTERNAL RUBBER PARTS.
1600	REASSEMBLY CONTINUES... (TODAY?)
1730	TEST MUD PUMP & ADJUST.
1830	ALL IS SET FOR CONTINUED OPERATIONS TOMORROW SECURE SITE & PACK UP...

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

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PROJECT HERITAGE PK. WELL NO. 1DATE 12/6/89 WED.

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0630	SETTING UP FOR MUD PUMP TESTING & SPLIT SPOON SAMPLING. ^{CONTINUED}
0720	CALL SFWMD w/ STATUS REPORT ... MUD PUMP & OK ... ^{STILL}
0830	CONTINUING TO MIX MUD & CONDITION HOLE. W/ 4" DRAG BIT
0900	HOLE CLEANED TO 18' → PREP. TO SPLIT SPOON
0930	18-20' → 50% : MED BROWN MED GRAINED QTZ SAND
0940	20-22' → 60% : MED BRN QTZ SAND (20'-21.75') UNDERLAIN BY COMPACTED MED GREY QTZ SAND ^{WITH CLAY} (21.75'-22')
0942	22-24' → 70% : MED TO LT. GREY QTZ SAND w/ SMALL AMT OF CLAY, ^{MOTTLED}
0945	24-26' → 80% : AS ABOVE w/ POCKETS OF WHT. QTZ SAND
0950	26-28' → 100% : FINE GRAINED WHITE QTZ SAND.
	RUN BACK IN WITH 4" DRAG BIT → CLEAN HOLE TO 28'
1035	28-30' → 80% : FINE, WHITE QTZ SAND.
1040	30-32' → 50% : AS ABOVE
1045	32-34' → 50% : AS ABOVE
1050	34-36' → 60% : COARSE GRAINED LT GREY - WHITE QTZ SAND.
1105	36-38' → 60% : AS ABOVE
1115	38-40' → 100% : AS ABOVE
1120	40-42' → 100% : COARSE TO 41' UNDERLAIN BY WHT. FINE QTZ SAND.
1140	42-44' → 100% : FINE TO MED. WHT. QTZ SAND.
1145	TRIP IN " DRAG BIT & CLEAN / CONDITION HOLE TO 44'
1240	STOP CIRCULATING ; TRIP OUT.
1255	44-46' → 80% : FINE TO MED. WHITE QTZ SAND
1305	46-48' → 60% : AS ABOVE
1315	48-50' → 60% : AS ABOVE, BUT w/ BROWN MOTTLED COLOR @ 50'
1325	50-52' → 60% : MOTTLED BRN TO WHITE SAND w/ FINE YELLOW AND GREEN LAYERING (SAND & CLAY)
1330	52-54' → 100% : MOTTLED BRN - GREEN QTZ SAND w/ CLAY UNDERLAIN BY CROSS BEDDED GREEN SAND (53' TO 53.6') WITH ABRUPT COLOR / LITHOLOGY CHANGE @ 53.6' → HAS BECOME WHT - ORANGE LIMESTONE, QTZ SAND & LIMEMUD INTERVAL. → HARD "REFUSAL" @ 54' - WILL NOW GO IN WITH 4" BIT AND REAM TO 54' IN PREP. FOR CORING.

WELL DRILLER'S LOG

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. 1 DATE Thursday 12/7/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0730	CIRCULATING OUT RUBBLE @ 59' AFTER YESTERDAY'S CASING RUN
0830	KELLY HOSE BLOWS OFF...
0905	REPAIRS COMPLETED; CONTINUE CIRCULATION
0930	START CORE RUN # 2 @ 59'. LOW RPM'S @ START (~ 50 rpm) LOW MUD PRESSURE (50 psi) EASY MUD POLYMER
0940	LOST CIRCULATION RETURNS @ ~ 61'. CONTINUE CORING SLOWLY.
0945	INCREASE RPM'S TO ~ 100/min
0955	STOP RUN # 2 (4' in 25 minutes) <u>100% RECOVERY</u> WHT, FRIABLE, SILTY, SHELLY SANDY LIMESTONE
1000	START RUN # 3 → STILL NO RETURNS
1020	STOP → CORED 63-73' in 20 minutes very fast thru fractures SOFT LIMESTONE
1030	<u>40% RECOVERY</u> (2 of 10') * LOSSES DUE TO LOTS OF SAND SOLUTIONED, FRACTURED WHT. SILTY LS.
1042	TRIPPED CORE BARREL BACK IN ... TD @ 71' (2' HIGH).
1042	START RUN # 4 @ 73' CORING SLOWLY
1107	STOP → 4' CORED in 30 minutes <u>100% RECOVERY</u> CORED 6' OF SAND ON A 4' RUN - WILL INCREASE RUN # 3 % TO 40%. → SAND (SHELLY & COARSE GRAINED QRTZ ... DETRITAL CARBONATE SOME LS. AT BOTTOM
1125	MIXING AQUAGEL (ADDING 1 BAG TO MUD TANK)
1148	START RUN # 5 (* FINALLY GETTING CIRCULATION RETURNS... BRIEFLY
1208	STOP → (3.5' in 20 minutes) <u>72% RECOVERY</u> WHITE SILTY LIMESTONE & CARBONATE SAND
1230	START RUN # 6 CORING QUICKLY THRU SOFT SEDIMENT WITH NO WT. ON BIT, 50 PSI, 50 RPM'S.
1252	STOP RUN 2.5' in 22 minutes <u>100% RECOVERY</u> SILTY WHITE CORALLINE LIMESTONE W/SAND.
1315	START RUN # 7 @ 83'
1430	STOP → 8' CORED in 75 minutes (4' of 8' RECOVERED)
1455	<u>50% RECOVERY</u> WHT - LT. GREY SOLUTIONED CORALLINE LIMESTONE W/SAND IN ALLING VOID.
1455	START CORE RUN # 8
1530	STOP RUN → 2' in 35 minutes
1545	<u>100% RECOVERY</u> SOLUTIONED, FRACTURED GREY LIMESTONE W/SAND. TEAR DOWN CORE BARREL FOR MAINTENANCE.

#2
59'-63'

#3
63-73'

#4
73-77'

#5
77-80.5'

#6
80.5-83'

#7
83-91'

#8
91-93'

WELL DRILLER'S LOG

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. 1 DATE 12/7/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1635	START CORE RUN #9 @ 93'
1710	STOP CORING @ 101' (7' OF CORE IN 45 MIN)
1711	CORE BARREL LODGED DOWN HOLE - USING ^{RIG} WINCH - SLOW PROGRESS
1740	TRIPPING OUT OK - PROBABLY NO CORE LEFT IN BARREL...
1800	~ 3' OF CORE RECOVERED, SECURE SITE
1815	43' RECOVERY COARSE LT. BRN. CARBONATE SAND
	UNDERLAIN BY LT. GREY LIMESTONE. THE SAND ZONE
	HEAVED IN AGAINST CORE BARREL CAUSING THE
	HANG UP DOWN HOLE.
1830	OFF SITE.

#9
13'-101'

WELL DRILLER'S LOG

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. 1FRIDAY
DATE 12/8/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0700	RUNNING 4" DRAG BIT DOWN HOLE TO CLEAN/CONDITION.
0720	MIXING ANOTHER (#2) BAG OF AQUAGEL IN MUD TANKS.
0730	CALL IN STATUS REPORT TO SFWMD.
0800	CIRCULATION CONTINUES (W/ RETURNS) AND ANOTHER BAG OF AQUAGEL IS MIXED.
	ADDITIVES: MUD TOTALS (SO FAR) : 3 BAGS AQUAGEL THIS WEEK : 5 GALS. EASY MUD.
0900	APPLYING A HEAVY WALL CAKE W/ EXTRATHICK MUD.
0945	TRIPPING OUT DRAG BIT.
1000	ATTEMPTING TO GET BACK TO BOTTOM W/ CORE BARREL HAVING TROUBLE GETTING PAST 90'-95' INTERVAL.
1030	WASHED DOWN TO BOTTOM
1035	START CORE RUN # 10. @ 101'
1055	CORING CONTINUES @ 120 RPM'S, >175 PSI AND GOOD RETURNS.
1120	STOP CORING → 2' in 45 minutes.
	<u>100% RECOVERY</u> IMPORTANT TO NOTE THAT THIS FRACTURED RUBBLE IS LT. GREY SPARRY LIMESTONE WITH CARBONATE SAND PACKED INTO NUMEROUS LARGE VUGS & SOLN. HOLES. SAND WAS ALMOST ENTIRELY WASHED AWAY DURING CORING.
1145	START RUN # 11 - LOST 2' OF HOLE & WASHING BACK TO 103'
1155	INTERRUPT CORING (MAKING LITTLE/NO PROGRESS) TO CALL SFWMD & DISCUSS SITUATION → WILL CALL BACK @ 1300
1205	CORE BIT PULLED UP INTO CASING WHILE WE AWAIT WORD. DRILLER SUGGESTS RUNNING MORE CASING - THEY HAVE 60' IN HOLE & 20' ON TRUCK - NOT ENOUGH TO CASE OFF PROBLEM AREAS.
1300	M. BRAUN (SFWMD) RECOMMENDS STABILIZING HOLE & SHUTTING DOWN FOR THE TIME BEING - DRILLERS NEED TO BRING ADDITIONAL CASING TO FINISH THE JOB NEXT WEEK.

