

L2-CANAL TEST Well (Correspondence)
LAT: 26° 36' 30.2" N
T45S; R34E; S4 Long: 80° 56' 58.4" E

L2-TW

Packer Test # 1

2072' to 2124' interval Top Packer set w/ 52' of

2-1-94

Drop pipes below top Packer.

(CaCO₃) Alka = 101.7 mg/L

CA = 10,738.5 mg/L

Cond = 30800 umhos/cm

SiO₂ = 9.409 mg/L

SO₄ = 1358.9 mg/L

TDS = 19100 mg/L

CA = 476 mg/L

K = 197.3 mg/L

Mg = 678 mg/L

NA = 5910 mg/L

Packer Test # 2

1890' to 1908' interval; 18' Packer interval.

2-4-94

(CaCO₃) Alka = 95.64 mg/L

CL = 3083.78 mg/L

Cond = 9900 umhos/cm

SiO₂ = 11.809 mg/L

SiO₄ = 424 mg/L

TDS = 5550 mg/L

CA = 204 mg/L

K = 46.3 mg/L

Mg = 224.2 mg/L

Na = 1615 mg/L

Packer Test # 3. 1268' to 1284'; 18' interval
2-7-94

Alka = 90.72 mg/L
CL = 490.73 mg/L
Cond = 2240 umhos/cm
SiO₂ = 7.866 mg/L
SO₄ = 365.89 mg/L
TDS = 1370 mg/L
Ca = 490.73 mg/L
K = 15.85 mg/L
Mg = 71.10 mg/L
Na = 307 mg/L

Tuesday 2-8-94
Packer Test # 4 1652.0 to 1704.0; 52' interval

(CaCO₃) Alka = 91.41 mg/L
CL = 881.62 mg/L
Cond = 3400 umhos/cm
SiO₂ = 10.591 mg/L
SO₄ = 439.435 mg/L
TDS = 2160 mg/L
Ca = 101 mg/L
K = 23.6 mg/L
Mg = ~~535~~ 103.9 mg/L
Na = 535 mg/L

Packer Test #5 1442' to 1494' 52' Packer Interval.
2-9-94 (Wednesday)

Alka = 90.12

CL = 444.725

Cond = 2230

SiO₂ = 10.459

So₄ = 321.62

TDS = 1370

Ca = 77.5

K = 11.8

Mg = 70.5

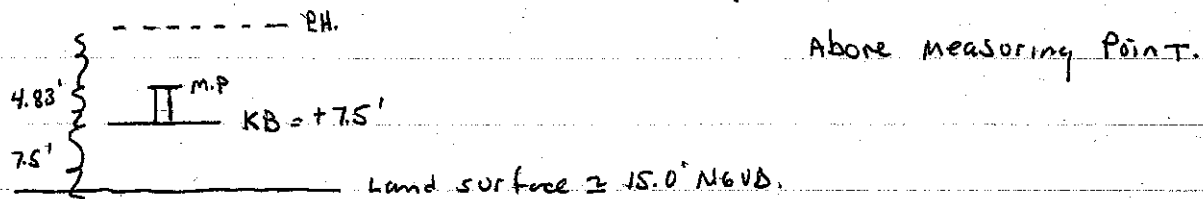
Na = 257

Tuesday 2-1-94

10,738.5 mg/L Lab

Packer TEST #1 : set 2069' bls. : chloride concentration 10,420 mg/L ^{Had} _{Ki}

Pressure Gauge reading = $3.50 \times 2.31 = 8.085'$ of head



$$15.0' + 7.5' + 4.83' + 8.01' = 35.34' \text{ Fresh water Head}$$

$$2069 \times 0.0125' = 25.86' \text{ equivalent salt water Head}$$

$$61.20' \text{ salt water Head.}$$

Pre-TEST Readings:

Transducer set 80.0 below m.p.

Least Transducer head of Pre-TEST = $14.33 \times 5.0 = 71.65'$

Total Drawdown = $8.35 \text{ bmp} + 8.01' \text{ Above m.p.}$

= $16.36'$ of D'd. @ pump rate of 75.0 gpm.

$$\begin{array}{r} 80.00 \\ - 71.65 \\ \hline 8.35' \end{array}$$

Specific Capacity = $Q/s = 75 \text{ gpm} / 16.36' \text{ D'd}$
 = $4.58 \text{ gpm} / \text{ft of D'd}$

Recovery Data:
 12.49' of Head

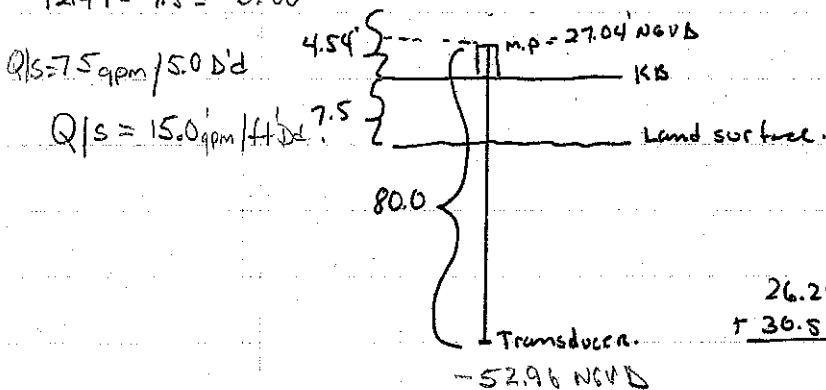
Friction Loss
 0.375' per 100'

Initial LH reading = $16.707 \times 5 = 83.54'$ of water Above 3 drill stem

$$20.5 \times 0.375 = 7.5'$$

$$12.49 - 7.5' = 5.00'$$

Volume of water were evacuated
 Above the Transducer. High range



$$15.0 + 7.5 + 4.54 + 3.54 = 30.58'$$

$\frac{30.58'}{26.25} = 1.165$ Fresh water head
 + $\frac{13.12}{26.25} = 0.5$ Brackish water head
56.83 salt water Head.

Initial LH reading measured from the m.p. (Peacock) = $0.625 \times 5 = 3.125'$

using 30 psi Transducer. $15.0 + 7.5 + 4.54 + 3.125 = 30.17'$

Initial ~~reading~~ reading measured on Permit from the High range transducer was 85.03

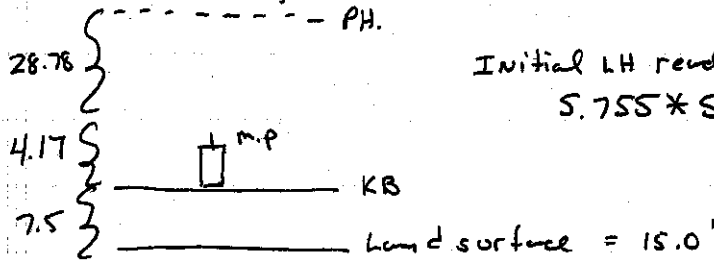
$$15.0 + 7.5 + 4.54 + 5.03 = 32.07' \text{ NGVD} \quad \} 58.32' \text{ salt water head}$$

Friday 2-4-94

Packer Test #2

Test interval = 1890' to 1910'

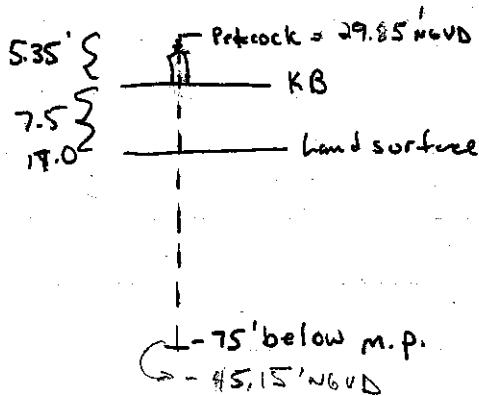
Initial reading prior to drill stem evacuation:



Initial LH reading using the 50psi Transducer was $5.755 * 5 = 28.775$ Above m.p.

$$15.0 + 7.5 + 4.17 + 28.78 = 55.45' \text{ NGVD}$$

- ° Evacuation of Drill stem consisted of pumping APPROX 3650 gallons.
- ° Transducer was set 75' below m.p.



Initial LH reading from the 50psi transducer. Measured from the petcock was $19.290 = 76.45 = \underline{\underline{49.3' \text{ NGVD}}}$
 $19.217 * 5 = 96.085$

Potentiometric Head. (Salty under Head)
 $15.0 + 7.5 + 5.35 + 2.1 = 48.95' \text{ NGVD}$

pump rate = 35 gpm

Drawdown Data:

83.66' of D'd @ End of Drawdown Test

pump rate = 35 gpm

Friction Loss = 0.09' per 100'

$$0.09 \times 20 = 1.8'$$

$$\text{corrected D'd} = 83.66 - 1.8' = 81.86'$$

$$\text{corrected } Q/s = 35 \text{ gpm} / 81.86' \text{ D'd}$$

$$= 0.43 \text{ gpm/ft}$$

84.32 feet of Recovery

+ (-45.15) NGVD

39.17 ft (NGVD)

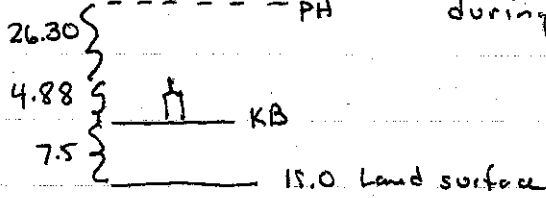
Monday 2-7-94

Packer TEST # 3

TEST Interval = 1266 to 1286 → 20' interval.

Chloride concentration = 491 mg/l.

Initial LH read prior to evacuating drill stem $5.260 \times 5 = 26.30'$
during the Drawdown test.



$$15.0 + 7.5 + 4.88 + 26.30 = 53.68' \text{ NGVD.}$$

$$\begin{array}{r} + 2 \\ \hline 55.68 \end{array}$$

pump rate = 3.5 gpm.

* Recovery Data was the only data collected during this test.

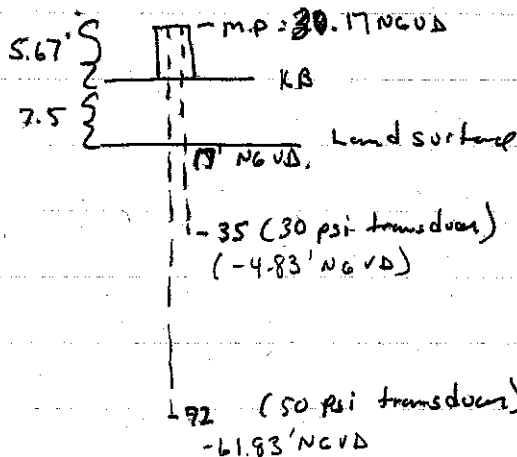
- 50 psi Transducer was set 92' below m.p.

- 30 psi Transducer was set 35' below m.p.

Approx 116.85' D'd occurred

during evacuation of drill stem

@ 3.5 gpm.



