

FIGURE 1 LACKLAND AIR FORCE BASE AND LOCATION OF LACKLAND AFB#1 GEOTHERMAL WELL

FORMATIONS ENCOUNTERED DURING DRILLING	DEPTH (Ft)	STRATUM EA
Black Soil		3
Yellow clay	158	155
Light Gray shale, Hard streaks-Navassa shale	243	84
Light Gray shale NAVASSO	461	219
Gray oily sand and shale NAVASSO	481	20
Soft Gray shale NAVASSO	601	20
Hard gray shale Taylor	800	199
Austin chalk	991	191
Eagle Ford shale	1018	27
Buda lime	1060	42
Del Rio clay	1100	40
Georgetown lime	1108	8
Edwards lime	1500	408

CHANGES MADE FROM ORIGINAL DATA

PUMP SETTING DEPTH

PUMPING EQUIPMENT

STATIC WATER LEVEL

CAPACITY

REMARKS

DRILLING COMPANY

J. R. Johnson

ADDRESS

BLACK SOIL	0-3	3
YELLOW CLAY	3-158	155
LIGHT GRAY SHALE, HARD STREAKS-NAVARRO SHALE	158-242	84
LIGHT GRAY SHALE - NAVARRO	242-461	219
GRAY OILY SAND AND SHALE - NAVARRO	461-481	20
SOFT GRAY SHALE - NAVARRO	481-601	20
HARD GRAY SHALE TAYLOR	601-800	199
AUSTIN CHALK	800-991	191
EAGLE FORD SHALE	991-1018	27
BUDA LIME	1018-1060	42
DEL RIO CLAY	1060-1100	40
GEORGETOWN LIME	1100-1108	8
EDWARDS LIME	1108-1500	408

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WATER SOFTNER = CAPACITY IN GRAINS 30,000

ZEOLITE USED: AMBERLITE IR120

FLOW RATE = 8

MINIMUM BACKWASH RATE = 3 G.P.M

SALT USED EACH GENERATION = 15 LBS.

PROPORTIONERS MODEL 1210 CHEM-O-FEEDER

VACUUM SIGNAL

AUTOMATIC PROPORTIONING CHLORINATOR MODEL # 70C1420

DRILLING COMPANY

ASPT TEXAS

ADDRESS



February 6, 1960.

Cont. No. DA-41-243-cmg-4175.
Water Supply, Lockhart A.F.B., Texas.

Resident Engineer,
Corps of Engineers,
P.O. Box 1575,
Brooks A.F.B., Texas.

Dear Sir:-

We have completed the drilling of test hole on water well to 1500 feet deep. The top of the Edwards lime was found at 1103 feet. It was hard and produced very little water till 1346 feet. From 1346 to 1460 feet the formation was soft, very broken and cavernous, and produced a strong flow of water.

It is my opinion that this well will produce in excess of 1600 gallons per minute, with less than 30 feet draw down. No acidification will be needed. I recommend that casing be set at top of Edwards, or, 1103 feet, and that the well be completed to a depth of 1450 feet. *See Lt Hs 12 Feb 60*

We must now await your instructions before we may proceed further. Therefore, we ask your quickest possible decision.

In verification of information given above, we enclose Schlumberger Directional log; Sonic log; Electrical log; and field log.

VICTOR FRASSEL

per T.P.

APPROVED
SUBJECT TO THE PROVISIONS OF THE GENERAL CONDITIONS OF CONTRACT NOTED
<i>See Lt Hs 12 Feb 60</i>
ENGINEER'S RESIDENT OFFICE LOCKHART DISTRICT, GE
<i>12 Feb 60</i>

