TEXAS BOARD OF WATER ENGINEERS

3

Z

H. A. Beckwith, ChairmanA. P. Rollins, MemberO. F. Dent, Member

BULLETIN 5418

GROUND-WATER RESOURCES OF JONES COUNTY, TEXAS

By

A. G. Winslow, and William W. Doyel, Geologists and Carl H. Gaum, Hydraulic Engineer United States Geological Survey

Prepared in cooperation with the Geological Survey, United States Department of the Interior

December 1954

CONTENTS

Abstract	
Introduction	4
Purpose and scope	
Previous investigations	
Acknowl edgments	
Climate	
Geologic formations and their relation to the occurrence of ground water	
Permian formations	
Lueders limestone	
Bullwagon dolomite member of the Vale formation	
San Angelo sandstone	
Alluvial deposits	
Utilization of ground water	
Domestic and stock	
Public supply	
Industrial	
Irrigation	
Quality of ground water	
Possibilities for future development]
Permian formations	1
Lueders limestone :	1
Bullwagon dolomite member of the Vale formation	1
San Angelo sandstone	1
Alluvial deposits]
Conclusions	1
References cited	1

ILLUSTRATIONS

Plate	1.	Map showing locations of wells, Jones County, Tex	30
Figure	1.	Map of Texas showing location of Jones County	2
	2.	Average annual precipitation at Abilene, Tex	4

TABLES

Table	1.	Monthly and annual precipitation at Abilene, Tex., 1885-1952	5
		Records of wells in Jones County	14
	3.	Drillers' logs of wells in Jones County	25
	4.	Analyses of water from wells in Jones County	27

GROUND-WATER RESOURCES OF JONES COUNTY, TEXAS

By

A. G. Winslow, and William W. Doyel, Geologists and Carl H. Gaum, Hydraulic Engineer

December 1954

ABSTRACT

1

Jones County, in north-central Texas, is in the outcrop of formations of Permian age which in most places yield small quantities of water of poor quality. A mantle of water-bearing alluvium that formerly covered the Permian rocks has been largely removed by erosion and only scattered remnants remain. The largest remaining alluvial deposit is in the south-central part of the county.

Yields of 100 gallons a minute have been reported from wells both in the Permian rocks and in the alluvium, but the quality of the water from the Permian rocks is generally inferior.

Although ground water is used principally for stock, and for domestic purposes, it is used also to supply two oil refineries for a water-flooding project in the Lewis-Steffens oil field, as a supplementary public supply for the city of Anson, and to supply two small irrigated areas in the southern part of the county.

Areas most likely to yield potable ground water are in the south-central part of the county and in a belt between Lueders and Nugent, from 1 to 2 miles west of the outcrop of the Lueders limestone. Wells more than 150 feet deep are unlikely to yield potable water.

INTRODUCTION

Jones County is in north-central Texas and is bounded on the north by Haskell and Stonewall Counties, on the east by Shackelford County, on the south by Taylor County, and on the west by Fisher County (fig. 1). The population of the county was 22,147 in 1950. The major towns are Anson, the county seat, population 2,703; Stamford, population 5,806; and Hamlin, population 3,564. The area of the county is 959 square miles, consisting of level to rolling prairie, much of which is under cultivation. The major crops are cotton and grains. The county also produced 6.7 million barrels of oil in 1950.

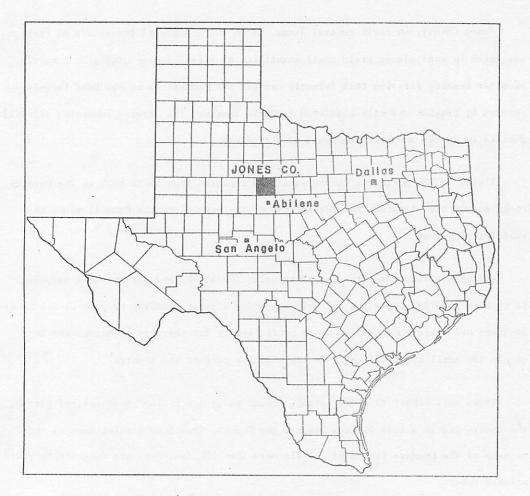


FIGURE 1.-Map of Texas showing location of Jones County.

The Clear Fork of the Brazos River and its tributaries form the main drainage system for the county. The public water supplies of Anson and Hamlin, and of Abilene in Taylor County, are furnished from artificial lakes within the county; the largest lake, Lake Fort Phantom Hill, in the southeastern part of the county, supplies the city of Abilene.

PURPOSE AND SCOPE

Because the supply of good water available for domestic, public, or other use in Jones County, Tex., is not large, this investigation was planned to delineate those areas where ground water might be found in such quantity and of such quality that it could be used to supplement existing surface-water supplies.

The available geologic maps and reports were studied and an inventory was made of the water wells in the county. This report contains a brief description of the geology of the county and its relation to the occurrence of ground water, and tabulated records of 197 wells, 60 chemical analyses of water from selected wells, and partial logs of 13 oil tests. The locations of the wells are shown on plate 1.

The investigation in Jones County was made by the United States Geological Survey in cooperation with the city of Anson and the Texas Board of Water Engineers as part of a Statewide program of ground-water investigations in Texas under the direct supervision of R. W. Sundstrom, District Engineer in charge of ground-water investigations in Texas, and under the general supervision of A. N. Sayre, Chief of the Ground Water Branch of the U. S. Geological Survey.

PREVIOUS INVESTIGATIONS

A study was made in March 1944 of the ground-water resources of the northeastern part of Jones County by Broadhurst and Follett (1944). Results of the investigation are given in a manuscript report. Pertinent data from that report are included in this report.

ACKNOWLEDGMENTS

Appreciation is expressed to the residents of Jones County who supplied information and aided in the collection of field data. Acknowledgment is also due officials of the city of Anson and V. C. Perini, Jr., consulting geologist of Abilene, as well as to well drillers and oil companies operating in Jones County, for information and assistance furnished during the investigation.

CLIMATE

The nearest U. S. Weather Bureau station having long records of climate is at Abilene, in Taylor County, about 23 miles south of Anson, where the average annual precipitation for the period 1885 to 1952 was 24.25 inches. The wettest year of record was 1941 with 48.77 inches of precipitation and the driest year of record was 1917 with 10.85 inches. The average temperature at Abilene for the period 1886 to 1952 was 64.5°F. The maximum recorded temperature was 111°F in August 1943; the minimum, 9°F in January 1947. The average growing season for Jones County is 220 days.

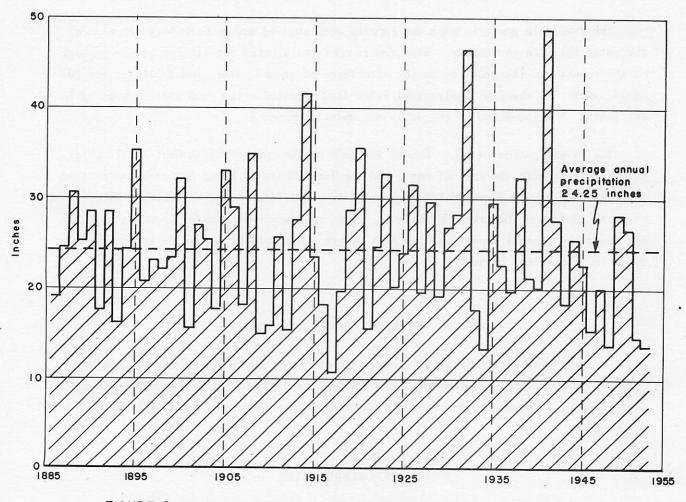


FIGURE 2.-Average annual precipitation at Abiline, Tex.

