# Geology and Ground-Water Resources of Medina County Texas

*By* C. L. R. HOLT, JR.

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# GEOLOGY AND GROUND-WATER RESOURCES OF MEDINA COUNTY, TEXAS

By C. L. R. Holt, Jr.

ABSTRACT

The Edwards limestone of Cretaceous age is the principal water-bearing formation in Medina County and makes up the major part of a ground-water reservoir, or aquifier, which in places includes thinner limestone formations both above and below the Edwards. The Glen Rose limestone, also of Cretaceous age, yields moderate amounts of water to wells and springs in the northern part of the county. Other Cretaceous formations, including the Austin chalk, Anacacho limestone, and Escondido formation, yield only small amounts of water, and that of the Austin and Escondido is of generally inferior quality.

The Carrizo sand and the Indio formation, both of Tertiary age, supply most of the water used in the southern part of the county. The Leona formation of Quaternary age supplies water for irrigation and other farm use in areas adjacent to the main streams.

Although the regional southeastward dip of the rocks is at a low angle, the Edwards limestone, which caps the hills in the northern part of the county, is found at a depth of about 2,000 feet below the sea level in the southern part of the county. The formations have been lowered by a series of faults. The faults, which are a part of the Balcones fault system, are mostly normal or tension faults and trend nearly parallel in a northeasterly direction. Thus, belts of rock, successively younger toward the southeast, are found at the surface. Individual faults of the Balcones system are as much as 35 miles long and have a maximum displacement of 700 feet. The Culebra anticline in eastern Medina County and western Bexar County is related to the Balcones fault system.

In all the ground-water reservoirs, water occurs under both water-table and artesian conditions. In the Edwards limestone, recharge occurs mainly where the streams cross the outcrop. The low flow of the streams is supplied by a large number of small springs that issue from the base of the Edwards limestone in the northern part of Medina County and the areas to the north, and from porous beds in the Glen Rose limestone. Most of this flow is absorbed by the Edwards limestone farther south as the streams cross the outcrop of the Edwards near the Balcones fault zone.

The movement of water in the Edwards limestone is generally southward and eastward, but it is locally controlled by faults. Much more water probably enters and leaves the county underground through channels in the Edwards limestone than is withdrawn by wells in the county. The total withdrawal from the Edwards through wells is estimated to be about 1,600,000 gpd. The Edwards limestone supplies water for public use in Castroville and Hondo, and for an air force base at Hondo.

The sands of the Indio formation of Tertiary age supply a cannery near Natalia and numerous domestic and stock wells. Values for the coefficient of transmissibility, in places where the sand is more than 60 feet thick, range from 10,000 to 20,000 gpd per foot.

The Carrizo sand, which overlies the Indio formation, serves the communities of Natalia and Devine. A coefficient of transmissibility of 134,000 gpd per foot was determined for the Carrizo at Devine. Water from the Carrizo sand and from the Leona formation is used for irrigation and for domestic and stock use.

The water in the Travis Peak formation probably is highly mineralized; the water from the Glen Rose formation generally is very hard, and in most places the water is high in sulfate and dissolved solids. Water from the Edwards limestone is generally hard but of good quality in other respects, except in the southern part of the county. Two analyses of water from the Austin chalk showed moderately high concentration of sulfate; three samples from the Anacacho are of generally satisfactory quality; waters from the Escondido and Indio formations contain moderate to large amounts of dissolved solids and are locally high in chloride content; the water from the Carrizo sand and the Leona formation is hard but of good quality in other respects. The Leona yields high nitrate water locally.

The report contains records of 1,099 wells and 23 springs, logs of 127 wells, periodic measurements of water levels in 54 observation wells, miscellaneous discharge measurements of 3 streams, and chemical analyses of 129 water samples obtained from wells and springs. According to the records, 895 wells are used for domestic and stock purposes, 14 are used for public supply, 35 are used for irrigation, and 4 are used for industrial purposes; about 150 wells, including about 100 oil tests, are not used for water supply.

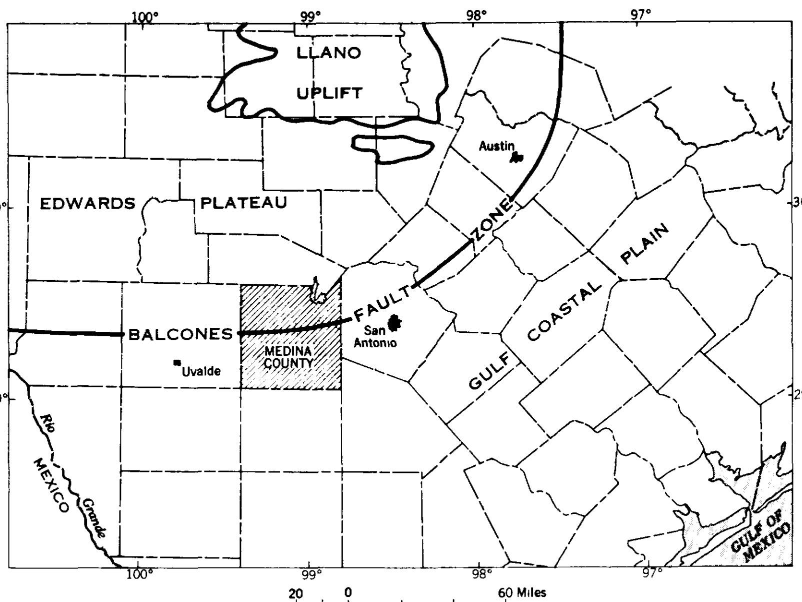


FIGURE 1.—Index map of central Texas showing physical divisions and location of Medina County.

# INTRODUCTION

## PURPOSE AND SCOPE OF INVESTIGATION

The investigation whose results are given in this report was planned to obtain data on the occurrence of ground water in Medina County. Special consideration was given to the sources, availability, potential development, and chemical character of the ground water; to its direction of movement; to the fluctuations of water levels in wells; and to the thickness and extent of the water-bearing formations.

The investigation was part of an extensive program of ground-water studies of the western part of the Balcones fault zone (fig. 1), which is being carried on cooperatively by the United States Geological Survey, the Texas State Board of Water Engineers, and the city of San Antonio. The field work was done between June 1950 and October 1952.

L. W. Stephenson of the U. S. Geological Survey visited the area in the spring of 1951, contributing valuable assistance in the study of the paleontology and stratigraphy of the Upper Cretaceous formations. W. L. Knighten, Gene M. Austin, and George E. Welder of the Texas State Board of Water Engineers ran a series of level lines to establish the altitudes of wells within the county.

## LOCATION AND GENERAL FEATURES OF THE AREA

Medina County is in south-central Texas between latitudes 29°05′ and 29°41′, and longitudes 98°48′ and 99°25′. It is bounded on the north by Bandera County, on the east by Bexar and Atascosa Counties, on the south by Frio County, and on the west by Uvalde County. (See fig. 1.) Hondo, which had a population of 4,220 in 1950, is the county seat and is near the geographic center of the county. J. W. Lang, of the Geological Survey, supervised the investigation and made many valuable suggestions during the fieldwork.

The county is rectangular, comprising 1,353 square miles. According to the 1950 census, it had a population of 17,013. The most highly populated areas are in the central and southeastern parts of the county.

Transportation facilities include a number of paved Federal and State highways and an extensive network of paved and graded county highways. The Southern Pacific Railway lines serve

Lacoste, Hondo, and D'Hanis, and the International and Great Northern Railway system serves Natalia and Devine.

### PREVIOUS INVESTIGATIONS

Information on the geology, geography, and ground-water resources in Medina County is given in several published reports. One of the first publications (Liddle, 1918) includes a general discussion of the geology and geography and a summary of the mineral resources of the county. A. N. Sayre (1936) gave a more detailed account of the ground-water geology and presented records of wells, water levels, and chemical analyses of ground waters. The data presented in Water-Supply Paper 678 (Sayre, 1936) were used in the preparation of this report. J. W. Lang (1954) summarized ground-water conditions in the 6,000-square-mile San Antonio area, which includes Medina County. Pettit and George (1956) discussed the hydrology of the Edwards and associated limestones in the San Antonio area in more detail. These reports and other references are listed at the end of this report.

### ACKNOWLEDGMENTS

The writer is indebted to numerous farmers, ranchers, well drillers, and city and county officials who willingly supplied information and aided in the collection of field data.

### WELL-NUMBERING SYSTEM

The wells are numbered according to their location. The grid system is part of a state-wide system wherein 30-minute quadrangles were assigned letters in order from west to east. Each of these areas was then subdivided into 10-minute quadrangles and the three rows numbered consecutively from left to right beginning at the upper left-hand corner. Within each 10-minute quadrangle the wells are numbered consecutively starting from the northwest corner. In this way each well is designated by a letter which indicates the 30-minute quadrangles in which the well is located, a number which indicates 10-minute quadrangle, and an individual well number.

## GEOGRAPHY

### SURFACE FEATURES

The area under discussion occupies parts of two major physical divisions or provinces, separated by the northeastward-trending Balcones fault zone (fig. 1). A division of the Great Plains, called the Edwards Plateau by Hill and Vaughn (1898,

p. 204), forms the northern part of Medina County. The remaining two-thirds of the county is referred to as the Gulf Coastal Plain or, more specifically, as the Rio Grande Plain.

The land surface ranges in altitude from about 560 feet, where Bear Creek leaves the southeast corner of the county, to about 2,030 feet on Hackberry Hill in the northwest corner of the area. The total relief in Medina County is, therefore, about 1,470 feet, although locally the relief does not exceed 500 feet.

The Balcones escarpment, which marks the boundary between the two geomorphic provinces, was formed by movement along the fault zone, dropping the area south of the fault in relation to the area north of it by several hundred feet. Numerous streams, eroding headward from the Balcones escarpment, have cut deep valleys into the Edwards Plateau, until only the highest buttes and narrow ridges represent the original plateau. This area, north of the major faults, is rough or rolling and is locally known as the "hill country." Beds of massive limestone alternating with softer marls and shales form steplike terraces which circle the hills.

In contrast to the major relief of the Edwards Plateau is the minor relief of the low plains south of the Balcones escarpment. With local exceptions the alternating generally indurated strata of the different formations dip more rapidly to the south than does the land surface. Erosion of the alternating hard and soft layers has formed cuestas with northward-facing escarpments.

An exception to the cuesta topography is found in the areas occupied by the chert and caliche of the Uvalde gravel. This gravel protects the underlying less resistant formations from erosion.

### DRAINAGE

The surface drainage of Medina County is, in general, to the south and southeast, coincident with the regional dip of the strata and the slope of the area. Local structural features have modified the drainage.

Squirrel, Seco, Hondo, Verde, and Quihi Creeks are the principal tributaries that drain the northern and western parts of Medina County. These intermittent streams drain into the Frio River, a tributary of the Nueces, in Frio County. The northern and eastern parts of the area are drained by the Medina River, which empties into the San Antonio River. These streams are fed by springs in the Edwards Plateau and lose most of their waters to the outcrops of the Edwards limestone near the Balcones fault system. The Medina River is the only perennial stream in the county. Hondo Creek resumes a perennial flow south of U. S. Highway 90 but maintains perennial flow for only 8 or 10 miles. The southeastern part of the county is drained by Black, Francisco Perez, and Chacon Creeks, which join the Frio River in McMullen County.

The entire area is subject to torrential rains and floods. In times of flood, those channels that are generally dry are filled and sometimes overflow upon the bordering terraces.

## CLIMATE

The average annual precipitation at Hondo during the 67-year period 1885–1952 was 27.99 inches; the average at Riomedina during the 24-year period 1923–46 was 26.76 inches. Records of the United States Weather Bureau at Hondo show that the maximum yearly total, 61.57 inches, was in 1919, and that the minimum yearly total, 21.25 inches, was in 1901. This weather station recorded a maximum monthly rainfall of 21.70 inches for May 1935 (fig. 2).

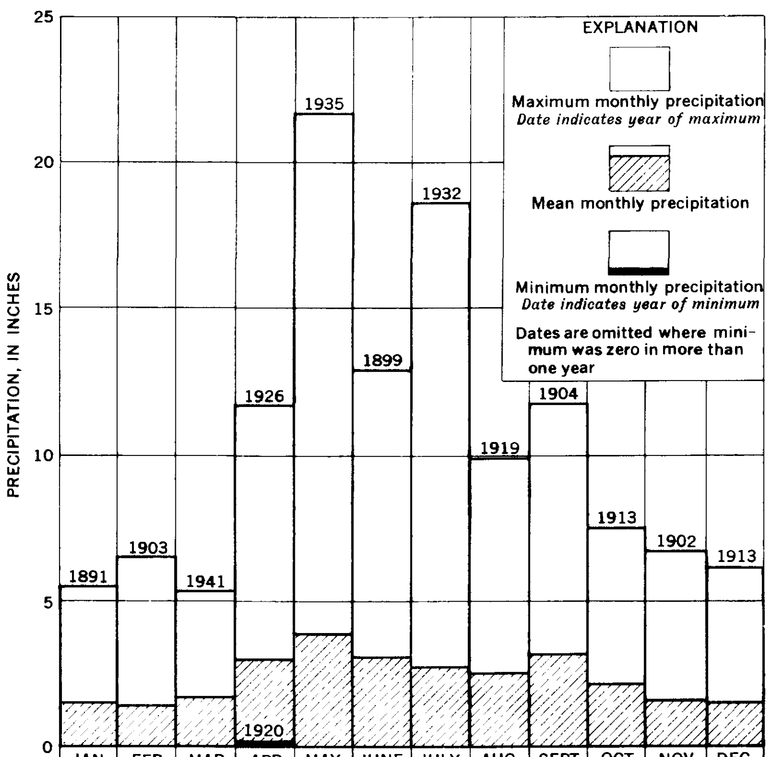


FIGURE 2.—Maximum, minimum, and mean monthly precipitation at Hondo, Tex., 1885–1952.

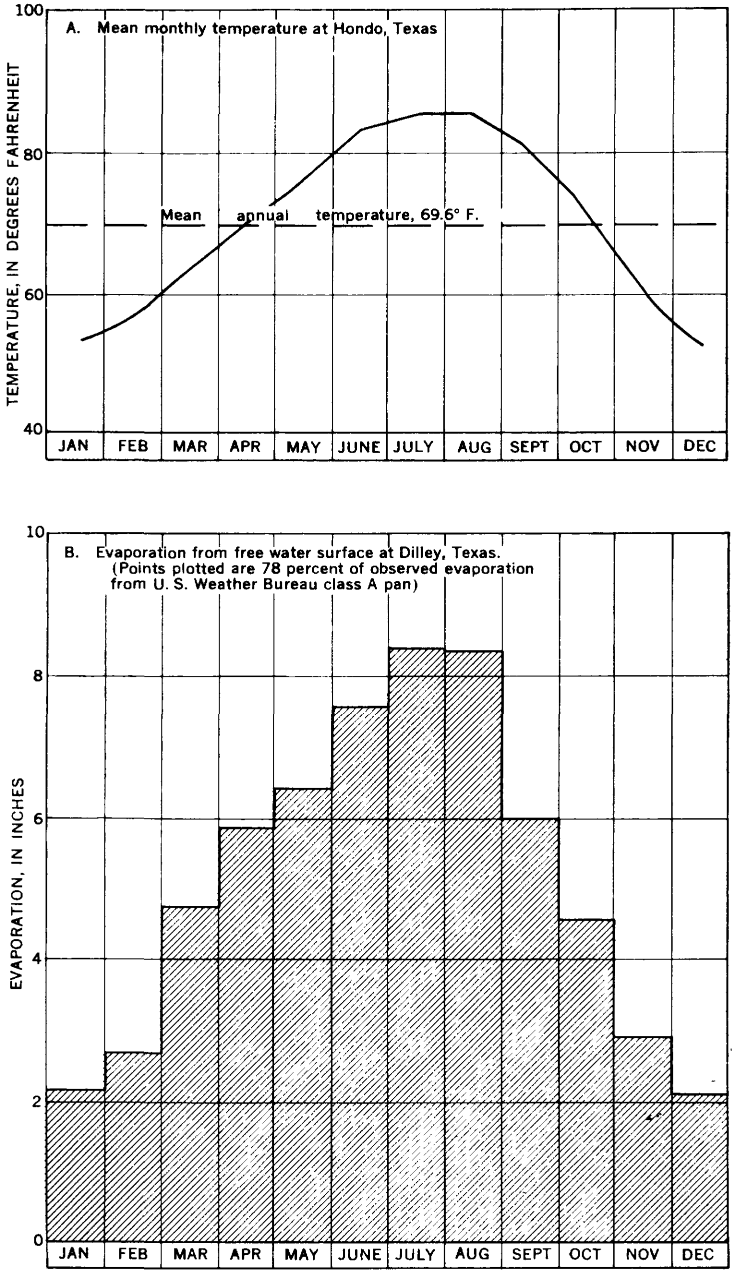


FIGURE 3.—Graphs showing temperature at Hondo and evaporation at Dilley, Tex.

The precipitation varies considerably from year to year, and occasional droughts cause much damage to the forage crops and reduce the supply of water available for irrigation. Conversely, unusually heavy rains have caused floods which have damaged parts of the towns of D'Hanis and Hondo. Two local floods occurred during the spring of 1951. A flood on May 6, 1951, was caused by excessive rainfall in the Quihi area, where as much

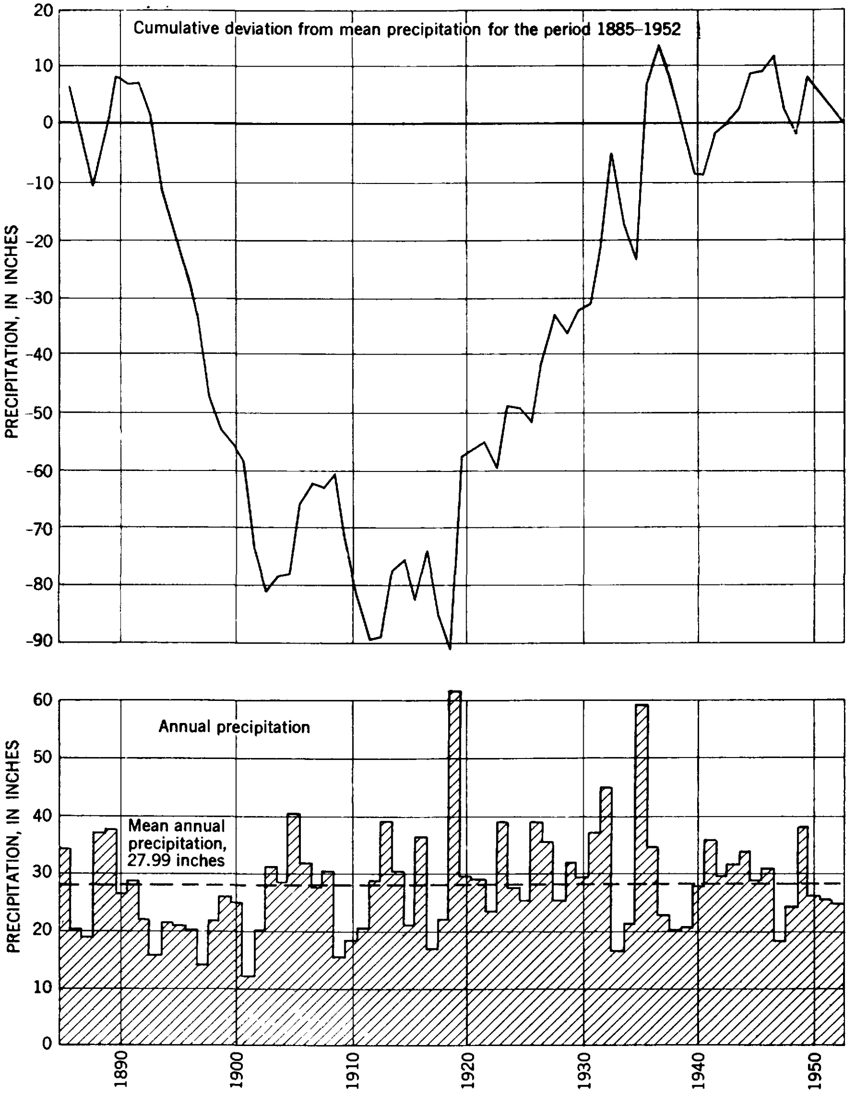


FIGURE 4.—Precipitation at Hondo, Tex., 1885–1952.

as 18 inches of rain was reported to have fallen in 4 hours. During a 3-hour storm on May 4, 1951, 10 to 16 inches of rain fell over the southwestern part of the county.

Most of the precipitation occurs during the growing season of 258 days. The average annual rate of evaporation from a free-water surface, as determined at the Texas Experimental Station at Dilley (fig. 3*B*), is approximately 62 inches. Thus, the potential annual evaporation is more than twice as great as the annual precipitation of Medina County.

The average annual temperature at Hondo is 69° F. The temperature is very changeable in winter; daily maximums are rarely below 32° F., and frequent warm periods occur. The average date of the first killing frost is November 23; the average date of the last killing frost is March 10.

Precipitation and temperature records at Hondo and Riomedina, collected by the United States Weather Bureau, are given in tables 1 and 2 and are shown graphically in figures 2, 3*A*, 4, and 5.

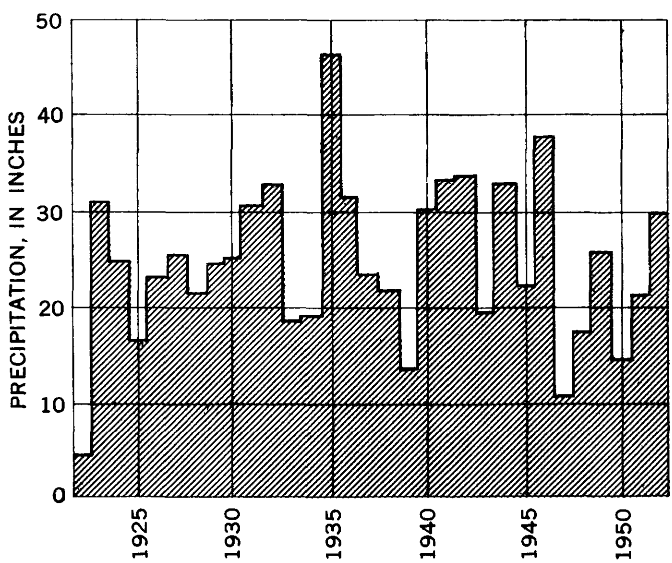


FIGURE 5.—Annual precipitation at Rio Medina, Tex., 1922–52.

TABLE 1.—*Precipitation, in inches, at Hondo, Tex.*

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1880 | 3.50 | 4.00 | 2.25 | 4.00 | 3.00 | 2.25 | 6.25 | 8.50 | 3.00 | 2.25 | 2.25 | 0.50 | 41.75 |
| 1881 | .50 | 1.25 | 1.13 | 3.25 | 4.75 | .00 | 1.25 | 1.13 | 5.75 | 4.25 | 2.00 | 1.59 | 26.75 |
| 1882 | 2.00 | 2.13 | 4.25 | .87 | 6.75 | .13 | 3.00 | 3.75 | 9.00 | 2.75 | 1.13 | .50 | 36.25 |
| 1885 | 3.75 | .75 | 3.75 | 5.50 | 8.00 | .75 | 6.50 | 1.00 | 1.50 | .75 | .75 | 1.50 | 34.25 |
| 1886 | .75 | 1.13 | 2.38 | 2.25 | 2.50 | 3.50 | 1.50 | 2.75 | 2.13 | .63 | .38 | .25 | 20.13 |
| 1887 | .25 | .75 | .50 | .50 | 2.50 | 1.25 | .75 | 3.63 | 1.75 | 2.13 | 2.50 | 2.50 | 19.00 |
| 1888 | 1.50 | 2.50 | 2.25 | 7.50 | 4.50 | 4.00 | .75 | 4.75 | 2.00 | 1.00 | 3.75 | 2.50 | 37.00 |
| 1889 | 3.50 | 1.50 | 2.50 | 1.25 | .00 | 4.75 | 11.63 | 3.50 | 6.13 | .75 | 2.25 | .00 | 37.75 |
| 1890 | .00 | 2.25 | .25 | 5.38 | 1.50 | 5.25 | 1.50 | 1.50 | 4.25 | 2.00 | 1.00 | 1.50 | 26.63 |
| 1891 | 5.50 | 1.25 | 1.13 | 4.50 | 2.38 | 2.13 | .75 | 1.00 | 3.50 | 1.50 | 1.00 | 4.00 | 28.63 |
| 1892 | 1.50 | .75 | 1.50 | .13 | .75 | 2.75 | .00 | 6.13 | 1.00 | 1.50 | 1.13 | 4.00 | 21.87 |
| 1893 | .13 | 1.13 | 2.50 | 2.00 | 3.38 | 1.87 | .87 | .75 | .13 | .00 | 2.50 | .75 | 15.63 |
| 1894 | 1.50 | .50 | .75 | 2.63 | 1.75 | 3.00 | .63 | 8.50 | 1.50 | .75 | .00 | .00 | 21.50 |
| 1895 | 1.25 | 3.87 | 2.50 | .25 | 5.50 | 2.00 | 1.00 | 2.00 | 1.25 | 1.50 | .00 | .13 | 21.00 |
| 1896 | 2.00 | 1.87 | .13 | 1.50 | 1.50 | 2.00 | 2.00 | 1.00 | 3.50 | 3.63 | .00 | .75 | 19.87 |
| 1897 | 1.25 | .00 | 1.25 | 1.00 | 2.75 | 2.00 | .00 | 1.50 | 1.13 | 3.25 | .00 | .00 | 14.13 |
| 1898 | .25 | .25 | .87 | 2.00 | .50 | 8.25 | .75 | 4.75 | 1.50 | .00 | 1.75 | 1.00 | 21.87 |
| 1899 | .00 | .00 | .00 | 1.38 | 3.75 | 12.87 | 1.63 | .00 | 2.00 | 1.50 | .87 | 1.75 | 25.75 |
| 1900 | 3.50 | .00 | 2.50 | 6.38 | 3.38 | .00 | 3.75 | 1.87 | .00 | 2.13 | 1.13 | .25 | 24.87 |
| 1901 | .25 | .00 | .75 | .13 | 3.00 | 2.50 | 4.00 | .00 | 1.13 | .00 | .50 | .00 | 12.25 |
| 1902 | .50 | .25 | .75 | 1.13 | 3.75 | .00 | .25 | .00 | 3.25 | 1.25 | 6.63 | 2.63 | 20.38 |
| 1903 | 2.25 | 6.50 | 1.25 | 2.00 | 1.63 | 3.87 | 7.63 | 1.63 | 4.25 | .13 | .00 | .00 | 31.13 |
| 1904 | .00 | .75 | .00 | 2.50 | 3.63 | 1.63 | 3.13 | 1.50 | 11.75 | 2.25 | .63 | .50 | 28.25 |
| 1905 | 2.13 | 1.00 | 3.25 | 10.00 | 2.75 | 7.50 | 3.38 | .25 | 3.87 | 2.38 | 2.63 | 1.00 | 40.13 |
| 1906 | .00 | .87 | .13 | 1.87 | 6.50 | .75 | 4.50 | 3.00 | 8.38 | 1.75 | 2.50 | 1.38 | 31.63 |
| 1907 | .00 | .00 | 1.38 | 2.25 | 5.63 | 1.38 | 3.13 | .25 | .38 | 6.63 | 6.25 | .13 | 27.38 |
| 1908 | .25 | .75 | 1.25 | 4.50 | 9.25 | .00 | 2.50 | 7.38 | .75 | 1.75 | 2.00 | .00 | 30.38 |
| 1909 | .00 | .16 | .75 | 1.44 | 4.11 | 1.06 | 1.61 | 2.53 | .00 | .16 | 2.43 | 1.29 | 15.54 |
| 1910 | .00 | .33 | 1.64 | 4.37 | 1.42 | .92 | 1.04 | .41 | .73 | 5.14 | .80 | 1.86 | 18.66 |
| 1911 | .32 | 2.15 | 2.46 | 4.36 | 2.20 | .20 | .71 | .44 | .67 | 3.17 | 2.37 | 1.52 | 20.57 |
| 1912 | .00 | 1.73 | 2.23 | 2.86 | 1.41 | 7.66 | .36 | .14 | 3.70 | 3.82 | 3.36 | 1.60 | 28.87 |
| 1913 | .77 | 1.04 | .38 | .64 | 3.57 | 4.99 | .75 | 3.97 | 3.66 | 7.46 | 5.76 | 6.17 | 39.16 |
| 1914 | .00 | 1.34 | .55 | 3.15 | 6.49 | 2.25 | .30 | 7.00 | 2.48 | 1.75 | 3.76 | 1.14 | 30.21 |
| 1915 | 1.57 | 2.44 | .85 | 3.96 | 1.25 | .00 | .10 | 6.54 | 1.56 | 1.93 | .00 | .60 | 20.80 |
| 1916 | 1.53 | .00 | 4.03 | 8.07 | 6.08 | .00 | 8.02 | 4.96 | .40 | 2.34 | .97 | .06 | 36.46 |
| 1917 | 1.02 | .54 | .07 | .49 | 3.64 | 4.28 | 2.61 | .00 | 1.70 | 1.25 | 1.03 | .10 | 16.73 |
| 1918 | .07 | .30 | .40 | 3.32 | 1.65 | .34 | 1.31 | .75 | 2.61 | 3.25 | 2.69 | 5.28 | 21.97 |
| 1919 | 3.23 | 1.59 | 1.85 | 2.32 | 3.20 | 8.81 | 11.78 | 9.90 | 9.36 | 7.20 | .71 | 1.62 | 61.57 |
| 1920 | 3.12 | .33 | 2.70 | .12 | 5.69 | 2.35 | 5.54 | 3.25 | .78 | 2.59 | 2.82 | .10 | 29.39 |
| 1921 | .88 | .30 | 3.09 | 3.19 | 4.48 | 6.23 | 1.03 | .00 | 7.36 | .92 | 1.62 | .00 | 29.10 |
| 1922 | 1.08 | .74 | 2.56 | 8.80 | 3.35 | 3.25 | .45 | .00 | .30 | 1.68 | 1.33 | .00 | 23.54 |
| 1923 | .38 | 5.34 | 2.32 | 4.73 | .32 | 2.64 | 3.15 | 2.55 | 5.33 | 4.38 | 4.25 | 3.48 | 38.87 |
| 1924 | 1.69 | 3.05 | 2.57 | 5.18 | 5.86 | 3.89 | .00 | .00 | 3.35 | .20 | .04 | 1.75 | 27.58 |
| 1925 | .48 | .07 | .35 | 1.08 | 6.31 | 1.40 | 1.10 | 7.33 | 2.09 | 2.41 | 1.42 | 1.20 | 25.24 |
| 1926 | 2.65 | .00 | 4.88 | 11.76 | 1.88 | 4.05 | 2.96 | 1.15 | .97 | 3.69 | 2.22 | 2.80 | 39.01 |
| 1927 | .83 | 2.59 | 2.19 | 3.14 | 2.44 | 9.39 | 5.97 | 1.25 | 2.92 | 1.51 | .00 | 3.00 | 35.25 |
| 1928 | .82 | 2.64 | .76 | .95 | 6.70 | 1.79 | 1.49 | 3.07 | 4.37 | .15 | 1.26 | 1.32 | 25.32 |
| 1929 | .83 | .40 | 2.52 | 2.64 | 8.68 | 2.00 | 4.50 | .30 | 2.12 | 2.28 | 1.81 | 3.73 | 31.81 |
| 1930 | .65 | .20 | 2.01 | 4.73 | 2.63 | 4.59 | .20 | .98 | 2.14 | 7.21 | 2.73 | .96 | 29.04 |
| 1931 | 4.71 | 3.17 | 1.80 | 5.01 | 3.71 | 2.36 | 5.80 | 4.11 | .77 | 1.40 | 1.67 | 2.94 | 36.89 |
| 1932 | 1.24 | 3.31 | .98 | 2.41 | 2.96 | 1.17 | 18.61 | 3.52 | 8.08 | .04 | .79 | 1.77 | 44.88 |
| 1933 | 3.27 | 1.81 | .10 | .80 | 3.08 | 1.53 | .20 | 1.80 | 1.84 | 1.51 | .49 | .26 | 16.69 |
| 1934 | 3.17 | .34 | 1.10 | 4.50 | .97 | .00 | 3.17 | .23 | 1.45 | .00 | 2.07 | 4.04 | 21.04 |
| 1935 | .39 | 2.00 | 2.14 | 1.29 | 21.70 | 5.83 | 9.78 | .70 | 9.81 | 1.09 | .72 | 3.55 | 59.00 |
| 1936 | .41 | .46 | 1.26 | .96 | 6.19 | 6.98 | 4.12 | 1.13 | 6.63 | 3.24 | 2.11 | .63 | 34.12 |
| 1937 | 1.05 | .00 | 2.81 | .30 | 2.03 | 2.81 | .59 | .20 | 2.73 | 2.23 | 2.03 | 5.33 | 22.11 |
| 1938 | 2.87 | .50 | 1.59 | 3.60 | 4.57 | 1.33 | 1.53 | .47 | .69 | .89 | .42 | 1.40 | 19.83 |
| 1939 | 2.33 | .46 | .33 | .94 | 1.80 | .20 | 4.46 | 2.01 | 1.98 | 2.76 | 2.27 | 1.03 | 20.57 |
| 1940 | .37 | 2.46 | 1.30 | 2.72 | 6.80 | 2.91 | 1.04 | 1.88 | .58 | 2.72 | 2.02 | 3.06 | 27.86 |
| 1941 | 5.25 | 3.15 | 5.20 | 4.39 | 2.39 | 1.76 | 1.08 | .73 | 7.30 | 2.89 | .78 | .52 | 35.44 |
| 1942 | .02 | 1.39 | .55 | 4.84 | 4.58 | 1.57 | 2.11 | 4.27 | 4.00 | 4.77 | .16 | 1.05 | 29.31 |
| 1943 | .38 | .24 | .86 | 1.45 | 4.35 | 6.91 | 4.78 | .02 | 7.62 | .94 | 1.40 | 2.15 | 31.10 |
| 1944 | 2.46 | 1.43 | 3.06 | .98 | 7.39 | 2.58 | .00 | 7.82 | .35 | 1.77 | 3.10 | 2.69 | 33.63 |
| 1945 | 3.07 | 2.33 | 1.93 | 4.16 | 2.22 | 4.14 | .46 | .45 | 7.06 | 1.37 | .55 | .80 | 28.54 |
| 1946 | 2.74 | 1.55 | .91 | 3.55 | 1.78 | 1.78 | .92 | 4.64 | 4.18 | 4.04 | 1.12 | 4.45 | 30.66 |
| 1947 | 2.24 | .35 | 1.28 | .47 | 2.34 | 3.20 | .25 | 4.68 | .55 | .68 | .98 | 1.10 | 18.12 |
| 1948 | .17 | 1.72 | .49 | .60 | .00 | 8.59 | 6.33 | .43 | 2.26 | 2.06 | .80 | .52 | 23.97 |
| 1949 | 1.90 | 3.61 | 3.84 | 7.20 | .70 | 4.95 | 1.08 | 4.15 | 2.13 | 6.38 | .00 | 2.03 | 37.97 |
| 1950 | 2.61 | 1.19 | .29 | .29 | 5.97 | 3.97 | 2.86 | 4.17 | 4.09 | .23 | .16 | .04 | 25.87 |
| 1951 | .30 | 1.49 | 2.51 | .54 | 10.57 | 2.61 | .12 | 1.10 | 4.41 | .53 | 1.01 | .20 | 25.39 |
| 1952 | .09 | 2.16 | 2.04 | 1.45 | 3.02 | 3.89 | 1.46 | .01 | 4.65 | .00 | 3.47 | 2.32 | 24.56 |
| Average | 1.44 | 1.37 | 1.67 | 2.99 | 3.92 | 3.08 | 2.77 | 2.54 | 3.17 | 2.21 | 1.62 | 1.55 | 28.34 |

TABLE 2.—*Precipitation, in inches, at Riomedina, Tex.*

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Annual |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922 | ---- | ---- | ---- | ---- | ---- | ---- | ---- | ---- | 1.40 | 3.80 | .07 | .00 | 5.27 |
| 1923 | .00 | 5.84 | 2.91 | 2.46 | .35 | .23 | 3.60 | 2.16 | 4.38 | 2.24 | 3.19 | 3.85 | 31.21 |
| 1924 | .87 | 2.60 | 2.67 | 6.09 | 4.10 | 4.43 | .04 | 1.80 | .25 | .31 | .00 | 1.27 | 24.43 |
| 1925 | .05 | .00 | .00 | .90 | 2.05 | .00 | .97 | 2.58 | 2.86 | 2.37 | 3.14 | 1.36 | 16.28 |
| 1926 | 2.68 | .00 | 2.94 | 8.40 | .00 | 2.68 | 1.52 | .00 | .00 | 1.37 | 1.84 | 2.12 | 23.55 |
| 1927 | 1.77 | 2.94 | 2.10 | 1.04 | 3.20 | 6.98 | 1.20 | .00 | 1.83 | 1.08 | .00 | 2.52 | 24.66 |
| 1928 | .34 | 2.49 | 2.04 | 1.23 | 4.49 | 1.87 | 1.63 | 1.32 | 3.12 | 1.41 | .48 | 1.23 | 21.65 |
| 1929 | .48 | .43 | 2.16 | .94 | 8.47 | 1.94 | 4.77 | .23 | .70 | 1.60 | 1.59 | 1.20 | 24.51 |
| 1930 | .43 | .00 | 2.53 | 2.35 | 4.17 | 3.20 | 2.38 | .00 | .00 | 8.88 | .74 | .50 | 25.18 |
| 1931 | 3.31 | 3.41 | 5.95 | 3.95 | 1.54 | 2.20 | 3.12 | 1.30 | .00 | 1.22 | .72 | 3.76 | 30.48 |
| 1932 | 2.46 | 2.43 | .00 | 2.72 | 2.64 | .57 | 6.77 | 6.05 | 7.84 | .00 | .00 | 1.05 | 32.53 |
| 1933 | 1.65 | 2.87 | .00 | .74 | 2.40 | 4.00 | 1.75 | 3.71 | 1.10 | .02 | .00 | .70 | 18.94 |
| 1934 | 5.20 | .83 | 1.39 | 3.21 | 1.40 | 1.70 | 4.17 | .00 | .82 | .00 | 1.27 | 3.57 | 23.56 |
| 1935 | .50 | 2.30 | 2.18 | 1.41 | 12.91 | 7.86 | 2.61 | .00 | 11.41 | 1.51 | .00 | 2.58 | 45.27 |
| 1936 | .44 | .44 | 1.72 | .95 | 4.93 | 11.59 | 2.56 | 1.32 | 2.56 | 2.33 | 1.99 | 1.14 | 31.54 |
| 1937 | 1.12 | .00 | 2.74 | .45 | 1.66 | 4.40 | 2.66 | .61 | 1.64 | 2.91 | .73 | 4.19 | 23.11 |
| 1938 | 3.30 | 1.20 | 2.38 | 4.37 | 2.82 | 1.93 | .72 | .20 | 2.25 | .47 | .38 | 1.28 | 21.30 |
| 1939 | 1.81 | .56 | .35 | .85 | 1.01 | .59 | 3.71 | 1.81 | 1.53 | .50 | 2.27 | 1.06 | 16.05 |
| 1940 | .51 | 1.94 | .85 | 1.30 | 4.17 | 7.35 | 1.53 | .40 | 1.22 | 5.12 | 1.72 | 3.89 | 30.00 |
| 1941 | .92 | 7.72 | 4.79 | 4.63 | 2.85 | 3.39 | 2.07 | .32 | 4.56 | 1.03 | .42 | .47 | 33.17 |
| 1942 | .00 | .91 | .00 | 7.88 | 2.30 | 1.13 | 7.51 | 3.13 | 6.07 | 3.18 | .34 | .73 | 33.18 |
| 1943 | .25 | .00 | 1.11 | 2.18 | 4.75 | 4.04 | 1.65 | .50 | 1.28 | .39 | 2.05 | 1.02 | 19.22 |
| 1944 | 3.12 | 1.60 | 1.80 | .76 | 4.66 | 1.54 | 2.20 | 8.14 | .98 | 1.29 | 3.34 | 3.55 | 32.98 |
| 1945 | 3.16 | 1.56 | 1.34 | 1.90 | 1.81 | 1.75 | 1.50 | .60 | 5.11 | 1.78 | .00 | 1.34 | 21.85 |
| 1946 | 2.67 | 1.51 | .66 | 2.75 | 2.82 | 3.38 | 1.37 | 8.87 | 6.83 | 2.58 | 1.64 | 2.03 | 37.11 |
| 1947 | 1.79 | .32 | 1.30 | .20 | 2.57 | .55 | .62 | 1.85 | ---- | .34 | .62 | ---- | 10.16 |
| 1948 | .22 | ---- | ---- | 2.10 | 2.85 | 4.22 | 2.25 | ---- | 2.75 | 2.41 | .88 | ---- | 17.68 |
| 1949 | 2.38 | ---- | 2.43 | 7.36 | 1.10 | 7.32 | 1.39 | 2.69 | 1.41 | ---- | ---- | ---- | 26.08 |
| 1950 | 1.31 | 1.77 | .21 | 2.48 | 3.71 | ---- | ---- | 3.11 | 1.85 | ---- | .21 | .00 | 14.65 |
| 1951 | .57 | 2.11 | 2.16 | .43 | 9.67 | .97 | .72 | .45 | 2.63 | .33 | 1.06 | .19 | 21.29 |
| 1952 | .23 | 1.77 | 2.51 | 1.96 | 2.62 | 1.77 | 2.51 | .00 | 8.99 | .00 | 4.54 | 2.76 | 29.66 |
| Average | 1.54 | 1.82 | 1.86 | 2.64 | 3.40 | 3.28 | 2.58 | 1.88 | 2.85 | 1.82 | 1.16 | 1.93 | 26.76 |

## DEVELOPMENT

Farming and stockraising are the principal occupations. The rugged upland area in northern Medina County is limited to the raising of cattle, sheep, and goats, except along stream valleys where feed crops can be raised. The character of the soil and the amount of rainfall has restricted the use of a large part of southwestern Medina County to grazing.

The relatively level country in the central, eastern, and southeastern portions of the county is used for diversified farming. The principal dryland crops are broomcorn, oats, maize, sorghum, corn, peanuts, and cotton. Surface water has been used since 1925 to irrigate truck crops in southeastern Medina County. In recent years, a number of irrigation wells have been developed for supplemental irrigation of grain crops.

Oil and gas have been produced from the Taylor, Ina, Adams, Chacon, and Bear Creek fields in the southern part of Medina County. Only the Chacon and Ina fields are still active. Industrial plants include pottery and broomcorn processing. Tile and brick are manufactured at D'Hanis, and vegetables from the irrigation district are processed and canned at Natalia. The United States Air Force has a base at Hondo, the county seat.

## GEOLOGY

The rocks exposed in Medina County are of sedimentary origin, with the exception of several igneous intrusions north and west of Hondo. Serpentine has been reported in logs of oil tests in the southern part of the county. The sedimentary rocks range in age from Cretaceous to Recent and consist of limestone, chalk, caliche, conglomerate, gravel, sand, silt, shale, and clay.

The geologic formations from which Medina County obtains its water supply are, from oldest to youngest, the Glen Rose limestone, Edwards limestone and associated limestones, Austin chalk, Anacacho limestone, silts and sands of the Escondido formation, sands of the Indio formation, Carrizo sand, and sands and gravels of the Leona formation. (See table 3.) The formations crop out in belts extending eastward across Medina County, as shown on plate 1. The normal continuity of the belts has been disrupted by faulting. The dip of the beds is generally toward the south and southeast at an angle steeper than the slope of the land surface; thus the land surface bevels the outcrops of the formation. The average normal dip is estimated at 15 to 20 feet to the mile, but deformation along fault lines has caused the strata in some fault blocks to be inclined from the normal position. Toward the south the multiple faulting of the Balcones zone has increased the depths at which the formations are normally encountered.

Toward the north successively older strata crop out, and the formation lowest in the geologic column has the highest topographic exposure. Such an arrangement of the rocks, whereby permeable limestone and sandstones are interbedded with relatively impermeable clays and shales, caused the ground water downdip from the outcrop to be under artesian pressure. Rain falling on the outcrops percolates into the porous beds and is then transmitted down the dip to greater depths below the surface.

Table 3 shows the subdivisions of the geologic formations with their approximate thicknesses, lithologic character, and water-bearing properties. The areas of outcrop of the different geologic units are shown on plate 1.

Plate 2, *A–A′*, is a cross section down the dip of the formations from Bandera County south along Hondo Creek to Frio County, in which the surface outcrops of the formations are correlated with the structure and subsurface geology. The formations of Cretaceous age maintain a generally uniform thickness, whereas the Tertiary formations thicken rapidly downdip to the south. The section illustrates the complicated, multiple faulting of the Balcones zone.

Plate 2, *B–B'*, is a cross section, approximately parallel to section *A–A'*. It extends from Medina Lake and Bandera County through Rio Medina and Lacoste to Bexar County. The total vertical displacement of the six faults in this section is approximately equal to the total displacement of the 25 faults along section *A–A'*. The Culebra anticline, bounded by the Cliff fault on the northwest and the Castroville fault on the southeast, is a southwestward-plunging anticline.

## ROCK FORMATIONS AND THEIR WATER-BEARING PROPERTIES

### PRE-CRETACEOUS ROCKS

The Paleozoic era was long and complex, as shown by the rocks that crop out in Llano County and adjacent counties in central Texas. After the deposition of the Paleozoic rocks the sea retreated from central Texas, and some of the county probably remained as land during the Triassic and Jurassic periods. As yet, too few deep wells have been drilled to ascertain the age of the pre-Cretaceous rocks. The black shale reported at a depth of 5,395 feet in the driller's log of well I–6–105 is probably of Pennsylvanian age. Sellards (1931, p. 819–827) identified schists of probable Paleozoic age along the Balcones fault zone. No rocks older than those of Cretaceous age crop out in Medina County. No water has been reported from pre-Cretaceous rocks in Medina County.

### CRETACEOUS SYSTEM

The Cretaceous rocks of Texas have been divided into the Coahuila (of Mexico), Comanche, and Gulf series. In Early Cretaceous time the sea advanced over this area, depositing sediments upon an eroded surface of Paleozoic rocks. During this period minor fluctuations in the depth of the sea were accompanied by the deposition of limestones, shales, and sandstones. At the close of the Comanche epoch the sea withdrew completely from this region, as indicated by the presence of a disconformity and the absence of the oldest formation of the Gulf series.

#### COAHUILA SERIES (MEXICO)

The oldest basinward strata of Cretaceous age, extending from Arkansas to Mexico, have been classified by Imlay (1945, p. 1416–1469) as the Hosston, Sligo, and Pearsall formations, in ascending order. The Pearsall is the subsurface equivalent of the Travis Peak formation of the Comanche series. The Hosston and Sligo formations are correlative with the Nuevo Leon and Durango

TABLE 3.—*Geologic formations of Medina County, Tex.*

| System | Series | Group | Formation | Approximate thickness (feet) | Lithologic character | Water-bearing properties |
|---|---|---|---|---|---|---|
| Quaternary | Recent | | Alluvium | 0-30 | Silt, sand, clay, and gravel. Confined to stream valleys. | Not known to yield large supplies of water. |
| | Pleistocene | | Leona formation | 0-65 | Silt, sand, and fine gravel, occurring beneath terraces along larger streams. | Yields moderate to large supplies of potable water. |
| Tertiary | Pliocene(?) | | Uvalde gravel | 0-30 | Coarse flint gravel and caliche on hilltops and divides. | Not known to yield water in Medina County. |
| | Eocene | Claiborne | Mount Selman formation | 0-100 | Sandstone and shale with limonite and calcite concretions. | Furnishes large supplies of good water in Frio County. Only the lowest portion crops out in Medina County. |
| | | | Carrizo sand | 240-300 | Course- to medium-grained nonmicaceous reddish sandstone. Locally crossbedded. | Yields moderate to large supplies of potable water. |
| | | Wilcox | Indio formation | 440-710 | Thin-bedded sandstone, siltstone, and shale. Contains lignite and calcareous nodules. | Yields moderate supplies of moderately mineralized water. |
| | Paleocene | Midway | Kincaid formation | 80-155 | Marine limestone, sandstone, and shale. Lower part contains glauconite. | Not a fresh-water aquifer in Medina County. |
| Cretaceous | Gulf | Navarro | Escondido formation | 550-740 | Shale, sandstone, and some limestone. Increasingly arenaceous to west. | Yields moderate supplies of moderately mineralized water. |
| | | | Corsicana marl | 30-55 | Limestone and shale; thickens to east. | Not a fresh-water aquifer in Medina County. |
| | | | Taylor marl | 0-150 | Clay and marl; thickens to east. | Do. |
| | | | Anacacho limestone | 350-530 | Fossiliferous limestone, marl, and clay. Increasingly calcerous to west. | Yields small supplies of water locally. |
| | | | Austin chalk | 210-290 | White to buff chalk, marl, and limestone. | Yields small supplies of water. |
| | | | Eagle Ford shale | 20-65 | Black shale and gray arenaceous limestone; weathers to yellow clay and brown flagstones. | Not known to yield water in Medina County. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Cretaceous | Comanche | Washita | Buda limestone | 35-110 | Dense, massive limestone, light-yellow to buff. Veined calcite. | Generally not water bearing. |
| | | | Grayson shale (formerly Del Rio clay) | 35-95 | Blue clay; weathers to yellow. Contians thin beds of limestone. | Yields no water to wells in Medina County. |
| | | | Georgetown limestone | 20-75 | Hard white limestone. Thin-bedded limestone and marl near top. | May be water-bearing but does not furnish entire supply to any known well in Medina County. If and where water-bearing it forms a part of the principal limestone reservoir. |
| | | Fredericksburg | Edwards limestone | 400-620 | Hard massive white limestone with flint nodules. Cavernous in places. | Yields large supplies of potable water. |
| | | | Comanche Peak limestone | 25-45 | Sandy marl and limestone. Contains no flint. | Not a fresh-water aquifer in Medina County. |
| | | | Walnut clay | 12-42 | Fossiliferous sandy marl and limestone. | Not known to yield water in Medina County. |
| | | Trinity | Glen Rose limestone | 800-1,175 | Alternating beds of hard limestone and softer marl. | Yields moderate supplies of potable but rather hard water. |
| | | | Travis Peak formation | 220-650 | Shale, silt, sandstone, and limestone. | Probably contains moderate supplies of water of undetermined quality. |
| | Coahuila (Mexico) | Nuevo Leon and Durango (Mexico) | Sligo formation | 0-208 | Gray limestone, black shale, and sandstone. | Not known to yield water in Medina County. |
| | | | Hosston formation | 0-440 | Red sandstone and shale. Some limestone. | Do. |
| Pre-Cretaceous | | | | 190+ | Hard black lignitic shale. Some anhydrite. | Do. |

groups of the Coahuila series of Mexico. These lowermost Cretaceous formations have been tentatively identified from 4,723 to 5,395 feet in the core log of well I–6–105. The red sandstone of the Hosston formation rests disconformably upon a black shale of probable Pennsylvanian age. An insufficient number of deep wells have been drilled in Medina County to determine the water-bearing properties of the rocks of the Coahuila series. No potable water has been reported from the two wells that penetrate these formations.

### COMANCHE SERIES

The Comanche series in Medina County includes rocks of the Trinity, Fredericksburg, and Washita groups. These rocks consist of limestone, marl, clay, shale, silt, and sandstone and have an aggregate thickness of more than 2,300 feet. They crop out in the northern part of the county.

#### TRINITY GROUP

##### TRAVIS PEAK FORMATION

The Travis Peak formation, the lowest formation of the Trinity group, does not crop out in Medina County. The nearest reported exposures are along the Guadalupe River in the northwestern part of Comal County (George, 1952, p. 16).

The Travis Peak has been encountered in only three wells in the county, all of which have been abandoned and completely or partially plugged. Wells I–1–15, I–2–67, and J–2–15 entered the Travis Peak formation below 2,500 feet. The logs of these wells (table 10) show a series of fine-grained sandstones, limestones, and varicolored shales. Wells I–1–15 and I–2–67 reported water, of undetermined quality, in the formation.

In the past, the cost of drilling to the depth necessary to obtain water from the Travis Peak was prohibitive for ordinary use. An increased demand for water may encourage further exploration of this formation as an aquifer.

##### GLEN ROSE LIMESTONE

The oldest formation exposed in Medina County is the Glen Rose limestone, which crops out in the northern part of the county. The base of the formation is not exposed, but well logs and exposures in adjacent counties show that the Glen Rose grades downward into the Travis Peak formation.

A thickness of 1,175 feet of the Glen Rose limestnoe was penetrated in well I–1–15 in western Medina County. Near the Bandera County line in central Medina County, a thickness of 900 feet has been estimated from surface measurements and the log of well C–9–63. The driller's log of well I–6–105 indicates the Glen Rose to be approximately 1,100 feet thick in the south-central part of the county.

The Glen Rose limestone consists of alternating beds of hard gray limestone and bluish-gray to yellow marl. The limestone is generally dense to finely crystalline, but some beds are granular or composed of reef material. A terrace type of topography has developed on the more easily eroded marl beds in the outcrop area. The marl beds range from a few inches to 15 feet in thickness, whereas the limestone beds range from a foot to 50 feet. The limestone becomes thicker and more massive in the lower portion of the formation.

The lowest exposure of the Glen Rose is near Bandera County in the bed of Hondo Creek. The total exposed thickness, estimated from the bed of Hondo Creek to the base of the Walnut clay, is approximately 650 feet. The formation is composed of alternating beds of limestone and marl. A well-known fossil zone, the *Salenia texana,* is approximately 100 feet above the bed of the creek. This zone was used by George (1952, p. 17–21) as marking an arbitrary dividing line between the upper and lower members of the Glen Rose limestone. The following section of the Glen Rose limestone was measured from the bed of Hondo Creek, 0.1 mile south of Bandera County, to the *Salenia texana* zone, 0.4 mile south of the Bandera County line.

| | *Thickness (feet)* |
|---|---|
| Limestone, dense gray; contains *Corbula texana* Whitney on upper surface of bed | 0.7 |
| Limestone, light-gray, nodular, chalky, with alternating thin beds of shale; contains *Porocystis globularis* (Giebel), *Orbitolina texana* (Roemer), *Nerinea* sp., and casts of large mollusks | 6.5 |
| Limestone, nodular; contains *Salenia texana, Hemiaster* sp., and large mollusks | 3.7 |
| Shale, yellowish-gray; contains *Orbitolina texana* (Roemer) | 4.8 |
| Shale, light-gray; forms flat bench | 3.0 |
| Limestone, yellowish-white, thick-bedded, dense, with calcite veins | 4.1 |
| Limestone, yellowish-white, thick-bedded, massive, with calcite veins | 4.8 |
| Shale, light-yellow, fossiliferous | 1.0 |
| Shale, gray; forms bench | 5.8 |
| Limestone, light-gray, soft | 3.0 |
| Shale, light-gray, arenaceous | 5.8 |
| Marl, yellowish-gray, soft | 17.8 |

| | Thickness (feet) |
|---|---|
| Shale, light- to dark-gray, calcareous, thin-bedded to laminar-bedded; no fossils. Weathered blue-gray | 3.6 |
| Limestone, gray, fine-grained, sandy; argillaceous in bottom 3 inches | .8 |
| Limestone, yellowish-white, fine-grained, sandy, massive | 4.1 |
| Limestone, yellowish-gray, nodular; irregular iron nodules on exposed weathered surface. Contains many fossils | 3.5 |
| Limestone, light-gray, dense, bedded | .9 |
| Shale, light-gray, platy; contains *Orbitolina* | 0.2 |
| Limestone, light-gray to white, dense, massive; contains a few pelecypods | 2.7 |
| Limestone, light-gray, arenaceous, dense, massive | 1.5 |
| Limestone, grayish-brown, massive, dense, crystalline, slightly arenaceous. Top of bed contains tracks of three-toed *Tyrannosaurus* and five-toed *Brontosaurus* | 2.8 |
| Limestone, white, very fossiliferous, partially coquinal; contains *Crassatella, Turritella,* and small pelecypods and gastropods | 7.8 |
| Limestone, light-gray, thin-bedded, and coquina; contains oyster shells | 18.2 |
| Total thickness of section measured | 107.1 |

The Glen Rose limestone contains large numbers of echinoids, rudistids, gastropods, and pelecypods, and a large foraminiferal fauna (Stead, 1951, p. 577), in which the genus *Orbitolina* is especially abundant. Few fossils have original shell material, most of them being found as casts or moulds of the original shells. The following species were collected from a quarry 0.7 mile south of Bandera County on the Hondo-Tarpley highway and have been identified by members of the U. S. Geological Survey: *Salenia texana* Credner, *Porocystis globularis* (Giebel), *Porocystis* sp., *Orbitolina texana* (Roemer), *Idonearca* sp., *Enallaster texanus* (Roemer), *Nerinea* sp., *Tylostoma* sp., *Pecten stantoni* Hill, *Nuculana?*, *Hemiaster* sp.

In the outcrop area of the Glen Rose limestone nearly all the normal or base flow of the streams is supplied by contact springs and seeps which issue from the basal part of the outcropping marl. Some springs issue from solutional openings, but even these are found at definite bedding contacts at the base of a more porous bed. No springs are known to issue along faults in the Glen Rose limestone.

Some water appears to pass from surface streams into the Glen Rose limestone in Medina County, although the volume is probably small compared to losses to the Edwards limestone in the lower reaches of the streams. Surface water has been reported to enter the lower part of the formation in outcrop areas in Bandera, Kendall, and Comal Counties.

Supplies of water sufficient for stock and domestic use are obtainable from wells over most of the outcrop area of the Glen Rose limestone, and, in several places, rather large supplies have been developed. Most of the water is found in sandy marl, thin-bedded arenaceous limestone, and calcareous sandstone. In several wells water has been found in cavernous limestone.

Only one water well taps the lower part of the Glen Rose limestone. Well C–9–63, completed in the lower part of the Glen Rose at 823 feet, is reported to have been pumped at 737 gpm with a specific capacity of 3.7 gpm per foot of drawdown. A sample of water collected from the well (table 12) had 622 ppm of sulfate. The water is being used for supplemental irrigation of feed crops.

The quality of the water varies widely, but generally it is found that the deeper wells yield water that is more highly mineralized than that from shallow wells (table 12). The water that issues as springs from the Glen Rose limestone is similar in quality to the water from shallow wells.

### FREDERICKSBURG GROUP

Overlying the Glen Rose limestone in Medina County are sandy marls and limestones of the Fredericksburg group (fig. 6). The group includes the Walnut clay, the Comanche Peak limestone, and the Edwards limestone. The Comanche Peak and Edwards limestones, shown as a single unit on the geologic map, are similar in lithologic character and water-bearing properties; they constitute a single aquifer, which, for convenience, is designated in this report the "principal aquifer."

#### WALNUT CLAY

The Walnut clay, the lowest formation in the Fredericksburg group, is a sandy marl 4 to 12 feet thick. It lies conformably upon the Glen Rose limestone. The Walnut clay is difficult to identify and map in many areas because of its thinness and its similarity to the underlying Glen Rose limestone. The thinness and persistence of the formation, however, warrant its use as a stratigraphic marker. The presence of specimens of *Exogyra texana* Roemer and *Gryphaea marcoui* Hill and Vaughan and irregular nodules of limestone aid in identifying the formation. In some areas the marl is honeycombed, but the solutional cavities are probably restricted to beds near the surface. No wells in Medina County obtain water from the Walnut clay.

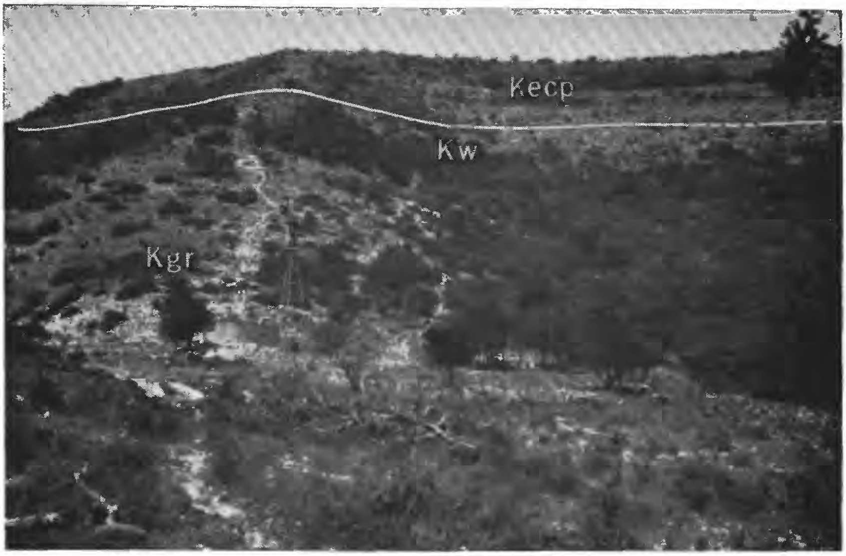


FIGURE 6.—North view of Edwards and Comanche Peak limestones (*Kecp*), undifferentiated, capping the Walnut clay (*Kw*) and Glen Rose limestone (*Kgr*).

### COMANCHE PEAK LIMESTONE

The Comanche Peak limestone overlies the Walnut clay conformably and ranges in thickness from 25 to 45 feet. It is a sandy to argillaceous marl grading upward into a light-gray massive limestone. The marl section contains *Exogyra texana* Roemer, whereas the limestone contains caprinids. The nodular appearance of the formation is its most distinctive characteristic. It is probable that some water, believed to come from the Edwards limestone, actually comes from the Comanche Peak limestone, but, because the wells are uncased, there is no positive evidence regarding the source of the water.

### EDWARDS LIMESTONE

The Edwards limestone lies conformably upon the Comanche Peak limestone and is overlain disconformably by the Washita group. The Comanche Peak limestone and the lower part of the Edwards limestone are very similar in lithologic character, but may be distinguished by their faunas and distinctive weathering.

The Edwards consists of massive beds of light-buff to light-gray hard, dense, fine-grained, brittle limestone, interbedded with occasional layers of marl or thin-bedded limestone. Flint occurs in thin beds, lenticular masses, and nodules at a number of horizons. Siliceous casts and molds of fossils are commonly found in the flint or chert nodules. The flint or chert ranges in color from light-gray to black and has a white spongy, weathered surface, and it is not known to occur in any other formation in the area. A cream- to gray-colored earthy, porous limestone containing *Ostrea* fragments is commonly found at the top of the formation. Drillers refer to this stratum as the "Dobie" zone and report that it contains traces of "dead oil" or asphalt.

The electrical properties of the Edwards limestone are illustrated in the partial electric log of well J–4–71 (fig. 7). The water in the Edwards limestone in this well was reported to be highly mineralized. The electric log, therefore, may not be characteristic of the Edwards limestone elsewhere.

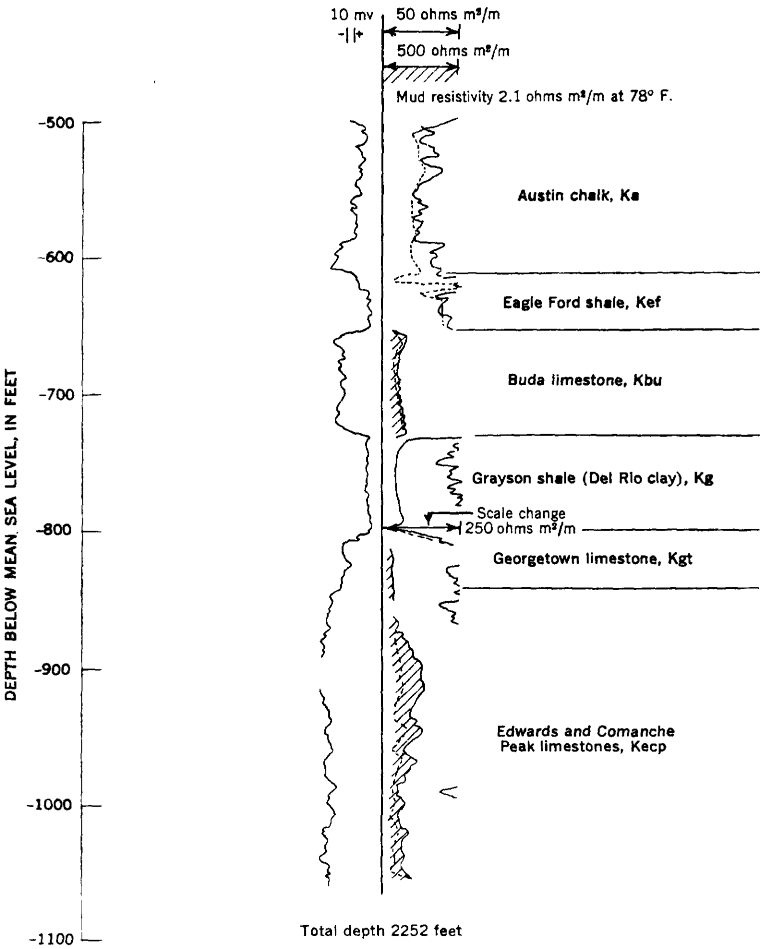


FIGURE 7.—Partial electric log of well J–4–71 illustrating the electrical properties of the Eagle Ford shale; Buda limestone; Grayson shale (Del Rio clay); Georgetown limestone; and Edwards and Comanche Peak limestones, undifferentiated. Owner: L. M. Samuels; driller: F. M. Burkett.