15

#15/4175
TURNOVER *luel Ro*

Johnston

1450-1500 Medium hard broken lime

1418-1460 Soft lime no breaks

1341-1418 Soft lime number of breaks

1302-1341 Medium hard

1234-1302 Soft honey comb

1220-1234 Hard yellow

1216-1220 Honey comb

1108-1216 Hard white

Description of the Edwards

1108-1500 Edwards lime

1100-1108 Georgetown lime

1060-1100 Del Rio clay

1018-1060 Buda lime

991-1018 Eagle Ford shale

888-991 Austin shale

601-800 Hard gray shale--Kawatoe Taylor

481-601 Soft gray shale - Kawatoe

461-481 Gray oily sand & shale - Kawatoe

342-461 Light gray shale - Kawatoe

158-342 Light gray shale, hard streaks - Kawatoe shale

3-158 Yellow clay

0-3 Black soil

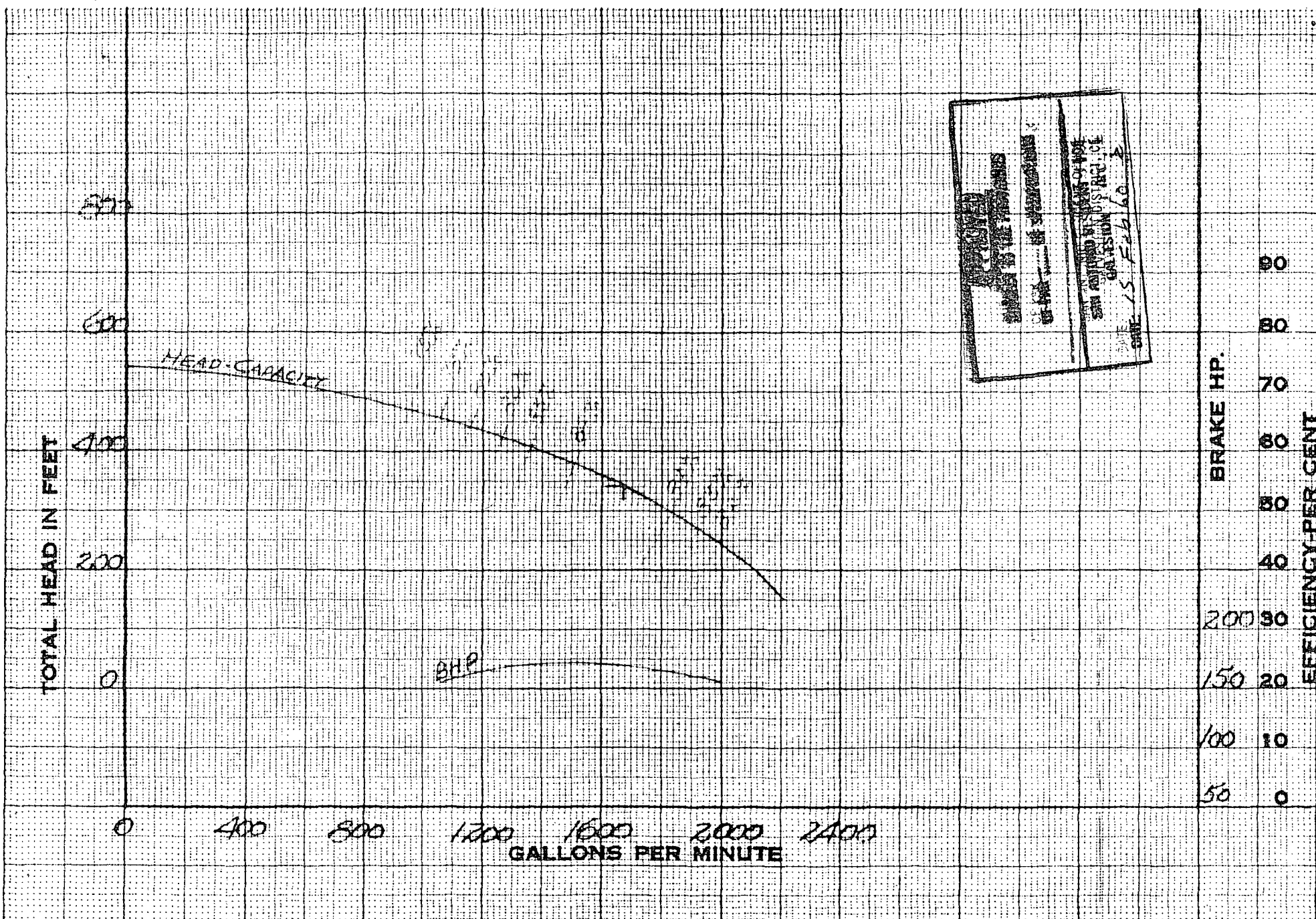
Log of Water Well

Feb. 1960

Water Supply Contract #4175

Lockland Air Force Base

1000
#45



PUMP SIZE AND TYPE 5 STG # 14 G.	RPM 1770	CUSTOMER NO. G.S.	IMPELLER NO.	BASED ON	DATE	BYRON JACKSON NUMBER PC 0111-343
			BRANCH NO.	DATA BY	DRAWN BY	

5-117

TEXAS WATER DEVELOPMENT BOARD

WELL SCHEDULE

Aquifer Rea Field No. #5004328 State Well No. 68-36-704
 Owner's Well No. I-230 County Brewer

1. Location: 1/4, 1/4 Sec., Block Survey

2. Owner: Lackland AFB - US Govt Address:
 Tenant: Address:
 Driller: G. R. Johnson Drilling & Svc Address: 297

3. Elevation of 150 is 740 ft. above mal, determined by

4. Drilled: 1960; Dug, Cable Tool, Rotary

5. Depth: Rept. 1500 ft. Meas. ft.

6. Completion: Open Hole Straight Wall, Underreamed, Gravel Packed

7. Pump: Mfr. Brown Jackson Type Turbine
 No. Stages 1, Bowsl Diam. in., Setting 70 ft.
 Column Diam. in., Length Tailpipe ft.