#10
01'-103'

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

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PROJECT HERITAGE PARK WELL NO. 1DATE 12-12-89

TUESDAY

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0645	W.B. ON SITE
0700	RIGGING DESANDER; TRIP IN 4" DRAG BIT; POSITION EQUIPMENT.
0745	CIRCULATION ESTABLISHED
0815	CORE BARREL CIRCULATING @ 103' - MUD LOOK ^{RETURNS} BETTER THAN EVER
0911	START CORE RUN #11
1011	STOP RUN → 5' CORED in 60 min. FRACTURED (RUBBLE)
	30% RECOVERY LT. GREY SOLUTIONED FOSSILIFEROUS LS. w/ CARBONATE SAND IN VOIDS
1045	START RUN #12 @ 108'
1130	STOP RUN 5' CORED IN 45 minutes
	80% RECOVERY → LT. GREY FOSSIL LS, (FEW VUGS & CAVITIES) MASSIVE & HARD GRADING INTO HIGH POROSITY (~110'-113') GOOD PRODUCTION, SHELLY SOLUTIONED LIMESTONE.
1150	START RUN #13 @ 113'
1245	STOP RUN 6' CORED IN 55 MINUTES... (MUD PUMP PRESS. BEGAN TO DEG AND RUN WAS STOPPED @ 6')
	100% RECOVERY LT. GREY LS. (GOOD POROSITY, SHELLY, VUGULAR w/ SAND INFILLING)
1310	START RUN #14 @ 119'
1330	STOP → CORED 4' in 20 min. LOTS OF BIT CHATTER @ -121-2
	50% RECOVERY FRACTURED, SOLUTIONED LS. w/ INCREASING SAND CONTENT TOWARD 123' (CORE BOTTOM)
1350	MIXING MUD BEFORE RESUMING CORING (AQUAGEL & POLYMER)
1415	START RUN #15 @ 123'
1510	STOP → CORED 4' in 55 minutes
	50% RECOVERY LT. GREY FRACTURED SOLUTIONED LS.
1530	START RUN #16 (LOTS OF BIT CHATTER AT THE OUTSET)
1545	FM. TAKING LOTS OF WATER
1555	STOP RUN → CUT 6' in 25 minutes (2.5' OF 6' RECOVERED)
	42% RECOVERY LS. AS ABOVE
1620	TEAR DOWN CORE BARREL - CLEAN & LUBRICATE.
1635	START RUN #17
1720	STOP RUN (10' in 45 min) Intermittent bit chatter ^{ALL} THE WAY
	~50% RECOVERY
1800	SET SCREEN @ 132'-142'
1830	OFF SITE.

110-119

#11
103'-108'#12
08'-113'#13
113'-119'#14
119'-123'#15
123'-127'#16
127'-133'#17
133'-143'

WELL DRILLER'S LOG

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SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PK. WELL NO. 1 DATE 12/13/89
WED.

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0715	BEGIN TO PULL UP 103' OF 4" CASING
0735	STATUS REPORT TO SFWMD.
0800	CASING PULLED
0815	RIGGING DOWN. ? CLEAN-UP TO MOVE TO NEW SITE
~1015	RIGGED DOWN → MOBILIZE TO MARKHAM PARK
1130	ARRIVE @ PARK ; TOLD WE CAN'T CORE DUE TO
	BUREAUCRATIC SNAFU. (BEGIN STANDING BY (DRILLERS,
	WHILE I TRY TO SORT MATTERS OUT W/ DAVID BROCK
	(CO. ENGINEER)
1300	AFTER REPEATED PHONE CALLS & CONVERSATIONS,
	DRILLING, REMAINS ON STAND-BY...
1700	WE ARE ASSURED BY BROWARD CO. THAT WE WILL
	BE ABLE TO START CORING TOMORROW MORNING...
1800	SECURE RIG IN PARK COMPOUND ... AND THEN OFF SITE

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

MONDAY

①

PROJECT HERITAGE PARK WELL NO. CORE 1 DATE 12/4/89

BROWARD CO.
- CITY OF PLANTATION, FLA. -

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1530	ON SITE @ HERITAGE PARK. CHECKED IN WITH
	BILL HARTL - PARK MANAGER & PROCEEDED TO
	WORK AREA. (LEFT DISTRICT @ ~1345)
1600	RIGGING UP
1730	BUILDING CORE BOXES ETC. WHILE DRILLERS CONTINUE
	SITE SET UP.
1900	SECURED AREA - OFF SITE TO THE GOODLIFE MOTEL...

WELL DRILLER'S LOG

②

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. CORE #1 DATE Tues. 12/5/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0630	AWAITING DELIVERY OF 'TRASH' PUMP FROM TRI-W RENTAL.
0715	RIGGING UP FOR SPLIT SPOON SAMPLING.
0810	0-2' → 70% RECOVERY : 1 st 6" BLACK, ORGANIC RICH QTZ SAND .5' - 2' = FINE PALE BROWN "BEACH" SAND
0815	2-4' → 50% : FINE PALE BROWN SAND AS ABOVE
0818	4-6' → 75% : BRN, BLK QTZ SAND (WET) W.T. @ ~ 4'
0820	6-8' → 90% : AS ABOVE, "SOOPY" SAND (VERY SOFT)
0822	9-11' → 90% : 1' VOID SPACE (~ 8-9') PALE BROWN, FINE-MED GRAINED QTZ SAND
0830	11-12' → 100% : AS ABOVE
0835	12-14' → 100% : AS ABOVE
0840	~ 15.8' "HARD" ZONE DURING HAMMERING
0845	14-16' → 100% : MOTTLED, MED BRN, MED-COARSE GRAINED QTZ SAND
0900	16-18' → 100% : AS ABOVE
0910	TRI-W ON SITE W/ PUMP. PREPARING TO MIX MUD AND DRILL DOWN TO 18' WITH 4" DIA DRAG BIT & CLEAN HOLE.
0930	MUD MIXED - NO FURTHER PROGRESS DUE TO STUCK IMPELLER ON RIG MUD PUMP ... ATTEMPTING TO FREE IT UP.
1030	D. FLETCHER PHONES HYDROWELL TO DISCUSS PLAN OF ACTION
1130	PUMP DISASSEMBLED & PUT ON STAKE TRUCK FOR TRANSPORT TO TONEY DRILLING SUPPLIES IN OPA-LOCKA.
1200	WB OFF SITE TO MOTEL TO STANDBY (WORK ON NOTES ETC) (2 HOURS).
1400	DRILLERS BACK FROM MIAMI - WE RESUME OPERATIONS AS SOON AS MUD PUMP REASSEMBLED & FLUSHED WITH DISHWASHING SOAP TO REMOISTURIZE INTERNAL RUBBER PARTS.
1600	REASSEMBLY CONTINUES ... (TODAY?)
1730	TEST MUD PUMP & ADJUST.
1830	ALL IS SET FOR CONTINUED OPERATIONS TOMORROW SECURE SITE & PACK UP...

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PK. WELL NO. 1DATE 12/6/89 WED.

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0630	SETTING UP FOR MUD PUMP TESTING & SPLIT SPOON SAMPLING. ^{CONTINUED}
0730	CALL SFWMD W/ STATUS REPORT ... MUD PUMP & OK ... ^{STILL}
0830	CONTINUING TO MIX MUD & CONDITION HOLE. W/ 4" DRAG BIT
0900	HOLE CLEANED TO 18' → PREP. TO SPLIT SPOON
0930	18-20' → 50% : MED BROWN MED GRAINED QTZ SAND
0940	20-22' → 60% : MED BRN QTZ SAND (20'-21.75') UNDERLAIN BY COMPACTED MED GREY QTZ SAND ^{WITH CLAY} (21.75'-22')
0942	22-24' → 70% : MED TO LT. GREY QTZ SAND W/ SMALL AMT OF CLAY.
0945	24-26' → 80% : AS ABOVE W/ ^{MOTTLED} POCKETS OF WHT. QTZ SAND
0950	26-28' → 100% : FINE GRAINED WHITE QTZ SAND.
	RUN BACK IN WITH 4" DRAG BIT → CLEAN HOLE TO 28'
1035	28-30' → 50% : FINE, WHITE QTZ SAND.
1040	30-32' → 50% : AS ABOVE
1045	32-34' → 50% : AS ABOVE
1050	34-36' → 60% : COARSE GRAINED LT GREY - WHITE QTZ SAND.
1105	36-38' → 60% : AS ABOVE
1115	38-40' → 100% : AS ABOVE
1120	40-42' → 100% : COARSE TO 41' UNDERLAIN BY WHT. FINE QTZ SAND
1140	42-44' → 100% : FINE TO MED. WHT. QTZ SAND.
1145	TRIP IN " DRAG BIT & CLEAN / CONDITION HOLE TO 44'
1240	STOP CIRCULATING ; TRIP OUT.
1255	44-46' → 80% : FINE TO MED. WHITE QTZ SAND
1305	46-48' → 60% : AS ABOVE
1315	48-50' → 60% : AS ABOVE , BUT W/ BROWN MOTTLED COLOR @ 50'
1325	50-52' → 60% : MOTTLED BRN TO WHITE SAND W/ FINE YELLOW AND GREEN LAYERING (SAND & CLAY)
1330	52-54' → 100% : MOTTLED BRN - GREEN QTZ SAND W/ CLAY UNDERLAIN BY CROSS BEDDED GREEN SAND (53' to 53.6') WITH ABRUPT COLOR / LITHOLOGY CHANGE @ 53.6' → HAS BECOME WHT - ORANGE LIMESTONE, QTZ SAND & LIMEMUD INTERVAL.
	→ HARD "REFUSAL" @ 54' - WILL NOW GO IN WITH 4" BIT
	AND REAM TO 54' IN PREP. FOR CORING.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. 1