Numerous caves have been found in the outcrop area of the Edwards limestone, especially along the southern margin of the plateau. A striking example is Bat Cave, located on a bluff overlooking the west branch of Verde Creek. The cave has four or more levels, the entrance room being approximately 30 by 180 feet and 90 feet high. Woodard Cave, west of Seco Creek, has a vertical entrance or sinkhole about 30 feet long and 18 feet wide and extends downward a distance of approximately 190 feet. The entrance and the underlying chambers are elongated in the direction of the jointing, which is about N. 60° E. The water in the principal reservoir probably is contained in caverns and solutional channels similar to those near the surface. Wells I–1–2, I–1–7, and I–2–23, which are from 4 to 6 miles downdip from Woodard Cave, suck and blow air, indicating a cavernous condition.

The Edwards limestone is generally too hard to yield whole specimens of fossils that can be identified, although several distinctive types occur in the less indurated thin-bedded limestone and shale members. The most common fossils found are rudistids of the genera *Toucasia, Monopleura,* and *Requienia,* and other reef-dwelling fossils such as *Caprina, Phacoides,* and *Pecten.* Siliceous sponges (pl. 12) were found in massive Edwards limestone near well J–1–20.

The Edwards limestone constitutes the principal part of the most important ground-water reservoir in Medina County, designated in this report as the "principal aquifer." It supplies water for public supply, industry, irrigation, and domestic and stock use in more than half the county. The recharge, discharge, and movement of the water in the reservoir and the extent to which it is developed are discussed in more detail under the heading "Occurrence and movement of ground water."

### WASHITA GROUP

#### GEORGETOWN LIMESTONE

The Georgetown limestone disconformably overlies the Edwards limestone. It is similar to the Edwards in lithologic character and topographic expression but can be distinguished by its many fossils. The Georgetown limestone generally contains more detrital material than the Edwards limestone. It is easily separated from the overlying Grayson shale (Del Rio clay) by the difference in lithologic character and fossil content.

In Medina County, the Georgetown consists of a dense yellowish-white massive to thick-bedded limestone, 20 to 50 feet thick. The upper section has thin beds of argillaceous limestone and marl containing a characteristic fauna. The following species

FIGURE 8.—Fossil sponges in Edwards limestone 5.1 miles northwest of Rio Medina.

were collected from a yellowish-gray marl 3 feet below the base of the Grayson shale (Del Rio clay) at a locality 16 miles north-northwest of D'Hanis in the bed of Seco Creek, a little more than 1 mile north of the Hondo-Utopia road: *Kingena wacoensis* (Roemer), *Turrilites brazoensis* Roemer, *Stoliczkaia uddeni* Bose, and *Hemiaster* sp.

Outcrops of the Georgetown limestone are scattered throughout northwestern and north-central Medina County. In other areas the Georgetown limestone has been faulted out of sight, as shown on plate 2.

No wells in Medina County obtain their principal water supply from the Georgetown limestone. Drillers have reported small amounts of sulfur water, but no wells have been completed in the formation. The Goergetown may, however, form a part of the principal aquifer in some areas.

### GRAYSON SHALE (DEL RIO CLAY)

The Grayson shale, formerly known as the Del Rio clay, conformably overlies the Georgetown limestone and occurs in the same outcrop areas in the county. It consists of 35 to 95 feet of bluish-green clay which weathers yellow brown. *Exogyra arietina* Roemer, a fossil shell shaped like a ram's horn, is characteristic of the formation and is found in well cuttings and on the surface. Aggregates of these shells form limestone beds, 3 to 4 inches thick, interspersed in the lower clayey section. The upper clay has fewer fossils and is sandier than the lower section. Thin beds of sandy limestone containing pyrite nodules are common in the upper part of the clay.

The electrical properties of the Grayson shale are illustrated in the partial electric log of well J–4–71. (See fig. 7.) The Grayson is a relatively tight shale containing several thin beds of sandstone and limestone.

The Grayson shale forms a characteristic slope which is arcuate in cross section below the protecting Buda limestone. The brownish-yellow clay weathers to a dark-brown or black soil. Local ranchers and farmers take advantage of the comparative impermeability of the clay by constructing surface reservoirs in its outcrop area. The Grayson shale is not water bearing in Medina County. Instead, it serves as an upper confining bed in the artesian area of the principal aquifer.

#### BUDA LIMESTONE

The Buda limestone, uppermost formation of the Comanche series, lies conformably on the Grayson shale. It is a very fine-grained dense massive light-gray to pink limestone. (See table 3.) The limestone breaks with angular or conchoidal fracture when struck with a hammer; fracture surfaces display a porcelaneous texture, red and black specks, and numerous small veinlets of crystalline calcite. In some areas the Buda limestone may be confused with some brittle, porcelaneous buff-colored beds in the Georgetown limestone. The presence of *Kingena wacoensis* (Roemer) in the Georgetown limestone aids in distinguishing these beds of similar texture.

The electrical properties of the Buda limestone are illustrated in the partial electric log of well J–4–71. (See fig. 7.)

The Buda limestone is relatively resistant to erosion and crops out in fault scarps, bluffs, and low hills. A few outcrops are honeycombed, but the majority are massive, having nodular surfaces. Several specimens of *Budaiceras* and *Pecten roemeri* Hill were identified in the limestone. Although the formation is fossiliferous, most of the fossils are in the form of casts or are replaced by crystalline calcite.

The thickness of the Buda limestone is between 35 and 55 feet in its outcrop area. Well logs indicate that the formation increases in thickness to the south. Although well drillers have reported that the Buda limestone produces small quantities of water in local fracture zones near the major faults, no wells are known to have obtained water from the formation in Medina County.

### GULF SERIES

The Gulf series in Medina County is represented by the Eagle Ford shale, the Austin chalk, the Anacacho limestone, the Corsicana marl, and the Escondido formation.

#### EAGLE FORD SHALE

The Eagle Ford shale lies upon the Buda limestone unconformably and underlies the Austin chalk. In Medina County there is no appreciable discordance in dip between the Buda limestone and Eagle Ford shale, but there is marked evidence of an unconformity. In the west bank of Hondo Creek on Jim Anderson's ranch, 6 miles north of Hondo, the basal bed of the Eagle Ford consists of a sandy yellow shale containing rounded pebbles and granules of Buda limestone, resting on an uneven nodular surface of the Buda.

The lower part of the Eagle Ford shale consists of a light-yellow to gray laminated siltstone and sandstone and thin beds of brownish limestone. The overlying beds are increasingly calcareous, the upper part of the formation consisting of a light-buff flaggy limestone. The total thickness of the Eagle Ford shale in the outcrop is between 15 and 30 feet, but logs of wells in the southern part of the county show a thickness of as much as 160 feet.

The limestone part of the formation is very fossiliferous, containing *Acanthoceras stephensoni* Adkins, *Inoceramus labiatus* Schlotheim, *Ostrea, Pecten,* shark's teeth, and fish scales.

The electrical properties of the Eagle Ford shale are illustrated in the partial electric log of well J–4–71. (See fig. 7.) The Eagle Ford is a dense sandy shale. It is not known to be water bearing in Medina County.

#### AUSTIN CHALK

In Medina County, the Austin chalk consists of 225 to 350 feet of limestone, chalk, marl, and thin beds of clay. The chalk lies unconformably on the Eagle Ford shale. Stephenson (1929, p. 1323–1334) shows that the unconformity is widespread in Texas. There are many good exposures of the formation, but none shows the complete section (fig. 10).

The lowermost beds of the Austin chalk consist of light-gray to buff dense thin-bedded limstone, very similar in lithologic character to the upper beds of the Eagle Ford shale, although the

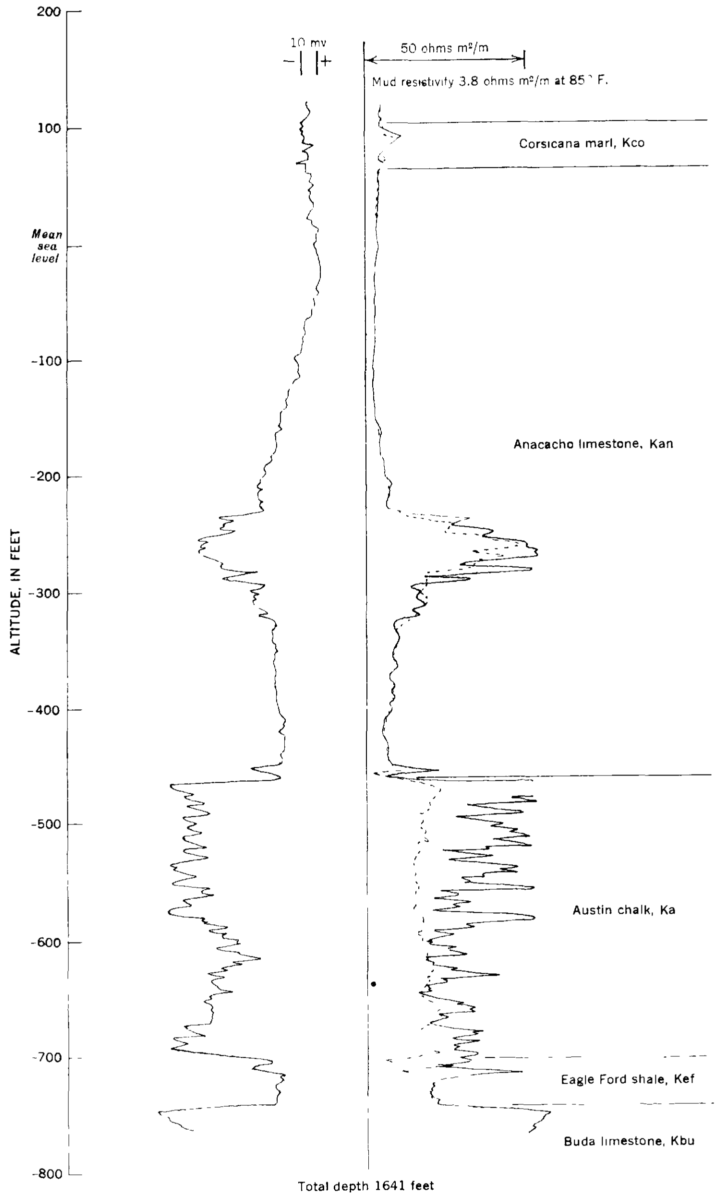


FIGURE 9.—Partial electric log of well J-4-49 illustrating the electrical properties of the Anacacho limestone and the Austin chalk. Owner: E. J. Bendele; driller: White Drilling Co.

Austin chalk contains less sand. *Inoceramus subquadratus* Schluter is commonly found in the lower beds of the Austin. Scattered grains of glauconite are found in the limestone.

FIGURE 10.—View of quarry in Austin chalk, looking east, near Verde Creek.

Approximately 75 feet above the base of the Austin chalk, the dense limestone grades into a massive soft, chalky impure light-gray to yellowish-white limestone. There are several beds of marl and clay in this medial section, which is 150 to 200 feet thick and is very fossiliferous. Some of the fossils found in the section are *Mortoniceras minutum* (Lasswitz), *Hemiaster texanus* Roemer, *Pecten bensoni* Kniker, *Inoceramus* sp., and *Gryphaea aucella* Roemer. An indurated conglomerate of *Gryphaea aucella* shells, 3 to 4 feet thick, forms a prominent horizon in the upper part of the Austin chalk. Nodular and dumbbell-shaped concretions of pyrite and marcasite are commonly found in the chalky limestone.

The uppermost part of the Austin chalk consists of massive white chalky limestone and alternating layers of marl and chalk. In most places this part of the formation contains the fossils *Exogyra tigrina* Stephenson, *Parapachydiscus* sp., *Baculites*, *Ostrea centerensis* Stephenson, and *Inoceramus undulato-plicatus* Roemer.

The electrical properties of the Austin chalk are illustrated in the partial electric log of well J–4–49. (See fig. 9.)

In Medina County, 9 wells are known to obtain water from the Austin chalk. Only 1 of the wells, I–3–79, produces more than 3 gallons a minute. It is near a zone of faulting and probably obtains most of its water through local recharge from gravel of the overlying Leona formation. Other wells have very small yields of water containing large amounts of hydrogen sulfide. The sulfur probably is derived from the pyrite and marcasite in the formation. There is a large solutional cavity or cave east of Hondo Creek, 8 miles north of Hondo, but it is the only known evidence of subsurface solution in the formation in Medina County.

### ANACACHO LIMESTONE

The Anacacho limestone overlies the Austin chalk unconformably and is equivalent in age to the Taylor marl of Bexar County. Stephenson (1927, p. 9) states, "In eastern Medina County and in western Bexar County, the westward-thinning body of Taylor marl overlaps the eastward-thinning tongue-like extension of the Anacacho limestone." To simplify mapping, the small amount of the Taylor marl in the eastern part of the county was included in the Anacacho limestone.

The Anacacho limestone varies in thickness from 240 feet in eastern Medina County to 450 or 500 feet in the western part of the county. The formation consists of argillaceous light-yellow, blue-gray, or buff thick-bedded limestone; light-gray chalk; light-yellow to blue marl; and sandy yellow clay. The formation is very fossiliferous, the lowermost part consisting of fragments of fossil shells and many whole shells. This stratum is coarse grained and indurated and suggests near-shore deposition. Several massive beds of the coarse-grained detrital limestone are impregnated with asphalt, the most noteworthy exposure being in the bed of Seco Creek, 2 miles north of D'Hanis. The fossils *Pycnodonta vesicularis* (Lamarck), *Hoplitoplacenticeras* aff. *H. vari*, and *Nucleolites wilderae* Ikens are common in the lower strata.

The following section of the Anacacho limestone was measured along Seco Creek from Haby Crossing fault northward to Fort Lincoln, 1.8 to 2.0 miles north of D'Hanis.

| | *Thickness (feet)* |
|---|---|
| Marl, light-yellow, thin-bedded, glauconitic; contains *Plicatula* sp. | 9.6 |
| Marl, light-gray, thin-bedded, glauconitic; contains *Salenia whitneyi* Ikins and numerous bryozoa | 2.3 |

| | *Thickness (feet)* |
|---|---|
| Limestone, light-yellow, marl; contains large numbers of *Pycnodonta vesicularis* (Lamarck) | 3.0 |
| Limestone, chalky, light-yellow, glauconitic, massive; contains *Pycnodonta vesicularis* (Lamarck), *Venericardia*, and bryozoa | 4.7 |
| Chalk, massive, white, indurated, sparsely fossiliferous | 5.1 |
| Marl, yellow to gray, glauconitic | .6 |
| Limestone, light-gray, thin-bedded, dense; contains *Pycnodonta vesicularis* (Lamarck) and *Exogyra spinifera* Stephenson | 2.4 |
| Limestone, light-yellow to light-gray, massive, large-grained; composed of indurated fragments of fossils, predominantly echinoids | 4.5 |
| Limestone, gray, massive; weathers light yellow, is indurated, contains traces of asphalt | 4.8 |
| Limestone, white, thin-bedded, hard, contains *Nucleolites wilderae* Ikins and a few small baculites | 2.0 |
| Limestone, light- to dark-gray, massive, indurated; composed of fossil fragments cemented with asphalt | 15.5 |
| Total | 54.5 |

The middle strata of the Anacacho limestone consist of chalky, fine-grained soft white to light-gray limestone and thinner beds of gray marl. The proportion of marl increases from west to east. Fossils in the middle portion of the Anacacho include *Parapachydiscus streckeri* Adkins, *Exogyra ponderosa* Roemer, *Baculites* sp., *Inoceramus* sp., *Bostrychoceras* aff. *B. polyplocum* (Roemer), *Sphenodiscus lenticularis* Owen, *Scaphites*, and *Cardium (Pachycardium)* sp.

In eastern Medina County, near Rio Medina, the upper strata of the Anacacho limestone consist of massive- to thin-bedded fine-grained light-gray to buff fossiliferous limestone. The marl beds, prevalent in other parts of the county, have merged into limestone. The limestone is well exposed along San Geronimo Creek near Riomedina. (See fig. 11.) The most common fossils are: *Pycnodonta vesicularis* (Lamarck), *Baculites taylorensis* Adkins, *Scaphites aricki* Adkins, *Pseudocompsoceras* sp., *Inoceramus* sp., *Anomia* sp., *Exogyra ponderosa* Roemer, *Eutrophoceras planoventer* Stephenson, and *Exogyra costata spinosa* Stephenson.

A dark- to yellowish-gray massively bedded bentonitic clay overlies the Anacacho limestone in the easternmost part of Medina County. The clay probably is a westward extension of the Taylor marl. The fossils *Exogyra ponderosa* Roemer and *Dentalina alternata* (Jones). are common. In the western part of the county, the uppermost beds of the Anacacho consist of fine-grained white

FIGURE 11.—Anacacho limestone in west bank of San Geronimo Creek, 1.2 miles south of Riomedina.

to pinkish-gray fossiliferous chalky limestone and several beds of light-gray marl and darker gray shale.

The following section was measured from the bed of Seco Creek to the north-facing bluff at the James Amberson ranch, 2.7 miles north of D'Hanis.

| | *Thickness (feet)* |
|---|---|
| Corsicana marl: | |
| Marl, silty, irregularly bedded, calcareous, yellow to light-brown; indurated | 13.4 |
| Marl, thin-bedded, soft, silty, light-brown; stained with iron | 2.7 |
| Marl, irregularly bedded, calcareous, dense, silty, yellowish gray | 3.5 |
| Marl, nodular-bedded, calcareous, light-gray to brown, silty, with iron stains | 2.8 |
| Shale, thin-bedded, variegated gray, yellow, and bluish-gray, with thin, ferruginous layers | 5.4 |
| Total | 27.7 |

| | Thickness (feet) |
|---|---|
| Disconformity. | |
| Anacacho limestone: | |
| Limestone, arenaceous, thin-bedded, light yellow, indurated, with *Diploschizia cretacea minor* Stephenson, *Terebratulina filosa* Conrad, *Scaphites porchi* Adkins, also *Turitella, Ostrea, and Lima* | 0.8 |
| Limestone, dense, arenaceous, thin bedded, light yellow to gray, with *Echinocorys texanus* (Cragin), *Pycnodonta vesicularis* (Lamarck) and *Inoceramus* sp. | 6.7 |
| Limestone, dense, 5 inches to 2 feet, thick beds, arenaceous, slightly glauconitic, light yellow, with *Bostrychoceras polyplocum* Roemer and *Inoceramus* | 11.2 |
| Marl, chalky, yellowish-white, irregularly bedded, arenaceous, slightly glauconitic | 1.0 |
| Limestone, dense, light yellow, thin-bedded, glauconitic, silty | 2.1 |
| Marl, soft, light brown, massive, slightly glauconitic | 3.6 |
| Total | 25.4 |

The electrical properties of the Anacacho limestone in well J–4–49 are shown in figure 9. The electric log shows a section of clay near the top grading downward into limestone.

Few wells are known that draw water from the Anacacho limestone. Sayre (1936, p. 56) found several wells north of Castroville producing water from the formation, but all these wells have since been deepened or abandoned. The circulation of water in the limestone part of the formation is restricted to the area of surface drainage.

### NAVARRO GROUP

#### CORSICANA MARL

The Corsicana marl is a relatively thin and well-defined unit cropping out in a narrow belt along the western edge of the southwestward-plunging Culebra anticline. It overlies the Anacacho limestone unconformably. The formation has been concealed by the overlapping Escondido formation and, in the central part of Medina County, by faulting. A silty marl, west of Seco Creek, probably is the equivalent of the Corsicana marl.

Stephenson (1941, p. 23) mapped the Corsicana marl in eastern Medina County and described the fauna at several localities. The fauna can be distinguished from that of the superjacent Escondido by its larger number of species and individuals. The following species were identified by Stephenson in 1951 in the Corsicana marl cropping out along the Medina canal, 2.5 miles northwest of Riomedina: *Lima acutilineata texana* Stephenson, *Exogyra costata* Say, *Gryphaea mutalibis* Morton, *Plicatula mul-*

*licaensis* Weller, *Trigonia castrovillensis* Stephenson, *Crenella serica* Conrad, *Lima? sayrei* Stephenson, *Hemiaster bexari* Clark, *Cardium (Granocardium) tippanum* (Conrad), *Pecten (Neithea) bexarensis* Stephenson, *Baculites* sp., *Indonearca* sp., *Crassatella* sp.

The strata of the Corsicana that crop out north of D'Hanis suggest a deposition nearer to shore than the Corsicana marl near Castroville. A section measured from the bed of Seco Creek to the adjacent north-facing bluff shows calcareous silty marl and thin-bedded shale unconformably overlying the Anacacho limestone. The following species, which are found in the Corsicana marl near Castroville, have been observed in the outcrops of the Corsicana in the Seco Creek section: *Crenella serica* Conrad, *Trigonia castrovillensis* Stephenson, *Bellifusus* sp., *Pecten* sp.

Brown (1952, p. 14) found a large foraminiferal fauna of Corsicana age in the lower strata of the Navarro group of the Seco Creek area.

Beds of shale are intercalated in the Corsicana marl near D'Hanis. The shale is a brackish-water deposit suggestive of the Olmos formation of the Eagle Pass area. It is possible that the Corsicana passes laterally into the coal-bearing Olmos formation, as both formations occur in the same stratigraphic position—that is, they are underlain by equivalents of the Taylor marl and overlain by the Escondido formation.

The electrical properties of the Corsicana marl in well I–6–94 are shown in figure 12. The Corsicana is a relatively dense arenaceous clay and marl which is not water bearing. No wells are known to produce water from the Corsicana marl in Medina County.

### ESCONDIDO FORMATION

The highest formation of the Navarro group in Medina County, the Escondido, is exposed at the surface in a broad east-west belt ranges from about 550 feet in the southwestern part of the county in the central part of the county. The thickness of the formation to 900 feet in the southeastern part.

According to Stephenson (1941, p. 23), the Corsicana marl is overlapped and concealed by the Escondido formation. Although the two formations are separated by a sharp change in lithologic character, the only evidence of an unconformity observed is the presence of a phosphatic bed, one-third of an inch thick. This contact is 2 feet above the bed of *Gryphaea mutabilis* Morton in the Corsicana marl and is 0.4 mile west of Medina River and 5.6 miles north of Castroville.

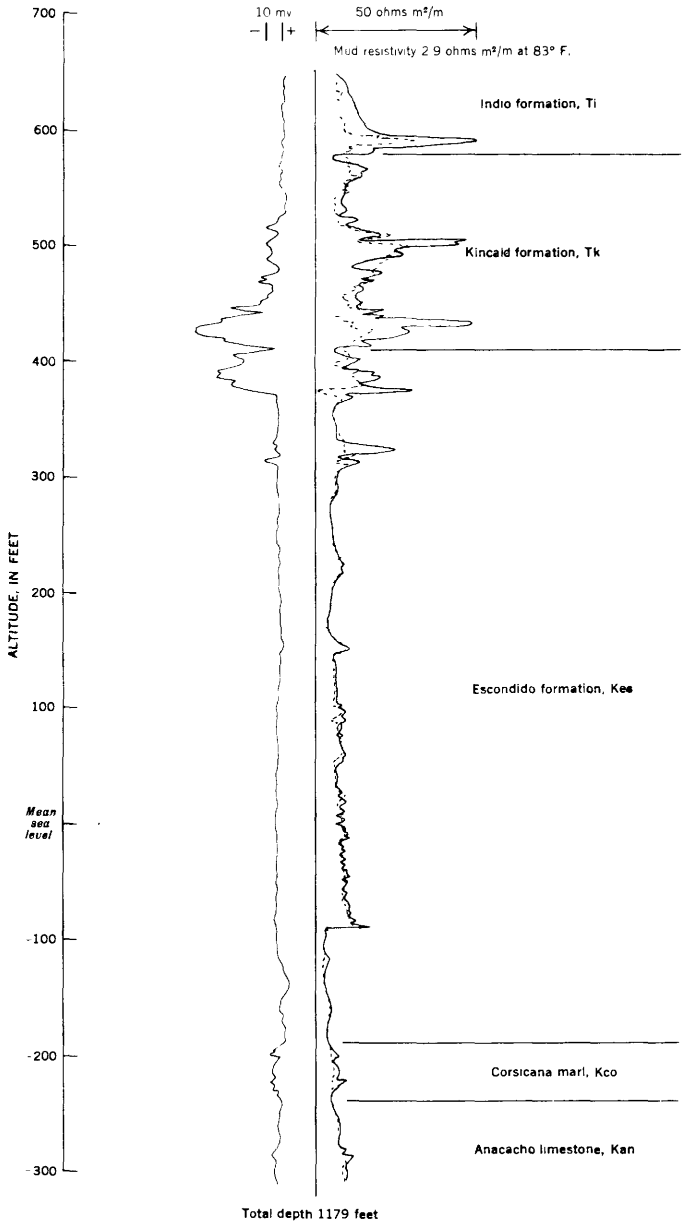


FIGURE 12.—Partial electric log of well I-6-94 illustrating the electrical properties of the Escondito formation and the Corsicana marl. Owner: H. E. Mofield; driller: Mowinkle and Nessley.

A major unconformity separates the Escondido from the overlying Kincaid formation (Stephenson, 1915, p. 159). There are no notable irregularities in the upper surface of the Escondido formation, but erosion is indicated by the absence of several beds. A thin layer of sandstone-pebble conglomerate marks the contact of the formation.

A conspicuous fossil zone in the upper part of the Escondido formation occurs approximately 12 feet below the base of the Kincaid formation. At one locality, Rock Crossing on Hondo Creek, this zone consists of 15 feet of very fossiliferous siltstone and hard arenaceous limestone (fig. 13). The limestone bed contains numerous fossils of *Sphenodiscus pleurisepta* (Conrad), *Ostrea* sp., and gastropods. The upper surface of the *Sphenodiscus* bed is shown in figure 14.

In the western part of Medina County the Escondido consists of flaggy gray calcareous to argillaceous fine-grained sandstone, thin-bedded buff siltstone, gray to bluish-gray shale, and layers or lenses of sandy marl and limestone. The limestone beds consist of conglomerates of fossil shells cemented with arenaceous limestone.

The following section of the Escondido formation was measured on the west side of the D'Hanis Brick and Tile Co.'s clay pit, 1.1 miles northwest of D'Hanis.

| | *Thickness (feet)* |
|---|---|
| Siltstone, yellow, ferruginous, soft, thin-bedded | 1.1 |
| Limestone, silty, yellowish-brown, dense, thin-bedded to irregularly bedded; contains shark's teeth, *Sphenodiscus* sp., and pelecypod casts | .5 |
| Shale, silty, light-gray, thin-bedded | .9 |
| Sandstone, hard, fine-grained, thin-bedded, reddish-yellow, ferruginous | 1.6 |
| Siltstone, yellowish-brown, slightly ferruginous, soft | 5.0 |
| Shale, silty, yellowish-brown, ferruginous; with selenite | 6.7 |
| Siltstone, massive-bedded, slightly ferruginous; with fossil ripple marks and burrows | 1.2 |
| Shale, silty, yellowish-brown, ferruginous; contains shark's teeth and *Donax* | 2.8 |
| Shale, silty, bluish-gray, thin-bedded, slightly indurated | 9.0 |
| Shale, silty, massive-bedded, yellowish-brown; with selenite | 11.2 |
| Siltstone, light-gray, ferruginous, thin-bedded | 1.6 |
| Shale, bluish-gray, massive-bedded, silty, indurated | 15.0 |
| Total | 56.6 |

A lithologic and paleontologic change takes place in the Escondido between the eastern and western parts of Medina County.


FIGURE 13.—Limestone bed in upper part of the Escondido formation (Kes), approximately 12 feet below the base of the Kincaid formation (*Tk*), at Rock Crossing of Hondo Creek.

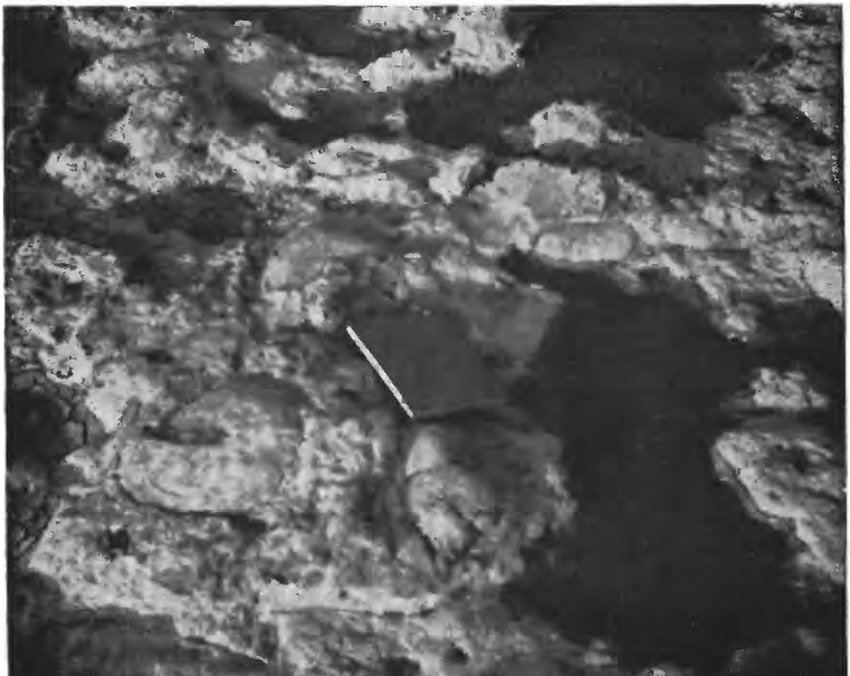

FIGURE 14.—*Sphenodiscus pleurisepta* (Conrad) horizon at upper surface of limestone bed.

The formation becomes increasingly arenaceous to the west, whereas the shale and limestone increase in thickness to the east.

The Escondido is equivalent to the Kemp clay in northeastern Bexar County. A gradual lithologic change toward the west merges the two formations. Stephenson (1941, p. 27) has arbitrarily separated the formations in western Bexar County. Compared with the Kemp, the Escondido is a more strongly lithified shaly clay, increasingly arenaceous to the west, and it contains prominent interbedded strata of dense calcareous sandstone. The lateral change of facies is reflected also in the fauna. The Escondido contains fossils not known in the Kemp and lacks some of the fossils common in the Kemp.

The electrical properties of the Escondido formation as illustrated by the partial electric log of well I–6–94 are shown in figure 12. The formation in this area consists of thin beds of fine-grained sandstone and thickly to massively bedded clay and shale.

The water-bearing sands and shales of the Escondido formation generally are not continuous or very thick. The thickest and most persistent sands are in the western part of the county, the thinnest in the east. The most important supplies of water in the formation are found in the western part of the county. The sandstones are interbedded with clay and shale, and the water is under artesian pressure except at the outcrop.

The waters in the Escondido formation have a considerable range in chemical composition. The water obtained from wells in the outcrops of the lower sandy beds is generally of good quality and suitable for domestic use. Water from the upper beds is generally of poorer quality, containing excessive amounts of chloride and sulfate, and some wells produce small amounts of asphalt.

### TERTIARY SYSTEM

The close of the Cretaceous period was marked by elevation of the land and retreat of the sea throughout central Texas. Early Tertiary time began with a new transgression of the sea. A prominent unconformity and break in the megafaunal succession marks the hiatus between the two periods of deposition.

### MIDWAY GROUP

#### PALEOCENE SERIES

The Midway group includes the Kincaid and Wills Point formations. Gardner (1933, p. 77) stated that there were no recognizable outcrops of the Wills Point in Medina County.

### KINCAID FORMATION

The Kincaid formation overlies the Escondido formation unconformably. The base of the Kincaid is marked by phosphate nodules, casts of shells, shark's teeth, and reworked sands and pebbles of the Escondido formation. In Medina County, the exposed thickness of the Kincaid ranges from 30 to 75 feet. Logs of wells in the southern part of the county indicate that the formation thickens in the direction of dip.

Outcrops in eastern Medina County are of a glauconitic, sandy greenish-gray shale overlain by an impure glauconitic, sandy yellowish-gray limestone containing pyrite nodules. *Venericardia bulla* Dall, *Venericardia crenaea* Gardner, *Cucullaea macrodonta* Whitfield, and *Membranipora* are the most characteristic fossils of the facies.

A slightly different facies is exposed in the western part of the county. Here it is an impure gray arenaceous limestone, locally containing small balls of clay, and a yellowish-gray glauconitic, calcareous, sandy clay. Concretions consisting of dense sandy limestone and brown crystalline calcite are common. Fossil shells are often found in the concretions. The most common fossils found in the area are *Hercoglossa vaughani* Gardner, *Venericardia crenaea* Gardner, and *Cucullaea texana* Gardner. On the basis of the facies change, Liddle (1918, p. 74–75) divided the Midway group into the Elstone and Squirrel Creek formations. Gardner (1933, p. 76) stated that both facies belong in the Kincaid formation.

The electrical properties of the Kincaid formation are illustrated in the partial electric log of well I–9–27 shown in figure 15.

No wells are known that produce water from the Kincaid formation in Medina County.

## EOCENE SERIES

### WILCOX GROUP

The Wilcox group overlies the Midway group and is overlain disconformably by the Claiborne group. Inasmuch as the Wills Point formation is missing from the outcrop of the Midway group, the basal Wilcox rests disconformably on the Kincaid formation. The Wilcox group is represented by the Indio formation in Medina County.

### INDIO FORMATION

At the present state of knowledge, the various divisions of the Wilcox group recognized elsewhere cannot be distinguished in this area (Stenzel, 1951, p. 2625). Trowbridge (1923, p. 90)

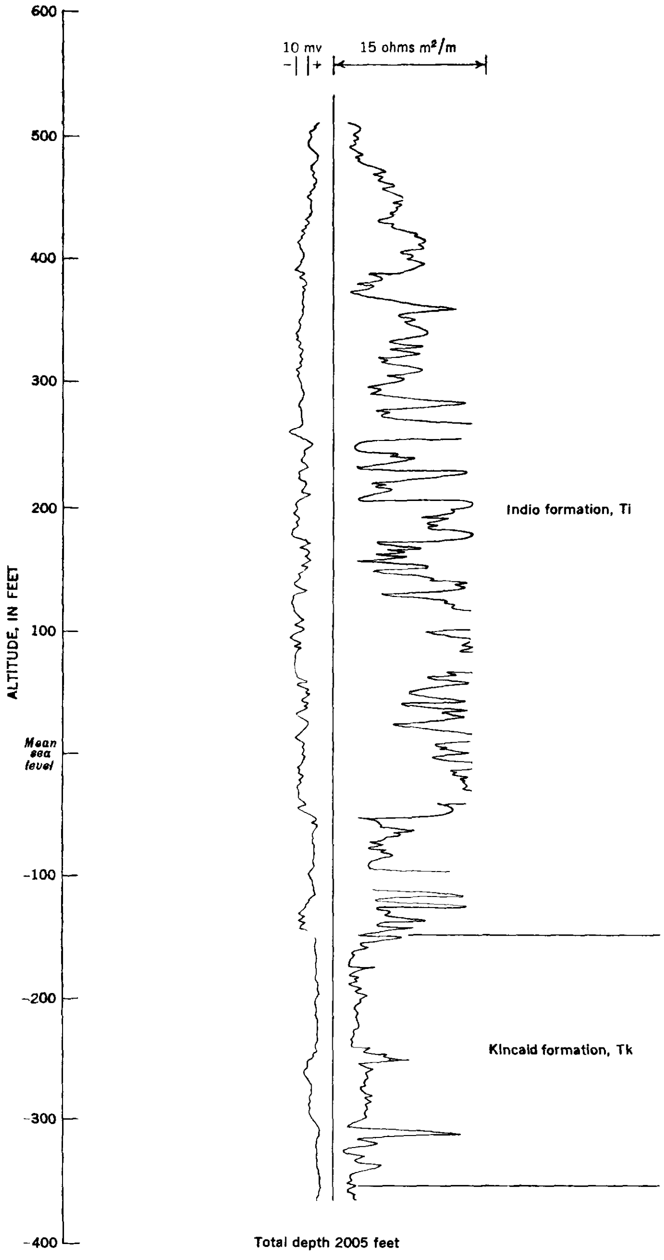


FIGURE 15.—Partial electric log of well I-9-27 illustrating the electrical properties of the Indio and Kincaid formations. Owner: Mrs. T. A. Wilson; driller: Clopton and Mitchell.

named the sandstones and shales overlying the Midway in Maverick and Dimmit Counties, Tex., the Indio formation. This name was used by Liddle (1918, p. 75) and Sayre (1936, p. 60) as a formation of Wilcox age overlying the Midway group and underlying the Carrizo sand. The basal strata of the Indio consist of thin-bedded to laminar varicolored fine-grained sandstones, carbonaceous laminar shales, and thin-bedded to laminar siltstones. Thin to laminar beds of silt, sand, and clay are exposed in a quarry 10.8 miles south of D'Hanis near East Squirrel Creek and are shown in figure 16. The Indio formation ranges in thickness from 440 to 710 feet in Medina County.

FIGURE 16.—Thin- to laminar-bedded silt, sand, and clay of the Indio formation in quarry 10.8 miles south of D'Hanis.

The Indio formation consists chiefly of thin-bedded argillaceous sandstone and laminated arenaceous shale. Locally it contains thick beds of clay and sandstone and thinner beds of lignite and calcareous sandstone. Many of the shale and sandstone beds are lenticular, and some of the sandstone is crossbedded.

Calcareous and arenaceous concretions are common in the middle part of the Indio formation (fig. 17). A gray silty laminated clay, approximately 90 feet above the top of the Kincaid formation, contains dense gray calcareous sandstone lenses 3 to 15 feet long and a few inches to 5 feet thick. The lenses contain pyrite replacements of whole and fragmental parts of leaves, and small clay inclusions. The following species were collected from a standstone lens exposed in a road cut on the Dunlay-Biry highway, 1.5 miles north of Biry, and have been identified by R. W. Brown of the U. S. Geological Survey: *Laurus wardiana* Knowlton, *Dinnamomum postnewberryi* Berry, *Terminalia hilgardiana* (Lesquereux) Berry, and fragments of other dicotyledonous leaves.

FIGURE 17.—Lenses of sandstone in the lower part of the Indio formation, showing concretionary structure.

The following section of the lower part of the Indio formation was measured in a west-facing bluff east of East Squirrel Creek, about 10 miles south of D'Hanis.

| | Thickness (feet) |
|---|---|
| Siltstone, dark-yellow, thin-bedded; contains thin layers of limonite | 5.1 |
| Siltstone, light-gray, laminar-bedded, contains limonite nodules | 2.1 |
| Shale, light-bluish-gray, laminar-bedded, contains lenses of light-gray sandstone 0.5 to 3.0 feet thick | 5.6 |
| Sandstone, light-gray, irregular to massively bedded. Contains round limonite concretions 0.03 to 0.2 foot in diameter; lenses of dense blue-gray calcareous sandstone, 5 to 7 feet in diameter, occur in the softer sandstone | 10.4 |
| Shale, drak-bluish-gray, laminar-bedded | .3 |
| Sandstone, cross-bedded, yellow, white, and blue | 2.8 |
| Unconformity, angular. | |
| Siltstone, light-gray; with alternating laminar-bedded layers of yellow sandstone | 4.3 |
| Sandstone, yellow; with alternating laminar-bedded layers of light-gray siltstone | 2.2 |
| Sandstone, white | .7 |
| Shale, silty, light-gray and yellow, laminar-bedded | .6 |
| Shale, dark-blue to dark-gray, bentonitic; contains carbonaceous seams | .6 |
| Siltstone, light-gray, laminar-bedded | .5 |
| Sandstone, light-orange; thick-bedded ledge former | 1.4 |
| Sandstone, light-yellow, thin-bedded | .5 |
| Sandstone, light-orange, laminar-bedded | .3 |
| Sandstone, light-orange, argillaceous | .15 |
| Sandstone, light-orange, laminar-bedded, argillaceous | .4 |
| Sandstone, yellowish-orange, thick-bedded, medium-grained; very dense, contains hollow iron nodules | 1.5 |
| Sandstone, yellowish-orange; bedding ½ to 2 inches thick, dense | .8 |
| Sandstone, fine-grained, light-gray, dense | .7 |
| Sandstone, thin-bedded; alternating yellow and white | .9 |
| Sandstone, white, soft | .6 |
| Concealed to top of Kincaid formation exposed in East Squirrel Creek | 24.5 |
| Total | 66.45 |

The upper part of the Indio formation consists of a heterogeneous series of thin-bedded sandstones, laminar-bedded silty clays, thin beds and lenses of lignite, and a few limonite concretions. The proportion of sand increases toward the top of the formation. Drillers identify this section by the presence of lignite and pyrite in the well cuttings and refer to it as the "salt and pepper" formation.

The electrical properties of the Indio formation are illustrated in the partial electric log of well I–9–27 shown in figure 15. Drillers' logs of wells in this area indicate that the Indio consists of fine-grained sandstone, siltstone, shale, and lignite. The water is highly mineralized.

Lignite was mined in 1900 from several surface exposures in the upper part of the Indio formation. These mines have been closed for many years and their workings filled with debris. The following section was measured by Dumble (1903, p. 925) in the Riley mine, 2¼ miles west of Lytle.

| | *Thickness (feet)* |
|---|---|
| Clay, yellow, laminated | 15 |
| Sand, gray, micaceous, medium-grained, laminated | 20 |
| Sand, yellow, micaceous, with ferruginous streaks | 20 |
| Sand, yellowish-gray, laminated, micaceous with streaks of black clay or lignite | 30 |
| Lignite | 5–8 |
| Clay, gray | 10 |

Ground water obtained from the Indio formation is variable in quality and quantity. Wells yield 2 to 500 gpm (table 9) of water ranging in dissolved-solids content from 348 to 11,200 ppm (table 12).

The varied lithologic character and lenticular shape of many of the sand beds make it difficult to determine the lateral extent of any given aquifer in the Indio formation. In general, however, wells penetrating the upper section of the formation yield more water than those lower in the section.

### CLAIBORNE GROUP

#### CARRIZO SAND

The Carrizo sand crops out in the southern part of Medina County in a belt extending from the Atascosa County line southwest to the Frio County line (pl. 1). The formation lies disconformably upon the underlying Indio formation and is 230 to 330 feet thick.

The Carrizo sand consists chiefly of friable light-gray to dark-red medium-grained quartz sandstone. Clay or shale occur near the middle of the formation as thin lenticular beds or as lumps 2 to 3 inches in diameter. Locally the formation is limonitic and contains several thin beds of ferruginous sandstone. In many outcrops, the formation is massive, and crossbedding is highly developed in some areas. The basal beds of the formation are thin to thick bedded. All ferruginous colors of the Carrizo are due to weathering; the sand is light gray underground.

The sand is, in general, an aggregate of subangular grains of quartz with little or no mica, secondary gypsum, or calcite. Lonsdale (1935, p. 23) gives the petrographic analyses of 13 samples of the Carrizo sand in Atascosa and Frio Counties. The results of the analyses show that the greatest percentage of sand grains are between 0.295 and 0.147 millimeter in diameter. The grains ranged from angular to rounded, the greatest number being subangular to subrounded. The Carrizo sand is considered to be nonmarine, of estuarine and deltaic origin, and to be remarkably uniform. The good sorting and small amount of cementation of the sand indicate a high porosity.

The electrical properties of the Carrizo sand, as illustrated in the partial electric log of well J–7–22, are shown in figure 18. The sand is porous and permeable and contains fresh water.

The Carrizo sand supplies water to shallow wells in its outcrop areas and to deeper wells southeast of the outcrop. These wells yield abundant supplies of water for domestic and stock use. The water is essentially under water-table conditions in the outcrop area because the upper surface of the saturated part of the formation is in permeable sand. The formation dips south or southeast and the depth of wells increases with the distance from the outcrop. Southeast of the outcrop area the water is under artesian conditions.

Wells in the outcrop area of the Carrizo sand yield adequate supplies of water for municipal use and irrigation. Devine and Natalia obtain their public water supply from the lower section of the Carrizo sand. Ten wells have been drilled and equipped with pumping plants for irrigation in the area of outcrop. Several of these wells obtain water from both the Indio and the Carrizo. The thinning of the Carrizo at the northern edge of the outcrop restricts the amount of storage and limits the use of the water there.

Water from wells in the outcrop of the Carrizo and is comparatively uniform in its chemical character (table 12). The water is of very good quality, having less than 500 ppm of dissolved solids.

## MOUNT SELMAN FORMATION

The Mount Selman formation crops out in a small area in southeastern Medina County. The lower part of the formation was named the Bigford by Trowbridge (1923, p. 75) and treated as a formation of the Wilcox group. Plummer (*in* Sellards, Adkins, and Plummer, 1932, p. 619–620) regarded the Bigford as a part of the Mount Selman formation of the Claiborne group. The Bigford differs lithologically, but merges laterally into the Reklaw member of the Mount Selman formation northeast of Medina County.

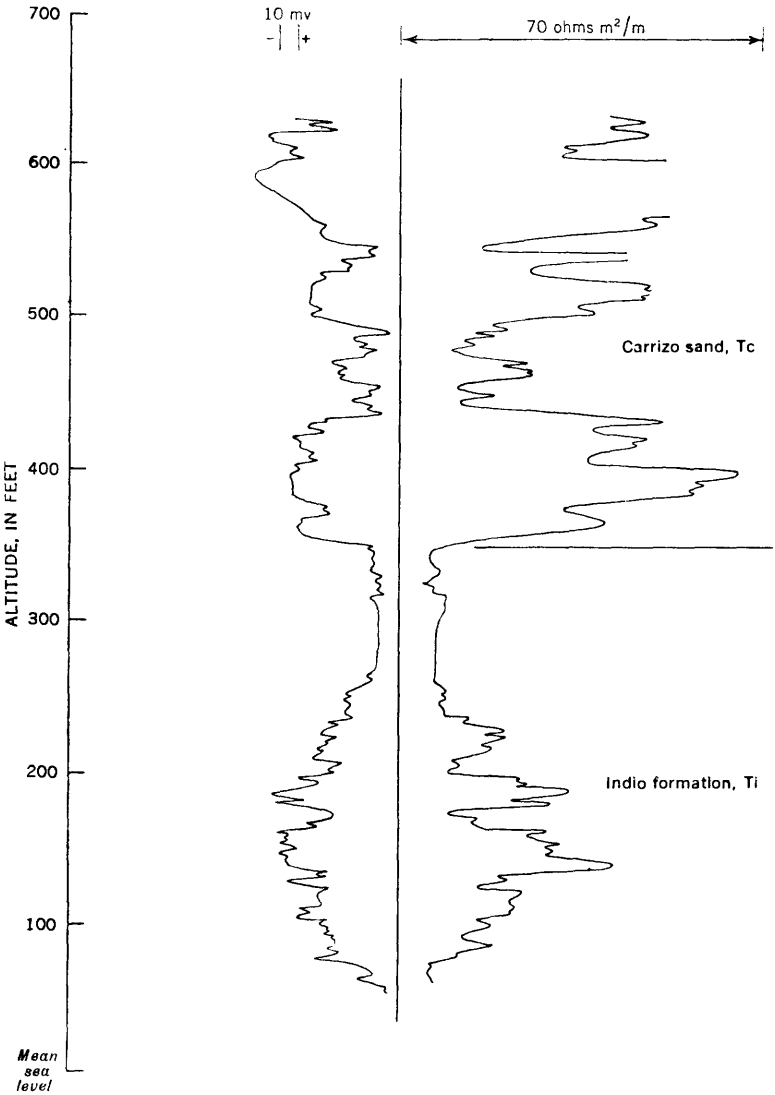


FIGURE 18.—Electric log of well J-7-22 illustrating the electrical properties of the Carrizo sand. Owner: City of Devine; driller: J. R. Johnson.

The basal member of the Mount Selman consists of brown to buff clay, thin sandstones, and very thin limestone beds. Thin lenses of lignite and calcareous concretions also are found. Abundant plant remains, leaves and stems have been recovered along the escarpment formed by the Bigford member in northern Frio County (Lonsdale, 1935, p. 29). The Mount Selman formation is about 100 feet thick in Medina County.

The Mount Selman formation occurs in too small an area in Medina County to store an appreciable amount of water. No wells are known to obtain water from the Mount Selman in this county.

#### PLIOCENE (?) SERIES

##### UVALDE GRAVEL

The Uvalde gravel is the oldest and highest terrace deposit in Medina County and is found in remnants capping hills and forming stream divides. The gravel consists of coarse rounded flint pebbles and boulders and some limestone pebbles. Reworked fossils in the gravel indicate that it was derived from the Edwards limestone, probably from the Edwards Plateau. The gravel is cemented by caliche. The thickness of the Uvalde ranges from a thin film over the surface to a layer nearly 20 feet thick. The gravel and caliche in these deposits are mined for road-surfacing material. The formation generally is too thin to hold much water, and its topographic position on hilltops permits most of the water to drain out readily.

### QUATERNARY SYSTEM

#### PLEISTOCENE SERIES

##### LEONA FORMATION

The Leona formation consists of deposits forming broad terraces in the valleys of the present streams. These terraces are topographically lower than those formed by the Uvalde gravel.

The Leona is composed of lenticular beds of sand, gravel, silt, and clay. The pebbles and cobbles of the gravel are predominantly limestone, and some flint. Coarser gravel is found near the base of the formation, the proportion of silt increasing toward the top.

The terraces extend to distances ranging from several hundred feet to 3 or 4 miles on one or both sides of the major streams. As a rule, the formation is thickest near the present stream channels or the older abandoned meander channels. The terrace deposits range in thickness from a mere film over the underlying formations to a layer 70 to 80 feet thick.

The outcrop area of the Leona forms broad plains in central and eastern Medina County, and most of the towns in the county are situated on the outcrop. Riomedina, Quihi, and D'Hanis obtain their water supplies from the formation. Private water supplies in Hondo, Castroville, and Lacoste are obtained from the gravel, although the public supplies of those places are obtained from wells tapping the Edwards limestone.

A number of small springs occur in the principal stream valleys where the streams have cut below the water table in the Leona formation. Among the typical springs fed by ground water from the Leona are nos. I–5–28 in Seco Creek; I–3–82 and I–6–74 in Hondo Creek; I-3-103, I-3-104, and I-3-125 in Verde Creek; and J-1-36 in San Geronimo Creek.

Recharge of the Leona formation is derived from rainfall and storm-water runoff on the surface of the formation. The piezometric surfaces of the underlying formations are below the base of the Leona and those formations do not contribute to its recharge. Conversely, the Leona formation contributes to the recharge of the underlying permeable formations.

As a rule, the Leona formation contains little water where the underlying formations are permeable, but it contains large supplies of water where it overlies less permeable strata, especially where it is thick. The thickest deposits of the Leona are found where the old stream channels have cut deep valleys in the least resistant of the underlying formations. Each stream-terrace deposit is a separate ground-water reservoir.

In most areas of outcrop in the county, the Leona formation furnishes an adequate supply of water for domestic and stock uses. In several areas, notably along Hondo Creek south of U. S. Highway 90, the Leona has the thickness and lateral extent necessary to store a large supply of water. Wells I-6-20, I-6-21, I-6-76, and I-6-77 have been withdrawing irrigation water from this reservoir.

### RECENT SERIES

#### ALLUVIUM

The stream valleys of Medina County contain Recent flood-plain deposits of silt and gravel. Several of the larger stream valleys have small terrace deposits which have been formed since Leona time. The deposits are restricted to narrow areas along the streams. A number of wells adjacent to the Medina River obtain their water from the Recent sediments. The water levels in the wells have been observed to fluctuate with the river level.

### IGNEOUS ROCKS

Several small exposures of igneous rocks have been found in Medina County. A large number of similar igneous masses occur in Uvalde County and have been described by Vaughan (1900, p. 2-3), Lonsdale (1927, p. 15-23), and Sayre (1936, p. 27). The igneous rocks occur in isolated masses in rough alinement with the trend of faulting in the Balcones system.

The igneous rocks in Medina County are in the form of plugs and dikes that crosscut, and form steep contacts with, the adjacent sedimentary rocks. A small plug of olivine basalt is on the Mumme ranch, 13.7 miles north of Hondo (pl. 1). This plug is about 300 feet in diameter at the surface and is surrounded by the Edwards limestone. The limestone near the contact has been altered to a varicolored marble containing veins of serpentine. Another small mass of olivine basalt is found along Cow Creek, 1½ miles northeast of West Verde Creek. The exposure is in the form of an elongated plug or dike, striking N. 55° E. A narrow zone of serpentine-bearing marl marks the contact between the dike and the surrounding Glen Rose limestone. A plug of nephelite basalt 3.4 miles south of D'Hanis, east of the D'Hanis-Yancey road, probably intrudes the Escondido formation, but the alluvial materials of the Leona formation obscure the contacts.

The youngest formation intruded by igneous rocks in this area is the Escondido. Lonsdale (1927, p. 44) believes that all the basalts of the Balcones fault region are related in origin and are probably of early Tertiary age. Sayre (1936, p. 27–32) indicates that some igneous masses came into existence in the early part of Late Cretaceous epoch.

### METAMORPHIC ROCKS

Serpentine has been recorded in the logs of several wells in Medina County. Leith and Mead (1915, p. 22) stated that serpentine is an alteration product of basic igneous rocks. The serpentine found in Medina County may be an intermediate product in the hydration of basaltic intrusives. The bodies of serpentine are closely associated with the faulting. The serpentine is reported to range in composition from a relatively pure very fine grained dense dark-green massive rock to an impure dense light-green fragmental rock, interbedded with limestone. In a number of wells near Chacon Lake serpentine was encountered in the upper part of the Austin chalk and lower part of the Anacacho limestone. (See pl. 2.) Serpentine was reported in wells J–4–65 and J–4–71 from 1,385 to 1,771 feet and from 1,441 to 1,580 feet below the surface, respectively. The serpentine mass near Chacon Lake is bounded on the north by the Pearson fault. Wells drilled north of the fault failed to penetrate any serpentine. Another large body of serpentine is found north of the Dunlay fault. Wells I–6–27 and I–6–30 (pl. 2) encountered serpentine at 476 and 616 feet, respectively, in the Anacacho limestone and upper part of the Austin chalk.

No wells are known to produce water from metamorphic rocks in Medina County.

## STRUCTURE

The structure of the rocks of Medina County affects the occurrence and movement of ground water. The principal structural features are the faults and folds forming the Balcones fault zone. The surface traces of the faults are shown on plate 1. The subsurface position of the faults and folds is indicated by contours drawn on the base of the Grayson shale (Del Rio clay). (See pl. 1.) Cross sections *A–A'* and *B–B'*, drawn transverse to the general direction of faulting, are shown in plate 2.

## FAULTING

### BALCONES FAULT ZONE

The Balcones fault zone separates the Gulf Coastal Plain from the Edwards Plateau. (See fig. 1.) This zone, as a structural feature, is traceable from Del Rio northeast to Waco. In many places a prominent escarpment marks the location of the trace of the main fault. In some places prominent folds are associated with the fault zone.

The displacement on individual faults in Medina County ranges from a few inches to more than 700 feet and the length from a fraction of a mile to 35 miles. The displacement on most of the faults is greatest near the middle of their length, diminishing toward the ends. Some of the faults die out in monoclinal flexures and are intersected by cross faults or branch faults.

In general, the faults of Medina County have nearly straight traces. In areas of considerable relief this indicates that the fault plane may be nearly vertical. Measurements on many of the faults show that the hade ranges from 12° to 28° from the vertical. Slickensides, fault breccia, and gouge are evident in several exposures of the fault surfaces. (See fig. 19.)

#### FAULTING IN NORTHERN MEDINA COUNTY

The most extensive fault of the Balcones zone, the Haby Crossing fault, enters the eastern part of the county northeast of Cliff, passes through the Haby Crossing on the Medina River, and continues southwestward past Kings Waterhole on Hondo Creek to Seco Creek north of D'Hanis. The displacement along the fault is greatest east of Haby Crossing where the upper part of the Austin chalk is in contact with the lower part of the Edwards limestone, indicating a stratigraphic displacement of 600 to 800 feet. The more resistant Edwards limestone on the upthrown side of the fault forms a very prominent escarpment. The displacement of the fault decreases to the west. Several auxiliary faults branch from the major fault in the central part of the county.

The throw of the individual faults decreases west of the Medina River, and escarpments are no longer prominent in the topography. A system of parallel faults in central Medina County has

FIGURE 19.—Anacacho limestone at Haby Crossing fault, showing slickensides and a hade of 26° from vertical.

a total displacement equal to the displacement of the larger faults to the east. The faulting in this area is complex and consists of cross faults, branch faults, hinge faults, and scissors faults. The numerous faults have formed wedges or blocks of rocks which are generally downthrown to the south in the form of stairsteps. (See pl. 2.) Horsts, upthrown blocks between downthrown blocks, are found north of the Vandenburg School, Seco Creek, and Ina Field faults, and south of the Fort Lincoln fault. Grabens, downthrown blocks between upthrown blocks, are found north of the Seco Creek and Fort Lincoln faults and south of the Medina Lake and Dunlay faults.

The complicated faulting of central Medina County is partly dissipated to the west, many of the faults dying out and passing into small monoclinal folds. A relatively narrow zone of highly complicated faulting is present in the northwestern part of the country. The Woodard Cave fault has a displacement of more than 200 feet, and a parallel fault, 2 miles south, has a displacement of 300 feet. A wedge or graben of the Austin chalk is present where the parallel fault crosses Seco Creek.

### FAULTING IN SOUTHERN MEDINA COUNTY

The Pearson and Biry faults are the southernmost major faults in Medina County. They are probably contemporaneous and are closely related to each other. The Pearson fault crosses Francisco Perez Creek east of Biry and continues northeastward through Pearson to the Bexar County line. The displacement of the fault increases to the northeast. The maximum displacement is about 400 feet at the Bexar County line. The Biry fault, extending southwest of Biry, has an average displacement of less than 100 feet. This fault is probably an extension of the Pearson fault, which is possibly associated with the San Antonio structure described by Sellards (1919, p. 82–86). The Adams gas field, southwest of Biry, and the Chacon Lake oil field, south of Pearson, are both closely related to the faults. (See pl. 1).

The Pearson fault appears to act as a barrier to the movement of ground water in the Edwards limestone. North of the fault an adequate supply of water of good chemical quality may be obtained from wells. Oil tests drilled into the Edwards limestone south of the fault failed to reveal water of good quality. Most wells south of the fault system obtain their principal water supply from the Indio formation.

### CAUSE OF FAULTING

The faults are generally parallel and are normal tension faults resulting from gravitational settling. They are generally regarded as having been caused by the gradual sinking of the Coastal Plain with reference to the Llano uplift. (See fig. 1.) Stephenson (1928, p. 899) has pointed out, however, that uplift may have occurred as well as sinking. The age of the faulting has not been accurately determined, but faulting may have occurred at intervals from Early Cretaceous to Recent geologic time. Bryan (1933, p. 439–442; 1936, p. 1357) states that there have been three periods of movement along the Balcones fault zone at Waco, Tex., the first relatively early in Early Cretaceous time, the second during Georgetown time, and the third during Recent time. The youthful appearance of the escarpments in eastern Medina County and the relations of the stream channels to the faults indicate a recent period of movement. Evidence of two directions of movement along a fault plane may be observed where the Seco Creek fault crosses Hondo Creek. Beds of the Eagle Ford shale on the downthrown side of a normal fault dip toward the fault, indicating a secondary movement or readjustment along the fault plane.

### FOLDING

#### CULEBRA ANTICLINE

A pronounced structural feature, the Culebra anticline (Sellards 1919, p. 83–84), extends from north-central Bexar County southwestward into Medina County. It is bounded on the northwest by the Cliff fault and on the southeast by the Castroville fault. The principal structure is a broad anticlinal fold, 7 to 9 miles wide, plunging to the southwest. The fold is asymmetrical, the steeper flank being on the southeast side.

Topographically, the anticline consists of a central hill of Austin chalk surrounded successively by bands of the Anacacho limestone, Corsicana marl, and Escondido formation. The Medina River flows around the nose or plunging end of the anticline, and San Geronimo Creek flows along the northwest flank. Cross section *B–B′* (pl. 2), which crosses the Culebra anticline, was prepared from data selected from well logs and from surface geology.

#### OTHER FOLDS

A large monoclinal fold near Devine in southeastern Medina County has an axis that trends northeast, parallel to the Balcones faulting. This monoclinal fold is possibly associated with the Alta Vista structure, named by Sellards (1919, p. 85–86) for a structural trend in southern Bexar County. The Bear Creek oil field in Medina County, south of the fold, is similar in structure to the Somerset field in Atascosa County and the Alta Vista field in Bexar County.

## OCCURRENCE AND MOVEMENT OF GROUND WATER

### GENERAL PRINCIPLES

The fundamental principles governing the occurrence and movement of ground water have been discussed in detail by Meinzer (1923a, p. 2–192; 1923b, p. 68; 1942, p. 385–497), Tolman (1937, p. 96–380), Wenzel (1942), and others. The section that follows is limited to the principles that are essential in understanding the hydrology of the ground water.

Ground water in Medina County is derived chiefly from water that falls as rain and snow. A part of the precipitation runs off in streams, a part is returned to the atmosphere by evaporation and by transpiration of trees and other plants, and a part enters the soil. Of the part that enters the soil, a small portion sinks into the zone of saturation, in which all the openings of the rocks are filled with water.

In most places ground water is slowly but steadily moving under the influence of gravity from areas of intake to areas of discharge. In the more permeable rocks, such as coarse sand and gravel and cavernous limestone, the water moves with comparative freedom, although the movement generally is very slow compared to the flow of a stream. Such rocks are capable of yielding abundant supplies of water to wells. In less permeable rocks, such as fine sand, silt, and shale or clay, molecular attraction retards the movement of the water so that the water may not move toward a well as fast as it is withdrawn by even a small pump.

Ground water occurs under both water-table and artesian conditions in Medina County. Under water-table conditions, the water is unconfined and does not rise in wells above the level at which it is encountered. This level is known as the water table. Water-table conditions usually are found to occur in the outcrop of permeable water-bearing beds. Under artesian conditions, the water is confined by an overlying relatively impermeable bed and the water will rise in wells above the level at which it is encountered.

The water table is not a level surface, but usually slopes from areas of ground-water intake or recharge toward areas of ground-water discharge. Where the land surface is lower than the water table in adjacent areas, some of the ground water will emerge as springs. This condition occurs in several places along Hondo Creek where the stream channel has cut below the level of the water table in the Leona formation, and ground water discharges into the creek.

Artesian conditions are established where beds of permeable rock dip below the ground between less permeable strata. Water in the outcrop area provides a hydraulic head for the water moving downdip. If there were no loss in head because of friction, a well drilled into the confined aquifier would find the head of the water equivalent to the height of a column of water having the same altitude as the water in the outcrop area. The artesian aquifer acts as a closed system, and any change in pressure eventually affects the aquifer as a whole. If there is insufficient recharge from rainfall or streamflow in the outcrop area, the water table will decline and the pressure in the artesian system will decline also. Correspondingly, any natural discharge, such as spring flow, or artificial discharge, such as pumping from wells, will cause a decrease in pressure throughout the aquifer. For these reasons, the pressure in an artesian aquifer may decrease and the water levels in wells may decline, but the aquifer will still be full of water.

The withdrawal of ground water from either a water-table or an artesian aquifer causes a decline in water level at the well, and a hydraulic gradient is developed toward the well from all directions. The quantity of water moving toward the well is proportional to this gradient. For example, if a pumped well in permeable material will yield 100 gallons a minute when the water level is lowered 10 feet, it will yield about 200 gallons a minute when the water level is lowered 20 feet. This ratio between the drawdown and the yield of the well is called the specific capacity and is generally expressed as yield in gallons a minute per foot of drawdown. Drillers generally observe the drawdown as they count the number of bailers of water withdrawn in a given length of time. This is a quick and convenient guide for the selection of a pump. The ratio holds within certain limits and is affected by factors other than permeability, such as the construction and development of the well.