WL = 52.42' NGVD

Recovery Data:

114.25' of Recovered Head @ End of D'd

Pump Rate = 3.5 gpm

Friction Loss = negligible

corrected Q/s = 3.5 gpm / 114.25' D'd

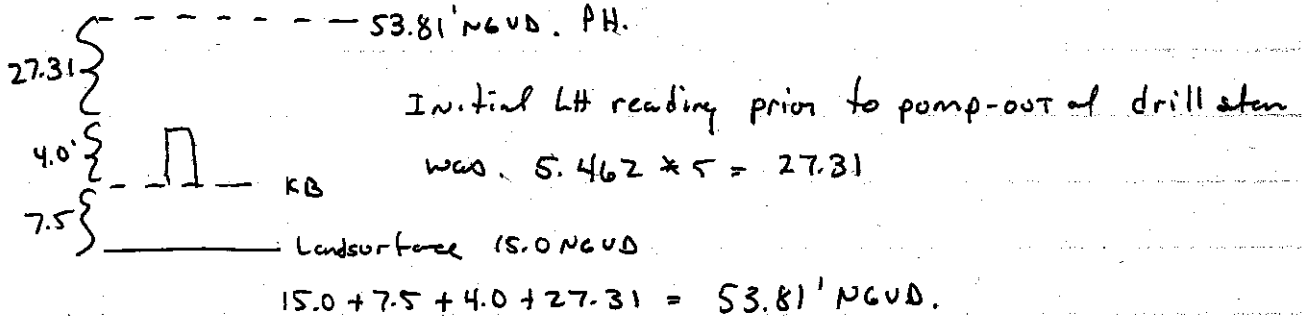
= 0.03 gpm/D'd

Tuesday 2-8-94

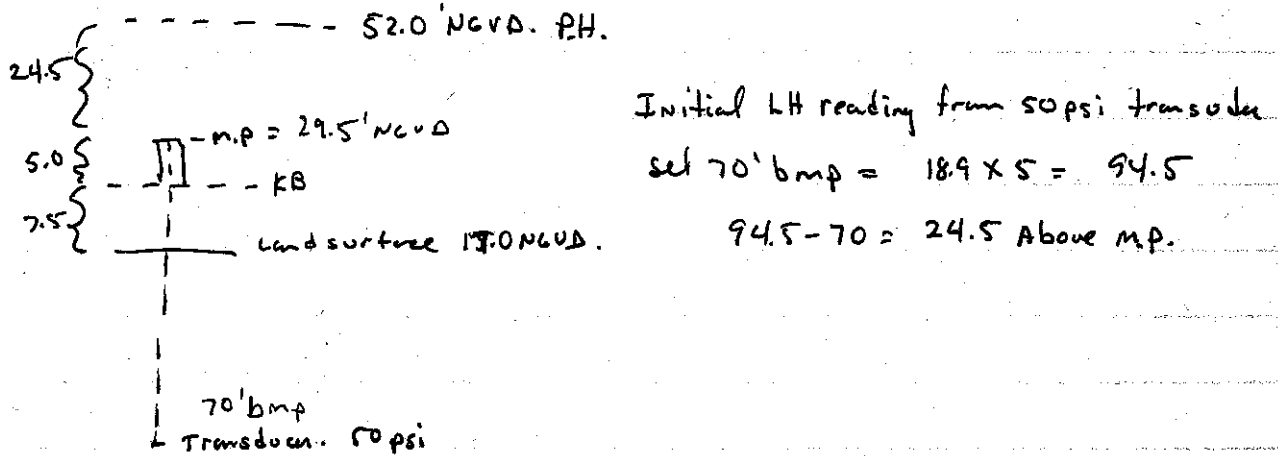
Packer Test #4

TEST interval 1652 to 1702 - 50' interval.

Chloride concentration = 882 mg/L.



Prior to Drawdown Test



pump rate = 35 gpm

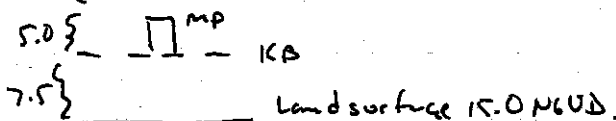
Final LH reading prior to pulling the 50 psi transducer @ the end of

the Recovery Test = $\frac{19.234}{5} = 96.17$

26.17 (indicated by a bracket on the left)

53.67' NGVD.

$96.17 - 70.0 = 26.17$



Drawdown Data

60.01' of D'd @ End of Drawdown Test (pump rate = 35 gpm)

Friction Loss = $0.09 \times 16.5 = 1.49'$

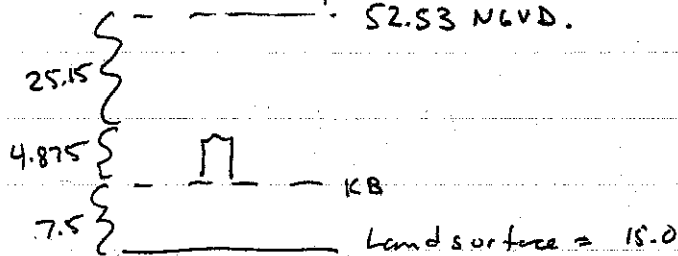
Corrected D'd = $60.01 - 1.49 = 58.51' \text{ D'd}$

Q/s = $35 \text{ gpm} / 58.51' \text{ D'd}$

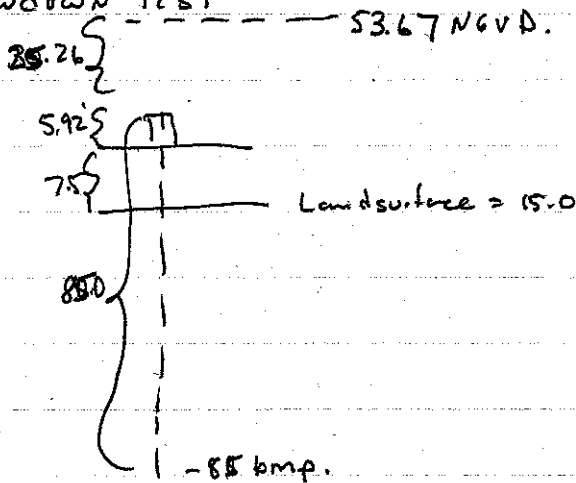
Wednesday 2-9-94

Packer Test #5 TEST interval = ~~1594~~ (1442-1492)

initial LH reading prior to evacuating drill stem = $5.03 \times 5 = 25.15'$ AN



Prior to
Drawdown TEST



Recovery Data

92.51' of Recovered Head pump rate = 30 gpm

Friction Loss: $0.05 \times 14.5 = 0.73'$

Corrected D'd = $92.51 - 0.73 = 91.78$

corrected Q/s = $30 \text{ gpm} / 91.78' \text{ D'd}$

= $0.35 \text{ gpm} / \text{D'd}$

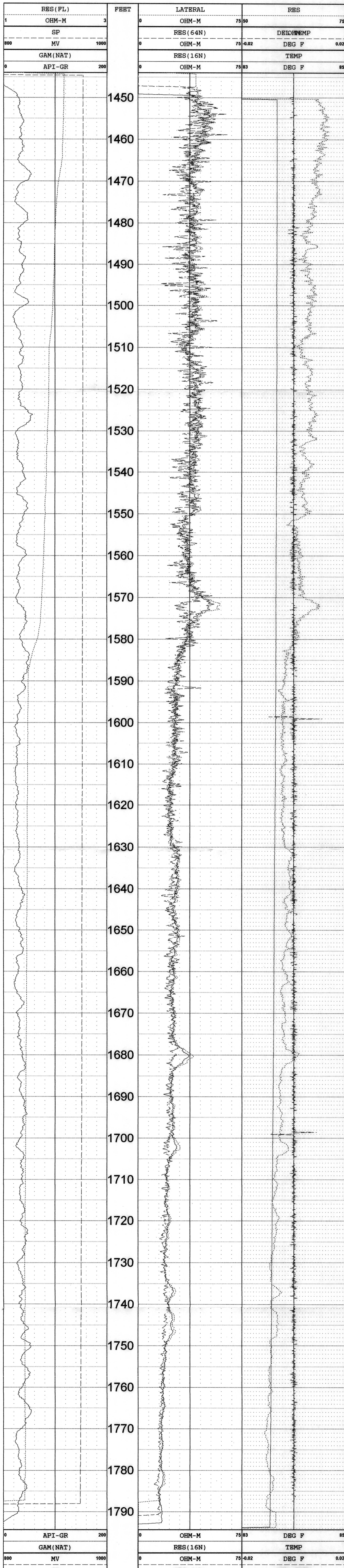
Need Caliper Log.

**ALL
WEBB'S
ENTERPRISES
INC.**

CLEWISTON

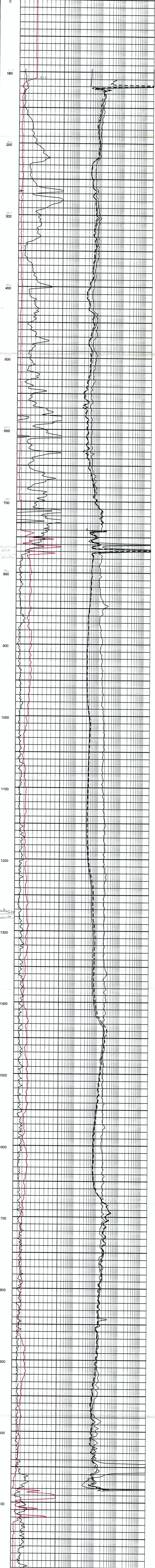
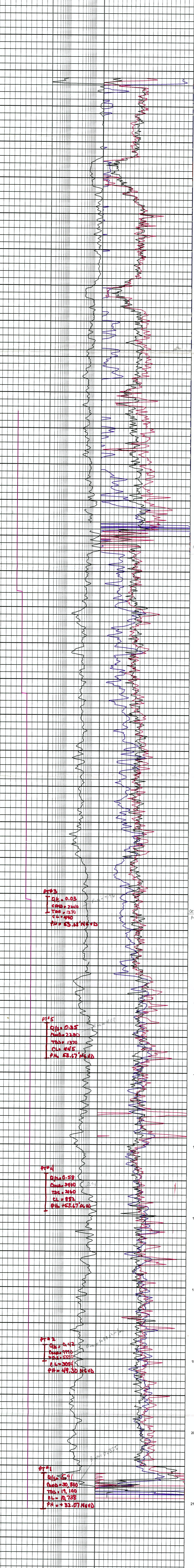
WELL : SFWMD	OTHER SERVICES:	
COMPANY : CLEWISTON	GEO LOG	
LOCATION/FIELD : L-1 CANAL	FLOW	
COUNTY : PB	VIDEO	
STATE : FL		
SECTION :	TOWNSHIP :	RANGE :
DATE : 12/19/96	PERMANENT DATUM : GL	
DEPTH DRILLER : 1800		KB : 0
LOG BOTTOM : 1794.10	LOG MEASURED FROM: TOC	DF : 0
LOG TOP : 1443.90	DRL MEASURED FROM: GL	GL :
CASING DIAMETER : 12	LOGGING UNIT : 1	
CASING TYPE : BLK ST	FIELD OFFICE : FT MYERS	
CASING THICKNESS: .375	RECORDED BY : TINSLEY	
BIT SIZE : 7.825	BOREHOLE FLUID : MUD	FILE : ORIGINAL
MAGNETIC DECL. : 0	RM :	TYPE : 9041A
MATRIX DENSITY :	RM TEMPERATURE :	
NEUTRON MATRIX :	MATRIX DELTA T :	
		THRESH: 2500
LOG TYPE : GEOPHYSICAL		
COMMENTS : 12 TEMP. SET		

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



Temp	Rwa	Sonic
75.0	85.0 0.02	DPHI
		0.0
		NPHI
		0.0
		SPHI
		0.0

Gamma / Cali	Track 1
GR	LL3
0.0	150.0 0.2
	2000.0
XCAL	ILD
10.0	30.0 0.2
	2000.0
	ILM
	0.2
	2000.0



(14)

