

TEXAS BOARD OF WATER ENGINEERS

E. V. Spence, Chairman
John W. Pritchett, Member
H. A. Beckwith, Member

GROUND-WATER RESOURCES OF MATAGORDA COUNTY, TEXAS

By

R. W. Sundstrom, G. H. Cromack, and N. N. West

PREPARED IN COOPERATION WITH THE UNITED STATES
DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY

April 1949

CONTENTS

	Page
Introduction	1
Location and extent of area	1
Economic development	1
Purpose of this report	1
Ground-water reservoirs	2
Present development of water supplies from wells	2
Public supplies	2
Industrial supplies	3
Rice irrigation	3
Summary of ground water used	3
Fluctuations of artesian pressures	4
Quality of water	5
Summary	5
Table 1. Records of wells in Matagorda County, Texas	6
2. Drillers' logs, Matagorda County, Texas	18
3. Results of field analyses of samples collected in Matagorda County, Texas, in 1934-43	36
4. Analyses of water from wells in Matagorda County, Texas	38

ILLUSTRATIONS

- Figure 1. Geologic map of a portion of the Upper Gulf Coast, Texas.
2. Map of Matagorda County, Texas, showing locations of water wells.

GROUND-WATER RESOURCES OF MATAGORDA COUNTY, TEXAS

By

R. W. Sundstrom, G. H. Cromack, and N. N. West

Introduction

Location and extent of area

Matagorda County, in southeastern Texas, is on the Coastal Plain bordering the Gulf of Mexico. It is bounded on the west by Jackson County, on the north by Wharton County, and on the east by Brazoria County. The county consists of 1,141 square miles of mostly level, open grassy plain and farm land that slopes gently toward the Gulf. From the southeastern corner of the county, Matagorda Peninsula extends 40 miles in a southwesterly direction, nearly inclosing Matagorda Bay, Tres Palacios Bay, and Oyster Lake. The Colorado River, crossing the county from north to south, bisects the mainland and drains much of the central portion of it. Likewise, Tres Palacios and Caney Creeks traverse the western and eastern parts of the county, respectively, in the same direction, and drain much of the areas through which they pass. Between these three major streams, many small creeks that do not reach to the northern boundary of the county drain to the Gulf.

Economic development

The mild climate, favorable soils, usually adequate rainfall for pastures, and flat topography have made Matagorda County well adapted to ranching and agricultural development. Cattle raising, the growing of rice by irrigation, and the growing of cotton without irrigation are now extensively practiced. Large-scale developments have taken place also in oil production and in the fishing industry. In 1946, there were more than 78,000 head of cattle in the county; about 53,000 acres of rice was irrigated; about 4,200 bales of cotton was grown; and more than 4,000,000 barrels of oil was produced.

Purpose of this report

The Texas State Board of Water Engineers and the Geological Survey, United States Department of the Interior, are engaged in cooperative investigations of the ground-water resources of Texas. This program has been in progress since 1929. The first studies in Matagorda County were made in 1934 when T. W. Bridges obtained the records of 79 wells. In 1943, G. H. Cromack collected data on 100 wells, and in 1947 Norman N. West collected information on 51 additional wells.

This report contains the data that were collected during those studies. It contains a brief discussion of the ground-water reservoirs that furnish water to wells in the county; the development of water supplies from wells; a summary of the results of the investigation; the records of 230 wells; the drillers' logs of 68 wells; comprehensive analyses of water from 22 wells; partial analyses giving the amounts of bicarbonate and chloride, and the hardness of the water from 12 wells; and a map showing the location of all the wells for which records were obtained.

Ground-water reservoirs

Sands, silts, and clays of Quaternary age underlie the surface throughout Matagorda County. The Pleistocene Beaumont clay crops out in most of the county except in the broad stream valleys where Recent alluvium has been deposited and along and near the shore line where stream-born materials, wind-blown sands and clays, and beach deposits have been laid down. The Beaumont clay is underlain by the Lissie formation, the Goliad sand, Willis sand, and older formations.

Sand and gravel in the Recent alluvium and beach deposits and sands in the Beaumont clay and Lissie formation constitute the principal ground-water reservoirs that have been drawn upon in the county. There are deeper ground-water reservoirs in the Willis and Goliad sands, but those reservoirs have not been explored and may contain highly mineralized water.

The ground-water reservoirs in the Beaumont clay and Lissie formation are composed of extensive strata of sand in between beds of impermeable clay. The dip of the beds is toward the southeast at an angle somewhat greater than the slope of the land surface. Thus, artesian conditions exist in the ground-water reservoirs throughout the county, and in much of the southern part of the county the artesian pressure is sufficient to cause wells to flow. The flowing wells are reported to yield from 1 to 100 gallons a minute; many of them range in yield from 30 to 60 gallons a minute. Wells that are equipped with pumps yield moderate to large quantities of water, and some of the irrigation and industrial wells are reported to range in yield from 1,100 to 3,000 gallons a minute.

Present development of water supplies from wells

Public supplies

Bay City and Palacios are the only incorporated cities in the county that have municipal water-supply systems. Bay City obtains its supply from four wells that range in depth from 445 to 1,000 feet. It is estimated that in 1943 these wells supplied on the average about 300,000 gallons of water a day for an estimated population of about 8,500. Palacios obtains its supply from four wells that range in depth from 590 to 607 feet. It is estimated that the city uses on an average about 200,000 gallons a day for an estimated population of about 4,000.

Industrial supplies

In 1946, the use of ground water for industrial purposes was much less than it had been during previous years. The Gulf Sulphur Company, which has three large wells, has ceased operations in Matagorda County. In the past a considerable amount of ground water was used for sulphur mining. Likewise, the oil fields in the county are approaching full development and less water is required for oil-well drilling. The cattle-raising industry requires a large amount of ground water. Many of the wells used for watering livestock flow and in many places much water is wasted from flowing wells.

Rice irrigation

In 1946, the amount of rice irrigated by ground water amounted to 5,500 acres. The amount of water applied to the land is estimated to be about 14,000 acre-feet a year, or the equivalent of about 12,500,000 gallons a day throughout the year. The estimate on the duty of water is made largely on the basis of the requirements for irrigation with surface water. In 1946, about 47,450 acres was irrigated from surface-water supplies; and an average of 37 inches of water was applied to the land irrigated. Probably a little less ground water is applied, because of the cost of pumping, and a depth of 30 inches was used in estimating the amount of ground water applied for irrigation.

Summary of ground water used

The following table gives an estimate of the ground water used in Matagorda County in 1946:

Estimated uses of ground water in Matagorda County in 1946

Use	Gallons a day
Public supply	500,000
Industrial supply (includes livestock)	750,000
Rice irrigation	12,500,000
Rural domestic supply	400,000
Total	14,150,000

Fluctuations of artesian pressures

When a well is allowed to flow, or is pumped, the artesian pressure (or water level) in the well drops and a hydraulic gradient is established toward the well from all directions, the gradient taking the shape of an inverted cone around the well. This cone spreads out if the discharge continues, becoming flatter as the distance from the well increases. If a number of wells are allowed to flow, or are pumped, the pressure cones tend to merge into a large depression radiating out from the centers of withdrawals. This is in accordance with the laws of hydraulics and in itself is no cause for alarm. A certain amount of decline in water levels or artesian pressures must occur in an area where ground water is withdrawn in considerable quantities. If the rate of withdrawal remains constant and the aquifer is not overdrawn beyond its ability to transmit water, equilibrium should be reached in time, and the rate of decline will become very small or may cease. On the other hand, the decline may be expected to continue so long as the rate of withdrawal increases.

The measurements of the artesian pressures made in 1934, 1943, and 1946 in a few wells in Matagorda County indicate that the artesian pressures have declined moderately. Some of the wells that had a small flow in 1934 were not flowing in April 1947. The following table gives the wells in which observations were made of the water levels at different periods of measurements, and the total decline that has occurred between the first and last measurement.

Table showing decline in artesian pressures
in some of the wells in Matagorda County

Well No.	Date of first measurement	Date of last measurement	Decline in artesian pressure in feet
3	Sept. 1934	April 1946	1.91
33	Sept. 1934	April 1946	10.21
40	July 1934	April 1946	18.49
46	Sept. 1934	July 1938	3.1
98	1941	April 1943	0.0
121	1933	Sept. 1934	1.42
136	1902	1942	25.0

Quality of water

The ground waters of the county are, in general, of good quality, being only moderately high in mineral content. The shallow waters are generally more highly mineralized than those at intermediate depths, though the most highly mineralized waters encountered are those from the greatest depths or those farthest south. The shallow waters are the hardest, and in general the hardness decreases with depth. The iron content is objectionably high in a few wells. In two of the most highly mineralized waters the fluoride content exceeds the limit of 1.5 parts per million recommended by the Public Health Service for water used on interstate carriers.

The results of field determinations of bicarbonate, chloride, and hardness, and of more complete analyses, are given in the tables at the end of the report.

Summary

The ground-water reservoirs of Matagorda County yield moderate to large quantities of water to wells. The total withdrawal of ground water in the county averaged approximately 14,000,000 gallons a day in 1946. On the whole, the evidence indicates that the artesian reservoirs are not being overdrawn. Additional large-scale ground-water development in the county will cause further decline in the artesian pressure. However, it is believed that comparatively large quantities of ground water can be developed in parts of the county without seriously depleting the underground reservoirs.

Table 1. Records of wells in Matagorda County, Texas
(All wells are drilled or bored)

Well	Distance from Blessing (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift <u>b/</u>	Use of water <u>c/</u>	Remarks
							Below land surface (ft.) <u>a/</u>	Date of measurement			
1	6 NW	J. A. Malcek	R. Vaclavick	1925	36	--	--	--	C, H	D, S	
2	5 N	D. S. Gilmore Estate	--	--	330 ⁺	--	--	--	C, W	S	
3	4½ N	Southern Pacific Lines	J. W. Young	--	326	8	6.43 7.74	Sept. 10, 1934 Apr. 2, 1944	None	N	Formerly supplied railroad locomotives.
4	4½ N	J. B. Bures	Jim Williams	1910	55	--	--	--	C, W	D, S	
5	7 N	W. T. Gunter	--	--	400 ⁺	--	--	--	C, W	D, S	Said to have flowed until 1921.
6	9½ N	Hans T. Anderson	Hans T. Anderson	1922	32	1½	--	--	C, W	D, S	
7	9 NE	J. W. Hawk	J. W. Hawk	1929	55	4	9.8	July 18, 1934	C, W	D, S	
8	8 NW	Wade Roberts	Otto Mickelson	1941	500 ⁺	24, 10	7.64	Apr. 20, 1943	T, G, 85	Irr	Irrigated 400 acres of rice in 1942. Yield estimated 1,800 gallons a minute.
9	7 NW	-- Garrison	Layne & Bowler, Inc.	Old	450 ⁺	--	8.6	do.	T	N	Irrigated rice in 1942.
10	6 NW	Hanson and Strarup	Otto Mickelson	1940	465	24, 10	--	--	T, G, 70	Irr	Irrigated 400 acres of rice in 1942.
11	5 NW	KJZT Lodge	Layne & Bowler, Inc.	Old	450 ⁺	10	13.4	Apr. 21, 1943	T	N	Irrigated rice in 1942.
12	4½ NW	B. W. Trull	do.	Old	420 ⁺	10	--	--	T	N	Formerly irrigated rice.
13	5½ NW	E. F. Geld	--	Old	--	4	5.0	Apr. 20, 1943	C, W, H	S	
14	4 NW	Will Melbourne	Henry Lane	1940	800 ⁺	2	+	Apr. 23, 1943	Flows	S	Twenty feet of screen reported at bottom. Measured yield 4 gallons a minute.
15	In Blessing	A. B. Pierce	L. A. Layne	1907	624	4	--	--	A, E, 3	P	Flow reported 90 gallons a minute in 1907. Supplies town of Blessing. See log.
16	1 SW	R. J. Vaclavick	R. J. Vaclavick	1929	42	4	11.3	Aug. 9, 1934	C, W	D, S	
17	5 S	W. F. Harrison	--	--	440 ⁺	4	--	--	C, W	D, S	
18	6 SE	W. H. Stallard	R. M. Snodgrass	1928	732	2	+15.7	Sept. 1, 1934	Flows	D, S	Measured flow 12½ gallons a minute in 1934.
19	do.	F. E. Stallard	do.	1928	632	2	+10.0	do.	Flows	D, S	Measured flow 15 gallons a minute in 1934. Temperature 79° F.
20	4 N	J. B. Bures	--	Old	400 ⁺	--	9.4	Apr. 23, 1943	T	N	Formerly irrigated rice.

a/ Plus (+) indicates water level above measuring point.

b/ Pump: A, air; C, cylinder; Cf, centrifugal; Gl, gas; T, turbine.