A cone of depression gradually spreads out in all directions from a center of ground-water discharge or pumping. This cone deepens and widens at a rate decreasing with time. The ultimate limits of the cone of depression are the physical boundaries of the aquifer or areas of rejected recharge or discharge (Theis, 1938, p. 889–902). When the pump is shut off, the water rises again in the well at a rate decreasing with time, and the cone of depression becomes shallower until it nearly vanishes. However, if a large amount of water is taken out of the aquifer, a measurable persistent lowering of the water level may result. This usually is not very serious, and in an extensive aquifer any excessive local decline may be avoided by proper spacing of wells.

## MOVEMENT OF WATER IN AQUIFERS

The amount of water moving through an aquifer depends upon the porosity, permeability, and dimensions of the aquifer and the amount of recharge and opportunity for discharge. The topography of the surface of the outcrop, the climate, the type of soil, and the amount and kind of vegetation are important factors in determining the amount of recharge to the aquifer.

The porosity and permeability of a rock formation largely determine its capacity to take in, store, and transmit water. Porosity is the ratio of total pore space to total volume of a material, and permeability is its capacity to transmit water. The properties are not directly related. Clay and shale may have a high porosity, but, because the individual pore spaces are very small, the permeability is low. Sand and gravel may have less porosity than clay and shale, but the individual pores are large and interconnected, permitting a more rapid movement of water.

The permeability of most limestones depends upon the processes that take place after deposition. Although small openings may remain in the rocks after deposition and consolidation, many limestones are essentially impermeable until solution along fractures enlarges them in places to the size of channels and caverns. A part of the fracturing may take place during the compaction of the limestone, but the major disruption and fracturing occur as a result of faulting and folding. Much faulting has taken place in Medina County, and joints, faults, and other openings have provided the passages that were later enlarged and extended by solution.

A minor amount of solution may occur during and immediately after deposition, but the most important solution occurs after the limestone is elevated and exposed to solution by meteoric waters. It is recognized generally that carbon dioxide in solution in meteoric waters greatly increases their solvent action on limestones. Water acquires carbon dioxide while passing through the air and through soils containing decaying vegetable matter.

The solvent action of ground water on limestone is a continuing process of enlarging the existing solution channels. The average flow of Comal Springs in New Braunfels, over a period of about 20 years, has been 320 cubic feet per second (cfs). The dissolved solids in the water averaged about 285 ppm. On this basis, George (1952, p. 37) estimated that an average of more than 200 tons of dissolved rock material is carried away daily by the water that issues from these springs.

Time is an important factor when considering solution of limestone. Pressure and temperature also affect the quantity of calcium carbonate that is dissolved by ground water. A change in these factors controlling solution may result in a redeposition of calcium carbonate in the same system of solution channels. Crystals of secondary calcite were recovered from the cuttings of well J–1–44 after the drill penetrated several void spaces at a depth of about 960 feet below the present water level. Travertine, a form of secondary calcite, accumulates along the edges of a subsurface stream in the Woodard Cave or sinkhole.

The solubility of limestone in water is an important factor when studying the hydrology of the limestone aquifers in Medina County. In the study of the silt, sand, and gravel aquifers of the county, the permeabilities are regarded as essentially stable, whereas the limestone aquifers, because of their solubility, are continually changing in porosity and permeability. The changing characteristics of the limestone reservoir may change the amount of recharge, discharge, and movement of water, and may affect the quality of water and its availability. In terms of historic time, however, changes in permeability and porosity caused by solution of the limestone probably would be insignificant.

### NATURAL RECHARGE

The recharge or intake area of an aquifer is the outcrop of the aquifer itself, or of a hydraulically connected formation, capable of absorbing water and adding a part of it to the zone of saturation. An area of recharge may be only a narrow belt on the surface, but it may be supplied in part by streams which drain a much larger area. Several of the aquifers used in Medina County crop out in the county itself, and a large part of the county, therefore, is a recharge area that receives water by direct penetration of rainfall. The outcrops extend east and west beyond the borders of the county. The catchment area for the streams that cross the aquifers includes the drainage areas of Seco, Hondo, and Verde Creeks and the Medina River, which extend north of Medina County.

#### TRAVIS PEAK FORMATION

The water of the Travis Peak formation is derived from precipitation over a large area north of Medina County. Water enters the sands of the formation in the outcrop area and travels downdip to Medina County. Water in the Travis Peak was encountered in wells I-1-15, I-2-67, and J-2-15.

#### GLEN ROSE LIMESTONE

Limestones and sandy marls of the Glen Rose crop out in northern Medina County and the surrounding counties of Uvalde, Real, Bandera, Kerr, and Kendall. Inasmuch as the outcrop covers only 84 square miles in northern Medina County, the principal recharge to the aquifer must be from rainfall in adjacent counties having larger surface exposures of permeable strata.

In Medina County the limestone beds in the exposed upper part of the Glen Rose are overlain and underlain by marl and shale which retard vertical movement of water. The most permeable zones are found at the base of limestone beds where they are in contact with underlying beds of shale. The solutional openings in the limestone range from minute to cavernous and receive varying amounts of water. Beds of sandy marl and fossiliferous zones in the limestone are locally permeable. Numerous caves and springs are found in limestone in the outcrop area of the Glen Rose.

#### EDWARDS LIMESTONE

The surface exposure of the Edwards limestone forms a broad belt across northern Medina County. The approximately 200 square miles of outcrop in Medina County is an area of recharge. A large amount of water enters the limestone by direct penetration of rainfall on this area, and an even larger amount is derived from streams crossing the outcrop carrying runoff from the catchment area on the Edwards Plateau. The streams receive flood flow from the entire drainage area, but their normal or base flow is sustained largely by water from springs in the Glen Rose limestone.

The recharge area of the limestone differs from that of a sandstone in that water must encounter an opening in the limestone caused by solution, jointing, or fracturing before it can move rapidly downward. The openings in the limestone may be large and lead into an extensive network of cavernous solution channels. The large openings are in the form of sinkholes, joints or faults enlarged by solution, or zones of smaller interconnected channels. Large quantities of water may enter the openings within a comparatively small area.

A series of discharge measurements were made in June 1952 of the streams crossing the Edwards limestone in Medina County. The discharge of each stream was measured on the upstream and downstream sides of the outcrop. Additional measurements were made along the streams where they cross the outcrop, to determine the sections of greatest recharge. The miscellaneous discharge measurements are shown in table 4. The entire discharge of Hondo, Seco, and Verde Creeks entered the Edwards limestone in the recharge area.

TABLE 4.—*Miscellaneous discharge measurements to determine seepage from streams in Medina County, Tex., in June 1952*

[Measurements by Surface Water Branch, U. S. Geol. Survey, Austin, Tex.]

| Date | Stream | Location | Approximate distance (miles from initial point) | Length of section (miles) | Discharge (cfs) | Loss in section (cfs) |
|---|---|---|---|---|---|---|
| June 12 | Hondo Creek | 0.3 mile north of Bob Dupuy Ranch, 2.5 miles south of Bandera County. | 0 | 0 | 34.7 | 0 |
| June 12 | do | 0.2 mile south of M. Garrison Ranch at low-water bridge. | 4.4 | 4.4 | 25.5 | 9.2 |
| June 12 | do | Concrete low-water bridge, 9.4 miles north of Hondo. | 11.3 | 6.9 | 6.4 | 19.1 |
| June 12 | do | Concrete slab at Schlentz crossing, 7.8 miles north of Hondo. | 14.1 | 2.8 | 0 | 6.4 |
| June 12 | Seco Creek | Ford at Patton Ranch, 17.2 miles north of D'Hanis. | 0 | 0 | 15.2 | 0 |
| June 12 | do | 0.1 mile south of concrete dam at Woodard Ranch, 13.1 miles north of D'Hanis. | 5.8 | 5.8 | 0.01 | 15.2 |
| June 12 | do | Concrete slab, 7.4 miles north of D'Hanis. | 14.8 | 9.0 | 0 | 0 |
| June 13 | West Verde Creek | Crossing 1.0 mile south of J. Short Ranch headquarters, 16.4 miles north of Hondo. | 0 | 0 | 1.53 | 0 |
| June 13 | Verde Creek | Concrete slab at Grodt crossing 12.2 miles northwest of Hondo. | 3.3 | 3.3 | 0 | 1.53 |

A discharge of 34.7 cfs was measured where Hondo Creek crosses the Glen Rose limestone. After flowing 2 miles the stream crosses the south branch of the Woodard Cave fault and passes onto the Edwards limestone. Several large fractures cross the creek bed just south of the fault. In this locality 9.2 cfs of water entered the limestone. The stream lost an additional 19.1 cfs of water while flowing over 6.9 miles of the Edwards limestone, including losses into four faults and innumerable solution holes in the bed of the creek. The greatest seepage losses were found in this section of the creek. The remaining 6.4 cfs entered the Edwards limestone before the stream crossed the Medina Lake fault and left the Edwards. There was no flow in the creek a mile south of the fault. Only during and immediately after exceptionally heavy rains do Hondo, Seco, and Verde Creeks flow south of the outcrop area of the Edwards limestone.

Similar stream losses to the Edwards limestone are shown by measurements of Seco and Verde Creeks. (See table 4.) These streams flowed only part of the way across the Edwards outcrop, and it seems likely that if the discharge were sufficient for the streams to flow across the entire outcrop, much additional water would enter the limestone through cracks and solution channels. The stream losses are undoubtedly higher during floods when the greater depth of water and larger water surface would increase the rate of recharge.

The average annual infiltration to the Edwards limestone from Seco, Hondo, and Verde Creeks is estimated to be of the order of 35,000 acre-feet. This estimate is based on the available discharge measurements, rainfall records, and average number of days a year that these streams have been reported to flow along their entire length.

Stream gages on Seco and Hondo Creeks were erected in 1952 above and below the outcrop of the Edwards limestone. The locations of these gages are shown on Slate 1. A more accurate estimate of the recharge to the Edwards limestone may be made from the discharge measurements of these gages after a record of sufficient length has been established.

Two dams were built across the Medina River in 1912 to impound water for irrigation. The main dam, used for storage, is 16 miles north of Castroville, and a smaller dam, diverting water to the canal system, is 4 miles below the main dam. The diversion dam is on the outcrop of the Edwards limestone, and, except for a small area of the Glen Rose limestone exposed in the bed of the stream, the reservoir also is on the outcrop of the Edwards limestone. The diversion dam is a concrete structure 440 feet long and 50 feet above the stream bed. The capacity of the reservoir behind it is about 4,000 acre-feet.

The storage dam upstream from the diversion dam is a concrete structure 1,500 feet long, and the spillway is 152 feet above the stream bed. The original capacity of the storage reservoir was 254,000 acre-feet at the spillway crest. District officials state that the present capacity is about 213,000 acre-feet.

Numerous fractures and solution holes are visible in the walls of the canyon above and below the dams (figs. 20, 21). The fractures have the same general northeast trend as the Balcones faulting. Grouting of the solution channels and fractures at the diversion dam in 1948 failed to reduce the leakage from the diversion reservoir. Increasing the stage of the lake increases the hydraulic gradient of the ground water moving from the lake, which, in turn, increases the rate of movement of the water and accelerates the solution of the limestone. Most of the reservoir area of Medina Lake is in the outcrop of the Glen Rose limestone. Movement of water from the Glen Rose limestone to the Edwards limestone is believed to occur along faults.

The United States Geological Survey made discharge measurements along the Medina River from 1922 to 1934. The results of these measurements are shown in table 5.

FIGURE 20.—West bluff of Medina diversion lake north of dam, showing large solution holes at waterline.

FIGURE 21.—Discharge of water from solution hole in east bluff of Medina River, 300 feet south of dam.

Burleigh (1949, p. 9–15) estimated that the seepage losses from the storage and diversion reservoirs in 1930 were nearly 72,000 acre-feet. The average annual loss may be even larger, inasmuch as the water surface in the storage reservoir probably dropped below many of the outlet conduits along the stream bed in September 1930.

Livingston, Sayre, and White (1936, p. 76) estimated that the seepage losses in the 3½-mile stretch of the river below the reservoir between the Mico gaging station, about 2,000 feet below the main reservoir, and the diversion dam was about 16,000 acre-feet in 1930. In addition, an average loss of 38,500 acre-feet a year was estimated for the stretch between Pipe Creek and the Mico station, according to 11 years of record from 1923 to 1933. This includes evapotranspiration losses, but these are probably balanced by tributary inflow, so that the figures represent essentially recharge to ground water.

The diversion reservoir was dry and the storage reservoir was at a low stage during 1951 and 1952, preventing the measurement of seepage losses at that time.

Livingston, Sayre, and White (1936, p. 73–83) estimated that the combined annual average recharge of the Edwards limestone from the Nueces, Frio, Dry Frio, Medina, and Sabinal Rivers and Hondo Creek may amount to 150,000 acre-feet. The combined recharge from all streams crossing the outcrop of the Edwards limestone in Medina County only may average 90,000 acre-feet a year. In addition, a considerable quantity of water must enter the formation directly from precipitation.

TABLE 5.—*Annual discharge of Medina River, 1922-34*

| Calendar year | Medina River near Pipe Creek (acre-feet) | Flow over diversion dam at Habys Crossing (acre-feet) | Seepage past diversion dam (acre-feet) | Medina Canal near Riomedina (acre-feet) |
|---|---|---|---|---|
| 1922 | | 300 | 15,500 | 18,100 |
| 1923 | 78,900 | 500 | 17,800 | 22,500 |
| 1924 | 84,100 | 5,700 | 19,200 | 16,000 |
| 1925 | 26,500 | 0 | 16,900 | 32,600 |
| 1926 | 64,200 | 5,300 | 17,500 | 11,700 |
| 1927 | 66,200 | 0 | 17,700 | 17,500 |
| 1928 | 20,500 | 0 | 17,600 | 15,700 |
| 1929 | 45,200 | 0 | 16,500 | 20,000 |
| 1930 | 62,900 | 0 | 15,400 | 21,000 |
| 1931 | 147,000 | 0 | 17,400 | 21,600 |
| 1932 | 197,000 | 200 | 18,600 | 21,600 |
| 1933 | 49,300 | 0 | 21,100 | 32,300 |
| 1934 | 12,700 | 0 | 16,800 | 4,900 |

## INDIO FORMATION

The Indio formation crops out over an area of 245 square miles in southern Medina County. A large part of the outcrop consists of clays and shales that have a low permeability. The effective recharge area is only a small part of the total area of outcrop.

Water may enter the Indio formation directly from rainfall on the outcrop, from streams that cross the outcrop, or by downward percolation of water from overlying formations. In all areas in Medina County for which information was obtained the water table in the Indio formation was below the level of the streams. Squirrel, Seco, Tehuacana, Hondo, Black, San Francisco, and Chacon Creeks lose a part of their flow as they cross the outcrop of the Indio formation. In many places, the Indio formation is covered by as much as 60 feet of the Leona formation, through which there may be some downward percolation of ground water. The Leona formation is more permeable than the Indio and may take in the streamflow rapidly and allow it to percolate slowly into the underlying Indio formation. The overlying Carrizo sand is not known to contribute water to the Indio formation. Electric logs and drillers' logs show there is 50 to 100 feet of clay in the upper part of the Indio. A pumping test of the water-bearing sands of the Indio formation and the Carrizo sand was made in September 1952 at the Devine well field. Well J–7–21, penetrating 115 feet of saturated Carrizo sand, was pumped at a uniform rate and the rate of drawdown was observed in two observation wells. One of the observation wells, J–7–23, penetrates approximately the same thickness of saturated Carrizo sand as well J–7–21. A rapid drawdown was observed in well J–7–23. Another observation well, J–7–22, penetrated approximately 85 feet of saturated sand in the Indio formation. Although wells J–7–22 and J–7–23 were an equal distance from the pumped well, there was no measurable drawdown of the water in the well tapping the Indio. This indicates that there is little or no movement of water between the two formations in this locality.

### CARRIZO SAND

The outcrop of the Carrizo sand in Medina County is a part of the intake area for the water being pumped in the Winter Garden area. A pumping test made of well J–7–21, in the outcrop of the Carrizo sand in Medina County, shows that the sand has a coefficient of transmissibility of more than 100,000 gpd per foot. This rather high transmissibility, which is favorable to recharge, is explained by the high degree of sorting of the sand grains and the lack of cementing material in the outcrop.

Water enters the Carrizo sand directly from rainfall on the outcrop, from streams that cross the outcrop, by downward percolation of water from overlying formations, and in some places by upward movement of water from lower formations.

Chacon, Francisco Perez, Black, Hondo, and Tehuacana Creeks cross the outcrop of the Carrizo sand. The water levels in wells in the Carrizo are below the beds of all these streams. The water levels in wells J–7–24 and J–7–47 rose rapidly after Chacon and Francisco Perez Creeks overflowed their banks in May 1951. Livingston, Sayre, and White (1936, p. 85) noted an apparent loss of 10 second-feet of water from the Leona River in the outcrop of the Carrizo sand in Zavala County in June 1931; measurements in February 1930, however, showed no apparent loss.

The Carrizo is covered by the Leona formation in a large area near Devine, and during high water there is apparently some stream loss into the permeable gravel of the Leona. Water may percolate through the gravel into the Carrizo sand and thus increase the amount of recharge to the formation at some distance from the streams.

### LEONA FORMATION

The Leona formation consists of terraced deposits of silt, sand, and gravel paralleling the principal streams in Medina County. Each stream terrace represents a separate aquifer confined to a stream valley. As a rule, the greatest thickness of saturated material is found near the present or previous drainage channels. The formation generally thins transverse to the stream channel, although there may be a sufficient thickness of saturated material in the interstream area for partial connection of parallel aquifers. The aquifers are connected at the junctions of the stream valleys.

Ground water occurs in the Leona formation in partially separated areas of Medina County. The total area of the surface exposures of the formation is approximately 218 square miles. Of this area the Leona along Seco Creek covers 23 square miles; along Hondo and Verde Creeks, more than 109 square miles; along the Medina River, 41 square miles; along Chacon Creek, 40 square miles; and along a small stretch on the Frio River, 5 square miles.

Recharge to the Leona formation in Medina County is from precipitation on the outcrops, from discharge of springs, from underlying aquifers, and from streamflow. The principal source of recharge is the floods that intermittently fill the channels and valleys of Seco, Hondo, Verde, and Chacon Creeks and the perennial flow of the Medina and Frio Rivers. Periodic measurements of water levels in wells in each of the aquifers indicate that the water table fluctuates with the amount of precipitation and the rate of streamflow.

Ground water in the Leona formation generally occurs under water-table conditions. However, locally the water is confined by nearly impermeable lenses of silt or clay. Small bodies of water not connected to the main reservoir may be encountered along the thin flanks of the stream-terrace deposits. The water in these isolated reservoirs may be exhausted rapidly by pumping.

### ARTIFICIAL RECHARGE

Artificial recharge is one method by which the yield of an aquifer may be increased. Artificial recharge is being practiced in several places in the United States and Europe (Meinzer, 1946; Sayre and Stringfield, 1948), but has not been tried in Medina County. It has been considered, however, for several years.

Artificial recharge may be accomplished by one of two methods: recharge by "water spreading" on the land surface or through ditches or basins, and injection of water through wells. All the important aquifers in Medina County could be recharged to some extent by surface spreading, allowing water to move downward to the zone of saturation. Under the economic conditions current during this investigation the introduction of water through wells would not be practical.

The principal aquifer, as indicated by the data given in table 5 for the Medina River, takes in a large part of the flow of the creeks and rivers crossing the outcrop. After periods of heavy rainfall, the floodwaters in the streams would be available for artificial recharge. Sinkholes, solutionally enlarged joints and faults, and solution caves are found throughout the outcrop of the limestone. Leakage from the Medina storage and diversion lakes shows the effects of impounding water on permeable limestone. (See fig. 20.) Excess floodwaters could be impounded on other streams in the outcrop of the Edwards limestone to increase recharge. Other possible methods of recharge would be to divert the excess streamflow into large sinkholes such as the Woodard Cave, or to spread the water over a fractured area, an example being the area near well C–9–49. A sinkhole in the bed of the Leona River in Uvalde County was covered by a steel grid to keep out logs and boulders. The county plans to construct a small dam downstream from this opening to increase the head of water and prevent the water from bypassing the sinkhole.

The sandstones of the Indio formation and the relatively unconsolidated Carrizo sand are exposed in the outcrop areas. Excess floodwaters could be spread over areas where the more permeable sands crop out. This method of recharge has many limiting factors. The mud and slime carried by the streams would tend to settle on the surface and restrict the infiltration of water. However, intermittent flooding, followed by drying and scarification or other treatment of the soil, might maintain the infiltration rate satisfactorily.

At the present time artificial recharge is expensive and, therefore, impractical except in areas where water is in high demand.

## DISCHARGE

Ground water is discharged from the underground reservoirs in Medina County through springs and seeps, through wells and by evaporation and transpiration. Before any water was pumped from wells in Medina County, the average annual losses of ground water by natural processes was approximately equal to the average annual gains. The gains and losses include underground movement of water from and to adjacent counties. This state of approximate equilibrium between average annual recharge and discharge was unbalanced by pumping water from the reservoir. As discharge from wells increases, there is a gradual lowering of the water levels in wells and a corresponding decrease in natural discharge. However, the amount of water withdrawn annually from the ground-water reservoirs in Medina County by pumping from wells is small, so far, compared with the volume of water that moves in and out of the county through underground channels.

### DISCHARGE FROM SPRINGS

Springs in Medina County are of three types: (1) contact springs in which water issues at the surface from permeable material overlying less permeable strata, (2) springs discharging water from solutional conduits formed along fractures in limestones, and (3) depression springs developed on the banks of streams which have cut channels below the water table. All the springs issue as flowing water, which locally maintains the low flow of streams. Springs of small, diffused flow are called seeps.

The flow of the springs in Medina County varies with the precipitation and, consequently, with the volume of water in storage in the reservoir. Measurements and estimates of the flow of most of the springs and seeps in the county were made in January 1952. The approximate total discharge was 890,000 gallons a day or about 1,000 acre-feet a year. This figure probably represents a below-average discharge, as the estimate was made during a period of low rainfall.

#### SPRINGS IN GLEN ROSE LIMESTONE

Ground water from the Glen Rose limestone is discharged by springs and seeps into streams that cross its outcrop. The perennial flow of many of the streams is maintained by this spring flow.

The perennial flow of West Verde Creek is fed by water discharging from contact springs C–9–3 and C–9–64 and from a spring, C–9–5, issuing from a large solutional opening in limestone. Contact springs D–7–44 and D–8–4 discharge into San Geronimo Creek. Both streams receive their largest flow from springs north of Medina County.

The Medina River, the largest perennial stream in Medina County, obtains a large part of its normal flow from springs in Bandera County. Older settlers have reported the existence of many large springs now covered by Medina Lake. Indian and Moccasin Springs, C–9–8 and C–9–10, perennially discharge 120 to 450 gallons a minute of water from openings in the Glen Rose limestone west of Medina Lake. East of Medina Lake, contact springs D–7–4, D–7–7, and D–7–9 intermittently discharge 35 to 100 gallons a minute into streams draining into the surface reservoir.

The flow of Seco Creek is augmented by contact springs C–7–1, C–7–7, C–7–8, C–7–9, and C–8–34. The water from these springs flows by gravity from openings near bedding planes in sandy marl and limestone. A number of unrecorded small springs and seeps occur along the same contacts.

The low flow of Hondo Creek is maintained by springs from the Glen Rose limestone in Bandera and Medina Counties, but the largest part of its flow is gained before it enters Medina County. The springs and seeps along Hondo Creek in Medina County discharge less than 700 gallons a minute. A contact spring, C–8–32, discharges into Hondo Creek from a sandy layer in the Glen Rose limestone.

### SPRINGS IN EDWARDS LIMESTONE

The hydrostatic level of the water in the Edwards limestone is below the land surface in all but a small area in the southern part of Medina County. The altitude of the water table in the area of outcrop is insufficient to maintain the piezometric surface above the land surface in the downdip part of the aquifer. Consequently, there is no discharge by springs from the Edwards limestone in Medina County except in the Medina Lake area.

Medina Lake and the diversion lake have increased the recharge to the limestone aquifer in their vicinity. Increasing the head of the surface water in the reservoirs has increased the volume of water that may flow to the water table. Numerous fractures and solution caverns are visible in the walls of the canyons above and below both the dams. (See fig. 20.) The solution caverns and channels are interconnected both horizontally and vertically, extending down to the underlying Walnut clay, which is essentially impermeable.

During the periods when the water is at a high stage in the reservoirs, a large volume of water may be seen discharging from joints, openings along bedding planes, and other solution holes in the canyon walls below the dams. (See fig. 21) A spring, D–7–24, near the bed of Medina River 600 feet south of the Medina Lake dam, was flowing approximately 450 gallons a minute in May 1953. The water issues approximately 20 feet above the Walnut clay from a fracture in the Comanche Peak and Edwards limestones. Spring D–7–39 was flowing approximately 1,300 gallons a minute in May 1953 from a large solution hole in the east wall of the Medina River Canyon, 300 feet south of the diversion dam. (See fig. 21.) At that time the diversion lake's surface was approximately 40 feet above the stream bed. The water discharging into the canyon below the dam probably moves laterally from the diversion reservoir and around the dam through interconnecting solution channels. Spring D–7–39 was dry from September 1952 to March 1953, while the diversion lake was empty.

#### SPRINGS IN ANACACHO LIMESTONE

Several small springs and seeps are found along the outcrop of the Anacacho limestone. Spring I–3–82, 4 miles north of Hondo in the bed of Hondo Creek, issues from the intersection of cross joints with a bedding plane. A series of small seeps along San Geronimo Creek intermittently discharge water from a solution-widened bedding-plane fissure.

#### SPRINGS IN LEONA FORMATION

Water is discharged from the sand and gravel of the Leona formation where stream channels have cut below the water table. Most of the ground water does not flow from any individual or definite point of discharge, but seeps from large areas of permeable material and from a few small springs.

Springs I–3–103, I–3–104, and I–3–125 discharge into Quihi Creek near its juncture with Hondo Creek. The total perennial flow of the three springs ranges at different times from 120 gallons a minute to 400 gallons a minute. Another spring, I–6–74, discharges 25 to 600 gallons a minute into Hondo Creek, 8 miles south of U. S. Highway 90. The altitude of the water at this spring is approximately equal to the altitude of the water level in well I–6–76, half a mile west of the river channel.

Depression springs are evident also in the bed of San Geronimo Creek near Riomedina and in the bed of Seco Creek south of D'Hanis. The flow of spring J–1–36 in San Geronimo Creek was approximately 160 gallons a minute in January 1951. Spring I–5–28 in Seco Creek was flowing approximately 25 gallons a minute in August 1951.

#### DISCHARGE FROM WELLS

Water is discharged artificially from pumped wells and from wells that penetrate artesian formations containing water under sufficient hydrostatic head to rise above the surface. Only four flowing wells were found in the county in 1952. Pumped wells supply water for nearly all domestic, stock, public-supply, and industrial usage in Medina County. Approximately one-fourth of the irrigation water is supplied by wells.

In 1951 the estimated average withdrawal of water from wells in the principal aquifer was 1,480,000 gallons a day; in 1952 it was 1,600,000 gallons a day.

For all formations, the estimated average discharge from wells in 1952 was 4,800,000 gallons a day for the following uses: Domestic and stock, 1,200,000 gallons a day; public-supply, 1,030,000 gallons a day; industrial, 70,000 gallons a day; and irrigation, 2,500,000 gallons a day.

### EVAPORATION AND TRANSPIRATION

Evaporation and plant transpiration discharge considerable ground water in Medina County, particularly where the water table is shallow in outcrops of the aquifers. Figure 3 shows that the monthly evaporation at Dilley, as determined by the United States Department of Agriculture, Soil Conservation Service, is highest during the summer months. Transpiration from plants also reaches a maximum during the same period. In most areas, evaporation reduces the downward percolation of water from the surface and soil to the water table. The amount of water lost from the water table directly by evaporation is relatively small because the depth to water is generally more than 50 feet below the surface.

The shallow water table in the Leona formation is accessible to many plants that are capable of sending their roots to the capillary fringe or the zone of saturation. Along the lowland bordering the streams in the county, a heavy growth of brush and trees derives most of its supplemental water from the ground-water reservoir. The water table in the outcrops of the other aquifers is generally below the depth normally penetrated by plant roots.

### MOVEMENT OF GROUND WATER

In a homogeneous medium, ground water moves in the general direction of the hydraulic gradient—that is, from points at which the artesian head or water table is high to points at which it is low. The Edwards and associated limestones do not form a homogeneous aquifer. The water seems to flow in solution channels along fractures generally parallel to the fault pattern. The contours on the piezometric map indicate only the general direction of flow. The water moves from the outcrop areas where the water table is at a relatively high altitude down the dip to the south, where, because of loss of head from friction, the hydrostatic head is progressively lower. The amount of water that can be withdrawn perennially from a ground-water reservoir depends upon the amount of recharge, the capacity of the aquifers to serve as conduits from the areas of recharge to the points of discharge, and the amount of water available from storage.

The coefficient of permeability of a water-bearing material is at the rate of flow, in gallons a day, through a cross section of 1 square foot under a hydraulic gradient of 1 foot per foot (or through a section 1 foot thick and 1 mile wide under a gradient of 1 foot per mile) at a temperature of 60° F. The field coefficient of permeability is the same except that it is measured at the prevailing temperature of the water rather than at 60° F. The coefficient of transmissibility of an aquifer is the product of the thickness of the aquifer, in feet, multiplied by the average field coefficient of permeability.

The amount of water that is released from storage when the head in an aquifer declines is called the coefficient of storage. It has been defined as the volume of water released from or taken into storage per unit surface area of the aquifer per unit change in the component of head normal to that surface. For water-table conditions the coefficient of storage is essentially the same as the specific yield, which is defined as volume of water a sample will yield by gravity, after being saturated to its own volume.

## CAPACITY OF FORMATIONS TO TRANSMIT AND YIELD WATER

Several pumping tests have been made of the Edwards limestone and of water-bearing sands of the Indio formation and the Carrizo sand. These tests consisted of pumping a well at a uniform rate and either observing the rate of drawdown in other observation wells or stopping the pump and observing the rate of recovery in the wells. These results were analyzed by means of the nonequilibrium formula developed by Theis (1935) to determine the coefficients of transmissibility and storage of the water-bearing beds. A discussion of this formula, the assumptions upon which it is based, and the applications are given by Theis (1938, p. 889–902) and Wenzel (1942).

The nonequilibrium formula assumes that the water-bearing formation is infinite in areal extent, that it is homogeneous and isotropic, that its transmissibility is the same at all places, and that it is bounded by impermeable beds above and below. It assumes also that the coefficient of storage is constant and that water is released from storage instantaneously with a decline in head. Although these conditions rarely, if ever, occur in nature, they are reasonably approximated, especially in extensive sand aquifers, and the nonequilibrium formula may be applied with some confidence.

The coefficients of transmissibility and storage determined from pumping tests made in wells tapping the Indio formation and Carrizo sand are given in table 6.

Table 6 indicates that the coefficients of transmissibility of the sands of the Indio formation range from 10,000 to 20,000 gpd per foot. This wide range was to be expected because the Indio formation consists of many lenticular bodies of sand, clay, and silt. The saturated material has a wide variation in grain size and percentage of clay. Well J-4-19 penetrated 64 feet of saturated material. Well I-6-126 penetrated 270 feet of silt, clay, and sand, and has 80 feet of screen. Well I-6-127 penetrated 340 feet of the Indio formation and has 72 feet of screen. Study of the available data indicates that the coefficients of transmissibility obtained from the pumping tests may possibly express the range to be expected in the Indio formation where it has a thickness of 60 feet or more.

TABLE 6.—*Results of pumping tests in southern Medina County*

| Well observed | Well causing interference | Aquifer penetrated | Coefficient of transmissibility (gpd/ft) | Coefficient of storage |
|---|---|---|---|---|
| J-4-19 | J-4-141 | Lower part of Indio formation. | 11,000 | ---- |
| I-6-126 | I-6-123 | Upper part of Indio formation. | 20,000 | 0.0016 |
| I-6-126 | I-6-123 | Upper part of Indio formation. | 12,000 | ---- |
| J-7-23 | J-7-21 | Carrizo sand | 134,000 | .028 |

Guyton (1942, p. 6-17) made a series of pumping tests on wells supplying Camp Swift in Bastrop County. The wells obtained water from an interbedded sand and clay zone, approximately 250 feet thick, in the Wilcox group. The coefficients of transmissibility ranged from 37,000 to 87,000 gpd per foot and the storage coefficients ranged from 0.0003 to 0.0007. These coefficients are in the same order of magnitude as those for the Indio formation in Medina County, if the difference in the saturated thicknesses of the sands is taken into consideration.

The coefficient of transmissibility of the Carrizo sand, as determined by a pumping test on well J-7-21, is approximately 134,000 gpd per foot (fig. 22). This was determined during a test made on wells in the Devine well field that penetrate approximately 115 feet of saturated sand. The wells are on the outcrop of the Carrizo sand. Pumping tests of the Carrizo sand were conducted in 1948 by D. E. Outlaw (manuscript in preparation) in the Winter Garden district where coefficients of transmissibility ranged between 35,000 and 39,000 gpd per foot.

As stated, the nonequilibrium formula assumes that the water-bearing formation is homogeneous and isotropic, that its transmissibility is the same at all places, and that it is infinite in areal extent. These assumptions are even less applicable to the limestone strata of Medina County than they are to the sands. The solution channels in the limestone are neither homogeneous nor isotropic, and they vary in areal extent. Faults, other fractures, and outcrops constitute hydrologic boundaries within the aquifer, and affect the rate of decline caused by pumping from wells.

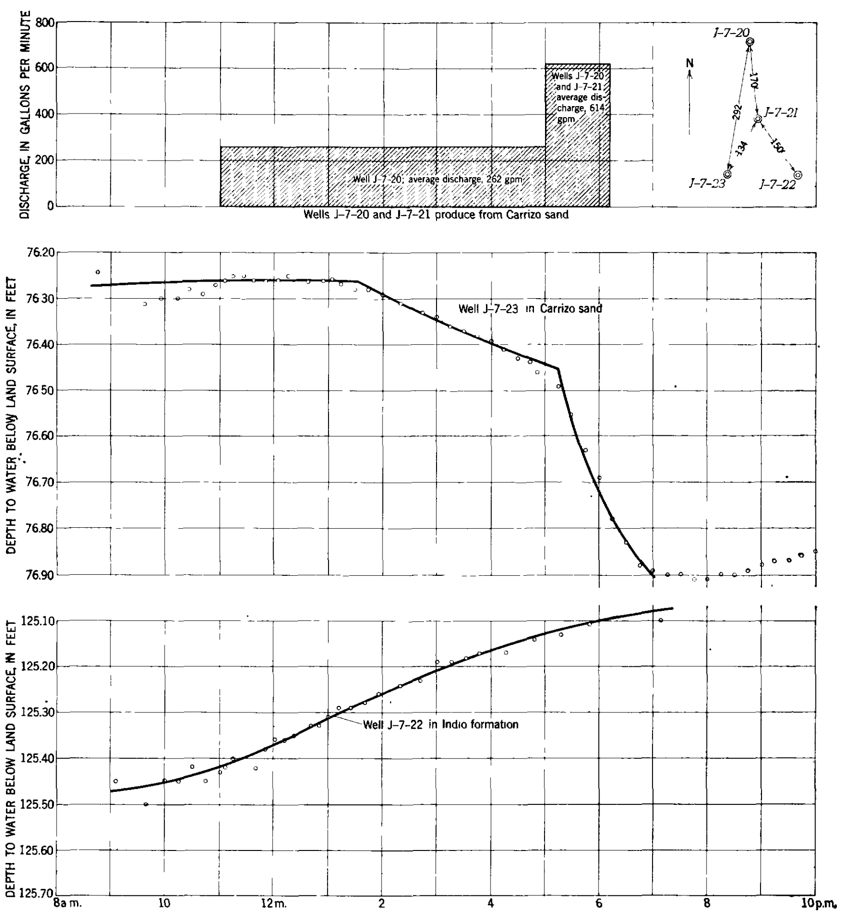


FIGURE 22.—Pumping test on wells J-7-20 and J-7-21, Medina County, Tex.

The Edwards limestone has a wide variation in porosity and permeability. Water moves in fractures and solution channels of varying size. Drillers have reported caverns as much as 20 feet in depth in wells in the limestone, whereas adjacent wells may be tight—that is, they may penetrate only small openings that are not connected. These irregularities in the character of the openings in the limestone restrict the application of the quantitative formulas.

A pumping test was made in October 1952 of the cavernous limestone in the upper part of the Edwards limestone. The test consisted of pumping municipal well J–1–83 at Castroville at the approximate rate of 510 gallons a minute and observing the rate of drawdown in adjoining well J–1–82. Well J–1–82 is 65 feet south of well J–1–83 and penetrates essentially the same thickness of the Edwards limestone. Both wells are open in the limestone. After pumping 9 hours, the water level in well J–1–83 had dropped 6.1 feet and the water level in well J–1–82 had dropped 0.08 foot. The water level in well J–1–84, 160 feet south of well J–1–82, was not measurably affected by the discharge of well J–1–83. The test indicates a rapid movement of water or a large volume of storage in the immediate vicinity of the pumped well. The results could not be used for computing coefficients of transmissibility and storage.

### DIRECTION OF GROUND-WATER MOVEMENT

The direction in which water is moving in an underground reservoir can be determined if the shape of the water table or the direction of the artesian-pressure gradient is known. In a ground-water reservoir of fairly homogeneous sand, sandstone, or gravel the direction and amount of slope of the piezometric surface usually can be mapped using data for a moderate number of observation wells. In a formation such as the Edwards limestone, the lack of uniformity of porosity and permeability decreases the accuracy of such a piezometric map.

In January 1951 and September 1952 the altitudes of the static levels of water in wells in the Edwards limestone were determined by measurements made below reference points of known altitude. From these data lines of equal altitude of water have been drawn which are shown on plates 3 and 4. The general directions of the movement of water varied but little from January 1951 to September 1952.

The configuration of the piezometric surface of the principal aquifer in Medina County is controlled chiefly by the hydrologic characteristics of the aquifer and its confining beds, the topography and drainage of the outcrop area, and the amount of throw of the faults. In general, the piezometric surface of the aquifer slopes from 30 to 60 feet per mile to the south in the area of outcrop. South of the outcrop also, the piezometric surface slopes to the south, but at a rate of 15 to 30 feet per mile. In the south-central part of the county the slope is in an easterly direction and ranges from 2 to 15 feet per mile. The gradient of the piezometric surface cannot be correlated directly with the amount of movement of the water because of the varying permeability of the limestone in the area.

The altitude of the water table in the outcrop of the Edwards limestone was about 940 feet in September 1952. In the vicinity of D'Hanis, the altitude of the piezometric surface was about 685 feet; in the vicinity of Hondo, about 660 feet; and near Castroville, about 650 feet. The altitude of the surface in the San Antonio area was approximately 630 feet and at Comal Springs at New Braunfels, 623 feet. These differences in altitude of the piezometric surface are sufficient for water to move to the east from Medina County to the San Antonio area.

The Edwards limestone underlies all of Medina County from the outcrop south; however, in the southern third of the county, the water in the formation is highly mineralized (see pls. 3 and 4) and also the formation lies too deep to be reached economically by water wells. Drillers' logs and core logs of oil tests drilled in this area show that the limestone lacks the high porosity common in the formation to the north. (See table 10.) The mineralization of the water encountered in many of these wells—for example, I–8–3—indicates that very little water moves down the dip. The approximate location of the boundary between the normal and more highly mineralized water in the Edwards is shown on plates 3 and 4. The location of the boundary suggests that the Pearson fault and several of the faults southwest of Dunlay retard the circulation of the water from the north to the south side of the faults.

### RELATION OF STRUCTURE TO MOVEMENT OF WATER

The movement of water to the south and east in Medina County has been complicated by the Balcones system of faults, which are transverse to the general hydraulic gradient (see pls. 4 and 5). The faults having large displacements may form barriers, diverting the ground water from its normal course.

Water entering the Edwards limestone from the Medina Lake area moves downdip to the south. The movement of water down the dip is retarded by the Haby Crossing fault, which in the area from Medina River to Cliff has sufficient throw to bring a relatively impermeable formation opposite the Edwards limestone. Most of the water moves to the southwest, along the fault, to the area north of Quihi where the throw is less than the thickness of the Edwards. Thence the water passes across the fault into the downthrown part of the Edwards. (See pls. 3 and 4.)

In the vicinity of Hondo and Verde Creeks, the throw of the faults is not sufficient to offset the Edwards limestone completely. The Medina Lake fault and the fault to its north locally divert the ground water moving in the outcrop area of the limestone. Fault gouge and a relatively impermeable limestone on the downthrown sides of the faults may prevent the movement of much water across the faults. The faulting between the Medina Lake fault and Hondo does not affect the southward movement of the ground water appreciably.

In the area near Woodard Cave where the Edwards limestone crops out, the faulting is sufficient to affect the movement of the water but does not completely prevent movement across the major fault. Drillers have reported that wells I–1–1 and C–7–28, south of the fault, did not encounter any porous zones or caverns such as were penetrated by wells drilled north of the fault and several miles to the south. The contours on plate 4 indicate an increase in the hydraulic gradient, probably due to a reduction in the permeability of the limestone. The displacement along the fault south of this area is too small to affect appreciably the movement of the ground water.

As suggested before, the Pearson fault and several of the faults southwest of Dunlay may serve as effective barriers to the downdip movement of the Edwards water. The highly mineralized water obtained from wells in the area south of the faults is indicative of poor artesian circulation.

The movement of water in the Escondido and Indio formations is locally affected by faulting, as shown by the difference in the chemical character of the waters on two sides of a fault (table 12). The movement of water through the Carrizo sand and the Leona formation is not appreciably affected by faulting.

## FLUCTUATIONS OF WATER LEVELS

The quantity of water stored in an artesian reservoir varies from day to day, season to season, and year to year, in response to changes in the rates at which water is taken into or discharged from the reservoir. The static or nonpumping level, which is the level to which water will rise in a well under its full pressure head, fluctuates in response to these changing conditions in a reservoir. Fluctuations of the water levels in wells are caused also by changes in atmospheric pressure, interference from nearby wells, earthquakes, and other disturbances. Determination of the fluctuations of the static levels and of the causes of fluctuations are essential to an understanding of the ground-water conditions in the reservoir.

Fluctuations of ground-water levels in Medina County were observed in 54 wells during the course of this investigation. Periodic measurements of the depth to water in the wells were made by observers using a steel tape chalked to show the water mark. Measurements of many of the same wells were made in 1930 (Sayre, 1936). The records of measurements of the water levels in the observation wells in Medina County are in table 11. The locations of these wells are shown on figure 23. Hydrographs of the water levels of 7 wells in the Edwards limestone and 1 well

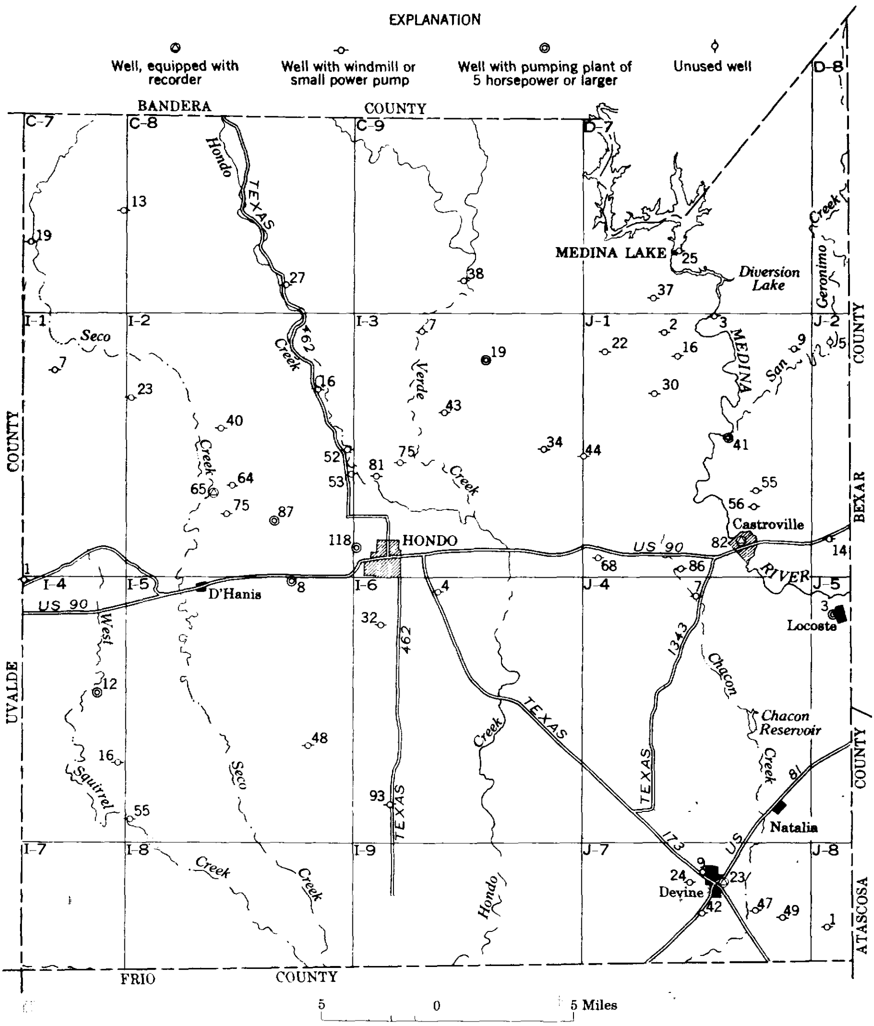


FIGURE 23.—Location of observation wells in Medina County, Tex.

in the Escondido formation may be compared in plates 5 and 6. These 8 wells, selected as permanent observation wells, have been measured periodically since 1930, except for well J-1-82, which was first measured, and equipped with a water-level recorder in 1950.

Some of the fluctuations of the static levels in wells penetrating the Edwards limestone are attributed to changes of storage affecting the artesian reservoir, but other changes in pressure upon the confined water do not involve changes in storage.

Ground water not discharged by springs and wells or by evaporation and transpiration must be discharged by seepage through the confining beds into other ground-water reservoirs or by subsurface movement in the aquifers into adjacent counties. The county lines do not represent the boundaries of the aquifers. Inasmuch as the discharge from the springs and wells in Medina County is considerably less than the recharge, a large part of the remaining water must seek a point of discharge in other areas. The general direction of ground-water movement is to the south and thence to the east, as shown in plates 3 and 4, into Bexar and Comal Counties.

### EFFECTS OF CHANGES IN STORAGE

The amount of water in storage in the principal aquifer is increased by infiltration of rainfall on the outcrop, of ephemeral runoff from nearby hills, and of flow in the streams crossing the outcrop. The storage volume is reduced by discharge from wells in Medina County and by subsurface movement of the water from Medina County toward the areas of natural and artificial discharge in Bexar and Comal Counties. The fluctuations of the water levels show the net effect of the additions to and subtractions from the artesian reservoir.

The relation between recharge by precipitation and change in water level in well J-1-82 is shown in plate 5. Comparison of the highest daily water levels with the precipitation graph shows a rapid rise in the static level immediately after a rainfall that exceeds 3 inches. Infiltration from precipitation may occur in any month of abundant rainfall, but it is most likely to occur in the spring and fall.

Distinction between recharge from precipitation and that from streamflow can be made only on the basis of time of occurrence. The only time when precipitation may be the predominant means of recharge is when the intermittent streams are dry and the perennial stream, the Medina River, is at a low stage. The first inch of rainfall under these conditions does not tend to raise the water level appreciably in well J–1–82. Thus an inch may be a measure of the precipitation required to replenish the typical soil-moisture deficiency.

Seepage from streams is a major source of recharge to the principal aquifer. The periods of greatest rise in the static level of well J–1–82 correspond to the periods of greatest rainfall and the maximum flow of the streams crossing the outcrop. Although the well is more than 10 miles south of the recharge area, the effects of recharge from precipitation and streamflow are transmitted to it almost immediately. The prompt response is an artesian phenomenon that reflects an increase in head at the outcrop as well as an addition of water to storage in the reservoir.

The effects of discharge of ground water from the reservoir are not immediately evident in the fluctuation of the static level of well J–1–82. The local pumping from the reservoir does not appreciably affect the static level of the well. The area of greatest discharge from the principal aquifer is 30 to 60 miles east and northeast of well J–1–82. If the annual discharge from this area is greater than the annual recharge to the outcrop, the static level in the well will decline. This situation existed in 1951 and 1952, when the recharge from the below-average rainfall was insufficient to balance the discharge from the reservoir. The static level in well J–1–82 declined approximately 1.5 feet a month during this period.

The maximum difference between highest and lowest level recorded in any of the wells in the Glen Rose limestone is 18.4 feet, the minimum is 12.2 feet, and the average is 15.3 feet. This moderate range in fluctuations of the water level is generally typical of wells in the outcrop of the Glen Rose. The water levels in these wells did not decline appreciably during the below-average precipitation of 1951 and 1952.

The difference between the highest and lowest water levels of well J–1–68 in the Escondido formation is 12.23 feet. During the 1951 and 1952 period of below-normal rainfall the water level declined approximately 8 feet. The fluctuation of the water level in this well is typical of wells in the outcrop area of the Escondido formation.

In observation well I–6–93 penetrating sediments of Wilcox age, the static water level was 51.9 feet below the land surface in January 1951 and 54.4 feet below the land surface in March 1952. In November 1952 the water level had risen to 32.1 feet below the land surface. The rise in water level reflects the recharge to the outcrop by local precipitation in May and June.

The maximum difference between the highest and lowest water levels recorded in any of the wells in the Carrizo sand is 13.3 feet, the minimum is 4.3 feet, and the average is 9.8 feet. The average decline in water level during 1951 and 1952 was 2.9 feet. All the observation wells in the Carrizo sand are in the outcrop area. The water levels in all but two of the wells in the Carrizo were higher in 1952 than the levels recorded for 1930.

### OTHER CHANGES IN WATER LEVEL

Artesian wells generally function like barometers—the water level in them fluctuates with the atmospheric pressure. When the atmospheric pressure increases, the additional weight of the air column depresses the water level in the well; when the pressure decreases and the air column is lighter, the water level rises. The fluctuations caused by changes in atmospheric pressure on the water in well J–1–82, as interpreted from the record of a barograph, ranged from 0.2 to 1.7 feet during the period from May 1950 to December 1952.

Fluctuations in atmospheric pressure do not affect water levels in wells tapping unconfined water because the atmospheric-pressure change is divided between the water and the material forming the aquifer. However, true water-table wells are rare in this area, and most of them will show some fluctuation due to changes in atmospheric pressure, indicating that the water is under slight confinement.

Fluctuations in water levels caused by earthquakes have been observed in well J–1–82. Each time, after the initial shock, the water in the well fluctuates above and below the static water level and then gradually returns to the static level.

## QUALITY OF GROUND WATER

### CHEMICAL CHARACTER OF THE GROUND WATER

The differences in chemical character of ground waters in Medina County in a general way reflect differences in the geologic formations. As water moves underground to wells or natural outlets of the water-bearing formations, it comes into contact with soluble minerals in the rocks. As a result of this contact two general processes occur. Most important at first is simple solution of the rock minerals, which is limited by the relative solubility of the rocks, time of contact, pressure, and temperature. The other process that alters water quality is ion exchange between the ions dissolved in the water and the rock minerals. For example, water may pass through a calcareous zone, taking calcium carbonate into solution in the form of calcium bicarbonate, and then pass through a clay zone in which calcium in the water is exchanged for sodium absorbed in the clay particles. Thus the resulting water may contain considerable dissolved sodium bicarbonate, even though neither the limestone nor the clay contained sodium bicarbonate as such.

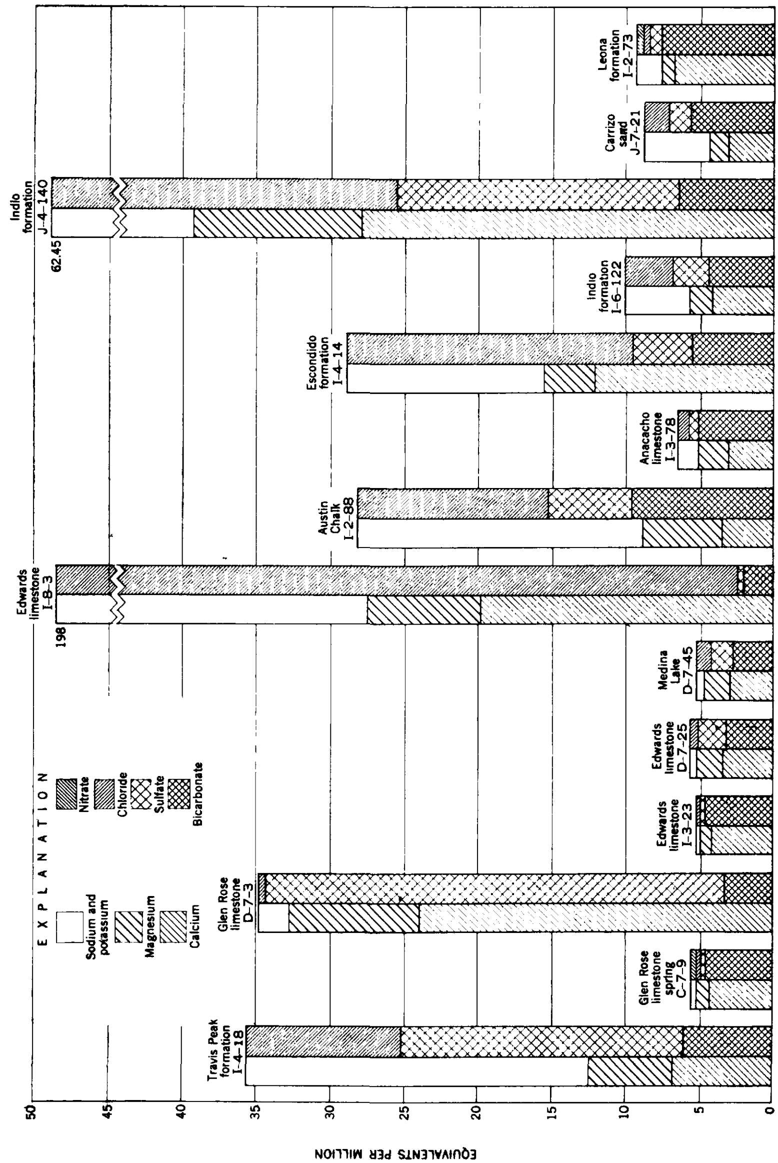


FIGURE 24.—Graphical representation of analyses of ground water in Medina County, Tex.

Samples of water were collected from 125 wells penetrating 9 aquifers and from 7 springs, 2 lakes, and a cave. The results of the analyses are given in table 12, and representative analyses are shown graphically in figure 24. The points where the water samples were collected are indicated by bars over the location numbers shown on plate 1. Most of the water samples were collected in 1952–53, and these analyses were made in the laboratory of the Geological Survey at Austin, Tex. Those made in 1930 were done at Washington, D. C., and were taken from Water-Supply Paper 678 (Sayre, 1936, p. 36–37).

The chemical composition of typical ground waters from the principal aquifers in Medina County is shown graphically in figure 24. The heights of the sections in a block correspond to the quantities, in equivalents per million, of the magnesium, calcium, sodium, and potassium cations, and the bicarbonate, chloride, sulfate, and nitrate anions.

### TRAVIS PEAK FORMATION

The Travis Peak formation yields water to well I–4–18, a drilled well near the Uvalde-Medina County line south of D'Hanis. This water contained 2,220 parts per million (ppm) of dissolved solids and excessive amounts of sulfate, chloride, and fluoride. Inasmuch as this is the only analysis of water from the Travis Peak formation in Medina County, it may not be representative of water contained in the formation in the remainder of the county.

### GLEN ROSE LIMESTONE

The Glen Rose limestone yields water containing moderate to large amounts of dissolved solids, the observed range in concentration being from 223 to 4,100 ppm. The more highly mineralized waters are high in sulfate content and are very hard. Water from springs and shallow wells in the Glen Rose is lower, generally, in dissolved solids than the water from the deeper wells, which is high in dissolved solids. The average content of dissolved solids in analyzed samples from springs and wells was about 1,870 ppm. The deeper wells that are relatively low in sulfate may penetrate interconnected solutional channels that permit free movement of water.

### EDWARDS LIMESTONE

Ground water produced from the Edwards limestone generally is uniform in quality, containing less than 300 ppm of dissolved solids. The observed range in hardness (as $CaCO_3$) was from 168 to 4,390 ppm. The municipal supplies of Hondo and Castroville are obtained from the principal aquifer. The dissolved solids in the water from the four wells owned by the city of Hondo and the Hondo Air Force Base range from 255 to 275 ppm. The water in the Castroville well, J–1–83, has 240 ppm of dissolved solids.

A few wells penetrating the Edwards limestone yield water containing more than 500 ppm of dissolved solids. The water in well J–1–38 had 110 ppm of sulfate; that from wells J–1–41, J–1–86, and J–2–1 had 298, 345, and 196 ppm of chloride, respectively; and that from well I–3–81 had 106 ppm of nitrate. The water from the Edwards in all these wells is believed to have been mixed with water from overlying formations entering the wells through leaky casing.

Plates 3 and 4 show an area in southern Medina County where there is probably little circulation of water in the Edwards limestone. The drillers of oil tests that have penetrated the Edwards limestone in this area report that water, if present at all, is highly mineralized. Oil test I–8–3 yielded water containing 6,960 ppm of chloride and dissolved solids of 11,400 ppm.

The water northwest of the Haby Crossing fault is of better quality than the water south of the fault. The fault has been shown to retard the downdip movement of water (see plates 3 and 4), resulting in a decrease in the amount of circulation in the reservoir south of the fault. Where solution has developed a reservoir with a system of connecting passages permitting the free movement of water, the amount of dissolved solids generally is comparatively uniform.

### AUSTIN CHALK

In general, water in the Austin chalk is highly mineralized, although several wells yield water of good quality. Water from wells I–2–61 and I–2–88 was moderately high in sulfate and chloride, and contained 813 and 1,610 ppm of dissolved solids, respectively.

### ANACACHO LIMESTONE

The Anacacho limestone locally yields water acceptable for domestic purposes, although it may be very hard. The analyses for well I–3–78 and spring I–3–82 show the water to be of acceptable quality.

### ESCONDIDO FORMATION

The Escondido formation yields water containing moderate to large amounts of dissolved solids, the observed range in concentration being from 484 to 3,330 ppm. The more highly mineralized waters are found near old oil and gas fields, which probably contaminate the water locally. In both dilute and concentrated waters chloride and sulfate are usually found in significant amounts. The available analyses show no significant relation between the chemical character of the water and the depth of the wells.

### INDIO FORMATION

Ground water in the Indio formation is generally of poor quality in Medina County. The range in concentration of sulfate, chloride, and dissolved solids is wide. The water in the lower part of the formation is higher generally in dissolved solids than water from wells in the upper part. The water from I–8–9 is of good quality. The more highly mineralized waters in the Indio formation may be the result of contamination by oil-field waters. The wide variation in the composition of the water may also be due in part to the wide variation in type of sediments and to the condition of their deposition.

### CARRIZO SAND

The analyses of water from wells show that the water in the Carrizo sand is generally of good quality, although hard. Dissolved solids are generally less than 500 ppm. The wells that supply the city of Devine yield water that has from 350 to 500 ppm of dissolved solids and less than 100 ppm each of sulfate and chloride.

### LEONA FORMATION

In chemical quality, the water from the Leona formation is satisfactory for most purposes. The nitrate content of the water is high in many places, the observed range being from 1.5 to 387 ppm. The water generally is very hard; the hardness ranges from a high of 516 ppm in well I–3–151 to 116 ppm in well J–4–118. Water from the Leona formation is the principal supply for the villages of D'Hanis, Quihi, and Lacoste.

## RELATION OF CHEMICAL CHARACTER TO USE

Various standards have been proposed from time to time to evaluate a water for drinking. The United States Public Health Service (1946), in setting standards for drinking water used on common carriers in interstate commerce, stated that certain chemical substances in natural or treated waters should not be present in excess of the concentrations listed below. The standards have been widely adopted by state and municipal authorities.

| *Constituent* | *Concentration* | *Constituent* | *Concentration* |
|---|---|---|---|
| Iron and manganese together | 0.3 | Sulfate | 250 |
| Magnesium | 125 | Fluoride | 1.5 |
| | | Chloride | 250 |

Total solids should not exceed 500 ppm; however, if water of such concentration is not available, a total-solids content of 1,000 ppm may be permitted.

Use of water that does not meet these suggested standards is common. Consumers accustomed to drinking water containing 1,500 ppm or more of dissolved solids may find an urban supply unpalatable that contains only 200 ppm, at least until they become used to it. Although most of the water sampled is considered by the users to be satisfactory for drinking and cooking purposes, water from a number of wells in Medina County contains objectionable amounts of sulfate and chloride; water from about half the wells sampled contains more than 500 ppm of dissolved solids.

Hardness, depending principally on the amount of calcium and magnesium in solution, is an important factor in public and industrial supplies. Water having a hardness of less than 60 ppm generally is considered soft. Water having a hardness in excess of 200 ppm is considered very hard and should be softened for most purposes, but such water is widely used without treatment.

The percentage of sodium among the principal cations, or percent sodium as it is commonly termed, is a value obtained by dividing the equivalents per million of sodium by the equivalents per million of calcium, magnesium, sodium, and potassium and multiplying by 100. It has a bearing on the suitability of a water for irrigation and lawn and garden sprinkling. Water in which the percent sodium is more than 60 may be injurious to certain types of soils, particularly if adequate drainage is not provided.

## CONTAMINATION OF GROUND WATER

A few of the water wells in Medina County show evidence of contamination and have been abandoned because water from them has become too highly mineralized to use. Wells I–5–2, J–1–37, and J–1–82 were abandoned when water from the Austin chalk containing hydrogen sulfide entered the wells through imperfect or corroded casing and contaminated the water from lower aquifers.

Some water wells that have been abandoned because they yield highly mineralized water may be restored to use by casing the wells, cementing the space outside the casing, and perforating the casing in the zones known to have fresh water.

During the period from 1925 to 1930 many shallow oil tests were drilled in the southern part of the country. A number of wells in the Indio formation near the old oil tests yield water too highly mineralized for human use. Wells I–8–1, I–8–2, and I–8–7 produce water having 2,840, 4,090, and 3,970 ppm of dissolved solids, respectively. These wells are within a mile of oil test I–8–3, which produces water having 11,400 ppm of dissolved solids. The water in well J–4–50, near oil tests J–4–47 and J–4–48 which flow salt water, has 1,290 ppm of chloride. In many oil fields the salt water is under sufficient pressure to raise it into contact with the shallow fresh-water aquifers, if an opening is provided. If the oil tests are not properly sealed or cased, contamination may occur. Other wells that yield mineralized water, however, such as I–4–15, I–5–31, and J–4–75, are too far from oil tests to have been contaminated from such sources. Analyses of water from these wells are not available, and no opinion can be expressed as to the reason for the high degree of mineralization.

## UTILIZATION OF GROUND WATER

Records for 1,003 water wells and 26 springs in Medina County are listed in table 9. Of the 1,003 wells 895 are used for domestic or stock purposes, 14 for public supplies, 35 for irrigation, and 4 by industry. Records were obtained from 103 oil tests and 55 domestic and stock, public-supply, and irrigation wells that are not being used. The geologic source of the ground water is shown in table 7.

TABLE 7.—*Source and use of ground water from observed wells and springs in Medina County*

| Geologic formation | Number of wells for indicated use | | | | | Number of springs | Total number |
|---|---|---|---|---|---|---|---|
| | Domestic and stock | Public supply | Irrigation | Industry | Not used | | |
| Leona formation | 178 | 1 | 7 | | 4 | 6 | 196 |
| Leona and Indio formations | | | 2 | | | | 2 |
| Carrizo sand | 55 | 3 | 5 | 1 | 8 | | 72 |
| Indio formation | 166 | 3 | 13 | 1 | 8 | | 191 |
| Escondido formation | 107 | | | | 7 | | 114 |
| Anacacho limestone | 11 | | | | 2 | 1 | 14 |
| Austin chalk | 11 | | 1 | | 1 | | 13 |
| Edwards and associated limestones | 256 | 7 | 6 | 2 | 13 | 2 | 286 |
| Edwards and Glen Rose limestones | 3 | | | | 1 | | 4 |
| Glen Rose limestone | 107 | | | | 11 | 17 | 135 |
| Glen Rose and Travis Peak formations | | | 1 | | | | 1 |
| Travis Peak formation | 1 | | | | | | 1 |
| Total | 895 | 14 | 35 | 4 | 55 | 26 | 1,029 |

### DOMESTIC AND STOCK

Most of the water used for domestic and stock purposes is obtained from wells and springs. In the northern part of the county, where there are large cattle ranches, springs and seepage areas are important sources of stock water. In the southern part of the county wells equipped with windmills or small-capacity electric or gas-driven pumps supply the comparatively small requirements of domestic and stock users.