8. Motor: Fuel Electric Make & Model HP 200

9. Yield: Flow gpm, Pump 1665 gpm, Meas., Rept., Est.

10. Performance Test: Date Length of Test Made by
 Static Level ft. Pumping Level ft. Drawdown ft.
 Production gpm Specific Capacity gpm/ft.

11. Water Level: ft. rept. 19 above ft. above surf
 ft. meas. below ft. below surf
 ft. rept. 19 above ft. above surf
 ft. meas. below ft. below surf
 ft. rept. 19 above ft. above surf
 ft. meas. below ft. below surf
 ft. rept. 19 above ft. above surf
 ft. meas. below ft. below surf

12. Use: Dam., Stock, Public Supply, Ind., Irr., Waterflooding, Observation, Not Used, Hospital

13. Quality: (Remarks on taste, odor, color, etc.)

Temp. °F, Date sampled for analysis Laboratory
 Temp. °F, Date sampled for analysis Laboratory
 Temp. °F, Date sampled for analysis Laboratory

14. Other data available as circled: Driller's Log, Radioactivity Log, Electric Log,
 Formation Samples, Pumping Test,

15. Record by: gpm, Date 3-7 1974
 Source of Data 1469 Sub?

16. Remarks: GT: 1100-1108; Edw: 1108-1500

CASING & BLANK PIPE			
Cemented From		ft. to	
Diam. (in.)	Type	Setting, ft. from	
	<u>Steel</u>		

WELL SCREEN			
Screen Openings			
Diam. (in.)	Type	Setting, ft. from	

68-36-704

January 6, 1960

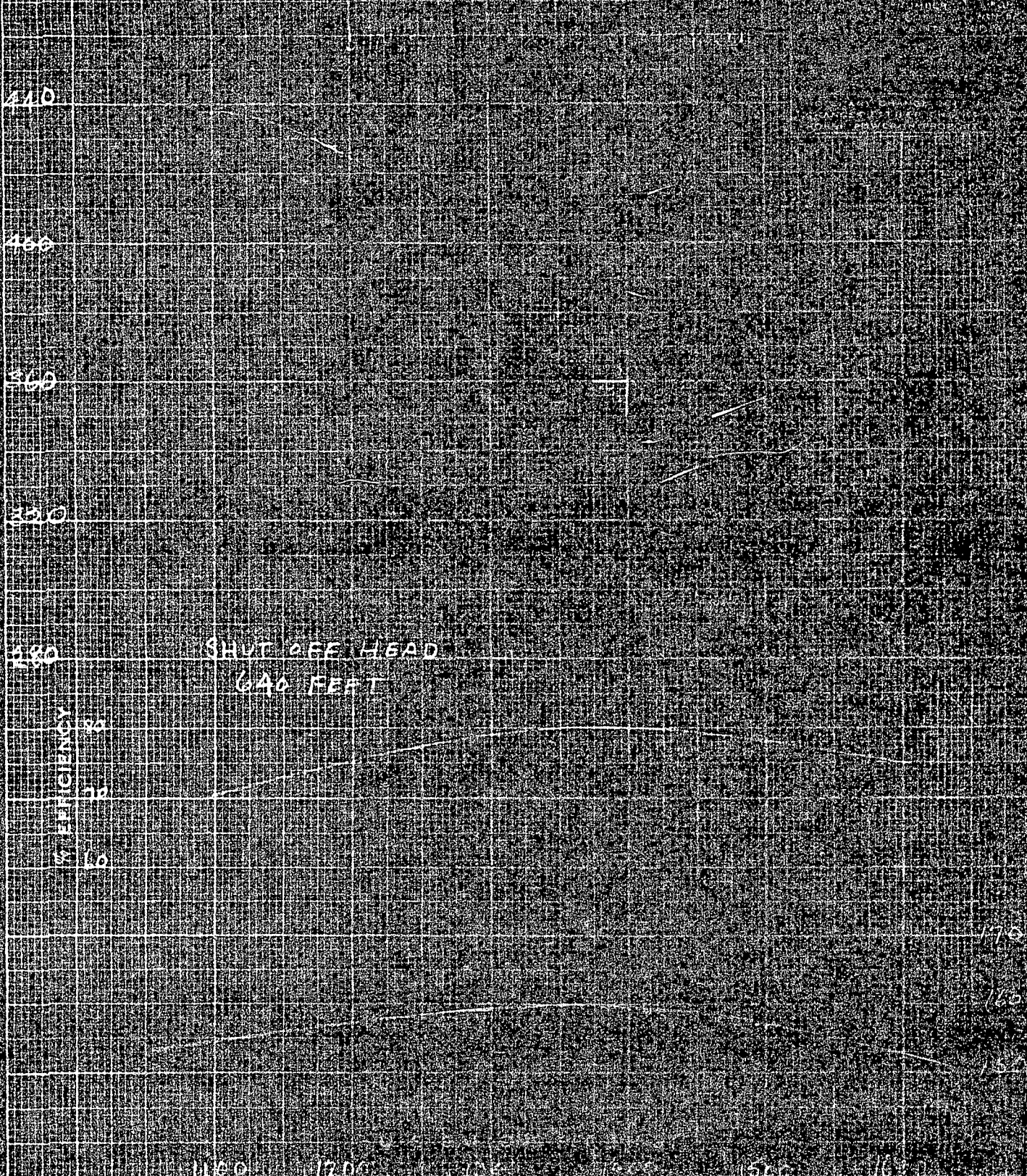
Log of water well drilled at Lackland Air Force Base,
San Antonio, Texas. Water Well #5. Water Supply
Contract #4175. Victor Prassel.