Thursday
DATE 12/7/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0730	CIRCULATING OUT RUBBLE @ 59' AFTER YESTERDAY'S CASING &
0830	KELLY HOSE BLOWS OFF...
0905	REPAIRS COMPLETED; CONTINUE CIRCULATION
0930	START CORE RUN # 2 @ 59'. LOW RPM @ START (~ 50 rpm) LOW MUD PRESSURE (50 PSI) EASY MUD POLYMER
0940	LOST CIRCULATION RETURNS @ ~ 61'. CONTINUE CORING SLOWLY.
0945	INCREASE RPM TO ~ 100/min
0955	STOP RUN # 2 (4' in 25 minutes)
	100% RECOVERY WHT, FRIABLE, SILTY, SHELLY SANDY LIMESTONE
1000	START RUN # 3 → STILL NO RETURNS
1020	STOP → CORED 63-73' in 20 minutes very fast thru fracture SOFT LIMESTONE
	* LOSSES DUE TO LOTS OF SAND
	40% RECOVERY (2 of 10') SOLUTIONED, FRACTURED WHT. SILTY LS.
1030	TRIPPED CORE BARREL BACK IN... TD @ 71' (2' HIGH).
1042	START RUN # 4 @ 73' CORING SLOWLY
1107	STOP → 4' CORED in 30 minutes
	100% RECOVERY CORED 6' OF SAND ON A 4' RUN - WILL INCREASE DETITAL CARBONATE
	RUN # 3 % TO 40%. → SAND (SHELLY & COARSE GRAINED QTZ... SOME LS. A BOTTL
1125	MIXING AQUAGEL (ADDING 1 BAG TO MUD TANK)
1148	START RUN # 5 (* FINALLY GETTING CIRCULATION RETURNS... BRIEFL
1208	STOP → (3.5' in 20 minutes)
	72% RECOVERY WHITE SILTY LIMESTONE & CARBONATE SAND
1230	START RUN # 6 CORING QUICKLY THRU SOFT SEDIMENT WITH NO WT. ON BIT, 50 PSI, 50 RPM'S.
1252	STOP RUN 2.5' in 22 minutes
	100% RECOVERY SILTY WHITE CORALLINE LIMESTONE w/SAND.
1315	START RUN # 7 @ 83'
1430	STOP → 8' CORED in 75 minutes (4' of 8' RECOVERED)
	50% RECOVERY WHT - LT. GREY SOLUTIONED CORALLINE LIMESTONE w/SAND
1455	START CORE RUN # 8 IN ALLING VOIC
1530	STOP RUN → 2' in 35 minutes
	100% RECOVERY SOLUTIONED, FRACTURED GREY LIMESTONE w/SAND
1545	TEAR DOWN CORE BARREL FOR MAINTENANCE.

#2
59'-63'

#3
63-73'

#4
73'-77'

#5
77-80.5'

#6
80.5-83'

#7
83-91'

#8
91-93'

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. 1 DATE 12/7/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1635	START CORE RUN #9 @ 93'
1710	STOP CORING @ 101' (7' OF CORE IN 45min)
1711	CORE BARREL LODGED DOWN HOLE - USING ^{RIG} WINCH - SLOW PROGRE
1740	TRIPPING OUT OK - PROBABLY NO CORE LEFT IN BARREL...
1800	~3' OF CORE RECOVERED, SECURE SITE
1815	<u>43% RECOVERY</u> COARSE LT. BRN. CARBONATE SAND UNDERLAIN BY LT. GREY LIMESTONE. THE SAND ZONE HEAVED IN AGAINST CORE BARREL CAUSING THE HANG UP DOWN HOLE.
1830	OFF SITE.

#9
93-101'

WELL DRILLER'S LOG

⑦

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PARK WELL NO. 1FRIDAY
DATE 12/8/89

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0700	RUNNING 4" DRAG BIT DOWN HOLE TO CLEAN/CONDITION.
0720	MIXING ANOTHER (#2) BAG OF AQUAGEL IN MUD TANKS.
0730	CALL IN STATUS REPORT TO SPWMD.
0800	CIRCULATION CONTINUES (W/ RETURNS) AND ANOTHER BAG OF AQUAGEL IS MIXED.
	ADDITIVES: MUD TOTALS (SO FAR): 3 BAGS AQUAGEL THIS WEEK: 5 GALS. EASY MUD.
0900	APPLYING A HEAVY WALL CAKE W/ EXTRATHICK MUD.
0945	TRIPPING OUT DRAG BIT.
1000	ATTEMPTING TO GET BACK TO BOTTOM W/ CORE BARREL HAVING TROUBLE GETTING PAST 90'-95' INTERVAL.
1030	WASHED DOWN TO BOTTOM
1035	START CORE RUN # 10. @ 101'
1055	CORING CONTINUES @ 120 RPM, 175 PSI AND GOOD RETURNS.
1120	STOP CORING → 2' in 45 minutes.
	(100% RECOVERY) IMPORTANT TO NOTE THAT THIS FRACTURED RUBBLE IS LT. GREY SPARRY LIMESTONE WITH CARBONATE SAND PACKED INTO NUMEROUS LARGE VUGS & SOLN. HOLES. SAND WAS ALMOST ENTIRELY WASHED AWAY DURING CORING.
1145	START RUN # 11 - LOST 2' OF HOLE & WASHING BACK TO 103'
1155	INTERRUPT CORING (MAKING LITTLE/NO PROGRESS) TO CALL SPWMD & DISCUSS SITUATION → WILL CALL BACK @ 1300
1205	CORE BIT PULLED UP INTO CASING WHILE WE AWAIT WORD. DRILLER SUGGESTS RUNNING MORE CASING - THEY HAVE 60' IN HOLE & 20' ON TRUCK - NOT ENOUGH TO CASE OFF PROBLEM AREAS.
1300	M. BRAUN (SPWMD) RECOMMENDS STABILIZING HOLE & SHUTTING DOWN FOR THE TIME BEING - DRILLERS NEED TO BRING ADDITIONAL CASING TO FINISH THE JOB NEXT WEEK.

#10
101'-103'

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

2

PROJECT HERITAGE PARK WELL NO. 1 DATE 12/11/89
 MONDAY

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1000	ON SITE AWAITING HYDROWELL.
~ 1130	SPWMD DRILLERS ON SITE SETTING UP.
- 1200	HYDROWELL ON SITE -
1230	POSITIONING EQUIPMENT TO GIVE EVERYONE ROOM.
1300	PULLING CASING
- 1340	ALL 3 · 21' CASING JOINTS LAID DOWN. TRIP IN
	4" DRAG BIT TO CLEAN HOLE TO ~ 103'
1350	MIXING QUIK-GEL
1430	CONTINUING TO WORK DOWN ~ 4" TO BOTTOM
1510	WORKING THE BIT PAST THE 80' MARK.
1550	T.D. @ 103' ; CLEAN / CONDITION HOLE
1630	TRIP OUT ; START CASING RUN
	3 · 21' JOINTS
	4 · 10.5' JOINTS
	} 105' 4" CASING SET
1730	CASING RUN COMPLETE ; JORGE RESTREPO AND D. BUTLER
	ON SITE TO DISCUSS NEXT SITE FOR CORING
1800	J. Restrepo et al off site
1830	SECURE SITE ; LEAVE

WELL DRILLER'S LOG

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

9

PROJECT HERITAGE PARK WELL NO. 1DATE 12-12-89

TUESDAY

110-119

TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0645	W.B. ON SITE
0700	RIGGING DESANDER; TRIP IN 4" DRAG BIT; POSITION EQUIPMENT
0745	CIRCULATION ESTABLISHED
0815	CORE BARREL CIRCULATING @ 103' - MUD LOOK BETTER THAN EV ^{RETURNS}
0911	START CORE RUN #11
1011	STOP RUN → 5' CORED in 60 min. FRACTURED (RUBBLE)
103'-108'	30% RECOVERY LT. GREY SOLUTIONED FOSSILIFEROUS LS. w/ CARBONATE SAND IN VOIDS
1045	START RUN #12 @ 108'
1130	STOP RUN 5' CORED IN 45 minutes
108'-113'	80% RECOVERY → LT. GREY FOSSIL LS, (FEW VUGS? CAVITIES) MASSIVE? HARD GRADING INTO HIGH POROSITY (~110'-113') GOOD PRODUCTION, SHELLY SOLUTIONED LIMESTONE.
1150	START RUN #13 @ 113'
1245	STOP RUN 6' CORED IN 55 MINUTES... (MUD PUMP PRESS. BEGAN TO DEG AND RUN WAS STOPPED @ 6'.)
113'-119'	100% RECOVERY LT. GREY LS. (GOOD POROSITY, SHELLY, VUGULAR w/ SAND INFILLIN)
1310	START RUN #14 @ 119'
1330	STOP → CORED 4' in 20 min. LOTS OF BIT CHATTER @ ~121-2
119'-123'	50% RECOVERY FRACTURED, SOLUTIONED LS. w/ INCREASING SAND CONTENT TOWARD 123' (CORE BOTTOM)
1350	MIXING MUD BEFORE RESUMING CORING (AQUAGEL & POLYMER)
1415	START RUN #15 @ 123'
1510	STOP → CORED 4' in 55 MINUTES
123'-127'	50% RECOVERY LT. GREY FRACTURED SOLUTIONED LS.
1530	START RUN #16 (LOTS OF BIT CHATTER AT THE OUTSET)
1545	FM. TAKING LOTS OF WATER
1555	STOP RUN → CUT 6' in 25 minutes (2.5' OF 6' RECOVER)
127'-133'	42% RECOVERY LS. AS ABOVE
1620	TEAR DOWN CORE BARREL - CLEAN & LUBRICATE.
1635	START RUN #17
1720	STOP RUN (10' in 45 min) Intermittent bit chatter ^{ALL} THE W.
133'-143'	50% RECOVERY
1800	SET SCREEN @ 132'-142'
1830	OFF SITE.