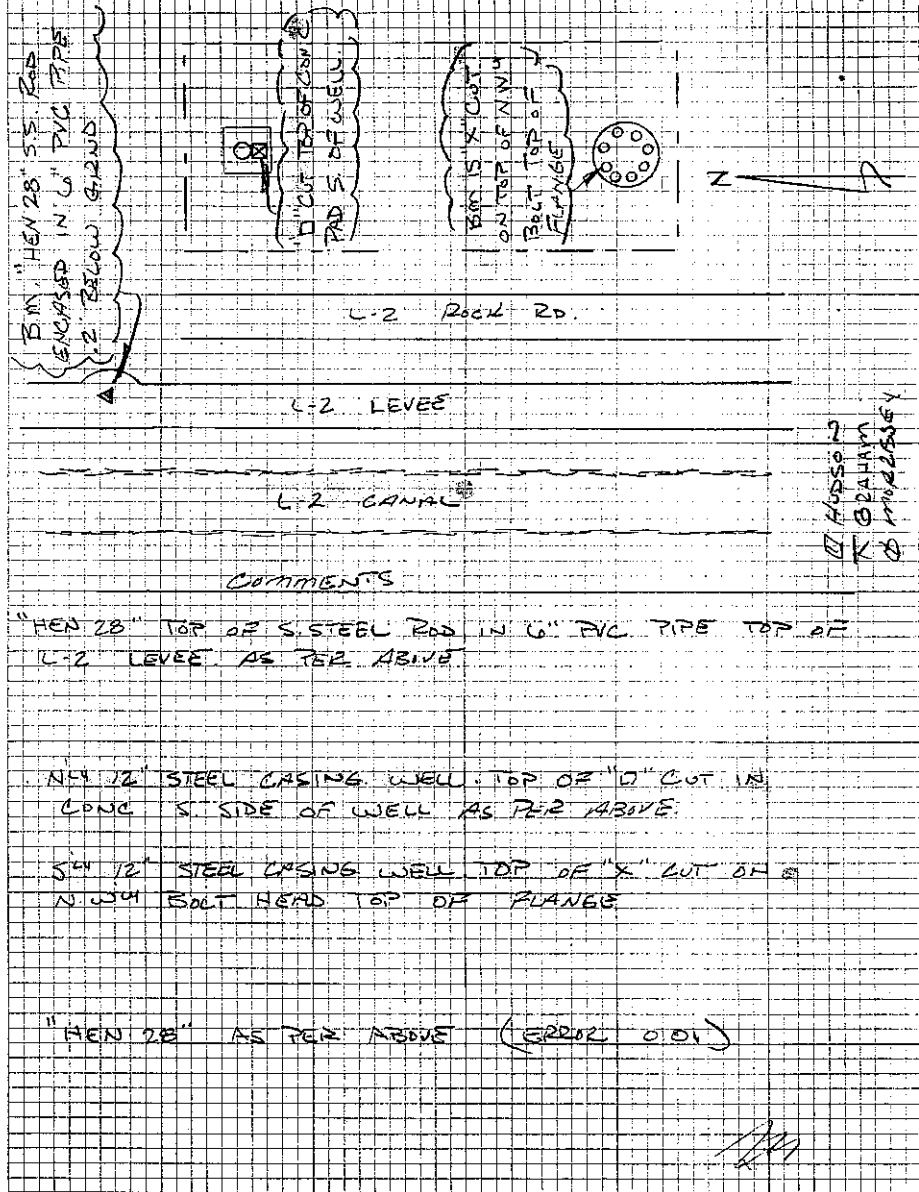
SEC 4 T15P 4TS RGE 34 E

ESTABLISH ELEV. ON MONITOR WELLS ON L-2 +- 500' S OF G-1511 AND EAST OF L-2 ROAD.

REFS @ MEMO FR. MICHAEL BENNETT TO HOWARD SIMPLE

- ① LOCATION SHEETS
- ② B.M. DESCRIPTION SHEETS
- ③ LAKE HARBOR S.W. FLA. QUAD

STA	HI	=	ELEV.	B.M.
B.M.				27.65
	2.10 (5.16)		29.75	17.83 17.835 (17.835)
TBM		11.92 (1.35)	17.83	17.835 (17.835)
TBM		7.73 (5.54)	22.02	22.025 (22.025)
RETURNING LEVELS				
B.M.	7.65 (5.62)		29.67	
		0.03 (5.23)	27.04	27.05



"HEN 28" TOP OF S. STEEL ROD IN 6" PVC PIPE TOP OF L-2 LEVEE AS PER ABOVE

12" STEEL CASING WELL TOP OF "D" CUT IN CONC S. SIDE OF WELL AS PER ABOVE

54" 12" STEEL CASING WELL TOP OF "X" CUT OF N. 1/4 BOLT HEAD TOP OF FLANGE

"HEN 28" AS PER ABOVE (ERROR 0.01)

MISSO
GRAHAM
MORSEY

Handwritten signature or initials.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 12-15-93

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
0'-9'	well indurated brown to tan colored sandy limestone w/ minor amount of shell fragments. Also contains minor amount of moderately indurated Lt-gray fine grained sandstone fragments. some calcite replaced shell fragments (slow drilling w/ significant bit chatter.) (cap rock) -
9'-18'	poorly indurated - soft Lt to red gray to slightly olive gray-green silty clay w/ fragments of light brown sandy limestone fragments interbedded as found above this interval. (fast drilling); A significant amount of sand ^{quartz} is ^{is} present in the drilling cuttings.
18'-25'	Light-tan to buff colored, poorly indurated (consolidated) shell hash / Limestone the majority of the sample contains mollusk shell fragments w/ whole (Chione) mollusk shells. Typical of Tamiami Formation.
25'-32'	Lt gray to gray colored Limestone w/ minor amounts of frosted quartz grains, large amounts of gastropod & mollusk shell fragments w/ few whole mollusk (Chione) and gastropod () shells. ^{medium} Drilling
Tripped out of bore-hole @ 1325	
Tripped into borehole @ 1340 2nd string	
32'-38'	Lt gray moderately ^{to poorly} indurated sandy limestone w/ significant 40% of medium to coarse grained frosted quartz grains; contains fragment of sparry calcite and shell fragments; few whole mollusk shell fragments
38'-43'	Lt gray moderately to well indurated sandy limestone, containing calcite replaced shell fragments; medium to coarse grained frosted quartz grains and whole mollusk (Chione) shells & fragments.
43'-58'	Lt-gray to gray colored poorly to moderately indurated Limestone (fast drilling) w/ strings of well indurated gray limestone; the majority of the interval contains limestone and mollusk shell fragment w/ minor amount of medium to coarse-grained frosted & translucent quartz grains; no identifiable shell fragments; some calcite fragments.
55'-60'	Lt-gray moderately to well indurated Limestone w/ minor amount of shell fragment and decreased amount 1% frosted quartz grains; some calcite grains and cylindrical - small diameter calcite tubes (worm-tubes?) no identifiable shells or shell fragments.
Tripped out of bore-hole @ 1425	
Tripped back into bore hole @ 1445 3rd string.	

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 12-15-93

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
60'-65'	moderately to well indurated Lt-gray medium to coarse sandy-Limestone; mixture of limestone and well cemented sand grains (limestone sandstone) fragment of calcite identifiable shells but some mollusk shell fragments few brown sandy limestone fragments (oxidizing environment); also contains large LS fragments
65'-70'	poorly to moderately indurated, light-gray ^{sandy} limestone containing some medium to coarse-grained quartz grains. This interval contains smaller more equal size limestone fragments w/ no large limestone or shell fragment (few indurated worm tubes(?))
70-75	SAME AS ABOVE
75-80	poorly to moderately indurated (consolidated) medium to coarse grained quartz sand w/ Lt to dark gray limestone and shell fragments; majority of shell fragments are mollusk shells.
80-85'	poorly to moderately indurated (consolidated) medium to coarse grained quartz sand w/ stringers of well indurated sandstone and Lt gray limestone w/ minor shell fragments
85-90	poorly to moderately indurated (consolidated) medium to coarse grained quartz sand w/ string of sand well consolidated sandstone and limestone stringers; minor amounts of shell fragments
Tripped out of hole @ 1545 hr. 4th string	
Tripped into hole @ 1600 hr; mud pump quit @ 1610 @ 94' resumed drilling at 1615	
90-97'	well indurated, light gray sandy limestone on a sandstone w/ calcite cement; no identifiable shell fragment (medium drilling rate) ^{spongy calcite replaced} mollusk shell frag.
97-105	poorly to moderately indurated, light-gray sandy limestone w/ abundant shell fragments and shreds of limestone; minor amount of fine-grained phosphate in the matrix
105-110	poorly to moderately indurated, light gray sandy limestone w/ abundant shell & limestone fragments; minor amounts of fine-grained phosphate in the matrix - well indurated light-gray limestone stringer from 108' to 110'
110-115	poorly to moderately indurated - light gray sand limestone w/ abundant shell & limestone fragments w/ some calcite replaced shells, minor amount of fine-grained phosphate sand grains
115-120	same as above
120-126	same as above; stopped drilling @ 1750 TD = 126'; sample taken from 125 to 126

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 12-27-93

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Kelly down 182' feet below Landsurface @ the start of the day Driller re-circulated the muds and cleaned out the borehole. Tripped into borehole @ 0956 hrs.
180'-185'	Lt gray moderately indurated Limestone w/ some stringer of well indurated gray ^{5m dy} Limestone; contains 10 to 30% medium grained quartz sand w/ the Limestone matrix. Abundant shell fragments minor amount fine to coarse grained phosphatic sands
185-190	Same as Above w/ increasing Amount of Lt gray lime mud towards 187'-190' minor amount of fine to coarse grained phosphatic sands
190-195	poorly to moderately indurated Lt-gray Limestone/lime mud, Approx 192 to 195' drab olive green dolosilt (Hawthorn Fm) w/ 1 to 5% ^{fine grained} phosphatic ^{sand}
195-200	int mixture of Lt gray lime muds (micrite) w/ the olive green dolosilt few stringers of moderately indurated Limestone. (fast drilling)
200-205'	SAME ABOVE.
205-210.	majority of interval consists of olive-green ^{clay w/ silt component} silt w/ few stringer of Lt gray lime mud; 2 to 5% phosphatic silt and ^{fine Qz} sand.
	Kelly down @ 210' 0940 hr. Total time for this string 2240 min Tripped back into hole @ 1003 hr.
210-220	dark green (olive) ^{plastic clay w/ silt component} lime mud / silt w/ 5% phosphatic silt. This interval contains few stringers of Lt-gray to buff colored lime mud and minor amounts of well indurated Lt-tan quartz sandstone and shell fragments, ^{and molt.} 1% coarse-grained phosphatic sand to ^{gravel} table size.
220-225	SAME AS ABOVE. w/ less frequency of the well indurated sandstone
225-230	Dark green; plastic clayey ^{w/ silt component} silt w/ minor amount of shell fragments
230-235	Dark green; plastic clayey dolosilt w/ ^{minor} stringer of shell beds contained in this interval.
235-240	Dark green; plastic clayey ^{w/ silt component} silt w/ 3 to 5% phosphatic silt and minor amounts of sand sized shell fragments. Kelly down @ 1503 hr. -242'
	NOTE: From 210 to 235 duration of the drilling was 2 hr 27 mins @ approx the 236' mark the mud pump stop and repairs were made to the system by a Calipulla repairman. down time from 1235 hrs to 1445 hrs. resumed drilling @ 1445
	Good Continuing Unit from 192 to 240

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Floridan WELL NO. L2-TW DATE 12-28-93

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
NOTE:	Kelly down @ 0800 hr resumed drilling @ 0827 hr. Combine sample 302-305 into 302 to 305 sample.
302-305	dark olive-green to gray color sandy clay w/ 10 to 15% fine to medium grained Qtz sand. Minor amount of phosphatic silt and sands
305-310	dark olive-green to gray color sandy clay w/ 20 to 25% fine to medium grained sand; minor amount poor induration buff color Limestone stringer within this interval
310-325	dark olive-green to gray colored sandy clay w/ 15 to 20% fine to medium grained sand; significant amount of bit chatters @ 312; w/ moderately to well indurated sandy Limestone and shell fragments; minor amount silt size phosphate grains
315-320	medium-gray colored poorly to moderately indurate sandy Limestone "biogenic limestone"; signif bit chatter through this interval; minor amounts of Lt-gray micritic Limestone; 10 to 15% fine to medium grained Qtz sand
320-329	well indurated sandy Limestone - dark gray in color w/ in of poorly indurated sandy clay matrix; very coarse to pebble sized Qtz grains
329-335	medium to Lt gray sandy clay matrix; w/ significant amount of very coarse to pebble size Qtz & phosphatic grains and shell fragment stopped drilling @ 0915 hr. 46 mins to drill this interval. Kelly down @ 0936 hr. Stopped drilling @ 1010 hr.
335-340	medium to Lt gray Limestone; w/ a significant fine to medium grained sand component; silt phosphatic grains 2 to 5% w/ minor amount of shell fragments (low permeability)
340-345	same as above. (low permeability)
345-350	Lt-gray poorly to moderately indurated sandy Limestone w/ significant amount of shell fragment; contains 2 to 5% phosphatic silt and fine sand
345-350'	"same as above" (moderate permeability)
350-355'	same as above (moderate permeability)
355-360	same as above. (moderate permeability)
360-365	same as above, but higher sandy clay component near the base of this interval 363-365. (moderate permeability)