Power: D, Diesel engine; E, electric; G, gasoline engine; H, hand; W, windmill. Number indicates horsepower.

c/ D, domestic; Ind, industrial; Irr, irrigation; N, not used; P, public supply; RR, railroad; S, stock.

d/ Water level reported by driller or owner.

Table 1. Records of wells in Matagorda County -- Continued

(All wells are drilled or bored)

Well	Distance from Blessing (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift	Use of water	Remarks
							Below land surface (ft.)	Date of measurement			
21	2½ NW	C. J. Lubojasky	C.J.Lubojasky	1935	39	5½	d/34.5	1943	C,W,H	D,S	Sand reported from 37 to 39 feet.
22	3¼ NW	B. W. Trull	Layne & Bowler, Inc.	Old	421	24.10	11.4	Apr. 21, 1943	T	N	Formerly irrigated rice. See log.
23	3 NW	Gay Stovall	--	Old	450	24.10	9.1	Apr. 23, 1943	None	N	Formerly irrigated rice.
24	3¼ W	R. H. Rhodes	Henry Lane	1940	165	4	9.5	do.	C,W	S	
25	In Blessing	Missouri Pacific Lines	--	Old	612	--	--	--	None	N	Formerly supplied locomotive boilers. See log.
26	do.	Kirk Harder	Otto Mickelson	1940	620	2½	d/8	1940	Cf,E,K	D,S	Sand reported from 590 to 620 feet. Screen from 600 to 620 feet.
27	1¼ SW	do.	do.	1939	529	16.12	d/7	1939	T,D,100	Irr	Yield 2,000 gallons a minute in 1939. Irrigates 270 acres of rice. Reported yield 3,000 gallons a minute during test. Yield estimated 1,800 in 1947.
28	2¼ SW	American Liberty Oil Co.	do.	1941	424	6	--	--	T,E,3	Ind	Average pumpage reported 80,000 gallons a day.
29	3¼ SE	Kirk Harder	Hockey and Barnett	1938	730	2	+	Apr. 23, 1943	Flows C,W	S	Screen from 709 to 730 feet.

Distance from Palacios

30	5½ NW	J. L. Beard	Barnett Bros.	1917	329	2	+ 5.2	Sept. 6, 1934	Flows	D,S	Measured flow 8½ gallons a minute in 1934. Temperature 76° F.
31	3¼ W	V. L. Anderson	--	1905	525	24	+ 5.6	do.	Flows	D,S	Measured flow 19 gallons a minute in 1934. Temperature 79° F.
32	5 W	Arthur Kight	--	--	640	2½	+	1934	Flows	D,S	
33	4¼ NW	Turtle Bay School	Geo. Barnett	--	361	2	9.1	Apr. 2, 1944	Flows C,H	P	Temperature 76° F.
34	3¼ W	Mrs. W. A. Wolf	--	--	400	2	+ 5.5	Sept. 6, 1934	Flows	D,S	Measured flow 1 gallon a minute in 1934. Temperature 77° F.
35	2 NW	Camp Hulen	Layne & Bowler, Inc.	1907	953	6	+ 18.0	Aug. 9, 1934	Flows	N	Estimated flow 75 gallons a minute in 1934. Temperature 82° F. See log.
36	2 SW	do.	--	1925	600	6	7.4	do.	None	N	Formerly supplied Texas National Guard Camp. Abandoned.
37	do.	do.	--	--	500	6	8.1	Sept. 28, 1934	None	N	Do.
38	do.	do.	--	--	300	6	14.0	do.	None	N	Do.

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Palacios (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Date of measurement	Method of lift	Use of water	Remarks
							Below land surface (ft.)	a.				
39	2 SW	Camp Hulen	--	--	600	2	+7.0		Sept. 28, 1934	None	N	Formerly supplied Texas National Guard Camp. Abandoned.
40	In Palacios	City of Palacios	J. H. Powell	--	590	12	+4.4		July 24, 1934	A,E	P	Formerly supplied city of Palacios; now used as stand-by well. Temperature 80° F.
41	do.	do.	do.	--	590	4	+4.2		do.	A	P	Do.
42	1½ NE	J. G. Sowell	Snodgrass and Barnett	--	600	2	+7.3		Sept. 7, 1934	Flows	D,S	Temperature 76° F.
43	3 N	J. G. Moffett	R. M. Snodgrass	--	290	3	--		--	C,G,3	D,S	
44	3½ NW	J. P. Ellis	J. H. Powell	--	568	2½	+2.0		Sept. 8, 1934	Flows	D,S	Measured flow 1 gallon a minute in 1934. Temperature 77° F.
45	3½ NE	Dr. J.R. Wagner	Layne-Texas Co.	1907	1,000	9-5/8	+		1934	Flows	N	Measured flow 100 gallons a minute in 1934. Temperature 84° F. See log.
46	4½ N	J. K. Darnell	R. M. Snodgrass	1927	287	2½	+4.3		Sept. 8, 1934	Flows Cf,E	D,S	Measured flow 5 gallons a minute in 1934. Temperature 74° F.
47	2 W	Camp Hulen No. 4	Layne-Texas Co.	1937	574	13-3/8 6-5/8	+		Aug. 3, 1937	Flows T,E,15	P	Screen from 527 to 571 feet. Water level reported below land surface Feb. 21, 1941. See log.
48	2½ W	Camp Hulen No. 5	do.	1940	646	20.10	428		Nov. 30, 1940	T,E	P	Screen from 523 to 545, and 581 to 591 feet. See log.
49	2 W	Camp Hulen No. 6	Texas Water Supply Corp.	1941	717	16-5/16	--		--	T,E	P	Do.
Distance from Bay City												
50	11 NW	John Fella	John Fella	1924	35	1½	--		--	C,H	D,S	
51	10 NW	Jack Hiltbold	Otto Mickelson	--	126	2	--		--	C,W	D,S	
52	8 NW	J.C. Carson et. al.	C. G. Hammill	--	700	6	--		--	C,W	D,S	
53	6 W	J. H. Barber	R. C. Berglund	1934	55	2	--		--	None	N	Abandoned.
54	6 SW	Mrs. E.H. Chapman	--	--	110	--	--		--	C,H	D,S	
55	do.	T. J. Walker	J. W. Whiddon	1918	21	1½	--		--	C,H	D,S	
56	do.	City of Markham	J. H. Powell	1909	687	24	--		--	C,W	P	Furnishes part of city supply.
57	4 SW	W. M. Bucek	J. W. Whiddon	1929	22	1½	--		--	C,W,G,½	D,S	
58	12½ W	W. J. Saman	--	1922	65	24	2.0		Apr. 24, 1943	T	N	Formerly irrigated rice.
59	11½ NW	Jacob Rasmussen	--	1913	30	1½	--		--	C,H	D,S	
60	10 W	Texas Pipe Line Co.	Henry Lane	1942	124	2	d/12		1942	A	Ind	Screen from 118 to 124 feet. Supplies pump station.

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Bny City (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift <u>b/</u>	Use of water <u>c/</u>	Remarks
							Below land surface (ft.) <u>a/</u>	Date of measurement			
61	6 W	H. T. Barber	Leo Franzina	1939	185	2	d/15	1939	Cf,E,1/3	D,S	Screen from 170 to 185 feet.
62	10 1/2 SW	Jack Reeves	L. E. Liggett	1921	690	2	--	--	Cf,E,K	D	Said to have flowed until 1936.
63	do.	do.	M. T. Huebner	1940	935	2	+	Apr. 29, 1943	Flows C,W	S,Irr	Screen from 909 to 935 feet.
64	do.	do.	Henry Lane	1942	106	16	11.3	do.	T,D,36	Irr	Screen from 44 to 106 feet. Irrigates 160 acres of rice. See log.
65	9 SW	do.	do.	1943	427	12	--	--	T	Irr	Irrigates rice. Yield 940 gallons a minute in 1947 after pumping 15 minutes. See log.
66	6 1/2 SW	J. E. Dawdy	Leo Franzina	1940	480	2	d/20	--	C,W	D,S	Screen from 472 to 480 feet.
67	7 SW	Plotner and Stoddard	--	--	635	--	--	--	None	N	Said to have been flowing in 1911.
68	8 1/2 SW	United North & South Oil Co.	Henry Lane	1943	86	4	--	--	A	Ind	Screen from 65 to 86 feet. Supplies drilling rigs. See log.
69	10 SW	Jim Lewis	do.	1942	334	4	--	--	C,W	S	
Distance from Blessing											
70	5 NE	V. L. Kopecky	Robertson Bros.	1931	25	3	--	----	C,E,K	P	
71	do.	Elmaton School	R. Vaclovick	1932	72	4 1/2	14.5	June 29, 1934	C,H	P	
72	5 E	J.B.Wilson Estate	H. Gwines	1915	90	6	--	--	C,W	D,S	
73	7 SE	P. P. Terry	R. M. Snodgrass	1927	595	2 1/2	7.0	July 19, 1934	Flows	D,S	Estimated flow 8 gallons a minute in 1934. Temperature 76° F.
74	7 1/2 SE	A. G. Skinner	do.	1914	596	3	+ 8.6	do.	Flows	D,S	Measured flow 5 galloos a minute in 1934. Temperature 76° F.
75	3 1/2 SE	B. W. Trull	do.	1921	440	2 1/2	+	1921	C,W	D,S	Screen from 422 to 440 feet.
76	do.	A. E. Harter	Hockey and Barnett	1938	540	2 1/2	+	1938	C,W	D,S	Screen from 519 to 540 feet.
77	6 SE	School District, No. 15	Henry Lane	1943	415	2	d/8	Jan. 1943	C,H	P	Screen from 407 to 415 feet.
78	do.	Jack Reeves	Luther Patterson	1941	540	4	+ 4	Apr. 29, 1943	Flows	S	Screen from 520 to 540 feet. Measured flow 1/2 gallon a minute.
79	6 1/2 E	Pat Thompson	Henry Lane	1943	200	4.2	9.1	Apr. 28, 1943	C,W	D,S	Screens from 100 to 106, and 194 to 200 feet. See log.

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Palacios (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift <u>b/</u>	Use of water <u>c/</u>	Remarks
							Below land surface (ft.) <u>a/</u>	Date of measurement			
80	10½ NE	J. B. Deckert	--	Old	80	3	d/10	1943	C,W	D,S	
81	12 NE	Mrs. Bert Kelley	--	1933	250	3	8.9	Apr. 29, 1943	C,H	D,S	
82	9½ NE	Ted Mangrum	Leo Franzina	1940	750	2	+	do.	Flows	D,S	Screen from 730 to 750 feet.
83	10 NE	Stanley Kubela	M. T. Huebner	1940	772	2	+	do.	Flows	D,S	Screen from 752 to 772 feet.
84	9½ NE	do.	do.	1939	752	2	+	do.	Flows Cf,E	D,S	Flow reported 16 gallons a minute when drilled. Screen from 732 to 752 feet. See log.
85	6½ NE	P. A. Richman	R. M. Snodgrass	1934	358	2	2.0	Sept. 26, 1934	C,W	D,S	
86	4½ NE	W. A. Hamlin	L. E. Liggett	--	300+	2½	3.5	do.	Flows	D,S	Measured flow 5 gallons a minute in 1934. Temperature 76° F.
87	3½ NE	L. E. Liggett	do.	1909	706	2½	15.0	Sept. 27, 1934	Flows	D,S	Measured flow 10 gallons a minute in 1934. Temperature 76° F.
88	do.	Collegeport Fig Orchard Co.	do.	1930	618	2½	+9.0	do.	Flows	D,S	Measured flow 7 gallons a minute in 1934. Temperature 78° F.
89	4 NE	Missouri Pacific Lines	--	--	612	9-5/8	+	1934	Flows	N	Estimated flow 35 gallons a minute in 1934. Temperature 80° F.
90	3½ NE	O. Reynier	L. E. Liggett	1910	320	21	+5.1	Sept. 27, 1934	Flows	D,S	Measured flow 8½ gallons a minute in 1934. Temperature 75° F.
91	3½ NE	Gust Franzen	Frank Powell	1910	636	2½	+7.2	Sept. 25, 1934	Flows	D,S	Measured flow 12 gallons a minute in 1934. Temperature 79° F.
92	6 N	P. A. Richman	L. E. Liggett	--	590	2½	+	1934	Flows	D,S	Estimated flow 5 gallons a minute in 1934. Temperature 78° F.
93	7½ NE	Town of Citrus Grove	R. M. Snodgrass	--	440+	2½	--	--	C,H	P	
94	3½ S	Stewart Savage.	Henry Lane	1942	750+	--	+	Apr. 30, 1943	Flows	S	
95	2½ SE	Mrs. Clara Le Tulle	--	Old	700+	4	+	do.	Flows	D,S	Measured flow 2 gallons a minute.
96	6 NE	P. A. Richman	Henry Lane	1942	350	4	+	1942	None	N	Formerly supplied drilling rig. Casing pulled and hole abandoned. See log.
97	8 NE	Frank S. Schuelke	R. M. Snodgrass	1931	480	2½	+	Apr. 29, 1943	Flows, C,H	D,S	Screen from 462 to 480 feet.
98	do.	T. W. Blackwell	J. H. Powell	1915	440	2	0	do.	None	N	Said to have flowed until 1941.
99	7½ NE	Stanley Kubela	do.	Old	830	2½	+	Apr. 9, 1943	Flows	D,S	Estimated flow 10 gallons a minute.