WELL DRILLER'S LOG

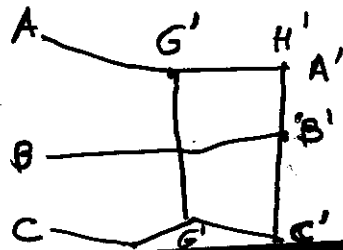
10

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT HERITAGE PK. WELL NO. 1 DATE 12/13/89
 WED.

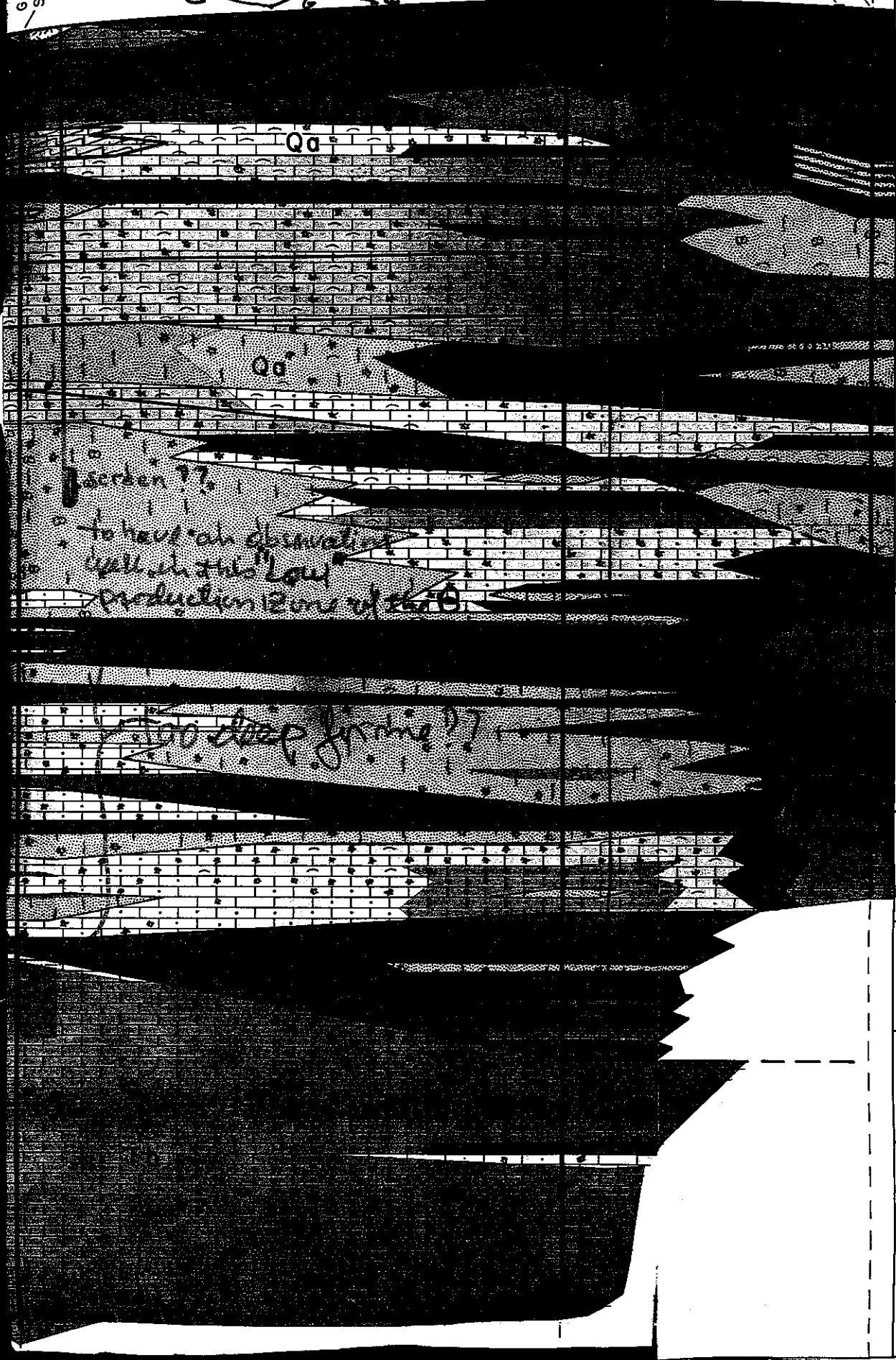
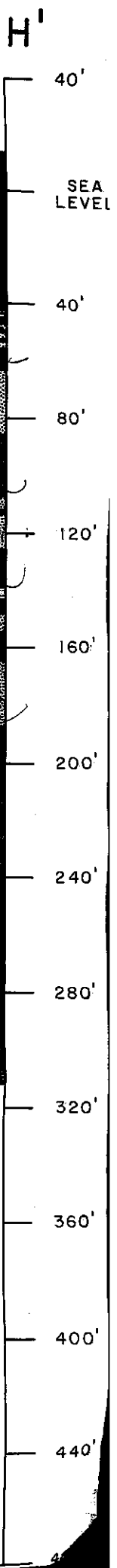
TIME	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0715	BEGIN TO PULL UP 103' OF 4" CASING
0735	STATUS REPORT TO SFWMD.
0800	CASING PULLED
0815	RIGGING DOWN & CLEAN-UP TO MOVE TO NEW SITE
~1015	RIGGED DOWN → MOBILIZE TO MARKHAM PARK
1130	ARRIVE @ PARK ; TOLD WE CAN'T CORE DUE TO
	BUREAUCRATIC SNAFU. (BEGIN STANDING BY (DRILLERS
	WHILE I TRY TO SORT MATTERS OUT W/ DAVID BROCK
	(CO. ENGINEER)
1300	AFTER REPEATED PHONE CALLS & CONVERSATIONS,
	DRILLING REMAINS ON STAND-BY...
1700	WE ARE ASSURED BY BROWARD CO. THAT WE WILL
	BE ABLE TO START CORING TOMORROW MORNING...
1800	SECURE RIG IN PARK COMPOUND ... AND THEN OFF SITE

G-2347 Allis Pond
SECTION
C-C'