Table 1.- Monthly and annual precipitation at Abilene, Texas, 1885-1952

	1			1			1000 1						
Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1885		-	-	-	-		-		-	2.61	0.23	0.98	3.82
1886	.11	.61	2.47	1.67	. 33	3.38	1.48	2.03	4.17	2.24	.65	Т	19.14
1887	.06	1.21	.03	2.45	3.95	3.26	2.71	1.10	2.64	4.77	.87	1.58	24.63
1888	.76	2.40	1.16	5.16	3.63	2.79	. 46	4.08	.05	2.00	4.80	3.29	30.58
1889	2.74	2.62	1.07	.71	2.93	6.36	1.80	. 21	3.03	1.22	2.54	Т	25.23
1890	. 33	1.81	.14	9.80	2.69	.65	2.10	2.11	5.19	.97	2.10	.61	28.50
1891	2.11	.76	1.79	1.95	1.83	2.04	1.10	2.03	.64	. 60	.12	2.60	17.57
1892	. 30	1.04	2.59	1.68	6.12	1.34	1.41	3.58	1.85	6.03	. 45	2.09	28.48
1893	. 51	. 33	.66	. 28	5.78	.98	. 52	3.36	2.30	.03	1.00	. 52	16.27
1894	1.24	.75	1.66	1.23	6.49	3.30	.79	6.79	. 54	1.17	Т	. 43	24.39
1895	1.15	2.32	.15	2.30	1.96	8.40	4.63	1.27	3.95	4.13	2.38	2.66	35.30
1896	1.44	.78	.14	1.11	.70	2.17	1.68	1.54	4.14	4.18	. 38	2.48	20.74
1897	1.28	.02	4.02	.74	4.73	3.90	2.00	1.87	2.89	1.32	.01	. 52	23.30
1898	.75	1.08	1.41	1.78	2.60	4.55	1.46	1.94	3.44	T	.98	2.14	22.13
1899	.51	.01	.04	2.96	4.02	5.45	1.38	.10	. 44	2.90	2.36	3.24	23.41
1900	.92	. 53	1.54	5.43	4.11	. 30	2.59	2.11	9.65	4.39	. 24	. 30	32.11
1901	.03	1.44	.72	.98	7.17	Т	. 28	.81	1.81	.61	1.50	. 36	15.71
1902	.09	. 31	2.25	.86	6.69	1.00	7.82	.06	3.13	2.00	2.46	. 39	27.05
1903	1.51	4.07	2.31	. 49	1.99	3.87	1.29	1.67	8.64	. 42	.05	- 22	26.53
1904	1.02	. 27	.00	.93	2.20	4.67	2.71	1.42	3.02	1.06	. 40	.10	17.80
1905	1.11	1.02	2.71	3.66	6.05	2.82	5.24	.28	3.16	4.66	1.50	.85	33.06
1906	.32	. 38	.91	2.41	2.60	5.82	3.68	5.45	2.85	1.73	2.41	. 49	29.05
1907	1.44	.00	.85	. 37	4.13	. 49	3.25	.35	. 46	3.92	2.06	1.01	18.33
1908	.63	.11	.77	6.72	8.38	. 49	4.77	1.23	2.50	6.96	2.41	.00	34.97
1909	.06	.00	. 39	. 38	2.71	4.04	1.09	.62	1.05	1.94	1.96	.73	14.97
1910	. 37	. 21	. 31	1.31	2.11	.74	. 32	2.87	1.64	4.62	. 38	1.05	15.93
1911	. 53	3.02	.91	2.71	.06	.08	6.39	2.83	1.38	1.37	. 31	6.29	25.88
1912	Т	1.16	1.40	2.30	1.80	2.63	. 30	2.81	.18	1.21	.33	1.31	15.43
1913	. 25	.56	1.27	1.57	4.73	1.99	.72	. 53	4.42	3.88	5.82	2.07	27.81
1914	Т	.14	.66	5.34	7.53	1.10	1.05	15.70	.91	4.08	3.48	1.61	41.60
1915	.67	.96	.80	8.06	2.12	2.85	.80	2.04	3.00	1.33	Т	.77	23.40
1916	. 40	.01	1.18	5.13	3.22	2.05	. 68	.52	.88	3.31	.88	.02	18.28
1917	.71	1.00	. 27	.93	3.31	.69	.90	1.24	1.48	.15	.16	.01	10.85
1918	.91	.11	.98	1.06	2.88	1.56	. 42	3.00	.76	3.66	1.98	2.52	19.84
1919	2.96	.45	2.73	2.75	5.73	3.12	1.51	2.33	1.72	3.99	1.13	.25	28.67
1920	3.02	. 30	.01	. 29	8.26	1.77	1.81	9.03	5.66	2.77	1.92	.63	35.47
1921	.68	1.54	.98	. 30	1.46	8.22	.44	.91	.94	.01	.01	.12	15.61
1922	1.18	. 46	1.21	8.71	5.34	1.80	.96	.20	. 32	2.43	1.97	- 20	24.78
1923	3.10	2.67	2.33	5.73	.88	3.81	.22	1.28	1.10	7.64	2.09	1.92	32.77
1924	.19	1.51	2.15	2.92	5.17	. 32	.64	1.51	4.05	. 30	.02	1.45	20.23
1925	.31	.07	.02	5.03	5.40	3.09	1.39	1.36	3.88	2.43	1.16	Т	24.14
1926	1.44	Т	3.65	3.86	2.65	5.78	2.66	1.42	. 45	2.22	.68	6.69	31.50
1927	.88	2.28	.99	3.87	.78	.89	1.89	.66	5.89	.71	Т	. 56	19.40
1928	.95	.78	. 43	.93	12.03	2.52	3.05	5.61	. 54	1.52	. 49	.83	29.68
1929	. 48	1.40	2.72	1.18	4.22	.13	.64	.05	4.37	3.28	. 50	. 14	19.11
1930	. 56	.06	.97	2.23	5.39	1.73	. 47	. 59	4.85	6.25	1.33	2.43	26.86

(Continued on next page)

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1931	1.82	2.54	1.12	2.15	1.14	1.22	2.21	0.31	0.09	10.21	3.49	1.96	28.26
1932	1.68	3.12	. 10	2.67	10.99	4.13	4.49	4.05	10.53	. 34	.01	4.32	46.43
1933	. 34	1.41	.70	. 43	7.85	. 32	.94	. 60	. 40	. 39	2.70	1.64	17.72
1934	.34	.77	3.23	2.61	1.45	.46	. 52	.15	.86	.18	2.45	. 39	13.41
1935	. 52	2.95	. 59	1.55	6.40	5.16	1.73	. 37	6.22	2.25	1.19	. 49	29.42
1936	.60	.12	.94	4.09	3.75	.01	2.09	. 12	7.32	2.42	.62	.77	22.85
1937	.90	.03	1.34	1.16	2.14	2.82	. 22	3.34	1.52	2.70	.80	2.89	19.86
19 38	1.49	1.23	4.36	1.62	6.61	5.92	7.95	.04	. 29	1.26	.97	. 44	32.18
1939	1.60	.18	1.00	.09	6.57	4.30	.94	1.95	.03	1.92	1.99	.79	21.36
1940	.29	3.50	. 27	1.53	1.57	3.93	.12	2.26	.97	.65	3.26	1.68	20.03
1941	1.75	1.96	1.66	4.76	6.47	6.66	3.89	7.01	2.30	10.88	. 50	.93	48.77
1942	.08	. 54	. 47	4.65	5.54	2.21	. 19	3.52	2.35	5.37	. 29	2.54	27.75
1943	. 29	.06	3.18	. 68	4.00	4.50	.22	-14	1.37	1.20	.86	1.99	18.49
1944	2.11	2.51	.88	. 59	4.70	1.28	3.76	2.11	1.03	3.34	1.37	1.75	25.43
19 45	. 59	.89	2.31	2.29	2.45	4.24	3.25	.75	-87	4.12	. 48	.64	22.88
1946	1.60	.76	. 49	1.03	3.12	.51	Т	1.89	1.42	.85	1.43	2.38	15.48
1947	.84	.06	1.35	1.16	4.05	2.26	.92	. 48	. 31	4.80	1.24	2.55	20.02
1948	.01	1.13	1.00	1.33	3.05	2.40	1.65	. 37	.01	2.21	Т	.78	13.94
1949	1.78	1.04	1.12	3.05	5.09	3.07	4.43	2.20	1.39	4.00	.00	1.20	28.37
19 50	.96	. 68	.17	2.61	5.09	1.50	6.96	5.79	2.81	- 09	Т	.02	26.68
1951	.05	.65	.81	1.56	4.38	3.03	1.47	- 22	.83	1.35	. 37	. 11	14.83
1952	.71	. 38	1.05	2.04	2.43	.04	.70	.02	2.34	.00	3.33	.84	13.88
Average	.90	1.03	1.25	2.48	4.14	2.67	1.97	2.09	2.47	2.64	1.26	1.32	24-25
Years	67	67	67	67	67	67	67	67	67	68	68	68	67

Table 1.- Monthly and annual precipitation at Abilene, Texas 1885-1952--Continued

GEOLOGIC FORMATIONS AND THEIR RELATION TO THE OCCURRENCE OF GROUND WATER

Jones County is in the outcrop of rocks of Permian age. In some areas the Permian rocks are covered by alluvium of Quaternary age. Pocks underlying the Permian do not contain fresh water and are not discussed here.

PERMIAN FORMATIONS

The Permian rocks, or red beds, cropping out in the county belong to the Wichita, Clear Fork, and Pease River groups in ascending order. They consist principally of red and gray shale, but beds of sandstone, sandy shale, limestone, dolomite, and gypsum are common. The combined thickness of the Permian rocks in Jones County is about 1,200 to 1,500 feet and the regional dip is westward at the rate of about 40 feet to the mile. The outcrops of the principal limestone and dolomite beds in the county are shown on a geologic map of Jones County published by the Bureau of Economic Ceology of the University of Texas in 1937 from which the outcrops of the Bullwagon dolomite member of the Vale formation and the Lueders limestone are reproduced on plate 1.

Three formations of Permian age have small possibilities of yielding potable water; the Lueders limestone in the Wichita group, the Bullwagon dolomite member of the Vale formation in the Clear Fork group, and the San Angelo sandstone in the Pease River group.

Lueders limestone. - The Lueders limestone crops out in the eastern part of the county (see pl. 1). The thickness of the formation is about 50 feet, but individual beds of limestone are about 2 feet thick and are separated by beds of shale.

Bullwagon dolomite member of the Vale formation. - The Bullwagon dolomite member of the Vale formation crops out in the central part of the county in a narrow strip trending in a northerly direction and passing about a mile east of Anson. The thickness as shown on the geologic map of Jones County by the Bureau of Economic Geology (1937) is about 20 feet.

San Angelo sandstone. - The San Angelo sandstone as described by Beede and Christner (1926) occurs at the base of the Pease River group. It consists of red and green clays, red and white crossbedded sandstone and conglomerate. The material is generally poorly sorted. Where fine-grained sediments are mixed with coarse, the permeability is generally low and large yields from wells penetrating the San Angelo are not likely to be obtained. The San Angelo sandstone generally is closely associated with beds of gypsum, which tend to increase the sulfate content of the water.

ALLUVIAL DEPOSITS

Thin alluvial deposits of Pleistocene and Recent age overlie the Permian rocks in parts of Jones County. The Pleistocene rocks are probably a part of the Seymour formation Cummings (1893) but are not distinguished from more recent alluvium in this report. The deposits of intermixed clay, silt, sand, caliche, and gravel were deposited on the uneven erosional surface of the red beds of Permian age. Where the red beds were deeply eroded the alluvium is correspondingly thick. Such places are relatively favorable for larger ground-water reservoirs but cannot be detected except by subsurface exploration. Very few drillers' logs of water wells are available, but some information is available from drillers' logs of oil tests. (See table 4.) In most parts of the county the alluvial deposits have been removed by erosion, but a thin mantle is present in some places, particularly in the south-central part of the county. Thicknesses of more than 100 feet have been reported, but such thicknesses probably exist only in relatively small areas. Although the deposits vary in both grain size and thickness, the coarsest materials are generally found at the base of the deposits.

A study of the surface geology and drillers' logs of oil tests and water wells indicates that the greatest thicknesses of alluvium are in the south-central part of the county extending to the Clear Fork of the Brazos River. The alluvium ranges in thickness from a knife edge to approximately 150 feet and averages about 50 feet. Water levels in wells in this area at the time of observation indicate that less than half the alluvium was saturated. Some of the records of water wells suggest that a few wells 5 to 6 miles southwest of Anson penetrate a considerable thickness of saturated water-bearing material. If it is assumed that the water wells were drilled just to the red beds, the saturated thickness of the water-bearing material may be determined by subtracting the depth to water from the depth of the well. On this basis, in well F-46 the saturated thickness at the time the water level was measured was 65 feet; in well F-33, it was 58 feet; in F-48, 40 feet; in F-50, 32 feet; and in F-56, 32 feet. In the table of partial drillers' logs of wells drilled in connection with the exploration of oil, wells C-24 and L-18 show 25 feet of gravel above the red beds. Well L-16 shows 58 feet of sand and gravel.