## PUBLIC SUPPLY

The water supply for Hondo is supplied by four drilled wells that penetrate the Edwards limestone. Two wells near the center of town were drilled in 1906 and 1909. The wells, I–3–133 and I–3–134, are 1,500 and 1,600 feet deep, respectively, and are equipped with turbine pumps. Wells I–3–117 and I–3–118 were drilled into the Edwards limestone at depths of 1,400 and 1,500 feet, respectively, in 1942 to supply the Hondo Air Force Base with water. These two wells also supplement the water supply of the city of Hondo. The daily average water use at Hondo, including that at the air base, was about 475,000 gallons in 1952; maximum withdrawals were about 900,000 gpd.

Well J–1–82, drilled in 1923, supplied the city of Castroville with water from the Edwards limestone until 1948, when "sulfur" water entered the well through defective casing. Well J–1–83, presently supplying the city, was drilled in 1948. It is 715 feet deep and is equipped with a turbine pump operated by an electric motor. The following pumpage records were furnished by the city of Castroville.

TABLE 8.—*Daily averages of water pumped at Castroville, Tex.*

| Month | 1951 (gallons) | 1952 (gallons) | Month | 1951 (gallons) | 1952 (gallons) |
|---|---|---|---|---|---|
| January | 49,000 | 71,000 | July | 122,000 | 79,000 |
| February | 55,000 | 63,000 | August | 134,000 | 134,000 |
| March | 54,000 | 63,000 | September | 105,000 | 168,000 |
| April | 61,000 | 57,000 | October | 81,000 | 140,000 |
| May | 71,000 | 61,000 | November | 56,000 | 97,000 |
| June | 69,000 | 102,000 | December | 71,000 | 86,000 |

A number of the residents of Lacoste use water pumped from the Southern Pacific Railway well, J–5–3. During times of drought, local farmers haul water from this well for domestic and stock use. The water is of good quality and is not treated.

Devine obtains its water supply from three wells in the Carrizo sand and a fourth well in the Indio formation. Wells J–7–20, J–7–21, in the Carrizo sand, and J–7–22, in the Indio formation, are in the well field under the elevated steel tank in the east part of town. Well J–7–41, drilled in the Carrizo sand in 1952, is in the west part of town. All the wells are equipped with electrically operated turbine pumps. The total pumpage from the four wells during 1952 was 50.29 million gallons. The monthly pumpage in 1952 was as follows :

| Month | Gallons | Month | Gallons | Month | Gallons |
|---|---|---|---|---|---|
| January | 3,267,500 | May | 3,960,000 | September | 4,400,000 |
| February | 3,447,500 | June | 4,255,000 | October | 4,147,500 |
| March | 3,017,500 | July | 4,560,000 | November | 3,975,000 |
| April | 3,517,000 | August | 5,500,000 | December (est.) | 3,850,000 |
| Total | | | | | 50,291,000 |

The water supply for Natalia comes from two drilled wells in the Carrizo sand. The wells are equipped with turbine pumps operated by electric motors. The total pumpage in 1951 was 16.98 million gallons and in 1952 was 19.60 million gallons. The total pumpage in 1952, by months, was as follows:

| Month | Gallons | Month | Gallons | Month | Gallons |
|---|---|---|---|---|---|
| January | 1,462,000 | May | 1,756,000 | September | 1,837,000 |
| February | 1,440,000 | June | 1,979,000 | October | 1,649,000 |
| March | 1,333,000 | July | 2,323,000 | November | 1,547,000 |
| April | 1,518,000 | August | 2,752,000 | December (est.) | 1,480,000 |
| Total | | | | | 21,076,000 |

Public water supplies are not provided in D'Hanis, Quihi, Riomedina, Dunlay and Yancey. Water is obtained from privately owned shallow wells in the Leona formation, except at Yancey where water is obtained from sands in the Indio formation.

### INDUSTRY

The principal industrial use of ground water in Medina County is for cooling and air conditioning. Many private homes and business establishments have shallow wells that supply water for evaporative air conditioners.

The Atlantic Pipeline Co. well (I–3–66), drilled to 1,341 feet, taps the Edwards limestone. It is equipped with a turbine pump powered with an electric motor. The water is used for cooling at the Quihi pumping station. The Humble Refining Co. uses well J–5–18, drilled to a depth of 94 feet in the Carrizo sand, for cooling at the Natalia pumping station. The Natalia Cannery Co. obtains water from well J–4–131, drilled to a depth of 441 feet in the Indio formation. The water is used in canning vegetables grown in the Medina Irrigation District.

The Southern Pacific and the International and Great Northern Railroad lines used ground water from the Edwards limestone for filling locomotive boilers and for depot facilities until the advent of diesel engines. The water from the railroad wells is now used principally for public supply.

The Medina Valley State Fish Hatchery drilled a well, J–4–135, 69 feet deep in the Carrizo sand in 1951 to supplement the surface water supplying the fish ponds.

## IRRIGATION

In 1952 there were 35 irrigation wells in Medina County, descriptions of which are given in table 9. The larger irrigation wells pump water from the Glen Rose limestone, the Edwards limestone, the Indio formation, the Carrizo sand, and the Leona formation. All the wells are equipped with turbine pumps powered by electric, gas, gasoline, or diesel motors. The irrigation of crops with ground water in Medina County is comparatively new, although crops have been irrigated with surface water since 1918. The earliest large development of ground water for irrigation began in 1934 when well I–6–20 was drilled 90 feet into the Leona formation. The well was equipped with a turbine pump and is reported to have yielded 650 gallons a minute. The major irrigation development has been since 1947, the largest number of irrigation wells having been completed in 1952.

## FUTURE DEVELOPMENT

In most parts of Medina County the water level in the principal limestone aquifer is more than 100 feet below the surface, thus retarding its use for irrigation. The contour map (pl. 1), showing the depth to the Georgetown limestone, indicates that it would be necessary to drill to a depth of more than 1,200 feet in most of the areas where the water might rise to less than 100 feet from the land surface. Analyses show that the Edwards in a large area in southern Medina County contains highly mineralized water (pls. 3 and 4). The area in the vicinity of Castroville is the most favorable for the development of large supplies of ground water of good quality.

The Indio formation yields moderate amounts of water having a wide variation in composition. The more permeable sands of this formation may be developed for supplemental irrigation, provided that the more highly mineralized zones of water are cased off and cemented. The variation in thickness of the water-bearing sands and their comparatively low permeability preclude any large development of ground water. Extensive test drilling will be necessary to determine the best localities.

Irrigation in Medina County from the Carrizo sand is limited by the sandy nature of the soil on the outcrop. It is probable that considerable additional land could be irrigated by using proper conservation practices and water sprinklers. The lowering of the water table accompanying an increase in pumping from the area would allow additional amounts of floodwater to enter the formation from streams crossing the outcrop. Water levels in wells in the outcrop area have shown an immediate rise after flow in the local streams.

The Leona formation consists of local terrace deposits of silt, sand, and gravel whose principal source of recharge is floodwater. Large supplies of water may be developed from this formation in areas having saturated sands and gravels of sufficient thickness and areal extent. The terraced deposits along Hondo Creek south of U. S. Highway 90 have the thickness and lateral extent necessary to store a large supply of ground water. Wells I–6–20 and I–6–76 in the Leona are used for irrigation.

## SUMMARY OF CONCLUSIONS

The principal aquifers in Medina County are the Glen Rose limestone, the Edwards and associated limestones, the Escondido formation, the Indio formation, the Carrizo sand, and the Leona formation. Minor amounts of ground water are obtained from the Travis Peak formation, the Austin chalk, and the Anacacho limestone. The Anacacho limestone merges with the Taylor marl to the east. The Corsicana marl and Escondido formation become increasingly sandy to the west.

The rocks dip gently toward the coast and the movement of water is downdip except as controlled by faults of the Balcones system. Faults having large displacements form local barriers diverting the ground water from its normal course.

The hydraulic gradient of the water in the principal aquifer, shown by the altitudes of the water levels in wells, is southward from the recharge area, thence eastward. The absence of potable water in the aquifer in the southern part of the county indicates that little water moves southward out of the county. The altitude of the piezometric surface near Castroville is sufficiently high, as compared to the altitude of the water level in wells in San Antonio and at Comal Springs in New Braunfels, to indicate that water is able to move to these lower points of discharge.

The combined withdrawal of water from the principal aquifer by all wells in 1952 was approximately 1,810 acre-feet. Inasmuch as the estimated recharge to the Edwards limestone in the county is thought to average 90,000 acre-feet a year, the total discharge of water by all wells was only about 2 percent of the total recharge.

The observed range of coefficients of transmissibility of the lenticular sands of the Indio formation is from 10,000 to 20,000 gpd per foot. The wide variation in chemical composition of the water—the amount of dissolved solids ranges from 348 to 11,200 parts per million—is due to the variation in type of sediments and the conditions under which they were deposited, to the rate of movement of ground water in them, and possibly to contamination by oil-field wastes. The wide variation of factors affecting the storage and movement of ground water in the Indio formation suggests that extensive test drilling should precede the development of any large supplies of ground water. Supplies of water adequate for domestic and stock use and for supplemental irrigation may be obtained where there is more than 60 feet of saturated sand.

The coefficient of transmissibility of the Carrizo sand in the Devine well field is approximately 134,000 gpd per foot. The water is of uniformly good quality. Additional large quantities of water could be developed from the Carrizo without drastically lowering the water table, providing the wells were adequately spaced.

Water in sufficient quantities for public supply and irrigation can be obtained from wells in the principal aquifer in most parts of Medina County. In the southern part of the county the water is too highly mineralized for most uses, and the aquifer probably has a relatively low permeability, also. In the area near Castroville the artesian water will rise to within a hundred feet of the surface.

Large supplies of ground water may be pumped for short periods of time from the Leona formation, but the small areal extent of the terraces and the comparative thinness of saturated sands and gravels limit the amount of ground water held in storage in the reservoirs and exclude nearly all the Leona formation in the county from further large-scale development.

## REFERENCES

Adkins, W. S., 1928, Handbook of Texas Cretaceous fossils: Texas Univ. Bull. 2838.

Brown, N. K., Jr., 1952, Upper Cretaceous Foraminifera from Seco Creek, Medina County, Tex.: M. A. thesis, Texas Univ.

Bryan, Frank, 1933, Recent movement along the fault of the Balcones system, McLennan County, Tex.: Am. Assoc. Pet. Geologists, Bull., v. 17, p. 439–442.

Burleigh, Harry L., 1949, Extract from report of geologic reconnaissance, Medina Project: typed report, U. S. Bureau of Reclamation, p. 9–15.

——— 1936, Evidence of recent movements along faults of the Balcones system in central Texas: Am. Assoc. Petroleum Geologists Bull., v. 20, no. 10, p. 1537–1571.

Dumble, E. T., 1903, Geology of southwestern Texas: Am. Inst. Min. Eng. Trans., v. 33.

Gardner, Julia, 1933, The Midway group of Texas: Texas Univ. Bull. 3301, p. 75–77.

George, W. O., 1952, Geology and ground-water resources of Comal County, Tex.: U. S. Geol. Survey Water-Supply Paper 1138.

Guyton, W. F., 1942, Results of pumping tests on wells at Camp Swift, Tex.: typed open-file report, U. S. Geol. Survey, p. 6–17.

Hill, R. T. and Vaughan, T. W., 1898, Geology of the Edwards Plateau and Rio Grande Plain adjacent to Austin and San Antonio, Tex.: U. S. Geol. Survey 18th Ann. Rept., pt. 2.

Imlay, R. W., 1945, Subsurface Lower Cretaceous formations of south Texas: Am. Assoc. Petroleum Geologists Bull., v. 29, p. 1416–1469.

Leith, C. K. and Mead, W. J., 1915, Metamorphic geology: Holt Publishing Co., New York.

Liddle, R. A., 1918, The geology and mineral resources of Medina County: Texas Univ. Bull. 1860.

Livingston, Penn, 1947, Relationship of ground water to the discharge of the Leona River in Uvalde and Zavala Counties, Tex.: Tex. Board Water Eng.

Livingston, Penn, Sayre, A. N., and White, W. N., 1956, Water resources of the Edwards limestone in the San Antonio area, Tex.: U. S. Geol. Survey Water-Supply Paper 773.

Lonsdale, J. T., 1927, Igneous rocks of the Balcones fault regions of Texas: Texas Univ. Bull. 2744.

——— 1935, Geology and ground-water resources of Atascosa and Frio Counties, Tex.: U. S. Geol. Survey Water-Supply Paper 678.

Meinzer, O. E., 1923a, The occurrence of ground water in the United States, with a discussion of principles: U. S. Geol. Survey Water-Supply Paper 489.

——— 1923b, Outline of ground-water hydrology, with definitions: U. S. Geol. Survey Water-Supply Paper 494.

——— 1942, Physics of the earth, part 9, Hydrology: New York, McGraw-Hill Book Co., Inc.

——— 1946, General principles of artificial ground-water recharge: Econ. Geology, v. 41, p. 191–201.

Sayre, A. N., 1936, Geology and ground-water resources of Uvalde and Medina Counties, Tex.: U. S. Geol. Survey Water-Supply Paper 678.

Sayre, A. N., and Stringfield, V. T., 1948, Artificial recharge of ground-water reservoirs: Am. Water Works Assoc. Jour., v. 40, p. 1152–1158.

Sellards, E. H., 1919, The geology and mineral resources of Bexar County: Texas Univ. Bull. 1932.

——— 1931, Rocks underlying Cretaceous in Balcones fault zone of central Texas: Am. Assoc. Petroleum Geologists Bull., v. 15, p. 819–827.

Sellards, E. H., Adkins, W. S., and Plummer, F. B., 1932, The geology of Texas: Texas Univ. Bull. 3232.

Stead, F. L., 1951, Foraminifera of the Glen Rose formation (Lower Cretaceous) of central Texas: Texas Jour. Science, v. 3, no. 4, p. 577–605.

Stenzel, H. B., 1951, New observations on the Wilcox group: Am. Assoc. Petroleum Geologists Bull., v. 35, no. 12, abstract, p. 2625.

Stephenson, L. W., 1915, The Cretaceous-Eocene contact in the Atlantic and Gulf Coastal Plain: U. S. Geol. Survey Prof. Paper 90, p. 155–182.

——— 1927, Notes on the stratigraphy of the Upper Cretaceous formations of Texas and Arkansas: Am. Assoc. Petroleum Geologists Bull., v. 11, p. 1–17.

——— 1929, Unconformities in the Upper Cretaceous series of Texas: Am. Assoc. Petroleum Geologists Bull., v. 13, p. 1323–1334.

——— 1941, The larger invertebrate fossils of the Navarro group of Texas: Texas Univ. Bull. 4101.

——— 1953. Probable Reklaw age of a ferruginous conglomerate in eastern Texas: U. S. Geol. Survey Prof. Paper 243–C, p. 31–43.

Theis, C. V., 1938, The significance and nature of the cone of depression in ground-water bodies: Econ. Geology, v. 33, no. 8, p. 889–902.

Tolman, C. F., 1937, Ground water: New York, McGraw-Hill Book Co., Inc., p. 96–380.

Trowbridge, A. C., 1923, Tertiary stratigraphy in the lower Rio Grande region: Geol. Soc. America Bull. 34, No. 1, p. 75.

United States Geological Survey, 1933, Surface-water supply of the United States, 1930, part 8, Western Gulf of Mexico basins: U. S. Geol. Survey Water-Supply Paper 748.

United States Public Health Service, 1946, Public Health Service drinking water standards: Reprint 2697, p. 13.

Vaughan, T. W., 1900, Description of the Uvalde quadrangle: U. S. Geol. Survey Geol. Atlas, Uvalde folio (no. 64), p. 2–3.

Wenzel, L. K., 1942, Methods of determining permeability of water-bearing materials, with special reference to discharging-well methods: U. S. Geol. Survey Water-Supply Paper 887.

# WELL RECORDS

TABLE 9.—*Records of wells and springs in Medina County, Tex.*

Water-level measurements: Reported water levels given in feet; measured water levels given in feet and tenths of a foot.
Method of lift: A, Air lift; B, bucket; C, cylinder; E, electric; G, gasoline; H, hand pump; J, jet; T, turbine; W, windmill. Number indicates horsepower.
Use of water: D, Domestic; Ind, industrial; Irr, irrigation; N, not used; P, public supply; RR, railroad; S, stock.

[All wells are drilled unless otherwise noted under Remarks. For water levels marked with asterisk (*) see table 11 for measurements made on other dates]