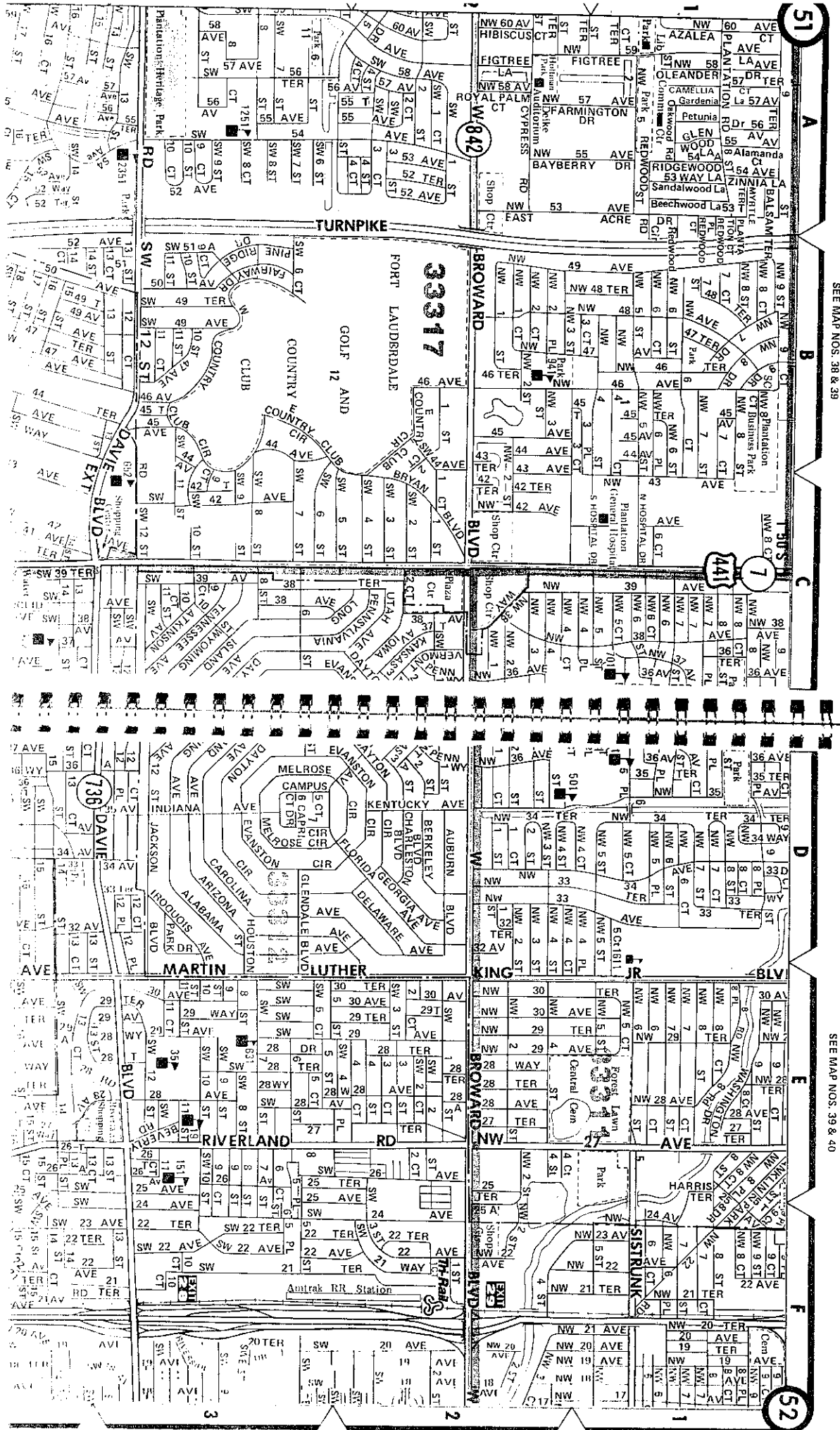
G-2344
SECTION
B-B'
COMINGS

STATE ROAD 810
SECTION
A-A'
G-2325



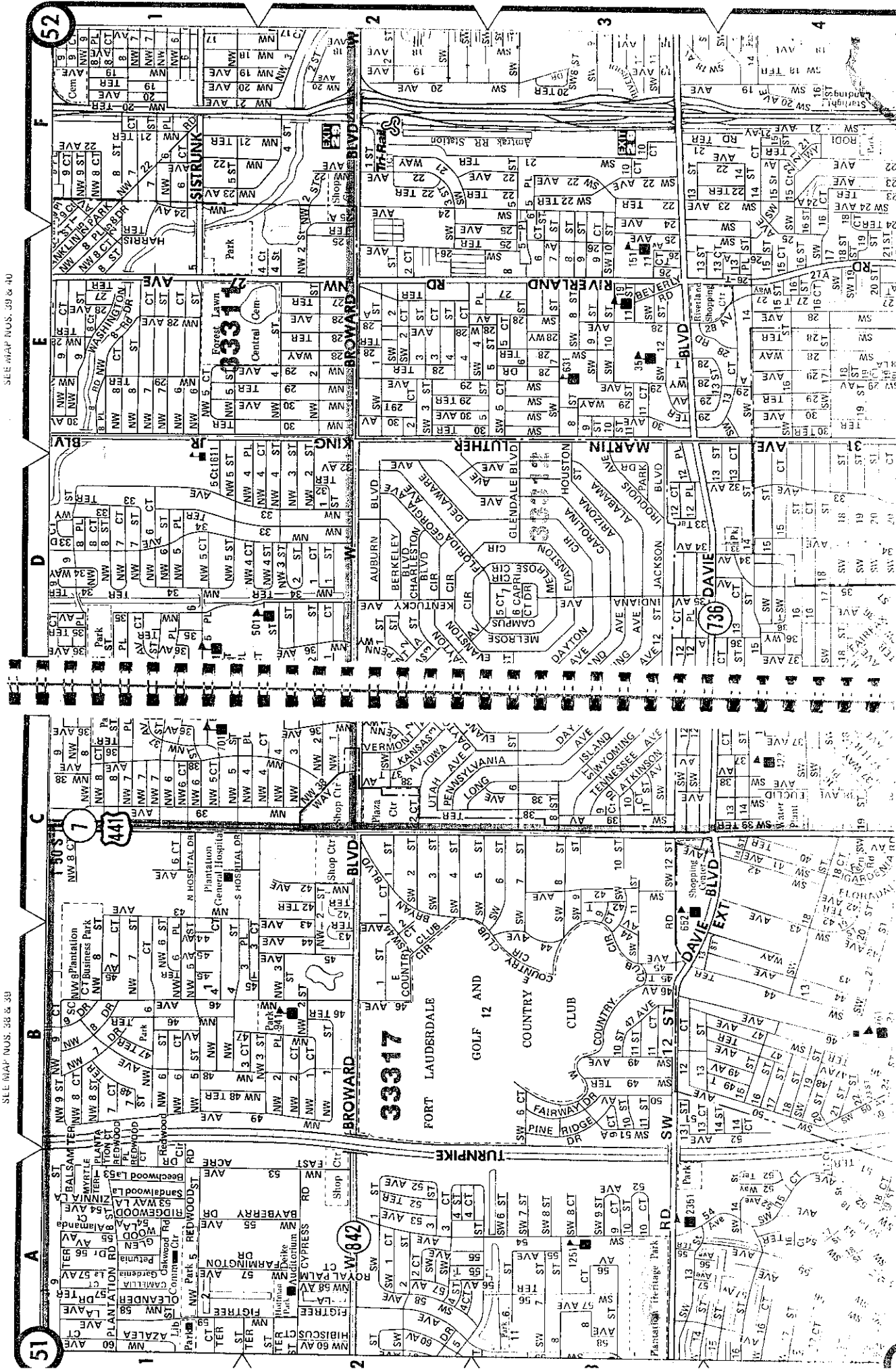
to have an observation
well in the low
production zone of the
to deep zone?

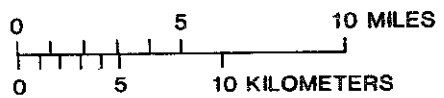
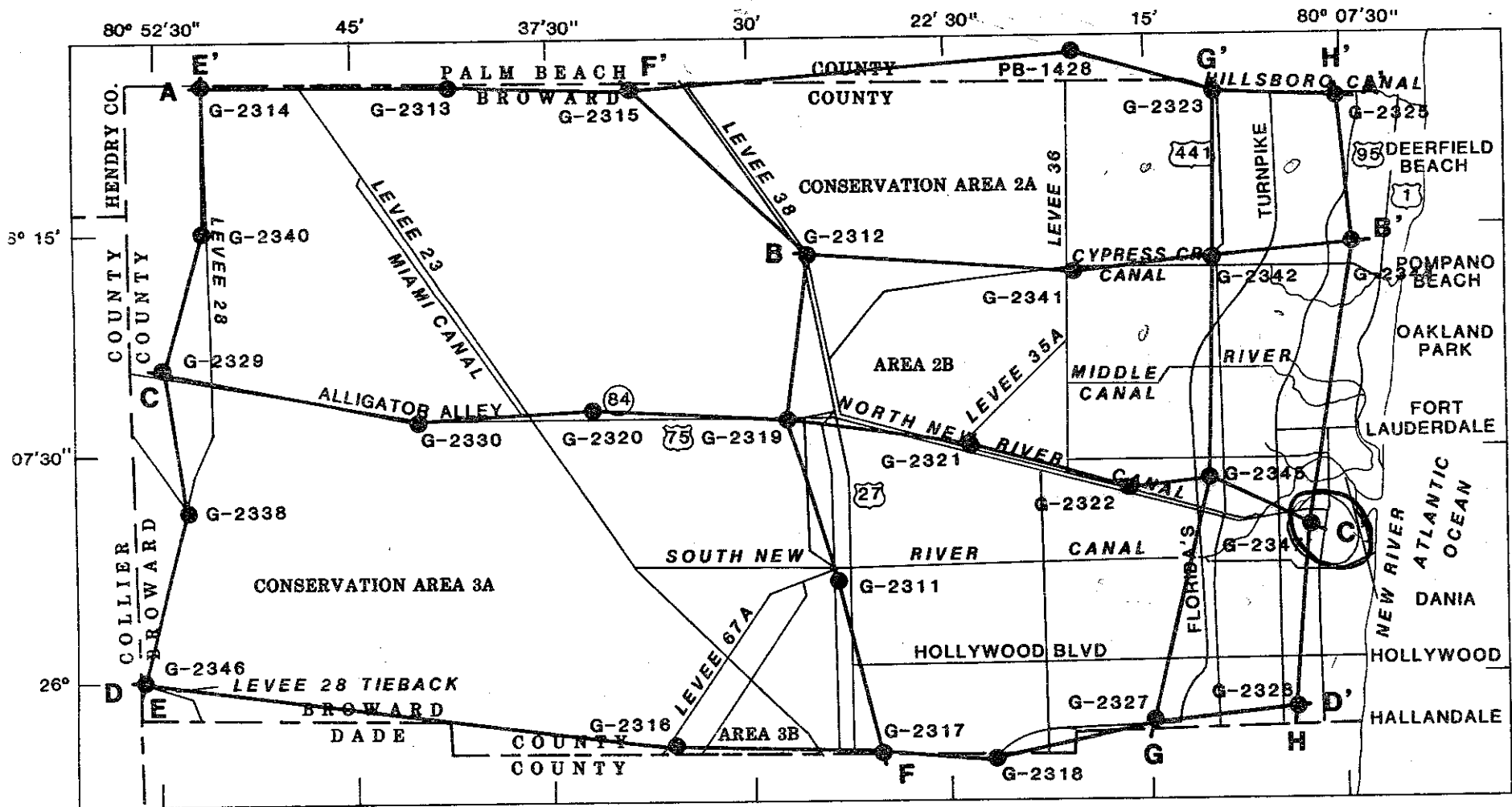
JORGE Thurs. 7:35
I SPOKE
WITH BILL HE IS
AWARE OF WHAT
YOU WOULD LIKE TO
DO W/CORE HOLE
Monty