The capacity of a ground-water reservoir to store or yield water depends largely upon the uniformity of the size of the grains. The small grains between large grains occupy space that might otherwise be filled with water. The alluvium in Jones County is a mixture of coarse gravel, sand, and silt. Because of the lack of uniformity in grain size in the materials, wells generally yield only small amounts of water, although yields as high as 100 gallons a minute have been reported.

UTILIZATION OF GROUND WATER

DOMESTIC AND STOCK

Ground water in Jones County is used principally by farmers for domestic and stock purposes. Most of the wells yield small quantities of water that is of suitable quality for stock watering but is unsuitable for domestic use. In the south-central part of the county a few wells yield water that is fairly satisfactory for domestic use but in some areas of the county no usable ground-water supplies are present and the farmers depend on cisterns and earthen tanks.

The depth of farm wells listed in this report ranges from 8 to 260 feet. The observed depth to water ranged from 6.3 feet in a well tapping Recent alluvial gravel to 84.6 feet in a well penetrating the red beds.

PUBLIC SUPPLY

The city of Anson has developed a ground-water supply on a standby basis for use when the surface supply is insufficient. In July 1953 the city had 11 wells (F-13-F-17, and F-22-F-27) in operation, all less than 100 feet deep and having relatively small yields. The most productive well (F-17) was reported to yield 60 gallons a minute; the others, an estimated 20 to 30 gallons a minute. The wells probably obtain water from the Bullwagon dolomite member of the Vale formation of the Clear Fork group.

INDUSTRIAL

A few industries have developed ground-water supplies in Jones County. The Texas Natural Gasoline Co.'s compressor plant near Stith has 9 wells (K-15-K-23) with a combined yield of about 200 gallons a minute. The wells range from 100 to 125 feet in depth and are reported to obtain water of poor quality (see K-15, table 4).

The Onyx Refinery near Hawley obtains water from four dug wells (L-10) completed in alluvial deposits. The refinery uses a reported 10,000 to 20,000 gallons a day. The water is reportedly hard but otherwise of good quality.

Ground water is used for water flooding in the Lewis-Steffens oil field, about 11 miles southeast of Anson. Seven shallow wells (G-16-G-22) yield an estimated 65,000 gallons a day from alluvial material. The water is used for flooding and for domestic supplies. Most of the water is of poor quality. (See table 4.)

IRRIGATION

Ground water is being used for irrigation on a small scale in a few places in Jones County. In the area east of Hawley, several irrigation wells have been completed in the alluvium, one of which (L-13) yields an estimated 100 gallons a minute. About 4 miles east of Noodle three irrigation wells (J-6, K-7, and K-8) draw water from Permian shale. The wells are 120 feet deep, and one well (J-6) is reported to yield 100 gallons a minute. Other irrigation wells yield 20 to 40 gallons a minute. Probably not more than 20 wells in the county are used for irrigation.

QUALITY OF GROUND WATER

Chemical analyses of water from selected wells are given in table 4. The analyses indicate that the water has a wide range in quality. The hardness ranges from 186 to 3,720 parts per million, the sulfate from 20 to 3,070 parts per million, and the chloride from 5 to 3,290 parts per million. Water from one of the city wells in Anson, 85 feet deep (F-17), contains 1,590 parts per million of sulfate and has a hardness of 1,850 parts per million; whereas water from another city well, 88 feet deep (F-22), 2 miles away, contains 77 parts per million of sulfate and has a hardness of 431 parts per million. All water wells in the Lewis-Steffens oil field are reported to have originally yielded water of about the same quality. However, analyses show that wells G-17, G-18, G-20, and G-21, yield water containing from 200 to 552 parts per million of chloride, whereas wells G-19 and G-22 yield water containing 3,280 and 1,220 parts per million of chloride, respectively. It is possible that wells G-19 and G-22 have become contaminated by oil-field brines since being drilled.

Water from the sand and gravel in the alluvium is generally of better quality than water from the Permian formations. A sample from well K-7, which yields some of the water of best quality obtained from the Permian, contained 130 parts per million of sulfate and 67 parts per million of chloride, and had a hardness of 395 parts per million. A sample from well F-45, yielding some of the water of best quality obtained from wells in the alluvium, contained 20 parts per million of sulfate and 12 parts per million of chloride and had a hardness of 290 parts per million.

Some of the analyses of samples of water collected in Jones County show the presence of iron in objectionable quantities. In some samples most of the iron had precipitated prior to analysis and had to be redissolved for analysis. This procedure of redissolving precipitated iron also dissolved an iron cement on sand grains, and also particles of pipe scale that may have been brought up with the water and collected in the sample bottle; hence, there is uncertainty as to how much of the total iron reported was originally present in solution in the water. Iron in solution at the time of analysis, as well as total iron, was determined in most samples in which the total iron exceeded 0.3 part per million. If the total iron is low (less than 0.3 part per million), it can reasonably be assumed that there would be no problem from iron staining by use of a particular water. Likewise, if the iron in solution is low when total iron is high, it can be assumed that no treatment other than simple aeration and filtration will be needed for iron removal.

The analyses of samples of water from Jones County show that relatively high concentrations of nitrate are present in well waters of the county. This is not unusual inasmuch as many ground waters in nearby counties have high concentrations of nitrate (George and Hastings, 1951). Approximately 7 percent of the analyses showed nitrate in excess of 100 parts per million, 23 percent in the range from 50 to 99 parts per million, and 70 percent below 50 parts per million.

Water having a content of nitrate (NO_3) in excess of 44 parts per million may be a contributing factor or the cause of a condition in infants known as infant cyanosis (blue babies) when used in feeding (Maxcy, 1950).

A small proportion of the samples contained fluoride in excess of the limit of 1.5 parts per million recommended by the Public Health Service. The maximum observed content was 2.8 parts per million.

A number of the samples had contents of boron that would be excessive in water used for irrigation.

POSSIBILITIES FOR FUTURE DEVELOPMENT

PERMIAN FORMATIONS

In general, wells drawing water from the Permian rocks have small yields, and the water becomes highly mineralized with depth. Small quantities of water suitable for stock can be obtained from shallow wells in many places in the county, but in only a few areas do the red beds yield water suitable for domestic use. Such areas are generally underlain by sandy zones or by limestone or dolomite. Limestones and dolomites have little or no porosity or permeability except that produced by fractures and solution. In general, solutional cavities and channels develop most extensively near the surface and in the vicinity of streams.

Three wells in the southwestern part of the county (J-6, K-7, and K-8) are reported to yield 100 gallons a minute each from shales of the Clear Fork group, but most wells yield only a few gallons a minute. City of Anson well 10 (F-17) was reported to yield 500 gallons a minute when drilled, probably from the Bullwagon dolomite member of the Vale formation, but the yield had dropped to an estimated 60 gallons a minute in June 1953. The remainder of the city wells have much smaller yields. In general the water becomes more highly mineralized with depth and the maximum depth of potable water in these formations is probably less than 150 feet.

Lueders limestone.- The Lueders limestone, which crops out along the east edge of the county, has a total thickness of about 50 feet, but individual beds of limestone are about 2 feet thick and are separated by beds of clay. Some water may be present but large yields can hardly be anticipated. The most favorable area for the Lueders limestone lies between Lueders and Nugent. (See pl. 1.) Wells H-2 and H-4 seem to be favorably situated but are not deep enough to reach the Lueders limestone.

Bullwagon dolomite member of the Vale formation. - Although the water from the Bullwagon dolomite member of the Vale formation is of relatively poor quality at Anson, water of better quality might be obtained from the Bullwagon a mile or two down dip from the outcrop and near the Clear Fork of the Brazos River, because of the possibility of larger solutional cavities developed by percolation of river water. Larger cavities would permit better circulation of ground water, which means larger yields and generally better quality. However, because the Bullwagon probably is not more than 20 feet thick, yields of more than 100 gallons a minute are not anticipated. San Angelo sandstone.- The San Angelo sandstone crops out in a north trending belt near the west edge of the county, where it supplies small quantities of highly mineralized water to wells in that area. Although much of the San Angelo consists of sandstone and conglomerate, the sands are poorly sorted and the permeability is low. Because of the low permeability of the sands and the high mineralization of the water, the San Angelo sandstone can be discounted as a potential source of large quantities of good water in Jones County.

ALLUVIAL DEPOSITS

In the south-central part of the county, as outlined on plate 1, supplies of water suitable for small-scale irrigation or for supplementary public supplies may be available from surficial alluvial material. Analyses of water samples from wells, particularly in the area southwest of Anson, indicate that the quality is generally satisfactory, and there are indications that considerable thicknesses of saturated material may be present at least in small areas. However, because of the lack of drillers' logs of existing water wells, the thickness of the alluvium and the thickness of the saturated portion of it are not definitely known except locally. Consequently, a program of test drilling would be necessary to determine more accurately the thickness and water-yielding properties of the sands and the quality of the water.

CONCLUSIONS

The best potential source of supplemental supplies of ground water of good quality in Jones County is probably the area of alluvial deposits in the south-central part of the county. However, test drilling would be necessary to prove or disprove the area.

The Bullwagon dolomite member of the Vale formation and the Lueders limestone are also potential sources of ground water, especially near the areas of outcrop and near the Clear Fork of the Brazos River. However, the beds of limestone are thin and large sustained yields of water of good quality are not to be expected.

The San Angelo sandstone can be discounted as a source of large supplies of good water in Jones County. The permeability is low and the water produced from existing wells generally is highly mineralized.

REFERENCES CITED

BEEDE, J. W., and CHRISTNER, D. D., 1926, The San Angelo formation and the geology of Foard County: Univ. Texas Bur. Econ. Geology Bull. 2607.

BROADHURST, W. L., and FOLLETT, C. R., 1944, Preliminary report on the ground-water resources near Stamford in Jones and Haskell Counties, Tex. U. S. Geol. Survey open file report, Austin, Tex., and Washington, D. C.

CUMMINS, W. F., 1893, Notes on the geology of northwest Texas: Texas Geol. Survey Ann. Rept. 4, pt. 1, p. 177-238.

GEORGE: W. O., and HASTINGS, W. W., 1951, Nitrate in the ground water of Texas: Am. Geophys. Union Trans., v. 32, no. 3, p. 450-456.