Possible
Limestone
in this
interval

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 12-28-93

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
NOTE	Kelly down and Resomed drilling @ 1027 hrs
365-370	Mixing small portion of this interval 365'-367' due to clearing out the bottom of the borehole upon completion of the last string. (Low permeability).
370-375	Light-olive-green to medium gray <u>sandy silt clay</u> light brownish gray <u>sandy silty clay</u> , 10-15% fine sand med. plasticity. <u>minor conchoidal shell fragments w/ 2 to 5% silty phosphatic grains.</u>
375-380	"Same as above" (good confining unit) Low permeability
380-385	"Same as above" (good confining unit) Low permeability
385-390	"Same as above" (good confining unit) Low permeability
390-392	same as above
392-395	light gray limestone, well indurated, shell fragments some (2% to 5%) phosphatic fine silt and sand ^{This was a 2 to 3' string of well indurated limestone}
	Kelly down to -397 - 395' to 399' moved to next interval 395-400'
	Resomed drilling @ 1145 hrs
395-400	dark olive-green to gray-sandy clay w/ silt to fine grained sandstone very plastic and platic (Low permeability) 2 to 3% phosphatic ^{silt} (very low permeability)
400-405	very slow drilling rate; note if high Gamma Kick on Gamma Log of this interval.
NOTE:	Drillery delayed due to leaky mud line from 1320 to 1345 hr. Lithologically a dark olive green to gray silty-sandy clay; very plastic and plastic; higher conc. of fine to medium grained phosphatic sands contain 5 to 7% phosphatic sands; silts decreasing toward 404' (very low perm)
405-412	Dark olive-green to gray clay w/ minor amount of silt and sand component phosphatic silt; very fine sand 3 to 5%. Very plastic and pliable. (very low perm)
412-413	light tan to buff color moderately to well indurated limestone containing medium to very coarse grained (pebbles) of quartz grains, also contains whole and fragments of both mollusk and gastropods. (storm event?)
413-420	Dark olive-green to ^{gray} dark <u>sandy clay</u> ; very plastic and pliable contains fine to medium grain quartz or ^{ls} fragments, no shell fragments. 1 to 2% phosphatic silt or sand component.
420-425	Dark olive-green to gray clay; very plastic. 1 to 2% phosphatic silts; fine sand component (very low permeability)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT Lwc Florida WELL NO. L2-TW DATE 12-28-92

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Kelly down @ 1545hr to a depth of 428 feet
	Resumed Drilling @ 1553hr.
425-430	Dark olive green to gray clay; plastic very minor silt & sand component 1 to 2% phosphatic silt & fine sand. (Low permeability)
430-435	'same as above'
435-440	Lt-gray to tan colored; poorly to moderately indurated Limestone minor fine sand component w/ in the limestone matrix; ^{moderate amounts of} some clay matrix contains 1 to 3% phosphatic silt & very fine sand (moderate permeability)
440-445	"Same as Above" ^{abundant shell fragments} (Low yield)
445-450	"Same as Above"
450-455	"same as above" (moderate permeability but probably low yield)
455-460	"Same as Above"
	Kelly down @ 1700hrs to a depth of 460 feet
	Resumed drilling @ 1705
460-465	Lt-gray to tan colored; poorly to moderately indurated Limestone w/ a minor sand component within the limestone; moderate amount of ^{mollusks} shell fragment (1 to 3% phosphatic fine sand) ^{moderate amount of clay matrix} (moderate permeability ^{low} yield)
465-470	"Same as Above" moderate permeability (mid thickness?)
470-478	"Same as Above"
478-	Lt-gray; poorly indurated Limestone within a Lt gray micritic mud; approx 1 to 3% fine phosphatic sand; no visible fossil fragment; The micritic mud matrix has moderate amount of fine sand. (Low permeability)
	stopped Drilling @ 1740 to a total depth of 480'
	Drilling was stop so that the drillers could pull the drill to insert a rubber around 18' surface casing to stop Artesian flow.

Artesian Formation

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 12-29-93

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Began Drilling to remain of the rod, not completed from the day before Began drilling @ -480 bls @ 0900hrs
480 - 485	Lt to medium gray sandy-Lime mud (micritic) w/ 10% fine sand component; 1 to 4% silt to fine grained phosphate (Low permeability)
485 - 488	"Same as Above"
488 - 495	Lt-gray to tan colored; poorly indurated ^{sandy} Limestone (poorly indurated micritic lime mud) w/ 1 to 3% phosphatic silt & fine sand. (Low permeability) Kelly down @ -490' bls @ 0928 hrs (20' foot section 27.5 mins) Resumed drilling @ 945 hrs.
495 - 500'	Lt-gray; poorly to moderately indurated ^(Limestone) sandy Limestone (micritic) contain 2 to 4% phosphatic silt & fine sand; contains some ^{moderately} well indurated Limestone shales & shell fragments; contain high volume of lime mud (micrite) matrix (Low permeability)
500 - 505	Lt-gray poorly indurated sandy micritic lime mud/limestone w/ 2 to 5% phosphatic silt & fine sand; minor sand component and shell fragment ^(Low Perm)
505 - 510	Lt gray poorly to moderately indurated sandy micritic lime mud/limestone contain 2 to 5% phosphatic silt & sand. contains shell fragments, moderate permeability (Low yield)
510 - 515	"Same as Above"
515 - 520	Lt gray poorly to well indurated sandy Limestone; w/ moderate Lime mud component. contains some recrystallized shell fragments and few internal molds. (Low to moderate permeability) probably very Low yield Kelly down @ -522 bls @ 1036 hr. (total time for 30' interval 48 mins) Drilling resumed @ 1050 hr.
520 - 525	Lt gray to tan color poorly to moderately indurated sandy Limestone w/ microcrystalline calcite / replaced shell fragment; significant lime mud sandy micritic matrix; 1 to 3% phosphatic sands and silt 5 to 10% sand fine to very fine grained (Low permeability)
525 - 530	Same as Above
530 - 535	Lt-gray - poorly to moderate indurated ^{sandy} Limestone w/ reduce clayey (micritic) matrix, contains 1% phosphatic sands some well indurated sandy limestone w/ replaced (microcrystalline calcite) shell fragments. (moderate permeability)
535 - 539	Same as Above.

Kid 0928
27.50

Kid 522
1036

Kid 1212
@ 554

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWI Florida WELL NO. L2-TW DATE 12-29-93

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
539-545	Lt gray to sandy lime mud (micritic) poorly indurated calcite & bk Contains fine to coarse grained limestone fragments. (Very low permeability)
545-550	same as above; but contains high concentration of phosphatic sands and silt. (very low permeability) Kelly down to 554 bls @ 1212 hr. total time = 1 hr 17 mins Drilling resumed @ 1244 hr.
550-555	Lt gray sandy (fine to medium grained) lime mud (micritic) w/ 10% fine to medium grained carbonate sands and shell fragments. 2 to 5% phosphatic silt; contains some moderately indurated thin limestone (Low permeability)
555-560	Lt gray sandy lime mud (micritic) 5 to 10% fine to medium grained carbonate sands and shell, 1 to 3% phosphatic silt; contains few well indurated sandy limestone or microcrystalline (replaced shell fragments) ^{very low} permeability
560-565	"Same as Above"
565-570	Lt gray micritic ^{Carbonate mud} ooze w/ minor sand size ^{Component} very sticky and firm 1 to 3% phosphatic silt. (Very Low permeability)
570-575	"Same as Above" (Very Low permeability)
575-580	"Same as Above" (very low permeability) minor carbonate sand component Kelly down 585 @ 1400 hr. 1 hr 17 mins.
580-585	Lt gray - sandy carbonate mud w/ significant silt and sand component Also contains shell fragments. (Low permeability) 1 to 3% phosphatic silt to ^{coarse} fine sand component. Resumed drilling @ 1425 hr.
585-590'	Medium gray sandy carbonate mud/silt w/ significant medium to coarse grained carbonate sands w/ fine to ^{very} coarse grained phosphatic sands (Low permeability).
590-595	Lt gray carbonate silt & clay w/ ^{moderate 10% - 15%} significant ^{component} medium to coarse grained carbonate sands poorly indurated; contain 5 to 7% fine to very coarse grained phosphatic sands (firm) (Low permeability)
595-600	Lt gray carbonate silt & clay (micritic) poorly indurated; primarily a lime mud (Low permeability) contains 3 to 5% phosphatic fine to coarse grained
600-605	Same as above; contains slightly higher amount of coarse grained phosphatic sands. (Low permeability)
605-610	"Same as above." (Low permeability) contains slightly higher amount of silt to medium grained phosphatic; carbonate material

KO-1530

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT Lwc Florida WELL NO. L2-TW DATE 12-30-93

ICD
1035
TW-679

possibly start
of Sewerline.

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Began drilling @ 0940hrs @ a depth of -648' bls.
	648- cleaned-out the borehole from 0905 to 0930 hr. by re-circulating the drilling mud down the drill stem.
648-655	Lt to medium gray micritic lime stone ^(lime mud) poorly indurated; firm minor carbonate fine sand component 1 to 3% phosphatic silt and fine sand (very low permeability)
655-660	Lt to medium Gray micritic Limestone (Lime mud) poorly indurated minor carbonate sand component; phosphatic silt to very coarse grained sand majority is lime mud matrix. (very low permeability)
660-662	same as Above; but slightly lighter gray w/ minor shell fragment component.
668-670	Lt-gray poorly to moderately indurated Limestone w/ slight lime mud component; some replace shell fragments. (Low permeability)
670-675	Lt-gray poorly to moderately indurated Limestone w/ 50% micrite matrix large majority is composed of shell fragments; reduced amount of phosphate in micrite matrix; ^(Low to moderate permeability) increased minor porosity.
	Kelly down @ 1035 @ a TD of 679.
	Resumed drilling @ 1056 hr.
675-680	Lt-gray poorly to moderately indurated Limestone w/ 50% carbonaceous micritic mud; contains 1 to 2% fine sand, silt phosphatic matter w/ some very coarse to pebble size phosphate (Low permeability) some shell fragment. ^{little} dolosilt.
680-685	Lt-gray poorly to well indurate Limestone w/ 30-40% carbonaceous micritic mud matrix, contains some replaced shell fragments 1 to 2% siltific sand phosphatic w/ few pebble size phosphate (Low permeability)
685-690	'Same As Above' (Low permeability) 30-40% micritic mud matrix
690-693	Same as Above (Low permeability) 30-40% micritic mud matrix
693-697	medium gray to poorly to moderately indurated Limestone w/ 60 to 70% micritic mud matrix (1 to 3% fine phosphatic sands (very low permeability)
697-700	medium to light gray moderately indurate Limestone w/ 50 to 60% micritic mud matrix 1% phosphate minor dolosilt component. (very low permeability)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Floridan WELL NO. L2-TW DATE 1-11-94