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Bay City (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift b/	Use of water c/	Remarks
							Below land surface (ft.) a/	Date of measurement			
100	8½ N	Pierce Estate	--	--	100 ⁺	3	--	--	C,W	D,S	
101	6 N	C. T. Dye	--	--	150 ⁺	2	--	--	C,W	D,S	
102	14½ NE	C. L. Bundick	C. L. Bundick	1929	43	4	15.0	July 13, 1934	C,H	D,S	
103	do.	H. M. Shaw	-- Wentworth	1927	109	2	--	--	E,G,1	D,S	
104	14 NE	O. J. Hodge, Sr.	do.	1913	205	2	--	--	E,H	D,S	
105	do.	O. J. Hodge, Jr.	C. L. Bundick	1932	185	2	--	--	C,H	D,S	
106	10 NE	J. F. Smith	Layne & Bowler Inc.	1912	640	8	--	--	C,W,G,1½	D,S	See log.
107	9 NE	W. F. Merritt	Richardson & Hannah	1929	96	1½	--	--	C,G,3	D,S	
108	7½ NE	T. J. Ewing	-- Wentworth	1923	300	3	--	--	C,W,G,1½	D,S	
115	2½ N	L. N. Miller	--	--	18	--	--	--	C,E,½	D,S	
116	1½ N	I. R. Dolan	Geo. Truitt	1932	65	4	19.5	June 28, 1934	C,E,½	D,S	
117	3½ W	City of Bay City	R. C. Berglund	1934	372	3	15.6	July 12, 1934	C,W	P,Irr	
118	In Bay City	Ellis Hammell	do.	1933	384	2½	--	--	C,E,3	S,Irr	
119	1½ S	W. D. Mayer	do.	1930	119	2½	12.7	Sept. 10, 1934	C,H	D,S	
120	2½ S	Mrs. E. Rickers	Frank Stelzig	1916	90	3½	--	--	C,W	D,S	
121	1½ SE	R. C. Berglund	R. C. Berglund	1930	784	2	1.4	Sept. 19, 1934	C,G,½	D,S	Said to have flowed until 1933.
122	In Bay City	City of Bay City No. 2	-- Jackson	1912	435	10	--	--	T,E,40	P	Yield reported 565 gallons a minute when drilled. See log.
123	do.	City of Bay City No. 1	--	--	444	20	11.4	July 26, 1934	T,E,40	P	Yield reported 602 gallons a minute when drilled.
124	2½ E	G. Searles	Chas. Vorwerk	1930	90	4½	11.6	June 29, 1934	C,W	P	
125	3 E	J. W. Powell	R. C. Berglund	1933	333	4	--	--	C,W	D,S	See log.
126	5½ NE	F. S. Pierson	F. S. Pierson	1933	45	1½	--	--	C,H	D,S	
127	5½ N	Brewster & Bartel	Henry Lane	1943	187	4	d/9	1943	G1	Ind	Screen from 147 to 187 feet. Supplies drilling rig. See log.
128	5 NE	F. G. Cobb	--	1938	275 ⁺	6	d/26	1943	G1	S	Supplies fish pond.
129	do.	Skelly Oil Co.	Luther Patterson	1936	585	6	d/26	1943	A	D,S	Screen from 550 to 580 feet. Yield 100,000 gallons a day. See log.
130	do.	do.	do.	1934	190	4	d/26	1943	G1	Ind	Screen from 180 to 190 feet. Supplies rigs. See log.
131	4½ NE	Sally Johnson	--	1923	500 ⁺	3	d/8	1943	G1	S	Said to have flowed when drilled.
132	2½ NE	Bart Reddock	Henry Lane	1943	156	1½	15	Apr. 1943	C,H	D	Screen from 150 to 156 feet. See log.
133	1 NE	Mort Le Tulle	Louie Gregory	1941	140	1½	--	--	C,W	D,S	

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Bay City (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift b/	Use of water c/	Remarks
							Below land surface (ft.) <u>a/</u>	Date of measurement			
134	In Bay City	City of Bay City No. 3	Layne-Texas Co.	1940	811	13-5/8 6-5/8	<u>d/6</u>	June 27, 1940	T, E, 40	P	Screens from 633 to 677; 687 to 727, and 754 to 791 feet. Drawdown 63 feet, pumping 545 gallons a minute during test. See log.
135	do.	Missouri Pacific Lines	McMasters & Pomeroy	1933	462	8.6	<u>d/22</u>	Aug. 17, 1933	--	RR	Original yield 130 gallons a minute, present yield 60 gallons a minute. See log.
136	do.	Southern Pacific Lines	--	1902	131	7½	<u>d/14</u>	1902	C, E	RR	Flow reported 62½ gallons a minute when drilled. Pumpage, 13,000 gallons a day in 1942.
137	2½ SW	Anderson Estate	Henry Lane	1943	371	4	18.1	Apr. 28, 1942	A	Ind	Screen from 331 to 371 feet. Supplies drilling rigs. See log.
138	4¼ S	Huebner Estate	do.	1943	162	4	<u>d/14</u>	Apr. 1943	C, W	S	Screen from 156 to 162 feet. See log.
139	do.	Hattie Combs	Seismograph Crew	1938	60	4	<u>d/ 8</u>	1943	C, W	D, S	No screen.
Distance from Matagorda											
140	15 N	J. L. Hood	--	1918	70	2	14	1933	C, W	D, S	
141	15½ N	Mike Kadebsky	Mike Kadebsky	1934	46	4	7.0	July 12, 1934	C, W	D, S	
142	13 N	V. L. Le Tulle	--	--	60½	4	--	--	C, W	D, S	
143	11 N	H. G. Gilmore	--	--	65	4	8.4	Sept. 11, 1934	C, W	D, S	
144	10 N	Gulf, Colorado, & Santa Fe R.R.	J. W. Powell	1920	557	4	+	1934	Flows, C, G	S	Principal water-bearing sand from 524 to 557 feet. Estimated flow 4 gallons a minute in 1934. See log.
145	10 N	Mrs. H. Huston	Z. Butler	--	60	4	12.3	Aug. 10, 1934	--	D, S	
146	10 NE	J. J. Le Tulle	J. W. Powell	1917	603	2½	11.7	Sept. 29, 1934	Flows	D, S	Flow reported 65 gallons a minute with static water level 20 feet above land surface when drilled. Principal water-bearing sand from 530 to 603 feet. See log.
147	12 NE	G. D. Culver	do.	1920	454	2	+10.2	do.	Flows	D, S	Flow reported 40 gallons a minute with static water level 20 feet above land surface when drilled.

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Matagorda (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift <u>b/</u>	Use of water <u>c/</u>	Remarks
							Below land surface (ft.) <u>a/</u>	Date of measurement			
148	8½ NE	J. J. Le Tulle	J. W. Powell	1917	493	3	13.3	Sept. 29, 1934	None	N	Flow reported 50 gallons a minute when drilled. Flow stopped in 1930. Principal water-bearing sand from 422 to 493 feet. See log.
149	9 NE	Geo. Sutherland	Henry Lane	1942	863	2	†	June 1942	Flows	D,S	Screen from 843 to 863 feet. Flow reported 12 gallons a minute when drilled. See log.
150	6½ NE	Arthur Bear	do.	1942	682	2	--	Oct. 20, 1942	Flows	S	Screen from 672 to 682 feet. See log.
160	7 NE	Culver Estate	Ed Mallory	1933	32	4	--	--	C,W	D,S	Static water level reported 25 to 30 feet above land surface when drilled.
161	6 NE	V. L. Le Tulle	R. C. Berglund	1912	717	2½	+ 17.5	Sept. 29, 1934	Flows	D,S	
162	4 N	Braman Estate	do.	1931	80	4	--	--	C,W	D,S	
163	2½ NE	do.	--	--	125†	6	--	--	C,W	S	
164	In Matagorda	D. M. Williams	J. W. Powell	1919	702	4	†	1934	Flows	P	Small flow reported. Well sands up.
165	do.	W. E. Cook	Geo. Barnett	1934	415	2	+ 1.4	Sept. 11, 1934	Flows	D,S	Temperature 78° F.
166	do.	C. W. Burkhardt	B. F. Powell	--	590	2½	--	1934	Flows	D,S	
167	do.	A. W. McNabb	R. M. Snodgrass	1928	402	2	†	1934	Flows, C,W	D,S	
168	do.	N. W. Culver	B. F. Powell	1914	710	3	+ 9.8	Aug. 11, 1934	Flows	P	
169	1 NE	W. M. Dunbar	R. M. Snodgrass	1927	735	3	+ 25.8	Sept. 11, 1934	Flows	D,S	Temperature 82° F.
170	5½ NE	Texas Gulf Sulphur Co.	Layne-Texas Co.	1918	521	24	16.0	Sept. 14, 1934	T,E, 50	Ind,P	Yield reported 818 gallons a minute when drilled. See log.
171	6 NE	do.	do.	1927	515	16	--	--	T,E, 15	Ind,P	Yield reported 280 gallons a minute. See log.
172	do.	do.	do.	1918	491	24	16.5	Sept. 13, 1934	T,E, 50	Ind,P	Yield 1,097 gallons a minute when drilled. See log.
173	3¼ NE	G. L. Gottschalk	R. M. Snodgrass	1934	748	2	+ 27.3	Sept. 12, 1934	Flows	S	Temperature 84° F.
174	1 SW	Brown & Root Inc.	Henry Lane	1943	773	4	+ 24.3	June 11, 1943	Flows	Ind	Screen from 753 to 773 feet. Measured flow 60 gallons a minute 1 foot above land surface. See log.
175	5½ S	U. S. Coast Guard	--	Old	600	2½	†	do.	Flows	P	Measured flow 4 gallons a minute 2 feet above land surface.