MAXCY, K. F., 1950, Report on the relation of nitrate nitrogen concentrations in well waters to the occurrence of methemoglobinemia in infants: Nat. Research Council, Bull. San. Eng., p. 265, App. D.

Table 2.- Records of wells in Jones County, Texas (All wells are drilled unless otherwise noted in remarks column)

Method of lift: A, airlift; B, bucket; C, cylinder; E, electric; G, gasoline; H, hand; J, jet; T, turbine; W, windmill. Number indicates horsepower. Use of water: D, domestic; Ind, industrial; Irr, irrigation; N, not used; P, public supply; S, stock.

				1		Water 1	evel		1.5-78-1	
Well	Owner	Driller	Date com- plet- ed	Depth of well (ft.)	Diam- eter of well, (in.),	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remarks
A-1				117	6	83.6	July 14, 1953	C, W	N	
* A- 2	J. W. Hines				6			C, ₩	S	Temp. 70.5 [°] F.
A-3	do.			173	8	69.2	July 30, 1953	C, W	S	Reported water highly mineralized.
A-4	J. T. Hamrick			48	6	24.4	July 11, 1953	C, ₩	D, S	
A+ 5	Otto Steinke	; - e		40	6	21.1	July 14, 1953	C , W	D	 (Still both), and we are got provided to the second se
A-6	B. H. Gardner	1977 N H 2		80		23.1	do.	C, W	D, S	Reported water unfit for human consump-
*A-7	J. F. Compton	Hill	1942	41	6	.14.1	Mar. 17, 1944	С, Н	S	
*A-8	Clarence and Mary Hyer			20	36	17.2	July 14, 1953	J,E	D, S	Dug. Reported water from red shale and blue clay.
A-9			• • •	31	8	23.4	do.	· C, W	N	Contraction where provide the service and the set
A10	G. W. Wainscott	64		70	6	18.0	July 11, 1953	C, W	D, S	Reported water unfit for human consumption.
*B-1	C. F. Teichelman	Haskell	19 45	50	6	20.0	do.	J, E, ¾	D, S	Casing: 16 feet of 6-inch. Re- ported water from shale. Temp. 69°F.
B-2	John Aperson			50	6	26.9	do.	C, W	D, S	Reported water from shale.
B- 3	do.		1953	50	24	32.4	do .	T, E, 1½	Irr	Pumps into tank. Water from tank used in sprinkler system. Reported water from shale.
B-4.	do.		1953	50	24	45.7	do.	T. E. 1½	Irr	Do.
*B-5	Mrs. J. E. England	18 D	1905	60	•••	<u>a</u> /25	Mar. 1944	C ₂ ₩	S	Reported water from red beds.
*B-6	D. P. Walker	00 ¹		80	. 6	36.1 38.2	Mar. 17, 1944 July 10, 1953	C, ₩	D, S	Reported water unfit for human consumption.
*B-7	do .	G an		20	30	3.9	Mar. 17, 1944	C, W	S	Dug. Casing: Brick to bottom. Re- ported water from red beds.
*B-8	H. Bounds		1930	33	6-7/8	17.7	do.	C, ₩	D, S	

Table 2.- Records of wells in Jones County--Continued

						Water	level				
Well	Owner	Driller	Date com- plet- ed	Depth of well (ft.)	Diam- eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use Remarks of water	Remarks	
*B9	J. A. Fielder	J. A. Fielder	1941	21	30	16. Š	Mar. 17, 1944	None	N	Dug. Casing: Brick to bottom. Reported water from sand and gravel.	
*B- 10	M. N. McGraw		1908	47	24	26.4	do.	C, W	D _r S	Dug. Casing: Brick to bottom.	
B-11	Jones Estate			41	6	26.4	July 11, 1953	C, W	D, S	Reported unfit for cooking or human consumption.	
*B- 12	H. L. Asmont			60	6	19.7 23.0	Mar. 7, 1944 July 10, 1953	C, W	S	Reported water from red beds.	
B-13	Warn B. Tayman		60	22	28	15.8	July 10, 1953	C, W	D	Dug. Brick curb.	
B- 14	Bill Goree			50	8	22.8	July 8, 1953	C, ₩	N	the special sector when a special sector	
B-15	I. M. Treadwell		*5	50	6	**		- , E	S	Reported water unfit for domestic or stock use.	
B-16	C. R. Moss			80		24.5	July 11, 1953	C,₩	D₂ S	Reported water unfit for human consumption.	
*B-17	10 M		40	25	30	12.4	Mar. 17, 1944	B, H	D, S	Dug. Casing: Concrete to bottom. Reported water from red beds.	
B- 18	Tom Brown	Hart	99	21	20 ·	15.2	July 11, 1953	C, W	D, S	Dug. Reported water unfit for cook- ing or human consumption.	
B- 19	A. R. McBay		w @	61	6	23.2	July 10, 1953	C, ₩	D, S	Reported water unfit for human consumption.	
*B-20	Anderson-Clayton Compress Co.		1933	120	6			C, E	S	Do.	
B-21				36	8	18.5	July 8, 1953	C, W	N		
*C-1	C. Ernest Jackson	-0	1928	101	8	<u>a</u> /60	July 1953	: C, ₩	D, S	Temp. 69 ¹ / ₂ ° F.	
C- 2	Fred Buerger		45	43	6	24.4	July 29, 1953	C, W	S		
C-3	Fred Thompson	~~	1942	32		6 0	•• .			Reported no water. Red beds at 32 feet	
C-4	W. B. Harris	ue .		24	36	17.5	Mar. 20, 1944	C, ₩	N	Dug. Brick curb. Reported water unfit for human consumption.	
*C5	P. P. Davenport		846	35	6	22.6	do.	C, H	S		
*Ċ-6	H. C. Rogers			43	. 42	24.3	do.	C, W	D, S	Dug. Brick curb.	
*C~7	do.		1943	50	6.	21.8	do.	C, H	D, S	The second second second second	
*C~8	Joe Benton		1943	17	30	13.5 15.4	Mar. 20, 1944 July 8, 1953	C, E,	D, S	Dug. Reported water from sand and gravel.	
C-9	<i>w</i> 9				6	57.6	July 8, 1953	C, W	N	· · · ·	

						Water	r level			
Well	Owner	Driller	Date com- plet- ed	Depth of well (ft.)	Diam- eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remarks
*C-10	Wilson Goree		19 50	18	30	14.8	July 8, 1953	C, W	D, S	Dug.
C-11	New Hope School			74	8	33.4	do.	C, W	N	A COMPANY CONTRACTOR
C-12	P. R. Betteis			48	24	44.6	do.	C, W	S	Dug. Concrete curb. Reported unfit for domestic use.
*C-13	H. B. Collins		1924	. 22	24	19.7	July 7, 1953	C, W	D	Dug. Not used for drinking.
*C-14	O. L. Catom	d a	••	70	6	<u>a/</u> 59	July 1953	-,E	D	Not used for drinking. Reported water from sand and gravel.
C-15	Bill Levat			15	.30	13.4	July 7, 1953		N	Dug. Concrete curb.
*C-16	R. L. Thane	. e m	-0	19	30	14.1	July 8, 1953	C, W	D	Dug. Temp. 68°F.
C-17	J. E. Warner	J. E. Warner		85	6	50.8	do.	C, W	N	Reported weak well.
D-1	Fred Buerger			10 CA .	30	15.4	July 29, 1953	C, W	D, S	Dug.
*D-2	C. H. Peterson	C. H. Peterson	1941	25	30	19.7	Mar. 20, 1944	C, W	D, S	Dug. Casing: Concrete rings to bottom. Reported water from sand and gravel.
*D-3	W. W. Carlton			28 ·	36	22.0	do .	C, ₩	D, S	Dug. Reported water unfit for human consumption.
*E-1	L. H. McBride	58	ae	160	6	77 - 3	July 30, 1953	C, W	S	The second s
E- 2	J. B. Young		e 13	71	6	45.8	July 10, 1953	C, W	N	
*E-3	T. C. Gregory .	• • • •	44	110	6	<u>a</u> /25	July 1953	C, E	D	Reported water unfit for human consumption.
E-4	J. L. Weaver	W. C. McBride		70	6	20.6.	July 10, 1953	C, W	D	Reported water from red sand,
*E-5	A. M. Donny		an co	190	6	19.1	July 30, 1953	C, W	D, S	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
E-6	R. P. Williams	:		51	6	38.6	July 10, 1953	C, ₩	D, S	and the second second second second
E-7	Joe J. Steel			62	8	33.4	July 14, 1953	C, E, 1	D ₇ S	
*E-8	Sam Brooks		1953	32	6	17.1	June 20, 1953	C, G	S	
E-9	Harve Arnett	919		87	6	69.5	July 10, 1953	C, W	s	Presenter in the second
E- 10	W. T. Rainwater Estate	00		85	12		e u	-, E	D	Supplies three houses.
E-11	W. O. Rainwater		1910	100	36			-,E	D	Dug.