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Tagged cement plug @ -718 from grouting the 12" steel casing, drilled-out cement plug by mud rotary method.
	Began drilling compacted rock unit @ 0910 hrs.
742-750	Missing interval: This interval was highly contaminated w/ abundant gray cement fragments from drilling-out the cement plug. - drilling stopped at -750 to clean-out the casing and borehole of the cement fragments - re-circulated the mud for approx 20 minutes.
750-755	dark to medium gray poorly to well indurated limestone w/ approx. 50 to 60% medium ^{gray} micritic mud as matrix; no fossil fragment 1 to 2% fine sand phosphate. (Low permeability)
755-762	dark to medium gray poorly to well indurated limestone w/ 40 to 50% medium gray micritic limestone as a matrix; no fossil fragment 1 to 3% phosphatic material (Low permeability)
762-770	medium to dark olive-brown silty clay containing 1 to 2% silt to fine grained phosphatic sand w/ few well indurated gray limestone fragment (very low permeability)
	Kelly down to -773' @ 1035 hr. - recirculated mud for approx 10 mins started drilling next rod @ 1058 hr
770-775	dark-gray poorly indurate to moderately indurated limestone w/ 40-50% dark gray clayey micrite contain fragments of well indurated tan color limestone and mollusk shell fragments. (Low permeability)
775-780	moderately to well indurated tan limestone intermixed w/ 20% olive-gray micrite; contains minor amounts of shell fragment and phosphatic coarse sands (?) (moderate permeability)
780-790	poorly to moderately indurated tan limestone w/ minor amounts of olive gray micrite; contains minor amounts of coarse grained phosphatic (?) (black material). Leps present (?) (moderate permeability)
790-800	poorly to moderately indurate limestone containing minor invertebrate shell fragments (Leps present) (moderate to good permeability) no phosphate grains
800-804	"Same as above." (Calcarenite - protostere to proactone)
	Kelly down to -804 @ 1137 hr (48 minutes) - cleaned-out borehole for approx 15' minute - will switch over to reverse air drilling.

1135
FD 77
SP 2000

MEATP
1053

forden dr
772' b/s.

ocala(?)

KD-1037
TD=804'
48 mins.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 11-2-94

VD=1031
TD=868
rec: no 2
22 min

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drilling @ 0805 w/ 11" bit reverse - Air method @ - 836' b/s (Ocala Grp). Water Quality Sample taken @ this depth w/ a chloride reading of 965 mg/L.
836-845	Lt tan, moderately indurated limestone (mudstone to wackestone) or calcutite; contains minor amounts replace shell fragments, ^{minor amount} of Lepidocyclin no well developed type of porosity in this interval (moderate permeability)
845-855	Lt. tan, moderately indurate limestone (mudstone to wackestone) or calcutite; contains minor amount of replace shell fragment but more than above (836-845 interval) minor concentration of leps. (moderate perm)
855-860	Lt tan moderate to well indurated limestone (mudstone to packstone) w/ pin-hole and small moldic porosity contains few recrystallize shell fragments and minor concentration of leps. (moderate to good permeability)
860-865	Lt tan to light brown; moderately to well indurated limestone (wackestone to packstone) high concentration of leps. contains increase number of replaced leps and other shell fragments (moderate to good permeability) Kelly down @ 1031 hrs. to a total depth of 868' b/s. re-circulated water for approx 25 mins. chloride reading of 976 mg/L @ 868' b/s.
	Started next rod @ 1107 hrs
865-867	Lt gray ^{Limestone} tan to light brown moderately indurated (wackestone to grainstone) high concentration of leps w/ some recrystallized shell fragment or microcrystalline recrystalline limestone (moderate to good permeability)
867-877	tan to light brown moderately to well indurated lime (wackestone to packstone). contains numerous leps w/ few recrystallized shell fragment - (moderate to good permeability)
877-879	Lt gray moderately to well indurate limestone (grainstone) individual grains are cemented together w/ visible signs of moldic and pin-hole porosity (high permeability depending on volume of clay matrix that was lost in the drilling fluids. (milky discharge) moderate to good permeability (higher volume of discharge after this point)
879-889	Lt gray moderately indurate limestone (grainstone) contains numerous crystalline limestone fragments. (high permeability) high volume of milky discharge (fast drilling through this interval)

976.

100 hrs of
flow @
110

1158
TD 897.5
CL:

Fast drilling 847.5
980-990
997

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 1-12-98

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
889-895	Lt brown to tan color, moderately indurated Limestone (grainstone) the individual grains give it a sucrosic texture. some crystalline Limestone fragment (good permeability) (fast drilling). Kelly down @ 1158 hrs to a total depth of 897.5 total time 58 mins chloride value @ 897.5 was 9 mg/l started drilling @ 1238 hrs.
895-905	Tan to Lt brown poorly to moderately indurated Limestone (wackstone to packstone), individual grains are mud supported (contains numerous Lt brown recrystallize shell fragments; few lops it @ all present ^(moderate permeability due to higher mud content)
905-915	Same as Above (moderate permeability due to variable micrite content w/ better induration (moderate to well) wackstone to packstone.
915-920	Lt tan to light brown moderate to well indurated Limestone (wackstone to packstone) contains light brown recrystallize shell fragment or limestone fragment (moderate permeability).
920-925	Lt tan to light brown moderately to well indurated Limestone (packstone to grainstone) contains numerous recrystallize shell fragment within this interval, somewhat a sucrosic texture to see well indurated limestone fragments. (moderate to good permeability) ^{smaller drill cuttings.} Kelly down @ 1325 hrs to depth of 929' b/s total time 46 mins chloride value @ 929' b/s was 917 mg/l Drilling started @ 1405 hrs.
925-935	Lt tan poorly to moderately indurated Limestone (wackstone to packstone) contains a few well indurated recrystallized shell fragments or crystalline calcite fragments (fast drilling) moderate permeability ^{to low} no identifiable micro or macro fossil visible. discharge water is milky indicate considerable amount of micrite present.
935-945	"Same as Above"
945-955	"Same as Above"
955-960	"Same as Above" Kelly down @ 1439 to a depth of 960' b/s total time 35.5 min really fast drilling through this interval indicate poorly to moderately indurated Limestone primarily packstone & wackstone Chloride value @ 960' b/s mg/l.

KD-1325
TD-925

KD-1439
TD-960
10-11-88

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 1-13-94

KD-1022
TD-1025
Time 55min

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Starting Depth interval 1020' b/s. TD @ 1023'
	Started @ 0805 hrs @ a depth of -1023' b/s. Runout bit for 32min drilled to -1025 that let the water circulate for 32 mins.
1020-1025	Tan colored, poorly to moderately indurated limestone (mudstone primarily) (calcilobite) w/ fragment of microcrystalline calcite, recrystallized fossil fragment w/ whole echinoderms (sand dollars) 1 1/4" diameter, recrystallized interior section of the echinoderm shells, in filling of the micrite. (Low to moderate perme)
1025-1035	Tan colored, poorly to moderately indurated limestone (mudstone) (calcilobite) w/ whole 1/2 to 1" diameter echinoderm shells (sand dollars) (Ragular echinoids) sea urchins w/ crystalline (sparry calcite) lining the interior of the sand dollars, also contains microcrystalline golden yellow calcite fragment throughout
1035-1040	this interval contains chunks of micrite - poorly to non indurated. Also several chocolate brown macro-crystalline dolomite fragment within this interval. SAME AS ABOVE
1040-1045	Tan colored, moderately indurated limestone (mudstone - calcilobite) w/ 1 1/4" diameter echinoderm (Ragular echinoids) (sand dollars) sea urchins through this interval better indurated w/ less poorly indurated micrite than above.
1045-1055	Tan colored, moderately indurated limestone (mudstone - calcilobite) w/ some larger fragments showing pin-holes & small moldic porosity contains 1/4-1 1/2" whole echinoderms (sea urchins) (sand dollars) (Low to moderate permeability)
	Kelly down @ 1030 hrs to a depth of 1055' b/s. Total depth of 55 min chloride value of 900 mg/l @ -1055' b/s.
	Started drilling next rod @ 1105
1055-1060	Tan colored, poorly to moderately indurated limestone (mudstone - calcilobite) contain large volume of echinoderm (Ragular echinoids) sea urchins (sand dollars) w/ large volume of recrystallized (sparry calcite) shell fragments
1060-1070	Tan colored, moderately indurated limestone (mudstone - calcilobite) or a moderately indurated biomicrite, contains large volume of whole (Ragular echinoids) also contains sparry calcite replacement shell fragments in echinoderm shells & fragment w/ a few piece of poorly indurated micrite
1070-1080	"Same as above" but slightly better indurated. (moderate permeability) first drilling from 1065 - to 1085
1080-1085	"Same as above" moderate permeability Kelly down @ 1207 hrs to 1086' b/s total time 58 mins chloride value of _____ mg/l @ 1086

150-1207
FD-1086
Time 58min

Post drill Jan 1085

sparry calcite indicates presence of dolomite

- check density caliper study @ 1065' b/s

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT Luc Florida WELL NO. 12-TW DATE 1-13-94

5P
1927
TD 1118.5

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drilling @ 1235 hrs.
1085-1095	Tan colored, ^{poorly to} moderately indurated Limestone (mudstone - calcilutite) w/ recrystallize ^{phyllos} echinoderm shell fragment; ^{sea urchins} whole sand dollars.
	less abundance of echinoderm than above. (moderate permeability)
1095-1100	"Same as above" (moderate permeability)
1100-1108	poorly to moderately indurated (tan limestone) & sandy limestone (wackestone) w/ some fragment of crystalline calcite, possible recrystallized micrite; <u>NO</u> ^{whole} visible echinoderm possible fragments.
1108-1111	- Lt gray, poorly indurated micrite; dense; minor silt component to this interval. not Location not known due to the dense. different between the large chunks of lime mud; small moderate indurated limestone (Low permeability) - "Check geophysical logs for exact depth"
1111-1115	Tan to buff colored moderately indurated limestone (wackestone) some pin-hole porosity development seen in the large cuttings somewhat of oolitic sucrosic texture to the mod. indurated wackestone (moderate permeability) due to the decrease clay component than the material above.
	Kelly down 1118.5' bgs @ 1327 hrs
	Started next drill rod @ 1425 hrs.
1115-1125	Tan to buff colored moderately indurated limestone (wackestone to packstone) (calcarenite). sucrosic texture; fine sand size carbonate grains but the grains are mud supported; few whole echinoderms (sand dollars) ^{echinoids (sea urchins)}
1125-1135	micrite to good permeability "Same as above"
1135-1145	"Same as above" but more of a wackestone not as well developed sucrosic texture (moderate permeability)
1145-1150	Tan to buff colored moderately indurated limestone (wackestone) primarily but higher carbonate mud content in this interval (moderate permeability).
	Kelly down @ 1735 to a depth of 1150' bgs
	Chloride conc @ 1150' bgs is 880 mg/lc
	Started drilling the next 30' rod @ 1755 hrs.
	complete 30' of next drill rod

KD=1734
TD=1150

KD=1833
TD=1170

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. W2-TW DATE 1-14-94

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1215-1224	Tan colored, moderately indurated limestone (works hard to packstone); some sucrosic texture of the large limestone fragments moderate permeability
1224-1226	medium gray to medium olive brown poorly indurated sandy micrite (good confinement) plastic texture; (low permeability)
1226-1235	Tan to buff colored moderately indurated limestone (works hard to packstone - recrystallized fossil fragments (echinoderms) w/ sparry calcite matrix amount of light gray micrite present
1235-1245	'Same as above' Kelly down @ 1149 to depth of 1245 Chloride concentration @ 1245 bls was 800 mg/L Started drill next interval @ 12:13 hr.
1245-1255	Tan to buff colored limestone (works hard to packstone) moderately indurated; contains echinoderms w/ sparry calcite infilling matrix amount of poorly indurated micrite (moderate permeability)
1255-1265	Tan to light brown moderately indurated limestone (works hard to packstone) w/ poorly indurated micrite (carbonate clay layers @ 1257' bls contains recrystallized (sparry calcite) shell fragments, primarily echinoderms w/ whole echinoderm present
1265-1275	Same as above but contains poorly indurated plastic micrite clay @ approx 1273' bls. Kelly down @ 1247 hr to a depth of 1275 Chloride conc. @ 1275' bls is _____ mg/L started drilling next interval @ 13:15 hr.
1275-1285	Tan to buff colored, moderately indurated limestone (works hard to packstone) contains whole fragments of echinoderm shells w/ their tabulae infilled w/ sparry calcite
1285-1295	Same as above w/ ^{well indurated} medium gray wackestone @ 1289 to 1290
1295-1305	Same as above - fast drill through this interval of 1295 to 1305 Kelly down @ 13:57 hr. to a depth of 1306' Chloride conc of _____ mg/L @ 1306'