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Gainsmore (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift b/	Use of water c/	Remarks
							Below land surface (ft.) a/	Date of measurement			
180	8½ NW	H. W. Estill	E. B. Dacke	1931	640	4	+ 3.3	July 26, 1934	Flows	D,S	Measured flow 8 gallons a minute in 1934. Not flowing in April, 1947.
181	7½ NW	L. R. Herrick	--	1917	532	2	+	1934	Flows	D,S	Estimated flow 15 gallons a minute in 1934. Static water level reported 8 feet above land surface in 1917.
182	3¼ NW	H. W. Estill	E. B. Dacke	1928	684	4	+ 5.1	Aug. 7, 1934	Flows	D,S	Measured flow 9 gallons a minute in 1934.
183	3 NW	Mrs. G. E. Ratcliff	do.	1929	932	4	+ 20.8	do.	Flows	D,S	Estimated flow 35 gallons a minute in 1934. See log.
184	4 SW	H. G. Falls	do.	1934	630	2	+ 6.0	do.	Flows	D,S	Measured flow 15 gallons a minute in 1934.
185	In Gainsmore	R. E. Vineyard	B. F. Powell	1914	600	2½	+	1934	Flows	D,S	Estimated flow 8 gallons a minute in 1934. Static water level reported 12 feet above land surface in 1914.
186	2 SE	C. T. Freeman	Chas. Vorwerk	1934	70	2	--	--	C,W	S	
187	3¼ SE	R. Sanborn	E. B. Dacke	--	631	2	+	1934	Flows	D,S	Measured flow 10 gallons a minute in 1934.
188	4¼ SE	C. T. Freeman	--	1930	635	2	+ 10.0	--	Flows	D,S	Measured flow 15 gallons a minute in 1934.
189	5¼ SE	W. D. Cornelius	B. F. Powell	1909	449	2	+ 2	1947	Flows	P	Estimated flow 1 gallon a minute in 1934. Not flowing in April 1947.
Distance from Blessing											
190	3 SW	Kirk Harter	Henry Lane	1941	340	5	7.3	Apr. 24, 1943	C,W	S	Formerly supplied drilling rig.
191	3¼ SW	Joseph Pybus Estate	do.	1941	96	4	7.6	Apr. 23, 1943	C,W	S	
192	6¼ SW	John Gresham	Otto Mickelson	1938	522	--	14.3	Apr. 22, 1943	T,D,100	Irr	Irrigated rice in 1942.
193	7 SW	Tom Sloan	J. H. Powell	Old	460	24	7.0	do.	None	N	Formerly irrigated rice.
Distance from Palacios											
194	In Palacios	City of Palacios No. 3	Layne-Texas Co.	1936	607	6	+	Aug. 23, 1936	T,E	P	Screen from 544 to 565 feet. Flowed 25 gallons a minute when drilled. Yield 253 gallons a minute. See log.
195	do.	City of Palacios No. 4	do.	1941	590	13-3/8, 6-5/8	14	June 28, 1941	T,E,20	P	Screen from 542 to 578 feet. Yield 420 gallons a minute. See log.
196	1¼ W	Camp Hulén No. 7	do.	1943	730	16,8	61	Feb. 1943	T,E,50	P	Yield reported 530 gallons a minute. See log.

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Palacios (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift <u>b/</u>	Use of water <u>c/</u>	Remarks
							Below land surface (ft.) <u>a/</u>	Date of measurement			
197	16½ SW	Matagorda Peninsula Flying Field No.1	Layne-Texas Co.	1942	500	8-5/8 6-5/8	†	Feb. 22, 1942	T,E,5	P	Screens from 396 to 419, 444 to 464, and 480 to 496 feet. Yield reported 100 gallons a minute. See log.
198	do.	Matagorda Peninsula Flying Field No.2	do.	1942	501	8-5/8 6-5/8	†	May 11, 1942	T,E,5	P	Screens from 379 to 402, 436 to 464, and 481 to 499 feet. Yield reported 100 gallons a minute. See log.
Distance from Midfield											
199	4¼ NW	Wade Roberts	Otto Mickelson	1946	579	16.12	10	June 4, 1947	T,D,100	Irr	Estimated yield 2,200 gallons a minute. Plans to irrigate 600 acres with well 199 and well 8 in 1947.
200	3¼ NW	Collins Bros.	American Water Co.	1945	634	24,18	8	Apr. 19, 1947	T,D,150	Irr	Estimated yield 1,500 gallons a minute. Plans to irrigate 600 acres with wells 200 and 201 in 1947. See logs.
201	4¼ NW	do.	do.	1945	585	24,18	8	do.	T,D,150	Irr	Estimated yield 1,400 gallons a minute.
202	4 N	S. Kana	--	Old	35	3	5	Mar. 25, 1947	W	D,S	
203	do.	do.	--	Old	26	4	4.7	do.	H	D	
204	3¼ N	Joe Kana	--	Old	34	3	4	do.	E½	D	
205	2 W	Clarence Mehrens	--	1944	520	12	6	Apr. 19, 1947	T,G,140	Irr	Estimated yield 1,800 gallons a minute. Plans to irrigate 600 acres in 1947 with wells 205 and 206.
206	1 W	do.	--	1944	510	14	6	do.	T,D,140	Irr	Estimated yield 2,400 gallons a minute.
207	4¼ NE	Rex Teat	--	Old	67	3	5.2	Mar. 25, 1947	W	D,S	
208	4¼ NE	E. F. Baca	Otto Mickelson	1947	602	20	6	do.	T,G,180	Irr	Estimated yield 3,000 gallons a minute. Plans to irrigate 350 acres in 1947. See log.
209	6 NE	Elmer Cornett	do.	1946	545	18,16, 12	7.0	Apr. 19, 1947	T,D,150	Irr	Plans to irrigate 200 acres in 1947. See log.
210	5¼ NE	C. P. Hiltpold	--	Old	248	4.2	10.1	Mar. 25, 1947	W	D	Water sand from 16 to 98 feet, and below 240 feet.

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Bay City (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift b/	Use of water c/	Remarks
							Below land surface (ft.) a/	Date of measurement			
211	8½ NW	Jessie Myatt	L.J. Franzina	1946	1,227	4	8.3	Apr. 7, 1947	W	S	Casing: 22 feet of 4-inch pipe; 1,185 feet of 2-inch pipe; 20 feet of screen. See log.
212	3¼ NW	Joe Birkner	American Water Co.	1945	148	12	14.2	Apr. 19, 1947	--	N	Irrigated rice in 1946.
213	4¼ NE	Galen Savage	do.	1946	530	24	12	June 4, 1947	T.D.150	Irr	Estimated yield, 2,380 gallons a minute. Casing: 141 feet of 18-inch, 378 feet of 14-inch, and 11 feet of 12-inch. See log.
214	6¼ E	Mrs. -- Acker	--	Old.	65	4	7	Mar. 24, 1947	W	D,S	
215	3¼ E	Bay City Radio Station	Henry Lane	1945	458	4.2	Flows	do.	T.E.S	D	See log.
216	In Bay City	City of Bay City	Layne-Texas Co.	1945	1,000	14.6-5/8	16	Apr. 1945	T.E.130	P	Bay City Well 4. Pumping level 103 feet below land surface. See log.
217	3¼ W	Paul Palmer	American Water Co.	1945	215	2	14	Apr. 19, 1947	E.C.¼	N	See log.
218	5¼ W	Joe Wright	--	1935	149	4	5	Mar. 26, 1947	W	D	
219	6¼ W	C. Legg	--	Old	536	3	15	do.	W	D,S	
220	6¼ W	Ignac Senkyrik	--	Old	100	2	15	do.	W	S	
221	7 W	R. Johnson	--	Old	100	3	15	do.	W	D,S	
222	14¼ SW	G. Bieri	Henry Lane	1945	495	2	5	Mar. 22, 1947	E.Cf.¼	D	See log.
223	22 SW	W. E. Reauh	American Water Co.	1945	262	1¼	13.6	Apr. 19, 1947	W	S	Do.
224	28¼ SW	Joe Husak	do.	1944	240	2	10	do.	W	S	Do.
225	25 SW	Ann Luther	do.	1944	562	3	Flows	Apr. 24, 1947	E.Cf.¼	D	Do.
226	21 SW	V. L. Bowers	do.	1944	420	2	2	Apr. 17, 1947	E.Cf.¼	D	Do.
227	20 SW	Jack Holsworth	do.	1946	770	18.12	Flows	Mar. 13, 1947	T.D.88	Irr	Estimated yield 1,665 gallons a minute. Plans to irrigate 300 acres of rice. See log.
228	25¼ S	Ned Culver	Henry Lane	1946	805	6	Flows	Mar. 27, 1947	--	S	Plans to install windmill. See log.
229	24¼ S	Douglas Kain	do.	1946	600	2	Flows	do.	--	S	Flows 4 or 5 gallons a minute. See log.
230	In Matagorda	do.	do.	1945	814	2	Flows	do.	--	D	Flows 65 gallons a minute. See log.
231	19 S	R. B. Dunbar	--	1927	740	2	Flows	Mar. 23, 1947	--	S	Reported flow 25 gallons a minute.
232	18 S	Asa Yeamans	Henry Lane	1945	743	2	Flows	Mar. 27, 1947	--	D	See log.
233	15¼ S	Sam Lawson	do.	1942	778	1.2	Flows	Apr. 18, 1947	E.Cf.¼	D,S	
234	15 S	do.	do.	1943	828	¼.2	Flows	do.	--	S	
235	15¼ S	Otis Bros.	--	--	700	2	Flows	do.	--	S	
236	13 S	Ned Culver	Henry Lane	1946	725	2	Flows	Apr. 19, 1947	--	N	Flows 20 gallons a minute. See log.

Table 1. Records of wells in Matagorda County -- Continued

Well	Distance from Bay City (miles)	Owner	Driller	Date completed	Depth of well (ft.)	Diameter of well (in.)	Water level		Method of lift <u>b/</u>	Use of water <u>c/</u>	Remarks
							Below land surface (ft.) <u>a/</u>	Date of measurement			
237	12 SE	Geo. Sutherland	Henry Lane	1946	744	4.2	Flows	Apr. 21, 1947	E,Cf, ½	D,S	Flows 4 gallons a minute. See log.
238	do.	Willie Doss	do.	1946	701	2	Flows	do.	--	S	Flows 6 or 7 gallons a minute. See log.
239	11 SE	Ancil Otis	American Water Co.	1945	579	4.2	Flows	do.	E,Cf, ½	D	See log.
240	10½ SE	Willie Doss	Henry Lane	1946	824	2	Flows	do.	--	N	Flows 6 or 7 gallons a minute. See log.
241	8 S	Frances Savage	American Water Co.	1946	450	2	3	Apr. 22, 1947	W	D	See log.
242	7 S	do.	do.	1945	471	24, 18	6	do.	T,D, 150	Irr	Casing: 122 feet of 24-inch hole; 349 feet of 18-inch hole. Plans to irrigate 250 acres of rice. See log.
243	8 SE	do.	do.	1945	965	3	Flows	do.	--	S	See log.
244	9½ SE	L. A. Norris	do.	1945	122	2	15	Mar. 13, 1947	W	D,S	Do.
245	16 SE	C. Clements	--	Old	620	2	Flows	do.	--	--	
246	18 SE	do.	--	Old	630	1½	Flows	do.	--	S	
247	18½ SE	do.	--	Old	630	2	Flows	do.	--	S	
248	22½ SE	J. A. Smith	American Water Co.	1945	625	2	Flows	Apr. 2, 1947	--	S	See log.
249	26 SE	do.	--	Old	550	2	4	do.	--	D,S	
250	10 NE	J. S. Abercrombie Co.	Layne-Texas Co.	1945	170	14	d/17	July 6, 1945	T,G	Ind	Cased to bottom, slotted from 68 to 161 feet. Reported drawdown 68 feet after pumping 900 gallons a minute for 24 hours. See log.
251	11½ NE	do.	do.	1945	185	14	d/14	Nov. 9, 1945	T,G	Ind	Cased to bottom, slotted from 88 to 179 feet. Reported drawdown 43 feet after pumping 840 gallons a minute for 24 hours. See log.
252	12½ NE	do.	do.	1945	179	14	d/17	Nov. 16, 1945	T,G	Ind	Cased to bottom, slotted from 87 to 177 feet. Reported drawdown 51 feet after pumping 1,225 gallons a minute for 24 hours. See log.

a/ Plus (+) indicates water level above measuring point.

b/ Pump: A, air; C, cylinder; Cf, centrifugal; Gl, Gas; T, turbine.

Power: D, Diesel engine; E, electric; G, gasoline engine; H, hand; W, windmill. Number indicates horsepower.

c/ D, domestic; Ind, industrial; Irr, irrigation; N, not used; P, public supply; RR, railroad; S, stock.

d/ Water level reported by driller or owner.