Table 2.- Records of wells in Jones County-- Continued

Table 2.- Records of wells in Jones County--Continued

						Water	level			
Well	Owner	Driller	Date com- plet- ed	Depth of well (ft.)	Diam- eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remark s
E-12	L. D. Crumpler			74	20	21.0	July 9, 1953	C, ₩	D, S	Dug. Reported strong supply.
E-13				25	30	14.5	do.	C, W	N	Dug.
E-14				27	30	13.3	do.	C, W	N	Dug. Brick curb.
*E-15	E. Edgar Boaz			34		18.2	do.	C, W	S	Dag. Temp. 69°F.
*E- 16	do.			100		<u>a</u> /50	19 47	-, E, 1	D	
E- 17	Roy K. Griffin	••		40		_a/ 30	July 1953	-, E	D, S	Dug.
E- 18	James T. Jeffrey			30		14.6	July 13, 1953	-, E	D	Dig. Concrete curb.
*E- 19	City of Hamlin			Lak e			6.0			Hamlin Lake.
F-1	D. G. Chittenden	E. W. Martin	1953	260		35.2	June 16, 1953	None	Irr	Reported water from sand.
F-2	do.	do.		217		44.3	June 25, 1953	None	Irr	
*F-3	Lee Hawks			60		20.8	July 15, 1953	°C, W	D, S	Reported unfit for human consumption.
F-4	Louise Sheppard				5	22.5	July 10, 1953	-, E	D	Reported unfit for cooking and drinking.
F-5	Dale King			70	8	22.1	July 8, 1953	C, W	S	and general store
F6	J. N. Griffiths	<u>ب</u> ته ه		65	36	14.5	do.	C, W	s.	Drilled for seismograph shot hole. Enlarged to 36 inches diameter to 20 feet.
F-7	Guy Sten			39	6	29.9	July 10, 1953	C, W	S	Reported unfit for domestic use.
F~8	Bernard Bryand	89	aē	92	8	18.2	July 11, 1953	C, W	S	
*F-9	J. B. Young	De		47	6	23.6	July 10, 1953	C, ₩	D, S	Temp. 69°F.
F- 10	J. L. Green			27	36	18.3	do ,	C, W		
F-11	J. K. Pettit			37	6	19.7	do.	C, W	D	Reported water hard.
*F-12	J. P. Ward	• ' ••		80	6	<u>a</u> /29	July 1953	T, E	Ind	Supplies water for drilling oil wells. Temp. 69°F.
F-13	City of Anson	Jess Whittaker	1953	50	8	<u>a</u> /30	May 1953	J, E, 2	Р	Casing: 35 feet of 8-inch. Water reported from shale. City well 1.

	of the Westerner State	and the provides	18.95	L. COAT		Water	level	1		and the state of the state of the state of the
Well	Owner	Driller	Date com- plet- ed	Depth of well (ft.)	Diam→ eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remarks
F-14	City of Anson	Jess Whittaker	1953	50	8	<u>a</u> /30	May 1953	J, E, 2	P	Casing: 35 feet of 8-inch. Water reported from shale City well 2.
F-15	do.	do.	1953	50	8	<u>a</u> /30	May 1953	J, E, 2	P	Casing: 35 feet of 8-inch. Water reported from shale. City well 3.
F-16	do.	do.	1953	60	8	<u>a/30</u>	May 1953	J, E, 2	P	Casing: 25 feet of 8-inch. Water reported from shale. City well 4.
* F- 17	do.			85	11	_a/20	1953	T, E, 5	Р	Casing: 50 feet of 11-inch. Water reported from shale. City well 10.
F- 18						20.6	July 8, 1953	C, W	N	not perferinge
F-19	Constan Seeman	*		44	6	29.7	do./	C, W	N	WELL MART DESCRIPTION OF AND
*F-20	Raymond Sprayberry	O. B. Scott	19 47	40		20.9	July 7, 1953	C, W	D	Water reported from shale.
*F-21	do.		01d	32		24.7	do.	C, W	D, S	Temp. 70°F.
*F-22	City of Anson		1952	88	8			T, E, 3	Р	Casing: 30 feet of 8-inch. Water reported from shale. City well 11.
F-23	do.	Jess Whittaker	1953	50	8	<u>a</u> /32	May 1953	J, E, 2	Р	Casing: 25 feet of 8-inch. Water reported from shale. City well 5.
F-24	do.	do .	1953	50	8			J, E, 2	Р	Casing: 25 feet of 8-inch. Water reported from shale. City well 7.
F-25	do.	do.	1953	50	8			J, E, 2	Р	Casing: 25 feet of 8-inch. Water reported from shale. City well 6.
F-26	do.	do.	1953	50	8			J, E, 2	P.	Casing: 25 feet of 8-inch. Water reported from shale. City well 9.
F- 27	do .	do.	1953	50	8			J, E, 2	Р	Casing: 25 feet of 8-inch. Water reported from shale. City well 8.
*F-28	H. W. Jenkins	69 Mi	1927	52	6	10.5	July 14, 1953	-,E	D	
*F-29	C. H. Heald		1932	32	6	<u>a</u> /29	July 1953	C, W	D _r S	
F- 30	do.			49	36	33.4	July 9, 1953	None	N	Dug. Brick curb.
*F- 31	Hoke Probst			28	30	19.4	do.	C, W	D	Dug. Concrete curb.
F-32	W. H. Littlefield	. ua		44	8	40.9	do.	.C., W	D	

Table 2 .- Records of wells in Jones County--Continued

Table 2.- Records of wells in Jones County--Continued

						Water	level			
Well	Owner	Driller	Date com∝ plet∝ ed	Depth of well (ft.)	Diam- eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remark s
*F-33	Clifford Sprayberry	. u a		75	30	16.5	July 9, 1953	C, W	S	Dug. Stone curb. Temp. 69°F.
*F-34	Hoke Probst		~ *	78	6.	61.7	July 14, 1953	C, W	S	Temp. 69.5°F.
F-35	Joe Boyd	· •••	·	16	36	12.6	June 17, 1953	C, W	S	Dug. Brick curb.
*F-36	Alton Wash	Jess Whittaker	1952	50	· 6	••	aa .	T, E, ¾		
* F- 37	R. R. Russell			36	6	8.3	June 22, 1953	C, W	D, S	Water from Bullwagon dolomite member.
F- 38	Joe Horn	C. E. Hill	1922	58	6	<u>a</u> /20	1922.	C, ₩	D, S	
. F-39	6 H	e 6	e 6	23	. • • .	15.3	June 19, 1953	C, ₩	· D, S	
F-40	T. A. Baucum	C. E. Hill	1933	72	6	5.6		C, ₩	D, S	Reported weak supply.
*F-41	W. T. Kasinger		a a	40	6	••		C, E, 1	D, S	
* F- 42	Jessie Dixon	Jess Whittaker	1950	62	6	19.9	June 18, 1953	J, E, ½	D, S	Casing: 6-inch to bottom.
* F- 43	Charles Stevens				33	26.0	June 17, 1953	C, E	D, S	Dug. Water reported from sand.
*F-44				28	42	18.0	July 9, 1953	. C, W	N·	Dug. Brick curb.
*F-45	Earl Scott	- ee	1918	32	•	<u>a/31</u>	July 1953	C, ₩	·D	
*F- 46	do.	. 60 .	36	95	. 24	30.2	July 9, 1953	. C, ₩	D, S	Dug. Brick curb.
*F- 47	H. T. Steel	Cliff Hill	1949	40	6	<u>a</u> / 8	July 1953	-, E	D, S	Water reported from sand.
*F⊶48	do.	• •••		60		<u>·a</u> /20	July 1953	C. W	D, S	
*F-49	Probst			50	6	26.9	July 9, 1953	C₂ ₩		
F- 50	J. S. Carman		01 d	76	6	44.3	June 24, 1953	C, W	D, S	Dug.
F-51	C. C. Crawford			58	6	50 - 2	do.	C, W	N	
F- 52	H. R. Taylor			62	6	53.0	do.	C, W .	D, S	
* F- 53	T. A. Martin	C. Jordan .	1952	69	12, 6	56.9	June 22, 1953	C, W	D	Reported water from sand and gravel.
F-54	oa .	00		39	6	32.8	. do.:	None	N	Reported water from red beds.

*

Table 2 Records of wells in Jones Coun	tyContinued
--	-------------

1.1143				1.		Water	level			Sector of the sector before the sector before
Well	Own er	Driller	Date com- plet- ed	Depth of well (ft.)	Diam- eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remark s
*F-55	J. R. Castleberry			70	5	45.6	July 31, 1953	C, ₩	D, S	Temp. 69.5 ⁰ F.
* F- 56	A. J. Smith, Sr.			51	36	19.2	June 24, 1953	C, E	D, S	Dug. Concrete curb.
* F- 57	Tod Roberts					~ -		-, E	D, S	
F- 58	Q. H. Foy			17	20	12.9	July 9, 1953	C, W	D, S	Dug. Brick curb.
F 59	Wheeler	2	~~	20	30	19.3	do.	C, W	D	Do.
*F60	T. M. Busby	•••	01 d	40		23.9	June 17, 1953	C, ₩, J, E	D, S	Dug. Concrete curb.
*F-61	Orr			65	6	•		C, G		Supplies oil test.
*F-62	Ben Elliot		Old	54	36	30.4	June 24, 1953	C, G	S	Dug. Stone curb.
*F-63	B. R. Myers	Scott	19 48	. 41	6	39.0	do	C, ₩	D, S	
*F-64	J. F. Caffey	100 mm		57	24	36.6	July 31, 1953	. C⁺ M	D, S	Dug, 'Concrete curb.
*F-65	City of Anson		-710					:		Sample of water from Anson water mains.
F-66	Herndon	- 0			6 a			-		Oil test. Altitude of land sur- face, 1,728 feet. See log.
F-67	Garland	u a		80		·== .		a a,	* a	Oil test. Altitude of land sur- face, 1,735 feet. See log.
G-1	Clan Bogart		**	16	;	14.4	July 7, 1953	None	N	Dug.
G- 2	Jess Roberts	w (e	·	40	8	16.7	July 8, 1953	C, W	D	Die Brite mig-
G-3	Luke Finley			50	6	a/20	July 1953	-, E	D	Drilled for seismograph shot hole.
G-4	Macduff			24		20.0	July 7, 1953	C, W	D	Du g.
G- 5	Olney Roberts	045 ** **********		26		24.5	do.	C, W	D.	Dug. Concrete curb. Reported weak supply.
G-6	J. H. Doty			24		20.7	July 6, 1953	- , E	D	Dug. Concrete curb. Reported water from coarse gravel.
G-7	Herbert Nunnely	· ••		53	6	30.6	June 19, 1953	C, W	D, S	ovurse gruter
G-8	Kenneth Roberts			40	6	26.9	do.	C, W	S	in the second
G-9	W. D. Backer			44		20.5	July 7, 1953	B, H	D	Dug. Brick curb.