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-7-1 (Spring) | Mary Hicks | | | | | Glen Rose limestone. | | | | Flows | D, S | Flowing 3.5 gpm Oct. 13, 1950. Reported never to have failed. Temp. 73° F. |
| C-7-2 | do | | 1919 | 700 | 11 | do | | 181.4 | Oct. 12, 1950 | None | N | Casing: 280 feet. |
| C-7-3 | do | | 1908 | 320 | 7 | do | | 177.9 | Oct. 13, 1950 | None | N | Casing: 16 feet. Water reported to have bitter taste. |
| C-7-4 | F. B. Padgett | J. Roberts | 1934 | 400 | 6 | do | | 204.8 | Oct. 12, 1950 | None | N | Casing: 80 feet. |
| C-7-5 | do | | 1942 | 20 | 6 | do | | 2.0 | do | C, W | D, S | Casing: 20 feet driven into spring. |
| C-7-6 | Louis Reber | J. Roberts | 1922 | 500 | 6 | do | | 143.3<br>185.3 | do<br>Sept. 11, 1951 | C, W | S | Casing: 400 feet. |
| C-7-7 (Spring) | do | | | | | do | | | | Flows | D, S | Flowing 6 gpm Oct. 12, 1950. On west bank of Seco Creek. Temp. 72° F. |
| C-7-8 (Spring) | M. I. Padgett | | | | | do | | | | Flows | D, S | Estimated flow 10 gpm Oct. 13, 1950. Reported never to have failed. Temp. 72° F. Reported maximum yield. 110 gpm. |
| C-7-9 (Spring) | Elton Miller | | | | | do | | | | Flows | D, S | Locally known as Miller Spring. Flowing 58 gpm June 12, 1952. See analysis table 12. Temp. 71½° F. |
| C-7-10 | G. M. Merritt | H. Wurtzler | 1951 | 320 | 6 | do | | 139.1 | Jan. 14, 1952 | C, W | S | Casing: 20 feet. |
| C-7-11 | Johnston & Johnston | J. G. Patton | 1940 | 665 | 4 | do | | 283.1 | Oct. 11, 1950 | C. W | S | Casing: 200 feet. Temp. 73° F. |
| C-7-12 | G. M. Merritt | | 1939 | 19 | 36 | do | | 13.1 | Sept. 13, 1951 | C, E ½ | D, S | Well was dug into spring. |
| C-7-13 | do | | | 400 | 6 | do | 1,361.5 | *243.1 | Oct. 11, 1950 | T, E ⅓ | S | See analysis, table 12. |
| C-7-14 | Johnston & Johnston | | 1924 | 388 | 5 | do | 1,278.2 | 185.8<br>188.0 | Oct. 12, 1950<br>Oct. 11, 1951 | C, E 1½ | D, S | Drawdown 21 feet after 2 hours pumping 8 gpm Oct. 11, 1951. |
| C-7-15 | Barnes Hillis | | 1919 | 285 | 5 | do | | 182.2 | Oct. 9, 1950 | C, W | D, S | Casing: 60 feet. |
| C-7-16 | G. M. Merritt | J. Roberts | 1944 | 300 | 5 | do | | 209.5 | Oct. 11, 1950 | C, W | S | |
| C-7-17 | C. P. Rugh | C. Mazurick | 1951 | 475 | 7 | do | | 178.1 | Oct. 10, 1950 | C, W | S | Water reported to have bitter taste. Deepened from 185 feet in 1951. |
| C-7-18 | do | G. Tschirhart | | 350 | 6 | do | | 255.4 | do | C, W | S | Odor of hydrogen sulfide. |
| C-7-19 | Carl Porter | J. Roberts | 1924 | 310 | 7 | do | 1,279.5 | *188.3 | Mar. 9, 1951 | C, W | D, S | Casing: 20 feet. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-7-20 | C. P. Rugh | C. Mazurick | 1949 | 486 | 7 | do | | 208.1 | Oct. 10, 1950 | C, W | S | Water reported to have bitter taste and red color. See analysis, table 12. |
| C-7-21 | do | | 1910 | 510 | 5 | do | | 153.7 | Oct. 9, 1950 | C, G<br>5 | D, S | Pumping 18 gpm Oct. 9, 1950. |
| C-7-22 | do | J. Roberts | 1922 | 475 | 5 | do | | 158.3 | Oct. 10, 1950 | C, G<br>5 | D, S | |
| C-7-23 | J. Woodard | do | 1946 | 423 | 6 | do | | 232.2 | Oct. 2, 1951 | T, E<br>2 | S | In Uvalde County. Pumping 11.5 gpm Feb. 2, 1951. Temp. 73° F. |
| C-7-24 | do | do | 1946 | 363 | 6 | do | | 118.8 | Feb. 2, 1951 | T, E<br>2 | S | In Uvalde County. |
| C-7-25 | do | do | 1946 | 347 | 6 | Edwards limestone (?) | | 261.1 | do | T, E<br>2 | S | Casing: 60 feet. Pump set at 310 feet |
| C-7-26 | do | do | 1945 | 340 | 6 | Glen Rose limestone. | | 195.9 | do | T, E<br>2 | S | Odor of hydrogen sulfide. |
| C-7-27 | do | do | 1935 | 276 | 6 | Edwards limestone(?). | 1,191.8 | 239.9 | do | T, E<br>2 | S | Locally known as Steam Pump well. Drawdown 8.2 feet while pumping 14 gpm Feb. 2, 1951. Temp. 72° F. |
| C-7-28 | do | do | 1942 | 1,009 | 5½ | Glen Rose limestone(?). | | 397.5 | do | J, E<br>2 | S | Muddy taste, no oder, milky color. Temp. 78° F. |
| C-7-29 | J. Woodard | J. Roberts | | | | Edwards limestone. | | | | | | Woodard cave. Water approximately 200 feet below surface. See analysis, table 12. |
| C-8-1 | H. Eckhardt | W. B. Richards | 1940 | 200 | 6 | Glen Rose limestone. | | 52.1<br>67.6 | Aug. 17, 1950<br>Sept. 1, 1951 | C, W | D, S, | See analysis, table 12. |
| C-8-2 | J. Burger | | 1920 | 26 | 38 | do | | 13.1 | Aug. 15 1950 | C, E<br>½ | D, S | Spring curbed with 20 feet of rock. Temp. 72° F. |
| C-8-3 | E. S. Rieber | H. Wurtzler | 1928 | 198 | 8 | do | 1,273.7 | 29.5 | do | | N | |
| C-8-4 | O. Mangold | do | 1928 | 250 | 6 | do | | 45.6 | do | C, G<br>5 | D, S | Pumping 18 gpm, Aug. 15, 1950. Pump set at 92 feet. |
| C-8-5 | do | R. Peters | 1921 | 32 | 35 | do | | 13.1 | do | B, H | D | Curbing: 12 feet of rock. |
| C-8-6 | H. E. Rieber | | | 200 | 7 | do | | 80.7<br>51.6 | Aug. 16, 1950<br>Sept. 7, 1951 | C, W | D, S | Odor of hydrogen sulfide. See analysis, table 12. |
| C-8-7 | G. Billings | | | 320 | 8 | do | | | | C, E<br>1 | D, S | Water reported to have bitter taste. Temp. 75° F. |
| C-8-8 | J. Storm | C. Mazurick | 1946 | 360 | 6 | do | 1,279.6 | 67.8 | Jan. 16, 1952 | C, W | D, S | Casing: 6 feet. Drawdown 82.4 feet after 4 hours pumping, 5 gpm, Jan. 16, 1952. |
| C-8-9 | M. Ney | H. Wurtzler | 1935 | 512 | 7 | do | | 147.6 | Oct. 9, 1950 | C, W | D, S | Casing: 20 feet. Water reported to have bitter taste. |
| C-8-10 | J. Ulbrich | | 1934 | 240 | 8 | do | | 45.9<br>109.4 | Aug. 16, 1950<br>Sept. 6, 1951 | C, W | S | Casing: 100 feet. |
| C-8-11 | G. C. Forbes | R. Peters | 1933 | 365 | 7 | do | | 187.8 | Aug. 16, 1950 | C, G<br>5 | D, S | Water reported to have slight odor hydrogen sulfide. Temp. 73° F. |
| C-8-12 | J. Ulbrich | J. Roberts | 1924 | 354 | 12 | do | | 83.2 | Aug. 15, 1950 | C, W | S | Casing: 40 feet. Odor of hydrogen sulfide. Temp. 73½° F. Aug. 16, 1950. See analysis, table 12. |
| C-8-13 | do | do | 1940 | 350 | 7 | do | 1,186.6 | 119.4 | do | C, W | S | Pumping 110 gpm when drilled, 1940. |
| C-8-14 | E. C. Martin | J. Jagge | 1932 | 422 | 10 | do | 1,403.4 | 277.1 | Oct. 9, 1950 | None | N | Casing: 3 feet. |
| C-8-15 | R. Marquis | H. Wurtzler | 1920 | 500 | 5 | do | | 288.7 | do | C, E<br>1 | D, S | Water reported to have bitter taste. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-8-16 | E. C. Martin | J. Roberts | 1939 | 400 | 6 | do |  | 240.9<br>228.5 | do<br>Sept. 7, 1951 | C, W<br>J, G 6 | D, S |  |
| C-8-17 | B. C. Jagge | G. Tschirhart | 1930 | 275 | 6 | Edwards limestone. | 1,182.5 | 227.2<br>220.4 | Aug. 4, 1950<br>Sept. 6, 1951 | C, W | S | Casing: 80 feet. Temp. 72° F. |
| C-8-18 | do | do | 1938 | 400 | 6 | Glen Rose limestone. |  | 200<br>149.4 | do<br>Aug. 4, 1950 | C, W | S | Reported to pump air after 2 hours pumping at 6 gpm. See analysis, table 12. |
| C-8-19 | F. D. Garrison | J. Roberts | 1942 | 300 | 5 | do | 1,161.8 | 179.7<br>186.3<br>174.2 | Jan. 9, 1951<br>Sept. 6, 1951<br>Sept. 3, 1952 | T, E 2 | D, S | Casing: 20 feet. Pumping 12 gpm. Jan. 9, 1951. |
| C-8-20 | Bob Depuy | C. Conway | 1948 | 500 | 7 | do |  | 184.5 | Sept. 15, 1951 | T, E 1½ | S | Water reported to have bitter taste. Temp. 74° F. |
| C-8-21 | F. D. Garrison | J. Jagge | 1926 | 300 | 4 | do |  | 169.5<br>195.7 | Jan. 9, 1951<br>Sept. 6, 1951 | C, W | S | Casing: 10 feet. |
| C-8-22 | do | do | 1926 | 320 | 12 | do |  | 200.6<br>201.1 | Jan. 9, 1951<br>Sept. 6, 1951 | C, W | S | Casing: 16 feet. Pump set at 280 feet. Reported small yield. |
| C-8-23 | F. D. Garrison | J. Jagge | 1939 | 300 | 5 | Edwards and Glen Rose limestones. |  | 167.6<br>175.4 | Jan. 9, 1951<br>Sept. 6, 1951 | C, W | S | Pumping 76 gpm July 1949. Temp. 72° F. See analysis, table 12. |
| C-8-24 | do | do | 1941 | 175 | 5 | Edwards limestone. |  | 172.9<br>164.5<br>164.8 | Jan. 9, 1951<br>Sept. 6, 1951<br>Sept. 3, 1952 | C, W | S | Casing: 120 feet. |
| C-8-25 | B. C. Jagge | Gabe Tschirhart | 1932 | 500 | 7 | do |  | 172.5<br>173.3 | Aug. 4, 1950<br>Sept. 6, 1951 | C, E 1½ | D, S | Casing: 80 feet. Water reported from cavernous limestone at 265–280 feet. Temp. 71½°F. See analysis, table 12. |
| C-8-26 | F. D. Garrison | H. Wurtzler | 1918 | 320 | 5 | do |  | 206.5 | Jan. 9, 1951 | C, W | D, S | Casing: 40 feet. Pump set at 230 feet. |
| C-8-27 | R. Zuberbueler | J. Jagge | 1922 | 300 | 5 | do | 1,119.9 | *219.1 | Aug. 17, 1950 | C, W | D, S | Temp. 72° F. See analysis, table 12. |
| C-8-28 | R. Depuy | C. Conroy | 1938 | 260 | 6 | do |  | 214.5 | Jan. 10, 1951 | C, W | S | No casing. |
| C-8-29 | R. Zuberbueler | J. Jagge | 1920 | 500 | 7 | do |  | 236.0 | July 28, 1950 | C, W | S | No casing. Temp. 71° F. See analysis, table 12. |
| C-8-30 | do | do | 1934 | 400 | 7 | do |  | 225.7<br>252.4 | Aug. 28, 1950<br>Sept. 6, 1951 | C, W | S | Temp. 72° F. |
| C-8-31 | Bob Depuy | C. Conway | 1951 | 138 | 8 | Glen Rose limestone. |  | 16.9 | Jan. 14, 1952 | T, G 12 | S, Irr | Casing: 86 feet. Draw-down 56 feet while pumping 64 gpm after 3 hours. Jan. 14, 1952. |
| C-8-32 (Spring) | Bob Depuy |  |  |  |  | do |  |  |  | C, W | D, S | Cement reservoir built around spring. Flowing 16 gpm Jan. 14, 1952. Temp. 71° F. See analysis, table 12. |
| C-8-33 | do | C. Conway | 1949 | 220 | 6 | do |  | 61.7 | Jan. 8, 1952 | C, W | S | Pump set at 210 feet. Reported to pump air after 2 hours pumping 5 gpm. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-8-34 (Spring) | M. Ney | | | | | do | | | | Flows | S | Bartz Spring. Flowing 6.5 gpm Mar. 18, 1952. Temp. 71½° F. |
| C-8-35 | Mrs. L. Davenport | | 1933 | 197 | 6 | do | | 67.0 | Apr. 21, 1952 | C, W | S | |
| C-9-1 | Mrs. B. C. Fleenor | W. B. Richards | 1936 | 160 | 4½ | do | | 77.7 | July 23, 1951 | C, E ¼ | D, S | Casing: 20 feet. Water reported to have bitter taste and red color. Temp. 72° F. |
| C-9-2 | R. J. Evans | do | 1936 | 120 | 5 | do | | 80.1 | do | C, E ¼ | D, S | Casing: 10 feet. |
| C-9-3 (Spring) | Joe Short | | | | | do | | | Oct. 23, 1951 | Flows | D, S | Flowing 57.2 gpm Oct. 23, 1950. Temp. 73.5° F. |
| C-9-4 | do | J. Harper | 1942 | 400 | 12 | do | | 30.7 | Feb. 11, 1952 | C, E ½ | D, S | Water reported to have bitter taste. See analysis, table 12. Temp. 73° F. |
| C-9-5 (Spring) | do | | | | | do | | | Oct. 23, 1950 | Flows | S | See analysis, table 12. Temp. 73°. |
| C-9-6 | S. C. Thurmond | J. Harper | 1938 | 231 | 6 | do | | 43.3<br>99.0 | July 23, 1951<br>Sept. 6, 1951 | C, E ½ | D, S | Flowing 38 gpm Oct. 23, 1950, and 10 gpm Mar. 30, 1951. Temp. 73° F. |
| C-9-7 | do | J. Groos | 1948 | 198 | 5 | do | | 137.6 | July 23, 1951 | C, W<br>J, G | D, S | Water reported to have bitter taste during dry weather. |
| C-9-8 (Spring) | E. J. Leinweber | | | | | do | | | | Flows | S | 80.6 gpm Oct. 25, 1950. Temp. 74° F. See analysis, table 12. |
| C-9-9 | do | Austin Smith | 1930 | 238 | 5 | do | | 132.6 | Dec. 20, 1950 | C, W | S | Moccasin Spring. Flowing 81 gpm Oct. 25, 1950. Temp. 74° F. |
| C-9-10 (Spring) | do | | | | | do | | | | | S | 12 gpm. Dec. 20, 1950. Temp. 74° F. |
| C-9-11 | W. S. Thurmond | J. Harper | 1948 | 296 | 5 | do | | 245.0<br>248.4 | Dec. 20, 1950<br>Sept. 6, 1951 | C, W | S | Goat Spring. Flowing 12.4 gpm Dec. 20, 1950. Temp. 74° F. |
| C-9-12 | E. F. Saathoff | J. Jagge | 1936 | 120 | 5 | do | | 49.7 | July 23, 1951 | C, E ¼ | D, S | Temp. 73° F. |
| C-9-13 | Joe Short | do | 1936 | 340 | 6 | Edwards limestone(?). | | 219.9 | Nov. 20, 1951 | C, W | S | Water reported to have bitter taste. |
| C-9-14 | R. Burger | W. Faulk | 1948 | | | Glen Rose limestone. | | 179.9 | do | C, W | D, S | |
| C-9-15 | Joe Short | W. Faulk | 1940 | 280 | 6 | do | | 184.1 | Nov 20, 1951 | C, W | D, S | Water reported to have bitter taste. |
| C-9-16 | C. J. Peters | G. Newman | 1948 | 300 | 6 | do | | 181.2 | do | C, G 5 | D, S | Driller reported top of Glen Rose at 270 feet. |
| C-9-17 | A. Burger | J. Harper | 1928 | 300 | 5 | do | | 159.0 | Sept. 10, 1950 | C, G 5 | S | Casing: 8 feet. Water reported to have bitter taste. |
| C-9-18 | H. G. Hay | do | 1947 | 399 | 6 | Edwards limestone. | | 213.3 | Nov. 15, 1950 | C, W | S | Water reported at 247 feet. |
| C-9-19 | do | Austin Smith | 1950 | 475 | | do | | 281.3<br>327.5 | Nov. 15, 1950<br>Sept. 11, 1950 | None | N | Near Verde Creek. |
| C-9-20 | do | C. Norten | 1950 | 475 | 7 | Edwards limestone(?). | | 171.6 | Nov. 15, 1950 | C, E | D, S | Casing: 15 feet. Water reported at 337 feet. |
| C-9-21 | E. J. Leinweber | J. Harper | 1946 | 357 | 8 | Glen Rose limestone. | | 281.3 | Dec. 20, 1950 | C, E ½ | S | Drawdown 42 feet after 30 minuter pumping 10 gpm Dec. 9, 1950. Aftes acidizing no measurable drawdown at 10 gpm. Temp. 74° F. |
| C-9-22 (Spring) | W. Reilly, Jr. | | | | | do | | | | | S | Indian Spring. Estimated flow 120 gpm Sept. 14, 1950. Temp. 74° F. |
| C-9-23 | J. L. Hensely | J. Jagge | 1934 | 410 | 6 | Edwards and Glen Rose limestones. | | 227.8 | Jan. 10, 1951 | C, G 4 | D, S | |
| C-9-24 | do | Austin Smith | 1950 | [illegible]60 | 6 | do | | 259.2 | do | C, W | S | Casing: 360 feet. See analysis, table 12. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-9-25 | Jack Winkler | J. Jagge | 1934 | 460 | 7 | Glen Rose limestone. | | | | C, E, 1½ | D, S | Water reported to have bitter tas te emp. 72° F. |
| C-9-26 | A. Saathoff | do | 1941 | 521 | 5 | do | 1,164.2 | 181.3 | Jan. 9, 1951 | C, W | S | Casing: 123 feet. Water reported to have bitter taste. Black precipitate inside discharge pipe. |
| C-9-27 | A. Winklie | | 1926 | 265 | 6 | Edwards limestone. | 1,178.4 | 176.9<br>189.1<br>179.0 | Jan. 5, 1951<br>Sept. 6, 1951<br>Mar. 19, 1952 | C, W | S | Temp. 72° F. |
| C-9-28 | W. DeGrodt | C. Norten | | 404 | 6 | do | 1,131.4 | 150.1 | Nov. 15, 1950 | None | N | |
| C-9-29 | do | Austin Smith | 1950 | 275 | 7 | do | | 199.7 | Jan. 16, 1952 | C, G, 5 | S | Reported drawdown 1.4 feet after 2 hours pumping 200 gpm Apr. 18, 1950. See analysis, table 12. See log. |
| C-9-30 | W. Schweers | J. Britch and Otto Weimer | 1944 | 332 | 6 | d) | | 272.8 | Jan. 5, 1951 | C, W | S | Temp. 72° F. |
| C-9-31 | do | B. Wiemers | 1910 | 330 | 6 | Glen Rose limestone(?). | | 203.6 | do | C, W | N | |
| C-9-:2 | H. C. Oefinger | J. Harper | 1926 | | 8 | Glen Rose limestone. | | 157.7 | Oct. 20, 1950 | C, W | S | |
| C-9-33 | R. Mumme | J. Roberts | 1950 | 585 | 8 | do | | 139.9 | Nov. 6, 1950 | C, G, W 6 | D, S | Water reported in sand memb r at 545–565 feet. Temp. 73° F. See analysis, table 12. |
| C-9-34 | Mrs. R. Decker | Ray Taylor | 1901 | 460 | 6 | Edwards limestone. | 1,106.5 | 141.9 | do | C, E, ½ | D, S | |
| C-9-35 | do | Austin Smith | 1947 | 330 | 5 | do | | 228.5 | do | C, E, ½ | S | Grayson shale (Del Rio clay) on surface. |
| C-9-36 | E. Britch | J. Jagge | 1936 | | 6 | do | | 233.6 | Oct. 30, 1950 | C, W | S | Casing: 100 feet. Buda limestone on su face. |
| C-9-37 | J. Schweers | do | 1938 | 300 | 7 | do | | 225.8 | Nov. 15, 1950 | C, W | S | Casing: 20 feet. Temp. 72° F. |
| C-9-38 | B. DeGrodt | T. Gilliam | 1928 | 346 | 6 | do | 1,129.1 | *192.8 | Mar. 14, 1951 | C, W | D, S | West well of two wells. See analysis, table 12. |
| C-9-39 | A. Winkler | | 1912 | 300 | 6 | do | 1,125.2 | 259.0<br>254.2<br>250.8 | Jan. 5, 1951<br>Mar. 19, 1952<br>Sept. 4, 1952 | C, E, 1½ | D, S | Casing: 20 feet. |
| C-9-40 | H. W. Schweers | J. Jagge | 1936 | 300 | 5 | do | 1,158.3 | 272.5 | Jan. 5, 1951 | C, E, 1½ | D, S | Casing: 40 feet. |
| C-9-41 | H. M. Mumme | C. Gilliam | 1906 | 325 | 5 | do | | | | C, G, 5 | D, S | Pumping 35 gpm Jan. 10, 1951. Temp. 72° F. |
| C-9-42 | J. L. Hensely | | 1945 | 440 | 6 | Edwards limestone(?) | | 268.3 | Jan. 10, 1951 | C, W | S | Pump set at 415 feet. Reported to pump air after 6 hour pumping 8 gpm |
| C-9-43 | J. L. Hensely | Austin Smith | 1948 | 360 | 7 | Edwards limestone. | | 291.9 | Jan. 10, 1951 | C, W | S | Water reported in cavernous limestone at 348–360 feet. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-9-44 | do | | 1937 | 410 | 7 | do | | 35[illegible].6 | Jan. 9, 1951 | C, W | D, S | Temp. 71° F. |
| C-9-45 | A. W. Schulte | J. Jagge | 1934 | 310 | 6 | do | 1,061.4 | 211.1 | do | C, E, 2 | D, S | See analysis, table 12. |
| | | | | | | | | 224.6 | Sept. 6, 1951 | | | |
| | | | | | | | | 211.5 | Mar. 19, 1952 | | | |
| C-9-46 | H. Saathoff | A. Gilliam | 1904 | 400 | 6 | do | 1,023.3 | 219.2 | Jan. 9, 1951 | C, W | D, S | |
| | | | | | | | | 206.8 | Sept. 6, 1951 | | | |
| | | | | | | | | 209.5 | Mar. 19, 1952 | | | |
| C-9-47 | W. L. Saathoff | J. Jagge | 1922 | 280 | 6 | do | | 260.8 | Jan. 4, 1951 | None | N | |
| C-9-48 | do | J. Harper | 1939 | 350 | 7 | do | | 252.2 | do | C, W | S | Edwards limestone on surface. |
| | | | | | | | | 230.4 | July 23, 1951 | | | |
| | | | | | | | | 240.7 | Sept. 16, 1951 | | | |
| C-9-49 | J. W. Weber | R. Bendele | 1951 | 355 | 7 | do | | 305.6 | Aug. 10, 1951 | C, G, 5 | S | Water reported to occur in three caverns between 281 and 355 feet. |
| C-9-50 | J. Schweers | B. Weimers | | 450 | 5 | do | | 249.8 | Jan. 5, 1951 | C, W | S | Buda limestone on surface. Temp. 72½° F. |
| C-9-51 | W. F. Schweers | W. Lancaster & Whiteside | 1947 | 268 | 8 | do | 1,077.5 | 254.0 | Jan. 4, 1951 | C, W | D, S | Well was dry Sept. 11, 1951. |
| | | | | | | | | 271.2 | Mar. 19, 1952 | | | |
| C-9-52 | do | R. Schwartz | 1927 | 325 | 6 | do | | 227.4 | Jan. 4, 1951 | C, W | S | Casing: 250 feet. |
| C-9-53 | E. Britch | J. Jagge | 1938 | | 5 | do | 1,022.1 | 187.7 | Oct. 30, 1950 | None | N | Casing: 100 feet. |
| | | | | | | | | 215.2 | Mar. 7, 1950 | | | |
| | | | | | | | | 224.7 | Sept. 4, 1952 | | | |
| C-9-54 | Jacob Schweers | J. Harper | 1945 | 346 | 8 | do | | 321.8 | Dec. 7, 1951 | C, W | S | Casing: 120 feet. Large sinkhole 300 feet south of well. |
| C-9-55 | E. J. Leinweber | Austin Smith | 1950 | 425 | | Glen Rose limestone. | | 120.2 | Dec. 20, 1950 | None | N | See log. |
| C-9-56 | Joe Short | do | 1951 | 139 | 6 | do | | 26.9 | Jan. 11, 1952 | C, W | S | Casing: 5 feet. Pump set at 92 feet. |
| C-9-57 | do | do | 1951 | 91.4 | 6 | do | | 68.6 | Feb. 11, 1952 | T, E, ¾ | D, S | Casing: 25 feet. Reported to pump air after 2 hours pumping 15 gpm. Drawdown 12.4 after 30 min. pumping 6 gpm. Temp. 76° F. See analysis, table 12. |
| | | | | | | | | 29.6 | Nov. 12, 1951 | | | |
| C-9-58 | do | do | 1951 | 237 | 5 | do | | 30.7 | Feb. 11, 1952 | None | N | Casing: 20 feet. See analysis. table 12. |
| C-9-59 | Ben Gerdes | do | 1951 | 280 | 6 | do | | 62.0 | do | C, W | S | Water reported to have bitter taste. |
| C-9-60 | Walter Conving | do | 1952 | 423 | 6 | do | | 167.2 | do | C, W | S | Casing: 6 feet. Water reported to have bitter taste. |
| C-9-61 | Joe Short | do | 1951 | 420 | 6 | do | | 183.8 | do | C, W | S | Water reported to have bitter taste. |
| C-9-62 | E. J. Leinweber | do | 1952 | 560 | 8 | do | | 271.1 | Jan. 22, 1952 | C, W | S | Drawdown 36.7 feet after 30 minutes pumping 6 gpm Jan. 22, 1952. |
| C-9-63 | J. S. Morris | J. R. Johnson | 1952 | 800 | 8 | Glen Rose limestone and Travis Peak formation(?). | 1,198 | 168.6 | Apr. 27, 1952 | T, E, 50 | rr | Casing: 691 feet. Reported drawdown 61 feet after 3 hours pumping 723 gpm Mar 22, 1952. Pump set at 275 feet, pumping 447 gpm Aug. 12, 1952. See analysis, table 12. |
| C-9-64 (Spring) | J. S. Morris | | | | | Glen Rose limestone. | | | Apr. 27, 1952 | Flows | D, S | Verde Spring. Flowing 17.6 gpm Apr. 27, 1952. Temp. 73° F. See analysis, table 12. |
| D-7-1 | Ben Schott | C. Parkens | 1939 | 325 | 5 | do | | 124.2 | Sept. 20, 1951 | C, E, ½ | D, S | Water reported to have bitter taste. |
| D-7-2 | Mrs. C. McNutt | | 1937 | 240 | 6 | do | | 198.9 | do | C, W | S | Do. |
| D-7-3 | I. McKay | | | 220 | 6 | do | | 149.4 | do | C, W | S | Heavy coating of minerals on discharge pipe. Temp. 74° F. See analysis, table 12. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D-7-4 (Spring) | R. Schott | | | | | do | | | do | Flows | S | Pecan Springs. Flowing 35 gpm Sept. 20, 1951. Temp. 73° F. |
| D-7-5 | do | W. Haby | 1947 | 300 | 5 | do | | 227 | do | C, W | S | Water reported to have bitter taste. |
| D-7-6 | Jack Walls | | 1909 | 42 | 36 | do | | 14.6 | do | C, W | D, S | Casing: 12 feet. Dug. |
| D-7-7 (Spring) | do | | | | | do | | | do | Flows | S | Flowing 5 gpm Sept. 20, 1951. |
| D-7-8 | R. E. Haby | J. Jagge | 1925 | 400 | 6 | do | | 277.6 | Dec. 15, 1950 | C, W | S | Water reported to have bitter taste. |
| D-7-9 (Spring) | do | | | | | do | | | | Flows | S | Flowing 3 gpm Dec. 5, 1950. Temp. 73° F. |
| D-7-10 | Alfred Haby | | 1942 | 275 | 5 | do | | 115.4 | Sept. 20, 1951 | C, W | D, S | Water reported to have bitter taste. |
| D-7-11 | do | J. Jagge | 1935 | 148 | 6 | do | | 134.7 | do | C, W | D, S | |
| D-7-12 | R. E. Haby | R. Letcher | 1945 | 220 | 6 | do | | 105.3 | Dec. 15, 1950 | C, W | S | Casing: 5 feet. Temp. 72° F. |
| D-7-13 | Altom Seekatz | Austin Smith | 1935 | 300 | 5 | do | | 54.9 | Sept. 15, 1951 | C, W | S | Near high water line of Medina Lake. Pump set at 148 feet. |
| D-7-14 | E. Seekatz | do | 1938 | 340 | 5 | do | | 102.7 | Sept. 20, 1951 | C, W | D, S | Water reported to have bitter taste. |
| D-7-15 | A. Haby | | 1920 | 586 | 8 | do | 1,155.2 | 220.4<br>245.6<br>262.2 | Jan. 8, 1934<br>Jan. 16, 1952<br>Mar. 19, 1952 | C, W | S | Water reported to have bitter taste. Well D-7-4 in U. S. Geol. Survey Water Supply Paper 678. |
| D-7-16 | do | | | 500 | 8 | do | 1,147.0 | 213.2<br>250.5<br>246.8 | Jan. 8, 1934<br>Jan. 16, 1952<br>Mar. 19, 1952 | C, W | S | Well D-7-3 in U. S. Geol. Survey Water-Supply Paper 678. |
| D-7-17 | do | | | 500 | 8 | do | 1,152.2 | 93.1<br>213.9<br>219.5 | Jan 8, 1934<br>Jan. 16, 1952<br>Mar. 19, 1952 | None | N | Well D-7-5 in U. S. Geol. Survey Water-Supply Paper 678. |
| D-7-18 | Sunny Blevins | J. R. Johnson | 1939 | 334 | 8 | Edwards limestone(?). | | 127.1 | Jan. 15, 1951 | C, E.<br>¼ | D | See log. |
| D-7-19 | Col. D. O'Connell | Gus Braemdle | 1945 | 476 | 7 | Glen Rose limestone(?). | | 311.5 | Dec. 15, 1950 | C, W | S | Temp. 77° F. |
| D-7-20 | J. L. Hensely | Austin Smith | 1950 | 495 | 7 | Glen Rose limestone | | 220.4 | Jan. 10, 1951 | C, W | S | Casing: 495 feet. Temp. 74½° F. See analysis, table 12. |
| D-7-21 | J. L. Hensely | Austin Smith | 1949 | 400 | 6 | Glen Rose limestone(?). | | 207.3 | Jan. 10, 1951 | C, W | S | Water reported to have bitter taste. |
| D-7-22 | T. J. Falgout | J. Jagge | 1936 | 300 | 7 | Edwards limestone. | 1,093.4 | 207.6<br>177.7<br>232.6 | Jan. 23, 1951<br>Sept. 12, 1951<br>Mar. 19, 1952 | C, W | S | |
| D-7-23 | Gen. J. G. Brant | J. R. Johnson | 1948 | 760 | 6 | Glen Rose limestone. | | 204.7 | Nov. 15, 1950 | C, E.<br>1 | D | Casing: 120 feet. Water reported to have bitter taste and hard. |
| D-7-24 | do | | 1938 | 195 | 6 | Edwards Comanche Peak, and Glen Rose limestones. | | | | G | D | Casing: 40 feet. Flowing 10 gpm Dec. 13, 1950. Temp. 73° F. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D-7-25 | R. Murray | A. Woerners | 1935 | 274 | 6 | Edwards limestone. | 1,086.5 | *153.7 | Dec. 12, 1950 | C, W | D | Casing: 13 feet. At east end of Medina Lake Dam. See analysis, table 12. |
| D-7-26 | Col. D. O'Connell | Gus Braendle | 1948 | 282 | 6 | do | | 181.9 | Dec. 13, 1950 | C, E ½ | D | Casing: 60 feet. Water reported at 125 and 275 feet. |
| D-7-27 | John Zynmeister | J. Jagge | 1938 | 280 | 7 | do | 1,106.6 | 183.6<br>211.3 | Dec. 12, 1950<br>Sept. 13, 1951 | C, W | D, S | Pump set at 260 feet. Temp. 72° F. |
| D-7-28 | J. L. Dowd | Austin Smith | 1950 | 310 | 6 | Glen Rose limestone. | | 24.6 | do | C, E ½ | D | Near river bed, below Medina Dam. Pump set at 294 feet. |
| D-7-29 | Le Roy Deman | Austin Smith | 1945 | 48 | 6 | Edwards limestone. | | 36.4 | Dec. 13, 1950 | C, E ¼ | D | Casing: 40 feet. Temp. 71° F. |
| D-7-30 | L. Kocurek | do | 1945 | 132 | 6 | do | | 55.9<br>84.8 | do<br>Sept. 13, 1951 | C, E ½ | S | Casing: 80 feet. Temp. 72° F. |
| D-7-31 | W. B. Lupe | do | 1945 | 140 | 5 | do | | 76.7 | Dec. 13, 1950 | T, E 1½ | D, S | Casing: 60 feet. Temp. 72° F. |
| D-7-32 | E. Seekatz | J. Harper | 1935 | 480 | 6 | do | | 258.7 | do | C, W | S | Casing: 120 feet. |
| D-7-33 | T. S. Falgout | — Brockley | 1945 | 500 | 5 | Edwards limestone(?). | 1,227.9 | 327.4<br>367.2<br>351.9 | Jan. 23, 1951<br>Sept. 21, 1951<br>Mar. 19, 1952 | C, E 2 | D, S | Casing: 500 feet. Drawdown 24 feet after 2 hours pumping 60 gpm Jan. 23, 1951. |
| D-7-34 | A. Boehme | | 1908 | 560 | 6 | do | 1,195.7 | 300.0<br>306.4<br>330.9 | Jan. 15, 1934<br>Jan. 23, 1951<br>Mar. 19, 1952 | C, W | D, S | Casing: 60 feet. Well D-7-1 in U.S. Geol. Survey Water-Supply Paper 678. Temp. 72° F. |
| D-7-35 | G. Boehme | J. Jagge | 1940 | 400 | 6 | Edwards limestone. | | 988.8 | Jan. 23, 1951 | C, E 1½ | S | Casing: 6 feet. |
| D-7-36 | do | | 1911 | 365 | 6 | do | 1,178.4 | 301.4<br>325.2 | do<br>Mar. 19, 1952 | C, W | D, S | Temp. 73° F. |
| D-7-37 | M. Haby | J. Jagge | 1928 | 450 | 6 | do | 1,168.1 | *309.6 | Nov. 7, 1950 | C, W | D, S | Temp. 72½° F. See analysis, table 12. |
| D-7-38 | Harvey Haby | do | 1933 | 200 | 5 | do | 944.4 | 77.7 | Dec. 12, 1950 | C, E 1 | D | Casing: 20 feet. East bank of diversion lake on Medina River. |
| D-7-39 (Spring) | R. E. Haby | | | Spring | | do | | | Jan. 23, 1950 | Flows | S | Flowing 8 gpm Jan. 23, 1950. Temp. 71° F. |
| D-7-40 | A. Haby | | 1908 | 350 | 6 | do | | 178 | Sept. 18, 1950 | C, W | S | |
| D-7-41 | A. Haby | | 1910 | 444 | 6 | do | 928.5 | 146.8<br>151.3 | Jan. 8, 1934<br>Jan. 5, 1952 | C, W | D, S | Well D-7-2 in U.S. Geol. Survey Water-Supply Paper 678. |
| D-7-42 | A. Schuchart | A. E. Goforth | 1921 | 600 | 7 | do | 1,078.4 | 364.8<br>359.0 | Sept. 13, 1951<br>Sept. 4, 1952 | C, W | S | |
| D-7-43 | O. W. Schuchart | | | 400 | 7 | do | | | | C, W | S | Well D-7-6 in U. S. Geol. Survey Water-Supply Paper 678. Temp. 73° F. |
| D-7-44 (Spring) | do | | | | | Glen Rose limestone. | | | Mar. 18, 1952 | Flows | S | Bear Spring. Flowing 32 gpm Mar. 18, 1952. Temp. 72° F. |
| D-7-45 (Lake) | Medina Valley Irrigation District. | | | | | Edwards and Glen and Rose limestones. | | | | | | Medina Lake. See analysis, table 12. |
| D-8-1 | F. S. Galle | | 1912 | 122 | 5 | Glen Rose limestone. | | 42.5 | Sept. 20, 1951 | C, W | S | Water level reported 31 feet below land surface as of Sept. 1950. |
| D-8-2 | do | | 1921 | 360 | 8 | do | | 64.4 | do | C, W | S | West bank of San Geron'mo Creek. |
| D-8-3 | do | | 1935 | 360 | 6 | do | | 54.8 | do | C, E 2 | D, S | |
| D-8-4 (Spring) | L. A. Schott | | | | | do | | | do | Flows | S | Flowing 6 gpm Sept. 20, 1951. Temp. 72° F. |
| D-8-5 | do | | 1938 | 68 | 6 | do | | 22.0 | do | C, E ½ | D, S | |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D-8-6 | Mrs. C. McNutt | | 1910 | 244 | 7 | do | | 25.5 | Sept. 20, 1951 | C, E, 3 | D, S | Supplies Gallagher Dude Ranch. |
| D-8-7 | O. W. Schuchart | J. Jagge | 1939 | 671 | 6 | do | | 289.0 | Aug. 13, 1951 | C, W | S | Casing: 260 feet. Owner reports insufficient yield. |
| D-8-8 | do | Austin Smith | 1950 | 671 | 7 | do | | 374.1 | do | C, E, 2 | D, S | Casing: 20 feet. Pumping 60 gpm June 19, 1952. Temp. 72° F. See log. See analysis, table 12. |
| D-8-9 | A. J. Schuchart | | 1900 | 520 | 6 | Glen Rose limestone(?). | 1,015.3 | 301+<br>307.6<br>367.4 | Jan. 11, 1934<br>May 18, 1951<br>Sept. 4, 1952 | C, W | D, S | Not cased. Well D-8-1 in U. S. Geol. Survey Water-Supply Paper 678. |
| D-8-10 | | | | | | | | | | | S | |
| D-8-11 | Schuhart Bros. | | | 300± | 6 | Edwards limestone(?). | | 114.8 | June 18, 1952 | C, W | N | |
| D-8-12 | F. L. Wurzbach | | Old | 25 | 60 | Leona formation. | | 24.6 | June 19, 1952 | C, W | D, S | Dug. No curbing. |
| I-1-1 | J. Woodard | J. Roberts | 1932 | 411 | 6 | Edwards limestone. | | 345.5 | Feb. 2, 1951 | T, E, 2 | S | |
| I-1-2 | do | do | 1944 | 410 | 6 | do | 1,171.2 | 342.1<br>346.7<br>367.0 | do<br>Mar. 19, 1952<br>Sept. 13, 1952 | T, E, 2 | D, S | Supplies Woodard Ranch headquarters Temp. 72° F. |
| I-1-3 | do | do | 1946 | 1,009 | 6 | Glen Rose limestone. | | 337.1 | Feb. 2, 1951 | T, E, 2 | S | Casing: 60 feet. At junction of Seco and Spring Creeks. See analysis, table 12. Temp. 71° F. |
| I-1-4 | J. Woodard | J. Roberts | 1946 | 430 | 6 | Edwards limestone. | | 405.3 | Feb. 2, 1951 | T, E, C, A | S | Buda limestone at surface. |
| I-1-5 | do | do | 1946 | 425 | 6 | do | | 388.7 | Feb. 1, 1951 | T, E, 2 | S | Pump set at 418 feet. |
| I-1-6 | do | do | 1946 | 415 | 6 | do | 1,172.7 | 411.6 | do | T, E, 2 | S | Small yield. |
| I-1-7 | E. L. Kelley | do | 1947 | 412 | 6 | do | 1,167.0 | *392.6 | Mar. 15, 1951 | C, E, 2½ | S | Casing: 412 feet. Driller reported cavern at 408–412 feet. Blowing well. Water temp. 71° F. Well deepened from 412 to 476 feet in 1952. See analysis, table 12. |
| I-1-8 | do | do | 1920 | 400 | 6 | do | | 363.2 | Oct. 11, 1950 | C, E, 5 | D, S | Casing: 350 feet. Irrigates 2-acre garden. Temp. 72° F. See analysis table 12. |
| I-1-9 | J. Woodard | do | 1923 | 500 | 7 | do | 1,191.5 | 390.1 | Jan. 5, 1951 | T, E, 2 | S | Casing: 210 feet. |
| I-1-10 | E. L. Kelley | do | 1950 | 362 | 6 | do | | 239 | Dec. , 1950 | T, E, 1½ | S | Casing: 80 feet. Water reported in cavernous limestone at 310 feet. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-1-11 | Mrs. Joe Reily | J. W. Harper | 1912 | 435 | 7 | do | | 298 | Jan. , 1950 | C, E<br>4 | D, S | Not cased. |
| I-1-12 | Tena Rothe | J. Roberts | 1948 | 432 | 6 | do | 1,140.6 | 340.3<br>363.3<br>396.3 | Mar. 1, 1951<br>Sept. 5, 1951<br>May 19, 1952 | C, W | S | Casing: 60 feet. Temp. 72° F. See analysis, table 12. |
| I-1-13 | J. Finger | California-Medina Oil Co. | 1927 | 600 | 6 | do | 1,066.8 | 332.8 | Mar. 2, 1951 | C, W | S | Oil test converted to water well. Water reported at 518 feet. |
| I-1-14 | Tena Rothe | | 1901 | 500 | 8 | do | 1,086.7 | 341.9<br>353.9<br>356.8 | Mar. 1, 1951<br>Sept. 5, 1951<br>May 20, 1952 | C, W | D, S | |
| I-1-15 | do | California-Medina Oil Co. | 1927 | 3,705 | 24 | do | | 335.9 | Feb. 28, 1951 | None | N | Oil test plugged back to 677 feet. Well I-1-5 in U. S. Geol. Survey Water-Supply Paper 678. See log, table 10. |
| I-1-16 | L. A. Haby | Mid-Kansas Oil & Gas Co. | 1925 | 1,605 | 10, 6 | do | 957 | | | None | N | Oil test. |
| I-1-17 | M. Tschirhart | J. Roberts | 1927 | 585 | 6 | do | 1,037.9 | 282.0<br>298.6<br>325.6 | Oct. 3, 1934<br>Mar. 2, 1951<br>May 13, 1952 | C, W | S | Temp. 73° F. Well I-1-6 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| I-1-18 | J. Cameron | | 1940 | 1,400 | 6 | do | | 365.9 | Mar. 1, 1951 | C, W | D, S | |
| I-1-19 | L. A. Haby | J. Roberts | 1924 | 650 | 6 | do | | 330.6 | Mar. 3, 1951 | C, W | S | |
| I-1-20 | W. Glasscock | do | 1946 | 1,100 | 7 | do | 1,061 | 300+ | Mar. 13, 1951 | C, W | S | Water reported in cavernous limestone at 890 feet. |
| I-1-21 | do | J. W. Harper | 1915 | 1,150 | 6 | do | 1,059.3 | 323.0<br>278.8 | do<br>Sept. 6, 1952 | C, W | D, S | Casing: 800 feet. Auxiliary 10-horse-power engine. Temp. 73° F. |
| I-1-22 | A. L. Rothe | J. Roberts | 1911 | 1,140 | 6<br>4 | do | | 290 | Mar. 13, 1951 | C, E<br>5 | S | Casing: 1,000 feet. Pump set at 320 feet. Slight amount of oil in water. Temp. 74° F. See analysis, table 12. |
| I-1-23 | do | do | 1930 | 1,050 | 6 | do | | 273.2 | Feb. 12, 1951 | C, W | S | Casing: 960 feet. |
| I-1-24 | M. T. Schuchart | do | 1928 | 995 | 5 | do | 995.5 | 254.9<br>266.8 | Oct. 3, 1934<br>Sept. 8, 1951 | C, G<br>5 | S | Temp. 73° F. Well I-1-7 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-1-25 | R. D. Hallern | | 1917 | 500 | 6 | Anacacho limestone. | | 125.1 | Feb. 19, 1930 | C, W | D, S | Unable to measure in 1951. Well I-1-4 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-1-26 | H. Clary | C. Gooding | 1946 | 145 | 6 | Escondido formation. | | 91.4 | Mar. 17, 1952 | C, E<br>¼ | D, S | Casing: 20 feet. |
| I-1-27 | Mrs. Joe Reily | J. Roberts | 1939 | 485 | 8 | Edwards limestone. | 1,109.0 | 347.4 | May 22, 1952 | C, W | S | Casing: 260 feet. Pump set at 374 feet. |
| I-2-1 | Walter Rothe | | 1907 | 370 | 6 | do | 1,088.0 | 302.2<br>302.5 | Mar. 8, 1951<br>Mar. 18, 1952 | T, E<br>½ | D, S | Austin chalk at surface. |
| I-2-2 | A. Saathoff | B. Schuelling | 1929 | 270 | 5 | do | | 221.4 | July 28, 1950 | C, W | S | |
| I-2-3 | F. B. Brucks | J. Jagge | 1938 | 400 | 7 | do | | 272.4<br>234.7 | Jan. 4, 1950<br>July 28, 1950 | C, G<br>5 | D, S | Pump set at 320 feet. Drawdown 3.4 feet after 3 hours pumping 8 gpm July 28, 1950. |
| I-2-4 | J. Ullrich | | | 350 | 6 | do | 1,077.8 | 254.6 | July 23, 1950 | C, W | D, | Blowing well. |
| I-2-5 | F. Rothe | | 1918 | 400 | 7 | do | 1,058.1 | 259.8 | Sept. 21, 1950 | C, E, G<br>1½ | D, S | Casing: 80 feet. Temp. 71½° F. |
| I-2-6 | do | J. Jagge | 1917 | 400 | 8 | do | | 260.6 | do | C, W | S | Water level reported 265 feet below land surface as of June 1917. Temp. 72° F. |
| I-2-7 | Gus Rothe | J. Harper | 1916 | 400 | 8 | do | | 228.0 | Sept. 20, 1950 | C, G<br>5 | D, S | Temp. 72° F. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-2-8 | Armin Rothe | | 1910 | 420 | 5 | do | | 224.2 | do | C, G, 6 | D, S | Casing: 20 feet. Temp. 71° F. |
| I-2-9 | R. Depuy | B. Schuelling | 19 3 | 320 | 6 | do | | 239.2 | Sept. 22, 1950 | C, W | S | No casing. |
| I-2-10 | Frank Rothe | J. Roberts | 1935 | 400 | 6 | do | | 268.7 | do | C, W | S | |
| I-2-11 | Clint Rothe | do | 1935 | 400 | 5 | do | 1,041.7 | 254.3 | Sept. 21, 1950 | C, W | D, S | Casing: 80 feet. Temp. 72° F. |
| | | | | | | | | 270.4 | Mar. 18, 1952 | | | |
| | | | | | | | | 277.9 | Sept. 5, 1952 | | | |
| I-2-12 | Armin Rothe | | 1902 | 400 | 6 | do | | 209.6 | Sept. 20, 1950 | C, W | S | Grayson shale (Del Rio clay) at surface. |
| I-2-13 | A. I. Davenport | H. Haby | 1934 | 355 | 6 | do | | 239.4 | July 27, 1950 | C, W | D, S | No casing. Temp. 72° F. |
| I-2-14 | R. Depuy | | 1912 | 350 | 5 | do | | 192.7 | do | C, W | S | |
| I-2-15 | W. A. Leinweber | J. Roberts | 1942 | 430 | 7 | do | | 203.6 | do | C, W | D, S | |
| | | | | | | | | 228.8 | Sept. 6, 1951 | | | |
| I-2-16 | A. Schlentz | | 1918 | 400 | 8 | do | 1,021.7 | *217.4 | do | C, E, 2 | D, S | Blowing well Well I-2-7 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| I-2-17 | A. C. Gilliam | J. Jagge | 1945 | 400 | 8 | do | | 208.0 | July 26, 1950 | C, W | D, S | Temp. 72° F. |
| I-2-18 | do | C. Gilliam | 1950 | 436 | 8 | do | | 295.4 | do | C, W | S | Blowing well. Temp. of water 71½° F. See analysis, table 12. |
| | | | | | | | | 321.8 | Sept. 6, 1951 | | | |
| I-2-19 | do | J. Jagge | 1945 | 390 | 8 | do | | 192.4 | July 26, 1950 | C, W | S | Temp. 72° F. |
| | | | | | | | | 213.9 | Sept. 6, 1950 | | | |
| I-2-20 | E. P. Friemel | J. Roberts | 1950 | 327 | 6 | do | | 254.5 | Aug. 31, 1950 | C, G, 5 | S | Casing: 327 feet. |
| I-2-21 | Herman Ney | | 1900 | 450 | 5 | do | 1,038.1 | 260.5 | Sept. 6, 1950 | C, E, 5 | D, S | Water reported in cavernous limestone at 350 feet. Temp. 72° F. See analysis, table 12. |
| | | | | | | | | 264.9 | Mar. 18, 1952 | | | |
| I-2-22 | E. A. Rothe | Joe Anderle | 1910 | 300 | 4 | do | 1,026.6 | 249.6 | Sept. 22, 1950 | C, W | D, S | Casing: 100 feet. Temp. 72° F. |
| I-2-23 | L. Finger | R. Hensley | 1934 | 330 | 6 | do | 1,067.5 | *270.1 | Sept. 22, 1950 | C, E, 1½ | D, S | Casing: 120 feet. Drawdown 1.3 feet after 2 hours pumping 30 gpm, Aug. 8, 1951. |
| I-2-24 | Herman Ney | | 1910 | 500 | 6 | do | | 250.4 | Sept. 6, 1950 | C, W | S | |
| | | | | | | | | 269.3 | Sept. 7, 1951 | | | |
| I-2-25 | Elmer Freemel | R. Hensley | 1940 | 300 | 5 | do | | 194.0 | Aug. 31, 1950 | C, W | D, S | Temp. 71° F. |
| I-2-26 | Louis Weynand | | 1920 | 240 | 6 | do | | 195.6 | do | C, G, W, 5 | D, S | Temp. 71½° F. |
| | | | | | | | | 208.4 | Sept. 7, 1951 | | | |
| I-2-27 | Joe Lut?, Jr. | J. Roberts | 1912 | 258 | 4 | do | | 195.4 | Aug. 29, 1950 | C, W | D, S | |
| I-2-28 | A. C. Gilliam | J. Jagge | 1949 | 380 | 8 | do | | 223.8 | July 26, 1950 | C, W | D, S | Casing: 130 feet. Temp. 73° F. |
| | | | | | | | | 225.2 | Sept. 26, 1950 | | | |
| I-2-29 | do | do | 1945 | 410 | 8 | do | | 257.4 | July [illegible], 1950 | C, W | S | Base of Grayson shale (Del Rio clay) reported at 62 feet. Temp. 72° F. |
| | | | | | | | | 266.9 | Sept. 6, 1951 | | | |
| I-2-30 | do | do | 1947 | 508 | 8 | do | | 198.4 | July 26, 1950 | C, W | S | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| I-2-31 | do | do | 1945 | 418 | 6 | do | | 225.2<br>235.5 | July 27, 1950<br>Sept. 6, 1951 | C, W | D, S | Pump set at 340 feet. Drawdown 81 feet after 2 hours pumping 6 gpm, Sept. 6, 1951. |
| I-2-32 | A. Leinweber | | 1898 | 265 | 8 | do | | 223.9 | July 23, 1950 | C, W | S | Near sinkhole in Hondo Creek. |
| I-2-33 | A. C. Gilliam | R. Hensley | 1940 | 420 | 6 | do | | 220.6 | July 27, 1950 | C, W | D, S | Temp. 72° F. |
| I-2-34 | G. E. Graff | | 1908 | 290 | 12, 6 | do | 994.5 | 219.9 | July 23, 1950 | C, G<br>5 | D, S<br>Irr. | Irrigates 15 acres of oats. Drawdown 4.3 feet after  hours pumping 23 gpm July 23, 1950. |
| I-2-35 | B. L. Coleman | R. Hensley | 1938 | 360 | 6 | do | | 224.6 | do | C, W | D, S | |
| I-2-36 | Albert Saathoff | B. Schuelling | 1947 | 320 | 6 | do | 984.2 | 234.5 | July 12, 1950 | T, E<br>2 | S | Pump set at 250 feet. |
| I-2-37 | do | | 1909 | 330 | 7 | do | | 229.6 | do | C, E<br>2 | D, S | Water reported at 310 feet. See analysis, table 12. |
| I-2-38 | B. L. Coleman | | 1905 | 270 | 6 | do | 997.4 | 199.4<br>219.8<br>223.3 | July 23, 1950<br>Sept. 6, 1951<br>Mar. 12, 1952 | C, E<br>2 | S | Blowing well. Temp. 72° F. |
| I-2-39 | Louis Pichot | A. Weynand | 1912 | 320 | 5 | do | | 186.0<br>211.1 | Sept. 22, 1950<br>Sept. 7, 1951 | C, G<br>5 | D, S | Casing: 260 feet. Temp. 73° F. |
| I-2-40 | W. A. Weynand | do | 1912 | 285 | 6 | do | 9 5.7 | *212.1 | Aug. 29, 1952 | C, E<br>½ | D, S | Blowing well. Well I-2-1 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| I-2-41 | A. L. Weynand | do | 1908 | 485 | 5 | do | | 207.2 | Sept. 22, 1950 | C, W | D, S | Base of Grayson shale (Del Rio clay) at 392 feet. Weak well. |
| I-2-42 | E. A. Rothe | J. Roberts | 1948 | 508 | 6 | do | | 279.6 | Sept. 22, 1950 | C, W | S | Temp. 72° F. |
| I-2-43 | do | | 1898 | 350 | 5 | do | | 246.0 | do | C, W, G<br>4 | S | Cased to 120 feet. |
| I-2-44 | Mrs. Emma Rothe | J. Roberts | 1922 | 500 | 6 | do | 996.7 | 238.7 | Sept. 20, 1950 | C, W | S | No casing. Cavern reported at 480–492 feet. |
| I-2-45 | J. Amberson | R. Hensley | 1948 | 640 | 5 | do | | 102.2 | Aug. 31, 1950 | C, G<br>5 | S | Casing: 500 feet. Well I-2-2 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-2-46 | G. Foreman | | 1906 | 707 | 6 | do | 1,056.7 | 198.1<br>102.9<br>231.6 | do<br>Mar. 18, 1952<br>Sept. 5, 1952 | C, G<br>2 | S | Drawdown 1.1 feet after pumping 15 gpm Aug. 31, 1950. Temp. 72° F. |
| I-2-47 | J. Amberson | J. Roberts | 1938 | 707 | 6 | do | 1,057 | 207.3<br>226.0 | Sept. 7, 1951<br>Mar. 18, 1952 | C, W | D, S | See analysis, table 12. |
| I-2-48 | Walter Meyer | do | 1949 | 570 | 6 | do | 970.4 | 261.1<br>196.3 | Sept. 18, 1951<br>Mar. 18, 1952 | T, E<br>1¾ | S | Casing: 455 feet. |
| I-2-49 | O. E. Lacy | do | 1950 | 585 | 5 | do | | 262.3<br>216.8 | Mar. 15, 1951<br>Sept. 7, 1951 | T, E<br>1½ | S | Casing: 485 feet. Water reported in sand at 495 feet. |
| I-2-50 | O. E. Lacy | J. Roberts | 1904 | 495 | 6 | do | 974.4 | 245.5<br>253.7<br>271.7 | Mar. 15, 1951<br>Sept. 5, 1951<br>Sept. 5, 1952 | T, E<br>1½ | D, S | Casing: 470 feet. Sulfur water reported at 160 feet. Fresh water in cavernous limestone at 482 feet. Temp. 72° F. See analysis, table 12. |
| I-2-51 | A. C. Reuss | | 1906 | 447 | 6 | do | | 218.1<br>238.2 | July 11, 1950<br>Sept. 6, 1951 | C, E<br>1½ | D, S | Casing: 440 feet. Pump set at 240 feet. Temp. 72° F. See analysis, table 12. |
| I-2-52 | J. Amberson | | 1905 | 500 | 6 | do | 970.9 | 234.8 | do | C, E<br>2 | D, S | Temp. 73° F. Well I-2-6 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-2-53 | L. E. Kollman | B. C. Armstrong | 1925 | 500 | 8<br>6 | do | 956.8 | 119.3 | July 11, 1950 | C, E<br>1 | S | |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-2-54 | do | L. E. Coleman | 1935 | 68 | 40 | Leona formation. | | 53.9 | do | C, W | S | Casing: 65 feet. |
| I-2-55 | O. E. Holloway | | 1904 | 477 | 6 | Edwards limestone. | | *193.4<br>201.3 | Aug. 3, 1950<br>Sept. 5, 1951 | C, E 2 | S | Drawdown 18 feet after 1 hour pumping 40 gpm, Sept. 5, 1951. Temp. 71½° F. |
| I-2-56 | Edgar Saathoff | A. Saathoff | 1914 | 53 | 48 | Leona formation. | | 44.4 | July 11, 1950 | C, E 1 | D, S | |
| I-2-57 | do | do | 1930 | 65 | 40 | do | | 46.4 | Oct. 2, 1950 | C, E ½ | S | Temp. 74° F. |
| I-2-58 | R. Koehler | do | 1930 | 44 | 48 | do | | 21.1 | Aug. 14, 1950 | C, W | S | |
| I-2-59 | R. Koehler | B. Schueling | 1922 | 236 | 7 | Austin chalk (?). | | 143.6 | Aug. 15, 1950 | C, E 2 | S | Water reported to have bitter taste. Top of Austin chalk at 218 feet. Temp 74° F. |
| I-2-60 | do | | 1900 | 52 | 48 | Leona formation. | | 19.7 | do | B, H | D, S | Casing: 30 feet. Base of gravel at 46 feet. |
| I-2-61 | R. A. Saathoff | J. Hensley | 1912 | 295 | 6 | Austin chalk | 1,027.2 | 177.8<br>242.7<br>199.8 | Sept. 30, 1950<br>Sept. 5, 1951<br>Mar. 17, 1952 | C, W | S | Casing: 260 feet. Temp. 72° F. See analysis, table 12. |
| I-2-62 | F. Hollmig | B. C. Armstrong | 1924 | 435 | 6 | do | | 307.1 | Sept. 30, 1950 | C, G 5 | D, S | |
| I-2-63 | F. X. Wolff | C. Garcia | 1938 | 60 | 48 | Leona formation. | | 32.6 | Aug. 29, 1950 | C, W | D, S | Casing: 60 feet. Base of gravel at 35 feet. |
| I-2-64 | Joe Lutz | Peters & Schueling | 1921 | 802 | 7 | Edwards limestone. | 951.3 | 209.5 | do | C, E 1 | D, S | Casing: 470 feet. Well I-2-8 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-2-65 | Irvin Lutz | Gabe Tschirhart | 1950 | 610 | 5 | do | 956.3 | 215.7 | do | None | N | |
| I-2-66 | J. Amberson | — Foretich | 1948 | 1,600 | 12 | do | 1,020 | 142.4<br>133.8<br>149.4 | Aug. 28, 1950<br>Sept. 5, 1951<br>Mar. 18, 1952 | None | N | Oil test. |
| I-2-67 | do | H. W. McCormick | 1947 | 3,400 | | do | | | | None | N | Oil test, abandoned and plugged. Large yield of fresh water reported in Edwards limestone. |
| I-2-68 | J. Amberson | J. Roberts | 1946 | 600 | 10 | do | | 269.3<br>290.5<br>305.1 | Aug. 28, 1950<br>Sept. 5, 1951<br>Sept. 5, 1952 | None | N | Casing: 490 feet. |
| I-2-69 | do | do | 1950 | 100 | 7 | Leona formation. | | 38.3 | Nov. 20, 1950 | T, E 1 | S | Drawdown 2.1 feet after 1½ hours pumping 60 gpm, Nov. 20, 1950. Temp. 75° F. |
| I-2-70 | do | do | 1926 | 240 | 5 | Austin chalk | | 69.9 | Aug. 30, 1950 | None | N | Water reported to have bitter taste. |
| I-2-71 | H. Weynand | F. Gonzales | 1946 | 45 | 48 | Leona formation. | | 40.1 | Aug. 29, 1950 | C, E ½ | D, S | Dug. |
| I-2-72 | Ernst Rothe | | 1902 | 54 | 40 | do | | 28.1 | Aug. 25, 1950 | C, E 1 | D, S | Casing: 20 feet dug. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-2-73 | W. Lutz | C. Garcia | 1920 | 40 | 36 | do | | 30.3 | Aug. 28, 1950 | C, G, 5 | D | Casing: 40 feet. Dug. Temp. 74° F. See analysis, table 12. |
| I-2-74 | F. S. Wolfe | | 1902 | 240 | 7 | Anacacho limestone. | | 63.3 | Aug. 17, 1950 | C, W | D, S | Casing: 40 feet. Pump set at 210 feet. Reported to pump air after 3 hours pumping 6 gpm, Aug. 1950. |
| I-2-75 | Ed Weynand | | 1912 | 190 | 6 | Austin chalk | 934.5 | *34.1 | Mar. 13, 1951 | C, W | S | Water reported to have bitter taste Weak well. Temp. 74° F. |
| I-2-76 | O. B. Taylor | F. Gonzales | 1946 | 61 | 4 | Leona formation. | | 35.3 | Sept. 5, 1950 | C, E, ½ | D, S | Casing: 60 feet. Drawdown 0.8 foot after 1½ hours pumping 7½ gpm Sept. 5, 1950. |
| I-2-77 | H. J. Poerner | H. J. Poerner | 1910 | 52 | 36 | Leona formation. | | 37.4 | Aug. 17, 1950 | C, W | D, S | Dug. |
| I-2-78 | C. Gilliam | C. Gilliam | 1940 | 196 | 9 | Anacacho limestone. | | 69.6<br>79.7 | Aug. 29, 1950<br>Sept. 5, 1951 | C, W | D, S | Casing: 90 feet. Pipe set at 160 feet. |
| I-2-79 | R. Koehler | C. Conway | 1934 | 684 | 6 | Edwards limestone. | | 225.2<br>246.1 | Aug. 15, 1950<br>Sept. 5, 1951 | C, G, 5 | S | Casing: 614 feet. Pumping 14 gpm, Sept. 5, 1951. Temp. 73° F. |
| I-2-80 | J. G. Schueling | | 1908 | 40 | 38 | Leona formation. | | 29.7 | Aug. 15, 1950 | C, W | S | Casing: 40 feet. Dug. |
| I-2-81 | Ferd Rock | B. Schueling | 1934 | 280 | 6 | Austin chalk | | 25.1 | do | C, E, 1½ | D, S | Casing: 240 feet. Water reported to have bitter taste. |
| I-2-82 | J. J. Schueling | do | 1920 | 347 | 8 | do | | 159.3 | do | C, W | D, S | Drawdown 61.2 feet after 2 hours pumping 4 gpm, Aug. 15, 1950. |
| I-2-83 | Raymond Koch | C. Jackson | 1941 | 39 | 36 | Escondido formation. | | 34.6 | do | C, E, 1 | D, S | Dug. |
| I-2-84 | Howard Nessley | C. Garcia | 1938 | 56 | 40 | Leona formation. | | 47.4 | Feb. 21, 1951 | C, E, ½ | D, S | Dug. Curbing: 30 feet of concrete rings. |
| I-2-85 | do | Precision Drilling Co. | 1951 | 851 | 9 | Edwards limestone. | 996.8 | 287.8<br>279.2<br>289.9 | Apr. 2, 1951<br>Sept. 5, 1951<br>Mar. 12, 1952 | T, E, 2 | D, S | Casing: 816 feet. Drawdown 2.5 feet after 12 hours pumping 175 gpm, Apr. 2, 1951. Temp. 72° F. See log. |
| I-2-86 | Raymond Finger | R. Finger | 1950 | 53 | 40 | Escondido formation(?). | | 47.2 | Aug. 29, 1950 | C, E, ½ | D, S | Dug. Curbing: 53 feet of rock. |
| I-2-87 | M. J. Zerr | B. C. Armstrong | 1926 | 3,500 | 8 | Edwards limestone. | 919.6 | 227.7 | Sept. 3, 1952 | C, G, 5 | S | Casing: 800 feet. Oil test, drilled to black shale at 3,635 feet, reported plugged at 1,100 feet. Well I-2-9 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-2-88 | C. Langfeld | | | 400 | | Austin chalk | | 68.2 | June 18, 1952 | C, W | S | Water reported to have bitter taste. See analysis, table 12. |
| I-2-89 | Arthur Lutz | A. Lutz | 1944 | 50 | 36 | Leona formation. | | 37.8 | Aug. 17, 1950 | C, E, 1 | D, S | |
| I-2-90 | P. E. Poerner | | 1926 | 50 | 58 | do | | 37.2 | do | C, W | D, S | Dug. Curbing: 40 feet of rock. Temp. 74° F. |
| I-2-91 | J. Amberson | J. Roberts | 1934 | 95 | 6 | do | | 45.7 | Aug. 28, 1950 | C, E, ½ | D | Casing: 90 feet. Drawdown 7.3 feet after 2½ hours pumping 86 gpm, Aug. 15, 1950. Temp. 74° F. |
| I-2-92 | E. Letcher | | 1922 | 54 | 38 | do | | 28.3 | do | C, W | D, S | Dug. Curbing: 50 feet of rock. |
| I-2-93 | M. Nester | C. Garcia | 1920 | 42 | 48 | do | | 34.7 | Aug. 18, 1950 | C, E, ½ | D, S | |
| I-2-94 | Hugo Brotze | | 1900 | 60 | 52 | do | | 40.1 | Aug. 18, 1950 | C, W | D, S | |
| I-2-95 | W. Glasscock | J. Roberts | 1928 | 1,100 | 7 | Edwards limestone. | 958.1 | 245.2<br>244.9<br>257.5 | Mar. 21, 1951<br>Sept. 5, 1951<br>May 13, 1952 | C, W | S | Used as auxiliary public supply for D'Hanis. Temp. 72° F. See analysis, table 12. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-2-96 | Henry Biry | | 1922 | 48 | 38 | Leona formation. | | 32.3 | Aug. 18, 1950 | C, W | S | Dug. Curbing: 30 feet of rock. |
| I-2-97 | R. G. Cantu | | 1902 | 40 | 36 | do | | 29.4 | Aug. 17, 1950 | C, E, 1/4 | D | Temp. 75° F. |
| I-2-98 | B. L. Robinson | C. Garcia | 1922 | 69 | 30 | do | | 33.9 | Aug. 29, 1950 | C, W | D, S | Dug. Curbing: 60 feet of concrete rings. |
| I-2-99 | Olin Williams | | 1920 | 54 | 42 | do | 912.5 | 34.4 | do | C, W | D, S | |
| I-2-100 | J. Amberson | R. Hensley | 1948 | 640 | 5 | Edwards limestone. | | 102.2 | Aug. 31, 1950 | C, G, 15 | S | Casing: 500 feet. Drawdown 6.4 feet while pumping 12 gpm, Aug. 31, 1950. Temp. 72½° F. |
| | | | | | | | | 102.9 | Mar. 18, 1952 | | | |
| I-2-101 | A. C. Gilliam | J. Roberts | 1952 | 654 | 12 | do | | 245.7 | Oct. 23, 1952 | T, G, 30 | Irr | Casing: 110 feet. Yield, 208 gpm when drilled. After treatment with 3,000 gallons of acid well was pumped at 1,100 gpm. |
| I-3-1 | Henry Ferrick | R. Schwartz | 1935 | 254 | 8 | do | | 230.9 | June 12, 1951 | C, W | S | Casing: 10 feet. Pump set at 250 feet. Temp. 72° F. |
| | | | | | | | | 235.3 | Sept. 10, 1951 | | | |
| I-3-2 | Emil Britch | do | 1924 | 322 | 9 | do | | 253.2 | July 13, 1951 | C, W | S | Casing: 280 feet. |
| I-3-3 | Ben Wiemers | J. P. Heinen | 1945 | 343 | 8 | do | | 292.5 | Jan. 4, 1951 | C, G, 5 | D, S | Casing: 10 feet. Water level reported 275 feet below land surface as of Apr. 1945. Well deepened from 305 to 343 feet after going dry in 1951. |
| I-3-4 | R. Langbern | J. Jagge | 1940 | 312 | 6 | do | 934.4 | 255.1 | Jan. 9, 1951 | C, W | D, S | Casing: 50 feet. |
| I-3-5 | J. G. Brucks | R. Schwartz | 1898 | 325 | 6 | do | | 259.0 | Jan. 4, 1951 | C, W | D, S | Casing: 40 feet. Temp. 72° F. See log. |
| I-3-6 | J. W. Fuos | J. Harper | 1906 | 286 | 6 | do | 1,065.0 | 237.4 | Jan. 4, 1950 | C, W | D, S | Casing: 50 feet. Pump set at 285 feet. |
| | | | | | | | | 278.8 | Mar. 19, 1952 | | | |
| | | | | | | | | 285.0 | Sept. 4, 1952 | | | |
| I-3-7 | Emil Britch | do | 1934 | 280 | 7 | do | 1,011.3 | *183.5 | Oct. 30, 1950 | C, W | D, S | Casing: 40 feet. Temp. 72° F. |
| I-3-8 | E. Britch | B. Wiemers | 1939 | 310 | 5 | do | | 181.7 | do | C, W | D, S | Casing: 60 feet. |
| I-3-9 | M. Brucks | J. Harper | 1946 | 245 | 8 | do | | 190.2 | June 12, 1951 | C, W | S | Casing: 20 feet. |
| I-3-10 | Henry Ferrick | R. Schwartz | 1938 | 350 | 8 | do | | 211.7 | June 12, 1951 | C, E, 2 | D, S | Casing: 60 feet. Grayson shale (Del Rio clay) at surface. Drawdown 2.8 feet after 1½ hours pumping 10 gpm, June 12, 1951. Temp. 72° F. |
| I-3-11 | do | do | 1938 | 368 | 8 | do | 950.8 | 219.0 | Feb. 26, 1951 | C, W | S | Buda limestone at surface. |
| I-3-12 | do | O. Wiemers | 1905 | 290 | 6 | do | | 262.3 | June 12, 1951 | C, W | S | |
| | | | | | | | | 261.8 | Sept. 10, 1951 | | | |
| I-3-13 | T. Wiemers | B. Wiemers | 1936 | 350 | 6 | do | | 253.9 | Nov. 30, 1950 | C, W | S | Casing: 40 feet. Pump set at 310 feet. |
| I-3-14 | C. A. Oefinger | J. Saathoff | 1930 | 350 | 6 | do | | 246.3 | Jan. 4, 1951 | C, E, 3/4 | S | Casing: 6 feet. Temp. 72° F. |
| I-3-15 | B. A. Schweers | J. Jagge | 1951 | | | do | 1,103.0 | | | | S | Casing: 10 feet. Sinkhole near well. |
| I-3-16 | do | W. Lancaster | 1920 | 307 | 6 | do | 1,089.5 | 291.5 | Jan. 9, 1951 | C, E, 1½ | D, S | Casing: 10 feet. Temp. 72° F. Several sinkholes near well. See analysis, table 12. |
| | | | | | | | | 304.6 | Mar. 19, 1952 | | | |
| | | | | | | | | 301.7 | Sept. 4, 1952 | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-3-17 | E. W. Balzen | J. P. Heinen | | 325 | 6 | do | | 240.2 | Jan. 3, 1951 | C, W | S | Casing: 10 feet. |
| I-3-18 | W. Heyen | W. Lancaster | 1939 | 281 | 7 | do | 1,004.6 | 211.5<br>276.8 | Jan. 10, 1951<br>Mar. 19, 1951 | C, W | S | Do |
| I-3-19 | Milton Heyen | B. Wiemers | 1932 | 420 | 7 | do | 1,012.7 | *225.0 | Dec. 11, 1950 | C, G<br>10 | D, S | Casing: 110 feet. Drawdown 3.6 feet after 2 hours pumping 20 gpm, Mar. 10, 1952. See analysis, table 12. |
| I-3-20 | Louis Heyen | B. Wiemers | 1915 | 325 | 5 | do | | 223.7 | Nov. 30, 1950 | C, E<br>½ | D, S | Casing: 120 feet. Pump set at 288 feet. Mar. 10, 1952. |
| I-3-21 | Didrich Weimers | | | 350 | 6 | do | | 232.4 | do | C, W | S | Casing: 20 feet. |
| I-3-22 | Fritz Martin | J. Harper | 1937 | 247 | 5 | do | 974.8 | 177.1<br>191.6<br>198.6 | Oct. 30, 1950<br>Sept. 7, 1951<br>Mar. 17, 1952 | C, E<br>1½ | D, S | Casing: 120 feet. Drawdown 0.8 foot while pumping 9 gpm, Oct. 30, 1950. Temp. 72° F. |
| I-3-23 | C. E. Martin | B. Schuelling | 1951 | 372 | 6 | do | 1,033.8 | 225.8 | Feb. 26, 1951 | C, E<br>2 | D, S | Casing: 10 feet. Well deepened from 250 to 372 feet after going dry in 1951. Temp. 71½° F. See analysis, table 12. |
| I-3-24 | do | | | 264 | 8 | do | 1,009.3 | 221.0<br>218.6<br>226.5 | do<br>Sept. 10, 1951<br>Mar. 12, 1952 | C, W | S | Casing: 100 feet. Blowing well. |
| I-3-25 | A. J. Rust | S. Mumme | 1910 | 265 | 4 | do | | 210.2 | Oct. 30, 1950 | C, E<br>1 | D, S | Casing: 180 feet. |
| I-3-26 | Charles Folk | | 1904 | 260 | 4 | do | | 190.0 | Oct. , 1950 | C, W | D, S | Casing: 100 feet. Pump set at 218 feet. Temp. 72° F. |
| I-3-27 | Anton Folk | | 1945 | 275 | 5 | do | | 205.6<br>203.6 | Oct. 30, 1950<br>Sept. 7, 1951 | C, W | D, S | Casing: 60 feet. Drawdown 2.5 feet after 5 hours pumping 10 gpm, Mar. 13, 1952. |
| I-3-28 | A. Eckhardt | Peters & Schuelling | 1928 | 262 | 6 | Edwards limestone. | 946.0 | 173.9<br>189.0<br>197.0 | Oct. 30, 1950<br>Sept. 7, 1951<br>Mar. 17, 1952 | C, W | S | Casing: 50 feet. |
| I-3-29 | Charles Baldus | C. Gilliam | 1936 | 320 | 5 | do | | 204.5 | Oct. 30, 1950 | C, E<br>1 | D, S | Casing: 95 feet. Pump set at 242 feet. |
| I-3-30 | do | do | 1940 | 300 | 5 | do | | 200.5 | do | C, W | S | |
| I-3-31 | George Boehle | B. Wiemers | 1914 | 250 | 6 | do | 939.1 | 192.7<br>209.3<br>218.3 | Nov. 7, 1950<br>Sept. 6, 1951<br>Mar. 19, 1952 | C, W | D, S | Temp. 71½° F. |
| I-3-32 | W. Boehle | do | 1914 | 300 | 6 | do | | 216.6 | Nov. 7, 1950 | C, G | D, S | Casing: 30 feet. Water reported at 210 and 290 feet. |
| I-3-33 | Louis Heyen | Otto Mumme | 1932 | 432 | 5 | do | | 206.2 | Dec. 11, 1950 | C, W | S | Casing: 136 feet. Buda limestone on surface. |
| I-3-34 | Walter Brucks | Cravens Drilling Co. | 1949 | 258 | 7 | do | 915.2 | *202.7 | Jan. 3, 1951 | C, E<br>½ | D, S | Casing: 50 feet. Drawdown 0.4 foot after 3 hours pumping 160 gpm, Jan. 3, 1951. See log. See analysis, table 12. |
| I-3-35 | J. Oefinger | J. Jagge | 1945 | 233 | 5 | do | | 207.5<br>216.9 | Mar. 14, 1951<br>Sept. 5, 1951 | C, W | S | Casing: 150 feet. Base of Grayson shale (Del Rio clay) at 160 feet. |
| I-3-36 | Melvin Balzen | Abe Tschirhart | 1936 | 302 | 6 | do | 961.1 | 260.7<br>281.4<br>269.3 | Jan. 3, 1951<br>Mar. 19, 1952<br>Sept. 4, 1952 | C, W | D, S | See log. |
| I-3-37 | do | do | 1936 | 275 | 6 | do | 962.8 | 253.7 | Jan. 3, 1951 | C, W | D, S | Casing: 75 feet. Base of Grayson shale (Del Rio clay) at 121 feet. Temp 72° F. Water at 240 feet. |
| I-3-38 | Herman Gerdes | do | 1935 | 70 | 5 | Leona formation. | | 24.5 | Jan. 3, 1951 | C, E<br>½ | D, S | Casing: 52 feet. East bank of Quih Creek. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-3-39 | H. H. Decker |  |  | 48 | 3 | do |  | 19.5 | do | C, G, 4 | S | Casing: 48 feet; slotted from 20 to 48 feet. |
| I-3-40 | Louis Gerdes | J. Jagge | 1930 | 300 | 7 | Edwards limestone. |  | 214.1<br>230.2 | Nov. 7, 1950<br>Sept. 6, 1951 | C, W | S | Casing: 280 feet. |
| I-3-41 | Louis Saathoff | do | 1947 | 322 | 7 | do | 933.6 | 141.2<br>168.8<br>138.0 | Nov. 7, 1950<br>Sept. 6, 1951<br>Mar. 19, 1952 | C, W | D, S | Casing: 300 feet. Pump set at 242 feet. |
| I-3-42 | Frits Nietenhoefer | R. Schwarts | 1937 | 248 | 6 | do | 913.5 | 182.3<br>188.2<br>202.9<br>195.7 | Nov. 7, 1950<br>Sept. 5, 1951<br>Sept. 4, 1952<br>Mar. 19, 1952 | C, E, ½ | D, S | Casing: 48 feet. Temp. 72½° F. |
| I-3-43 | H. W. McClain | B. Wiemers | 1914 | 237 | 6 | do | 944.2 | *217.8 | Sept. 7, 1951 | C, W | D, S | Casing: 140 feet. Drawdown 1.7 feet after 30 minutes pumping 6 gpm, Sept. 7, 1951. Well I-3-4 in U. S. Geol. Survey Water-Supply Paper 678. Temp. 72° F. |
| I-3-44 | Louis Genea |  |  | 300 | 6 | do |  | 191.0 | Nov. 3, 1950 | C, W | D, S | Casing: 100 feet. |
| I-3-45 | F. E. Boggus |  | 1906 | 298 | 5 | do |  | 202.9 | Oct. 30, 1950 | C, E, ½ | D, S | Casing: 60 feet. |
| I-3-46 | Mrs. L. C. Decker | B. Schuelling | 1926 | 380 | 6 | do | 993.0 | 162.5 | Oct. 16, 1950 | T, E, 1½ | S | Drawdown 0.3 foot after 2 hours pumping 7½ gpm, Oct. 16, 1950. |
| I-3-47 | F. J. Griffin | C. Gilliam | 1939 | 360 | 6 | do |  | 242.0 | do | C, W | S | Buda limestone at surface. |
| I-3-48 | H. H. Decker | R. Peters | 1942 | 355 | 6 | do | 934.4 | 189.4<br>216.0<br>223.5 | Oct. 19, 1950<br>Mar. 12, 1952<br>Sept. 4, 1952 | C, E, 2 | D, S | Casing: 320 feet. Drawdown 0.4 foot after 1½ hours pumping 80 gpm, May 29, 1951. |
| I-3-49 | Otto Wiemers | O. Wiemers | 1921 | 256 | 6 | do |  | 227.5 | Nov. 3, 1950 | C, W | D, S | Casing: 222 feet. Water reported in cavernous limestone at 245 feet. Grayson shale (Del Rio clay) from 161 to 221 feet. See log. |
| I-3-50 | L. H. Heyen |  | 1900 | 278 | 6 | do | 947.7 | 188.3<br>194.6 | Feb. 20, 1930<br>Sept. 6, 1950 | C, E, ¼ | D, S | Well I-3-5 in U. S. Geol. Survey Water-Supply Paper 678. Temp. 72° F. See analysis, table 12. |
| I-3-51 | A. Eckhardt | Otto Mumme | 1909 | 260 | 6 | do |  | 175.6 | Dec. 11, 1950 | C, W | D, S | Casing: 150 feet. |
| I-3-52 | Mrs. O. Glasscock |  |  | 281 | 7 | do | 950.8 | 236.3 | Mar. 12, 1922 | C, W | S | Water level reported 188 feet below land surface as of May 1935. |
| I-3-53 | F. J. Griffin | J. R. Johnson | 1949 | 342 | 7 | do |  | 251.0<br>269.3 | Oct. 16, 1950<br>Sept. 7, 1951 | C, W | S | Casing: 240 feet. Austin chalk at surface. |
| I-3-54 | M. M. Fohn | Otto Mumme | 1906 | 312 | 6 | do | 911.0 | 172.7<br>194.7<br>205.3 | Oct. 20, 1950<br>Sept. 7, 1951<br>Mar. 17, 1952 | C, E, 2 | D, S | Casing: 100 feet. Pump set at 226 feet. Temp. 72° F. |
| I-3-55 | H. H. Decker | C. Gilliam | 1936 | 320 | 7 | do |  | 171.7 | Oct. 19, 1950 | C, G, 6 | S | Casing: 50 feet. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-3-56 | C. W. Schlentz | J. Harper | 1936 | 230 | 6 | do | 1,038.2 | 173.8<br>202.8 | Dec. 11, 1950<br>Mar. 17, 1952 | C, G<br>10 | S | Reported to pump air after 3 hours pumping 12 gpm, Dec. 1950. |
| I-3-57 | G. W. Muennink | J. Jagge | 1942 | 400 | 6 | Escondido formation. | | 114.7 | Nov. 7, 1950 | C, E<br>1/3 | D, S | Casing: 100 feet. Reported to pump air after 8 hours pumping 500 gpm, Jan. 1942. Pump set at 260 feet. |
| I-3-58 | A. Karm | Lancaster & Whiteside. | 1945 | 320 | 6 | do | | 155.6 | do | C, W | D, S | South well of two wells. Casing: 320 feet; slotted from 270 to 320 feet. Pump set at 180 feet. |
| I-3-59 | do | do | 1890 | 320 | 7 | Anacacho limestone(?). | | 139.2 | Nov. 8, 1950 | C, W | D, S | Casing: 320 feet. Weak well. Asphalt in water. |
| I-3-60 | E. Saathoff | J. Jagge | 1947 | 101 | 4 | Escondido formation. | | 62.0 | Oct. 27, 1950 | C, E<br>1/2 | D, S | Casing: 101 feet. |
| I-3-61 | J. H. Schweers | R. Schwartz | 1928 | 136 | 4½ | do | | 33.2 | Jan. 3, 1951 | C, W | D, S | Casing: 136 feet: slotted from 96 to 136 feet. |
| I-3-62 | Edwin Schulte | | 1910 | 42 | 42 | Leona formation. | | 34.5 | do | C, W | D, S | Casing: 30 feet. Dug. |
| I-3-63 | C. H. Fous | — Goforth | 1951 | 80 | 6 | Escondido formation. | | 42.3<br>38.2 | Mar. 26, 1952<br>Sept. 24, 1951 | C, E<br>½ | D, S | Casing: 40 feet. Water level reported 40 feet below land surface as of Sept. 1951. |
| I-3-64 | C. H. Dailey | J. Jagge | 1920 | 60 | 5 | Leona formation. | | 39.2 | Sept. 24, 1951 | C, W | D, S | Casing: 40 feet. |
| I-3-65 | Emil Fous | | 1929 | 32 | 42 | do | | 26.4 | do | C, W | D, S | Dug. Curbing: 30 feet of rock. |
| I-3-66 | Atlantic Pipe Line Co. | J. R. Johnson | 1949 | 1,341 | 7 | Edwards limestone. | | 185 | Nov. , 1949 | T, E<br>4 | D, Ind | Casing: 7-inch to 1,072 feet, 4½-inch from 1,072 to 1,319 feet. Drawdown reported 110 feet after 24 hours pumping 32 gpm, Nov. 1949. See log. |
| I-3-67 | Milton Brucks | A. Muennink | 1936 | 27 | 42 | Leona formation. | | 21.3 | Oct. 27, 1950 | C, G, W<br>5 | D, S | Casing: 27 feet. Well reported to have been dry in 1942. |
| I-3-68 | J. J. Boehle | | | 38 | 36 | do | | 23.5 | do | C, G<br>5 | D, S | Drawdown 0.2 foot after 8 hours pumping 7 gpm, May 29, 1951. Temp. 74½° F. |
| I-3-69 | Otto Lindeburg | Otto Lindeburg | 1935 | 17 | 42 | do | | 13.4 | Oct. 27, 1950 | C, W | D, S | Dug. Water entered well at 16 feet. |
| I-3-70 | Rolf Saathoff | | 1949 | 45 | 38 | do | | 35.4 | Oct. 25, 1950 | C, E<br>¼ | D, S | Do. |
| I-3-71 | Arthur Schlentz | | 1918 | 44 | 48 | do | | 39.8 | do | C, W | D, S | Reported to pump air after ½ hour pumping 5 gpm. |
| I-3-72 | R. Decker | | 1920 | 46 | 40 | do | | 32.9 | July 10, 1950 | C, W | D, S | Dug. |
| I-3-73 | Mrs. L. C. Decker | C. Gilliam | 1920 | 700 | 6 | Edwards limestone. | | 182.4 | Oct. 16, 1950 | C, E<br>3 | D, S | Casing: 100 feet. Temp. 73° F. |
| I-3-74 | H. H. Decker | J. Jagge | 1940 | 304 | 6 | do | 912.0 | 173.0 | Oct. 19, 1950 | C, E<br>¾ | D, S | Casing: 100 feet. |
| I-3-75 | Gus Britch | P. Lindholm | 1910 | 300 | 6 | do | 933.5 | *224.2 | Sept. 7, 1951 | C, W | D, S | Well I-3-3 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-3-76 | R. A. Saathoff | Peters & Schuelling | 1916 | 500 | 5 | do | | 193.5<br>212.2 | Oct. 16, 1950<br>Sept. 6, 1951 | C, E<br>1½ | D, S | Casing: 425 feet. Water reported at 460 feet. |
| I-3-77 | Hugo Mumme | do | 1915 | 460 | 4 | do | 947.7 | 204.0<br>102.1 | Oct. 3, 1934<br>June 12, 1950 | C, G<br>2 | D, S | Casing: 200 feet. Water reported in cavernous limestone at 445 feet. Well I-3-7 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-3-78 | R. L. Mumme | R. Hensley | 1949 | 280 | 8 | Anacacho limestone. | | 64.8 | June 12, 1950 | C, W | D, S | Casing: 20 feet. Small amount of oil pumped with water. Temp. 75° F. See analysis, table 12. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-3-79 | Stanley Mumme | R. Hensley | 1952 | 240 | 8 | Austin chalk | | 34.7 | May 16, 1952 | T, G 30 | Irr | Casing: 128 feet. Drawdown 112 feet after 1½ hours pumping 68 gpm, May 16, 1952. Irrigates 42 acres. Temp. 76° F. |
| I-3-80 | R. L. Mumme | J. Harper | 1947 | 525 | 8 | Edwards limestone(?). | | 42 | May , 1950 | T, E ½ | S | Casing: 30 feet. Oil in water. See log. |
| I-3-81 | W. Britch | Peters & Schuelling | 1926 | 805 | 5 | Edwards limestone. | 937.3 | 234.9<br>203.0 | Sept. 10, 1951<br>June 12, 1950 | C, W | D, S | Casing: 150 feet. Temp. 73° F. Well I-3-6 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| I-3-82 (Spring) | Eugene Moos | | | | | Anacacho limestone. | | | | | S | Locally known as King's Water Hole Spring. Water issues from large fault and enters Leona formation in bed of Hondo Creek. Temp. 74° F. See analysis, table 12. |
| I-3-83 | Elmer Leinweber | C. Gilliam | 1950 | 343 | 5 | Edwards limestone. | | 197.9 | Sept. 12, 1950 | T, E 2 | S | Casing: 280 feet. |
| I-3-84 | do | | 1912 | 68 | 36 | Leona formation. | | 51.4 | Oct. 30, 1950 | None | N | |
| I-3-85 | Emil Britch | | 1905 | 52 | 42 | do | | 39.0 | June 10, 1950 | C, W | D, S | Dug. |
| I-3-86 | J. G. Britch | J. Harper | 1939 | 467 | 8 | Austin chalk (?). | | 120.7 | July 10, 1950 | C, E ½ | D | Slight hydrogen sulfide odor. |
| I-3-87 | Rosa Britch | | 1908 | 45 | 35 | Leona formation. | | 37.0 | do | C, W | D, S | |
| I-3-88 | Alvin Mumme | B. Schuelling | 1937 | 110 | 9 | Escondido formation. | | 71.9 | do | C, W | D, S | Dug. |
| I-3-89 | J. G. Britch | do | 1936 | 400 | 8 | Anacacho limestone. | | 163.6 | do | C, E 1 | S | |
| I-3-90 | Henry Winkler | J. Saathoff | 1942 | 42 | 43 | Austin chalk | | 36.9 | do | C, W | D, S | Dug. |
| I-3-91 | H. Nietenhoefer | J. Jagge | 1915 | 200 | 6 | Escondido formation. | | 70.1<br>71.8 | July 12, 1950<br>Sept. 6, 1951 | C, W | D S | Casing: 200 feet; slotted from 140 to 200 feet. Temp. 74° F. See analysis, table 12. |
| I-3-92 | C. Nietenhoefer | | 1916 | 58 | 38 | Leona formation(?). | | 42.7 | July 10, 1950 | C, W | D, S | |
| I-3-93 | C. C. Rogers | | 1908 | 54 | 40 | do | | 36.6 | Oct. 25, 1950 | C, W | D, S | |
| I-3-94 | Arthur Schlentz | | 1907 | 53 | 45 | do | | 45.2 | do | C, W | S | Dug. Curbing: 45 feet of concrete rings. |
| I-3-95 | Ehme Saathoff | | 1918 | 32 | 24 | do | | 28.1 | Oct. 27, 1950 | C, E ¼ | D, S | Dug. Curbing: 30 feet of concrete rings. |
| I-3-96 | H. O Lindeburg | | 1920 | 41 | 42 | do | | 30.2 | do | C, W | D, S | |
| I-3-97 | George Wiemers | | 1905 | 38 | 60 | do | | 25.7 | July 13, 1951 | C, W | D, S | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-3-98 | E. Boehle | O. R. Frome | 1934 | 1,283 | 10 7 | Edwards limestone. | | | | None | N | Oil test, abandoned and plugged. Water reported in cavernous limestone at 1,283 feet. See log. |
| I-3-99 | Robert Riff | | 1935 | 43 | 38 | Escondido formation(?). | | 37.3 | Oct. 27, 1950 | C, E 1/3 | D, S | Sandstone from 40 to 44 feet. Temp. 74° F. |
| I-3-100 | A. W. Bryant | J. Jagge | 1947 | 48 | 5 | do | | 37.9 | do | C, E 1/2 | D | Casing: 48 feet; slotted from 28 to 48 feet. |
| I-3-101 | C. F. Schweers | C. Garcia | 1934 | 34 | 48 | Leona formation. | | 26.1 | do | C, W | D, S | Dug. Curbing: 35 feet of rock. |
| I-3-102 | New Fountain School | J. Harper | 1938 | 105 | 6 | do | | 31.9 | Oct. 24, 1950 | C, E 1/2 | D, P | Temp. 73° F. |
| I-3-103 (Spring) | Francis Richter | | | | | Leona formation(?). | | | Oct. 25, 1950 | Flows | D, S | Flowing 12 gpm Oct. 25, 1950 from gravel in bank of Elm Creek. Temp. 76° F. |
| I-3-104 (Spring) | A. L. Newman | | | | | do | | | do | Flows | S | Locally known as Elm Creek Spring. Flowing 8 gpm Oct. 25, 1950. Temp. 76° F. |
| I-3-105 | F. L. Stiegler | | 1920 | 52 | 40 | do | | 35.6 | do | C, W | D, S | |
| I-3-106 | R. Nietenhoefer | | 1930 | 41 | 42 | Leona formation. | | 35.4 | do | C, W | D, S | |
| I-3-107 | A. Nietenhoefer | Peters & Schuelling | 1910 | 210 | 6 | Escondido formation. | 933.3 | 188.3 | Oct. 24, 1950 | None | N | Casing: 100 feet. Weak well. |
| I-3-108 | W. G. Poehler | | 1932 | 38 | 60 | Leona formation. | | 29.4 | do | C, W | S | |
| I-3-109 | Nettie Schuele | | 1905 | 35 | 42 | do | | 25.5 | do | C, G 5 | D, S | Dug. Curbing: 35 feet of rock. |
| I-3-110 | M. O. Muennink | J. Muennink | 1936 | 104 | 6 | Escondido formation. | | 34.6 | do | C, W | D, S | Casing: 104 feet; slotted from 64 to 104 feet. |
| I-3-111 | Eugene Moos | | 1930 | 39 | 42 | Leona formation. | | 29.4 | July 7, 1950 | C, W | D, S | Dug. Curbing: 39 feet. |
| I-3-112 | W. N. Burgin | | 1900 | 32 | 38 | do | | 25.4 | July 10, 1950 | C, E 1/2 | D, S | Dug. Curbing: 34 feet of rock. |
| I-3-113 | J. B. Rodriquez | J. B. Rodriquez | 1949 | 49 | 46 | do | | 34.5 | do | C, E 1/4 | D, S | |
| I-3-114 | J. Johnson | do | 1949 | 25 | 36 | do | | 16.4 | do | C, E 1/4 | D, S | |
| I-3-115 | Glenn Gooding | B. C. Armstrong | 1920 | 650 | 16 | Edwards limestone(?). | 933.3 | 123.0 | June 23, 1950 | C, G 7½ | D, S | Pump set at 612 feet. Grayson shale (Del Rio clay) not cased off. Reported to pump air after 3 hours pumping 8 gpm. Temp. 73° F. See analysis, table 12. |
| I-3-116 | A. Saathoff | | 1934 | 55 | 38 | Leona formation. | | 38.8 | Aug. 2, 1951 | C, W | D | |
| I-3-117 | United States Government. | Wiegand Bros. | 1942 | 1,510 | 13 10 | Edwards limestone. | 912.4 | 238.4 | Sept. 5, 1951 | T, E 125 | P | Hondo Air Base No. 1 Supplies City of Hondo and Hondo Air Base. Casing; 13-inch to 422 feet, 10-inch from 422 to 1,285 feet. Drawdown reported 25 feet while pumping 1,000 gpm, June 1942. Eight-stage pump set at 360 feet. See analysis, table 12. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-3-118 | do | do | 1942 | 1,418 | 13<br>10 | do | 905.0 | *229.9 | do | T, E<br>125 | P | Hondo Air Base No. 2. Casing: 13-inch to 413 feet, 10-inch from 413 to 1,206 feet. Pump set at 280 feet in 1942. Reported to pump air while pumping 150 gpm. After acidizing with 3,000 gallons yield increased to 920 gpm. Drawdown 62 feet while pumping 1,200 gpm, Sept. 1942. See log. See analysis, table 12. |
| I-3-119 | Eugene Moos | | 1900 | 32 | 32 | Leona formation. | | 18.8 | July 6, 1950 | C, W | D | Dug. Curbing: 32 feet of concrete rings. |
| I-3-120 | L. G. Leinweber | J. Hensley | 1932 | 117 | 6 | Escondido formation. | | 60.1<br>46.1 | July 7, 1950<br>Sept. 6. 1951 | C, W | D | Casing: 117 feet; slotted from 72 to 117 feet. |
| I-3-121 | F. W. Graff | | 1941 | 32 | 42 | Leona formation. | | 24.5 | do | C, E<br>½ | D, S | Dug. Curbing: 32 feet of concrete rings. |
| I-3-122 | Frank Muennink | C. Gilliam | 1950 | 80 | 6 | Escondido formation. | | 25.5 | July 18, 1951 | C, E<br>½ | D, S | Casing: 80 feet; slotted from 60 to 80 feet. Supplies dairy farm. |
| I-3-123 | do | do | 1947 | 92 | 5 | do | | 48.5 | do | C, E<br>¼ | S | Casing: 92 feet; slotted from 55 to 92 feet. |
| I-3-124 | E. Boehle | | 1875 | 33 | 48 | Leona formation. | | 14.9 | July 13, 1951 | B, H | D, S | Dug. |
| I-3-125 (Spring) | E. Wiemers | | | | | Leona formation. | | | | Flows | D, S | Flowing 112 gpm Aug. 8, 1951. Water enters Leona formation in bed of Verde Creek. Temp. 76° F. See analysis, table 12. |
| I-3-126 | G. H. Balzen | | | 44 | 48 | do | | 31.0 | July 13, 1951 | C, E | D, S | Dug. Curbing: 40 feet of concrete rings. |
| I-3-127 | J. D. Dodson | Humble Oil & Refining Co. | 1934 | 2,672 | 11 | | | | | None | N | Oil test, abandoned and plugged. See log. |
| I-3-128 | F. A. Graff | W. Saathoff | 1946 | 57 | 48 | Escondido formation. | | 47.7 | Oct. 27, 1950 | C, E<br>⅓ | D, S | Reported to have bitter taste. |
| I-3-129 | J. L. Rehm | C. Gilliam | 1945 | 96 | 6 | do | | 48.7 | June 26, 1951 | C, E<br>½ | D, S | |
| I-3-130 | F. M. Ward | W. Lancaster | 1938 | 100 | 6 | Escondido formation. | | 34.0 | June 26, 1951 | C, E | D, S | Temp. 75° F. See analysis, table 12. |
| I-3-131 | G. Sadler | | 1900 | 60 | 48 | Leona formation. | | 35.9 | do | C, W | D | See analysis, table 12. |
| I-3-132 | W. J. Nester | | 1890 | 46 | 42 | do | | 26.2 | June 25, 1951 | C, E<br>½ | D, S | |
| I-3-133 | City of Hondo | P. Lindholm | 1906 | 1,500 | 12 | Edwards limestone. | 887.8 | 181.4 | Feb. 20, 1930 | T, E<br>1 | P | Well I-3-1 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-3-134 | do | do | 1909 | 1,600 | 12 | do | 887.5 | 196.7<br>226.3 | Feb. 20, 1930<br>Sept. 5, 1951 | T, E<br>125 | P, D, RR, Ind | Casing: 1,485 feet. Pumping 800 gpm, Aug. 12, 1950. Supplies City of Hondo. Well I-3-2 in U. S. Geol. Survey Water-Supply Paper 678. Temp. 73½° F. See log. See analysis, table 12. |
| I-3-135 | Walter Meyer | C. Gilliam | 1950 | 92 | 5 | Escondido formation. | | 54.6 | Aug. 10, 1950 | T, E<br>1½ | S, Irr | Casing: 80 feet; slotted from 45 to 70 feet. Water-bearing gravel 48 to 68 feet; yellow clay 68 to 75 feet; and blue clay 75 to 92 feet. See log. |
| I-3-136 | Erwin J. Moos | J. Harper | 1949 | 51 | 6 | Leona formation. | | 36.4 | Oct. 12, 1951 | C, E<br>¼ | D, S | Casing: 51 feet; slotted from 31 to 51 feet. |
| I-3-137 | Walter Saathoff | | 1950 | 57 | 48 | Escondido formation. | | 47.7 | Oct. 27, 1950 | C, E<br>⅓ | D, S | Reported to pump air after 3 hours pumping 4 gpm. |
| I-3-138 | Emil G. Riff | E. L. Pace | 1949 | 612 | 5 | do | | 193.0 | Dec. 28, 1951 | None | N | Casing: 612 feet. Oil test. To be used for stock water. Water reported in sand at 404 feet. |
| I-3-139 | Louis Heyen | Austin Smith | 1951 | 400 | 6 | Edwards limestone. | | 223.3 | do | C, W | S | Casing: 100 feet. See log. |
| I-3-140 | R. L. Mumme | R. Hensley | 1952 | 720 | 8 | do | | 246.5 | Oct. 25, 1952 | C, E<br>1 | S | |
| I-3-141 | Glenn Gooding | do | 1952 | 790 | 6 | do | | 112.8 | Oct. 24, 1952 | C, E<br>1 | D, S, Irr | Plans to irrigate in 1953. Well open at Buda limestone. |
| I-4-1 | Ross Kennedy Estate | | | 1,600 | 8 | do | 967.3 | *259.0 | Jan. 3, 1952 | C, G, W | D, S | Drawdown 4.4 feet after 2 hours pumping 7 gpm, Jan. 3, 1952. Temp. 73° F. Well I-4-18 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| I-4-2 | Ascenscion Muniz | A. Muniz | 1940 | 60 | 36 | Escondido formation. | | 47.3 | Aug. 6, 1951 | C, W | D, S | Dug. |
| I-4-3 | do | do | | 60 | 6 | Leona formation(?). | | 46.2 | Aug. 6, 1951 | C, W | D, S | Casing: 60 feet; slotted from 40 to 60 feet. |
| I-4-4 | Frank Gapen | J. Roberts | 1948 | 121 | 8 | Escondido formation. | | 75.6 | Aug. 2, 1951 | C, E<br>1 | D, S | Casing: 120 feet; perforated from 80 to 116 feet. |
| I-4-5 | A. W. Nester | do | 1946 | 135 | 6 | do | | 129.7<br>131.1 | Aug. 7, 1951<br>Nov. 15, 1951 | C, W | D, S | Casing: 135 feet; slotted and screened from 96 to 135 feet. |
| I-4-6 | T. Johnson | do | 1948 | 212 | 6 | do | | 146.8<br>146.9 | Nov. 15, 1951<br>Aug. 7, 1951 | C, W | S | Casing: 200 feet. Reported to have bitter taste. |
| I-4-7 | G. A. Kennedy | Stover & May | 1927 | 1,456 | 8 | | 950 | | | None | N | Oil test, abandoned and plugged. Altitude by Oil Company. See log. |
| I-4-8 | C. Meyer | J. Roberts | 1948 | 86 | 6 | Escondido formation. | | 66.9 | Sept. 12, 1951 | C, W | D, S | Casing: 86 feet; slotted. |
| I-4-9 | Edna Johnson | | 1915 | 75 | 6 | do | | 52.9 | Aug. 7, 1951 | C, W | D, S | |
| I-4-10 | Gene Ilse | | 1909 | 450 | 7 | Anacacho limestone. | | 232.0<br>238.2 | May 21, 1930<br>Jan. 4, 1951 | None | N | Water reported to be highly mineralized. Well I-4-28 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| I-4-11 | W. C. Scott | Sun Oil Co. | | 1,185 | | | | | | None | N | Oil test, abandoned and plugged. See log. |
| I-4-12 | Curtis White | — Holderman | | 1,303 | 8 | Edwards limestone. | 950.0 | *245.7 | Dec. 4, 1951 | C, E<br>5 | D, S | Formerly supplied Illinois Pipeline Co. station. Well I-4-29 in U. S. Geol. Survey Water-Supply Paper 678. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-4-13 | W. C. Scott | J. Roberts | 1950 | 160 | 4 | Escondido formation. | | 137.9 | Sept. 11, 1951 | C, W | S | Casing: 160 feet; slotted from 120 to 160 feet. |
| I-4-14 | do | do | 1942 | 210 | 6 | do | | 78.8 | do | C, G, W | S | Casing: 210 feet. Temp. 75° F. See analysis, table 12. |
| I-4-15 | C. Koch | C. Gilliam | 1936 | 333 | 7 | do | | 125.2 | Feb. 6, 1951 | C, W | S | Casing: 330 feet. Odor of hydrogen sulfide. |
| I-4-16 | do | J. Roberts | 1938 | 500 | 7 | do | | 195.9 | do | C, W | S | Casing: 500 feet; ripped from 300 to 500 feet. Drawdown 110 feet after 6 hours pumping 20 gpm, Feb. 7, 1951. |
| I-4-17 | Geo. Rehm | — Stegner | 1933 | 1,220 | 7 | Edwards limestone. | 867.5 | 131.8<br>147.4 | Apr. 30, 1930<br>Oct. 9, 1951 | None | N | See log. |
| I-4-18 | A. L. Rehm | Atlantic Refining Co. | 1933 | 4,200 | 7 | Travis Peak formation. | 870.6 | | | Flows | S | In Uvalde Connty. Oil test, now used as water well. Flowing 26 gpm, Nov. 28, 1951. Temp. 86° F. See analysis, table 12. |
| I-4-19 | Arthur Nester | J. Roberts | 1900 | 135 | 6 | Escondido formation. | | 129.7 | Aug. 7, 1951 | C, W | D, S | |
| I-5-1 | Woodrow Glasscock | | 1936 | 66 | 48 | Leona formation. | | 25.9 | Jan. 19, 1952 | T. E.<br>12 | S, Irr | Irrigated 20 acres of oats in 1951. Pumping 63 gpm, Jan. 19, 1952. |
| I-5-2 | Southern Pacific Lines. | P. Lindholm | 1897 | 1,171 | 8 | Edwards limestone. | 886.0 | | | None | N | Casing: 1,000 feet. Used for public supply until 1941. See log. |
| I-5-3 | D'Hanis Catholic School. | | 1924 | 41 | 28 | Leona formation. | | 32.0 | Jan. 18, 1952 | C, G<br>5 | P, S | Dug. Curbing: 40 feet of brick. Well supplies 107 people. See analysis, table 12. |
| I-5-4 | D'Hanis High School | J. Roberts | 1942 | 260 | 8 | Escondido formation. | | 127.2 | do | C, E<br>⅓ | D, P, S | Casing: 260 feet; slotted from 220 to 260 feet. Temp. 74° F. Supplies D'Hanis High School. See analysis, table 12. |
| I-5-5 | J. Tschirhart | | | 39.1 | 72 | Leona formation. | | 23.8<br>32.5<br>25.1 | Feb. 19, 1930<br>Nov. 22, 1950<br>Jan. 12, 1952 | C, W | D, S | Well I-5-1 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| I-5-6 | Pat Kelley | F. Santos | 1945 | 48 | 60 | do | | 20.2 | July 27, 1951 | C, E<br>¼ | D, S | Casing: 50 feet. |
| I-5-7 | E. Oranday | | 1928 | 48 | 24 | do | | 40.9<br>37.5 | Feb. 19, 1930<br>Jan. 18, 1952 | T, E<br>¼ | D, S | Casing: 30 feet. Well I-2-4 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-5-8 | C. Steurnthaler | Pegg Bros. | 1951 | 1,462 | 8 | Edwards limestone. | 893.8 | *210.4 | Feb. 3, 1951 | T, E<br>5 | D, S, Irr | Casing: 1,200 feet. Yield 15 to 20 gpm when drilled. After treatment with 2,000 gallons acid under 80 pound pressure well was pumped at 840 gpm. Temp. 76° F. See log. See analysis tabel 12. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-5-9 | Leio Batot | | | 63 | 48 | Leona formation. | | 49.9 | Feb. 19, 1930 | C, W | D, S | Casing: 63 feet. Well I-2-5 in U. S. Geol. Survey Water-Supply Paper 678. |
| | | | | | | | | 49.9 | Feb. 19, 1951 | | | |
| I-5-10 | C. B. Knopp | J. E. Rohmer | 1947 | 1,325 | 8 | Edwards limestone. | | 264.5 | Nov. 28, 1950 | T, E 30 | Irr | Casing: 1,208 feet. Small yield reported when drilled. After treatment with 3,000 gallons acid well pumped 620 gpm. Drawdown 22 feet after pumping 500 gpm, Nov. 28, 1950. Irrigates 74 acres. |
| I-5-11 | R. J. Taylor | A. Hunt & Hedges | 1951 | 395 | 7 | Escondido formation. | | 46.4 | July 10, 1951 | T, E 1 | S | Casing: 91 feet. Oil test, drilled to 395 feet, plugged at 70 feet for water well; perforated from 40 to 60 feet. See log. |
| I-5-12 | August Weynand | | | | 6 | Leona formation. | | 33.3 | July 27, 1951 | C, W | S | |
| I-5-13 | H. A. Schweers | | 1916 | 50 | 8 | do | | 43.5 | do | C, W | D, S | |
| I-5-14 | R. Richter | W. F Kittle | 1936 | 280 | 6 | Escondido formation. | | 67.3 | Jan. 8, 1951 | C, W | S | Casing: 280 feet. |
| I-5-15 | Joe Nehr | J. Roberts | 1950 | 326 | 5 | do | | 106.9 | Feb. 12, 1951 | C, E ½ | S | Casing: 300 feet; slotted from 240 to 300 feet. Drawdown 21 feet after 12 hours pumping 120 gpm, Feb. 12, 1951. |
| I-5-16 | W. A. Nehr | | 1945 | 425 | 8 | Escondido formation. | | 147.9 | July 11, 1951 | C, W | S | Water reported to have salty taste. |
| | | | | | | | | 154.0 | Nov. 15, 1951 | | | |
| | | | | | | | | 158.8 | Jan. 16, 1952 | | | |
| I-5-17 | Anna McGraw | | | 35 | 63 | Leona formation. | | 30.7 | July 11, 1951 | C, E | D | |
| I-5-18 | Teresa Zerr | | 1934 | 45 | 6 | do | | 31.4 | Aug. 8, 1951 | C, W | D, S | Casing: 45 feet, in center of dug well. |
| I-5-19 | H. Nester | | 1875 | 45 | 60 | do | | 30.3 | Aug. 6, 1951 | C, W | D, S | |
| I-5-20 | E. T. Nester | J. Roberts | 1937 | 170 | 7 | Escondido formation. | | 109.9 | Sept. 24, 1951 | None | N | |
| I-5-21 | Mrs. F. B. Padgett | | | | 36 | Leona formation. | | 34.7 | Aug. 2, 1951 | | S | Casing: 40 feet. |
| I-5-22 | W. J. Nester | J. Roberts | 1951 | 175 | 10 | Escondido formation. | | 170.5 | Sept. 20, 1951 | C, E ½ | S | Drilled for irrigation well. Reported yield 300 gpm on test. |
| I-5-23 | do | do | 1934 | 410 | 6 | do | | 256.7 | do | C, W | S | |
| I-5-24 | Mort Cowan | do | 1924 | 360 | 6 | do | | 248.9 | Sept. 24, 1951 | C, W | S | Casing: 360 feet. Oil test, drilled to 700 feet. Plugged at 360 feet for use as water well. Casing: 360 feet; slotted from 310 to 360 feet. |
| I-5-25 | Alfred Nester | Sun Oil Co. | 1923 | 1,320 | | | | | | None | N | Oil test. Base of Grayson shale (Del Rio clay) at 1,290 feet. No water reported in Edwards limestone. |
| I-5-26 | A. E. Saathoff | P. Lindholm | 1908 | 508 | 6 | Anacacho limestone. | | 209.0 | Sept. 24, 1951 | C, W | S | Casing: 480 feet. Escondido formation, 20 to 400 feet; Anacacho limestone, 400 to 508 feet; water, 488-505 feet. See log. |
| I-5-27 | Otis Nester | | 1928 | 33 | 36 | Leona formation. | | 28.0 | Aug. 7, 1951 | C, E ¼ | S | Dug. |
| I-5-28 (Spring) | do | | | Spring | | do | | | | Flows | D, S | Flowing 25 gpm Aug. 7, 1951. |
| I-5-29 | C. Finger | J. Fitzsimmon | 1951 | 126 | 5 | Escondido formation. | | 120.1 | Apr. 8, 1951 | C, E ¼ | S, N | Casing: 125 feet. Well was dry Jan. 18, 1952. |
| | | | | | | | | Dry | Jan. 18, 1952 | | | |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-5-30 | M. J. Finger | Joe Anderle | 1934 | 454 | 6 | Escondido formation(?). | | 116.8<br>134.2 | Aug. 5, 1951<br>Jan. 23, 1952 | C, W | S | Casing: 400 feet. Drawdown 3.8 feet after 3 hours pumping 3 to 5 gpm, Jan. 23, 1952. See log. |
| I-5-31 | W. A. Nehr | J. Roberts | 1940 | 414 | 8 | Escondido formation. | | 130.4 | Jan. 17, 1952 | C, W | S | Casing: 400 feet. Pipe set at 210 feet. Temp. 74° F. See analysis, table 12. |
| I-5-32 | August Mumme | Pat Johnson | 1928 | 242 | 5 | Escondido formation. | | 142 | Sept. , 1938 | C, W | D, S | Casing: 700 feet. Oil test, drilled to 740 feet; plugged at 242 feet for water supply. Water level reported 142 feet below land surface as of Sept. 1938. |
| I-5-33 | G. Wooten | J. Roberts | 1946 | 418 | 6 | do | | 113.8 | Jan. 23, 1952 | C, G, W 5 | S | Water reported to be salty, contains small amount of oil. |
| I-5-34 | John N. Fohn | Finnell & Williams | 1926 | 1,008 | 4-8¼ | | | | | None | N | Oil test, plugged and abandoned. Water reported in Edwards limestone. See log. |
| I-5-35 | J. A. Mott | Medina Oil Co. | 1927 | 838 | 8 | Edwards limestone. | 851 | | | C, W | S | Oil test, converted to water well. Water level reported 118 feet below land surface as of June 1946. See log. |
| I-5-36 | Otto Mainz | United North & South Development Co. | 1926 | 550 | 6 | Escondido formation(?). | 844.5 | 40.3 | Feb. 15, 1951 | C, E 1½ | D, S | Oil test, drilled to 1,425 feet; plugged at 550 feet in 1926. Cleaned out and cased to 550 feet in 1950. Well I-5-6 in U. S. Geol. Survey Water-Supply Paper 678. See log. See analysis, table 12. |
| I-5-37 | R. J. Taylor | N. C. Johnson | 1936 | 1,249 | 10, 7 | | | | | None | N | Oil test, plugged and abandoned. Fresh water reported in Edwards limestone. See log. |
| I-5-38 | do | Pruitt & Van Deimen | 1928 | 1,225 | 12½ | | 850 | | | None | N | Oil test, plugged and abandoned. Fresh water reported at 240 and 1,193 feet. Well I-5-7 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-5-39 | Otto Mainz | J. Roberts | 1951 | 306 | 12 | Escondido formation. | | 78.9 | Feb. 19, 1951 | None | N | Casing: 300 feet; slotted 228 to 300 feet. Water reported to be salty and contain oil. |
| I-5-40 | A. L. Haegelin | Mid-Kansas Oil Co. | 1930 | 196 | 6 | do | | 130.9<br>140.5 | Feb. 22, 1930<br>Nov. 6, 1951 | C, W | S | Casing: 210 feet. Pump set at 190 feet. Well I-5-5 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-5-41 | do | Sun Oil Co. | 1945 | 773 | | | 940 | | | None | N | Oil test, plugged and abandoned. See log. |
| I-5-42 | do | E. M. Burkett | 1930 | 196 | 5 | Escondido formation(?). | | 131.1 | Nov. 6, 1951 | C, W | S | Pump set at 145 feet. Temp. 74° F. See analysis, table 12. |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-5-43 | A. L. Haegelin | Ben Banner | 1941 | 1,720 | 10 8 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-5-44 | do | Medina Oil Co. | | 1,950 | | | | | | None | N | Oil test, plugged and abandoned. Wel I-5-4 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| I-5-45 | do | J. Roberts | 1952 | 328 | 6 | Escondido formation. | | 174.3 | Feb. 18, 1952 | C, E 1/2 | S | Casing: 328 feet; slotted from 280 to 328 feet. |
| I-5-46 | J. B. Chadwick | | 1942 | 48 | 5 | Leona formation(?). | | 27.9 | Jan. 18, 1952 | C, W | D, S | Casing: 48 feet; screened from 28 to 48 feet. |
| I-5-47 | H. H. Schmidt | H. C. Hassell | 1941 | 268 | 5 | Escondido formation(?). | | 128.4 | Jan. 19, 1952 | C, G 10 | S | Drawdown 6.8 feet after 1½ hours pumping 8 gpm, Jan. 18, 1952. |
| I-5-48 | J. A. Rowe | J. Eckhardt | 1930 | 1,700 | 6 | Edwards limestone. | 845 | 154.7 | Mar. 17, 1952 | C, W | D, S | Drawdown 0.9 foot after 8 hours pumping 2 to 4 gpm, Jan. 19, 1952. Temp. 77° F. See analysis, table 12. |
| I-5-49 | E T. Bendele | W. H. Wycott | 1928 | 840 | 8 | Escondido formation. | | 179.9 | Jan. 19, 1952 | C, W | D, S | Casing: 700 feet. Oil test, drilled to 840 feet. Plugged back to fresh water sands. Drawdown 84.3 feet after 3 hours pumping 2 to 5 gpm, Jan. 19, 1952. |
| I-5-50 | M. Langfield | F. M. Burkett | 1926 | 292 | 6 | do | | 145.8 | Nov. 6, 1951 | C, W | S | |
| I-5-51 | T. J. Bendele | W. H. Wycott | 1936 | 375 | 8, 6 | Escondido formation. | | 143.0 | Nov. 6, 1951 | C, W | S | Casing: 8-inch to 250 feet and 6-inch from 250 to 310 feet. See log. |
| I-5-52 | Charles Finger | Warren & Rogers | 1938 | 320 | 10 | do | | 124.4 | Dec. 15, 1921 | C, W | D, S | Oil test, drilled to 925 feet. Plugged back to 325 feet. Water reported salty. Temp. 74° F |
| I-5-53 | Walter Conring | Pegg Bros. | 1949 | 600 | 6 | Escondido formation(?). | | 187.2 | Jan. 23, 1952 | T, E 1½ | S | Water reported salty. Drawdown 3.4 feet after pumping 12 gpm, Jan. 23, 1952. |
| I-5-54 | Charles Finger | | 1936 | 58 | 36 | Leona formation(?). | | 42.4 | Nov. 6, 1951 | C, E 1/3 | D, S | Dug. |
| I-5-55 | Ray McGlauphlin | L. W. Burrell | 1926 | 2,000 | 8 | Edwards limestone. | 784.1 | *81.8 | Jan. 3, 1952 | C, W | D, S | Drawdown 12 feet after 1½ hours pumping 2 to 4 gpm, Jan. 3, 1952. Well I-4-30 in U. S. Geol. Survey Water-Supply Paper 678. Temp. 76° F. See analysis, table 12. |
| I-5-56 | Carle & Nester | W. Glasscock | 1946 | 2,412 | 6 | Edwards limestone(?). | | 23.3 | Jan. 23, 1952 | None | N | Oil test. See log. |
| I-5-57 | H. H. Wheeles | F. M. Burkett | 1926 | 275 | 8 | Escondido formation. | | 191.5 | do | C, W | S | Casing: 275 feet; slotted from 245 to 275 feet. See analysis, table 12. |
| I-5-58 | C. M. Hood | R. Hensley | 1938 | 420 | 10 | Escondido formation. | | 168.7 | Jan. 19, 1952 | C, W | D, S | Owner reports small yield of highly mineralized water. |
| I-5-59 | Paul Rienhardt | W. W. Woodworth | 1929 | 1,964 | 10 | | 830 | | | None | N | Oil test, plugged and abandoned. See log. |
| I-5-60 | Oscar W. Tunder | Mid-Kansas Oil Co. | 1930 | 1,990 | | | 792 | | | None | N | Oil test, plugged and abandoned. See log. Well I-5-2 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-5-61 | do | | 1940 | 180 | 12 | Escondido formation. | | 97.5 | Jan. 23, 1952 | C, W | D, S | Casing: 180 feet; perforated. Water reported to be salty. Temp. 73° F. |
| I-5-62 | J. A. Rowe | J. Eckhardt | | 700 | 6 | do | | 131.7 | Jan. 19, 1952 | C, W | S | Water reported salty. |
| I-5-63 | Jesus M. Santos | J. Roberts | 1945 | 412 | 6 | do | | 277.4 | Jan. 22, 1952 | C, G 6 | S | |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) (feet) | Water level: Below land-surface datum datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-5-64 | R. M. Jones | do | 1948 | 354 | 5 | do | | 161.6 | do | C, E. 2 | S | Casing: 165 feet. Owner reports small yield of salty water. Pumping 8 gpm Jan. 22, 1952. |
| I-5-65 | Thomas Duderstadt | Masters | 1928 | 171 | 7 | do | | 92.1 | do | C, W | S | Water reported to be highly mineralized. |
| I-5-66 | Jacob Fohn | | | 65 | 52 | Indio formation. | | 60.7 | Aug. 15, 1951 | C, W | S | Dug. Curbing: 36 feet of rock. |
| I-5-67 | O. L. Saathoff | J. Roberts | 1948 | 82 | 5 | Indio formation(?). | | 44.9 | Jan. 19, 1952 | C, E. 1/4 | D, S | Casing: 82 feet; slotted from 52 to 82 feet. |
| I-5-68 | do | | 1928 | 58 | 36 | Leona formation(?). | | 34.6 | do | C, W | D, S | Casing: 15 feet. Dug. |
| I-5-69 | E. S. Bohmfalk | J. Fitzsimmon | 1938 | 86 | 6 | Indio formation(?). | | 32.7 | do | C, W | D, S | Casing: 86 feet: slotted. |
| I-5-70 | Lucian Ward | | 1934 | 62 | 28 | Indio formation. | | 34.2 | do | C, W | S | |
| I-5-71 | do | Grayburg Oil Co. | 1926 | 92 | 7 | do | | 35.8 | do | C, E. 1/2 | D, S | Oil test, drilled to 2,196 feet, plugged below 92 feet. Well I-5-3 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| I-5-72 | Floyd Schmidt | H. C. Hassell | 1946 | 156 | 6 | Indio formation(?). | | 76.8 | do | C, E. 1/2 | D, S | Casing: 156 feet; slotted from 110 to 156 feet. Water reported to be highly mineralized. |
| I-5-73 | S. I. Dubose | A. E. Goforth | 1934 | 560 | 8 | Indio formation. | | 173.6 | Jan. 19, 1952 | C, W | D, S | Water reported to be salty; corrodes pipe. |
| I-6-1 | F. L. McWilliams | | 1935 | 63 | 36 | Leona formation. | | 55.9<br>54.7 | July 20, 1951<br>Jan. 28, 1952 | C, E. 1/2 | D, S | Dug. |
| I-6-2 | S. Neuman | | 1919 | 58 | 72 | do | | 52.6 | July 20, 1951 | C, E. 1/4 | D, S | Casing: 60 feet. Drawdown 0.2 feot after 2 hours pumping 5 gpm July 20, 1951. |
| I-6-3 | Alfred Winkler | C. Gilliam | 1949 | 50 | 6 | do | | 21.7 | Jan. 26, 1952 | C, E. 1/2 | D | Casing: 45 feet; slotted from 20 to 45 feet. Pump set at 43 feet. Reported to pump air after 24 hours pumping 4 gpm. See analysis, table 12. |
| I-6-4 | F. W. Bohmfalk | Milton Pegg | 1950 | 1,530 | 8 | Edwards limestone. | 851.4 | 175.0<br>*175.0 | Nov. 2, 1951<br>Aug. 31, 1951 | T, E. 2 | D, S, Irr | Casing: 1,300 feet. Temp. 75° F. See log. See analysis, table 12. |
| I-6-5 | Elmer Bader | C. Gilliam | 1939 | 78 | | Leona formation. | | 41.4 | Jan. 25, 1952 | C, W | S | Casing: 72 feet. |
| I-6-6 | H. G. Boehle | | 1914 | 40 | 28 | do | | 32.8 | July 20, 1951 | C, W | D, S | Casing: 40 feet. Owner reports sma yield. |
| I-6-7 | Andrew Schweers | | 1928 | 50 | 32 | do | | 38.1 | do | C, E. 1/4 | D, S | |
| I-6-8 | Ed Saathoff | | | 52 | 48 | do | | 32.4 | do | C, W | S | Casing: 40 feet. Water reported salty. |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-6-9 | Emil G. Riff | M. L. Walker | 1938 | 1,076 | 8 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-10 | J. M. Saathoff | R. M. Yantis and Carl Bros. | 1928 | 802 | | | | | | None | N | Do. |
| I-6-11 | J. Etter | | 1908 | 44 | 36 | Leona formation. | | 15.1 | July 20, 1951 | C, E, 1/4 | D, S | Dug. |
| I-6-12 | C. Neuman | Maxwell & Turner | 1934 | 1,468 | | | 793 | | | None | N | Oil test, plugged and abandoned. Well I-6-1 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| I-6-13 | H. H. Haby | J. Fitzsimmon | 1937 | 142 | 6 | Escondido formation. | | 67.2 | Aug. 2, 1951 | C, W | D, S | Casing: 150 feet, slotted from 60 to 85 feet, and from 120 to 145 feet. Temp. 73° F. See analysis, table 12. |
| I-6-14 | L. A. Haby | H. A. Pagenkoff | 1950 | 1,270 | 11, 5½ | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-15 | Lawrence Fritz | J. W. Duncan | 1941 | 1,596 | 8<br>5½ | Edwards limestone(?). | | 38.0 | Jan. 25, 1952 | C, W | S | Casing: 8-inch to 900 feet, 5½-inch from 900 to 1,596 feet. Water reported salty. |
| I-6-16 | J. G. Fitzsimon | J. Fitzsimmon | 1946 | 272 | 6 | Escondido formation. | | 121.3 | do | C, E, 1 | D, S | Owner reports small yield of salty water. |
| I-6-17 | Lawrence Haby | do | 1945 | 95 | 6 | do | | 62.9 | July 21, 1951 | C, W | D, S | Casing: 90 feet, slotted. Drawdown 3.1 feet after ½ hour pumping 3 to 4 gpm, July 21, 1951. |
| I-6-18 | J. A. Coyle | Lynd & Fundren | 1936 | 1,800 | | | | | | None | N | Oil test, plugged and abandoned. |
| I-6-19 | do | | 1919 | 51 | 48 | Leona formation. | | 41.9 | Nov. 17, 1950 | C, E, ½ | D, S | Dug. Curbing: 40 feet of rock. Drawdown 1.2 feet after 24 hours pumping 30 gpm, Nov. 18, 1950. |
| I-6-20 | do | F. M. Burkett | 1934 | 90 | 8 | do | | 38.4 | Jan. 4, 1951 | T, G, 40 | Irr | Casing: 90 feet, slotted from 50 to 90 feet. Reported drawdown 6.8 feet after 4 hours pumping 500 gpm, Jan. 1952. |
| I-6-21 | J. H. Wiemers | | 1936 | 60 | 168 | do | | 37.2 | June 27, 1951 | T. G, ½ | Irr<br>D, S | Dug. Curbing: 60 feet of brick. Irrigates 40 acres of clover. Drawdown 0.5 foot while pumping 6 gpm, Feb. 10, 1952. |
| I-6-22 | T. G. Wiemers | C. Gilliam | 1938 | 112 | 6 | Escondido formation. | | 62.8 | do | C. E, 1½ | S, Irr | Casing: 112 feet, slotted. Water reported to have bitter taste. |
| I-6-23 | L. Muennink | | 1920 | 52 | 48 | Leona formation(?). | | 34.4 | Jan. 28, 1952 | C, W | D. S | Dug. |
| I-6-24 | J. R. Clements | J. Fitzsimon | 1945 | 98 | 6 | Escondido formation. | | 68.3 | June 28, 1951 | C, W | S | |
| I-6-25 | F. W. Bohmfalk | do | 1946 | 60 | 6 | Leona formation. | | 37.3 | do | C. E, ½ | D, S | Owner reports small yield. |
| I-6-26 | C. D. Wiemers | C. Gilliam | 1938 | 90 | 5 | do | | 46.3 | Aug. 8, 1951 | C, W | D, S | Casing: 90 feet. |
| I-6-27 | D. W. Wiemers | H. M. Roark, and others. | 1943 | 690 | 10<br>7 | | | | | None | N | Oil test. See log. |
| I-6-28 | George Schweers | | 1912 | 36 | 28 | do | | 14.6 | Jan. 28, 1942 | C, W | S | Dug. |
| I-6-29 | F. F. Muennink | | 1935 | 48 | 42 | do | | 40.6 | Aug. 8, 1951 | C, W | D, S | Do. |
| I-6-30 | J. E. Ulbrich | Whitfield & Draper | 1938 | 1,213 | | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-31 | Hugh Rector | | | 59 | 36 | Leona formation. | | 46.5 | July 20, 1951 | C, G, 10 | S | |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-6-32 | M. W. Keel | H. Saathoff | 1926 | 68 | | do | | 51.3<br>47.6 | Jan. 22, 1952<br>Feb. 7, 1951 | C, E, ¼ | D, S | Casing: 68 feet. Drawdown 0.3 foot after 7 hours pumping 6 gpm, Apr. 22, 1952. |
| I-6-33 | W. B. Odem | R. P. Whitfield | 1937 | 1,434 | | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-34 | C. Walker | C. Gilliam | 1928 | 64 | 6 | Leona formation. | | 41.4 | Jan. 26, 1952 | C, W | S | |
| I-6-35 | W. B. Odem | Gates & Hill | 1935 | 465 | 8<br>7 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-36 | A. L. Haegelin | Medina Oil Co. | 1925 | 1,950 | 12<br>6 | | 901 | | | None | N | Casing: 1,950 feet. Oil test. Well I-6-4 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| I-6-37 | R. A. Haegelin | | | 54 | 7 | Leona formation. | | 45.8 | Aug. 9, 1951 | C, W | D, S | Casing: 54 feet, slotted from 35 to 54 feet |
| I-6-38 | R. A. Holloway | Circle Oil Co. | 1938 | 60 | 12 | do | | 46.2 | July 9, 1951 | C, E, 1 | D, S | Oil test, drilled to 1,687 feet. Plugged below 60 feet. Casing: 60 feet, slotted from 35 to 60 feet. |
| I-6-39 | A. G. Holloway | | 1944 | 102 | 8 | Escondido formation. | | 50.7 | Aug. 9, 1951 | C, W | D, S | Casing: 102 feet, slotted. |
| I-6-40 | M. L. Haegelin | | 1920 | 58 | 40 | Leona formation. | | 34.4 | Jan. 29, 1952 | C, W | D, S | |
| I-6-41 | R. Bailey | W. Lancaster | 1936 | 212 | 6 | Escondido formation. | | 56.4 | do | None | N | Water reported salty. |
| I-6-42 | do | | | 45 | 42 | Leona formation. | | 41.8 | Aug. 15, 1951 | C, E, W ¼ | D, S | Drawdown 2.4 feet after 2 hours pumping 8 gpm, Mar. 12, 1952. |
| I-6-43 | D. N. Berry | | | 56 | 6 | do | | 32.9 | Jan. 29, 1952 | C, E, ¼ | D, S | Irrigated 20 acres of grass from this well in 1950. |
| I-6-44 | J. M. Fusselman | Kirby Petroleum Co. | 1930 | 1,950 | 10 | | 798 | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-45 | A. G. Holloway | | 1915 | 44 | 52 | Leona formation. | | 32.8 | June 6, 1951 | T, E, 6 | D, S, Irr | Irrigated 4 acres of oats in 1951. Drawdown 1.7 feet after 2 hours pumping 28 gpm, June 6, 1951. |
| I-6-46 | Robert Clements | J. Fitzsimmon | 1946 | 85 | 6 | do | | 64.3 | June 28, 1951 | C, E, W ¾ | D | |
| I-6-47 | Charles Graff | | | 187 | 5 | Escondido formation. | | 121.0 | Jan. 28, 1952 | C, W | S | Drawdown 8.9 feet after 6 hours pumping 3 to 5 gpm, Jan. 28, 1952. |
| I-6-48 | J. M. Fusselman | V. F. Neuhaus | 1923 | 1,814 | 10 | | 888 | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-49 | Harry Stiegler | | 1932 | 60 | 48 | Leona formation. | | 47.8 | Aug. 8, 1951 | C, W | D, S | Dug. Curbing: 28 feet of rock. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-6-50 | Fusselman & Murdry. | Sam Kong | 1929 | 3,302 | 10 | | | | | None | N | Oil test, plugged and abandoned. Top of Edwards limestone reported at 1,190 feet. |
| I-6-51 | A. A. Murrell | L. V. Doss | 1951 | 101 | 8 | Leona formation. | | 40.9 | Mar. 21, 1951 | None | N | Oil test, plugged and abandoned in May 1951. See log. |
| I-6-52 | W. Scott | — Holdeman | | 89 | 6 | Leona formation. | | 34.4 | Dec. 12, 1950 | None | N | Well used by Illinois Pipeline Company station in 1936. |
| I-6-53 | William Mann | Elstone Oil Co. | 1939 | 1,682 | 7 | | | | | None | N | Casing: 1,025 feet. Oil test, plugged and abandoned. See log. |
| I-6-54 | do | F. Santos | 1938 | 55 | 30 | Leona formation. | | 39.6 | Jan. 29, 1952 | C, E. 1/4 | D, S. | Dug. Curbing: 30 feet. |
| I-6-55 | H. J. Wiemers | | 1942 | 1,100 | 10 | | | | | None | N | Casing: 1,100 feet. Oil test, plugged and abandoned. |
| I-6-56 | A. Wiemers | | 1936 | 92 | 5 | Escondido formation. | | 78.5 | Jan. 25, 1952 | C, W | S | Casing: 120 feet, slotted from 80 to 120 feet. |
| I-6-57 | O. Bendele | Jagge & Tschirhart | 1935 | 193 | 6 | do | | 159.2 | do | C, W | D, S. | Water reported to have salty taste. Well pumps small amount of oil. |
| I-6-58 | A. H. Bendele | J. Fitzsimmon | 1951 | 189 | 6 | do | | 173.8 | Jan. 26, 1952 | None | N | Casing: 60 feet. |
| I-6-59 | J. O. Redus | Witherspoon Oil Co. | 1927 | 2,343 | | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-60 | Louis Haas | R. Haas | 1934 | 410 | 15 | Escondido formation. | | 79.8 | Feb. 18, 1952 | C, E. 1 | S | Water reported to have salty taste. |
| I-6-61 | A. Bilhartz | | 1940 | 59 | 28 | Leona formation. | | 37.3 | Jan. 29, 1952 | C, W | D, S. | Dug. Curbing: 36 feet of concrete rings. West well of two wells. |
| I-6-62 | A. Hutzler | | 1935 | 220 | 12 | Indio formation. | | 159.3<br>158.4<br>160.8 | Aug. 21, 1951<br>Nov. 15, 1951<br>Jan. 16, 1952 | C, W. | D, S. | Casing: 200 feet, slotted from 180 to 200 feet. |
| I-6-63 | E. D. Bader | R. Haas | 1944 | 99 | 7 | do | | 72.6 | Sept. 28, 1951 | C, W. | D, S. | Casing: 100 feet. Driller reported water at 79 feet. |
| I-6-64 | J. A. Watson | | 1907 | 140 | 5 | do | | 91.3 | Sept. 26, 1951 | C, W. | D, S. | |
| I-6-65 | C. W. Hairrell | A. F. Mann | 1942 | 94 | 5 | do | | 62.3 | Sept. 27, 1951 | C, W. | S | Casing: 90 feet. |
| I-6-66 | F. B. Forrest | Letro Oil Corp. | 1936 | 1,020 | 10<br>6 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-67 | C. A. Henson | | 1905 | 115 | 6 | Indio formation. | | 83.0 | Sept. 27, 1951 | C, W. | D, S. | Casing: 115 feet, ripped from 95 to 115 feet. |
| I-6-68 | R. Bilhartz | | | 86 | 6 | Leona formation. | | 42.3 | Jan. 29, 1952 | C, W. | D, S. | |
| I-6-69 | Joe Bilhartz | —Brown | | 211 | 6 | Indio formation. | | 111.6 | Sept. 19, 1951 | None | N | Oil test. |
| I-6-70 | V. H. Neuman | | 1900 | 60 | 42 | Leona formation. | | 45.0 | do | C, W. | D, S. | Dug. Curbing: 60 feet of concrete rings. |
| I-6-71 | J. A. Blackburn | Ina Oil Co. | 1924 | 2,006 | | | | | | None | N | Oil test, plugged and abandoned. Well I-6-2 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-6-72 | Regina Schmidt | Magnolia Petroleum Co. | 1926 | 2,048 | | | | | | None | N | Oil test, plugged and abandoned. Well 1-6-3 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-6-73 | J. L. Wernette | | 1900 | 67 | 42 | Leona formation. | | 41.0 | Sept. 27, 1951 | C, W. | D, S. | Dug. |
| I-6-74 (Spring) | J. P. Nixon | | | | | do | | | Jan. 15, 1952 | Flows | D, S. | Flowing 26 gpm Jan. 15, 1952. Temp. 69 F. |
| I-6-75 | Ira Schmidt | | 1938 | 45 | 48 | do | | 42.4 | Sept. 18, 1951 | C, W. | D, S. | |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-6-76 | C. Wendland & F. Ward | R. Hensley | 1952 | 66 | 13 | do | | 44.7 | Jan. 15, 1952 | T, G 60 | Irr | Casing: 66 feet, slotted from 12 to 58 feet. Drawdown 2.8 feet after 8 hours pumping 860 gpm, Jan. 15, 1952. |
| I-6-77 | J. J. Neuman | | 1912 | 49 | 24 | do | | 35.7 | Sept. 19, 1951 | C, T, W, G, 15 | S, Irr | Pumping 72 gpm May 12, 1952. Irrigated 15 acres in 1950. Owner reports well was pumped at 200 gpm in 1939. |
| I-6-78 | W. G. Bearmen | W. Lancaster | 1947 | 49 | 7½ | Indio formation. | | 44.7 | do | C, E 1 | D, S | Casing: 48 feet. Supplies dairy farm. See analysis, table 12. |
| I-6-79 | Harold Steigler | | 1940 | 44 | 36 | Leona formation. | | 32.1 | do | C, W | S | |
| I-6-80 | Fritz Moebius | R. Haas | 1936 | 125 | 6 | Indio formation. | | 78.6 | Sept. 27, 1951 | C, W | D, S | Casing: 120 feet, slotted from 80 to 120 feet. Pump set at 116 feet. |
| I-6-81 | Kurt Schaaf | do | 1937 | 154 | 6 | do | | 114.2 | do | C, W | D, S | |
| I-6-82 | James Bailey | A. F. Mann | 1948 | 75 | 10½ | do | | 40.4 | Aug. 8, 1951 | C, G, W 10 | S, Irr | Casing: 75 feet, slotted from 35 to 70 feet. Drawdown 6.9 feet after 2 hours pumping 9 gpm, Aug. 8, 1951. Temp. 77° F. |
| I-6-83 | J. F. Crider | | 1935 | 60 | 42 | Leona formation. | | 34.8 | do | C, W | D, S | Casing: 50 feet. Dug. |
| I-6-84 | W. Edwards | Sutton Drilling Co. | 1940 | 115 | 8 | Indio formation. | | 45.0 | do | T, E 5 | Irr | Casing: 120 feet, slotted. Irrigated 22 acres of grass in 1951. |
| I-6-85 | Frank Hartman | | 1921 | 62 | 6 | do | | 43.7 | Jan. 29, 1952 | C, W | D, S | |
| I-6-86 | C. C. Rogers | C. Gilliam | 1940 | 96 | 5 | do | | 76.7 | Aug. 20, 1951 | None | N | Water reported salty. |
| I-6-87 | W. Nietenhoefer | Ina Oil Co. | 1923 | 300 | 5 | Escondido formation. | | 161.1 | Aug. 16, 1951 | C, W | S | Oil test, converted to water well. Water reported to be salty. |
| I-6-88 | Jim Grey | | 1928 | 44 | 36 | Indio formation. | | 39.2 | Aug. 20, 1951 | C, W | S | |
| I-6-89 | Fritz Senne | A. D. Gaston | 1938 | 975 | 7 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-90 | do | | 1908 | 58 | 38 | Indio formation. | | 26.6 | Feb. 28, 1951 | C, W | D, S | Dug. Curbing: 28 feet of rock. |
| I-6-91 | C. C. Rogers | | 1905 | 33 | 36 | do | | 28.5 | Aug. 20, 1951 | C, W | S | |
| I-6-92 | Albert Hoffman | Ina Oil Co. | 1923 | 2,026 | | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-93 | H. E. Mofield | C. Gilliam | 1940 | 125 | 6 | Indio formation. | | 52.4 | Feb. 28, 1951 | C, W | S | Casing: 125 feet, slotted from 95 to 125 feet. Temp. 75° F. See analysis, table 12. |
| I-6-94 | do | Mowinkle & Nessley | 1949 | 1,179 | 8 | Edwards limestone. | 756 | | | T, E 8 | Irr | Oil test, converted to water well. Water level reported 84 feet below land surface as of June 1949. |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-6-95 | do | W. W. Kelly | 1951 | 394 | 12 | Indio formation. | 759 | 109.1 | Aug. 31, 1951 | T, G 40 | D, Irr | Drilled to supply water for oil test. Drawdown 31.4 feet while pumping 58 gpm, Aug. 31, 1951. |
| I-6-96 | F. G. Senne | | 1926 | 44 | 48 | do | | 24.6 | Feb. 28, 1951 | C, W | D, S | Dug. Curbing: 8 feet of rock. Water reported from 40 to 44 feet. See analysis, table 12. |
| I-6-97 | Vernon Gruenwald | | 1941 | 55 | 48 | do | | 36.8 | Sept. 20, 1951 | C, E ¼ | D, S | Casing: 55 feet. Water reported salty. Temp. 74° F. See analysis, table 12. |
| I-6-98 | W. B. Melton | | Old | 79 | 5 | do | | 52.2 | Aug. 23, 1951 | C, W, E | D, S | |
| I-6-99 | do | A. P. Mann | 1929 | 103 | 6 | do | | 59.4 | do | C, W | S | Casing: 103 feet, perforated from 76 to 100 feet. |
| I-6-100 | G. C. McAnelley | | 1875 | 55 | 7 | do | | 53.2 | Aug. 24, 1951 | C, E ½ | D, S | See analysis, table 12. |
| I-6-101 | W. B. Melton | | | 169 | 5 | do | | 89.7 | Aug. 23, 1951 | C, W | S | Casing: 140 feet. Water reported highly mineralized. |
| I-6-102 | G. C. McAnelley | | 1900 | 130 | 6 | do | | 93.7 | Jan. 12, 1952 | C, W | S | Casing: 130 feet, slotted from 92 to 130 feet. |
| I-6-103 | J. P. Nixon | A. F. Mann | 1936 | 128 | 5 | do | | 44.6 | Aug. 24, 1951 | C, W | S | |
| I-6-104 | W. C. Scott | | 1930 | 204 | 7 | do | | 107.6 | Aug. 23, 1951 | C, W | S | Reported to pump air after 5 hours pumping 6 gpm. Water reported salty. |
| I-6-105 | J. McAnelley | Ralph E. Fair Inc. | 1946 | 5,512 | | Travis Peak formation. | | | | None | N | Oil test, abandoned. Well reported to have flowed 200 gpm of water at 4,814 feet July 1946. See log. |
| I-6-106 | Hartley Howard | W. F. Pegg | 1950 | 1,066 | 8 | | | | | None | N | Casing: 65 feet. Oil test, plugged and abandoned. See log. |
| I-6-107 | C. Adams | Carl & Flinders | 1940 | 365 | 10, 8 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-108 | Hugo Smith | Bill Armstead | 1924 | 69 | 12 | Leona formation. | | 39.4 | Jan. 29, 1952 | C, G 12 | D, S | Casing: 80 feet, slotted. Drawdown 2.5 feet while pumping 8 gpm, Jan. 29, 1952. |
| I-6-109 | Carlton Adams, Jr. | L. V. Doss | 1941 | 138 | 7, 5½ | Indio formation. | | 74.8 | Apr. 24, 1951 | C, E 1 | D, S | Casing: 7-inch to 104 feet, 5½-inch from 104 to 138 feet. Perforated from 20 to 138 feet. See log. |
| I-6-110 | — Schmidt | E. H. Keater | 1949 | 2,016 | 11 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-111 | Carlton Adams, Jr. | L. V. Doss | 1951 | 256 | 9 | Indio formation. | | 29.4 | Apr. 24, 1951 | T, G 60 | Irr | Casing: 292 feet. Oil test, drilled to 1,700 feet, plugged at 260 feet and converted to water well. Drawdown 46 feet while pumping 250 gpm, Apr. 24, 1951. See log. |
| I-6-112 | Mame M. Adams | Mirando Gas Co. | 1928 | 1,014 | 7, 5 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-6-113 | Wm. Keller | R. Haas | 1946 | 189 | 6 | Indio formation. | | 162.0 | Sept. 27, 1951 | C, W | D, S | |
| I-6-114 | W. E. Love | Ina Oil Co. | 1925 | 152 | 5 | do | | 144.4 | do | C, W | D, S | Reported to pump air after 3 hours pumping 6 gpm. |
| I-6-115 | Francis Boehle | A. F. Mann | 1942 | 140 | 5 | do | | 113.8 | Aug. 24, 1951 | C, W | D, S | Casing: 140 feet, slotted from 92 to 140 feet. |
| I-6-116 | Mame M. Adams | Southern Gas Utility, Inc. | 1926 | 944 | 7 | | 732 | | | None | N | Casing: 905 feet. Oil test, plugged and abandoned. See log. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of wel (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-6-117 | do | do | 1926 | 944 | 10, 7 | | 728 | | | None | N | Casing: 915 feet. Oil test, plugged and abandoned. See log. |
| I-6-118 | do | do | 1926 | 910 | 7 | | 706 | | | None | N | Casing: 811 feet. Oil test, plugged and abandoned. See log. |
| I-6-119 | C. Adams | Les Upton | 1948 | 302 | 7 | Indio formation. | | 86.2 | Oct. 13, 1952 | T, G 30 | D, S Irr | Casing: 300 feet, slotted |
| I-6-120 | Hartley Howard | | 1900 | 93 | 6 | do | | 60.9 | Sept. 28, 1951 | C, E ½ | D, S | Drilled in old dug well. |
| I-6-121 | do | A. F. Mann | 1934 | 96 | 6 | do | | 60.5 | Oct. 5, 1951 | C, W | S | |
| I-6-122 | Gilbert Falbo | L. V. Doss | 1948 | 186 | 6 | do | | 91.1<br>91.7 | Oct. 8, 1951<br>Oct. 10, 1952 | C, E ½ | D, S | Drawdown 2.6 feet while pumping 7 gpm Nov. 9, 1951. Temp. 73° F. See analysis, table 12. |
| I-6-123 | do | L. V. Doss | 1951 | 251 | 13, 8 | do | | 72.8 | Dec. 28, 1951 | T, E 30 | Irr | Casing: 13-inch to 157 feet, 10-inch from 157 to 217 feet, and 8-inch from 198 to 251 feet. Perforated from 135 to 155 feet, 158 to 207 feet, and 209 to 241 feet. Drawdown 34.3 feet after 4 hours pumping 420 gpm, Dec. 28, 1951. Pump set at 140 feet. See log. |
| I-6-124 | Hartley Howard | Alfred Haas | 1948 | 183 | 6 | do | | 173.3 | Sept. 28, 1951 | C, W | S | Reported to pump air after 4 hours pumping 5 gpm. |
| I-6-125 | George Rackley | | 1900 | 158 | 5 | do | | 122.6 | do | J, E ⅓ | D, S | |
| I-6-126 | Gilbert Falho | Les Upton | 1952 | 270 | 8 | do | | 102.3 | Oct. 10, 1952 | T, G 60 | Irr | Casing: 270 feet, slotted from 185 to 265 feet. Yield: 466 gpm, Oct. 6, 1952. |
| I-6-127 | do | do | 1952 | 340 | 8 | do | | 94.5 | do | None | N | Casing: 340 feet, slotted. Drilled for use as irrigation well |
| I-7-1 | Joe Gross | J. Jagge | 1939 | 320 | 6 | Escondido formation. | | 90.6 | Aug. 23, 1951 | C, W | D, S | Casing: 300 feet, slotted. |
| I-7-2 | do | | 1931 | 94 | 36 | Indio formation. | | 51.5 | do | C, W | S | Dug. Curbing: 90 feet of concrete rings. |
| I-7-3 | Henry Gross | | 1940 | 400 | 8 | do | | 162.4 | do | C, G, W 12 | S, Irr | Casing: 400 feet, slotted from 335 to 385 feet. Temp. 76° F. See analysis, table 12. |
| I-7-4 | Joe Gross | | 1932 | 160 | 5 | do | | 69.7 | do | C, W | S | Casing: 150 feet. |
| I-7-5 | do | | 1938 | 400 | 8 | do | | 82.6 | do | C, W | S | Casing: 360 feet, slotted. Pump set at 210 feet. |
| I-7-6 | Lewis Gross | | 1948 | 220 | 5 | do | | 81.6 | do | None | N | |
| I-7-7 | do | | 1939 | 100 | 42 | do | | 79.0 | do | C, W | S | Dug. Curbing: 20 feet of rock. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-7-8 | Henry Gross | | | 136 | 5 | do | | 56.4<br>60.0 | Apr. 19, 1930<br>Aug. 23, 1951 | C, W | D, S | Casing: 140 feet. Well I-7-1 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-7-9 | John Gross | | 1950 | 160 | 5 | do | | 58.5 | do | C, W | S | |
| I-8-1 | Lewis Gross | G. Tschirhart | 1938 | 300 | 6 | do | | 106.5 | do | C, W | S | Casing: 300 feet. Water reported salty. Temp. 76° F. See analysis, table 12. |
| I-8-2 | L. O. Carle | Woodrow & Glasscock. | 1946 | 260 | 6 | do | | 180.9 | Aug. 8, 1951 | C, W | S | Water reported salty. Drilled to supply water for oil test. See analysis, table 12. |
| I-8-3 | do | Plateau Oil Co. | 1926 | 2,164 | 10 | Edwards limestone(?). | | | | None | N | Oil test, plugged and abandoned. See log. See analysis, table 12. |
| I-8-4 | E. F. Wilson | | | 198 | 6 | Indio formation. | | 49.3 | Feb. 20, 1952 | C, W | S | Casing: 120 feet. |
| I-8-5 | do | C. Conway | 1935 | 119 | 5 | do | | 113.9 | do | C, W | S | Casing: 120 feet, slotted from 80 to 120 feet. |
| I-8-6 | do | | | 107 | 6 | do | | 100.2 | do | C, W | S | |
| I-8-7 | Marvin Uzzell | J. Roberts | 1951 | 172 | 5 | do | | 38.5 | Oct. 5, 1951 | T, E, ½ | S, Irr. | Pump set at 116 feet. See analysis, table 12. |
| I-8-8 | Alan Sparger | | 1934 | 121 | 5 | do | | 105.3 | Feb. 8, 1951 | C, W | D, S | Casing: 150 feet, slotted. Water reported salty. |
| I-8-9 | M. S. Koch | | 1920 | 159 | 5 | do | | 117.3 | do | C, W | D, S | Casing: 160 feet. Drawdown 2.2 feet while pumping 4 gpm, Feb. 8, 1952. See analysis, table 12. |
| I-8-10 | L. S. Dubberly | | | 400± | 5 | do | | 79.5 | Aug. 17, 1951 | C, W | S | Water reported salty. |
| I-8-11 | R. E. Wilson | | 1910 | 120 | 6 | do | | 50.2<br>62.2 | Feb. 27, 1930<br>Feb. 8, 1951 | C, W | D, S | Well I-8-8 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-8-12 | Joe Ward | | 1900 | 80 | 5 | do | | 79.5<br>88.1 | Feb. 27, 1930<br>Feb. 8, 1951 | C, E, ¼ | S | Well I-8-9 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-8-13 | Frank Martin | | | 300 | 5 | do | | 78.5 | Feb. 22, 1930 | None | N | Well I-8-10 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| I-8-14 | L. S. Dubberly | A. F. Mann | 1950 | 240 | 5 | do | | 79.5 | Aug. 17, 1951 | C, W | S | Casing: 140 feet, slotted from 85 to 130 feet. Water reported at 90 and 120 feet. |
| I-8-15 | C. Muennink | | 1947 | 105 | 6 | do | | 55.3 | do | C, E | S | Water reported highly mineralized. Oil on surface of reservoir. Water sand reported from 90 to 105 feet. |
| I-8-16 | A. J. Hardt | A. F. Mann | 1945 | 98 | 6 | do | | 49.8 | do | C, W | S | Drawdown 0.4 foot after 2 hours pumping 3 to 5 gpm, Aug. 17, 1951. Temp. 75° F. |
| I-8-17 | Andrew Muennink | Austin Smith | 1949 | 94 | 6 | do | | 48.3 | Feb. 18, 1952 | T, E | S | Drawdown 2.7 feet while pumping 12 gpm Feb. 18, 1952. |
| I-8-18 | Oliver Hardt | A. F. Mann | | 227 | 4 | do | | 49.8 | Aug. 17, 1951 | C, W | S | Casing: 165 feet, slotted. |
| I-8-19 | Ed Martin | | | 190 | 6 | do | | 33.5<br>42.2 | Mar. 1, 1930<br>Aug. 17, 1951 | C, W | D, S | Well I-8-4 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-8-20 | do | | 1947 | 100 | 6 | do | | 52.7 | do | C, W | S | |
| I-8-21 | Leroy Faseler | C. Conway | | 95½ | 6 | do | | 68.8<br>84.8 | Feb. 22, 1930<br>Feb. 20, 1952 | C, W | S | Well I-8-7 in U. S. Geol. Survey Water-Supply Paper 678 is 1,500 feet southwest. Caved and abandoned. |
| I-8-22 | James Heiligman | | 1948 | 146 | 6 | do | | 112.8 | Aug. 22, 1951 | C, W | S | |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-8-23 | M. Wilson | | | 100± | 52 | do | 669.2 | 86.2 | Mar. 4, 1930 | None | N | Rock walls caved in 1937, well abandoned. Well I-8-5 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-8-24 | Mrs. E. E. Wilson | | | 150 | 6 | do | | 76.8 | Aug. 17, 1951 | C, E | D, S | Casing: 150 feet, slotted from 110 to 145 feet. |
| I-8-25 | do | | | 100± | 60 | do | 656.7 | 32.5<br>45.6 | Mar. 1, 1930<br>Feb. 8, 1952 | C, W | D, S | Well I-8-6 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-8-26 | do | | | 150 | 6 | do | | 63.5 | Aug. 17, 1951 | | D | |
| I-8-27 | do | Robertson Drilling Co. | 1932 | 3,126 | 10 | Carrizo sand | 697 | 66.0 | Feb. 20, 1952 | None | N | Oil test, plugged at 122 feet. Now used as water well. See log. |
| I-8-28 | F. E. Wilson | R. Hensley | 1951 | 133 | 6 | Indio formation. | | 76.9 | do | C, E ½ | D, S | Casing: 135 feet, slotted from 60 to 120 feet. |
| I-8-29 | do | | | 178 | 8 | Carrizo sand | | 167.0 | do | C, G 3 | S | |
| I-8-30 | Sallie B. Little | United North & South Development Co. | 1930 | 4,237 | 12½ | | 715.0 | | | None | N | Oil test, plugged and abandoned. See log. |
| I-8-31 | F. E. Wilson | | | 141 | 5 | Carrizo sand | | 60.7 | Feb. 20, 1952 | C, W | S | |
| I-8-32 | E. E. Hensley | | | 98 | 5 | Indio formation. | | 78.9 | do | C, W | D, S | Well I-8-3 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-8-33 | G. A. Blackaller | Med-Frio Oil Co. | 1921 | 3,500 | | | 703.0 | | | None | N | Oil test, abandoned. Owner reported well flowing water in 1930. See log. |
| I-8-34 | J. E. Langley | Joe Gray | | 240 | 6 | Carrizo sand | | 35.8<br>47.4 | Mar 1, 1930<br>Feb. 20, 1952 | C, W | S | Well I-8-1 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-9-1 | Olen Brieden | | | | 7 | Indio formation. | | 120.5 | Aug. 16, 1951 | C, W | S | |
| I-9-2 | Emma Wiemers | | | 51 | 48 | do | | 41.3 | do | C, E | D, S | Dug. See analysis, table 12. |
| I-9-3 | John P. Nixon | James F. Greenlee | 1932 | 1,340 | 10, 7 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| I-9-4 | Alfred Wiemers | | | 62 | 60 | Indio formation. | | 39.5 | Aug. 23, 1951 | C, W | D, S | Dug. Curbing; 62 feet of brick. |
| I-9-5 | Philip Nixon | Austin Smith | 1951 | 99 | 6 | do | | 45.7 | Feb. 13, 1952 | C, E ¼ | D, S | Casing: 100 feet, slotted from 40 to 92 feet. Drawdown 1.1 foot while pumping 6 gpm, Feb. 13, 1952. Temp. 75° F. |
| I-9-6 | E. Bohmfalk | Fritz Fuchs | 1923 | 1,556 | 6, 4 | | | | | None | N | Oil test, plugged and abandoned. Water reported from 1,141 to 1,176 feet. Well I-9-9 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| I-9-7 | Ed Fasler | | 1925 | 121 | 6 | Indio formation. | | 43.4 | Aug. 23, 1951 | C, W | D, S | |
| I-9-8 | Leroy Faseler | | | 90 | 7 | do | | 53.9 | do | C, W | S | Water reported to be highly mineralized. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-9-9 | do | | | | | | | | | None | N | Oil test, plugged and abandoned. No water reported. Well I-9-10 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-9-10 | C. E. Wiemers | C. Conway | | 176 | 6 | Indio formation. | | 148.8 | Aug. 23, 1951 | C, E. ½ | S | Reported to pump air after 3 hours pumping 8 gpm. |
| I-9-11 | E. E. Wilson | A. F. Mann | 1938 | 150 | 6 | do | | 102.0 | do | C, W | S | Water reported to have iron color. |
| I-9-12 | Henry Faseler | | 1946 | 200 | 4 | do | | 126.5 | Oct. 8, 1951 | C, W | S | Casing: 180 feet, slotted from 120 to 175 feet. |
| I-9-13 | E. B. Chandler | C. P. Cortter | 1941 | 1,110 | 11 | | | | | None | N | Casing: 63 feet. Oil test, plugged and abandoned. See log. |
| I-9-14 | do | B. C. Calvin | 1940 | 1,061 | 7 | | | | | None | N | Casing: 104 feet. Oil test, plugged and abandoned. See log. |
| I-9-15 | E. Gossett | | 1948 | 140 | 5 | Indio formation. | | 120.8 | Oct. 8, 1951 | J, E. ½ | D, S | Casing: 140 feet, slotted and screened from 105 to 140 feet. |
| I-9-16 | W. J. Hardcastle | | 1912 | 80 | 36 | Carrizo sand | | 49.9 | Oct. 5, 1951 | C, W | D, S | |
| I-9-17 | F. H. Silvey | | | 168 | 7 | Indio formation. | | 110.3 | do | C, W | S | Drawdown 0.8 foot while pumping 5 gpm, Oct. 5, 1951. |
| I-9-18 | J. W. Harris | | 1932 | 126 | | Carrizo sand | | 98.2 | Oct. 4, 1951 | C, W, G | D, S | See analysis, table 12. |
| I-9-19 | F. H. Silvey | | 1940 | 85 | 6 | Indio formation. | | 54.3 | Oct. 5, 1951 | J, E. ¾ | D, S | Casing: 85 feet, slotted and screened from 40 to 85 feet. Pumping 14 gpm, Oct. 5, 1951. |
| I-9-20 | Ira Barron | | 1942 | 220 | 6 | do | | 118.6 | do | C, W, G 4 | D, S | Casing: 220 feet, slotted from 120 to 220 feet. Well drilled in bottom of dug well, cased to surface. |
| I-9-21 | S. B. Stiles | | 1936 | 175 | | Carrizo sand | | 139.3 | Oct. 4, 1951 | C, W, G 5 | D, S | Temp. 76° F. |
| I-9-22 | W. H. DuBose | K. C. Hassell | 1949 | 140 | 4 | do | | 90.3 | do | J, G. 5 | S | Casing: 140 feet, slotted. Drawdown 2.2 feet while pumping 11 gpm Oct. 4, 1951. |
| I-9-23 | J. L. DuBose | | | 180 | 9 | do | | 160.3 | do | C, W | D, S | Casing: 30 feet. |
| I-9-24 | Leo Bohles | | 1936 | 176 | | do | | 161.7 | do | C, W | S | Temp. 78° F. See analysis, table 12. |
| I-9-25 | A. E. Outlaw | | 1938 | 210 | 8 | do | | 181.4 | do | C, W | D, S | Casing: 40 feet. |
| I-9-26 | Amelia Zadich | J. E. Thomas & B. Rife. | 1936 | 3,332 | 10<br>6 | | | | | None | N | Casing: 63 feet. Oil test, plugged and abandoned. See log. |
| I-9-27 | Mrs. T. A. Wilson | Clopton & Mitchell | 1939 | 2,005 | | | 645 | | | None | N | Oil test, plugged and abandoned. See log. |
| I-9-28 | J. H. Cunningham | A. F. Mann | 1951 | 210 | 10 | Carrizo sand | | 94.5 | Feb. 19, 1952 | T, G. | Irr | Casing: 211 feet, perforated from 90 to 210 feet. Drawdown 34.3 feet while pumping 460 gpm, Feb. 19, 1952. |
| I-9-29 | do | | | 110 | 6 | do | 663.8 | 101.3<br>107.8 | Mar. 11, 1930<br>Feb. 19, 1952 | | D, S | Well 1-9-4 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| I-9-30 | T. R. Littleton | | 1934 | 117 | 7 | Indio formation. | | 81.7 | Oct. 8, 1951 | C, W | D, S | Casing: 120 feet, slotted. |
| I-9-31 | P. D. McAnelly | | | 86 | 60 | do | 692.5 | 74.6<br>80.2 | Feb. 28, 1930<br>Oct. 8, 1951 | C, W | S | Well I-9-8 in U. S. Geol. Survey Water-Supply Paper 678. |
| I-9-32 | F. Duncan Estate | | 1936 | 92 | 5 | Indio formation. | | 63.9 | do | C, W | S | Casing: 100 feet. Temp. 75° F. See analysis, table 12. |
| I-9-33 | Jess Duncan | | | 130 | 4 | do | 664.4 | 43.8 | Feb. 28, 1930 | None | N | Well I-9-7 in U. S. Geol. Survey Water-Supply Paper 678. Abandoned |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-9-34 | Carl Faseler |  |  | 86 | 4 | do | 668.8 | 43.7 | do | C, W | S | Well I-9-5 in U. S. Geol. Survey Water-Supply Paper 678. |
|  |  |  |  |  |  |  |  | 56.9 | Oct. 8, 1952 |  |  |  |
| I-9-35 | do |  |  | 56 | 48 | do |  | 46.5 | Feb. 27, 1930 | C, W | D, S | Well I-9-6 in U. S. Geol. Survey Water-Supply Paper 678. |
|  |  |  |  |  |  |  |  | 56.3 | Oct. 8, 1951 |  |  |  |
| I-9-36 | Frank Hartman |  | 1950 | 89 | 9 | do |  | 35.0 | Feb. 18, 1952 | C, E | D, S | Casing: 9 feet. |
| I-9-37 | Dan McCrea | A. F. Mann | 1950 | 341 | 8 | Indio formation(?). |  | 43.1 | Aug. 21, 1951 | Cf. E. 7½ | Irr | Drawdown 88.7 feet while pumping 108 gpm, Aug. 21, 1951. Temp. 76° F. |
| I-9-38 | H. L. Saathoff |  |  | 48 | 42 | do |  | 41.9 | do | C, W | D |  |
| I-9-39 | L. F. Faseler |  | 1942 | 70 | 54 | Leona formation. |  | 56.3 | Aug. 17, 1951 | C, W | S | Water sand reported from 60 to 70 feet. |
| I-9-40 | Dan McCrea | A. F. Mann | 1950 | 225 | 15 | Indio formation. |  | 56.5 | Feb. 18, 1952 | T, G 15 | Irr | Pumping 120 gpm, Feb. 18, 1952. Temp. 75° F. |
| I-9-41 | John Faseler |  | 1926 | 223 | 6 | do | 689.7 | 72.6 | Aug. 21, 1951 | C, W | D, S |  |
| I-9-42 | A. C. Essenberg |  | 1928 | 160 | 4 | Carrizo sand |  | 104.2 | Aug. 22, 1951 | C, G | D, S |  |
| I-9-43 | Arnold Griffin |  | 1939 | 134 | 6 | do |  | 90.0 | do | C, W | S |  |
| I-9-44 | Harrison Wilson | A. F. Mann | 1952 | 210 | 7 | Indio formation. |  | 74.3 | Aug. 4, 1952 | T, G 15 | Irr | Casing: 120 feet, slotted from 80 to 120 feet. Water sand reported from 85 to 105 feet. |
| I-9-45 | do |  | 1912 | 96 | 6 | do |  | 66.7 | Aug. 21, 1951 | C, G, W 5 | D, S |  |
| I-9-46 | J. J. Tulloch |  |  | 100 | 6 | Carrizo sand |  | 67.5 | Aug. 22, 1951 | C, W | D, S |  |
| I-9-47 | B. W. Crane |  | 1951 | 66 | 4 | do |  | 54.5 | do | C, W | D, S |  |
| I-9-48 | Harrison Wilson |  |  | 121 | 12 | do | 646.7 | 64.1 | Feb. 28, 1930 | C, W | D, S | Well I-9-2 in U. S. Geol. Survey Water-Supply Paper 678. |
|  |  |  |  |  |  |  |  | 72.9 | Oct. 9, 1951 |  |  |  |
| I-9-49 | do |  |  | 119 | 6 | do | 675.2 | 101.3 | Feb. 28, 1930 | C, W | D, S | Well I-9-3 in U. S. Geol. Survey Water-Supply Paper 678. |
|  |  |  |  |  |  |  |  | 113.1 | Oct. 9, 1951 |  |  |  |
| I-9-50 | B. D. Bomba | A. F. Mann | 1938 | 99 | 6 | do |  | 99.4 | Oct. 8, 1951 | C, W | S | Casing: 125 feet, slotted from 94 to 125 feet. See log. |
| I-9-51 | Leroy Faselor |  | 1940 | 112 | 4 | do |  | 96.9 | do | C, W | D, S | Casing: 120 feet, slotted. |
| I-9-52 | Jess Duncan | H. C. Hassell | 1942 | 104 | 5 | Carrizo sand(?) |  | 81.8 | Feb. 19, 1942 | C, W | S |  |
| I-9-53 | William Crain |  | 1920 | 123 | 4 | Carrizo sand |  | 116.3 | do | None | N |  |
| I-9-54 | J. Heiligman |  |  | 115 | 6 | do |  | 55.6 | do | None | N |  |
| J-1-1 | C. R. Haby |  | 1908 | 320 | 5 | Edwards limestone. | 1,077.5 | 213.4 | Jan. 23, 1951 | C, E 1 | D, S | Casing: 120 feet. Drawdown 2.1 feet after 3 hours pumping 5 gpm, Jan. 22, 1951. Temp. 72° F. |
|  |  |  |  |  |  |  |  | 221.1 | Sept. 12, 1951 |  |  |  |
|  |  |  |  |  |  |  |  | 227.5 | Mar. 24, 1952 |  |  |  |
| J-1-2 | Joe Schott | A. E. Goforth | 1920 | 190± | 7 | do | 1,044.0 | 193.5 | Jan. 29, 1951 | C, W | S | Well J-1-18 in U. S. Geol. Survey Water-Supply Paper 678. |
|  |  |  |  |  |  |  |  | 190.9 | Nov. 7, 1950 |  |  |  |
| J-1-3 | A. Haby |  |  | 260 | 6 | Edwards limestone(?) | 925.9 | *65.9 | Mar. 14, 1951 | C, W | D, S | Pump set at 110 feet. Well J-1-17 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-1-4 | Eugene Schott | J. Jagge | 1935 | 700± | 6 | Edwards limestone. | | 141.3 | Nov. 24, 1950 | C, W | D, S | No measurable drawdown after 2 hours pumping 3 to 5 gpm, Nov. 24, 1950. Temp. 72° F. |
| J-1-5 | Alfred Kaufman | | 1915 | 40 | 36 | Leona formation. | | 31.1 | do | C, W | D, S | Dug. Curbing: 40 feet of rock. |
| J-1-6 | R. E. Haby | R. Haby | 1947 | 34 | 42 | do | | 28.4 | do | C, E<br>1/4 | D, S | Dug. Temp. 74° F. |
| J-1-7 | Alfred Bourquin | A. E. Goforth | 1915 | 769 | 8 | Edwards limestone. | 926.8 | 98.6<br>172.7<br>235.8<br>251.2 | Mar. 19, 1952<br>Jan. 9, 1934<br>Feb. 13, 1951<br>Mar. 11, 1952 | C, W | D, S | Pump set at 280 feet. Temp. 72° F. Well J-1-16 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-8 | Frank Wurzbach | | 1904 | 750 | 6 | do | | 196.2<br>196.2 | do<br>Feb. 13, 1951 | C, G<br>10 | D, S | Drawdown 4.8 feet after 1½ hours pumping 9 gpm, Feb. 13, 1951. Temp. 73° F. |
| J-1-9 | A. C. Wurzbach | A. E. Goforth | 1918 | 775 | 5 | do | 923.1 | *233.7 | Sept. 5, 1951 | C, W | D, S | Casing: 500 feet. Temp. 72° F. Well J-1-15 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-10 | Otto Huegele | J. Jagge | 1934 | 64 | 6 | Leona formation. | | 38.1 | Jan. 13, 1951 | C, W | S | Casing: 50 feet, slotted from 35 to 50 feet. Water-bearing gravel from 35 to 49 feet; yellow clay from 49 to 63 feet. |
| J-1-11 | L. Schuchart | | 1926 | 65 | 48 | Leona formation. | | 60.0 | Sept. 24, 1951 | C, W | S | Dug. |
| J-1-12 | Otto Huegele | | | 76 | 6 | do | | 56.7 | Jan. 16, 1952 | C, W | S | Casing: 76 feet, set in dug well. |
| J-1-13 | Arnold Haby | | 1889 | 41 | 30 | Leona formation(?) | | 34.4 | Nov. 28, 1950 | C, W | D, S | Casing: 40 feet. |
| J-1-14 | C. J. Schott | C. J. Schott | 1922 | 44 | 36 | do | | 35.1 | do | T, E<br>1/3 | D, S | Casing: 44 feet. |
| J-1-15 | Joe Schott | | 1890 | 297 | 5 | Edwards limestone(?) | 974.2 | 152.1<br>175.2 | Jan. 10, 1934<br>Jan. 10, 1951 | C, W | D, S | Casing: 190 feet. Temp. 72° F. Well J-1-20 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-16 | H. F. Haegelin | A. E. Goforth | 1930 | 272 | 5 | do | 968.7 | *171.9 | Mar. 14, 1951 | C, W | S | Pump set at 245 feet. Well J-1-19 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-17 | Alex Haby | J. Jagge | 1920(?) | 275± | 8 | Edwards limestone. | 1,003.4 | 153.8<br>161.8<br>196.6 | Jan. 12, 1934<br>Nov. 28, 1950<br>Apr. 25, 1952 | C, W | D, S | Temp. 73° F. Well J-1-21 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-18 | Wallace Lutz | Leroy Lutz | 1945 | 260 | 6 | do | | 162.5<br>187.6<br>191.3 | Nov. 28, 1950<br>Apr. 25, 1952<br>Sept. 5, 1952 | C, G<br>5 | D, S | Drawdown 8.1 feet after 2½ hours pumping 7 gpm, Apr. 25, 1952. |
| J-1-19 | J. Schuehle | A. E. Goforth | 1919 | 275± | 8+ | do | 1,000.3 | 154.1<br>188.0<br>194.3 | Jan. 12, 1934<br>Nov. 27, 1950<br>Apr. 25, 1952 | C, W<br>2 | D, S | Pump set at 210 feet. Temp. 72° F. Well J-1-22 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-20 | Leo Mangold | J. Fitzsimon | 1947 | 254 | 7 | do | | 195.1<br>219.6<br>237.3 | Nov. 22, 1950<br>Apr. 25, 1952<br>Sept. 5, 1952 | C, E<br>½ | D, S | Casing: 6 feet. Temp. 72° F. |
| J-1-21 | Otto Sittre | J. Jagge | 1938 | 255 | 5 | do | | 217.8<br>234.8<br>239.1 | Nov. 27, 1950<br>Apr. 24, 1952<br>Sept. 5, 1952 | C, E<br>½ | D, S | Drawdown 1.8 feet after 6 hours pumping 4 gpm, Apr. 24, 1952. Temp. 72½° F. |
| J-1-22 | Frank Haby | | 1915 | 350 | 6 | do | 1,042.6 | *242.4 | Sept. 12, 1951 | C, W | S | Well J-1-25 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-1-23 | Robert Graff | | | 332 | 6 | do | 1,002.3 | 160.8<br>110.6<br>245.5 | Jan. 12, 1934<br>Jan. 23, 1951<br>Apr. 24, 1952 | C, W | D, S | Well J-1-24 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-24 | John Schuehle | John Schuehle | 1926 | 36 | 36 | Leona formation. | | 24.5 | Nov. 27, 1950 | C, W | S | Casing: 30 feet. Base of gravel at 27 feet. |
| J-1-25 | Stanley Jagge | Jagge Bros. | 1946 | 30 | 42 | do | | 23.8 | do | C, W | D, S | Casing: 30 feet. Base of gravel at 25 feet. |
| J-1-26 | S. J. Haby | J. Jagge | 1921 | 289 | 6 | Austin chalk(?). | | 24.2 | Nov. 27, 1950 | C, W | D, S | Casing: 260 feet. Water reported to have bitter taste during drought. Leona formation contributes water to well through corroded casing. |
| J-1-27 | Rudolph Haby | F. Santos | 1939 | 45 | 36 | Leona formation. | | 18.1 | do | C, E, ¼ | D, S | Temp. 75° F. |
| J-1-28 | Clara Wurzbach | | 1886 | 42 | 29 | do | | 25.0 | Sept. 24, 1951 | C, E, ½ | D, S | |
| J-1-29 | Hubert Balzen | F. Santos | 1939 | 48 | 36 | do | | 8.8 | Nov. 27, 1950 | C, E, ½ | D, S | Dug. Curbing: 48 feet of rock. |
| J-1-30 | F. Jungman | J. Crowder | 1927 | 880 | 8, 6 | Edwards limestone. | 947.3 | 259.8 | Sept. 10, 1951 | C, W | D, S | Casing: 8-inch to 400 feet, 6-inch from 730 to 850 feet. Temp. 73° F. Well J-1-23 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| J-1-31 | C. W. Haby | W. Haby | 1948 | 27 | 42 | Leona formation(?). | | 17.5 | Nov. 28, 1950 | C, E | D, S | Dug. Curbing: 27 feet of concrete rings. |
| J-1-32 | Guy Haby | | 1906 | 30 | 36 | do | | 17.2 | do | C, E, ¼ | D, S | Dug. West bank of Medina River. |
| J-1-33 | F. J. Zinsmeyer | | 1900 | 60 | 38 | Escondido formation. | | 15.7 | Sept. 21, 1951 | C, W | D, S | |
| J-1-34 | Robert Boehme | | 1931 | 62 | 48 | Leona formation. | | 54.4 | Sept. 24, 1951 | C, W | D, S | |
| J-1-35 | J. Hutzler | | 1910 | 60 | 38 | do | | 33.2<br>35.5 | Jan. 25, 1951<br>Sept. 5, 1951 | C, W | D, S | Dug. Curbing: 26 feet of rock. |
| J-1-36 (Spring) | Max Boehme | | | | | do | | | | | D, S | Locally known as San Geronimo Spring Flowing 160 gpm, Jan. 26, 1951. Temp. 74° F. |
| J-1-37 | do | Jess Grove | 1914 | 300 | 6 | Austin chalk | | | | None | N | Water reported to have bitter taste. Well J-1-13 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-38 | J. Hutzler | J. Jagge | 1946 | 571 | 6 | Edwards limestone. | | 234.7 | Jan. 25, 1951 | C, W | S | Casing: 450 feet. Temp. 73° F. See analysis, table 12. |
| J-1-39 | A. Wurzbach | W. D. Bacon et al. | 1940 | 450 | 10 | do | | | | None | N | Casing: 450 feet. Oil test, plugged and abandoned. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-1-40 | W. Wurzbach | F. Santos | 1940 | 64 | 48 | Leona formation. | | 52.0 | Jan. 25, 1951 | C, W | D, S | Dug. Curbing: 60 feet of concrete rings. Temp. 75° F. |
| J-1-41 | F. C. Stinson | J. Rogers | 1929 | 641 | 6 | Edwards limestone. | 846.0 | *181.8 | Sept. 5, 1951 | C, G, 8 | D, S | Casing: 58 feet. Drawdown 0.7 foot after 2 hours pumping 24 gpm, Feb. 9, 1951. Temp. 72½° F. See log. Well J-1-12 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| J-1-42 | L. Oefinger | | 1900 | | 42 | Leona formation. | | 21.5 | Sept. 24, 1951 | C, W | S | Dug. |
| J-1-43 | W. G. Balzen | | 1900 | 38 | 36 | do | | 29.5 | do | C, W | D, S | Casing: 30 feet. Dug. |
| J-1-44 | Fritz Fuos | Pegg Bros. | 1951 | 1,216 | 9, 6 | Edwards limestone. | 875.4 | 205.0<br>194.7 | Jan. 1, 1952<br>May 18, 1951 | C, E, 4 | D, S | Casing: 9-inch to 40 feet, 6-inch from 40 to 1,150 feet. Drawdown 24.1 feet after 8 hours pumping 800 gpm, May 18, 1951. See log. See analysis, table 12. |
| J-1-45 | Anton Burger | W. Peters | 1924 | 1,315 | | do | | | | None | N | Oil test, plugged and abandoned. Well J-1-3 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| J-1-46 | A. C. Stein | | | 41 | 36 | Leona formation. | | 28.3 | Sept. 21, 1951 | C, W | D, S | Dug. |
| J-1-47 | do | | 1920 | 38 | 36 | do | | 34.8 | do | C, E | D, S | Do. |
| J-1-48 | E. Naegelin | | 1936 | | 7 | do | | 24.0 | do | C, W | D, S | |
| J-1-49 | L. W. Burrell | L. W. Burrell | 1907 | 180 | 6 | Anacacho limestone. | | 45.5<br>71.8 | Feb. 20, 1930<br>July 15, 1951 | C, W | D, S | Pump set at 160 feet. Well reported to have small yield. Well J-1-11 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| J-1-50 | D. Naegelin | | 1930 | 50 | 48 | Leona formation. | | 45.9 | Sept. 21, 1951 | C, W | S | Dug. Curbing: 6 feet of concrete. |
| J-1-51 | L. Haby | —Greenshield | 1914 | 580 | 6 | Edwards limestone. | | 207.4 | do | C, W | D, S | Casing: 520 feet. |
| J-1-52 | I. C. Stinson | | 1930 | 501 | 6 | do | 871.3 | 173.2<br>209.5<br>214.0 | Jan. 8, 1934<br>Sept. 5, 1951<br>Mar. 11, 1952 | C, G, 6 | S | Base of Grayson shale (Del Rio clay) reported at 496 feet. Temp. 73° F. Well J-1-14 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-53 | do | J. Jagge | 1947 | 567 | 12 | do | 929.0 | 250 | Feb. 9, 1951 | C, W | D, S | Casing: 60 feet. Sulfur water cemented off from 300 to 400 feet. Temp. 72° F. See log. |
| J-1-54 | J. Jagge | do | 1946 | 650 | 5 | do | 930.1 | 249.0<br>265.9<br>259.0 | Feb. 9, 1951<br>Mar. 11, 1952<br>Sept. 6, 1952 | C, W | D, S | Casing: 60 feet. Pump set at 280 feet. Base of Grayson shale (Del Rio clay) at 628 feet. |
| J-1-55 | A. F. Jagge | do | 1925 | 562 | 6 | do | 844.1 | 183.4 | Sept. 5, 1951 | C, W | D, S | Casing: 6 feet. Pump set at 240 feet. Base of Grayson shale (Del Rio clay) at 506 feet. Well J-1-10 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-56 | L. W. Burrell | Jagge & Tschirhart | | 565 | 5 | do | 819.3 | 145.7 | Feb. 9, 1951 | C, W | D, S | Temp. 73° F. Well J-1-9 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| J-1-57 | do | L. W. Burrell | 1910 | 217 | 6 | Anacacho limestone. | | | | None | N | Abandoned. Well J-1-8 in U. S. Geol. Survey Water-Supply Paper 678. |