Table 2. Drillers' logs, Matagorda County, Texas

	Thickness (feet)	Depth (feet)
<u>Well 15</u>		
Owner, A. B. Pierce, in Blessing. Driller, L. A. Layne.		
Black soil	4	4
Clay	37	41
Sand	15	56
White clay	34	90
Muddy sand	22	112
Red clay	71	183
Rock	8	191
Lime rock	129	320
Clay and cobblestones	60	380
Sand	19	399
Hard rock	19	418
Gumbo	62	480
Red rock	11	491
Gumbo	87	578
Rock	5	583
Sand	35	618
Gumbo	6	624
<u>Well 22</u>		
Owner, B. W. Trull, 3½ miles northwest of Blessing. Drillers, Layne & Bowler Inc.		
Clay	74	74
Sand	39	113
Clay	149	262
Sand	59	321
Clay and gumbo	80	401
Gravel	20	421
<u>Well 25</u>		
Missouri Pacific Lines, in Blessing.		
Sandy loam	2	2
White clay	4	6
Red clay	6	12
Fine-grained red sand	2	14
White clay	18	32
Red clay	2	34
Sand	7	41
Clay	65	106
Sand, water	25	131
Red clay	49	180
Hard rock	2	182
Fine-grained sand, water	5	187
Red clay	19	206
Blue clay	115	321

	Thickness (feet)	Depth (feet)
<u>Well 25 -- Continued</u>		
Sand, water	6	327
White clay	100	427
Sand, dry	20	447
Red clay	40	487
White sand	20	507
Gray clay	83	590
Slate	8	598
Sand and gravel, water	14	612
<u>Well 35</u>		
Camp Hulen, 2 miles northwest of Palacios. Driller, Layne & Bowler Inc.		
Clay	177	177
Sand	14	191
Clay	6	197
Sand	21	218
Clay	119	337
Shale	7	344
Gumbo	91	435
Clay	19	454
Hard clay	20	474
Gumbo	8	482
Shale and gravel	16	498
Gumbo	16	514
Shale and gumbo	19	533
Gumbo	131	664
Sand	32	696
Gumbo	21	717
Sand	12	729
Gumbo	4	733
Sand	10	743
Sandy shale	44	787
Packsand	35	822
Shale	2	824
Rock	2	826
Shale	5	831
Sand	8	839
Shale	14	853
Sand	7	860
Clay	23	883
Sand	23	906
Rock, layers	10	916
Sand	20	936
Sandy shale	15	951
Sand	2	953

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 45</u>		
Owner, Dr. J. R. Wagner, 3 $\frac{3}{4}$ miles north-east of Palacios. Driller, Layne-Texas Co.		
Soil	4	4
Clay	17	21
Sand	1	22
Clay	25	47
Sand	2	49
Clay	32	81
Sand	8	89
Clay	17	106
Sand	22	128
Clay	25	153
Sand	3	156
Clay	60	216
Gumbo	25	241
Sand	5	246
Gumbo	18	264
Clay and small stone	26	290
Muddy sand	12	302
Gumbo	78	380
Rock	3	383
Gumbo	33	416
Rock	7	423
Gumbo	5	428
Rock	5	433
Gumbo	10	443
Shale	21	464
Gumbo	18	482
Rock	1	483
Sand and gravel	8	491
Gumbo	42	533
Rock	2	535
Gumbo	5	540
Sand rock	9	549
Sand and gravel	6	555
Rock	4	559
Gumbo	30	589
Sand rock	23	612
Gumbo	5	617

	Thickness (feet)	Depth (feet)
<u>Well 45 -- Continued</u>		
Rock	2	619
Gumbo	3	622
Lime rock	14	636
Gumbo	19	655
Sand rock	10	665
Gumbo	7	672
Sand	2	674
Gumbo	52	726
Sand	6	732
Gumbo	27	759
Sand	5	764
Gumbo	12	776
Sand	10	786
Gumbo	3	789
Sand	4	793
Gumbo	5	798
Sand and gravel	26	824
Rock	1	825
Gumbo	20	845
Sand	17	862
Gumbo	14	876
Rock	4	880
Sand	14	894
Sand and shale	15	909
Good sand	27	936
Sand and shale	39	975
Gumbo	25	1000

<u>Well 47</u>		
Camp Hulen No. 4, 2 $\frac{1}{2}$ miles west of Palacios. Driller, Layne-Texas Co., Ltd.		
Soil and clay	15	15
Sand	5	20
Red clay	28	48
Sand	5	53

(Continued on next page)

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 47 -- Continued</u>		
Clay	70	123
Sand	21	144
Clay	20	164
Fine-grained red sand	5	169
Soft clay	37	206
Clay streaks, shale, and shell	70	276
Sand	24	300
Clay	33	333
Shells and clay	31	364
Clay	13	377
Sand	5	382
Clay and shells	66	448
Sand	5	453
Sticky clay	72	525
Fine-grained hard sand	44	569
Sticky clay	5	574

Well 48

Camp Hulen No. 5, 2 miles west of Palacios. Driller, Layne-Texas Co., Ltd.

Surface soil	8	8
Red clay	16	24
Red and white clay	29	53
Clay and shell	8	61
Clay	34	95
Fine-grained sand	21	116
Coarse-grained white sand	18	134
Soft clay	17	151
Clay and shell	136	287
Shell and sandy breaks	13	300
Tough sticky shale and some shell	24	324
Soft shale and shell	6	330
Tough sticky shale, some shell	7	337
Sandy shale and shell	20	357

	Thickness (feet)	Depth (feet)
<u>Well 48 -- Continued</u>		
Shale	25	382
Sandy shale and shell	17	399
Shale, sandy layers	37	436
Tough shale	86	522
Sand	22	544
Tough shale	36	580
Sand	10	590
Tough shale	56	646

Well 49

Camp Hulen No. 6, 2 miles west of Palacios. Driller, Texas Water Supply Corp.

Sand	12	12
Clay	28	40
Sand	16	56
Clay	40	96
Hard sand	44	140
Shale	15	155
Hard sand	5	160
Shale	85	245
Sand	58	303
Shale	67	370
Shale and sand streaks	5	375
Sticky clay	63	438
sand	8	446
Shale	88	534
Sand	7	541
Shale and sand streaks	4	545
Hard fine-grained sand	5	550
Sticky shale	30	580
Sand	24	604
Sticky shale	26	630
Sand	20	650
Sticky shale	44	694
Sand	23	717

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 64</u>		
Owner, Jack Reeves, 10½ miles south-west of Bay City. Driller, Henry Lane		
Shale	42	42
Sand	62	104
Shale	2	106

	Thickness (feet)	Depth (feet)
<u>Well 65</u>		
Owner, Jack Reeves, 9 miles southwest of Bay City. Driller, Henry Lane.		
Surface clay	10	10
Sand	10	20
White clay	28	48
Sand	42	90
Red shale	52	142
Sand	28	170
Shale and rock	232	402
Sand	25	427

	Thickness (feet)	Depth (feet)
<u>Well 68</u>		
Owner, United North and South Oil Co., 8½ miles southwest of Bay City. Driller, Henry Lane.		
Surface clay	14	14
Red and white clay	32	46
Rock	5	51
Rock and sand	35	86

	Thickness (feet)	Depth (feet)
<u>Well 79</u>		
Owner, Pat Thompson, 6½ miles east of Blessing. Driller, Henry Lane.		
Soil	4	4
Clay	36	40

	Thickness (feet)	Depth (feet)
<u>Well 79 -- Continued</u>		
Sand	18	58
Shale	35	93
Sand	8	101
Shale	82	183
Sand	17	200

	Thickness (feet)	Depth (feet)
<u>Well 84</u>		
Owner, Stanley Kubela, 9½ miles north-east of Palacios. Driller, M. T. Huebner.		
Surface soil	4	4
Clay	20	24
Fine-grained sand	14	38
Red clay	24	62
Sand	21	83
Sticky shale	60	143
Sand	15	158
Shale	100	258
Sand	16	274
Shale	10	284
Gumbo	32	316
Sand and gravel	24	340
Shale and lime	22	362
Sand and gravel	18	380
Shale	24	404
Sticky shale	40	444
Sandy shale	20	464
Sand	20	484
Sand and gravel	20	504
Sandy shale	60	564
Sand and gravel	20	584
Sticky shale	40	624
Shale	20	644
Sandy shale	54	698
Sand	52	750
Shale	2	752

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 96</u>		
Owner, Pat Richmond, 6 miles northeast of Palacios. Driller, Henry Lane.		
Surface	10	10
Sand	24	34
Gray shale	81	115
Sticky shale	87	202
Red shale	23	225
Sand and shale	38	263
Shale	56	319
Sand	31	350

	Thickness (feet)	Depth (feet)
<u>Well 106</u>		
Owner, J. F. Smith, 10 miles northeast of Palacios. Driller, Layne & Bowler Inc.		
Soil and clay	20	20
Sandy clay	46	66
Sand and gravel	117	183
Clay	171	354
Fine-grained sand	14	368
Gumbo	61	429
Shale and gravel	12	441
Gumbo	48	489
Water sand	40	529
Clay	12	541
Fine-grained gray sand	17	558
Gumbo	29	587
Water sand	44	631
Gumbo	9	640

	Thickness (feet)	Depth (feet)
<u>Well 122</u>		
Owner, City of Bay City No. 2, in Bay City. Driller, -- Jackson.		
Surface soil	3	3
Clay and sand	18	21

	Thickness (feet)	Depth (feet)
<u>Well 122 -- Continued</u>		
Sand	17	38
Clay and sand	37	75
Tough clay	37	112
Hard sand	29	141
Pink gumbo	49	190
Sticky shale	38	228
Blue gumbo	40	268
Sandy shale	27	295
Blue gumbo	90	385
Water, sand, and gravel	50	435

	Thickness (feet)	Depth (feet)
<u>Well 125</u>		
Owner, J. W. Powell, 3 miles east of Bay City. Driller, R. C. Berglund.		
Clay	35	35
Sand	24	59
Clay	3	62
Coarse-grained sand	48	110
Blue clay	39	149
Coarse-grained sand	9	158
Blue clay	4	162
Sand	26	188
Blue clay	24	212
Blue clay and boulders	10	222
Hard blue clay	74	296
Sand	37	333

	Thickness (feet)	Depth (feet)
<u>Well 127</u>		
Owner, Brewster and Bartel, 5½ miles north of Bay City. Driller, Henry Lane.		
Sand	10	10
Shale	75	85
Sand	102	187

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 129</u>		
Owner, Skelly Oil Co., 5 miles northeast of Bay City. Driller, Luther Patterson.		
Soil and clay	70	70
Sand	109	179
Shale	96	275
Shale and sand	127	402
Shale	106	508
Sandy shale	20	528
Shale	17	545
Sand, water	38	583
Shale	2	585

	Thickness (feet)	Depth (feet)
<u>Well 130</u>		
Owner, Skelly Oil Co., 5 miles northeast of Bay City. Driller, Luther Patterson.		
Soil	10	10
Clay	65	75
Sand and gravel	115	190

	Thickness (feet)	Depth (feet)
<u>Well 132</u>		
Owner, Bart Reddock, 2½ miles northeast of Bay City. Driller, Henry Lane.		
Surface clay	42	42
Sand	30	72
Rock and shale	68	140
Sand	16	156

	Thickness (feet)	Depth (feet)
<u>Well 134</u>		
Owner, City of Bay City No. 3, in Bay City. Driller, Layne-Texas Co.		
Soil and clay	13	13
Sand and layers of clay	126	139
Red, blue, and gray clay	133	272
Sandy clay and sand	51	323
Blue shale	20	343
Sand, clay breaks	10	353
Shale	39	392
Brown sand and shale breaks	37	429
Shale	8	437
Sand with shale breaks	33	470
Shale	26	496
Sand with shale breaks	53	549
Shale	24	573
Fine-grained sand	10	583
Blue mixed shale	36	619
Sharp sand	44	663
Shale	9	672
Sand and shale breaks	36	708
Shale	17	725
Sand	20	745
Shale	9	754
Sand and shale breaks	31	785
Shale with streaks of sand	21	806
No record	5	811

	Thickness (feet)	Depth (feet)
<u>Well 135</u>		
Owner, Missouri Pacific Lines No. 2, in Bay City. Driller, McMasters and Pomeroy.		
Surface	66	66
Sand	34	100
(Continued on next page)		

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 135 -- Continued</u>		
Red clay	278	378
Sand	16	394
Hard gumbo	18	412
Coarse-grained sand and gravel	50	462

<u>Well 137</u>		
Owner, Anderson Estate, $2\frac{1}{4}$ miles southwest of Bay City. Driller, Henry Lane.		
Surface clay	7	7
Sand	23	30
Red shale	50	80
Fine-grained sand	9	89
Shale and rock	42	131
Rock and sand	9	140
Blue clay	8	148
Sand	10	158
Clay	62	220
Shale with sand breaks	134	354
Coarse-grained sand	17	371

<u>Well 138</u>		
Owner, Huebner Estate, $4\frac{1}{2}$ miles south of Bay City. Driller, Henry Lane.		
Surface soil	3	3
Clay	11	14
Sand	16	30
Shale	60	90
Fine-grained sand	20	110
Shale	34	144
Coarse-grained sand	18	162

	Thickness (feet)	Depth (feet)
<u>Well 144</u>		
Owner, Gulf, Colorado and Santa Fe Railroad, 10 miles north of Matagorda. Driller, J. W. Powell.		
Clay	16	16
Sand	7	23
Clay	29	52
Sand	15	67
Clay	2	69
Sand	10	79
Clay	29	108
Sand	16	124
Blue clay	12	136
Coarse-grained sand	11	147
Blue clay	17	164
Fine-grained sand	15	179
Clay	10	189
Fine-grained sand	6	195
Clay	24	219
Coarse-grained sand	39	258
Clay	55	313
Fine-grained sand	19	332
Gumbo	49	381
Fine-grained sand	13	394
Gumbo	13	407
Coarse-grained sand	26	433
Blue clay	91	524
Water sand	33	557

<u>Well 146</u>		
Owner, J. J. Le Tulle, 10 miles north- east of Matagorda. Driller, J. W. Powell.		
Clay	22	22
Sand	1	23
Clay	42	65

(Continued on next page)

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 146 -- Continued</u>		
Sand	6	71
Clay	38	109
Sand	10	119
Clay	15	134
Sand	21	155
Clay	26	181
Hard blue clay	54	235
Clay	104	339
Fine-grained sand	21	360
Clay	29	389
Sand	9	398
Clay	108	506
Fine-grained sand	10	516
Clay	14	530
Coarse-grained sand	73	603

Well 148

Owner, J. J. Le Tulle, 8½ miles north-east of Matagorda. Driller, J. H. Powell.