Table 2.- Records of wells in Jones County--Continued

						Water	level			
Well	Owner	Driller	Date com- plet ed	Depth of well (ft.)	Diam- eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remarks
*G- 10	Mrs Roberts	Obie Scott	1933	65	•••	22.8	July 19, 1953	. C , ₩	D, S	Dug. Brick curb. Reported water from white sand.
G-11	Coker Heirs			60		40.1	June 24, 1953	C, G	D, S	Du g.
G- 12	Joe Steel			78	24	68.5	June 17, 1953	C, W	N	Dug. Concrete curb.
G-13	Ratliff			24	36	19.7	July 6, 1953	C, ₩	S	Dug. Brick curb.
*G-14	O. D. Nichols		-	46	8	44.0	do .	B, H	D, S	Temp. 70° F.
G-15				56	6	52.7	June 17, 1953	None	N	Formerly supplied school.
G-16	Walsh and Watts		1934	.60	6		80	C, G	D, Ind	Reported water from sand.
*G-17	do.		1936	60	6			C, G	Ind	Do.
*G- 18	do.	Gilbert Gates	19 47	60	36		68 AB	C, G	D, Ind	Dug. Concrete curb. Reported water from sand.
*G-19	do.	do.	1947	60	36			C, G	D, Ind	Do .
*G-20	do.	do.	19 47	60	36		•• •	C, G	Ind	Do .
*G-21	do.	do.	19 47	60	36	57 . 3	June 18, 1953	C, G	D, Ind	Do
*G-22	do.	do.	1947	60	36	90		C, G	Ind	Do.
*G-23	Robert-King-Ford	6.0		57				C, G	Ind	Used for water flooding in oil field.
G-24	-~ Hale	Balbridge				••			-	Oil test. Altitude of land sur- face, 1,697 feet. Owner's well 1. See log.
G- 25	J. J. Steele					80	' ലത		- 0	Oil test. Altitude of land surface, 1,724 feet. See log.
*H-1	J. Davis	Watkins		20		17.0	July 6, 1953	E	D. S	Dug. Concrete curb.
H-2	Commy Nite			14		12.3	do.	C, ₩	S	Do.
H-3	West Central Gas Co.		1953	2, 150		a/500	1953		eo.	Oil test. Reported salty water.
*H- 4	O. D. Nichols		• •	20	72	14.9	July 6, 1953	B, H	D	Dug.
*H- 5	City of Stamford		•••	Ŗi ver					ŵ ę	Sample of water taken from surface reservoir on Clear Fork of Brazos River.
*H-6	do.			Ri ver	a ci	•••				Sample of water taken from pump stati in Lueders.

		and the second second		-		Water				
Well	Owner	Driller	Date com- plet- ed	Depth of well (ft.)	Diam- eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remarks
J-1	Dickinson Estate			36	36	29.4	July 13, 1953	C, W	D, S	Dug. Brick curb.
J-2	T. B.Douglas	:		69	8	24.8	do.	C, W	D, S	Reported unfit for drinking.
*J-3	Adams and Duff	· Slick Oil Co.	1951	49	10	20.6	June 20, 1953	C, W	S	Reported water from sand.
J-4	do.			44	6	29.4	do.	C, W	D, S	Do.
J- 5	do.		1945		6	32.2	do.	C, W	s	Do.
J-6	Carl Jackson	Bob Dennis	1951	120	10	we	. eiu an	T, E, 5	Irr	Casing: 20 feet of 10-inch.
J-7	J. W. Timer	ar 10		80	8	24.7	July 13, 1953	C, W	D, S	Reported unfit for human consumption.
J8	Sharp	1 1 1 1 1 1 1 1 1 1		57		45.0	do.	C, W	D	Reported water hard.
*J-9	C. P. Hodges	••	1910	22	28	17.1 [.]	do.	C, W	D, S ·	Dug. Brick curb.
J-10	H. H. Windham			52		33.7	do .	C, E	S	Reported strong supply of hard water.
*J-11	F. E. Sipe	, age an		91	6	16.2	July 30, 1953	C, ₩	D, Ś	Reported unfit for human consumption. Temp. 70°F.
J-12	L. R. Cade									Oil test. See log.
K-1	B. Daugherty		° • .	45		39 - 3	June 17, 1953	C, W .	D, S	Dug. Reported water from red beds.
K-2	A. E. Newman	A. E. Newman	1953	8	42	6.3	do .	C, G	Irŗ	Dug.
K- 3	W. V. Triplett	Frank Hill	1952	70	6			C, E	D, S	Sands reported at 40 to 42 feet, and 65 to 75 feet.
K-4	Little			35	36	21.5	June 22, 1953	C, W	N	Dug. Concrete curb.
K-5	J. T. Smith		6 a	26	36	24.0	June 17, 1953	J.E.		Do.
K-6	J. C. Hall		a u	19	24	17.2	July 13, 1953	C, W	N	Dug. Brick curb.
*K-7	Carl Jackson	Bob Dennis	1952	120	10	<u>a</u> /40	1952	T, E, 5	Irr	Casing: 20 feet of 10-inch. Owner's well 2.
K-8	do.	. do.	1952	120	8	<u>a</u> /40	1952	T, E, 5	Irr	Casing: 20 feet of 8-inch. Reported water from shale. Owner's well 3.
K-9	do.	do.	1952	97	8	54.0	June 24, 1953	None	N	Reported well partially caved. Owner's well 4.
*K-10	Durwood McCoy		1947	100	6			-, E	D, S	
K- 11	Barb S. Collins			19	24	18.0	July 29, 1953	B, H	D, S	Dug. Brick curb.

Table 2 .- Records of wells in Jones County--Continued

Table 2 .- Records of wells in Jones County -- Continued

						Water	level			
Well	Owner	Driller	Date com- plet- ed	Depth of well (ft.)	Diam- eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remarks
K-12	Art Fousten	••	••	62	5½	_a/ 50	July 1953	C, G	D	Reported unfit for human consumption.
K-13	H. Arnwine	- 90	• •	40	30	38.6	July 13, 1953	C, W	D	Dug. Brick curb.
K-14	do.			60	30	52.7	do.	C, W	D	Dug. Brick curbing. Reported unfit for human consumption.
*K-15	Texas Natural Gasoline Co.			115		<u>a/</u> 35	July 1953	T, E	Ind	One of nine wells. all 100 to 125 feet deep. supplying compressor plant. Water reported from red beds of Permian age. Temp. 70°F.
K-16	do.			125		_a/35	July 1953	T, E	Ind	Do.
K-17	do.		• •	100- 125	e a	<u>a</u> /35	July 1953	J,E	Ind	Do.
K- 18	do.			125 100- 125		<u>a/35</u>	July 1953	J,E	Ind	Do.
K-19	do.			100- 125		<u>a/35</u>	July 1953	J,E	Ind	Do.
K-20	do.			125 100- 125		<u>a</u> /35	July 1953	J,E	Ind	Do.
K-21	do.	an ca		100- 125		_a/ 35	July 1953	J,E	Ind	Do.
K- 22	do.		60	100- 125		<u>a</u> /35	July 1953	J,E	Ind	Do.
K-23	do.	6 Q	••	100 - 125	. 00	<u>a/35</u>	July 1953	J, E	Ind	Do.
K-24	Trash Bumpass						60			Oil test. Altitude of land surface, 1,771 feet. See log.
K-25	J. W. Grogan					0.0		- 62 103		"Oil test. Altitude of land surface, 1,675 feet. See log.
K-26	Jane Hoyt	e 0							-	Oil test. Altitude of land surface. 1,726 feet. See log.
*L-1	Lena Davis	Lotspich	. 46	65	6	51.4	June 17, 1953	. C, W	D, S	and the second second
L-2	B. R. Doty		18 m		24	14.4	July 29, 1953	-, E	D, S	Dug.
L⊷ 3	Jim Sawyer	aø	40	24	36	23.4	June 22, 1953	C, W	D, S	Dug. Brick curb.
L=4	R. D. Kilgroe		1928	40	36	38.1	do .	C _r W	D, S	Dug. Brick curb. Reported water from sand and gravel.
*L-5	Frank Jackson			42	36	40.1	do.	C, ₩ .	D, S	Dug. Brick curb.
L-6	W. A. Carter	W. A. Carter	19 44	23		<u>a/22</u>	June 1953	J, E, ½	D	Dug. Reported water from sand and gravel.

						Water	level			
Well	Owner	Driller	Date com- plet- ed	Depth of well (ft.)	Diam- eter of well (in.)	Below land surface datum (ft.)	Date of measurement	Method of lift	Use of water	Remark s
*L-7	W. F. Rushing			30	36	28.8	June.22, 1953	J,E	D, S	Dug. Reported water from sand and gravel.
*L-8	B. J. Cook	B. J. Cook	1951	26	36	24.5	do.	J,E	D	Do.
L-9	L. L. Parsons	Earl Young		23	36	21.6	do.	C, E	D, S	Dug. Concrete curb.
L-10	Onyx Refinery	-		25	~~	<u>a</u> / 20	July 1953	C, E, 1	Ind	Dug. Reported water from sand and gravel. One of 4 wells; 20 to 25 feet deep, supplying refinery.
L-11	R. G. Young	Malone & Higgins	19 52	42	9	21.2	June 22, 1953	None	N	
*L-12	Geo. R. Young	Geo. R. Young	19 53	28	36	26.0	do.	C, G	Irr	Dug.
L-13	R. G. Young	Malone & Higgins	1952	42	14	a/ 22	1952	T, E, 5	Irr	
	Young	Hines & Hilburn				**		••		Oil test. Altitude of land sur- face, 1,627 feet. Owner's well 1. See log.
	Nana D. Newton	Percy Jones						40 49	5	Oil test. Altitude of land sur- face, 1,629 feet. See log.
L-16	Tel ford	Shaheen & Big Six				68		 2 2 2 4		Oil test. Altitude of land sur- face, 1,679 feet. Owner's well 1. See log.
L-17	Mintei Estate				e.a				w 44	Oil test. Altitude of land sur- face, 1,719 feet. See log.
L-18	Guitar									Oil test. Altitude of land sur- face, 1,649 feet. See log.
*M-1	Guitar Trust Estate		~~	40		17.6	July 29, 1953	C, E	D, S	Dug.
*M-2	O. E. Radford		19 10	24	24	20.5	do.	B, H	D, S	Dug. Brick curb. Temp. 69.5°F.
M- 3	James Stewart		କଳ	21	36	16.9	do .	B, H	D, S	Dug. Brick curb.

Table 2.- Records of wells in Jones County--Continued

_a/ Reported by owner or driller.