SEE MAP NOS. 38 & 39

SEE MAP NOS. 39 & 40





EXPLANATION

- A — A' TRACE OF HYDROGEOLOGIC SECTION
- G-2317 TEST WELL AND NUMBER

Figure 3.--Location of test drilling sites and hydrogeologic sections (from Causarás, 1985). Well numbers and site names are listed in table 1.

G-2343
SECTION
C-C'

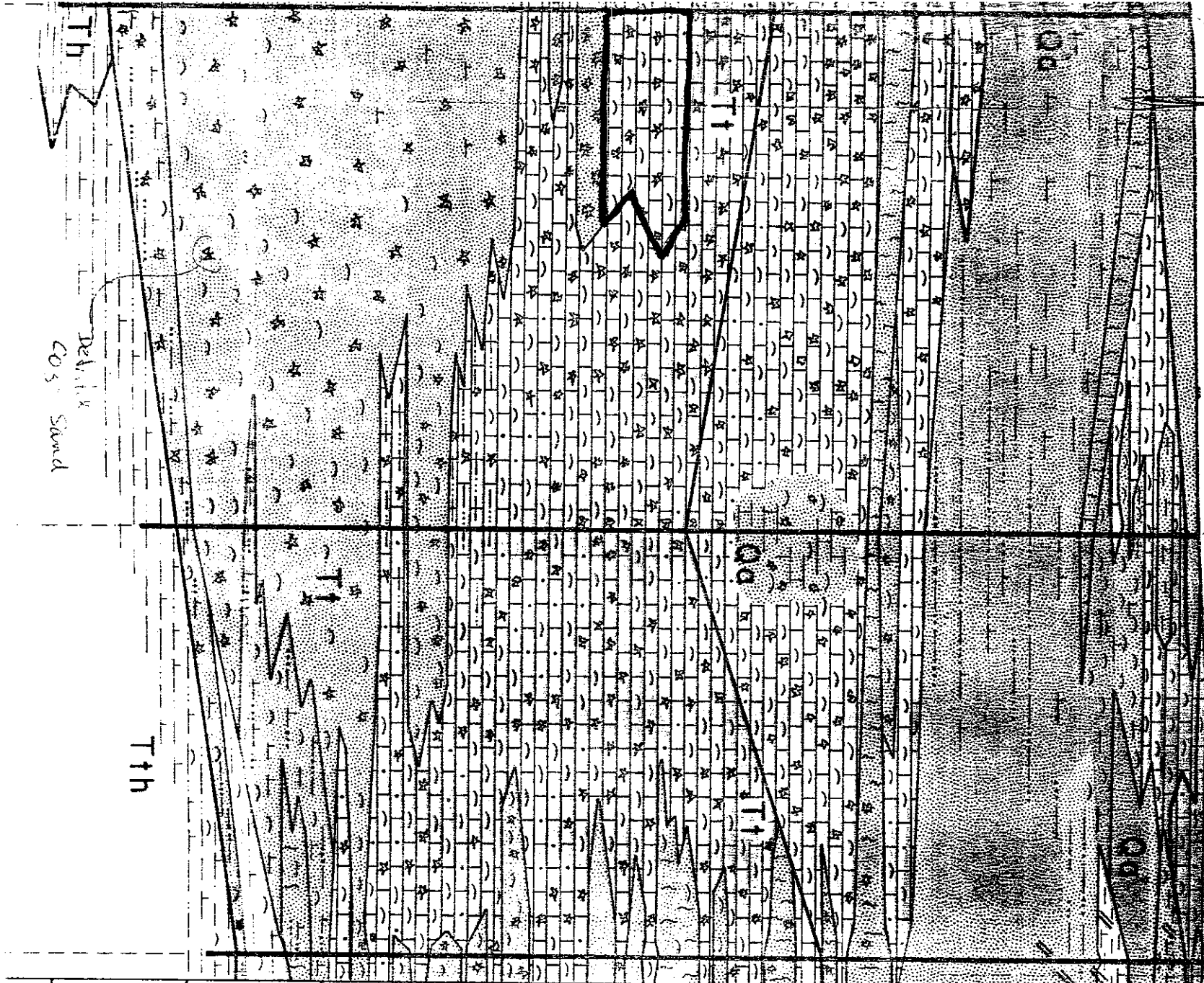
FLORIDA'S
TURNPIKE

SECTION
B-B'
G-2342
US-441

SECTION
A-A'
G-2323

HILLSBORO

140' 150' (15' of SCREEN)



Tth

Del. L.R.
Co's Sound

Tth

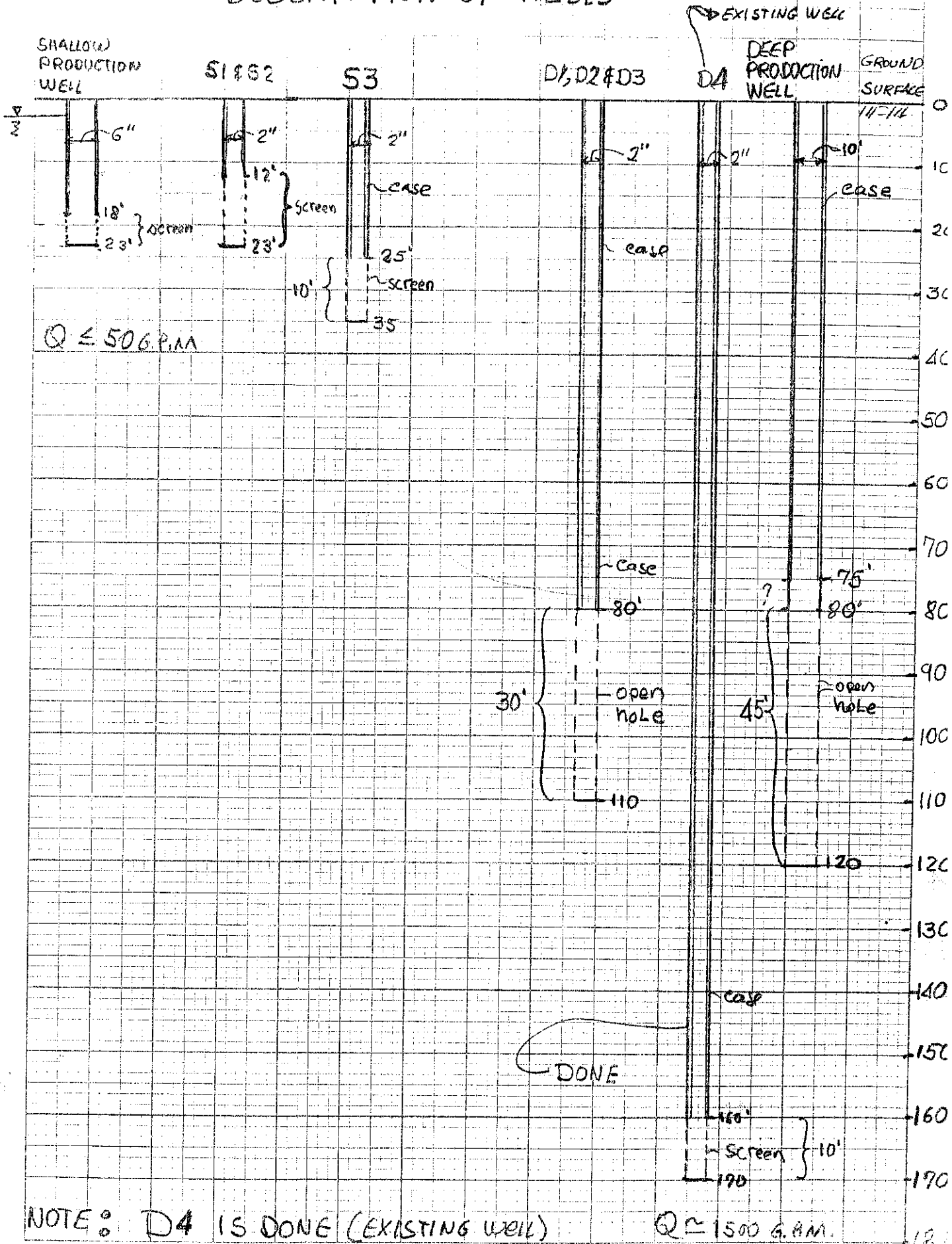
Qf

SEA
LEVEL

G

40' 80' 120' 160' 200' 240' 280' 320'