Clay	39	39
Fine-grained sand	117	156
Clay	4	160
Coarse-grained sand	51	211
Blue clay	154	365
Fine-grained sand	53	418
Blue clay	4	422
Coarse-grained sand	71	493

Well 149

Owner, Geo. Sutherland, 9 miles north-east of Matagorda. Driller, Henry Lane.

Surface clay	23	23
Sand	7	30
Shale	35	65

	Thickness (feet)	Depth (feet)
<u>Well 149 -- Continued</u>		
Sand	12	77
Shale	38	115
Rocks and shale	25	140
Sand	30	170
Shale breaks	6	176
Sand	9	185
Red shale	28	213
Sand	105	318
Blue shale	56	374
Blue sand	11	385
Hard shale	67	452
Coarse-grained sand	29	481
Shale	69	550
Sand and shale	25	575
Sticky shale	76	651
Sand	31	682
Shale	14	696
Sand	167	863

Well 150

Owner, Arthur Bear, 6½ miles northeast of Matagorda. Driller, Henry Lane.

Surface soil	2	2
Clay	9	11
Sand	29	40
Shale	107	147
Sand	26	173
Shale	32	205
Oyster shells	11	216
Fine-grained sand	34	250
Sticky shale	54	304
Shale	106	410
Fine-grained sand	22	432
Shale	18	450
Sand	23	473
Shale	199	672
Fine-grained sand	10	682

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 170</u>		
Owner, Texas Gulf Sulphur Company, 5½ miles northeast of Matagorda. Driller, Layne-Texas Co.		
Clay	11	11
Sand	31	42
Clay	35	77
Coarse-grained red sand	73	150
Coarse-grained white sand	10	160
Clay	52	212
Coarse-grained sand	10	222
Gumbo	181	403
Fine-grained gray sand	15	418
Gumbo	4	422
Fine-grained blue sand	21	443
Gumbo	78	521

	Thickness (feet)	Depth (feet)
<u>Well 171</u>		
Owner, Texas Gulf Sulphur Company, 6 miles northeast of Matagorda. Driller, Layne-Texas Co.		
Soil and clay	9	9
Sand	27	36
Clay	28	64
Sand	34	98
Clay	40	138
Sand and gravel	26	164
Clay	28	192
Sand	18	210
Gumbo	88	298
Shale	10	308
Gumbo	23	331
Shale	27	358
Gumbo and shale	43	401
Sandy shale	15	416
Gumbo	45	461
Shale	8	469
Sand	36	505
Gumbo	10	515

	Thickness (feet)	Depth (feet)
<u>Well 172</u>		
Owner, Texas Gulf Sulphur Company, 6 miles northeast of Matagorda. Driller, Layne-Texas Co.		
Clay	19	19
Sand	15	34
Clay	5	39
Red sand	16	55
Clay	8	63
Red sand	35	98
Clay	16	114
Coarse-grained sand	57	171
Gumbo	186	357
Sand and gravel	34	391
Gumbo	11	402
Sand and shale	20	422
Gumbo	43	465
Hard sand	26	491

	Thickness (feet)	Depth (feet)
<u>Well 174</u>		
Owner, Brown and Root, Inc., 1 mile southwest of Matagorda. Driller, Henry Lane.		
Surface soil	12	12
Sand	23	35
Blue shale	51	86
Sand	19	105
Shale	58	163
Shale and sand	22	185
Sticky shale	75	260
Sand	21	281
Shale	68	349
Sand	26	375
Sticky shale	75	450
Sand	52	502
Sticky shale	96	598
Sand and shale	42	640
Sand	20	660
Shale	78	738
Sand	35	773

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 183, partial log</u>		
Owner, Mrs. R. E. Ratliff, 3 miles north-east of Gainsmore. Driller, E. B. Dacke.		
Surface soil	20	20
Red gumbo	135	155
Sand	20	175
Blue gumbo	20	195
Sand	80	275
Sticky shale	20	295
Blue gumbo	105	400
Sandy shale	10	410
Gumbo	59	469
Sandy shale	10	479
Gumbo	41	520
Sand	30	550
Gumbo	20	570
Sandy shale	10	580
Gumbo	36	616
Gumbo and shale	93	709
Shale	70	779
Sandy shale	30	809
Total depth		932

	Thickness (feet)	Depth (feet)
<u>Well 194</u>		
Owner, City of Palacios in Palacios. Driller, Layne-Texas Co.		
Clay	7	7
Sand	8	15
Clay	44	59
Sand	7	66
Clay	109	175
Sand	7	182
Clay	40	222
Sandy clay	24	246
Sand	12	258
Clay	48	306
Sand	12	318

	Thickness (feet)	Depth (feet)
<u>Well 194 -- Continued</u>		
Shale	24	342
Sand	3	345
Clay	14	359
Sand	14	373
Shale	3	376
Sand	38	414
Shale	31	445
Sand	7	452
Shale	28	480
Sand	6	486
Shale	60	546
Sand	42	588
Shale	19	607

	Thickness (feet)	Depth (feet)
<u>Well 195</u>		
Owner, City of Palacios in Palacios.		
Soil	1	1
Clay	14	15
Sand	4	19
Sandy clay	24	43
Sand	8	51
Clay	55	106
Sandy clay	20	126
Clay and caliche	30	156
Sandy clay	16	172
Sand, clay, and caliche	44	216
Soft shale	29	245
Shale and layers of shell	23	268
Shale	18	286
Tough shale	7	293
Shale	11	304
Sand	12	316
Shale and streaks of shell	43	359
Sand	21	380
Shale	63	443
Shale and layers of sand	17	460

(Continued on next page)

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 195 -- Continued</u>		
Shale and layers of shell	21	481
Shale	30	511
Hard shale	25	536
Good sand	33	569
Shale	3	572
Sand	6	578
Shale	12	590

	Thickness (feet)	Depth (feet)
<u>Well 196</u>		
Owner, Camp Fulen No. 7, 1 $\frac{1}{2}$ miles west of Palacios. Driller, Layne-Texas Co., Ltd.		
Soil	2	2
Clay	85	87
Sand with clay	40	127
Clay	25	152
Sand	10	162
Clay	119	281
Sand	15	296
Sticky shale	56	352
Sand and shale	11	363
Sand and shell	28	391
Shale	5	396
Sand and shell	16	412
Sticky shale	44	456
Sand	5	461
Sticky shale	66	527
Coarse-grained sand	18	545
Shale	5	550
Hard sand	5	555
Shale	26	581
Coarse-grained sand	12	593
Shale	29	622
Sand with shale	34	656
Shale	56	712
Hard fine-grained sand	10	722
Shale	8	730

	Thickness (feet)	Depth (feet)
<u>Well 197</u>		
Owner, Matagorda Peninsula Flying Field, 16 $\frac{1}{2}$ miles southwest of Palacios. Driller, Layne-Texas Co., Ltd.		
Sand and shell	29	29
Sand	39	68
Clay streaks, sand, and shell	30	98
Sand	13	111
Clay	12	123
Sandy clay	12	135
Sand	30	165
Clay	64	229
Sand	17	246
Clay and sand	14	260
Hard shale	10	270
Sandy shell	30	300
Soft blue shale	20	320
Hard shale	23	343
Shale	37	380
Sand	22	402
Tough shale	4	406
Sand and shale	32	438
Soft sandy shale	20	458
Sand	5	463
Shale	21	484
Sand	16	500

	Thickness (feet)	Depth (feet)
<u>Well 198</u>		
Owner, Matagorda Peninsula Flying Field, 16 $\frac{1}{2}$ miles southwest of Palacios. Driller, Layne-Texas Co., Ltd.		
Sand and shell	96	96
Clay and sand streaks	23	119
Clay	6	125
Sandy clay	35	160
Tough clay	69	229
Sandy clay	6	235
Sand	15	250
Tough clay	196	446

(Continued on next page)

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 198 -- Continued</u>		
Tough shale	39	485
Sand	15	500
Tough shale	1	501

Well 200

Owner, J. A. and W. V. Collins, $3\frac{3}{4}$ miles northwest of Midfield. Driller, American Water Company.

Surface soil	10	10
Sand	20	30
Shale	30	60
Sand	35	95
Sticky shale	90	185
Sand	30	215
Shale	10	225
Sand	25	250
Shale	20	270
Sand	30	300
Shale	10	310
Sand	15	325
Sticky shale	60	385
Shale	52	437
Sand	73	510
Shale	8	518
Sand	22	540
Sticky shale	15	555
Sand	79	634

Well 201

Owner, J. A. and W. V. Collins, $4\frac{1}{2}$ miles northwest of Midfield. Driller, American Water Company.

Surface soil	10	10
Sand	35	45
Shale	15	60
Sand	20	80
Shale	110	190
Sand	25	215
Shale	5	220

	Thickness (feet)	Depth (feet)
<u>Well 201 -- Continued</u>		
Sand	22	242
Shale	28	270
Sand	25	295
Sticky shale	33	328
Sand	12	340
Sticky shale	45	385
Sand	70	455
Shale	45	500
Sand	30	530
Sticky shale	15	545
Sand	40	585

Well 208

Owner, E. F. Baba, $4\frac{1}{2}$ miles northeast of Midfield. Driller, Otto Mickelson.