* For chemical analyses, see table 4:

Table 3. - Drillers' logs of wells in Jones County, Tex.

	ckness feet)	Depth (feet)		ckness eet)	Depth (feet)
	Wel	1 F-66, p	artial log		
Owner: Herndon.					
Clay, red	40	40	Red beds		52
Gravel	12	52			
	We	ell F-67, 1	partial log		
Owner: Garland.					
Soil	5	5	Gravel	13	9:
San d	22	27	Red beds		9:
Clay, red	53	80			-
	W	ell G-24,	partial log		
Owner: Hale. Driller: Balbridge.					
Sand and clay	55	55	Sand and gravel	5	85
Gravel	25	80	Shale and red beds		85
	We	ell G-25,	partial log		
Owner: J. J. Steele.					
Clay, red	7	7	Gravel	11	68
Sand:	34	41	Red beds		68
Clay, red	16	57			
	W	ell J-12,	parti al. log		
Owner: L. R. Cade.					
Clay, red	11	11	Limestone	15	108
Rock	6	17	Shale, red, and clay		108
Gravel	4	21			
Clay, red	72	93			
	w	ell K-94.	partial.log		
Owner: Trash Bumpass.					
Owner: Trash Bumpass.		5	Clay. red	15	72
Soil:	5	5 7	Clay, red		72 75
				3	

Table 3. - Drillers' logs of wells in Jones County-Continued

the second s	Thickness (feet)	Depth (feet)		lhickness (feet)	Depth (feet
	Wel	1 K-25, p	partial log	23	-
Owner: J. W. Grogan.					
No record	- 10	10	Classing		
Clay, red		20	Clay, red	-11-1-3	5
San d		30	Red beds	10	6
	W-11	1 1/ 96 -			
Owner: Jane Hoyt.	weil	г к-20, р	artial log		
Clay	20	90			
Sand and gravel		20 37	Clay, red beds	30	9
Clay		37 60	Sand	7	10 10
				32.54	10
	Well	L-14. p	artial log		
Owner: Young. Driller: Hines & H					
Sand	50	50	Shale,		5
Gravel	5	55			
Owner: Nana D. Newton, Driller: Per Clay		L-15, pa	Red beds	10	45
	cy Jones.	1		10 40	
Cl ay	cy Jones. 25 10	25 35	Red beds		
ClayGravel	cy Jones. 25 10	25 35 1 L-16, p	Red beds		
Clay Gravel Dwner: Telford. Driller: Shaheen	cy Jones. 25 10 Wel	25 35 1 L-16, p	Red beds		85
Clay Gravel Dwner: Telford. Driller: Shaheen Clay	cy Jones. 25 10 Wel & Big Six.	25 35 1 L-16, p	Red beds Limestone partial log Sand Gravel	40	85
Clay Gravel Dwner: Telford. Driller: Shaheen Clay	cy Jones. 25 10 Wel & Big Six. 30	25 35 1 L-16, p 30	Red beds	40	85
Clay Gravel Dwner: Telford. Driller: Shaheen Clay	cy Jones. 25 10 Wel & Big Six. 30' 34 3	25 35 1 L-16, p 30 64 67	Red beds Limestone partial log Sand Gravel	40	85 78 88
Clay Gravel	cy Jones. 25 10 Wel & Big Six. 30' 34 3	25 35 1 L-16, p 30 64 67	Red beds Limestone partial log Sand Gravel Red beds	40	85 78 88
Clay Gravel Dwner: Telford. Driller: Shaheen Clay Sand Gravel Dwner: Minei Estate.	cy Jones. 25 10 Wel & Big Six. 30' 34 3	25 35 1 L-16, p 30 64 67	Red beds	40	
Clay Gravel Owner: Telford. Driller: Shaheen Clay Sand	cy Jones. 25 10 Wel & Big Six. 30' 34 3 Wel	25 35 1 L-16, p 30 64 67 1 L-17, p	Red beds Limestone partial log Sand Gravel Red beds partial log	40 11 10	85 78 88 88
Clay Gravel Owner: Telford. Driller: Shaheen Clay Sand Gravel Owner: Minei Estate. Top soil	cy Jones. 25 10 Wel & Big Six. 30' 34 3 Wel 5 45	25 35 1 L-16, p 30 64 67 1 L-17, p 5 50	Red beds	40 11 10	8 5 78 88 88 88
Clay Gravel Dwner: Telford. Driller: Shaheen Clay Sand Gravel Gravel Dwner: Minei Estate. Top soil	cy Jones. 25 10 Wel & Big Six. 30' 34 3 Wel 5 45	25 35 1 L-16, p 30 64 67 1 L-17, p 5 50	Red beds Limestone partial log Sand Gravel Partial log Gravel Gravel Partial log Gravel Bed beds	40 11 10	8 : 78 88 88 88
Clay Gravel Dwner: Telford. Driller: Shaheen Clay Sand Gravel Gravel	cy Jones. 25 10 Wel & Big Six. 30' 34 3 Wel 5 45	25 35 1 L-16, p 30 64 67 1 L-17, p 5 50	Red beds Limestone partial log Sand Gravel Partial log Gravel Gravel Partial log Gravel Bed beds	40 11 10	8 : 78 88 88 88
Clay Gravel	cy Jones. 25 10 Wel & Big Six. 30 34 3 Wel 5 45 We	25 35 1 L-16, p 30 64 67 1 L-17, p 5 50 11 L-18, (Red beds Limestone Deartial log Sand Gravel Red beds Deartial log Gravel partial log partial log Clay Gravel	40	8 : 78 88 88 65 65
Clay Gravel Dwner: Telford. Driller: Shaheen Clay Sand Gravel Gravel Gravel	cy Jones. 25 10 Wel & Big Six. 30 34 3 Wel 5 45 We. 10	25 35 1 L-16, p 30 64 67 1 L-17, p 5 50 11 L-18, 4 10	Red beds Limestone partial log Gravel Partial log Gravel Red beds partial log Clay	40 11 10 15 2	8

Texas
County,
Jones
in
wells
from
wäter
of
Analyses
4 A
Table

(Analyses given are in parts per million except specific conductance, pH_s and percent sodium)

										wanuta			2'	7																			-		-	_
Hq	7.5	•	8.0	2°6	•	•	•	•	•	•	•	•	1	6 * 2	•	•	•	1	•	•	8.0	-1 ° 8	•	•	1.1	0	2°2		7°9		6.8	7°6	1 . 7	0		8.0
Specific cónductánce (micromhos) at 25°C)	3, 820	•	726	2,490	,	•	•	1	•	•	8	•	1	2,050	1	•	•	1	2,140	3,020	-	3, 590	,	, ,	-	-	- 69	. 0.	- 64	2, 190	249	. 8, 160	1, 050	3, 120	1	010 1
en t um	19	•	32	30		•	•	0	,	,	•	9	,	16	,	•	•	U	40	50	62	37		•	54	20	6	15	31	22	11	53	26	31	25	
Caach	2,120	1	303	1, 030	r	•	•	•	•	•	•	•	i	243	,	1	1	,	653	856	400	1, 330	,			3, 350	1,940	1,510	I, 430	974	26	2,460	418	1, 270	1,850	
Dis. salred. solids	3, 380	•	501	1,940	•	•	•	•	•	•	•	1	•	1,240	9	•	1	0	1, 290	2 _° 180	2,460	2,480	•	9	4,790	5, 110	3	2, 300	2,490	1, 550	158	6, 590	731		3, 450	
Boron (B)	•	•	•	•	•	•	•		•	•	•	•	,	2.0	•	•	•	•	•	•	5.5	•	•	•	•	1°1	• 36	•	•	e		•	•	•	•	
Ni- trate (NO ₃)	0.5	•	62	45	,		•	,	,	,	0	,	1	95	0	1	•	t	106	80	1.2	52	•	0	1.0	112	62	13	112	13	2.0	17	13	6.9	49	
Fluo ride (F)	1.1	•	1.0	1.2	•	,	,	•	•	•	0	•		8°	,	•		i	2.6	8 °	1°0	1.4	•	0	6°	1.0	9°	8.	° 6	° 6	0°	80°	1.2	8 °	°8	-
Chlo- ride (Cl)	139	50.0	26	138	558	452	52	490	292	222	, 180	19	062	240	258	64	598	755	310	228	725	510	760	805	372	1, 300	285	152	610	190	13	., 300	01	228	391	
Sul- fate (S04)	2, 180	1,830	41	1,060	1,850	b2,000	b150	b120	b140	b80	2,020 1	b60	517	235	p 60	b80	b120	b160	265	166	736	889	541	190	2,860	2,050 1	L, 430	1, 360	833	765	8 . 1	3,070 1	214	1, 310	1, 590	
Bicar- bonate (HCO ₃)	176	82	383	189	135	156	373	c 276	30.2	318	297	d3 49	153	444	e459	410	f461	39.8	352	372	261	527	g342	h301	116	211	258	168	314	204	118	205	273	222	256	
Sodium and potas- sium (Na+K)	227	1	99	204 15	•	•	1	•	,	0.	1	1	,	51 2.3	•	,	,	,	203	400	00 3°0	365.	3	0	887	386 16	91 4.4	124	297	25	15	1,270	67 2.3	62 3.6	277	
Magne. sium (Mg)	184	•	38	80 2	,	•	•	•	•	•	9	•	,	36 3	1	•	•	,	103	16	61 7	238	0	0	26	343 3	98	94	183	93 1	1°1	260	47	118 2	16	
Cal- l cium (Ca)	546	1	59	282	•	1	•	1	,	•		,	1	38	,	,	•	•	92	193	09	140	,	•	510	911	616	450	272	237	27	556	06	314	592	
Iron (Fe) dis- solved	0.00	,	00°	a. 19	,	•	3	•	,	,	,	,	,	00°	•	•	1	•	a0.17	a. 22	a. 32	8	,	,	a7.8	a. 38	1.2		al3	,	a.14	1	.00	00°	•	
Silica (Si0 ₂)	17	•	20	16	,	•	•	•	•	,	•	•	,	20	•	1	•	•	32 .	16	16	29	0	•	8.9	19	18	19	24 a	20	9°0	14	17	17	•	A DESCRIPTION OF THE OWNER OF THE
	1953	1944	1953	1953	1944	1944					1944	1944	1944	1953	1944				1953	1953		1953	1944		1953	1953	1953	1953	1953		1946	1953	1953	1953		
Date of collection	30, 1	17, 1	14, 1	11, 1			do.	do.	do.	do .	-	-	17, 1	29,		do .	do .	do .	8,]	: 1	do.	8,	20,]	do .	30 ;	13,	30,	24.	°,6	do.				30,	e 0	
	July	Mar.	July	July	Mar.	Mar.					Mar。	Mar.	Mar。	July	Mar.				July	July		July	Mar.		July	July	July	June	July		Sept. 20,	July 15,	July 10,	July		
Depth of well (ft.)		41	20	50	09	80	20	33	21	47	60	25	120	101	35	43	50	17	18	22	02	19	25	28	160	110	190	32	34	100	Lake	09	47	80	85	and the second of
Owner	J. W. Hånes	J. F. Compton	Clarence & Mary Hyer	C. F. Teichelman	Mrs. J. E. England	D. P. Walker	do.	H. Bounds	J. A. Fielder	M. N. McCraw	H. L. Asmont	:	Anderson-Clayton Compress Co.	C. Ernest Jackson	P. P. Davenport	H. C. Rogers	do.	Joe Benton	Wilson Goree	H. B. Collins	O. L. Catom	R. L. Thane	C. H. Peterson	W. W. Carlton	L. H. McBride	T. C. Gregory	A. M. Donny	Sam Brooks	E. Edgar Boaz	do.	Hamlin	Lee Hawks	J. B. Young	J. P. Ward	City of Anson	
Well	2	A-7	A-8	B-1		-	B-7			B- 10	B-12	B-17	B-20	C-1	C-5	C-6	C-7	6-8	C- 10	C-13	C-14	C-16	D-2	D-3	E1	E-3	E-5	E-8	E-15	E-16	E- 19	F-3	F. 95	F-12	iF-17	

0

.