KD-1247
TD=1275

KD-1357
TD=1306

1407

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWT Florida WELL NO. L2-TW DATE 1-14-94

KP-0846
TD 1181.5
CL 892

FA
1033
TD-12

KD: 1148
TD-1245

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drill @ 0835 hr @ a depth of 1170' b/s
	1150' to 1170' was drilled @ the end of day on 1-13-94
1150-1155	Tan to buff colored moderately to well indurated limestone mudstone to wackestone; some pin-hole porosity development seen in the large cuttings; contain recrystallized echinoderm fragment and whole shells (sea urchins - spherical - regular (sand dollars) - flat)
1155-1165	Tan to buff colored, moderately indurated limestone (wackestone to packstone); saccoid texture but also contains chunks of poorly indurated micrite; also contain echinoderms that are recrystallized w/ a granular texture
1165-1175	Tan to buff colored moderately indurated limestone (wackestone to packstone). saccoid texture of large cuttings contain some recrystallized shell fragments; well indurated porous mudstone. (echinoderms). sandy calcite replacement w/ the echinoderms. (biomicrite).
1175-1180	Same as above
	Kelly down @ 0846 hr. to a depth of 1181.5' b/s
	Chloride concentration @ 1181.5' - 893 mg/l
	Started drilling next interval @ 0944
1180-1185	Lt brown; well indurated limestone (packstone); the drill cuttings are highly fragment no large rock pieces; some pin-hole porosity developed no visible Echinoderms present. Moderate to good permeability
1185-1198	Tan to buff colored moderately indurated limestone (mudstone to wackestone) this unit has embayite grain development but the grains are not supported
1198-1203	Lt brown to tan colored moderately indurated limestone (wackestone) smaller fragments of well indurated tan colored mudstone no visible fossils or fossil fragments. (moderate permeability)
1203-1210	Tan colored; moderately indurated limestone (mudstone to wackestone) contain some poorly indurated chunks of micrite causing lower permeability through this unit. moderate to low permeability
1210-1215	Tan colored; moderately to well indurated limestone (wackestone) w/ poorly indurated lt gray to tan micrite or mudstone; few whole echinoderms present. (moderate permeability)

Regulation - Almost all are aggregations forming swarms or schools that number dozens, hundreds or even thousands
(echinoids)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC - Florida WELL NO. LZ-TCW DATE 1-14-94

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drilling this interval @ 15:30 - (1305' - 1337')
1305 - 1310	Tan to buff colored; moderately indurated Limestone (Wackestone to packstone) w/ several Limestone fragment that would be considered a grainstone. moderate amounts of Lt gray poorly indurated micrite (mudstone) from 1305 - 1307' bls. contains sparry calcite in filling of the echinoderm shells & (moderate permeability - low perm @ top of interval)
1310 - 1320	Tan to Lt brown colored; moderately indurated Limestone (Wackestone to packstone; w/ several grainstone fragment contain sparry calcite in filling of echinoderm shells; minor amount of poorly indurated micrite.
1320 - 1330	"Same as Above"
1330 - 1337	"Same as Above"
	Kelly Down @ 1615 hr to a depth of 1337' bls.
	Chloride concentration of _____ mg/L @ 1337
	Started drilling this interval @ 1645 hr. (1337' to
1337 - 1345	Tan to buff colored; moderately indurated Limestone (varies from a packstone to a grainstone) contains minor amounts of poorly indurate Lt gray micrite; grain encrusted echinoderm shells & fragment w/ sparry calcite in-filling to interior of the echinoderms (moderate to good permeability)
1345 - 1350	Tan to Lt brown moderately to slightly well indurated packstone (packstone to grainstone - primarily grainstone); contains echinoderms infilled w/ sparry calcite; contains minor amounts of poorly indurated micrite (mudstone). (good permeability)
1350 - 1360	Tan to Lt brown moderately indurated ^{fossiliferous} Limestone (packstone) w/ a few grainstone fragment; contains minor amounts of poorly indurate micrite (mudstone) and echinoderm fragments and grain encrusted whole shells.
1360 - 1368.5	"Same as above"
	Kelly Down to 1368.5' bls @ 1733 hr.
	Chloride conc @ 1368.5 is _____ mg/l.
	Last cutting for 1-14-94

KP-1615
TD-037

TD
1368.5
KD-1733

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC-Florida WELL NO. L2-TW DATE 1-18-94

KP-094
TD-1400

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drilling @ 0835 @ a depth 1368.5
1368.5-1380	Lt Brown well indurated Limestone (Packstone) w/ fragment of Lt brown packstone, very minor fossil fragment. (good permeability due to lack of mud matrix)
1380-1388.	Lt Brown to tan colored Limestone (wackestone) w/ Abundant volume of poorly indurated Lt. gray sandy micritic mud starting @ 1382' bls. and continuing to 1388' bls; minor volume of recrystallized shell fragment; no visible echinoid shells or fragments (Low permeability good confinement within this interval)
1388-1395	Lt Brown colored moderately indurated Limestone (wackestone to packstone w/ minor volume of poorly indurated micrite interspersed through this interval. (moderate permeability due to micrite content.)
1395-1400	Lt Brown well indurated Limestone (packstone) w/ fragment of well indurated ^{wackestone} packstone pin-hole porosity ^{visible} development within the large cutting fragments (good permeability due to low micrite; good indurations)
	Kelly down to 0934 hr to a depth of 1400' chloride conc. _____
	Started drilling next interval @ 1010 hr.
1400-1404	Lt Brown moderate to well indurated Limestone (wackestone to packstone w/ pin-hole and small moldic porosity visible contains minor amounts of Lt gray poorly indurated micrite; contains few echinoid shell fragments (may be from above?) (good permeability)
1404-1406	medium brown, well indurated Limestone (packstone to grainstone (succussic texture of large well indurated fragments)
1406-1414	Lt brown to cream colored Limestone (wackestone to packstone) interbedded or interlayer w/ Lt to medium gray dolostone few of the Lt brown limestone has a succussic texture (good permeability)
1414-1419	Lt brown moderately indurated Limestone (wackestone to packstone) visible pin-hole porosity w/ succussic texture. (good permeability)
1419-1427	Tan to cream colored, moderately to well indurated Limestone (wackestone to packstone) w/ minor carbonate clay content.
1419- 1427 ¹⁴²⁷	Lt brown moderately to well indurated Limestone (packstone) w/ minor pin-hole & moldic porosity development (good permeability)
1427-1430	Lt gray well indurated Limestone (wackestone) w/ few frag. of well indurated medium to dark gray dolostone. (25)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. LZ-TW DATE 1-18-84

KD 1215
TD 1485

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drilling this interval @ hrs
1430-1435	tan to cream colored moderately to well indurated limestone (wackestone to packstone (calcareous)) minor fragment clastic, a sucrosic texture (good permeability)
1435-1438	Lt to medium brown, moderately to well indurated limestone (packstone) grades to a medium brown toward 1438 (good permeability) NO visible fossils or fossil fragment.
1438-1445	tan to cream colored well indurated limestone (wackestone to packstone; calcarenite) minor pin-hole; moldic porosity development minor amount of well indurated gray dolomite. (good perm)
1445-1448	tan to Lt gray moderately limestone (wackestone) w/ significant amount of Lt gray; poorly indurated micrite no visible fossil present. (low permeability due to high micrite content.)
1448-1460	Lt brown to medium brown, well indurated limestone packstone to grainstone (calcareous) (very good permeability) depending on intergrain permeability.
	Kelly down @ 1215 hr to depth of 1462.5
	Chloride conc. 770 mg/L @ 1462.5
	Started to drill next interval @ 1235 hr
1460-1465	Lt brown moderately indurated limestone (wackestone to packstone) minor amounts of well indurated crystalline limestone. this interval contains approx 30 to 40% Lt to medium gray poorly indurated micrite (low permeability) due to micrite content.
1465-1475	Light to medium brown, well indurated limestone (packstone to grainstone) calcarenite; sucrosic texture; well indurated crystalline limestone or chert(?) (good permeability) minor pin-hole porosity
1475-1485	light brown well indurated limestone (packstone to grainstone) calcarenite; minor pin-hole porosity development. (good permeability)
1485-1489	medium gray to Lt brown well indurated limestone (packstone to grainstone) calcarenite; contains 10-15% poorly indurated micrite few whole micro fossils - <i>Dictyonema americanum</i> and rounded; several forms indicate of the Lake City Fm. (moderate to good permeability)
1489-1490	Dark chocolate brown, poorly indurated, organic rich peaty clay-silt. (possibly sub-aerial process - minor soil development)

Lake City

Kelly down @ 1335 hr to a depth of 1493' b15. 2. Disconformity between the Acorn Fm & Lake City Formation? (26)

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

KD-1412619
TD. 1525'

PROJECT Low Florida WELL NO. L2-TW DATE 1/18/94

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1490-1495	Start of 1st interval @ 1525 hrs. Tan to Lt Brown well indurated Limestone (packstone to grain stone) minor pin-hole porosity development; few fragment of microcrystalline, tan colored Limestone. (good permeability)
1495-1500	Lt to medium brown well indurated Limestone (primarily a granitic but includes packstone (calcareite); very minor amount of white, poorly indurated micrite; few fragment of well indurated dark gray to black dolostone. minor pin-hole porosity (good permeability)
1500-1510	Lt brown well indurate Limestone (packstone to grainstone) minor pin-hole porosity development; few <u>Dictyonemus americanus</u> present. (good permeability)
1510-1515	"Same as Above"
1515-1520	Lt brown to light gray colored; well indurated Limestone (packstone to wackestone) the gray fragments are well indurated dolostone; minor pin-hole porosity development. (good permeability).
1520-1525	Lt brow to Lt gray colored; moderately to well indurate Limestone (packstone) minor volume of Lt gray poorly indurated micrite (moderate permeability due to 10%-15% micrite). Kelly down @ 1412 hrs to a depth of 1525' started next interval @ 1442 hrs.
1525-1535	Tan to Lt brown in color well indurated Limestone (packstone to wackestone (primarily a calcarenite), few sucrosic texture in the packstone (good permeability)
1535-1540	medium brown well indurated Limestone (packstone) calcarenite (small cutting fragment through this interval) good permeability
1540-1542	medium gray well indurated dolostone; minor bit chatter @ this interval (moderate permeability)
1542-1552	medium brown well indurated Limestone (pack stone) calcarenite minor amount of gray well indurated dolostone 1551' few fragment of medium gray dolostone. (good permeability)
1552-1555	Golden yellow; well indurated crystalline Limestone (calcite) bit chatter through this interval (low permeability). Kelly down @ 1733 to a depth of 1556.5' b/s started next interval 1758 hrs. Drilled to 1575' b/s - had a rod with 1 cm. in on Wednesday 1-19-94.