Surface soil	1	1
Clay	22	23
Sand	10	33
Clay and sand layers	21	54
Sand	19	73
Clay	9	82
Sand	18	100
Clay	5	105
Sand	36	141
Clay	40	181
Sand	29	210
Clay	26	236
Sand	7	243
Clay	39	282
Sand	10	292
Clay	7	299
Sand	41	340
Clay	10	350
Rocky sand	12	362
Sand	67	429
Clay	7	436
Rocky sand	29	465
Gumbo	36	501
Rocky sand	76	577
Lime rock	6	583
Rocky sand	5	588
Gumbo	14	602

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 211</u>		
Owner, Jessie Myatt, $8\frac{3}{4}$ miles northwest of Bay City. Driller, Leo J. Franzina.		
Surface soil	3	3
Soft clay	15	18
Fine-grained sand	12	30
Clay and sand	60	90
Sticky shale and lime	208	298
Sand	50	348
Shale and sand	120	468
Sandy shale and lime	107	575
Sand	9	584
Shale and lime	133	717
Sand and gravel	33	750
Shale and lime	196	946
Sand	22	968
Shale	39	1,007
Shale and lime	185	1,192
Sand and gravel	35	1,227

	Thickness (feet)	Depth (feet)
<u>Well 212</u>		
Owner, Joe Birkner, $3\frac{1}{4}$ miles northwest of Bay City. Driller, American Water Company.		
Surface soil	30	30
Sand	8	38
Clay	25	63
Sand	81	144
Clay	4	148

	Thickness (feet)	Depth (feet)
<u>Well 213</u>		
Owner, Galen Savage, $4\frac{1}{2}$ miles northeast of Bay City. Driller, American Water Company.		
Surface soil	10	10
Clay	55	65
Sand	150	215

	Thickness (feet)	Depth (feet)
<u>Well 213 -- Continued</u>		
Shale	50	265
Sand	40	305
Shale	95	400
Sand	45	445
Shale	25	470
Sand	30	500
Shale	10	510
Sand	17	527
Shale	3	530

	Thickness (feet)	Depth (feet)
<u>Well 215</u>		
Owner, Radio Broadcasting Station, Inc., $3\frac{1}{4}$ miles east of Bay City. Driller, Henry Lane.		
Surface soil	5	5
Shale	64	69
Sand	22	91
Sand and gravel	40	131
Shale	132	263
Sandy shale	37	300
Shale	133	433
Sand and gravel	25	458

	Thickness (feet)	Depth (feet)
<u>Well 216</u>		
Owner, City Well 4, Bay City. Driller, Layne-Texas Co., Ltd.		
Clay	15	15
Brown sand	92	107
Shale and clay	20	127
Gravel	15	142
Clay and gravel	45	187
Red and blue clay	60	247
Sandy clay	45	292
Clay and sand layers	104	396
Brown sand and shale breaks	43	439
Shale	3	442

(Continued on next page)

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 216 -- Continued</u>		
Sandy shale	89	531
Shale	20	551
Sandy shale	23	574
Fine hard sand	12	586
Blue shale	25	611
Shale	16	627
Sharp sand and fine gravel	135	762
Shale	11	773
Sand, gravel, and lime shells	24	797
Gravel and sand layers	15	812
Shale	10	822
Coarse sand and gravel	25	847
Shale	10	857
Fine-grained sand and hard lime	45	902
Shale, clay layers, and lime	98	1,000

Well 217

Owner, Paul Palmer, $3\frac{1}{2}$ miles west of Bay City. Driller, American Water Company.

Surface soil	10	10
Sticky shale	75	85
Sandy shale	50	135
Sticky shale	80	215
Sand	20	235

Well 222

Owner, G. Bieri, $14\frac{1}{2}$ miles southwest of Bay City. Driller, Henry Lane.

Surface soil	5	5
Clay	12	17
Shale	34	51
Sand	15	66

	Thickness (feet)	Depth (feet)
<u>Well 222 -- Continued</u>		
Sandy shale	30	96
Sand	15	111
Shale	90	201
Sand	20	221
Shale	85	306
Sand and shale	30	336
Shale	60	396
Sandy shale	40	436
Shale	36	472
Sand	23	495

Well 223

Owner, W. E. Reauh, 22 miles southwest of Bay City. Driller, American Water Co.

Surface soil	12	12
Clay	105	117
Fine-grained sand	11	128
Clay	117	245
Sand	17	262

Well 224

Owner, Joe Husak, $28\frac{1}{2}$ miles southwest of Bay City. Driller, American Water Co.

Surface soil	10	10
Clay	30	40
Shale	60	100
Sand and clay	40	140
Clay	40	180
Shale	20	200
Sand	40	240

Table 2. Drillers' logs, Matagorda County -- Continued

			Thickness	Depth		
			(feet)	(feet)	Thickness	Depth
					(feet)	(feet)
<u>Well 225</u>			<u>Well 227 -- Continued</u>			
Ann Luther, 25 miles southwest of Bay City. Driller, American Water Company.			Sand 60 355			
Clay	49	49	Sticky shale	10	365	
Sand	25	74	Sand	65	430	
Shale	91	165	Shale	10	440	
Sand	20	185	Sand	20	460	
Shale	91	276	Sandy shale	30	490	
Sand	16	292	Sand	35	525	
Shale	8	300	Sticky shale	35	560	
Sand	37	337	Sand	65	625	
Shale	63	400	Shale	10	635	
Sand and shale	12	412	Sand	25	660	
Shale	74	486	Shale	10	670	
Sand and shale	14	500	Sand	100	770	
Shale	20	520	<u>Well 228</u>			
Sand	42	562	Ned Culver, 25½ miles south of Bay City. Driller, Henry Lane.			
<u>Well 226</u>						
V. L. Bowers, 21 miles southwest of Bay City. Driller, American Water Company.			Sand 35 35			
Surface soil	5	5	Clay	30	65	
Shale	45	50	Sand and shell	15	80	
Sand	20	70	Sandy shale	40	120	
Shale	100	170	Shale and streaks of sand	60	180	
Fine-grained sand	10	180	Sand	25	205	
Shale	70	250	Shale	60	265	
Sand	6	256	Sandy shale	40	305	
Shale	124	380	Sand	212	517	
Sand and shell	18	398	Shale	25	542	
Shale	6	404	Sand	27	569	
Sand	16	420	Shale	31	600	
<u>Well 227</u>						
Jack Holsworth, 20 miles southwest of Bay City. Driller, American Water Company.			Sand 6 606			
Surface soil	10	10	Shale	94	700	
Shale	285	295	Shale and boulders	21	721	
<u>Well 229</u>						
Douglas Kain, 24½ miles south of Bay City. Driller, Henry Lane.			Sandy shale 19 740			
			Shale 54 794			
			Sand 11 805			
			<u>Well 229</u>			
			Sand 35 35			
			Clay 30 65			
			Sand and shell 15 80			
			Sandy shale 40 120			
			(Continued on next page)			

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 229 -- Continued</u>		
Streaks of shale	60	180
Sand	25	205
Shale	60	265
Sandy shale	40	305
Shale	200	505
Sand	12	517
Shale	25	542
Sandy shale	25	567
Sand	33	600

<u>Well 230</u>		
Douglas Kain, in Matagorda. Driller, Henry Lane.		
Surface soil	5	5
Clay	55	60
Sand	15	75
Shale and lime	300	375
Sand	25	400
Shale and lime	150	550
Sand and lime	50	600
Shale and lime	179	779
Sand	35	814

<u>Well 232</u>		
Asa Yeamans, 18 miles south of Bay City. Driller, Henry Lane.		
Surface soil	5	5
Clay	15	20
Sand	24	44
Shale	75	119
Sand	15	134
Shale	200	334
Sand	10	344
Shale and sand	36	380
Shale and lime	20	400
Sand	15	415
Shale and lime	150	565
Sand	6	571
Shale and lime	129	700
Sand	43	743

	Thickness (feet)	Depth (feet)
<u>Well 236</u>		
Ned Culver, 13 miles south of Bay City. Driller, Henry Lane.		
Surface soil	5	5
Sand	30	35
Clay	32	67
Shale	30	97
Sand	10	107
Sandy shale	22	129
Shale	12	141
Sand	29	170
Shale	190	360
Sand	20	380
Sand	45	425
Shale and lime	75	500
Hard shale	200	700
Sand	25	725

<u>Well 237</u>		
George Sutherland, 12 miles southeast of Bay City. Driller, Henry Lane.		
Surface soil	10	10
Sand	20	30
Shale	128	158
Sand	17	175
Shale	332	507
Sand	30	537
Shale	150	687
Shale	39	726
Sand	18	744

<u>Well 238</u>		
Willie Doss, 12 miles southeast of Bay City. Driller, Henry Lane.		
Surface soil	10	10
Shale	38	48
Sand	20	68
Shale	42	110
Sand	25	135
Shale	111	246

(Continued on next page)

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 238 -- Continued</u>		
Sand	23	269
Sandy shale	66	335
Sand	70	405
Shale	49	454
Sand	35	489
Shale	22	511
Sand	23	534
Sandy shale	119	653
Sand	48	701

<u>Well 239</u>		
Ameil Otis, 11 miles southeast of Bay City. Driller, American Water Company.		
Surface soil	20	20
Sand	10	30
Clay	170	200
Sand	40	240
Clay	135	375
Sand	23	398
Clay	122	520
Sand	59	579

<u>Well 240</u>		
Willie Doss, 10 $\frac{1}{2}$ miles southeast of Bay City. Driller, Henry Lane.		
Shale	45	45
Sand	17	62
Shale	20	82
Sand	8	90
Shale	23	113
Sand	31	144
Shale	49	193
Sand	7	200
Shale	10	210
Sand	56	266
Sandy shale	34	300
Sand and gravel	59	359
Shale	49	408
Sand	18	426
Shale	22	448

	Thickness (feet)	Depth (feet)
<u>Well 240 -- Continued</u>		
Shale and sand	80	528
Sand	49	577
Shale	3	580
Sand	97	677
Cap rock	8	685
Sand	89	774
Shale	16	790
Sand	34	824

<u>Well 241</u>		
Frances Savage, 8 miles south of Bay City. Driller, American Water Company.		
Surface soil	10	10
Sand	25	35
Clay	10	45
Sand	60	105
Clay	60	165
Sand	55	220
Clay	105	325
Sand	10	335
Clay	95	430
Sand	20	450

<u>Well 242</u>		
Frances Savage, 7 miles south of Bay City. Driller, American Water Company.		
Surface soil	10	10
Shale	38	48
Sand	112	160
Shale	10	170
Sand	20	190
Shale	10	200
Sand	30	230
Shale	15	245
Sand	25	270
Shale	90	360
Sand	111	471

Table 2. Drillers' logs, Matagorda County -- Continued

	Thickness (feet)	Depth (feet)
<u>Well 243</u>		
Frances Savage, 8 miles southeast of Bay City. Driller, American Water Company.		
Surface soil	10	10
Clay	80	90
Sand	25	115
Sandy shale	185	300
Sand	20	320
Sticky shale	90	410
Sand	125	535
Sand and shale	190	725
Sand	45	770
Shale	175	945
Sand	20	965

	Thickness (feet)	Depth (feet)
<u>Well 244</u>		
L. A. Norris, 9 $\frac{1}{2}$ miles southeast of Bay City. Driller, American Water Company.		
Surface soil	12	12
Clay	83	95
Sand	27	122

	Thickness (feet)	Depth (feet)
<u>Well 248</u>		
J. A. Smith, 22 $\frac{1}{2}$ miles southeast of Bay City. Driller, American Water Company.		
Surface soil	10	10
Clay	15	25
Sand	20	45
Shale	75	120
Sand	20	140
Shale	90	230
Sand	25	255
Sand and shale	210	465
Shale	100	565
Sand	60	625

	Thickness (feet)	Depth (feet)
<u>Well 250</u>		
J.S. Abercrombie Company, 10 miles north-east of Bay City. Driller, Layne-Texas Co.		
Black soil	2	2
Pink clay	60	62
Clay and layers of sand	16	78
Sand and gravel	18	96
Clay	19	115
Sand and gravel	45	160
Clay	10	170

	Thickness (feet)	Depth (feet)
<u>Well 251</u>		
J.S. Abercrombie Company, 11 $\frac{1}{2}$ miles north-east of Bay City. Driller, Layne-Texas Co.		
Black soil	2	2
Sand and clay	26	28
Clay	16	44
Shale	17	61
Clay	10	71
Sand	16	87
Clay	4	91
Sand and gravel, some clay streaks	49	140
Sand and gravel	10	150
Coarse-grained sand	31	181
Clay	4	185

	Thickness (feet)	Depth (feet)
<u>Well 252</u>		
J.S. Abercrombie Company, 12 $\frac{1}{2}$ miles north-east of Bay City. Driller, Layne-Texas Co.		
Sandy soil	3	3
Black dirt	4	7
Red clay	34	41
Clay	6	47
Sand	3	50
Clay	26	76
Sand and gravel	73	155
Sand	15	170
Clay	9	179

Table 3

Results of samples collected in Matagorda County, Texas, in 1934-43. Results are in parts per million, and analyzed in the laboratories of the Geological Survey.