DESCRIPTION OF WELLS



NOTE: D4 IS DONE (EXISTING WELL)

$Q \approx 1500 \text{ G.P.M.}$

45 0940

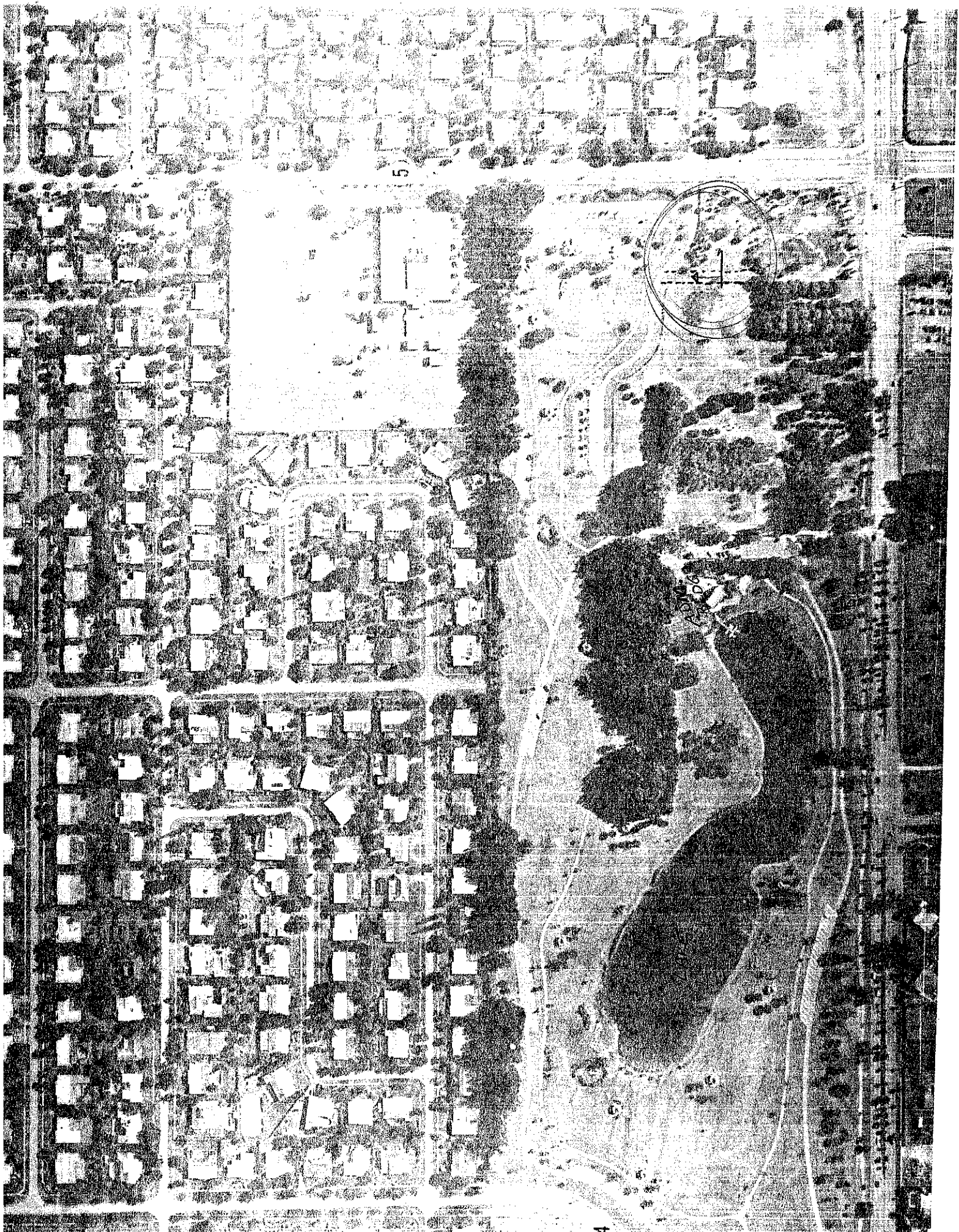
12 X 14 TO THE INCH • 3 INCHES
REUFFEL & ESSER CO. MAP IN SET

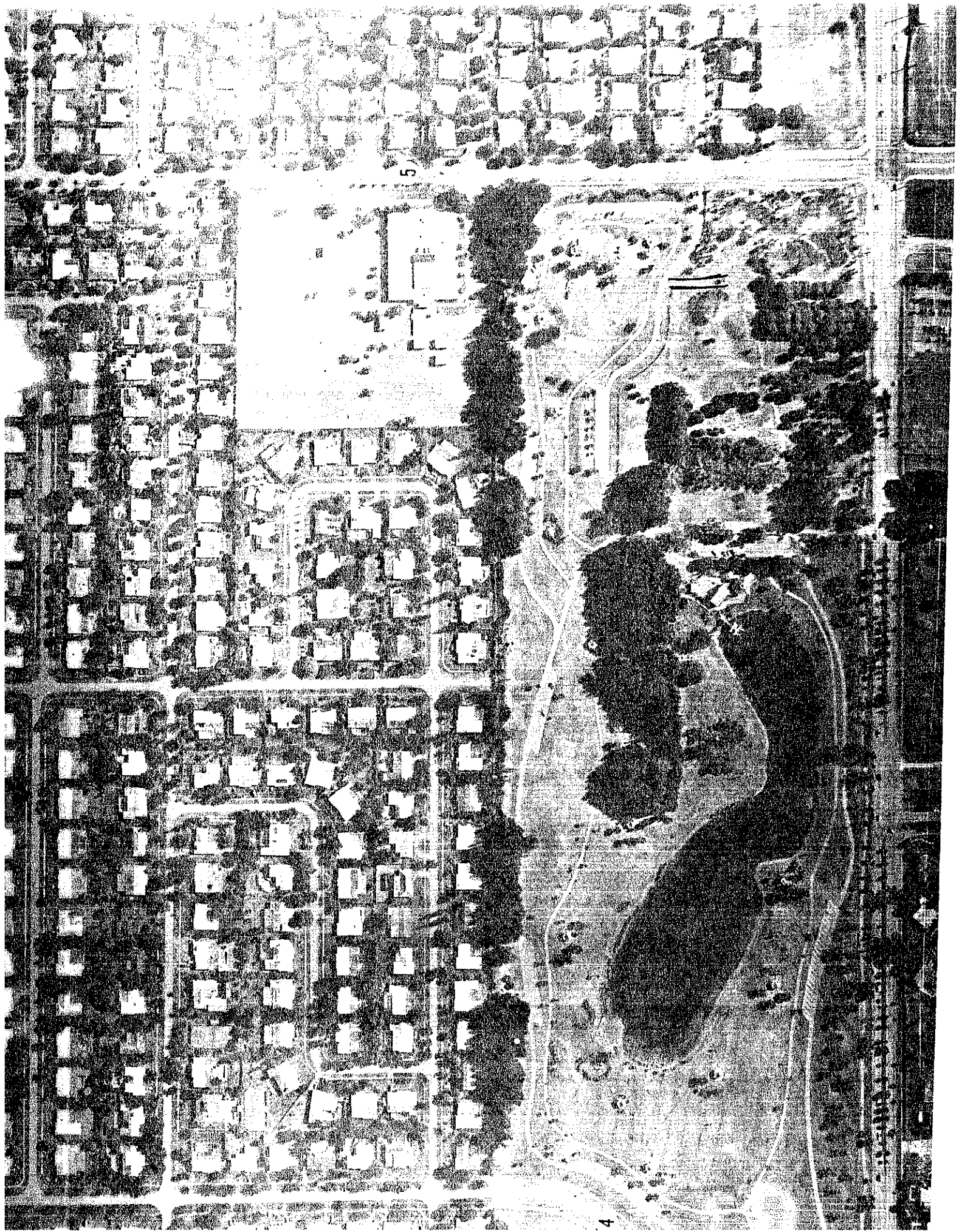


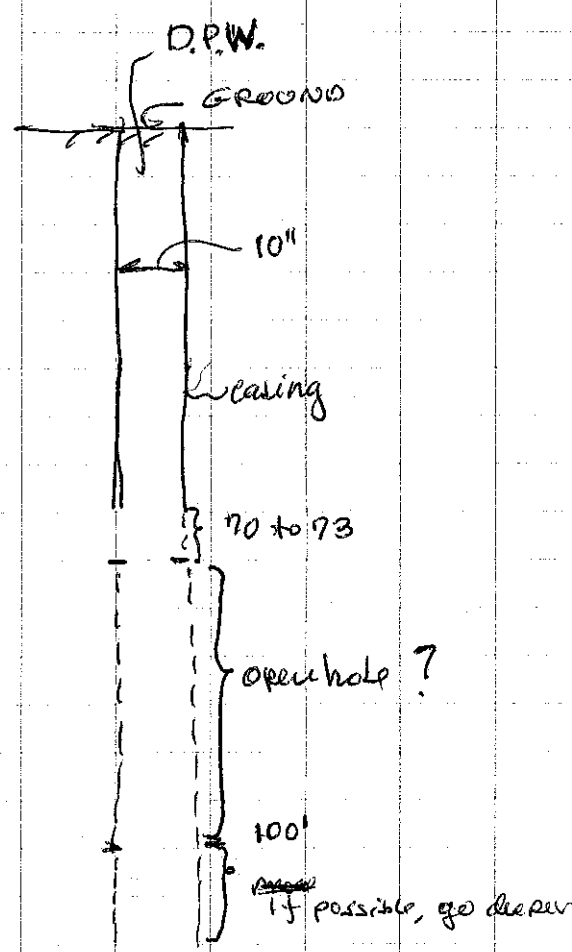
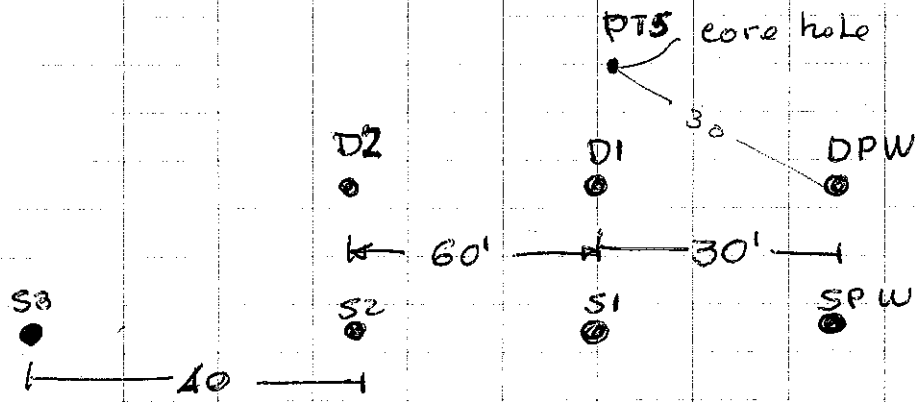
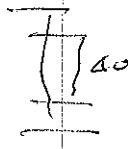
Plantation Heritage
Section 11 Township 50 Range 41



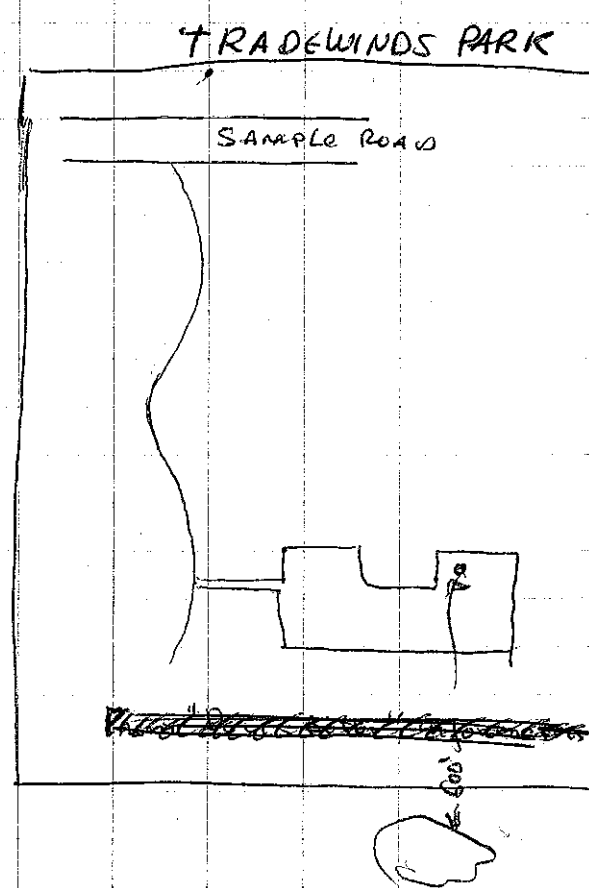
CD-11 Well Locations







the production zone seems:
 $Q \approx 1,000 \text{ GPM.}$



AGREEMENT

Between

BROWARD COUNTY

and

THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT

for

RIGHT OF ENTRY AND TESTING WELL CONSTRUCTION AT
PLANTATION HERITAGE PARK

AGREEMENT

Between

BROWARD COUNTY

and

THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT

for

RIGHT OF ENTRY AND TESTING WELL CONSTRUCTION AT
PLANTATION HERITAGE PARK

This is an Agreement, made and entered into by and between: BROWARD COUNTY, a political subdivision of the state of Florida, hereinafter referred to as "OWNER,"

AND

THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT and/or its agents, employees or assigns, hereinafter referred to as "PERMITTEE(S)."

W I T N E S S E T H :

WHEREAS, PERMITTEE(S) has requested and OWNER has agreed to grant PERMITTEE(S) the right to enter upon property of OWNER, described herein, for the purposes set forth herein; NOW, THEREFORE,

IN CONSIDERATION of the mutual terms, conditions, promises, covenants hereinafter set forth, OWNER and PERMITTEE(S) agree as follows:

SCOPE OF WORK

1. OWNER agrees to grant PERMITTEE(S) the right to enter upon OWNER'S property for the following limited purposes:
 - a. To construct water well(s) for the purpose of gathering lithologic data.
 - b. To conduct aquifer performance and step drawdown test(s) to determine water availability.
 - c. To collect geophysical logs on selected well(s) and to permit use of radioactive materials in test well(s) as set forth herein in Paragraph 3.

- d. To periodically be allowed access to the well(s) for the purpose of monitoring water levels and/or water quality sampling.

PERMITTEE(S) agrees to notify the Park Manager of entry onto the subject premises in order to perform any and all services referenced in this agreement.

2. OWNER and PERMITTEE(S) agree that such equipment as may be needed to accomplish the scope of work set forth above in Paragraph 1 may be brought upon, over and across the property of OWNER, which is described herein as follows:

East central zone of Plantation Heritage Park area located in Section 11, Township 50 South, and Range 41 East. The subject area is marked on the sketched map which is attached hereto and made a part hereof as Exhibit "A." The set of wells will be located in an area which has been mutually agreed upon by PERMITTEE(S) and OWNER.

3. OWNER agrees to authorize PERMITTEE(S) to utilize a sealed nuclear source for geophysical logging purposes in the test well(s) construction.

In the event the sealed source is lodged downhole, PERMITTEE(S) agrees to utilize all possible efforts to recover said source.