None

KD-1731
TD-1535'

minor bit chatter @ 1532

Dictyonemus @ 1540-1545'

Bit chatter @ 1548

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 1/19/94

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	started next interval @ 1755 hr on 1/18/94, drilled to -1575' b/s
	on 15' of that drilled rod and stopped @ 1834 hrs. started to drill the
	remaining 15' @ 0840 on 1/19/94
1555-1560	Lt. to medium Brown well indurated Limestone (packstone) ^{calcarenite} interlayered w/ golden yellow crystalline calcite w/ minor amounts of medium gray well indurated dolostone.
1560-1570	Lt to medium brown; well indurated Limestone (packstone & possible granstone (calcarenite) w/ minor amount to white to cream colored Limestone (wackestone) interspersed at the bottom of this interval. <u>Dictyonoceras Americanus</u> Present w/ this interval (good permeability)
1570-1580	medium Brown well indurated Limestone (packstone to granstone) calcarenite w/ minor amount of crystalline calcite through this interval; ^{good} pin-hole and moldic porosity development <u>Dictyonoceras Americanus</u> present within this interval (good permeability)
1580-1585	"same as above"
	Kelly down @ 0907 hr to a depth of 1588'
	started next interval @ 0940 hr.
1585-1595	Lt grayish moderately to well indurated limestone (wackestone to packstone) w/ 30% Lt to brownish yellow well indurated crystalline calcite, interspersed through this interval (no visible <u>dictyonoceras Americanus</u> present; (small cutting fragment (moderate to good permeability).
1595-1605	Lt gray well indurated Limestone (packstone) calcarenite w/ 25% Lt brown well indurated limestone crystalline to packstone (moderate to good permeability) no visible <u>dictyonoceras Americanus</u> . medium gray limestone or dolostone from 1605-1607 interval.
1607-1615	tan to cream colored moderately ^{to well} indurated limestone (packstone) (calcarenite); larger cuttings frags. (had drilling through this interval.) w/ minor amounts of Lt brown crystalline calcite fragment (good permeability). Kelly down @ 1617 hr to a depth of 1617' started drilling next interval @ 1641 hrs.
1615-1625	Lt gray <u>moderately</u> indurated limestone (packstone to minor granstone) (calcarenite) w/ few well indurated mudstone to wackestone fragment) No visible <u>dictyonoceras Americanus</u> or other fossils. (good permeability depending on induration & intergrain poro.

KD1107
T @ 1617

704

KD1125
TD

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT WFL-Florida WELL NO. L2-TW DATE 1-19-94

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1625-1635	"SAME AS ABOVE"
1635-1640	Lt gray, moderately indurated limestone (packstone)
	Calcarenite w/ few well indurated medium gray limestone (packstone) fragments. minor amount of sparry & crystalline calcite. (good permeability) NO visible fossils or fragments
1640-1645.	Turn to Lt Brown moderately indurated limestone (wackestone to packstone (calcarenite), w/ few well indurate grayish-tan colored fragments. NO visible fossil or fossil fragment (good permeability) minor amount of sparry or crystalline calcite.
	Kelly down @ 1125 hrs @ a depth 1648' bls.
	Started next interval @ 1148 hrs.
1645-1650	Lt gray in color well indurated limestone (packstone) w/ minor amount of Lt brown crystalline calcite fragment. abundant Dictyonoceras Amer. and other fossil shells; fragments (moderate to good permeability)
1650-1660	Lt gray to tan colored moderately to well indurated limestone (primarily a packstone w/ minor grainstone) calcarenite. this interval also contains Dictyonoceras Americanus and other fossil fragments (good permeability)
1660-1670	tan to Lt brown in color. moderately to well indurated limestone (packstone to grainstone (calcarenite) w/ minor amount of Lt to medium gray limestone or dolostone. granular texture to the larger cutting fragment (American ^{Dictyonoceras} Prasad) w/ other microfossils. (good permeability).
1670-1680	medium to dark gray to black tan to Lt brown moderately to well indurated limestone packstone to grainstone (calcarenite) w/ visible pin-hole and moldic porosity. contains a dark gray to black layer of well indurated limestone or dolostone from 1670-1671' bls Dictyonoceras Americanus and other microfossil present. (good permeability)
	Kelly down @ 1241 hrs to a depth 1680' bls.
	stopped drilling @ 1253 hr to clean setting tools and to allow the fines to settle in L2 canal.
	Started next interval @ 1528 hrs.
1680-1690	Lt to medium brown moderately to well indurated limestone wackestone to packstone; primarily packstone w/ stringer of well indurated medium to dark gray limestone or dolostone @ 1683-1685; 1688-1691' bls contains Dictyonoceras Americanus and other microfossil (good permeability)

Stopped drilling @ 1253 hrs

KD-241 hr TD=1680

KD 1627 TD=1711

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWS Florida WELL NO. L2-TW DATE 1-19-74

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1690-1695	medium brown; moderately indurated limestone, packstone to grainstone (calcareous) w/ medium to dark gray well indurated dolomite. From 1693-1695'; contain partially dolomitized Dictyonoceras and white white non dolomitic microfossils (moderate to good permeability)
1695-1700	medium brown; moderately to well indurated limestone (packstone to grainstone (calcareous) w/ moderately indurated white to cream colored packstone from 1698-1700 Dictyonoceras Americanus Present
1700-1710	medium brown moderately to well indurated limestone (packstone to grainstone (calcareous) w/ stringer of well indurated tan to cream color ^{micro crystalline} limestone (or chert) with sharp conoidal fracturing, near the base of this interval 1708-1710' bls. (moderate to good permeability) Kelly down @ 1622 hrs to a depth of 1711' bls. (Dictyonoceras Americanus Present) Started next interval @ 1655 hrs
1710-1715	medium brown in color; moderately indurated limestone (packstone) calcarenite w/ tan colored well indurated microcrypto-crystalline limestone @ the base of this unit; Dictyonoceras Americanus present how to moderate permeability depending on volume of crypto-crystalline limestone)
1715-1720	Lt brown to tan colored well indurated micro-to-crypto crystalline limestone w/ stringer of well indurated packstone. some pin-hole in Nuggy possibly development in micro-crystalline limestone. (Low permeability) possible confining unit? depends on density of the crystalline limestone. (Acid test on limestone fragments) slow drilling Dictyonoceras Americanus present.
1720-1730	Lt brown to tan color. moderately to well indurated limestone packstone w/ stringer of well indurated crypto-crystalline limestone Dictyonoceras Americanus Present; few shark teeth. (moderate permeability)
1730-1740	"Same as Above" Kelly down @ 1752 hrs to depth of 1741' bls. Stopped discharge @ 1812 hrs.

KD-1752
FD-1741

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

KA-1001
1712

PROJECT LWC Florida WELL NO. L2-TW DATE 1-20-94

Bit chucks @ 1745' Bit chucks @ 1760 Bit chucks @ 1764

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1740	Started drilling this interval @ 0856 hr.
1740-1745	medium gray very well indurated limestone (wackestone to packstone w/ minor amount tan to Lt brown well indurated wackestone dictynocorus present in this interval (moderate to good permeability))
1745-1750 * Bit chucks @ 1745	Lt gray to Lt brown, well indurated limestone (wackestone) w/ pin-hole & vuggy porosity minor amounts of moderately in medium brown grainstone; Abundant dictynocorus present. (moderate permeability)
1750-1760	Turn to medium brown moderately indurated limestone (packstone to grainstone) w/ stringer of well indurated tan wackestone that show pin-holes; slightly vuggy porosity development; Abundant Dictynocorus Americanus present. (good permeability)
1760-1765 Bit chucks @ 1760 1764	Tan to Lt brown, well indurated limestone (wackestone to packstone) w/ minor amount of crystalline calcite, pin-hole & vuggy porosity development; Dictynocorus Americanus Abundant within this interval. ^{moderate} perm
1765-1770	medium brown; moderately indurated limestone (packstone to grainstone) w/ Lt to medium gray well indurated limestone (packstone) from 1768-1770; Dictynocorus American present minor amount dark gray dolomite @ base (moderate permeability).
	Kelly down 1001 hr to depth of 1772 started next interval @ 1023 pm.
1770-1777 1023 PM	Tan to Lt Brownish gray moderately indurated limestone (grainstone) w/ minor amounts of Lt to medium gray fine grained dolomite (?) Abundant dictynocorus Americanus (good permeability)
1777-1780 1011 PM TP-1502	medium to dark gray well indurated fine grained dolomite w/ a vuggy texture. Looks like gw action on dissolving or etching dolomite w/ medium brown limestone (packstone to grainstone) Dictynocorus American Abundant. moderate to low permeability)
1780-1790 Bit chucks @ 1790	tan to light brown moderately indurated limestone (grainstone) w/ minor amount well indurated wackestone & dolomite; Abundant Dictynocorus Americanus present (good to very good permeability)?
1790-1800	"Same as above" w/ minor amount of yellow/golden colored crystalline calcite

Kelly down @ 1116 hr to depth of 1802' b/s.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Floridan WELL NO. L2-TW DATE 1-20-79

Signif. B.C. 1806-1807

KB-003
TO 1837

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drilling this interval @ 1150 hrs.
1800-1812	Tan to light brown moderately to well indurated Limestone grainstone or calcarenite, w/ minor amounts of well indurated medium gray dolostone stringers. The large piece of limestone display a grainy texture (see minor pin-hole porosity development (good perm.) Dictyonocorus Americanus abundant within this interval)
1812-1814	Tan colored well indurated Limestone (packstone) to minor grainstone (medium to good permeability). Dictyonocorus present.
1814-1820	Lt to medium brown well indurated Limestone (packstone to Boundstone) minor amounts of Lt to medium gray well indurated dolostone Abundant Dictyonocorus as the Allochems. (moderate to good permeability)
1820-1832	Tan colored, moderately to well indurated limestone (grainstone boundstone) calcarenite, minor amount of lt gray well indurated dolostone in this interval; Dictyonocorus abundant through this interval moderate to good permeability depending on intergrain permeability).
1832-1833	medium to dark gray well indurated (very hard - bit chatter through this interval). dolostone - did not react w/ 50% Acid (Very Low permeability)
	Kelly down @ 1303 to a depth of 1834' - started next interval @ 1430 hrs.
1833-1835	Tan colored, well indurated Limestone (grainstone) w/ minor amount of medium gray fine grained well indurated dolostone; Dictyonocorus Americanus present (moderate permeability)
1835-1837	medium gray well indurated fine grained dolostone; hard drilling @ this interval; check geophysical logs for well indurated rock unit @ this depth (did not react w/ 50% Acid soln.; could this be neat cement infill?) (Low permeability)
1837-1840	medium brown moderately indurated Limestone (grainstone) w/ stringer of well indurated medium gray dolostone dispersed through this interval (hard bit chatter intervals) Dictyonocorus Americanus present ^{moderate perm.}
1840-1844	Tan to light brown moderately to well indurated Limestone (grainstone to boundstone; pin-hole & moldic porosity; abundant Dictyonocorus hence the major Allochems (good permeability).