| Well or Spring | Owner | Driller o well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-1-58 | F. Droitcourt | | 1932 | 50 | 42 | Leona limestone. | | 30.3 | July 16, 1951 | C, W | D, S | Dug. Curbing: 38 feet of rock. Water level reported to fluctuate with stage of Medina River. |
| J-1-59 | A. Schneider | | 1880 | 62 | 48 | do | | 49.0 | Sept. 20, 1951 | C, W | D, S | Dug. Curbing: 8 feet of brick. See analysis, table 12. |
| J-1-60 | A. Beidiger | J. Jagge | 1938 | 165 | 5 | Escondido formation. | | 79.1 | July 16, 1951 | C, W | D, S | Casing: 160 feet, slotted from 115 to 160 feet. |
| J-1-61 | Joe Riff | | 1942 | 47 | 42 | Leona formation(?) | | 32.7 | do | C, W | D, S | Dug. |
| J-1-62 | John Nietenhoefer | G. P. Oakes | 1940 | 1,412 | 10, 8 | Edwards limestone. | | | | None | N | Oil test, abandoned and plugged. See log. |
| J-1-63 | T. Reitzer | | 1900 | 99 | 5 | Escondido formation. | | 47.6 | Sept. 20, 1951 | C, E | D, S | Casing: 100 feet slotted. |
| J-1-64 | O. A. Schmidt | C. A. Schweers | 1938 | 940 | 10, 7 | | | | | None | N | Oil test. See log. |
| J-1-65 | J. Hartman | G. Hartman | 1936 | 28 | 36 | Leona formation(?). | | 12.9 | July 16, 1951 | C, W | D, S | Dug. Curbing: 28 feet of concrete rings. |
| J-1-66 | J. Boehlen | | 1902 | 100 | 6 | Escondido formation. | | 87.0<br>63.9 | Feb. 19, 1930<br>Dec. 27, 1951 | C, E, ¼ | D, S | At Dunlay. Well J-1-2 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-67 | S. H. Steinle | B. Wiemers | 1935 | 120 | 6 | do | | 59.8 | Dec. 27, 1951 | C, E, ½ | D, S | At Dunlay. Well J-1-1 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-68 | J. Krenmueller | J. Jagge | 1933 | 110 | 6 | do | 986.1 | *67.9 | Sept. 11, 1951 | C, W | D, S | At Dunlay. Casing: 110 feet, slotted from 40 to 60 feet and 80 to 110 feet. |
| J-1-69 | George Frey | do | 1930 | 282 | 8 | do | | 85.0 | July 16, 1951 | C, W | D, S | Casing: 280 feet, lower part slotted. Drawdown 35 feet after 3 hours pumping 50 gpm. Corrosion reported to require pipe replacement every two years. |
| J-1-70 | C. Haegelin | C. Haegelin and F. Santos. | 1950 | 46 | 48 | Leona formation(?). | | 43.9 | do | C, E, ½ | D, S | Dug. Curbing: 45 feet of concrete rings. |
| J-1-71 | do | J. Jagge | 1941 | 68 | 5 | Escondido formation. | | 41.7 | do | C, W | S | Casing: 65 feet, slotted from 35 to 65 feet. |
| J-1-72 | Sam Tschirhart | | 1938 | 42 | 42 | Leona formation(?). | | 36.9 | July 16, 1951 | C, W | D, S | Well reported to fail during drought. |
| J-1-73 | C. M. Cotham | Hugo Borquin | 1941 | 43 | 48 | Leona formation. | | 41.6 | do | C, E, ½ | D, S | West bank of Medina River. Water level in well reported to vary with the stage of the river. |
| J-1-74 | Moye Military Academy. | Cravens Drilling Co. | 1929 | 700 | 12 | Edwards limestone. | | 52.7<br>77.5 | May 18, 1950<br>Sept. 5, 1951 | T, E, 5 | P | Camp Cayuga well. Drawdown 1.1 feet while pumping 120 gpm for ½ hour, Sept. 12, 1951. Supplies swimming pool and boys' camp. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-1-75 | L. W. Burrell | J. Jagge | 1944 | 650 | 10, 5 | do | | | | C, E 1 | D, S | Unable to measure. |
| J-1-76 | Robert Halty | Henry Loessburg | 1905 | 225 | 10 | Anacacho limestone. | | 89.6<br>110.1 | Feb. 19, 1930<br>Mar. 8, 1951 | C, W | D, S | Reported to pump air after 2 hours pumping 6 gpm. Well J-1-7 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-77 | F. Tondre | | 1910 | 71 | 36 | Leona formation. | | 57.6 | Mar. 8, 1951 | H, B | D | |
| J-1-78 | Leonard Otto | F. Burkett | 1912 | 75 | 42 | Leona formation(?). | | 68.6 | Aug. 12, 1951 | C, G 6 | D, S | Formerly U. S. Geol. Survey observation well XM-1. |
| J-1-79 | Oscar Karm | J. Jagge | 1947 | 730 | 5 | Edwards limestone. | | 105.2 | Oct. 27, 1950 | C, W | D | |
| J-1-80 | U. B. Kempf | J. Fitzsimon | 1944 | 67 | 5 | Leona formation. | | 29.0 | July 16, 1951 | C, W | D, S | Casing: 65 feet, slotted from 25 to 60 feet. East bank of Medina River. |
| J-1-81 | Dan Biedigers | | 1936 | 39 | 48 | do | | 30.1 | do | C, E | D, S | Dug. Curbing: 40 feet of concrete rings. |
| J-1-82 | City of Castroville | Fred Burkett | 1923 | 710 | 6 | Edwards limestone. | 757.8 | 94.8 | Dec. 5, 1951 | | N | In Castroville. Bottom of Grayson shale (Del Rio clay) at 620 feet. Small amount of sulfur water enters well from Austin chalk. Well J-1-6 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-83 | do | Cravens Drilling Co. | 1948 | 715 | 9 | do | 758.1 | 73.8 | June 6, 1951 | T, E 60 | P | North of well J-1-82. Casing: 700 feet. Drawdown 6 feet after 24 hours pumping 500 gpm, Oct. 9, 1950. Temp. 75½° F. See analysis, table 12. |
| J-1-84 | Moye Military Academy | Cravens Drilling Co. | 1946 | 740 | 10 | Edwards limestone. | 757.5 | 71.6 | July 8, 1950 | T, E 40 | P, D | South of well J-1-82. Casing: 696 feet. Drawdown 1.4 feet after 24 hours pumping 192 gpm, Oct. 9, 1950. Temp. 75° F. |
| J-1-85 | J. A. Bader | Austin Smith | 1930 | 1,070 | 4 | do | 922.0 | 244.2 | Sept. 28, 1934 | C, W | D, S | At Three Points Station. Unable to measure. Casing: 1,035 feet. Well J-1-5 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-1-86 | J. Courand | Golden West Oil Co. | 1927 | 1,147 | 13 | do | 854.2 | *202.7 | Nov. 1, 1951 | C, W | D, S | Oil test, completed as water well. Casing: 1,126 feet. Well J-1-4 in U. S. Geol. Survey Water-Supply Paper 678. Temp. 75° F. See log. See analysis, table 12. |
| J-1-87 | W. Sharp | J. Fitzsimon | 1947 | 660 | 7, 5 | do | 774.0 | 125.9<br>126.3 | June 2, 1952<br>Sept. 5, 1952 | C, W | S | Casing: 7-inch to 145 feet, 5-inch from 145 to 542 feet. Pump set at 140 feet. |
| J-2-1 | W. J. Haby | A. E. Goforth | 1923 | 749 | 6 | Edwards limestone. | 966.7 | 228.9<br>258.6<br>293.6 | Aug. 29, 1934<br>Jan. 2, 1951<br>Sept. 6, 1951 | C, W | D, S | Corroded casing allows sulfur water from Austin chalk to enter well. Well J-2-6 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| J-2-2 | Fernand Rihn | F. Rihn | 1950 | 28 | 30 | Leona formation. | | 23.1 | Jan. 2, 1951 | C, W | D, S | East bank of San Geronimo Creek. Blue clay at 26 feet. |
| J-2-3 | W. G. Wurzbach | Austin Smith | 1942 | 557 | 6 | do | | 210.4 | July 23, 1951 | C, W | S | |
| J-2-4 | J. F. Wurzbach | J. Jagge | 1939 | 640 | 8 | do | | 205.3 | do | C, G 5 | D, S | Casing: 610 feet. Temp. 73° F. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-2-5 | A. A. Haby | A. E. Goforth | 1923 | 740 | 6 | Edwards limestone. | 950.0 | 267.2 | Sept. 5, 1951 | None | N | No surface casing. Black precipitate on tape below 220 feet, probably from water in Austin chalk. Well J-2-5 in U. S. Geol. Survey Water-Supply 678. |
| J-2-6 | C. T. Wurzbach | A. E. Goforth | 1928 | 486 | 6 | do | 966.3 | 401.2 | Feb. 12, 1951 | C, E | D, S | Temp. 73° F. |
| J-2-7 | O. W. Schuchart | J. Fitzsimon | 1946 | 689 | 6 | Edwards limestone. | 1,072.4 | 378.6<br>384.7 | Jan. 25, 1951<br>Jan. 16, 1952 | C, G<br>5 | S | Casing: 656 feet. Corroded casing reported to allow sulfur water from Austin chalk to enter well. |
| J-2-8 | A. J. Wurzbach | A. E. Goforth | 1928 | 445 | 6 | do | | 383.0<br>385.4 | Dec. 12, 1950<br>July 23, 1951 | C, G<br>5 | D, S | Casing: 390 feet. Temp. 72° F. See analysis, table 12. |
| J-2-9 | C. T. Wurzbach | | | 440 | 6 | do | 997.1 | 307.7<br>307.2 | Oct. 11, 1934<br>July 23, 1951 | C, E<br>½ | D, S | Temp. 73° F. Well J-2-4 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-2-10 | Fred Jagge | Jagge Bros. | 1950 | 650 | 6 | do | | 254.4<br>255.3 | Feb. 9, 1951<br>Oct. 8, 1952 | C, W | S | Casing: 620 feet. Pump set at 280 feet. Odor of hydrogen sulfide. |
| J-2-11 | A. Weiblen | | 1900 | 225 | 8 | Anacacho limestone(?) | | 95.0<br>95.0 | Jan. 12, 1934<br>Mar. 14, 1951 | C, W | D, S | Well reported to have small yield. Well J-2-1 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-2-12 | Fritz Weiblen | Fred Burkett | 1926 | 560 | 6 | Edwards limestone. | 796.8 | 119.0<br>108.9 | Jan. 12, 1934<br>Mar. 14, 1951 | C, W | D, S | Base of Grayson shale (Del Rio clay) at 510 feet. Well J-2-2 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-2-13 | Fritz Weiblen | Jagge & Tschirhart | 1947 | 700 | 8 | do | | 126.9 | Oct. 6, 1950 | C, W | D, S | |
| J-2-14 | M. H. Bippert | Fred Burkett | 1929 | 1,180 | 8 | do | 766.8 | *113.2 | Oct. 31, 1951 | C, E<br>1 | D, S | Casing: 950 feet. Temp. 75° F. Well J-2-3 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| J-2-15 | A. J. Wurzbach | J. I. Moore | 1945 | 3,193 | | | | | | None | N | Oil test, plugged and abandoned. See log. |
| J-4-1 | Ulrich Burger | J. Fitzsimon | 1934 | 96 | 6 | Escondido formation. | | 56.8 | Jan. 24, 1952 | C, W | S | Casing: 110 feet, slotted from 80 to 110 feet. |
| J-4-2 | E. Krewald | Pegg Bros. & J. Fitzsimon. | 1951 | 1,385 | 10 | Edwards limestone. | 970.6 | 289.4 | Nov. 16, 1951 | C, E<br>1 | D, S | Casing: 1,240 feet. Pump set at 340 feet. Owner plans to irrigate in 1953. Temp. 75½° F. See log. See analysis, table 12. |
| J-4-3 | R. Z. Haby | | | 400 | 4 | Escondido formation. | | 159.1 | Aug. 20, 1951 | C, W | D, S | Water encountered at 240 feet, reported to be salty. |
| J-4-4 | Toby Koch | | | 400 | 12 | do | | 159.5 | do | C, W | D, S | Water reported to be salty. |
| J-4-5 | T. S. McClure | F. M. Burkett | 1917 | 1,150 | | | | | | None | N | Oil test, plugged and abandoned. See log. |
| J-4-6 | R. J. Noonan | E. T. Peters | 1929 | 1,580 | 4 | Edwards limestone. | 916.8 | 121.5 | May, 22, 1951 | None | N | Oil test, converted to water well. See log. |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-4-7 | L. M. Samuels | F. M. Burkett | 1932 | 1,285 | 5 | do | 916.8 | *169.1 | July 18, 1951 | C, W | D, S | Casing: 1,150 feet. Pump set at 180 feet. See analysis, table 12. |
| J-4-8 | J. P. Inkhen | | | 28 | 48 | Leona formation(?). | 794.0 | 24.0 | July 18, 1951 | C, E 1/4 | D, S | Casing: 28 feet, slotted. |
| J-4-9 | R. J. Tschirhart | | 1945 | 43 | 48 | Leona formation. | | 25.5 | do | C, E 1/4 | D, S | Dug. Curbing: 36 feet of concrete rings. |
| J-4-10 | Wm. Edgar | F. M. Burkett | 1916(?) | 1,502 | 8 | Edwards limestone. | 851.8 | 167.3<br>199.0 | Jan. 5, 1934<br>July 20, 1951 | C, W | D, S | Well J-4-9 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-4-11 | do | Sun Oil Co. | 1930 | 1,325 | 16 | do | 833.0 | 184.0 | do | C, G 30 | Irr | Casing: 1,250 feet. Pumping 158 gpm, July 20, 1951. Temp. 75° F. See log. |
| J-4-12 | Bernard Wallace | | 1919 | 40 | 48 | Leona formation. | | 28.6 | July 16, 1951 | C, E 1/4 | D, S | Dug. Curbing: 40 feet of rock. |
| J-4-13 | Emma Jungman | Grothe & Son | 1932 | 155 | 4 1/2 | Escondido formation. | | 38.9 | do | C, W | D, S | Casing: 150 feet, slotted from 110 to 150 feet. Drawdown 7.2 feet after 4 hours pumping 20 gpm, July 16, 1951. |
| J-4-14 | A. Hutzler | | 1920 | 1,326 | 8 | Edwards limestone. | | 83.4 | do | J, E 1/2 | D, S | Bottom of Grayson shale (Del Rio clay) at 1,120 feet. |
| J-4-15 | J. O. Pike | T. W. Bain | 1939 | 461 | | | | | | None | N | Oil test, plugged and abandoned. |
| J-4-16 | F. Echtle | | 1940 | 45 | 24 | Leona formation. | | 25.1 | July 17, 1951 | C, E 1/4 | D | Reported to pump air after 1 1/2 hours pumping 8 gpm. Pump set at 43 feet. |
| J-4-17 | Nick Ruby | B. Johnson | | 240 | 8 | Escondido formation. | | 111.0 | Jan. 27, 1952 | C, E 2 | D, S | |
| J-4-18 | H. E. Martin | | 1948 | 16 | 24 | Leona formation. | | 11.1 | July 17, 1951 | C, E 1/4 | D | |
| J-4-19 | Joe A. Turner | A. F. Mann | 1946 | 84 | 8 | Escondido formation. | | 29.4 | Oct. 16, 1952 | | N | Casing: 65 feet. Water reported from 72 to 80 feet. Flowing 24 gpm, July 16, 1951. Used for irrigation until May 1952. See analysis, table 12. |
| J-4-20 | Louis Stein | | 1934 | 46 | 6 | Leona formation. | | 27.0 | Jan. 28, 1952 | C, W | D, S | |
| J-4-21 | Alex Tschirhart | | 1925 | 66 | 6 | do | | 63.8 | Feb. 15, 1952 | C, W | D, S | |
| J-4-22 | C. Ihnken | | 1907 | 26 | 42 | do | | 13.8 | July 18, 1951 | C, E 1/4 | D, S | Dug. Curbing: 25 feet of rock. |
| J-4-23 | J. Tschirhart | Johnson Bros. | 1926 | 1,618 | 15, 7 | | | | | None | N | Casing: 21 feet. Oil test, plugged and abandoned. See log. |
| J-4-24 | do | R. Haas | 1950 | 156 | 6 | Escondido formation. | | 127.1 | Feb. 13, 1951 | C, W | S | Owner reported small yield. |
| J-4-25 | H. V. Haas | Thomas & Ryan | 1930 | 1,650 | 10 | Edwards limestone(?). | 857.0 | | | None | N | Casing: 80 feet. Oil test, plugged and abandoned. See log. |
| J-4-26 | W. B. King | W. B. King | 1941 | 150 | 5 | Escondido formation. | | 65.4 | July 20, 1951 | C, W | D, S | Casing: 150 feet, perforated from 115 to 150 feet. Water reported to be highly mineralized. |
| J-4-27 | Albert Bendele | Stovers & May | | 1,672 | 10 | Edwards limestone(?) | 775.0 | | | None | N | Oil test. Well J-4-3 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| J-4-28 | Emil Bendele | — Young | | 910 | 8 | Escondido formation. | | 69.4 | Mar. 26, 1951 | C, W | S | Casing: 400 feet. Oil test drilled to 910 feet, plugged at 400 feet and converted to water well. |
| J-4-29 | Mrs. L. S. Bader | Bigby & Crowder | 1946 | 1,050 | 10 | | | | | None | N | Casing: 1,000 feet. Oil test. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-4-30 | L. A. Haby | Mid-Kansas Oil & Gas Co. | | 1,605 | | | 957.0 | | | None | N | Oil test, plugged and abandoned. Well J-4-2 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| J-4-31 | Jake Haby | | 1925 | 1,616 | 7 | | 955.0 | | | None | N | Oil test, plugged and abandoned. Well J-4-1 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| J-4-32 | do | J. Fitzsimon | 1940 | 180 | 4 | Escondido formation. | | 52.8 | Jan. 25, 1952 | C, G. 2 | S | Casing: 60 feet. |
| J-4-33 | do | do | 1939 | 210 | 4 | do | | 53.7 | do | C, W | D, S | Casing: 30 feet. Temp. 74° F. |
| J-4-34 | A. Wendland | do | 1949 | 162 | 6 | do | | 47.6 | do | C, W | S | Casing: 50 feet. Well reported pumping 300 gpm, June 1949. |
| J-4-35 | C. Koch | | 1898 | 188 | 12, 6 | do | | 160.2 | do | C, W | D, S | Water reported to be salty. |
| J-4-36 | A. Haas | — Edgington | 1927 | 212 | 15 | do | | 163.6 | Jan. 26, 1952 | C, E. 1 | D, S | Water reported to be salty. Small amount of oil pumped with water. |
| J-4-37 | D. F. Davis | M. Stewart & Sons | 1939 | 2,081 | | | | | | None | N | Oil test, plugged and abandoned. See log. |
| J-4-38 | do | Catherine Brown & Co. | | 2,040 | 6 | | | | | None | N | Casing: 1,000 feet. Oil test, plugged and abandoned. Bottom of Grayson shale (Del Rio clay) at 1,957 feet. |
| J-4-39 | Paul Bendele | J. Fitzsimon | 1939 | 204 | 6 | Escondido formation. | | 132.4 | Jan. 29, 1952 | C, W | S | |
| J-4-40 | W. T. Brady | | 1935 | 111 | 6 | Indio formation. | | 73.1 | May 22, 1951 | C, W | D, S | Casing: 115 feet, slotted from 70 to 115 feet. Temp. 74° F. See analysis, table 12. |
| J-4-41 | Henry Bendele | | 1926 | 160 | 6 | do | | 120.7 | Aug. 21, 1951 | C, W | D, S | Casing: 85 feet. |
| J-4-42 | H. Miller | R. Haas | 1951 | 195 | 6 | Escondido formation(?) | | 167.7 | Jan. 29, 1952 | T, E. 1½ | S | Casing: 196 feet, slotted from 156 to 196 feet. Pump set at 190 feet. Drawdown 6.6 feet while pumping 30 gpm, Jan. 29, 1952. |
| J-4-43 | E. J. Bendele | | 1934 | 153 | 7 | Indio formation. | | 118.6 | Aug. 21, 1951 | C, W | D, S | Casing: 155 feet, slotted from 122 to 155 feet. |
| J-4-44 | J. R. Conrad | | 1939 | 180 | 8 | Escondido formation. | | 91.1 | do | C, W | D, S | Casing: 160 feet. Water reported to be salty. |
| J-4-45 | Ralph Bendele | Abe Tschirhart | 1928 | 260 | 12 | do | | 79.4 | Aug. 20, 1951 | C, W | D, S | Casing: 250 feet. Water reported to be salty. |
| J-4-46 | do | | 1943 | 55 | 9 | Leona formation. | | 36.8 | Aug. 21, 1951 | C, W | D, S | |
| J-4-47 | Christilles Estate | Johnson & Hyslop | 1926 | 1,700 | 5 | | | | | None | N | Casing: 100 feet. Oil test, plugged and abandoned. Flows water and oil. See log. |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-4-48 | E. J. Bendele | | 1931 | 600 | 7 | Escondido formation. | | | | Flows | N | Casing: 600 feet. Water reported to be salty, contains oil. Estimated flow 8 gpm, Aug. 20, 1951. Four adjacent wells also flow salt water and oil. |
| J-4-49 | do | White Drilling Co. | 1949 | 1,641 | 7 | | | | | None | N | Oil test, plugged and abandoned. Flows salty water and oil. See electric log in files of Board of Water Engineers. |
| J-4-50 | E. J. Bendele | Abe Tschirhart | 1935 | 145 | 10 | Escondido formation. | | 80.8 | Aug. 20, 1951 | C, W | D, S | Casing: 145 feet, slotted. Water reported to be salty. See analysis, table 12. |
| J-4-51 | W. J. Oppelt | do | 1938 | 145 | 9 | do | | 81.6 | do | C, W | D, S | Casing: 140 feet. Water reported to be salty and to have oil taste. |
| J-4-52 | W. J. Conger | E. R. Thomas et al. | 1929 | 1,785 | 7, 10 | | 784.0 | | | None | N | Casing: 998 feet. Oil test, plugged and abandoned. See log. |
| J-4-53 | E. J. Bendele | | 1934 | 158 | 8 | Indio formation. | | 71.3 | Aug. 21, 1951 | C, W | S | Casing: 160 feet, slotted from 138 to 160 feet. |
| J-4-54 | Oscar Tschirhart | | 1920 | 648 | 8 | Escondido formation. | | 123.3 | Sept. 26, 1951 | C, W | S | Casing: 168 feet. Water reported to be very salty. |
| J-4-55 | Howard Mangold | W. Lancaster | 1941 | 104 | 6 | do | | 93.5 | Jan. 28, 1952 | C, W | S | Oil on surface of water. |
| J-4-56 | Jerry Young | J. Fitzsimon | 1930 | 130 | 6 | Escondido formation(?). | | 94.7 | Sept. 26, 1951 | C, E, 1½ | D, S | Casing: 130 feet, slotted from 92 to 118 feet. |
| J-4-57 | Peter Jungman | Chacon Oil | 1931 | 2,019 | 6 | | | | | None | N | Casing: 200 feet. Oil test, plugged and abandoned. |
| J-4-58 | Mary E. Jungman | W. L. Umburn | 1934 | 353 | 8, 6½ | Escondido formation. | | 20.5 | Sept. 25, 1951 | C, W | S | Casing: 8-inch to 60 feet, 6-inch from 60 to 355 feet. See log. |
| J-4-59 | Jungman Heirs | J. H. Lynd & A. M. Hepler. | 1935 | 2,019 | 10, 6 | Georgetown limestone(?). | 760.0 | | | None | N | Oil test, plugged and abandoned. See log. |
| J-4-60 | Val Mangold | T.N.T. Drilling Co. | 1930 | 1,700 | 7 | | 722.0 | | | None | N | Casing: 650 feet. Oil test, plugged and abandoned. See log. |
| J-4-61 | J. Tschirhart | Cromwell & Cromwell. | 1939 | 1,460 | 12, 6 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| J-4-62 | F. Mangold | Pearson Oil Co. | 1933 | 360 | 8 | Escondido formation. | | 51.9 | Jan. 12, 1952 | C, E, ½ | D Ind. Irr. | Casing: 100 feet. Oil test, plugged at 102 feet, converted to water well. Slotted from 90 to 100 feet. See log. |
| J-4-63 | Medina Farms Inc. | Chas. E. Wagener | 1934 | 310 | 6 | Indio formation. | | | | C, E, ¼ | Irr | See log. |
| J-4-64 | San Antonio Trust Co. | Schermerhorn Oil Co. | 1926 | 1,619 | 9 | Edwards limestone(?). | | | | None | N | Casing: 844 feet. Oil test, plugged and abandoned. See log. |
| J-4-65 | A. A. Murrell | | 1949 | 1,977 | 6 | Anacacho limestone(?). | 731.0 | | | None | N | Casing: 1,100 feet. Oil test, plugged and abandoned. |
| J-4-66 | Mary Jungman | Chacon Oil Co. | 1928 | | 7 | | 789.0 | | | None | N | Casing: 1,550 feet. Oil test, plugged and abandoned. |
| J-4-67 | do | do | 1928 | 571 | 9 | | 739.0 | | | None | N | Casing: 219 feet. Oil test, plugged and abandoned. See log. |
| J-4-68 | John L. Kempf | A. Thompson | 1946 | 30 | 6 | Indio formation. | | 16.7 | Sept. 25, 1951 | C, E | D, S | |
| J-4-69 | John T. Kirby | W. Lancaster | 1948 | 148 | 7, 5 | do | | 16.5 | Sept. 9, 1951 | C, E, 1 | D, S | Casing: 7-inch to 50 feet, 5-inch from 40 to 136 feet. Drawdown 26 feet after 8 hours pumping 6½ gpm, Sept. 9, 1951. Temp. 75° F. See log. See analysis, table 12. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-4-70 | San Antonio Trust Co. | Schermerhorn Oil Co. | 1926 | 1,597 | 12½, 7 | | | | | None | N | Casing: 1,593 feet. Oil test, plugged and abandoned. See log. |
| J-4-71 | Parker & McCune | Pegg Bros. | 1951 | 2,252 | | | | 39.5 | Feb. 15, 1952 | None | N | Oil test. |
| J-4-72 | L. A. Allred | | 1944 | 19 | 30 | Indio formation. | | 13.3 | July 17, 1951 | C, E | D, S | Dug. |
| J-4-73 | L. Mendez | R. Haas | 1949 | 80 | 8 | do | | 34.9 | do | C, F, ¼ | D | Water reported to be salty. |
| J-4-74 | J. A. Crocker | | 1947 | 52 | 4 | do | | 12.7 | do | C, W | S | Casing: 52 feet. Water reported to be salty. |
| J-4-75 | Guy Mayhew | | 1941 | 60 | 7 | do | | 12.0 | do | C, E, ¼ | S | Temp. 74½° F. See analysis, table 12. |
| J-4-76 | E. H. Green | R. Haas | 1948 | 58 | 8 | Leona and Indio formations. | | 27.5 | do | C, E, 1 | D, Irr | Irrigated 16 acres of pecan trees in 1951. |
| J-4-77 | Humble Oil & Refining Co. | | 1928 | 42 | 6 | Indio formation. | | 27.6 | Feb. 8, 1952 | C, W | D, S | Casing: 50 feet. |
| J-4-78 | Yancy Russell | F. M. Burkett | 1948 | 140 | 7, 6 | do | | 23.8 | Oct. 29, 1952 | C, E, ½ | D, S | Casing: 7-inch to 82 feet, 5½-inch from 76 to 140 feet. Pump set at 110 feet. See log. |
| J-4-79 | N. L. Davidson | | | 147 | 6 | do | | 21.2 | Aug. 30, 1951 | C, E, ¼ | D, S | |
| J-4-80 | S. E. Schaefer | F. M. Burkett | 1949 | 142 | 7, 6 | do | | 18.9 | do | C, E, ¼ | D | Casing: 7-inch to 78 feet, 6-inch from 76 to 142 feet. See log. |
| J-4-81 | Cecil Burns | A. F. Mann | 1951 | 108 | 6 | do | | 34.4 | Sept. 25, 1951 | C, E, ¼ | D, S | |
| J-4-82 | John F. Miller | J. F. Miller | 1951 | 26 | 42 | Leona formation. | | 12.1 | do | C, G, 10 | D, S Irr | Dug. Drawdown: 8.3 feet after 2½ hours pumping 28 gpm Sept. 25, 1951. |
| J-4-83 | Mrs. H. M. Lowe | A. F. Mann | 1951 | 30 | 6 | do | | 18.1 | Aug. 30, 1951 | C, E | D | Water reported to be salty. |
| J-4-84 | J. B. McCann | | 1947 | 28 | 6 | do | | 13.4 | Aug. 28, 1951 | B, H | D | |
| J-4-85 | Oscar Koenig | A. F. Mann | 1909 | 140 | 6 | Indio formation. | | 55.9 | Sept. 25, 1951 | C, W | D, S | Drilled to 310 feet, plugged at 140 feet and casing ripped. |
| J-4-86 | W. D. O'Bryant | | 1947 | 20 | 24 | do | | 13.6 | do | C, E, ¼ | D, S | No curbing. See analysis, table 12. |
| J-4-87 | T. E. Savage | T. E. Savage | 1951 | 86 | | do | | 62.0 | Aug. 28, 1951 | C, E | D, S | |
| J-4-88 | Oscar Koenig | A. F. Mann | 1930 | 140 | 6 | do | | 76.3 | Sept. 25, 1951 | C, W | D, S | |
| J-4-89 | E. Ballard | | 1946 | 13 | 30 | Leona formation. | | Dry | Aug. 28, 1951 | B, H | D, S | |
| J-4-90 | A. G. Pentecost | A. F. Mann | 1950 | 75 | 5 | Indio formation. | | 34.9 | Sept. 26, 1951 | C, E | D | Casing: 76 feet, slotted. |
| J-4-91 | Catherine Conrad | — Morris | 1929 | 114 | 6 | do | | 87.3 | do | C, W | D, S | |
| J-4-92 | Oscar Koenig | | 1926 | 70 | 4 | do | | 54.4 | do | C, W | S | |
| J-4-93 | Clara Poerner | | 1932 | 100 | 6 | do | | 66.0 | do | C, G | D, S | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-4-94 | Earl Love | — Blackwell | 1931 | 102 | 6 | do | | 80.6 | Aug. 21, 1951 | C, W, E 4 | D, S | Casing: 102 feet, slotted from 80 to 102 feet. Pump set at 100 feet. |
| J-4-95 | do | do | 1949 | 181 | 6 | do | | 146.8 | do | C, W | S | Casing: 181 feet. Water reported to have oil taste. |
| J-4-96 | Martin Schmidt | | 1929 | 145 | 7 | Escondido formation(?) | | 115.3 | do | C, W | D, S | Casing: 145 feet. |
| J-4-97 | E. H. Frazier | Rudolph Haas | 1950 | 104 | 5 | Indio formation. | | 86.8 | Aug. 21, 1951 | C, E 6 | D, S | Casing: 104 feet. Water sand from 88 to 104 feet. |
| J-4-98 | George Schmidt | | 1948 | 160 | 12, 8 | do | | 101.9 | do | C, E 1 | D, S | Casing: 160 feet, slotted. |
| J-4-99 | Arthur Poerner | | | 132 | 5 | do | | 88.4 | Aug. 20, 1951 | C, W | S | |
| J-4-100 | Frank Rihn | R. Haas | 1936 | 138 | 5 | do | | 128.9 | Aug. 21, 1951 | C, W | D, S | Casing: 135 feet, slotted from 116 to 134 feet. |
| J-4-101 | Henry Bendele | | | 166 | 16 | do | | 109.5 | Aug. 24, 1951 | T, G | Irr | Casing: 166 feet. Pumping 180 gpm, May 8, 1951. |
| J-4-102 | M. A. Keller | Fetner & Ralph R. Lewis, and others. | 1927 | 2,372 | 10 | | 794.0 | | | None | N | Oil test, plugged and abandoned. Well J-4-8 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| J-4-103 | Emma Keller | | 1940 | 112 | 6 | Indio formation. | | 92.5 | Aug. 24, 1951 | C, W | D, S | Casing: 120 feet, Pump set at 105 feet. |
| J-4-104 | Hartley Howard | W. Lancaster | 1948 | 200 | 6 | do | | 131.2 | Oct. 5, 1951 | C, E | D | See analysis, table 12. |
| J-4-105 | Mrs. J. W. Roberson, Sr. | | 1940 | 235 | 6 | do | | 107.7 | Sept. 28, 1951 | C, E | D, S | |
| J-4-106 | Louis Brown | J. Jagge | 1935 | 96 | 8 | do | | 43.4 | Aug. 24, 1951 | C, W | D, S | Casing: 96 feet, slotted. |
| J-4-107 | Arthur Poerner | | 1949 | 168 | 6 | do | | 106.6 | Aug. 20, 1951 | C, E 1 | D, S | Casing: 168 feet. |
| J-4-108 | E. S. Griffin | Henry Leisberg | 1910 | 218 | | do | | 53.5 | Sept. 26, 1951 | C, W | D, S | |
| J-4-109 | Mrs. Arthur Conrad | do | 1910 | 130 | 5 | do | | 55.1 | do | C, W | D, S | Water reported to be highly mineralized. See analysis, table 12. |
| J-4-110 | Willie Schott | | | 85 | 6 | do | | 57.7 | Aug. 27, 1951 | C, W | S | |
| J-4-111 | R. J. Marbach | | 1929 | 135 | 5 | do | | 60.3 | Aug. 20, 1951 | C, W | D, S | Casing: 130 feet, slotted from 112 to 130 feet. Water reported to be salty. |
| J-4-112 | Shook School | | | | 6 | do | | 54.5 | do | C, W | D, P | Casing: 130 feet. |
| J-4-113 | R. J. Waddell | | 1950 | 140 | 6 | do | | 23.4 | Aug. 24, 1951 | C, E | D, S | Casing: 140 feet. Temp. 74° F. |
| J-4-114 | Joe Bendele | A. F. Mann | 1925 | 100 | 6 | do | | 54.1 | Aug. 27, 1951 | C, W | D, S | |
| J-4-115 | R. O. Davis | Shaw Bros. | 1947 | 387 | 6 | do | | 60.3 | Aug. 28, 1951 | C, W, E | D, S | |
| J-4-116 | V. D. Grumbles | | 1948 | 43 | 6 | do | | 13.6 | Aug. 27, 1951 | C, E | D, S | Water reported to be salty. |
| J-4-117 | L. E. Bullington | | | 106 | | Indio formation and Grayson shale(?) (Del Rio clay). | | 79.8 | do | C, W | D, S | |
| J-4-118 | T. J. Mason | | 1948 | 12 | 96 | Leona formation. | | 9.2 | Aug. 24, 1951 | C, E 1 | D, S | Casing: 8 feet. See analysis, table 12. |
| J-4-119 | L. E. Sauter | A. F. Mann | 1951 | 195 | | Indio formation. | | 46.9 | Aug. 24, 1951 | C, E | D, S | Reported to pump air after 2 hours pumping 8 gpm. Pump set at 120 feet. See analysis, table 12. |
| J-4-120 | C. Rickett | do | 1940 | 92 | 4 | do | | 22.7 | do | C, W | D, S | Casing: 100 feet. |
| J-4-121 | Amos Creeder | do | 1951 | 90 | | do | | 36.2 | do | T, E 1½ | Irr | Casing: 90 feet, slotted. Drawdown 10.7 feet after 2 hours pumping 23 gpm, Aug. 24, 1951. Temp. 76° F. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-4-122 | Harold Thetford | | 1932 | 180 | 8 | do | | 29.1 | do | C, W | D, S | Casing: 180 feet. |
| J-4-123 | Bruce M. Roark | A. F. Mann | 1950 | 100 | 6 | Carrizo sand | | 35.7 | do | C, E, ½ | D, Irr | Casing: 100 feet. |
| J-4-124 | G. C. Clark | | 1933 | 18 | | Leona formation. | | 9.3 | do | C, W | D, S | Dug. Offset well, having a depth of 203 feet, was abandoned when casing corroded through and well became highly mineralized. See analysis, table 12. |
| J-4-125 | R. E. Allison | W. Trull | 1951 | 63 | | Indio formation. | | 32.8 | Aug. 27, 1951 | C, E | S | |
| J-4-126 | C. C. Sinesh | | 1949 | 85 | 6 | do | | 17.7 | Aug. 29, 1951 | C, E | S | Supplies dairy farm. |
| J-4-127 | J. R. Gayer | | 1947 | 81 | 6 | do | | 28.3 | do | C, W | D | See analysis, table 12. |
| J-4-128 | L. E. Johns | | | 25 | | do | | 2.5 | Aug. 30, 1951 | C, E | D, S | Dug. |
| J-4-129 | Don Stoy & City of Natalia. | | 1944 | 86 | 12 | do | | 63.3 | Feb. 15, 1952 | T, E, 7½ | P, S, Ind. | City of Natalia well no. 1. Casing: 86 feet, slotted from 56 to 86 feet. Drawdown 12 feet after 6 hours pumping 150 gpm, Feb. 12, 1952. |
| J-4-130 | do | W. Lancaster | 1940 | 226 | | do | | 95.6 | Feb. 8, 1952 | T, E, 15 | P, S | City of Natalia well no 2. Casing: 226 feet. Drawdown 123.3 feet after 6 hours pumping 155 gpm, Feb. 8, 1952. |
| J-4-131 | Natalia Cannery | J. R. Johnson | 1950 | 441 | 7 | do | | 94.9 | Oct. 11, 1951 | T, E, 5 | Ind | Used in canning vegetables. |
| J-4-132 | San Antonio Suburban Irrigation Farms Co. | A. H. Dudenstadt | | 75 | 8 | Carrizo sand | 751.0 | 50.7 | Feb. 22, 1930 | | N | Well J-4-7 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-4-133 | J. Robertson | | | 112 | 6 | do | | 92.0 | Feb. 5, 1952 | C, G, 2½ | S | |
| J-4-134 | J. Robertson | | 1934 | 97 | 5 | Carrizo sand | | 58.1 | Feb. 5, 1952 | C, E, ¼ | D, S | |
| J-4-135 | State Fish Hatchery Medina Valley | W. Lancaster | 1951 | 69 | 12 | do | | 27.4 | Feb. 16, 1952 | T, E, 7½ | D, S | Drawdown 12 feet after 4 hours pumping 85 gpm, Feb. 16, 1952. Supplements surface supply of fish ponds. |
| J-4-136 | Pete Lindsey | do | 1942 | 104 | 4 | Indio formation. | | 65.6 | Feb. 7, 1952 | C, W | S | |
| J-4-137 | George Meier, Jr. | A. F. Mann | 1951 | 68 | 8 | do | | 17.9 | Feb. 15, 1952 | T, E, ¾ | D | Casing: 68 feet, slotted from 40 to 68 feet. Drawdown 16.4 feet after 30 minutes pumping 15 gpm Feb. 15, 1952. |
| J-4-138 | M. G. Russell | Precision Drilling Co. | 1949 | 210 | 12 | do | | 19.6<br>20.7 | do<br>Oct. 13, 1952 | T, G, 40 | D, Irr | Casing: 110 feet, perforated from 30 to 110 feet. Irrigated 35 acres of grasses in 1951. Pump set at 60 feet. |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-4-139 | P. Bendele | R. Haas | 1952 | 149 | 5 | do | | 128.1 | Feb. 26, 1952 | C, G, | S | Drawdown: 3.1 feet while pumping 6 gpm, Feb. 26, 1952. |
| J-4-140 | J. T. Kirby | A. F. Mann | 1952 | 242 | 8 | do | | 90.4 | June 2, 1952 | T, G, 12 | Irr | Drawdown: 42 feet after 3 hours pumping 80 gpm, June 2, 1952. Temp. 71° F. See analysis, table 12. |
| J-4-141 | J. A. Turner | do | 1952 | 83 | 12 | do | | 29.4 | Oct. 12, 1952 | T, G, 30 | Irr | Drawdown: 47 feet after 5 hours pumping 260 gpm, Oct. 14, 1952. Irrigates 62 acres of dairy feed. |
| J-4-142 (Lake) | Medina Valley Irrigation District. | | | | | | | | | | | Chacon Lake. See analysis, table 12. |
| J-5-1 | T. Wolfe | F. M. Burkett | 1939 | 83 | 5 | Leona formation. | | 66.2 | Mar. 19, 1952 | C, E, ¼ | D, S | |
| J-5-2 | C. F. Horner | | | 56 | 46 | do | | 51.3 | do | C, W | S | Dug. |
| J-5-3 | Southern Pacific lines. | | | 1,450 | | Edwards limestone. | 724.4 | *65.5 | Jan. 21, 1952 | T, E, 15 | P, Ind | Supplies railroad and a portion of Lacoste. Drawdown 6.2 feet after 45 minutes pumping 360 gpm, Feb. 13, 1951. Well J-5-1 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-5-4 | Lena Geiger | | 1875 | 54 | 42 | Leona formation. | | 45.7 | July 16, 1951 | C, W | D, S | Dug. Curbing: 31 feet of brick. |
| J-5-5 | Jess Wolfe | F. M. Burkett | 1946 | 56 | 6 | do | | 41.7 | Jan. 28, 1952 | C, W | D, S | |
| J-5-6 | Helen Kusenberger | do | 1950 | 30 | 7 | do | | | | | D, S | Casing: 30 feet, slotted from 19 to 30 feet. |
| J-5-7 | Dan Buzzo | | 1939 | 56 | 5 | do | | 36.9 | Jan. 28, 1952 | C, W ½ | D | |
| J-5-8 | Rio Vista Dairy | | | | 6 | do | | 35.6 | July 16, 1951 | | S | |
| J-5-9 | W. F. Schmidt | | 1948 | 42 | 42 | do | | 35.3 | do | C, E | D, S | Dug. Curbing: 40 feet of concrete rings. Reported to pump air after 3 hours pumping 7.3 gpm. |
| J-5-10 | Adolph Mangold | | 1920 | | 8 | Edwards limestone(?). | | 81.5<br>83.5 | July 18, 1951<br>Sept. 13, 1951 | | N | Oil test. |
| J-5-11 | R. Farr | | 1951 | | | Leona formation. | | 15.1 | July 16, 1951 | C, E, ½ | D, S | |
| J-5-12 | G. E. Wanjura | | 1945 | 70 | 6 | Indio formation. | | 31.0 | do | C, W | D, S | |
| J-5-13 | Joe Burkett | W. Trull | 1949 | 340 | 7 | do | | | Feb. 16, 1952 | C, E, 1 | S | Casing: 159 feet. |
| J-5-14 | Mrs. — Atkins | | 1928 | 80 | 4 | do | | 31.1 | July 17, 1951 | C, W | D, S | |
| J-5-15 | R. Sanchez | A. F. Mann | 1947 | 87 | 6 | do | | 56.8 | Feb. 8, 1952 | C, E, ¼ | D | |
| J-5-16 | Frank Riley Estate. | N. B. Oliver | 1950 | 142 | | do | | 76.0 | July 18, 1951 | C, E, ¼ | D | |
| J-5-17 | W. T. Garnand | Somerset Western | 1917 | 1,670 | | | | | | None | N | Oil test, plugged and abandoned. |
| J-5-18 | Humble Oil & Refining Co. | H. Powell | 1944 | 94 | 12 | Carrizo sand | | 59.1 | Feb. 8, 1952 | T, E, 7½ | D, Ind | Casing: 94 feet, slotted. Drawdown 19 feet after 12 hours pumping 184 gpm, Feb. 8, 1952. Temp. 78° F. |
| J-5-19 | Anderton Lloyd | A. B. Whiteside | 1949 | 145 | 5 | do | | 64.3 | do | C, W | S | Casing: 145 feet. |
| J-5-20 | L. Ward | A. F. Mann | 1938 | 96 | 6 | do | | 65.4 | Feb. 7, 1952 | C, W | D, S | |
| J-7-1 | J. R. Howard | National Oil Co. | 1931 | 2,633 | 16 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| J-7-2 | R. H. Scott | A. F. Mann | 1949 | 161 | 6 | Indio formation. | | 101.0 | Oct. 5, 1951 | C, E, ¼ | D | |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-7-3 | J. R. Howard | do | 1949 | 233 | 5 | do | | 110.9 | do | C, W | D, S | Pump set at 160 feet. |
| J-7-4 | Emmitt Ratcliff | | 1927 | 116 | 12 | Carrizo sand | | 95.1 | Feb. 17, 1952 | C, G, 5 | D, S, Irr | Casing: 120 feet, slotted. Irrigated 8 acres of fruit trees in 1951. |
| J-7-5 | San Antonio Suburban Irrigation Farms Co. | A. H. Dudenstadt | | 2,710 | | | 752.0 | | | None | N | Oil test, plugged and abandoned. Reported flowing sulfur water from Edwards limestone when drilled. Well J-7-7 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-6 | R. J. Noonan | | 1930 | 96 | 6 | Carrizo sand | | 38.5 | Feb. 7, 1952 | None | N | |
| J-7-7 | W. S. Lilly | W. Lancaster | 1949 | 147 | 8 | Indio formation. | | 62.2 | do | C, G, 20 | Irr | Casing: 148 feet, perforated from 90 to 148 feet. Drawdown 49.6 feet after 6 hours pumping 140 gpm, Feb. 7, 1952. Temp. 73° F. |
| J-7-8 | T. B. Walker | A. F. Mann | 1943 | 67 | 4 | do | | 35.7 | Feb. 17, 1952 | C, E, ¼ | D | |
| J-7-9 | R. Briscoe | | | 132 | 5 | Carrizo sand | 656.4 | 75.4 | June 30, 1951 | | N | Well J-7-4 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-10 | D. W. Harris | | | 105 | 6 | do | | 43.8<br>81.9 | Feb. 21, 1930<br>Oct. 11, 1951 | None | N | Well J-7-3 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-11 | Evergreen Cemetary Association. | | | 140 | 6 | do | 696.0 | 130.0<br>100.1 | Feb. 21, 1930<br>Oct. 9, 1951 | C, E, 1 | D, Irr | Well J-7-2 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-12 | J. B. Collier | | | 63 | 36 | do | 670.0 | 60.9<br>23.8 | Feb. 21, 1930<br>Feb. 8, 1952 | T, G, 80 | D, S, Irr | Pumping 112 gpm, Feb. 8, 1952. Well J-7-1 in U. S. Geol. Survey Water-Supply Paper 678. Irrigates 2 acres of oats. |
| J-7-13 | Mrs. Mary Cox | | 1900 | 80 | 30 | Indio formation. | | 56.1 | Oct. 10, 1951 | C, W | S | Dug. Curbing: 80 feet of rock. |
| J-7-14 | J. DuBose | H. C. Hassell | 1939 | 69 | 6 | Carrizo sand | | 28.2 | Feb. 7, 1952 | C, E, 1 | D, S | Casing: 70 feet perforated from 40 to 69 feet. |
| J-7-15 | Sam Carraway | A. F. Mann | 1941 | 76 | 6 | do | | 52.9 | do | C, E, ½ | D, S | Casing: 78 feet. Drawdown 5.7 feet after 1½ hours pumping 8 gpm Feb. 7, 1952. |
| J-7-16 | Flora H. Briscoe | Kelfar Oil Co. | 1937 | 2,523 | 11 | | | | | None | N | Casing: 40 feet. Oil test, plugged and abandoned. See log. |
| J-7-17 | V. Thomson | | 1908 | 135 | 36 | Carrizo sand | | 118.6 | Oct. 8, 1951 | C, W | S | Dug. Curbing: 60 feet of rock. |
| J-7-18 | E. G. Kelland | | 1936 | 143 | 8 | do | | 97.0 | do | J, E, ½ | D, S | Casing: 140 feet. Temp. 74° F. |
| J-7-19 | George Briscoe | | | 125 | 4 | do | | 78.6 | do | C, W | D, S | |
| J-7-20 | City of Devine | A. F. Mann | 1940 | 613 | 8 | do | | 73.7 | Jan. 31, 1951 | T, E, 15 | P, S | Casing: 210 feet, slotted. Pumping 262 gpm, Oct. 12, 1952. Temp. 76° F. See log. |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-7-21 | do | do | 1940 | 250 | 12 | do | | 79.9 | Jan. 16, 1952 | T, E, 15 | P, S | Casing: 250 feet, slotted. Drawdown 82 feet after 2 hours pumping 125 gpm, Jan. 16, 1952. Temp. 76° F. See analysis, table 12. |
| J-7-22 | do | J. R. Johnson | 1946 | 613 | 11 | Indio formation. | | 124.9 | Oct. 15, 1952 | T, E, 15 | P, S | Casing: 478 feet, slotted liner from 478 to 581 feet. Pumping 310 gpm, Jan. 16, 1952. See analysis, table 12. |
| J-7-23 | do | A. F. Mann | 1936 | 182 | 11 | Carrizo sand | | 75.2 | do | | N | Well used for public supply until Sept. 1952. Temp. 76° F. |
| J-7-24 | K. G. Howard | | | 132 | 8 | do | 653.01 | *76.7 | June 30, 1951 | C, W | D | Well J-7-5 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-25 | V. P. Haas | — King | | 114 | 5 | do | 666.3 | 57.4 | Aug. 30, 1951 | C, W | D, S | Well J-7-6 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-26 | W. A. Thompson | J. R. McCaldin | | 3,012 | | | 696.0 | | | None | N | Oil test, plugged and abandoned. Well J-7-8 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| J-7-27 | R. W. Foster | Peers Drilling Co. | 1951 | 136 | 8 | Indio formation. | | 49.1 | Aug. 30, 1951 | C, G, 20 | D, S | Drilled to supply water for oil test. Pumping 110 gpm, Aug. 30, 1951. Water sand from 50 to 135 feet. |
| J-7-28 | R. W. Foster | Edwin Oil Co. | 1951 | 2,275 | | | | | | None | N | Oil test, plugged and abandoned. See log. |
| J-7-29 | C. Baker | A. F. Mann | 1950 | 205 | 4 | Indio formation | | 177.6 | Feb. 17, 1952 | C, E, ½ | D, S | Casing: 200 feet, 300 feet west of this well is the abandoned and plugged well J-7-9 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-30 | C. A. Robinson | — Hamilton | | 134 | 6 | Carrizo sand | 690.4 | 82.9<br>89.2 | Feb. 21, 1930<br>Feb. 7, 1952 | C, E, ½ | D, S | Well J-7-10 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| J-7-31 | F. H. Silvey | H. C. Hassell | 1938 | 237 | 6 | Indio formation. | | 109.0 | Feb. 7, 1952 | C, E, ⅓ | D, S | Casing: 240 feet, slotted from 190 to 240 feet. Drawdown 16 feet while pumping 6 gpm, Feb. 9, 1952. |
| J-7-32 | J. Robinson | | | 118 | 5 | Carrizo sand | | 109.3 | do | C, W | D, S | |
| J-7-33 | J. J. Wipff | — Johnson | 1900 | 110 | 60, 6 | do | 637.8 | 96.0 | Oct. 10, 1951 | C, E, | D, S | Dug. Curbing: 90 feet of rock. Casing: 20 feet, slotted from 90 to 110 feet. Well J-7-18 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-34 | August Wipff | W. Lancaster | 1950 | 114 | 6 | do | 639.3 | 84.3<br>94.6 | Feb. 21, 1930<br>May 29, 1952 | C, E, 1 | D, S | Drawdown 4.4 feet after 3 hours pumping 12 gpm, May 29, 1952. Well J-7-17 in U. S. Geol. Survey Water-Supply Paper 678 at same location has been abandoned. Temp. 71° F. |
| J-7-35 | J. J. Wipff | | 1930 | 2,774 | | | | | | None | N | Oil test to Edwards limestone. Plugged and abandoned. |
| J-7-36 | B. Hardcastle | Les Upton | 1947 | 140 | 6 | Carrizo sand | 661.5 | 87.8 | June 2, 1952 | C, E, ½ | D, S | Casing: 140 feet, slotted from 92 to 140 feet. Replaces the abandoned well J-7-15 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-37 | C. Weldon | do | 1949 | 135 | 6 | do | | 92.9 | do | C, E, ⅓ | D, S | Casing: 135 feet, slotted from 90 to 135 feet. Replaces well J-7-13 in U. S. Geol Survey Water-Supply Paper 678. See analysis, table 12. |