0	3	Black Soil
3	158	Yellow Clay
158	242	Light Gray Shale, hard streaks
242	461	Light Gray Shale
461	481	Gray Oil, Sand & Shale
481	601	Soft Gray Shale
601	800	Hard Gray Shale
800	991	Austin Chalk
991	1018	Eagelford Shale
1018	1060	Buda Lime
1060	1100	Del Rio Clay
1100	1108	Georgetown Lime
1108	1216	Edwards Lime (hard white)
1216	1220	Edwards Lime (honeycomb)
1220	1234	Edwards Lime (hard yellow)
1234	1302	Edwards Lime (soft honeycomb)
1302	1341	Edwards Lime (medium hard)
1341	1418	Edwards Lime (soft lime, number of breaks)
1418	1460	Edwards Lime (soft lime, no breaks)
1460	1500	Edwards Lime (medium hard broken lime)

J. K. Johnson

NOTE: ALL COLUMN LOSSES ARE INCLUDED

TOTAL HEAD IN FEET



SHUT OFF HEAD
640 FEET

EFFICIENCY

IMPELLER BRONZE	JOHNSTON	12 DC	7
ON DIA			
STD. CON. T.P.	TURBINE PUMPS	1760	
1-25-51 MSM	ANGELES CALIFORNIA USA		6039c

WATER WELL NO. 3

LOG FOR WELL NO. 3

2 - 0-2	Soil	23-1472-1495	Georgetown
18 - 2-20	Gravel	60-1495-1755	Edwards lime
55 - 20-75	Yellow Clay w/gravel		
15 - 75-90	Green Shale		
170 - 90-260	Blue Shale		
140 - 260 -400	Fine sandy shale		
20 - 400-420	Hard Shale		
72 - 420-492	Blue Shale		
10 - 492-502	Upper Navarre Sand		
102 - 502-604	Shale		
7 - 604-611	Lower Navarre Sand		
336 - 611 -947	Taylor marl		
211 - 947-1158	Anachaco lime		
159 - 1158-1347	Austin chalk		
63 - 1347 -1410	Eagleford shale		
62 - 1410-1472	Del Rio (Grayson shale)		

FORMATIONS ENCOUNTERED DURING DRILLING	DEPTH (FT)	STRATUM EA
Soil	2	2
Gravel	20	18
Yellow Clay w/ gravel	75	55
Green Shale	90	15
Blue Shale	260	170
Fine Sandy Shale	400	140
Hard Shale	420	20
Blue Shale	492	72
Upper Navarro Sand	502	10
Shale	604	102
Lower Navarro Sand	611	7
Taylor Mud	947	336
Knatchaco Limestone	1158	211
Austin Chalk	1347	189
Engleford Shale	1410	63
Del Rio Grayson Shale	1472	62
Georgetown	1495	23
Edwards Limestone	1755	260

CHANGES MADE FROM ORIGINAL DATA

PUMP SETTING DEPTH

PUMPING EQUIPMENT

STATIC WATER LEVEL

May 1956 1351

CAPACITY

1600 GPM

REMARKS

[Faint handwritten notes and diagrams in the remarks section, including a schematic of a well or pump system.]

DRILLING COMPANY

ADDRESS