KB-018
TO 1844

very hard - slow drilling 1856

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

1866

PROJECT LWC Florida WELL NO. L27W DATE 1-20-94

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1844-1846	medium-gray well indurated dolostone; did not react w/ Acid) Very Low permeability (check geophysical logs)
1846-1856	tan to light brown moderate to well indurated limestone grainstone; w/ minor pin-hole porosity Abundant Dictyonoceras American abundant in this interval (moderate permeability) ^{some internal of medium gray dolostone?}
1856-1859	dark to chocolate brown well indurated dolostone (dolomite) saccharic texture; crystalline dolomite (very low permeability) ^{vuggy & pin-hole porosity}
1859-1865	tan to light brown moderately to well indurated limestone (grainstone + calcarenite) minor amount of poorly indurated white micrite; abundant Dictyonoceras Amer. (good permeability). Kelly down @ 1618 hr to a depth of 1866. Staked next interval @ 1650 hr.
1865-1870	Tan to light gray moderate to well indurated limestone (wackestone to grainstone) some moldic or vuggy porosity the bottom of the interval is finer grained limestone (wackestone) Dictyonoceras present. (abundant in upper part) (moderate permeability)
1870-1875	tan to medium brown moderate to well indurated limestone (packstone to grainstone) w/ stringer of well indurated medium gray dolostone (chert?) from 1873-1875' Dictyonoceras Abundant in grainstone interval; major allochem. (moderate permeability)
1875-1885	Light tan to light gray well indurated limestone (grainstone) (calcarenite) minor amount of white poorly indurated micrite Dictyonoceras American present. (good permeability)
1885-1895	"Same as above" but light to medium brown in color. Kelly down 1885 1758 hrs to depth of 1897' b/s. end of Day 1-20-94.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 1-21-94

BC=1904' BC=1906'

100 0945
TD=1973

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drilling this interval @ 0845 hr. 1-24-94
1895-1900	Lt to medium Brown well indurated Limestone (grainstone) calcarenite. The major allochthon are Dictyonoceras shells; fragment
	minor amount of poorly indurated white to lt gray micrite (moderate to good permeability). Dictyonoceras Americanus Abundant
1900-1905	Tan to Light Brown well indurated limestone (packstone to grainstone (primarily grainstone) Abundant Dictyonoceras Present (good permeability)
1905-1915 Bit chatter @ 1904 & 1906	Tan to medium brown well indurated limestone (packstone to grainstone; major allochthon: Dictyonoceras; well indurated medium to dark gray dolostone interval @ 1906' & 1914' bbs - good (good permeability) but low permeability @ dolostone intervals
1915-1925	Tan to medium brown well indurated limestone (grainstone) calcarenite Abundant dictyonoceras present; major allochthon. (good permeability)
	Kelly down @ 0845 to depth 1928.5
	Started next interval @ 1017 hr.
1925-1935	Tan to Light Brown moderately indurated limestone (grainstone) calcarenite, w/ minor amounts of wackestone + packstone) Dictyonoceras Abundant; major allochthon of grainstone. minor amount of medium to dark gray limestone stringer @ base of interval (fast drilling) moderate to good permeability) several bit drops of several inches within this interval
1935-1945	(same as above) fast drilling (good permeability) minor bit drop of several inches w/ this interval.
1945-1955	"same as above"
1955-1960	Lt to medium brown; moderately to well indurated limestone packstone to grainstone; primarily a grainstone; abundant dictyonoceras major allochthon; stringer of well indurated dark to medium gray chert? @ 1956' corresponding to bit chatter. (moderate to good perm)
	Kelly down 1139 hr to depth of 1960' bbs.
	Started next interval @ 1202 hr.

1017 hr

KA 1131A
TD=1960

1973
BC=1973

KD=1311
TD=1971

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 1-21-94

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
1960-1970	Lt to medium brown, well indurated limestone (grainstone) calcarenite: w/ minor amount of lt gray well indurated limestone and poorly indurated white micrite. Abundant Dictyonoceras; major allochem grainstone. (good permeability)
1970-1980	SAME AS ABOVE
1980-1990	Lt to medium brown, ^{to lt gray} well indurated limestone (packstone to grainstone w/ 10-15% moderately indurated ^{lt gray} white mudstone to packstone; Abundant Dictyonoceras; major allochem in the Lt to medium brown grainstone; minor amount of medium gray well indurated dolostone (in chert?) 1/2" stringer @ app. 1990 (moderate to permeability) depends and wackestone; mudstone and chert; dolostone Kelly down @ 1311 @ a depth of 1992' bls. PEXF interval started @ 1390 hr.
1990-1995	Lt gray moderately to well indurated limestone (wackestone to packstone) w/ minor amount of yellow-brown crystalline calcite fragments and medium gray to dark gray well indurated dolostone or (chert) (does not react w/ 50% acid solo) Dictyonoceras present but not in large numbers (moderate ^{to low} permeability)
1995-2005	Lt to medium brown moderately to well indurated limestone (grainstone - calcarenite) w/ minor amount of lt to medium gray well indurated dolostone and minor yellowish brown calcite fragment Dictyonoceras present some being dolomitized (good permeability)
2005-2010	Lt to medium brown, moderate to well indurated limestone (packstone to grainstone (calcarenite) w/ minor fragment of lt gray dolostone; from 2007-2010. Interbedded yellow-brown calcite and dark gray to black dolostone (well indurated). Dictyonoceras present and large numbers.
2010-2020	Lt to medium brown moderately to well indurated limestone (grainstone) thin laminae in larger fragments. 10 to 15% interbedded limestone with brown to thin black laminations. ^{-carbonaceous material(?)} Minor amount of Lt gray well indurated dolostone (moderate to good permeability). Kelly down @ 1453 to depth 2023' bls

20-148

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT W-Florida WELL NO. L2-TW DATE 1-24-94

41.5 min to drill from 2060-2065 Significant BPC @ 2068 32 mins 2065-2070 34 min 2070-2075 42 min 2075-2080

* Base of U. Florida

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
7	Started drilling @ 0830 hr. 1-24-94 @ a depth of 2053' b/s.
2050-2057	Tom to lt gray well indurated Limestone (Wackestone to packstone) minor pin-hole porosity development; obtain few thin laminae of dark black material within to Limestone; few Dictyonoceras Americum; may indicate the base of "Lake City" - Avon Park formation (moderate permeability)
2057-2062	dark chocolate brown to black very well indurated dolomite (dolostone) w/ minor pin-hole porosity - The dolomite is crystalline to microcrystalline in texture; start indicates the base of the Upper Floridan Aquifer; no microfossils present. (very low permeability); base of Upper Floridan Aquifer) very slow drilling; significant bit chatter.
2062-2070	lt to medium (chocolate) brown very well indurated crystalline to microcrystalline dolomite; minor sucrosic texture visible in few fragments; minor pin-hole & vuggy porosity development (very low permeability) crystal are subhedral - anhedral. from 2068" (continued Unit bit chatter)
2070-2075	"same as above" (slow drilling 34 minutes)
2075-2080	"same as above" but thin layer of well developed vuggy porosity from 2079-2080 and displays vuggy texture within this interval. (Low permeability) combining unit. (slow drilling 42 minutes)
NOTE :	* some carbonate fine to medium grained sands may be infilling voids (vugs or channels) w/in the dolomite section? This material was present in the cuttings settling tank after drilling through the above section.
2080-2083	medium to dark brown very well indurated crystalline to microcrystalline (massive) dolomite; some of dolomite fragments display very well developed vuggy & channel porosity suggesting dissolution within this zone; minor sucrosic texture Anhedral dolomite crystals; may show high perm with small scale but generally Low permeability. stopped drilling @ 1815hr to a depth 2084' b/s; did not finish this rod.

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 1-27-94

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drilling @ 0930 hr @ a depth of 2115' b/c
2115-2120	Tan to dark brown; very well indurated; medium to microcrystalline dolostone w/ some fragments of coarse grained siccocitic dolomite displaying euhedral crystals; minor sand fraction composed of the deformed siccocitic dolomite (very low permeability) minor amount seems to white moderately indurated limestone; the limestone is either thin layer or is fallin from above?
2120-2125	Lt brown to dark (chocolate) brown; very well indurated; medium to micro- or cryptocrystalline dolostone; this interval is composed of the medium grained crystalline dolostone w/ some siccocitic dolomite fragment within this interval minor sand fraction and white to cream colored moderately indurated limestone sand fragment (from above?)
2125-2132	Lt brown to medium brown; very well indurated; crystals to medium grained crystalline dolostone w/ some fragment display a poorly developed anhedral to subhedral crystal development (siccocitic) (very low permeability)
2132-2136	Tan to lt brown; very well indurated; crystals to fine crystalline dolostone; displaying some conchoidal fracturing; few fragments of medium grained crystalline dolostone (low permeability)
2136-2140	Interbedded tan to light brown crystalline to microcrystalline dolomite w/ stringer of dark brown to black medium to coarse grained crystalline dolostone displaying minor pin-point porosity development; minor stringer of fine to medium grained carbonate sand lens (1/2" thick @ 2137 & 2138) return to a well indurated lt brown dolostone towards the base of this interval (low permeability)
2140-2145	Tan to Lt brown; very well indurated fine to cryptocrystalline dolostone; the dolostone displays conchoidal fractures and cutting up thin strands of dolostone; very slow drilling through this interval this sand lens from 2142-2142.5 composed of fine carbonate sands from 2140 to 2142; drilling time was 1 hr & 35 mins. (very low permeability) very tight interval
	Kelly down @ 1240 hr to a depth of 2148' b/c

1:38 min
2:10 min
KD-2142
@ 1240

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT Lux Florida WELL NO. L2-TW, DATE 1-27-94

47 mins ↓ drill 2155-2160 west Fav test 7m. 9 mins 2160-2165

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
	Started drilling this interval @ 13 hrs
2145-2150	lt brown, very well indurated fine-grained dolostone w/ minor amount of pin-point porosity develop (slow drilling) very low permeability
2150-2153	medium to dark brown well indurated fine to medium grained crystalline dolostone; medium to coarse grained subhedral to euhedral dolomite crystals; minor pin-point & vuggy porosity in the dark brown dolostone (Low permeability)
2153-2157	Tan to lt brown very well indurated; fine to microcrystalline dolostone (very slow drilling through this interval (very low porosity & permeability))
2157-2162	medium to dark brown, very well indurated fine to medium grained crystalline dolostone; sacrosic texture in some fragments from 2160-2162 anhedral to subhedral crystal. (Fast drilling) (low permeability)
2162-2165	lt ^{gray} brown to cream colored moderately indurated limestone (packstone to wackestone) w/ some poorly indurated micrite (mudstone) low to moderate permeability (start of Lower Florida Aquifer)
2165-2170	medium brown; well indurated fine to medium grained crystalline dolostone; good pin-hole & vuggy porosity development; anhedral to subhedral dolomite crystal display a sacrosic texture. (low to moderate permeability)
2170-2175	lt to dark brown; well indurated fine to medium grained crystalline dolostone w/ good pin-point & vuggy porosity; grades in to lt brown moderately indurated dolostone toward the base of this interval w/ moderately indurated white to lt gray limestone (packstone to wackestone) (low to moderate permeability) somewhat more sacrosic texture from 2172-2175' bis.
	Keley down @ 1535 @ a depth of 2178
	Started next interval @ 1623 hrs.
2175-2178	lt gray; moderately indurated limestone (wackestone to packstone) w/ minor amount of lt gray poorly indurated micrite (mudstone) no visible microfossils (Low to moderate permeability)

2180-2185 - slow drilling
29 mins

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

PROJECT LWC Florida WELL NO. L2-TW DATE 1-27-84

KD-1837 hr. to depth of 2209

DEPTH	DESCRIPTION - ROCK TYPE, COLOR, HARDNESS, OTHER
2178-2185	medium brown, well indurated fine to medium grained crystalline dolostone w/ good pin-point vuggy porosity displays a vuggy texture (moderate to good permeability depending on the vuggy interconnections)
2185-2190	medium brown to medium gray very well indurated fine grained crystalline dolostone; minor pin-point vuggy porosity; few thinly laminated fragments of dolostone (very slow drilling 30 minutes for this interval (low permeability))
2190-2192	lt gray well indurated limestone (mudstone to wackestone) w/ medium to dark brown well indurated fine to medium grained crystalline dolostone: some ^{pin-hole} vuggy porosity development
2192-2200	lt gray moderate to well indurated limestone (packstone to wackestone) w/ stringer of dark brown fine to medium grained dolostone and medium gray well indurated limestone (packstone) no visible microfossil (moderate to good permeability)
2200-2210	lt gray moderately to well indurated limestone (wackestone to packstone (calcareous)) (moderate to good permeability) no visible fossil fragments w/ minor amounts of poorly indurated micrite (mudstone) kelly down 1837 to a depth of 2209. started next rod @ 1900 hr.
2210-	

KD-2008 hr
TD=22357 bls