| Well or Spring | Owner | Driller of well | Date completed | Depth of well (feet) | Diameter of well (inches) | Water-bearing formation | Altitude of land-surface datum (feet) | Water level: Below land-surface datum (feet) | Water level: Date measurement | Method of lift | Use of water | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-7-38 | W. Adams | J. C. Webster Oil & Gas Co. | 1932 | 3,074 | 10 | | | | | None | N | Oil test, plugged and abandoned. See log. |
| J-7-39 | J. R. Haster | George Hester | 1905 | 106 | 6 | Carrizo sand | 654.5 | 95.9 | Oct. 10, 1951 | C, E, 1/4 | D | Well J-7-12 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-40 | W. Adams | Donaldson Oil Co. | 1929 | 3,125 | 6, 10 | | | | | None | N | Oil test, plugged and abandoned. Well J-7-14 in U. S. Geol. Survey Water-Supply Paper 678. See log. |
| J-7-41 | City of Devine | Les Upton | 1952 | 141 | 12 | Carrizo sand | | 91.3 | Apr. 25, 1952 | T, E, 25 | PS | In Devine. Casing: 141 feet, slotted from 96 to 141 feet. Drawdown 28 feet after 19 hours pumping 1,207 gpm, Apr. 25, 1952. See analysis, table 12. |
| J-7-42 | A. A. Lilly | | 1923 | 148 | 10, 6 | do | 657.6 | *101.8<br>95.5 | Feb. 21, 1930<br>June 30, 1951 | C, W | D, S | Casing: 10-inch to 150 feet. In 1942 well was recased with 6-inch to 150 feet. Well J-7-11 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-43 | J. E. Odam | A. F. Mann | 1950 | 124 | 8 | do | | 61.5 | Feb. 7, 1952 | T, G, 60 | D, Irr | Casing: 125 feet, perforated from 80 to 125 feet. Reported yield of 800 gpm. Drawdown 42 feet while pumping 460 gpm, Feb. 17, 1952. |
| J-7-44 | D. W. Whitaker | | 1875 | 94 | 36 | do | | 79.4 | Oct. 10, 1951 | C, W, E | D, S | Dug. Curbed with rock. |
| J-7-45 | L. E. Boone | A. F. Mann | 1946 | 112 | 6 | do | | 103.1 | Oct. 10, 1951 | C, W | D, S | |
| J-7-46 | J. F. Nicodemus | — Forrester | 1940 | 120 | 6 | do | 659.0 | 118.1<br>110.0<br>111.5 | Feb. 22, 1930<br>Jan. 3, 1951<br>Jan. 8, 1952 | C, E | D, S | Well J-7-19 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-47 | W. Cavhart | | | 134 | 48 | do | 661.1 | *106.6<br>104.0 | Feb. 21, 1930<br>Sept. 16, 1954 | C, W | D, S | Dug. Curbing: 62 feet of rock. Well J-7-20 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-48 | W. McMenery | W. C. Campbell | 1936 | 2,898 | | | | | | None | N | Oil test, plugged and abandoned. See log. |
| J-7-49 | D. J. Bartlett | | | 105 | 4 | Carrizo sand | 649.0 | *95.5<br>94.2 | Feb. 22, 1930<br>June 30, 1951 | C, W | S | Well J-7-21 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-50 | C. O. Brown | | | 105 | 8 | do | 660.0 | 102.5<br>102.3 | Feb. 22, 1930<br>June 2, 1952 | C, W | D, S | Well J-7-22 in U. S. Geol. Survey Water-Supply Paper 678. |
| J-7-51 | Josephine Haegelin | | | 86 | 4 | do | 640.0 | 75.0<br>81.6 | Feb. 22, 1930<br>June 2, 1952 | C, W | S | Well J-7-23 in U. S. Geol. Survey Water-Supply Paper 678. See analysis, table 12. |
| J-7-52 | Mary Blatz | Lewis Production Co. | 1941 | 3,238 | 11 | | 613.0 | | | None | N | Oil test, plugged and abandoned. See log. |
| J-7-53 | J. F. Camp | W. Lancaster | 1939 | 194 | 12 | Carrizo sand | | 81.9 | June 2, 1952 | T, G, 40 | D, S, Irr | Casing: 195 feet, slotted from 90 to 184 feet. Pumping 116 gpm, June 2, 1952 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-7-54 | J. H. Hardcastle | J. Hensley | 1938 | 119 | 5 | do |  | 92.9 | Oct. 8, 1951 | C, W | D, S | Casing: 120 feet, slotted from 80 to 118 feet. |
| J-7-55 | Alex Bohl | A. F. Mann | 1945 | 103 | 5 | do |  | 86.7 | Oct. 10, 1951 | C, E | D, S |  |
| J-7-56 | C. T. Vance |  | 1919 | 77 | 7 | do |  | 73.9 | do | C, W | D, S | Well reported to have small yield. |
| J-7-57 | Bill Driscoll |  | 1930 | 107 | 6 | do |  | 75.6 | Feb. 7, 1952 |  | N |  |
| J-7-58 | do | A. F. Mann | 1940 | 109 | 6 | do |  | 79.1 | do | C, E, ¼ | D, S | Drawdown 3.4 feet while pumping 8 gpm, Feb. 7, 1952. |
| J-7-59 | So omay Gallegos |  | 1933 | 121 | 6 | do |  | 83.3 | do | C, W | D S |  |
| J-7-60 | F. C. Meyer | A. F. Mann | 1946 | 184 | 12 | do |  | 73.8 | Feb. 19, 1952 | T, G, 60 | Irr | Casing: 184 feet, perforated from 112 to 175 feet. Pumping 540 gpm, Feb. 19, 1952. Irrigated 80 acres of oats and clover. |
| J-7-61 | D. Messec | C. Martin | 1920 | 120 | 8 | Carrizo sand |  | 69.7 | Feb. 26, 1952 | T, E, 15 | Irr | Casing: 120 feet. Drawdown 32 feet after 4 hours pumping 238 gpm, Feb. 26, 1952. Pump set at 104 feet. |
| J-7-62 | I. & G. N. R. R. |  |  | 2,453 |  |  |  |  |  | None | N | Oil test, plugged and abandoned. See log. |
| J-8-1 | E. Mullins |  |  | 114 | 5 | Carrizo sand | 639.7 | 92.7 | Feb. 22, 1930 | C, W | D, S | Well J-8-1 in U. S. Geol. Survey Water-Supply Paper 678. |
|  |  |  |  |  |  |  |  | 96.6 | June 30, 1951 |  |  |  |
| J-8-2 | U. Thompson | H. C. Hassell | 1936 | 112 | 6 | do |  | 96.6 | Oct. 8, 1951 | C, W | S |  |
| J-8-3 | W. S. Lilly | Gilcrease Oil Co. | 1939 | 3,219 |  |  | 623.0 |  |  | None | N | Casing: 312 feet. Oil test, plugged and abandoned. See log. |