Well	Owner	Depth of well (ft.)	Date of collection	Silica (SiO ₂)	Iron (Fe) dis- solved	Cal cium (Ca)	Magne sium (Mg)	Sodium and potas- sium (Na ⁺ K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (CL)	Flwo ride (F)	Ni- trate (NO ₃)	Boron (B)	Dis- solved solids		Per- cent so- dium	Specific conductance (micromhos at 25°C)	pH
F-21	Raymond Sprayberry	32	July 6, 1953	19	0.00	71	36	135	348	54	165	0.4	55		706	205	17		
F-22	City of Anson	88			-	87	52	121	226	77	295	. 5	16		855	325- 431	47	, 1, 200	7.8
F-28	H. W. Jenkins	52	July 14, 1953	18	-	366	153	377 4.2	265	1,650	310	.8	4.2	4.2	3,020	1,540	38 35	-	7.9
F- 29	C. H. Heald	32	Oct. 20, 1953	24	.02	62	43	82	343	56	94	.6	45	*. 2	576	332	35	3,770	7.7
F- 31	Hoke Probst	28	do.	22	-	61	33	113	345	79	95	.6	42		616	288		963	7.5
F-33	Clifford Sprayberry	75	July 9, 1953	26	.01	52	18	103 1.0	452	50	5.0		3.5	. 30	489	208	46	1,010	7.6
F-34	Hoke Probst	78	July 14, 1953	16	a.63	113	43	134 3.4	242	349	135	1.4	14	. 30	1,010			792	7.8
F-36	Alton Wash	50	July 25, 1953	24		210	63	189	224	243	160	.8	22	-	1,520	459	39	1,470	8.1
F- 37	R. R. Russell	36	June 22, 1953	24	.16	99	- 58	104	388	109	150	1.0	76		826	783 486	34 32	2,190	7.7
F-41	W. T. Kasinger	40	June 18, 1953	46	-	152	51	242	387	340	288	1.0	60	. 25	1,370	588		1,360	7.4
F-42	Jessie Dixon	62	do.	52	-	376	124	245	244	346	970	1.2	84	. 27	2, 320	1,450	47 27	2,180	7.8
F-43	Charles Stevens	-	June 17, 1953	38	-	50	15	152	447	60	24	2.6	49	-	611	186	64	3, 900	7.6
F-44		28	Oct. 20, 1953	28	-	67	18	143	408	99	52	.8	48		657	241	56	9 48	7.3
7-45	Earl Scott	32	July 9, 1953	38	.00	90	16	13	298	20	12	1.8	40		442	290	9	1,030	7.7
- 46	do.	95	Oct. 20, 1953	32		76	35	161	465	140	85	. 8	44		803	334	51	710	8.1
- 47	H. T. Steel	40	do .	22		126	69	114	354	137	262	.4	52		956	598	29	1,260	8.0
- 48	do.	60	do.	20	a7.6	116	68	128	274	299	20 5	1.0	26		998	569	33	1,640	7.5
- 49	Probst	50	do.	25	-	65	24	57	347	44	18	. 6	32	-	437	260	32	1,090	7.5
- 53	T. A. Martin	69	June 22, 1953	42	-	140	25	109	552	80	100	.6	8.2	16.6	776-	452	34	700	7.4
- 55	J. R. Castleberry	70	July 31, 1953	30	a2.2	296	109	236 6.1	329	245	842	.3	16	. 63	1,940	190	30	1,280	7.1
- 56	A. J. Smith, Sr.	51	June 24, 1953	32	-	139	59	147	332	232	212	1.4	108		1,090	590	35	3,470	7.5
- 57	Tod Roberts		Oct. 20, 1953	18	. 12	132	44	131	277	359	128	1.0	15		964	510	36	1,740	7.3
- 60	T. M. Busby	40	June 17, 1953	19	.04	128	51	153	270	451	90	1.4	51		1,080	529	39	1,470	7.6
-61	Orr	65	July 30, 1953	19	a. 22	255	83	149 3.4	124	882	208	.6	4.0	- 52	1,670			1,570	7.4
- 62	Ben Elliot	54	Oct. 20, 1953	32	-	66	36		j 37 5	63	81	.6	24		577	978 312	25	2,250	7.9
-63	B. R. Myers	41	do.	47	* 26	152	28	155	626	124	120	.6	23		971	494	38	937	8.3
- 64	J. F. Caffey	57	July 31, 1953	48	.06	108	49	47 5.5	467	192	162	.2	. 2	. 10	976	494	41	1,510	7.2
-65	City of Anson		July 30, 1953	6.3	.00	63	15	35 9.6	52	174	61	.3	2.0	. 14	429	and the second s	40	1,770	7.8
- 10	Mrs Roberts	65	June 19, 1953	31	-	74	28	123	318	65		1.6	98			218	25	659	7.5
-14	O. D. Nichols	46	July 6, 1953	30	-	144	34	176	576	109	NC APA	1.0	2.0	. 45	687 994	300 500	47	1, 120	7.7
-17	Walsh & Watts	60	June 18, 1953	48	. 20	236		203 8.5	641	104	488	.2	.2	. 22	1,460		43	1,680	7.3
- 18	do.	60	do.	47		170	36	223	537	111	350	.2	17		1, 220	803 572	35	2,540	7.2
- 19	do .	60	do.	50		668	124	1,360	482	1	3, 280	.0	-		5,820 2		46	2,100	7.4
- 20	do .	60	do .	47	a second	146		76 4.9	545	130	200	.2	22	S	1,020	476	58	10,100	7.1
-21	do.	-60	do.	43		246	1.	54 5.8	546	176	552	.0	15		1,610	840		1,680	7.2
- 22	do.	60	do.	45		416	78	382	440		1,220	.0	18		2,460 1		39	2,780	7.3
i- 23	Robert-King-Ford	57	July 6, 1953	46				449	225		1, 480	.2	6.0	. 31		, 360	38	4,440 5,250	7.2

Table 4.- Analyses of water from wells in Jones County--Continued

.

.

Table 4.- Analyses of water from wells in Jones County -- Continued

Date of collection	of tion	Silica (SiO ₂)	Iron (Fe) dis-	Cal- cium (Ca)	Magne- sium (Mg)	Sodium and potas- sium Na + K	Bi car- bonate (HCO ₃)	Sul - fate (SO4)	Chlo- ride (Cl)	Fluo- ride (F)	Ni- trate (NO ₃)	Boron (B)	Dis- H solved r solids	Hard- P ness c as CaCO ₃ d	Per-Sp cent con sos (mi dium at	Specific conductance (micromhos at 25°C)	Hd
			LY UP	143	73	144	409	329	195	1.4	16	1.	1, 150	657	32	1,750	7.8
do 50 50			.03		72	190	458	140	295	1.4	8.0	,	1,080	546	43	1,830	1.7
Mar. 25. 1944 7.0	,		.05		15	62	k93	185	72	0.	° 8	•	460	244	32	741	8.4
			.10	84	7.	5 84	E	189	80	• 4	1.2	•	510	2.40	40	754	9.5
June 24, 1953 19	-			286	89	245	160	1,170	175	. 6	15	1.6	2,0801 1,080	1,080	33	2,690	1.1
July 13, 1953 19			• 00	196	180	274	299	682	580	I.4	60			1,230	33	3, 200	0.0
17	17	2	all	880	371	1, 140	314	1,740	1,870	2.8 1,	8 40			3, 720	40	10, 400	4°-
1953 24			° 00	94	39	36	270	130	29	1.4	34	° 25	559	39.5	16	126	(°)
1953 16				42	36	365 2.6	6 443	251	305	1。6	2.8	2.9	1, 250	253	92	2, 110	۵°۵
96			44.6	75	39	53 5.0	0 267	47	120	° 6	48	. 32	622	348	25	958	7.9
	0.00		30	er.		<i>6</i> ,		206	750	0 °	14	. 24	1,860	1,060	34	3, 220	7.2
						16		139	305	• 2	8.7	° 09	1,090	584	39	1,860	7.4
			10.		31	178	438	100	135	1.4	19	1	781	297	57	1, 310	7.4
50	06		10			174	39.4	114	128	1.4	19	8	748	272	58	1, 320	7°4
30	30					129	406	58	52	1.8	45	。20	593	226	55	957	7.3
Tuly 90 1053 24			00			356	378	453	312	1.8	54	ı	1,540	494	61	2, 390	0
			a.95	13		371	227	328	792	• 4	89	•	2,010	861	48	3, 460	7°9

a - Total iron.

b - Turbidity sulfate.

c - Includes the equivalent of 10 ppm carbonate (∞_3).

d - Includes the equivalent of 14 ppm carbonate (∞_3).

e - Includes the equivalent of 18 ppm carbonate $(\rm CO_3)^\circ$

f - Includes the equivalent of 12 ppm carbonate (CO_3).

g - Includes the equivalent of 22 ppm carbonate (\cos_3).

h - Includes the equivalent of 26 ppm carbonate ($m CO_3
m)$,

i - Analyses by Texas Department of Health.

. Includes the equivalent of 3 ppm carbonate (CO_3).

k - Includes the equivalent of 8 ppm carbonate (00_3) .

m - Contains 47 ppm carbonate (CO_3) and 9 ppm hydroxide (OH).

.