Well	Bicarbonate (HCO ₃)	Chloride (Cl)	Hardness as CaCO ₃	Well	Bicarbonate (HCO ₃)	Chloride (Cl)	Hardness as CaCO ₃
2	304	56	210	68	406	114	-
3	336	70	230	69	416	157	-
4	434	188	600	70	444	153	360
5	304	54	240	71	476	306	400
6	480	190	310	72	524	225	350
7	426	206	410	73	312	171	70
10	392	154	-	74	304	190	70
14	266	137	-	75	306	47	-
16	458	218	330	76	283	92	-
17	364	53	85	77	351	71	-
18	376	82	25	78	291	168	-
19	328	61	30	80	363	90	-
21	436	96	-	82	384	219	-
24	330	78	-	84	374	136	-
26	316	37	-	85	328	46	75
27	322	92	-	86	324	46	70
28	298	40	-	87	364	228	30
29	291	82	-	89	378	143	50
30	348	51	110	90	332	46	70
31	316	55	55	91	440	220	30
32	428	78	25	92	456	248	35
34	350	55	50	93	354	58	35
35	550	700	55	95	366	168	-
36	334	60	10	97	329	66	-
37	416	56	20	99	317	189	-
38	158	595	360	100	296	77	260
39	338	59	15	101	446	78	300
40	358	64	15	103	604	170	140
41	360	62	20	104	340	170	140
42	368	74	20	105	358	150	140
43	396	57	55	106	272	65	150
44	332	64	32	108	236	420	160
45	398	1,170	120	115	494	196	420
46	364	52	85	116	504	32	370
48	351	58	-	117	338	44	130
49	503	138	-	119	476	91	350
50	401	125	330	120	466	144	340
51	416	110	320	121	258	45	120
53	432	78	320	124	404	260	430
55	400	114	400	125	338	51	100
56	292	35	140	126	492	138	270
57	456	42	390	128	395	125	-
60	338	100	-	129	284	32	-
61	398	132	-	130	448	132	-
62	399	141	-	131	278	31	-
63	315	764	-	133	471	166	-
66	351	81	-	135	313	44	-
67	297	45	-	136	479	60	-

Table 3 -- Continued

Results of field tests of samples collected in Matagorda County -- Continued

Well	Bicarbonate (HCO ₃)	Chloride (Cl)	Hardness as CaCO ₃	Well	Bicarbonate (HCO ₃)	Chloride (Cl)	Hardness as CaCO ₃
140	430	56	270	167	542	107	45
141	476	338	630	168	570	155	20
142	572	325	370	171	520	96	25
143	366	98	310	172	410	191	350
144	608	370	60	173	346	1,040	75
146	304	690	65	180	312	181	15
160	552	460	430	182	416	195	35
161	380	75	10	184	524	382	70
162	400	530	560	185	244	450	95
163	436	705	750	186	474	460	350
164	494	160	15	188	416	552	110
165	570	80	40	190	392	261	-
166	532	62	15	191	420	324	-

Table 4. Analyses of water from wells in Matagorda County, Texas

Analyzed by Margaret D. Foster, W. W. Hastings, and J. H. Rowley. Results are in parts per million.

Well numbers correspond to numbers in table of well records.

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluor- ide (F)	Ni- trate (NO ₃)	Total hardness as CaCO ₃
1	J. A. Malcek	36	Oct. 24, 1934	483	-	-	84	33	66	532	93	28	1.0	0.05	345
15	A. B. Pierce	624	Apr. 8, 1944	339	18	2.9	40	19	62	286	19	38	.4	.0	178
33	Turtle Bay School	361	Oct. 24, 1934	391	-	-	17	9.3	131	336	19	48	.6	0.10	81
47	Camp Hulén	574	Oct. 18, 1942	432	18	.03	4.4	1.9	165	330	18	62	.3	0	19
52	J.C.Carson et al	700	1947	496	-	-	90	26	65	400	17	90	-	.0	332
54	Mrs. E. H. Chapman	110	Oct. 24, 1934	649	-	-	94	40	103	418	28	177	.6	.13	399
88	Collegeport Fig Orchard Co.	618	Oct. 25, 1934	515	-	-	6.1	3.1	203	379	16	100	-	0	140
102	C. L. Bundick	43	do.	594	-	-	98	25	101	568	68	20	0.5	1.5	348
106	J. F. Smith	640	1947	364	-	-	38	14	86	270	10	76	-	.0	152
107	W. F. Merritt	96	Oct. 25, 1934	629	-	-	90	29	120	524	35	96	.9	.10	344
118	Ellis Hammell	384	Oct. 26, 1934	342	-	-	29	11	95	308	16	38	.9	.08	118
122	City of Bay City	435	Apr. 6, 1943	315	13	3.1	33	14	70	268	12	40	.2	.2	140
123	do.	444	do.	318	14	.12	35	15	63	258	16	38	.2	.2	149
134	do.	811	do.	426	19	.68	46	20	89	316	21	74	.6	0	197
145	Mrs. H. Huston	60	Oct. 25, 1934	589	-	-	102	17	108	413	8.1	150	.3	.20	325
147	G. D. Culver	454	do.	464	-	-	3.7	1.8	187	384	19	63	-	.15	17
169	W. M. Dunbar	735	do.	621	-	-	4.2	1.7	252	422	2.3	152	1.2	.20	17
174	Brown & Root Inc.	773	June 11, 1943	601	16	.45	4.4	1.2	236	464	a/ 2	103	1.1	0	16
175	U.S. Coast Guard	600+	do.	1,320	12	.07	11	8.0	519	829	a/ 3	358	.6	0	60
181	L. R. Herrick	532	1947	987	-	-	15	4.5	369	260	2	454	-	1.2	56
183	Mrs.G.E.Ratcliff	932	Oct. 25, 1934	1,653	-	-	21	8.7	628	383	1.8	802	2.7	.50	88
187	R. Sanborn	631	Oct. 26, 1934	1,009	-	-	18	6.3	377	486	84	281	2.7	.10	71
189	W. D. Cornelius	449	1947	650	-	-	14	6.6	243	484	2	136	-	.0	62
194	City of Palacios	607	Apr. 8, 1943	475	17	.05	6.6	2.8	178	353	17	73	1.0	.2	28
195	do.	590	do.	456	17	.06	5.8	3.2	169	348	18	63	1.0	0	28
198	Matagorda Peninsula Flying Field	501	June 15, 1943	1,773	-	-	12	8.1	692	576	a/ 2	775	-	0.5	64
201	Collins Bros.	585	Apr. 19, 1947	452	-	-	81	23	48	309	18	92	-	.0	296
208	E. F. Baca	602	Mar. 25, 1947	524	-	-	49	26	124	402	28	99	-	.0	230
211	Jesse Myatt	1,227	Apr. 7, 1947	356	-	-	28	14	92	258	16	70	-	.0	128
213	Galen Savage	530	June 4, 1947	588	-	-	87	29	106	445	18	129	-	.2	336
215	Bay City Radio Station	458	May 1947	378	-	-	13	4.4	132	304	15	51	-	.5	50
226	V. L. Bowers	420	Apr. 17, 1947	520	-	-	8.8	3.5	197	432	29	57	-	.5	36
227	Jack Holaworth	770	Mar. 13, 1947	590	-	-	9.0	3.7	226	382	9	146	-	.0	38
228	Ned Culver	805	May 1947	805	-	-	16	9.5	849	632	2	995	-	1.0	79

a/ By turbidity.

Table 4. Analyses of water from wells in Matagorda County -- Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Dissolved solids	Silica (SiO ₂)	Iron (Fe)	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and Potassium (Na+K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Fluor- ide (F)	Ni- trate (NO ₃)	Total hardness as CaCO ₃
230	Douglas Kain	814	Mar. 27, 1947	580	-	-	4.3	1.4	230	448	4	103	-	.0	16
231	R. B. Dunbar	740	Mar. 23, 1947	740	-	-	8.2	4.4	354	726	2	150	-	.0	32
233	Sam Lawson	778	Apr. 18, 1947	545	-	-	4.2	1.0	217	412	8	99	-	.0	14
234	do.	828	do.	939	-	-	5.3	2.2	373	564	2	261	-	.0	22
235	Otis Bros.	700	do.	1,020	-	-	11	3.4	397	328	2	448	-	1.0	42
237	Geo. Sutherland	744	Apr. 20, 1947	1,380	-	-	12	4.5	535	390	2	630	-	.8	48
238	Willie Doss	701	May 1947	1,260	-	-	15	4.5	483	280	2	620	-	.8	56
242	Frances Savage	471	Apr. 22, 1947	626	-	-	72	24	141	400	17	170	-	.0	278
243	do.	965	do.	366	-	-	10	3.8	131	296	11	50	-	.2	40
249	J. A. Smith	550	Apr. 2, 1947	1,000	-	-	18	11	377	546	2	326	-	1.0	90
b/250	J.S.Abercrombie Co.	170	Nov. 6, 1946	621	-	-	103	28	92	429	31	134	-	-	-
b/252	do.	179	do.	886	-	-	127	66	84	413	67	255	-	-	-

b/ Analyzed by R. M. Burkett.

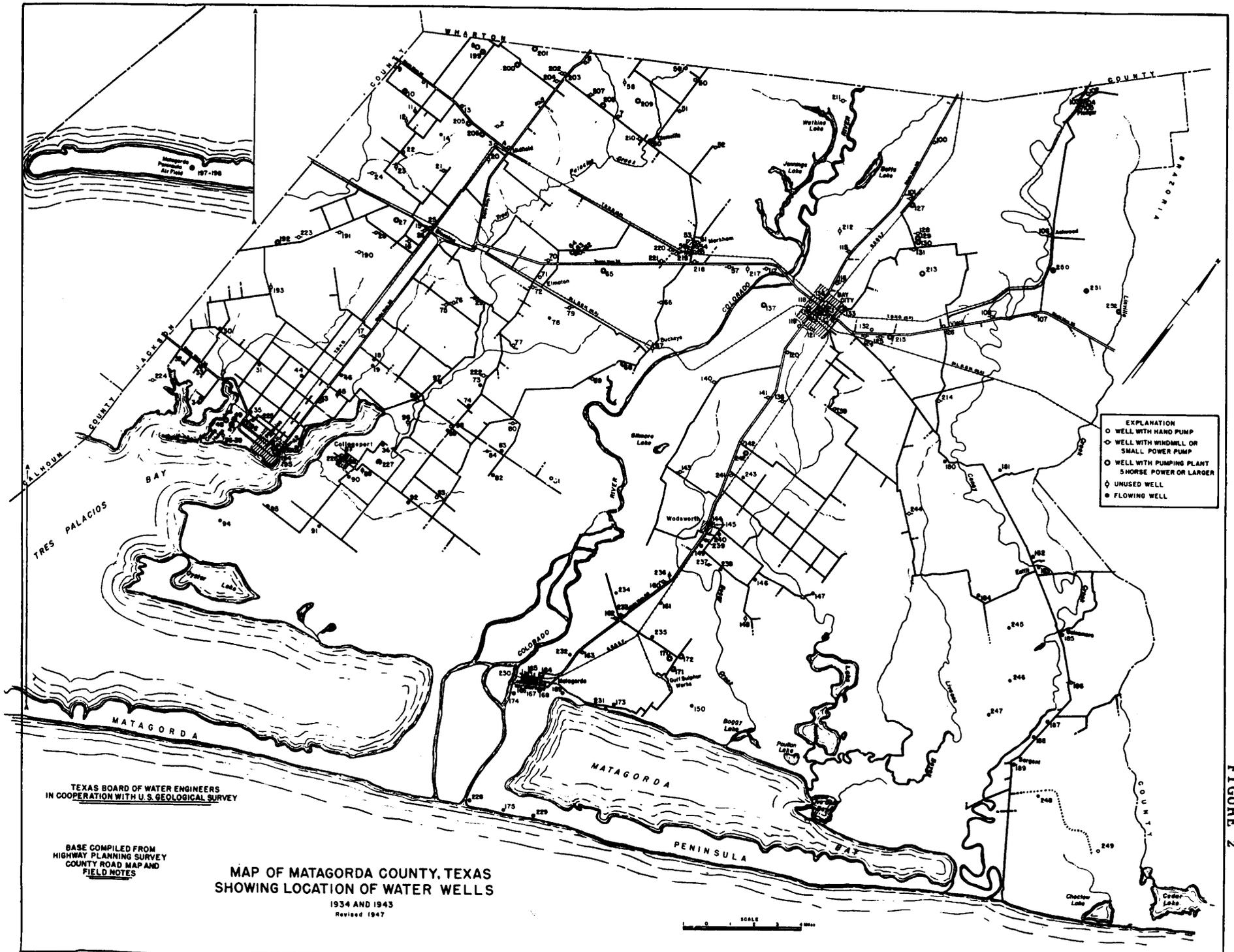


FIGURE 2