If a decision is made by PERMITTEE to abandon the sealed source downhole, PERMITTEE(S) agrees to do so in compliance with the rules and regulations promulgated by the Department of Health and Rehabilitative Services in Section 10D-91.1200, Florida Administrative Code, entitled "Control of Radiation Hazard Regulations," as amended from time to time, and any other applicable Federal, State, or local regulation, ordinance, or law.

In the event the said source is lost downhole, the South Florida Water Management District shall be responsible for the monitoring, maintenance, and implementation of any other requirement imposed by Federal, State, or local regulation, ordinance or law enacted to protect against contamination of the well and the surrounding formation water from said source.

The Radiation Safety Officer of the South Florida Water Management District shall be responsible for compliance with the above-referenced Department of Health and Rehabilitative Services regulations.

4. PERMITTEE(S) warrants to OWNER that upon completion of the scope of work described in this agreement, the property will be left in, or restored to, the same condition as it was when the PERMITTEE(S) and/or PERMITTEE(S) contractor(s) first entered upon the land to begin the work.
5. PERMITTEE(S) shall, to the extent permitted by law, indemnify, hold harmless and defend OWNER, its agents, servants and employees from and against any claim, demand or cause of action of whatsoever kind or nature arising out of the acts of PERMITTEE(S) and/or PERMITTEE(S) contractors in the performance of services under this agreement.
6. The representations and warranties of PERMITTEE(S) contained in Paragraph 3 above shall survive this agreement and continue to remain in full force and effect subsequent to the termination of this agreement.
7. PERMITTEE(S) and OWNER agree that this agreement shall terminate upon completion of the scope of services described in Paragraph 1 herein.

IN WITNESS WHEREOF, the parties have made and executed this Agreement on the respective dates under each signature: BROWARD COUNTY as OWNER through its BOARD OF COUNTY COMMISSIONERS, signing by and through its Chairman, authorized to execute same by Board action on the _____ day of _____, 19____, and the SOUTH FLORIDA WATER MANAGEMENT DISTRICT as PERMITTEE, signing by and through its _____, duly authorized to execute same.

COUNTY

ATTEST:

BROWARD COUNTY, through its
BOARD OF COUNTY COMMISSIONERS

County Administrator and
Ex-Officio Clerk of the
Board of County Commissioners
of Broward County, Florida

By _____
NICKI E. GROSSMAN, Chairman

_____ day of _____, 19____.

AGREEMENT BETWEEN BROWARD COUNTY AND THE SOUTH FLORIDA WATER
MANAGEMENT DISTRICT FOR RIGHT OF ENTRY AND TESTING WELL
CONSTRUCTION AT PLANTATION HERITAGE PARK

Approved as to form by
Office of County Attorney
Broward County, Florida
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By _____
Patrice M. Eichen
Assistant County Attorney

PERMITTEE

WITNESSES:

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

By _____

_____ day of _____, 19__.

PME:bjw
7/25/89
plant.a01
#89-035.01



EXHIBIT "A"

Plantation Heritage Park

Well Locations