TABLE 10.—*Drillers' logs of wells in Medina County, Tex.*

Well C-9-29
[Owner: W. DeGrodt. Driller: Austin Smith]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Lime, gray | 40 | 40 | Lime, white | 10 | 130 |
| Lime, yellow, arenaceous | 20 | 60 | Lime, pink, and clay | 60 | 190 |
| Lime, white | 20 | 80 | Lime, white | 25 | 215 |
| Lime, pink | 40 | 120 | Lime, white; water | 60 | 275 |

Well C-9-55
[Owner: E. J. Leinweber. Driller: Austin Smith]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Lime, white | 115 | 115 | Lime and shale | 70 | 305 |
| Sand and water | 5 | 120 | Shale, gray | 75 | 380 |
| Lime, blue | 30 | 150 | Lime and shale | 40 | 420 |
| Shale and lime | 45 | 195 | Lime, blue; water | 10 | 430 |
| Lime, blue | 40 | 235 | | | |

Well D-7-18
[Owner: Sunny Blevins. Driller: J. R. Johnson]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 1 | 1 | Lime, gray | 121 | 197 |
| Limestone (Edwards), pink | 29 | 30 | Marl, blue | 44 | 241 |
| Lime, white, hard | 46 | 76 | Limestone (Glen Rose) | 93 | 334 |

Well D-8-8
[Owner: O. W. Schuehart. Driller: Austin Smith]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Gravel, broken limestone | 20 | 20 | Limestone (Glen Rose), blue; with alternating layers of blue clay, yellow lime, and sand | 498 | 620 |
| Limestone (Edwards), yellow, dense; contains some flint; no water | 102 | 122 | Limestone (Glen Rose), blue gray; contains water | 51 | 671 |

Well I-1-15, partial log
[Owner: Tena Rothe. Driller: California-Medina Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Shale, blue | 156 | 156 |
| Lime, gray | 48 | 204 |
| Lime, gray, sandy | 20 | 224 |
| Shale, blue | 27 | 251 |
| Lime, gray, hard, sandy | 5 | 256 |
| Lime, dark; with blue clay and sandy shale | 22 | 278 |
| Shale, sandy | 22 | 300 |
| Shale, slate, and white lime | 18 | 318 |
| Lime, white | 18 | 336 |
| Lime, white, and dark-gray shale | 12 | 348 |
| Shale, brown, sandy; water sand | 72 | 420 |
| Sand; water and white lime | 5 | 425 |
| Lime, gray, hard | 8 | 433 |
| Lime, white, and sand; water | 7 | 440 |
| Lime, white, and sand; very hard | 12 | 452 |
| Shale, lime, sand | 10 | 462 |
| Lime, hard, and gray sand | 16 | 478 |
| Lime, gray, sandy | 20 | 498 |
| Lime, gray | 7 | 505 |
| Lime, gray, hard | 12 | 517 |
| Lime, very hard; with flint | 19 | 536 |
| Lime, gray, hard | 4 | 540 |
| Lime, very hard; with flint | 14 | 554 |
| Lime, white; with flint | 7 | 561 |
| Lime, white; with flint | 10 | 571 |
| Sand, white, hard | 23 | 594 |
| Sand, white and white lime | 10 | 604 |
| Sand; gas show (good) and white lime | 6 | 610 |
| Lime, very hard | 10 | 620 |
| Lime, with flint | 15 | 635 |
| Lime, white | 9 | 644 |
| Lime, white, coarse | 10 | 654 |
| Lime, brown | 23 | 677 |
| Lime, hard; with flint | 11 | 688 |
| Lime, white, hard | 13 | 701 |
| Lime, white-brown, soft | 25 | 726 |
| Lime, brown | 4 | 730 |
| Lime, white, hard | 13 | 743 |
| Lime, brown, hard | 3 | 746 |
| Lime, white | 32 | 778 |
| Lime, with flint | 5 | 783 |
| Lime, hard, with flint | 5 | 788 |
| Lime, white | 5 | 793 |
| Lime, hard | 12 | 805 |
| Lime, white | 7 | 812 |
| Lime, white, crystalline | 8 | 820 |
| Lime, white | 13 | 833 |
| Lime, crystalline; with calcite, sand, and lime | 21 | 854 |
| Lime, sandy | 15 | 869 |
| Lime, white, sandy | 14 | 883 |
| Lime, white, hard | 6 | 889 |
| Lime, white | 10 | 899 |
| Lime, hard | 13 | 912 |
| Lime, white | 18 | 930 |
| Lime | 13 | 843 |
| Sand, white, hard | 12 | 955 |
| Lime, white | 13 | 968 |
| Lime, white to dark-gray | 25 | 993 |
| Lime, gray | 12 | 1,005 |
| Lime, gray; gas show | 18 | 1,023 |
| Lime, gray | 10 | 1,033 |
| Lime, gray, with flint | 8 | 1,041 |
| Lime, gray, hard | 10 | 1,051 |
| Lime, white to gray | 10 | 1,061 |
| Lime, white | 4 | 1,065 |
| Lime, white, crystalline, and gray shale | 14 | 1,079 |
| Lime, gray, hard, and black shale | 27 | 1,106 |
| Lime, gray | 14 | 1,120 |
| Sand, dark-gray; gas show | 7 | 1,127 |
| Lime, dark, sandy, and shale; water | 12 | 1,139 |
| Shale and lime breaks | 14 | 1,153 |
| Lime, gray, and brown shale | 4 | 1,157 |
| Lime, dark-gray | 16 | 1,173 |
| Lime, gray, hard | 9 | 1,182 |
| Lime, gray, hard, sticky, and dark-gray shale | 12 | 1,194 |
| Sand and very hard gray lime; water | 7 | 1,201 |
| Lime, gray, very flinty | 8 | 1,209 |
| Lime, gray, very hard | 6 | 1,215 |
| Lime, white, hard | 3 | 1,218 |
| Lime, gray; with soft-lime breaks | 18 | 1,236 |
| Lime with shale breaks | 11 | 1,247 |
| Lime, gray, and brown shale | 9 | 1,256 |
| Lime, gray, hard, and shale | 7 | 1,263 |
| Lime, gray | 11 | 1,274 |
| Lime, black, hard | 3 | 1,277 |
| Lime, black | 3 | 1,280 |
| Lime, gray, hard | 4 | 1,284 |
| Lime, brown and brown shale, soft lime, and shale | 14 | 1,298 |
| Lime, soft, sandy | 19 | 1,317 |
| Lime, sandy, and brown shale; gas show | 36 | 1,353 |
| Lime and shale, brown and blue; and gypsum | 36 | 1,389 |
| Lime, shaley | 34 | 1,423 |
| Lime, gray | 11 | 1,434 |
| Shale, light-gray | 17 | 1,451 |
| Sand and lime | 26 | 1,477 |
| Shale and brown lime | 34 | 1,511 |
| Lime, shale | 28 | 1,539 |
| Lime, gray, and shale | 25 | 1,564 |
| Shale and gray lime | 26 | 1,590 |
| Lime, gray | 17 | 1,607 |
| Lime, gray, soft and hard | 27 | 1,634 |
| Lime, white | 7 | 1,641 |
| Lime, hard, sandy | 12 | 1,653 |
| Lime, gray and shale sandy | 17 | 1,670 |
| Lime, gray, hard | 13 | 1,683 |
| Lime, brown, hard | 14 | 1,697 |
| Lime, hard, shale | 14 | 1,711 |
| Lime, gray | 19 | 1,730 |
| Lime, gray, hard, caving | 20 | 1,750 |
| Lime, brown rotten | 13 | 1,763 |
| Lime, brown, caving | 30 | 1,793 |
| Lime, white, caving | 7 | 1,800 |
| Lime, caving; water | 5 | 1,805 |
| Lime, gray | 7 | 1,812 |
| Lime, gray, hard | 7 | 1,819 |
| Lime, gray; gas show | 9 | 1,828 |
| Lime, gray, soft | 13 | 1,841 |
| Lime, soft; gas show | 12 | 1,853 |
| Lime, white, hard | 6 | 1,859 |
| Lime, white-gray, caving | 13 | 1,872 |
| Lime, white; gas show | 7 | 1,879 |
| Lime, white | 3 | 1,882 |
| Lime, gray | 12 | 1,894 |
| Lime, gray; gas show | 6 | 1,900 |
| Lime, dark-gray | 8 | 1,908 |
| Lime, white, hard | 5 | 1,913 |
| Lime, gray, hard; gas show | 10 | 1,923 |
| Lime, gray | 9 | 1,932 |
| Lime, light-gray | 6 | 1,938 |
| Sand, gray | 24 | 1,962 |
| Sand, light-gray | 7 | 1,969 |
| Lime, gray | 6 | 1,975 |
| Sand, gray | 5 | 1,980 |
| Lime, gray-sandy | 5 | 1,985 |
| Lime, sandy | 8 | 1,993 |
| Lime, gray | 6 | 1,999 |
| Lime, gray; gas show | 6 | 2,005 |
| Lime, gray; oil show | 6 | 2,011 |
| Lime, gray | 24 | 2,035 |
| Lime, gray; oil show | 10 | 2,045 |
| Lime, gray, hard; gas show | 3 | 2,048 |
| Lime, gray; gas show | 29 | 2,077 |

Well I-1-15, partial log (Continued)
[Owner: Tena Rothe. Driller: California-Medina Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Lime, with gray flint | 5 | 2,082 |
| Lime with flint; gas show | 5 | 2,087 |
| Lime, light-gray; gas show | 4 | 2,091 |
| Lime, brown, sandy | 4 | 2,095 |
| Lime, gray | 6 | 2,101 |
| Lime, light-gray; with pyrite | 5 | 2,106 |
| Lime, white and white shale | 6 | 2,112 |
| Lime, white; with flint | 6 | 2,118 |
| Lime, white sandy | 7 | 2,125 |
| Lime, gray | 11 | 2,142 |
| Lime, gray and shale light | 7 | 2,149 |
| Lime, white | 10 | 2,159 |
| Slate and sticky shale | 2 | 2,161 |
| Shale, light-blue | 5 | 2,166 |
| Shale, light | 2 | 2,168 |
| Pyrite | 6 | 2,174 |
| Lime, white, sandy; water | 19 | 2,193 |
| Lime, gray; gas show | 10 | 2,203 |
| Lime, brown, sandy; oil show | 9 | 2,212 |
| Lime, gray, hard | 10 | 2,222 |
| Lime, white; gas show | 7 | 2,229 |
| Lime, brown-gray, sandy | 17 | 2,246 |
| Shale, white | 8 | 2,254 |
| Shale, gray and gray lime | 6 | 2,260 |
| Shale and lime | 183 | 2,443 |
| Shale, gray | 7 | 2,450 |
| Shale, blue | 4 | 2,454 |
| Shale, blue-gray | 15 | 2,469 |
| Lime, blue-gray, and shale sandy | 5 | 2,474 |
| Lime, gray, sandy and shale; oil | 3 | 2,477 |
| Lime, gray, hard and blue shale | 3 | 2,480 |
| Lime, white, hard | 2 | 2,482 |
| Shale, blne, sandy; oil show | 3 | 2,485 |
| Lime, blue; sand, gray; shale, blue | 6 | 2,491 |
| Shale, blue, with lime | 9 | 2,500 |
| Lime, gray, sandy; oil show | 4 | 2,504 |
| Sand | 24 | 2,528 |
| Sand and shale, red | 2 | 2,530 |
| Sand, caving badly | 2 | 2,532 |
| Sand | 2 | 2,534 |
| Shale | 2 | 2,536 |
| Shale, gray | 6 | 2,542 |
| Shale, brown | 15 | 2,557 |
| Shale, gray | 4 | 2,561 |
| Gumbo | 10 | 2,571 |
| Shale, blue | 8 | 2,579 |
| Shale, red | 2 | 2,581 |
| Shale, blue | 3 | 2,584 |
| Shale, dark | 4 | 2,588 |
| Shale, sandy | 2 | 2,590 |
| Sand, brown | 2 | 2,592 |
| Sand and lime | 3 | 2,595 |
| Sand, brown, chalk | 2 | 2,597 |
| Sand, white, and shale; oil | 1 | 2,598 |
| Chalk, gumbo | 2 | 2,600 |
| Gnmbo | 2 | 2,602 |
| Shale, brown; oil show | 13 | 2,615 |
| Lime; oil show | 1 | 2,616 |
| Shale, blue, sandy; oil show | 5 | 2,621 |
| Shale, white, sandy; caving | 2 | 2,623 |
| Shale, red | 5 | 2,628 |
| Sand, red | 2 | 2,630 |
| Asphalt | 1 | 2,631 |
| Shale, light-red-gray | 7 | 2,638 |
| Lime, sandy | 2 | 2,640 |
| Lime, black | 2 | 2,642 |
| Unknown | 6 | 2,648 |
| Shale, brown | 4 | 2,652 |
| Shale, gray | 16 | 2,668 |
| Shale, gray, and sand | 10 | 2,678 |
| Sand with lime | 19 | 2,697 |
| Lime, white | 7 | 2,704 |
| Sand, brown | 1 | 2,705 |
| Shale, gray | 5 | 2,710 |
| Gumbo | 3 | 2,713 |
| Lime, hard | 2 | 2,715 |
| Sand, brown | 2 | 2,717 |
| Shale, sandy | 23 | 2,740 |
| Shale, sandy and sand | 11 | 2,751 |
| Sand | 11 | 2,762 |
| Shale, sandy | 62 | 2,824 |
| Shale, sandy and sand | 8 | 2,832 |
| Lime, sandy | 20 | 2,852 |
| Sand | 51 | 2,903 |
| Shale, sandy | 10 | 2,913 |
| Shale, sandy, and lime | 26 | 2,939 |
| Lime | 7 | 2,946 |
| Lime and sand | 10 | 2,956 |
| Lime and shale, caving | 6 | 2,962 |
| Shale, sandy | 8 | 2,970 |
| Shale, sand, and limestone | 7 | 2,977 |
| Shale, grayish-brown | 8 | 2,985 |
| Shale, brown | 6 | 2,991 |
| Sand, brown; with shale and lime | 16 | 3,007 |
| Shale, brown | 11 | 3,018 |
| Shale, brown and gray | 9 | 3,027 |
| Shale, fine, sandy | 2 | 3,029 |
| Shale, brownish-gray | 6 | 3,035 |
| Shale, gray | 7 | 3,042 |
| Sand | 10 | 3,052 |
| Sand and shale | 4 | 3,056 |
| Shale, gray | 5 | 3,061 |
| Sand and lime | 1 | 3,062 |
| Lime, sandy | 1 | 3,063 |
| Lime | 3 | 3,066 |
| Shale, sandy; gas show | 2 | 3,068 |
| Lime, hard, crystalline | 7 | 3,075 |
| Shale, gray, friable | 4 | 3,079 |
| Shale, gray, sandy, friable | 2 | 3,081 |
| Shale, sandy | 4 | 3,085 |
| Shale, gray | 2 | 3,087 |
| Shale, gray, and hard brown shale | 23 | 3,110 |
| Lime, white and shale, gray | 2 | 3,112 |
| Shale, brown and dark blue | 21 | 3,133 |
| Shale, dark | 11 | 3,144 |
| Shale | 2 | 3,146 |
| Shale, brown | 6 | 3,152 |
| Shale, light-brown; oil show | 15 | 3,167 |
| Sand; oil show | 7 | 3,174 |
| Sand, with oil | 11 | 3,185 |
| Sand, black | 3 | 3,188 |
| Shale and sand, black | 4 | 3,192 |
| Sand and shale | 5 | 3,197 |
| Shale and sand, black | 1 | 3,198 |
| Gumbo and shale | 7 | 3,205 |
| Gumbo shale | 8 | 3,213 |
| Total Depth | --------- | 3,705 |

Well I-2-85
[Owner: Howard Nessley. Driller: Precision Drilling Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 4 | 4 | Lime, hard, and shale | 141 | 346 |
| Caliche, gravel, and boulders | 21 | 25 | Chalk with shale streak | 290 | 636 |
| Clay, yellow | 14 | 39 | Shale, dark, sandy; hard streaks | 38 | 674 |
| Shale, gray | 31 | 70 | Limestone (Buda), white, hard | 64 | 738 |
| Shale, blue; lime streaks | 35 | 105 | Shale, gray, sticky | 67 | 805 |
| Shale, gray, sandy | 52 | 157 | Lime, gray, hard | 24 | 829 |
| Shale and lime (top Anacacho) | 22 | 179 | Lost circulation in crevice | 2 | 831 |
| Shale, blue, sandy | 5 | 184 | Limestone (Edwards); no circulation | 20 | 851 |
| Lime, hard; oil show | 21 | 205 | | | |

Well I-3-5
[Owner: J. G. Brucks. Driller: R. Schwartz]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay (Grayson shale, formerly Del Rio clay) | 35 | 35 | Limestone (Edwards); water | 75 | 165 |
| Sand, calcareous | 55 | 90 | Lime, water in crevice | 135 | 300 |
| | | | Lime, gray | 25 | 325 |

Well I-3-34
[Owner: Walter Brucks. Driller: Cravens Drilling Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 2 | 2 | Lime, gray, soft | 47 | 165 |
| Limestone (Buda) | 62 | 64 | Limestone (Edwards); water in crevice | 93 | 258 |
| Clay (Grayson shale, formerly Del Rio clay) | 54 | 118 | | | |

Well I-3-36
[Owner: Melvin Balzen. Driller: Abe Tschirhart]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil, yellow | 3 | 3 | Lime, gray; flint | 54 | 184 |
| Clay, blue (Grayson shale, formerly Del Rio clay) | 57 | 60 | Lime, pink | 77 | 261 |
| Limestone, gray | 48 | 108 | Lime, white; water | 39 | 300 |
| Limestone (Edwards) | 22 | 130 | Lime, blue | 2 | 302 |

Well I-3-49
[Owner: O. Wiemers. Driller: Otto Wiemers]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil and gravel | 15 | 15 | Clay, blue (Grayson shale, formerly Del Rio clay) | 58 | 167 |
| Shale, gray | 33 | 48 | Limestone (Georgetown) | 54 | 221 |
| Limestone (Buda) | 61 | 109 | Limestone (Edwards) | 35 | 256 |

Well I-3-66
[Owner: Atlantic Pipe Line. Driller: J. R. Johnson]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 2 | 2 | Chalk (Austin) | 183 | 905 |
| Caliche | 10 | 12 | Shale (Eagle Ford) | 19 | 924 |
| Caliche and gravel | 33 | 45 | Limestone (Buda) | 64 | 988 |
| Clay and gravel | 21 | 66 | Clay (Grayson shale, formerly Del Rio clay) | 48 | 1,036 |
| Shale (Navarro) | 259 | 325 | Limestone (Georgetown) | 36 | 1,072 |
| Sand, green, and shale streaks | 22 | 347 | Limestone (Edwards), with shale streaks | 269 | 1,341 |
| Shale (Navarro) | 13 | 360 | | | |
| Marl (Taylor) | 362 | 722 | | | |

Well I-3-80
[Owner: R. L. Mumme. Driller: J. Harper]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Gravel and clay | 9 | 9 |
| Lime, light-gray | 76 | 85 |
| Lime, soft | 35 | 120 |
| Clay, blue | 40 | 160 |
| Lime, hard | 33 | 193 |
| Chalk | 92 | 285 |
| Shale, gray | 18 | 303 |
| Chalk | 75 | 378 |
| Shale (Eagle Ford) | 37 | 415 |
| Limestone (Buda) | 60 | 475 |
| Clay (Grayson shale, formerly Del Rio clay) | 40 | 515 |
| Limestone (Georgetown and Edwards) | 10 | 525 |

Well I-3-98
[Owner: E. Boehle. Driller: O. R. Frome]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil | 3 | 3 |
| Clay, yellow | 7 | 10 |
| Gravel | 5 | 15 |
| Clay, yellow | 40 | 55 |
| Sand, rock | 1 | 56 |
| Gumbo, rock | 9 | 65 |
| Lime, shell | 1 | 66 |
| Shale, gray | 164 | 230 |
| Shale, shell | 15 | 245 |
| Shale, gray | 165 | 410 |
| Shale, shell | 17 | 427 |
| Lime, gray, soft | 38 | 465 |
| Shale, gray, soft | 140 | 605 |
| Lime, white, chalky | 70 | 675 |
| Lime, white, hard | 65 | 740 |
| Shale, gray, hard | 45 | 785 |
| Shale, brown; with lignite | 27 | 812 |
| Lime, green | 26 | 838 |
| Shale, blue; with pyrite | 7 | 845 |
| Chalk | 50 | 895 |
| Lime, hard | 15 | 910 |
| Chalk | 80 | 990 |
| Shale, dark; with pyrite | 15 | 1,005 |
| Chalk | 70 | 1,075 |
| Shale (Eagle Ford) | 37 | 1,112 |
| Limestone (Buda) | 61 | 1,173 |
| Clay (Grayson shale, formerly Del Rio clay) | 59 | 1,232 |
| Limestone (Georgetown) | 51 | 1,283 |

Well I-3-118
[Owner: U. S. Government. Driller: Wiegand Bros.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Gravel and shale | 63 | 63 |
| Clay and boulders | 15 | 78 |
| Shale | 186 | 264 |
| Shale and boulders | 85 | 349 |
| Shale | 302 | 651 |
| Limestone | 131 | 782 |
| Chalk | 66 | 848 |
| Chalk and shale | 65 | 913 |
| Shale | 116 | 1,029 |
| Limestone | 69 | 1,098 |
| Shale | 67 | 1,165 |
| Limestone | 253 | 1,418 |

Well I-3-127
[Owner: J. D. Dodson. Driller: Humble Oil & Refining Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Clay and sand | 24 | 24 |
| Sand, boulders | 50 | 74 |
| Sand, hard | 66 | 140 |
| Rock | 2 | 142 |
| Shale | 4 | 146 |
| Shale, sandy, and boulders | 286 | 432 |
| Shale, lime | 146 | 578 |
| Sand, hard | 56 | 634 |
| Rock | 10 | 644 |
| Shale | 14 | 658 |
| Rock | 4 | 662 |
| Shale and boulders | 64 | 726 |
| Rock | 2 | 728 |
| Shale and boulders | 30 | 758 |
| Rock | 1 | 759 |
| Shale and boulders | 8 | 772 |
| Shale and boulders | 253 | 1,025 |
| Rock | 3 | 1,028 |
| Shale and boulders | 12 | 1,040 |
| Rock | 5 | 1,045 |
| Shale and boulders | 200 | 1,245 |
| Shale | 145 | 1,390 |
| Sand; tested dry | 76 | 1,466 |
| Shale, sandy | 5 | 1,471 |
| Sand | 12 | 1,483 |
| Shale, sandy | 61 | 1,544 |
| Shale, sticky | 160 | 1,704 |
| Shale, lime | 116 | 1,820 |
| Marl (Taylor) | 246 | 2,066 |
| Chalk (Austin) | 303 | 2,369 |
| Shale (Eagle Ford) | 64 | 2,433 |
| Limestone (Buda) | 154 | 2,587 |
| Limestone (Georgetown) | 60 | 2,647 |
| Limestone (Edwards) | 25 | 2,672 |

Well I-3-134
[Owner: City of Hondo. Driller: P. Lindholm]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay, boulders | 28 | 28 | Shale, hard | 75 | 830 |
| Clay, sand | 10 | 38 | Rock | 55 | 885 |
| Rock and sand | 4 | 42 | Gypsum | 165 | 1,050 |
| Clay | 48 | 90 | Asphalt; oil show | 7 | 1,057 |
| Gumbo | 250 | 340 | Rock, hard | 93 | 1,150 |
| Rock | 3 | 343 | Limestone, with pyrite | 25 | 1,175 |
| Shale | 17 | 360 | Limestone, hard | 47 | 1,222 |
| Shale, hard | 20 | 380 | Limestone, with pyrite | 22 | 1,244 |
| Shale, hard and soft | 200 | 580 | Shale and limestone | 52 | 1,296 |
| Gumbo, tough | 13 | 593 | Rock, hard | 44 | 1,340 |
| Rock | 39 | 632 | Rock, soft and shale | 25 | 1,365 |
| Gypsum and rock | 21 | 653 | Rock, with pyrite | 3 | 1,368 |
| Limestone, hard | 21 | 674 | Shale with pyrite | 97 | 1,465 |
| Limestone, soft | 38 | 712 | Sand, stratified; water | 20 | 1,485 |
| Rock, hard | 13 | 725 | Limestone | 15 | 1,500 |
| Gumbo | 30 | 755 | Shale, hard and soft | 100 | 1,600 |

Well I-3-135
[Owner: Walter Meyer. Driller: C. Gilliam]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 30 | 30 | Clay, yellow | 11.5 | 73 |
| Gravel | 31 | 61 | Clay, blue | 25 | 98 |
| Lime, hard, laminated | 0.5 | 61.5 | | | |

Well I-3-139
[Owner: Louis Heyen. Driller: Austin Smith]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Lime, white | 15 | 15 | Lime, yellow | 30 | 245 |
| Lime, yellow | 20 | 35 | Lime, white | 60 | 305 |
| Shale, blue | 60 | 95 | Lime, gray | 45 | 350 |
| Limestone (Edwards) | 70 | 165 | Lime, white; water | 45 | 395 |
| Lime, gray | 50 | 215 | Lime, yellow | 5 | 400 |

Well I-4-7
[Owner: G. A. Kennedy. Driller: Stover and May]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 6 | 6 | Shale and boulders | 23 | 435 |
| Gravel | 9 | 15 | Rock | 4 | 439 |
| Rock | 9 | 24 | Limestone | 21 | 460 |
| Rock, broken | 12 | 36 | Lime, broken; oil show | 14 | 474 |
| Rock | 4 | 40 | Lime, broken | 58 | 532 |
| Sand, gravel | 44 | 84 | Lime, shale | 9 | 541 |
| Rock, broken | 23 | 107 | Lime with pyrite | 19 | 560 |
| Rock | 2 | 109 | Lime, hard | 9 | 569 |
| Shale | 11 | 120 | Lime, sandy | 13 | 582 |
| Rock | 6 | 126 | Lime, hard | 62 | 644 |
| Shale | 6 | 132 | Shale and lime, hard | 17 | 661 |
| Rock | 4 | 136 | Shale and lime, broken | 11 | 672 |
| Sand | 6 | 142 | Chalk | 118 | 790 |
| Rock | 4 | 146 | Chalk with pyrite | 27 | 817 |
| Shale | 21 | 167 | Sand and chalk | 10 | 827 |
| Rock | 3 | 170 | Chalk, hard, and shale | 5 | 832 |
| Shale and boulders | 89 | 259 | Chalk | 115 | 947 |
| Rock | 2 | 261 | Chalk, shale, chalky | 34 | 981 |
| Shale | 19 | 280 | Limestone, hard | 56 | 1,037 |
| Rock | 2 | 282 | Chalk and clay, streaks | 34 | 1,071 |
| Shale, sandy | 8 | 290 | Chalk, hard | 69 | 1,140 |
| Rock | 2 | 292 | Shale (Eagle Ford) | 30 | 1,170 |
| Shale, sticky; rock | 23 | 315 | Limestone (Buda) | 125 | 1,295 |
| Shale | 15 | 330 | Clay (Grayson shale, formerly Del Rio clay) | 75 | 1,370 |
| Shale, sandy | 15 | 345 | Limestone (Georgetown) | 28 | 1,398 |
| Shale, sticky | 65 | 410 | Gumbo | 3 | 1,401 |
| Rock | 2 | 412 | Limestone (Edwards) | 55 | 1,456 |

Well I-4-11
[Owner: W. C. Scott. Driller: Sun Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Caliche, gravel, and clay | 28 | 28 |
| Lime, hard, or chalk | 20 | 48 |
| Marl, firm | 14 | 62 |
| No recovery | 14 | 76 |
| Chalk, hard, porous | 3 | 79 |
| No recovery | 9 | 88 |
| Marl, firm, hard; with shale at base | 10 | 98 |
| Sand, blue, tight, shaly or ashy | 11 | 109 |
| Shale, blue, sandy, or ash | 6 | 115 |
| No recovery | 5 | 120 |
| Chalk, hard, fossil, asphaltic | 8 | 128 |
| Chalk, very hard, fossil | 8 | 136 |
| Chalk, very hard, fossil; with ash pebbles and greenish-blue sandy ash | 12 | 148 |
| Ash, greenish-blue and gray, friable, and breccia with calcite seams | 80 | 228 |
| Ash, sandy | 2 | 230 |
| Ash, coarse-crumbly | 9 | 239 |
| Sand, limy | 2 | 241 |
| Lime, breccia, very hard; fossiliferous | 4 | 245 |
| Lime, very hard | 2 | 247 |
| Conglomerate, lime, very hard | 2 | 249 |
| Ash, green, friable; with calcite | 4 | 253 |
| Ash, bluish-gray, firm, brittle | 27 | 280 |
| Rock, dark, hard | 33 | 313 |
| Rock, dark, hard; with calcite and quartz seams of varying texture | 60 | 373 |
| Vein material vertical rather than the usual horizontal | 5 | 378 |
| Lime-dolomite, hard | 17 | 395 |
| Igneous rock | 12 | 407 |
| Ash agglomerate, green, slate color; with calcite and ash veins | 11 | 418 |
| Ash, green crumbly with calcite veins | 9 | 427 |
| Lime, white, hard; with pyrites and vertical split filled with calcite and trace of asphalt | 3 | 430 |
| Lime, white, hard; with vertical faults and trace of asphalt | 10 | 440 |
| Lime, white, hard; fossiliferous | 10 | 450 |
| Conglomerate, white, hard; fossiliferous; gray, hard lime with fine texture; slate-colored, hard, ash with fine texture | 10 | 460 |
| Chalk, gray, hard; fossiliferous | 16 | 476 |
| Chalk, white, hard; fossiliferous with spots of glauconite | 10 | 486 |
| Chalk, light-gray, hard, sandy, calcareous | 10 | 496 |
| Chalk, light-gray, hard, and ash-blue, sandy, compact very hard sandy chalk; fossiliferous with spots of green serpentine | 22 | 518 |
| Chalk, white, hard, fossil calcareous; with grains of green serpentine | 12 | 530 |
| Chalk, white, hard, limy; with spots of green serpentine, and hard sandy, limy chalk with green serpentine specks and large fossil shells | 15 | 545 |
| Chalk, hard, sandy, limy; with serpentine and large fossil shells; white hard, fossiliferous chalk | 10 | 555 |
| Chalk, gray, soft, friable, and white hard chalk | 12 | 567 |
| Chalk, white, hard; with a few dark bands | 87 | 654 |
| No recovery | 30 | 684 |
| Chalk, white, hard; with a few dark bands | 87 | 771 |
| Chalk, white, hard | 42 | 813 |
| Chalk, light, hard | 39 | 852 |
| Chalk, dark, hard, laminated; slight gas odor | 10 | 862 |
| Shale, brown, very hard, laminated; slight gas odor | 33 | 895 |
| Shale, dark, very hard, laminated; good gas odor | 39 | 934 |
| Shale, dark, very hard, laminated; good gas odor; and white very hard massive limestone | 11 | 945 |
| Ash, blue, firm, and white very hard massive limestone | 12 | 957 |
| No recovery | 14 | 971 |
| Limestone, white, very hard, massive | 15 | 986 |
| Limestone, white, hard; oil trace | 27 | 1,013 |
| Limestone, white, hard; oil trace; and black shale | 13 | 1,026 |
| Shale, black, firm | 11 | 1,037 |
| Shale, black, firm, fossil; with pyrite; and light-gray hard dense limestone; 3 feet thick, with pyrite | 55 | 1,092 |
| Limestone, white, hard, dense, fossiliferous | 12 | 1,104 |
| Serpentine, green; gumbo limestone (Georgetown) | 15 | 1,119 |
| Limestone, white, hard, dense; blue firm ash; dark-buff, dense limestone (Edwards) | 15 | 1,134 |
| Limestone, buff, very hard, asphaltic; contains dark nodular flint | 15 | 1,149 |
| No recovery | 12 | 1,161 |
| Limestone, buff, hard; slightly less dense than Edwards | 9 | 1,170 |
| Flint, black, very hard | 1 | 1,171 |
| Limestone, tan, very hard | 1 | 1,172 |
| Limestone, buff, hard, porous; fossiliferous; with calcite; sulfur odor; water | 13 | 1,185 |

Well I-4-17
[Owner: George Rehm. Driller: Stegner]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Shale, yellow, slightly sandy | 20 | 20 | Shale, dark-gray; hard gumbo; and hard limestone | 55 | 425 |
| Shale and gravel, yellow | 10 | 30 | Limestone, gray-white, hard; and gray hard shale with pyrite | 75 | 500 |
| Shale, yellow, slightly sandy | 10 | 40 | Shale, bluish-gray, hard | 10 | 510 |
| Shale and gravel, yellow, calcareous | 40 | 80 | Limestone, earthy, white and blue shale | 20 | 530 |
| Slate and gravel, orange, calcareous | 10 | 90 | Limestone, white, hard, and blue shale with pyrite | 30 | 560 |
| Shale, brown, sandy; streaks | 20 | 110 | Limestone, earthy, white; with glauconite | 80 | 640 |
| Shale, dark-blue, calcareous | 10 | 120 | Limestone, white and hard mud; with pyrite | 310 | 950 |
| Limestone, dark-gray, and shale | 10 | 130 | Limestone, brown, hard laminated, crystalline, and dark-gray brown calcareous shale; oil-odor lignite | 70 | 1,020 |
| Serpentine, bright-green | 10 | 140 | Lignite, hard, brownish-black | 30 | 1,050 |
| Limestone, white-gray, hard | 20 | 160 | Limestone, white, hard | 90 | 1,140 |
| Shale, dark-gray | 10 | 170 | Shale, grayish-blue, sticky; with pyrite | 80 | 1,220 |
| Shale, bluish-green; with pyrite | 10 | 180 | | | |
| Shale, green, with massive hard limestone | 50 | 230 | | | |
| Shale, bluish-green, and white limestone | 30 | 260 | | | |
| Limestone, gray and white | 20 | 280 | | | |
| Shale, dark-gray, and limestone | 80 | 360 | | | |
| Limestone, white and gray; with pyrite | 10 | 370 | | | |

Well I-5-2
[Owner: Southern Pacific Lines. Driller: P. Lindholm]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay | 31 | 31 | Slate | 32 | 770 |
| Sand or clay | 100 | 131 | Chalk, hard | 20 | 790 |
| Limestone | 60 | 191 | Clay, stone | 16 | 806 |
| Sand, cement | 30 | 221 | Clay, sand | 34 | 840 |
| Sand and water | 5 | 226 | Soapstone, blue; oil show | 114 | 954 |
| Sand, tight | 20 | 246 | Sand, brown | 118 | 1,072 |
| Sandstone | 28 | 274 | Rock, white and sand | 13 | 1,085 |
| Clay, blue, slaty | 35 | 309 | Sand, packed; water | 79 | 1,164 |
| Limestone | 429 | 738 | Limestone | 7 | 1,171 |

Well I-5-8, partial log
[Owner: C. Steurnthaler. Driller: Pegg Bros.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| No record | 380 | 380 | Chalk (Austin) | 260 | 990 |
| Marl (Taylor) | 150 | 530 | Shale (Eagle Ford) | 60 | 1,050 |
| Limestone (Anacacho) | 200 | 730 | Limestone (Buda) | 70 | 1,120 |
| | | | Record not available | 342 | 1,462 |

Well I-5-11
[Owner: R. J. Taylor. Driller: A. Hunt]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay, yellow | 15 | 15 | Clay, blue | 38 | 100 |
| Gravel and yellow clay | 37 | 52 | Shale, lime streaks | 165 | 265 |
| Sand, white; water | 2 | 54 | Shale, blue | 103 | 368 |
| Clay, yellow | 8 | 62 | Shale, blue and lime | 27 | 395 |

Well I-5-26
[Owner: A. E. Saathoff. Driller: P. Lindholm]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 2.5 | 2.5 | Shale, gray | 192 | 400 |
| Gravel (Leona) | 17.5 | 20 | Limestone (Anacacho) | 5 | 405 |
| Clay, yellow | 64 | 84 | Limestone, and asphalt; oil | 35 | 440 |
| Clay, blue | 106 | 190 | Limestone and shale | 48 | 488 |
| Sand | 18 | 208 | Limestone; water | 20 | 508 |

Well I-5-30
[Owner: M. J. Finger. Driller: Joe Anderle]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Gravel and sand | 5 | 5 | Sand and clay | 15 | 350 |
| Clay, yellow | 50 | 55 | Sandstone, red | 12 | 362 |
| Clay, blue | 36 | 91 | Marl, gray | 43 | 405 |
| Lime, blue | 2 | 93 | Marl, white | 25 | 430 |
| Clay, blue | 112 | 205 | Sand and water | 6 | 436 |
| Shale, gray | 95 | 300 | Sandstone | 17 | 453 |
| Sand with asphalt | 35 | 335 | Sand; oil show | 1 | 454 |

Well I-5-34
[Owner: John N. Fohn. Driller: Finnell & Williams]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Gravel | 3 | 3 | Shale, gummy | 20 | 695 |
| Clay | 37 | 40 | Sand, hard | 9 | 704 |
| Sand | 4 | 44 | Shale, sticky | 76 | 780 |
| Shale with sand | 216 | 260 | Lime, hard | 5 | 785 |
| Shale, light-colored | 10 | 270 | Gumbo | 50 | 835 |
| Sand, gray; water | 5 | 275 | Lime, hard; good oil show | 23 | 858 |
| Shale, sandy; oil show | 190 | 465 | Gumbo, sticky | 20 | 878 |
| Shale, light with sand lenses; oil show | 55 | 520 | Shale, sandy; oil show | 12 | 890 |
| | | | Shale, hard, limy | 15 | 905 |
| Lime, gray, soft | 5 | 525 | Lime, hard, sandy | 12 | 917 |
| Shale, sandy | 50 | 575 | Lime, very hard | 13 | 930 |
| Shale, hard | 15 | 590 | Lime | 35 | 965 |
| Sand, hard; oil show | 21 | 611 | Lime, yellow; oil show | 12 | 977 |
| Shale, soft | 19 | 630 | Lime, dark-gray | 24 | 1,001 |
| Shale, sandy | 32 | 662 | Lime, light | 7 | 1,008 |
| Shale and sand with lenses; oil show | 13 | 675 | | | |

Well I-5-35
[Owner: J. A. Mott. Driller: Medina Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Flint, boulders | 2 | 2 | Gumbo | 25 | 240 |
| Clay, yellow | 28 | 30 | Lime, hard | 5 | 245 |
| Clay, gray | 5 | 35 | Gumbo | 25 | 270 |
| Shale, light | 35 | 70 | Lime | 5 | 275 |
| Sand, white | 10 | 80 | Gumbo | 10 | 285 |
| Clay, brown | 35 | 115 | Lime, dark; shells | 5 | 290 |
| Sand; water | 15 | 130 | Oil show | 5 | 295 |
| Clay, gray | 5 | 135 | Sandstone, white | 15 | 310 |
| Gumbo, blue | 15 | 150 | Shale, blue | 130 | 440 |
| Lime, hard | 15 | 165 | Lime, gray | 2 | 442 |
| Sand and water | 15 | 180 | Sand and water | 3 | 445 |
| Gumbo | 30 | 210 | Lime, gray | 3 | 448 |
| Lime | 5 | 215 | Shale, blue | 390 | 838 |

Well I-5-36
[Owner: Otto Mainz. Driller: United North & South Development Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil | 20 | 20 |
| Sand | 10 | 30 |
| Gravel rock | 10 | 40 |
| Rock | 29 | 69 |
| Boulders and hard sand | 36 | 105 |
| Rocks, hard, sandy | 44 | 149 |
| Shale, hard | 61 | 210 |
| Sand; oil show | 7 | 217 |
| Shale, sandy | 26 | 243 |
| Shale, hard | 2 | 245 |
| Shale, hard, dry | 13 | 258 |
| Shale, hard | 14 | 272 |
| Shale | 18 | 290 |
| Shale, hard | 11 | 301 |
| Sand, hard; water | 3 | 304 |
| Lime, hard, sand | 11 | 315 |
| Rock | 1 | 316 |
| Sand, hard; water | 7 | 323 |
| Lime, hard, sandy | 10 | 333 |
| Shale | 2 | 335 |
| Shale, hard and boulders | 40 | 375 |
| Shale | 108 | 483 |
| Sand | 1 | 484 |
| Shale | 5 | 489 |
| Sand, hard | 15 | 504 |
| Shale, hard | 27 | 531 |
| Boulders, hard, sand | 10 | 541 |
| Boulders, sand | 9 | 550 |
| Sandstone | 37 | 587 |
| Shale | 3 | 590 |
| Sandstone | 19 | 609 |
| Limestone, with pyrite | 6 | 615 |
| Lime, hard | 59 | 674 |
| Lime, hard and broken shale | 13 | 687 |
| Lime and broken shale | 33 | 720 |
| Lime and hard shale | 37 | 757 |
| Sandstone and lime | 8 | 765 |
| Chalk | 6 | 771 |
| Chalk, with pyrite | 55 | 826 |
| Chalk | 235 | 1,061 |
| Shale (Eagle Ford) | 38 | 1,099 |
| Limestone (Buda) | 73 | 1,172 |
| Clay (Grayson shale, formerly Del Rio clay) | 76 | 1,248 |
| Limestone (Georgetown) | 71 | 1,319 |
| Limestone | 38 | 1,357 |
| Limestone (Edwards) | 3 | 1,360 |
| Cap rock | 1 | 1,361 |
| Lime | 16 | 1,377 |
| Limestone (Edwards) | 16 | 1,393 |
| Lime, broken | 27 | 1,420 |
| Limestone, broken | 5 | 1,425 |

Well I-5-37
[Owner: R. J. Taylor. Driller: N. C. Johnson]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil | 3 | 3 |
| Clay, gray, sandy | 32 | 35 |
| Gravel | 9 | 44 |
| Clay, yellow | 3 | 47 |
| Gravel and water | 5 | 52 |
| Clay, yellow | 18 | 70 |
| Shale, gray and boulders | 255 | 325 |
| Lime, rock | 10 | 335 |
| Shale, gray, sandy | 185 | 520 |
| Sandstone, hard | 78 | 598 |
| Lime and hard sand | 22 | 620 |
| Shale, hard, sandy | 72 | 692 |
| Shale, white, sandy | 58 | 750 |
| Clay, blue | 3 | 753 |
| Chalk | 252 | 1,005 |
| Shale (Eagle Ford) | 41 | 1,046 |
| Limestone (Buda) | 76 | 1,122 |
| Clay (Grayson shale, formerly Del Rio clay) | 70 | 1,192 |
| Limestone (Georgetown) | 56 | 1,248 |
| Limestone | 1 | 1,249 |

Well I-5-41
[Owner: A. L. Haegelin. Driller: Sun Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Alluvium and shale | 80 | 80 |
| Sand, green, shaly | 24 | 104 |
| Lime, sandy, glauconitic | 34 | 138 |
| Sand, calcareous | 12 | 150 |
| Sand and shale, green; fossils | 30 | 180 |
| Clay, green; fossils | 14 | 194 |
| Lime; fossils | 4 | 198 |
| Sand, dark-green | 14 | 212 |
| Lime | 1 | 213 |
| Sand, green and clay | 16 | 229 |
| Lime, green, sandy; fossils | 7 | 236 |
| Sand, greenish-gray | 22 | 258 |
| Lime, green; fossils | 2 | 260 |
| Clay, sand, grayish-green | 20 | 280 |
| Marl, green; fossils | 4 | 284 |
| Sand, grayish-green | 31 | 315 |
| Lime, gray, sandy; fossils | 3 | 318 |
| Shale, green, fossilferous | 33 | 351 |
| Sandy, clay and sandstone; oil spots | 28 | 379 |
| Sand, green | 12 | 391 |
| Lime, green, fossilferous | 2 | 393 |
| Clay, green, sandy | 36 | 429 |
| Clay, green, sandy; oil streaks | 106 | 535 |
| Shale, green, sandy | 69 | 604 |
| Shale, green and sand streaks | 19 | 623 |
| Shale, green and thin sand streaks | 87 | 710 |
| Shale, green and sand | 50 | 760 |
| Clay and green shale | 13 | 773 |

Well I-5-43
[Owner: A. L. Haegelin. Driller: Ben Banner]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 10 | 10 | Sand, shale streaks; good oil show | 7 | 885 |
| Gravel | 10 | 20 | Shale, sandy; oil show | 12 | 897 |
| Clay, yellow | 10 | 30 | Shale, sticky | 4 | 901 |
| Sand, gravel | 14 | 44 | Shale, blue, soft | 28 | 929 |
| Rock, hard | 12 | 56 | Lime, hard, sandy | 34 | 963 |
| Shale, green | 63 | 119 | Lime, green, hard | 3 | 966 |
| Rock, hard | 27 | 146 | Marl (Taylor), hard | 79 | 1,045 |
| Shale, green | 5 | 151 | Sand, hard | 7 | 1,052 |
| Rock, hard | 3 | 154 | Gumbo, blue | 13 | 1,065 |
| Shale, blue | 39 | 193 | Shale, hard, sandy | 20 | 1,085 |
| Lime, green, hard | 1 | 194 | Shale, sandy and lime | 30 | 1,115 |
| Shale, blue | 48 | 242 | Lime, hard and sandstone | 15 | 1,130 |
| Sand, green, hard | 4 | 246 | Chalk | 85 | 1,215 |
| Shale, blue, medium | 19 | 265 | Shale and lime | 17 | 1,232 |
| Shale, blue, hard, broken | 48 | 313 | Lime, sandy | 12 | 1,244 |
| Shale, hard, sandy; oil show | 57 | 370 | Lime, hard and soft | 41 | 1,285 |
| Shale, blue, sticky | 8 | 378 | Lime, arenaceous; oil show | 29 | 1,314 |
| Shale, blue, hard, broken | 87 | 465 | Lime, broken and shale | 76 | 1,390 |
| Shale, blue, sandy | 110 | 575 | Shale (Eagle Ford) | 60 | 1,450 |
| Sandy, green, hard | 6 | 581 | Limestone (Buda) | 45 | 1,495 |
| Shale, hard, sandy | 49 | 630 | Clay (Grayson shale, formerly Del Rio clay) | 75 | 1,570 |
| Shale, blue, medium-hard | 50 | 680 | Limestone (Georgetown) | 80 | 1,650 |
| Shale, blue, hard | 53 | 733 | Limestone (Edwards) | 70 | 1,720 |
| Shale, sticky | 145 | 878 | | | |

Well I-5-44
[Owner: A. L. Haegelin. Driller: Medina Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay | 10 | 10 | Lime, sandy | 12 | 1,230 |
| Rock | 28 | 38 | Clay, blue, hard | 40 | 1,270 |
| Gravel and water | 4 | 42 | Sand and gravel | 3 | 1,273 |
| Boulders and gumbo | 20 | 62 | Limestone (Anacacho) | 19 | 1,292 |
| Gumbo and sand | 174 | 236 | Shale, blue | 5 | 1,297 |
| Gumbo and shale | 173 | 409 | Unknown formation | 297 | 1,594 |
| Gumbo, sandy | 251 | 660 | Shale (Eagle Ford), gray | 16 | 1,610 |
| Shale, sandy | 30 | 690 | Shale | 35 | 1,645 |
| Gumbo | 15 | 705 | Limestone (Buda) | 78 | 1,723 |
| Shale, blue | 255 | 960 | Clay (Grayson shale, formerly Del Rio clay) | 77 | 1,800 |
| Gumbo | 13 | 973 | Limestone (Georgetown); sulfur water | 37 | 1,837 |
| Limestone (Anacacho) | 66 | 1,039 | Limestone and sand; water | 23 | 1,861 |
| Salt water and salt | 53 | 1,092 | Limestone (Edwards); fresh water; oil show | 45 | 1,906 |
| Water and gas show | 5 | 1,097 | Limestone | 44 | 1,950 |
| Shale and blue azurite | 6 | 1,103 | | | |
| Limestone (Anacacho) | 59 | 1,162 | | | |
| Gumbo | 38 | 1,200 | | | |
| Limestone (Anacacho) | 18 | 1,218 | | | |

Well I-5-51
[Owner: T. J. Bendele. Driller: W. H. Wycott]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 5 | 5 | Shale, gray; boulders | 21 | 195 |
| Lime, hard | 19 | 24 | Shale, gray, sticky | 10 | 205 |
| Clay, yellow | 31 | 55 | Shale, gray, sandy | 45 | 250 |
| Shale, blue, gummy | 12 | 67 | Limestone | 5 | 255 |
| Shale, hard, sandy, flint | 23 | 90 | Sand and water | 5 | 260 |
| Shale, blue and limestone | 20 | 110 | Shale, gray, gummy | 50 | 310 |
| Lime, white | 10 | 120 | Lime, gray, sandy | 65 | 375 |
| Shale, blue, sandy | 54 | 174 | | | |

Well I-5-56
[Owner: Carle and Nester. Driller: W. Glasscock]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 119 | 119 | Shale | 54 | 1,266 |
| Boulders, hard, sandy | 139 | 258 | Limestone and shale | 159 | 1,425 |
| Sand, hard | 60 | 318 | Limestone, sandy | 87 | 1,512 |
| Sand and shale | 124 | 442 | Limestone | 188 | 1,700 |
| Shale and sand | 153 | 595 | Shale and limestone | 7 | 1,707 |
| Shale | 460 | 1,055 | Shale | 24 | 1,731 |
| Shale, hard, sandy | 20 | 1,075 | Shale and limestone | 206 | 1,937 |
| Sand | 7 | 1,082 | Limestone | 57 | 1,994 |
| Shale, calcareous | 20 | 1,102 | Shale | 6 | 2,000 |
| Shale, hard, sticky | 19 | 1,121 | Limestone | 2 | 2,002 |
| Lime, sandy | 22 | 1,143 | Shale and limestone | 293 | 2,295 |
| Lime, hard, sandy | 46 | 1,189 | Limestone | 21 | 2,316 |
| Shale and limestone | 9 | 1,198 | Limestone, broken | 72 | 2,388 |
| Limestone | 14 | 1,212 | Limestone and shale | 24 | 2,412 |

Well I-5-59
[Owner: Paul Rienhardt. Driller: W. W. Woodworth]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 3 | 3 | Limestone | 4 | 586 |
| Rock | 25 | 28 | Shale and boulders; sticky | 161 | 747 |
| Sandstone | 2 | 30 | Limestone | 1 | 748 |
| Sand, white; water(?) | 6 | 36 | Shale, sticky | 112 | 860 |
| Sandstone | 4 | 40 | Sand, white | 68 | 928 |
| Rock, red | 8 | 48 | Sandstone | 2 | 930 |
| Rock, sand | 3 | 51 | Shale | 6 | 936 |
| Shale | 55 | 106 | Sand | 18 | 954 |
| Sandstone | 12 | 118 | Shale | 86 | 1,040 |
| Sand; water | 3 | 121 | Sand | 15 | 1,055 |
| Sandstone | 4 | 125 | Shale, sandy | 15 | 1,070 |
| Sand, shale | 75 | 200 | Limestone | 65 | 1,135 |
| Sandstone | 5 | 205 | Sand and shale | 55 | 1,190 |
| Rock and shale | 75 | 280 | Limestone, sandy, and shale | 125 | 1,315 |
| Rock | 3 | 283 | Chalk (Austin) | 270 | 1,585 |
| Shale, sticky | 92 | 375 | Shale (Eagle Ford) | 109 | 1,694 |
| Lime, sandy | 4 | 379 | Limestone (Buda) | 80 | 1,774 |
| Shale | 26 | 405 | Clay (Grayson shale, formerly Del Rio clay) | 66 | 1,840 |
| Rock | 3 | 408 | Limestone (Georgetown) | 67 | 1,907 |
| Shale and boulders | 174 | 582 | Limestone (Edwards); water | 57 | 1,964 |

Well I-5-60
[Owner: Oscar W. Tunder. Driller: Mid-Kansas Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 3 | 3 | Sand; oil trace | 5 | 367 |
| Clay | 11 | 14 | Shale | 53 | 420 |
| Gravel | 4 | 18 | Rock, hard | 38 | 458 |
| Sand | 22 | 40 | Shale, sticky | 112 | 570 |
| Sand, yellow | 25 | 65 | Rock, hard | 2 | 572 |
| Sand, black; water | 20 | 85 | Shale, boulders | 419 | 991 |
| Shale, sandy | 16 | 101 | Limestone, hard | 164 | 1,155 |
| Rock | 5 | 106 | Shale | 93 | 1,248 |
| Shale, blue | 34 | 140 | Chalk (Austin) | 364 | 1,612 |
| Limestone, black | 37 | 177 | Shale (Eagle Ford) | 60 | 1,672 |
| Limestone | 40 | 217 | Limestone (Buda) | 85 | 1,757 |
| Shale, sandy | 45 | 262 | Clay (Grayson shale, formerly Del Rio clay) | 67 | 1,824 |
| Rock, hard | 1 | 263 | Limestone (Georgetown) | 70 | 1,894 |
| Shale | 89 | 352 | Limestone | 46 | 1,940 |
| Rock, hard | 6 | 358 | Limestone; water | 50 | 1,990 |
| Shale | 4 | 362 | | | |

Well I-5-71
[Owner: Lucian Ward. Driller: Grayburg Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Sand rock | 22 | 22 | Sand rock | 2 | 1,224 |
| Clay, surface | 8 | 30 | Lime | 48 | 1,272 |
| Sand, packed | 23 | 53 | Clay | 2 | 1,274 |
| Sand, packed; boulders | 36 | 89 | Marl (Taylor); lime | 101 | 1,375 |
| Sand, packed | 95 | 184 | Shale, sandy | 6 | 1,381 |
| Shale | 60 | 244 | Lime | 12 | 1,393 |
| Shale and boulders | 148 | 392 | Shale | 32 | 1,425 |
| Rock | 3 | 395 | Shale and lime | 31 | 1,456 |
| Shale and boulders | 44 | 439 | Lime | 78 | 1,534 |
| Shale | 36 | 475 | Chalk | 2 | 1,536 |
| Rock | 4 | 479 | Lime, soft | 49 | 1,585 |
| Shale | 6 | 485 | Chalk | 155 | 1,740 |
| Shale and boulders | 105 | 590 | Lime, broken | 36 | 1,776 |
| Marl, green | 5 | 595 | Limestone | 54 | 1,830 |
| Sand, broken and light shale; oil show | 65 | 660 | Lime and shale | 33 | 1,863 |
| Shale, hard; boulders | 60 | 720 | Shale | 15 | 1,878 |
| Shale | 30 | 750 | Shale (Eagle Ford) | 15 | 1,893 |
| Clay | 20 | 770 | Lime | 46 | 1,939 |
| Shale | 23 | 793 | Clay (Grayson shale, formerly Del Rio clay) | 100 | 2,039 |
| Clay | 25 | 818 | Clay and lime | 8 | 2,047 |
| Shale and sand, light; oil show | 5 | 823 | Limestone (Georgetown) | 63 | 2,110 |
| Shale and boulders | 173 | 996 | Lime, brown | 20 | 2,130 |
| Clay | 139 | 1,135 | Lime, broken | 11 | 2,141 |
| Shale | 15 | 1,150 | Lime, brown | 16 | 2,157 |
| Clay | 59 | 1,209 | Lime, cap rock | 10 | 2,167 |
| Sand, broken; shale | 13 | 1,222 | Lime | 29 | 2,196 |

Well I-6-4
[Owner: F. W. Bohmfalk. Driller: Pegg Bros.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface dirt | 3 | 3 | Serpentine | 12 | 840 |
| Caliche and sandy clay | 26 | 29 | Marl (Taylor) | 81 | 921 |
| Rock | 3 | 32 | Chalk (Austin) | 220 | 1,141 |
| Clay | 6 | 38 | Shale (Eagle Ford) | 42 | 1,183 |
| Rock | 3 | 41 | Lime (Buda) | 70 | 1,253 |
| Shale with soft lime streaks | 600 | 641 | Clay (Grayson shale, formerly Del Rio clay) | 69 | 1,322 |
| Lime, hard | 61 | 702 | Lime (Georgetown) | 21 | 1,343 |
| Shale | 72 | 774 | Lime (Edwards) | 187 | 1,530 |
| Shale with lime streaks, and serpentine | 54 | 828 | | | |

Well I-6-9
[Owner: Emil G. Riff. Driller: M. L. Walker]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay | 65 | 65 | Lime, hard and shale | 59 | 604 |
| Shale, blue, hard | 115 | 180 | Lime, hard, sandy | 71 | 675 |
| Shale, sandy | 90 | 270 | Shale, hard | 75 | 750 |
| Rock, hard | 2 | 272 | Lime, hard | 4 | 754 |
| Shale, blue | 23 | 295 | Shale, green, sandy | 11 | 765 |
| Shale, blue, sticky | 10 | 305 | Shale with pyrite | 10 | 775 |
| Shale, blue | 43 | 348 | Shale, green, sandy | 4 | 779 |
| Lime and shale, hard | 8 | 356 | Lime; shale, sandy | 5 | 784 |
| Shale, blue, sticky | 20 | 376 | Rock, hard | 1 | 785 |
| Shale, blue | 7 | 383 | Shale, sandy | 50 | 835 |
| Shale, blue, sticky | 11 | 394 | Shale and lime | 48 | 883 |
| Shale, hard; fossils | 42 | 436 | Lime with pyrite | 32 | 915 |
| Shale, sandy | 24 | 460 | Lime | 135 | 1,050 |
| Shale | 12 | 472 | Lime with pyrite | 26 | 1,076 |
| Shale, blue, sandy | 73 | 545 | | | |

Well I-6-10
[Owner: J. M. Saathoff. Driller: R. M. Yantis]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 5 | 5 | Limestone | 52 | 636 |
| Sand and clay | 28 | 33 | Shale and lime | 14 | 650 |
| Gravel | 6 | 39 | Shale, sticky | 8 | 658 |
| Shale, sticky | 196 | 235 | Shale, sandy | 12 | 670 |
| Shale, sandy; oil odor | 5 | 240 | Shale | 20 | 690 |
| Shale | 60 | 300 | Limestone | 46 | 736 |
| Shale, sticky | 85 | 385 | Lime and serpentine, sandy | 14 | 750 |
| Shale, hard | 5 | 390 | Lime, hard and soft | 16 | 766 |
| Shale, sticky | 110 | 500 | Clay (Upson) | 2 | 768 |
| Shale | 84 | 584 | Chalk (Austin) | 34 | 802 |

Well I-6-12
[Owner: C. Neuman. Driller: Maxwell & Turner]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Chalk (Austin) | 1,103 | 1,103 | Clay (Grayson shale, formerly Del Rio clay) | 67 | 1,281 |
| Shale (Eagle Ford) | 24 | 1,127 | Limestone (Georgetown) | 49 | 1,330 |
| Limestone (Buda) | 87 | 1,214 | Limestone (Edwards) | 138 | 1,468 |

Well I-6-14
[Owner: L. A. Haby. Driller: H. A. Pagenkoff]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Caliche and gravel | 8 | 8 | Shale and sandy shale | 200 | 800 |
| Rock | 20 | 28 | Lime, hard | 5 | 805 |
| Clay and sand | 52 | 80 | Serpentine; dead oil in spot | 169 | 974 |
| Shale | 70 | 150 | Chalk and serpentine | 227 | 1,201 |
| Shale; oil show | 10 | 160 | Lime, very hard | 10 | 1,211 |
| Shale, limy | 160 | 320 | Chalk and serpentine mixed; soft mushy chalk | 58 | 1,269 |
| Sand; oil and shale | 3 | 323 | Shale, brown | 1 | 1,270 |
| Shale | 247 | 570 | | | |
| Lime, sandy, good | 30 | 600 | | | |

Well I-6-27
[Owner: D. W. Wiemers. Drillers: H. M. Roark, and others]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 15 | 15 | Shale, gray, sandy | 20 | 430 |
| Gravel; water | 26 | 41 | Shale, blue, sticky | 35 | 465 |
| Clay, yellow | 42 | 83 | Shale, gray, hard, sandy | 11 | 476 |
| Shale, blue | 189 | 272 | Serpentine, segment | 22 | 498 |
| Shale, brown, sandy; gas odor | 20 | 292 | Serpentine, dark-green alternating hard and soft streaks; oil show | 151 | 649 |
| Shale, brown—and gray sandy oil lenses—very thin sections; light-gray sand | 58 | 350 | Serpentine, dark-green, hard | 11 | 660 |
| Sand and water | 14 | 364 | Serpentine, oil in thin section | 16 | 676 |
| Shale, hard, sandy | 9 | 373 | Serpentine, green, hard | 14 | 690 |
| Shale, gray | 37 | 410 | | | |

Well I-6-30
[Owner: J. E. Ulbrich. Driller: Whitfield & Draper]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 2 | 2 | Shale, light, sandy | 6 | 375 |
| Sand, yellow and clay | 57 | 59 | Shale, green, hard, sandy; fossils | 12 | 387 |
| Gravel and sand | 11 | 70 | Shale, dark-green, hard, sandy, fossiliferous | 23 | 410 |
| Sand, packed | 6 | 76 | Shale, hard, sandy | 52 | 462 |
| Shale, blue | 156 | 232 | Limestone | 1 | 463 |
| Shale, blue, hard | 5 | 237 | Limestone and shale, hard | 15 | 478 |
| Shale, sandy; oil show | 6 | 243 | Limestone and shale (Taylor) | 20 | 498 |
| Shale, dark | 13 | 256 | Limestone, soft | 1 | 499 |
| Shale, dark and sand lenses | 10 | 266 | Limestone, hard | 8 | 507 |
| Shale, dark | 2 | 268 | Limestone, broken | 2 | 509 |
| Shale and sand lenses with fossils; oil show | 6 | 274 | Rock | 2 | 511 |
| Shale | 6 | 280 | Lime, hard | 33 | 544 |
| Shale, sand, lime; oil show | 7 | 287 | Shale, hard, broken | 11 | 555 |
| Shale | 7 | 294 | Shale, green | 50 | 605 |
| Shale; dark, sticky, sand lenses; oil show | 7 | 301 | Rock | 1 | 606 |
| Shale, dark gumbo | 22 | 323 | Shale, brown | 7 | 613 |
| Shale, dark, sandy | 13 | 336 | Shale, brown, hard | 3 | 616 |
| Shale, dark-green, sandy | 19 | 355 | Serpentine | 1 | 617 |
| Shale, light-green, sandy | 9 | 364 | Serpentine and calcite | 18 | 635 |
| Shale, dark-green, sandy | 5 | 369 | Serpentine, hard and calcite | 578 | 1,213 |

Well I-6-33
[Owner: W. B. Odem. Driller: R. P. Whitfield]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 29 | 29 | Shale, hard | 1 | 561 |
| Gravel | 60 | 89 | Shale, sandy; gas show | 4 | 565 |
| Clay, yellow | 11 | 100 | Shale, blue, sandy | 27 | 592 |
| Shale, blue | 32 | 132 | Rock, brown, hard, sandy | 6 | 598 |
| Shale, blue; boulders | 208 | 340 | Shale, green, hard | 6 | 604 |
| Shale, sandy and black lime; oil show | 10 | 350 | Shale, green and boulders | 26 | 630 |
| Shale and sand | 5 | 355 | Sandstone, green, hard | 15 | 645 |
| Shale, hard, dry | 1 | 356 | Rock, hard, broken | 40 | 685 |
| Shale, sandy | 6 | 362 | Shale, dry, sandy | 22 | 707 |
| Shale, hard and rock | 3 | 365 | Shale, sticky | 43 | 750 |
| Sand | 2 | 367 | Shale, brown, hard | 50 | 800 |
| Shale | 1 | 368 | Chalk (Austin); fossils; oil show | 317 | 1,117 |
| Shale, gumbo | 8 | 376 | Shale (Eagle Ford) and hard shale | 70 | 1,187 |
| Shale, gumbo and sandy | 5 | 381 | Limestone (Buda) | 71 | 1,258 |
| Rock | 2 | 383 | Clay (Grayson shale, formerly Del Rio clay) | 76 | 1,334 |
| Shale, sandy | 9 | 392 | Limestone (Georgetown) | 36 | 1,370 |
| Shale, sandy | 8 | 400 | Limestone (Edwards), hard, broken | 13 | 1,383 |
| Shale, soft sticky | 75 | 475 | Limestone | 2 | 1,385 |
| Shale, blue, hard | 15 | 490 | Limestone, hard; sulfur water | 49 | 1,434 |
| Shale, hard, sticky | 10 | 500 | | | |
| Shale, blue, sandy | 60 | 560 | | | |

Well I-6-35
[Owner: W. B. Odem. Driller: Gates & Hill]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface, gravel | 5 | 5 | Clay and shale | 13 | 248 |
| Lime | 5 | 10 | Shale, black and lignite | 10 | 258 |
| Sand | 8 | 18 | Gumbo, white | 12 | 270 |
| Shale, gray | 5 | 23 | Shale, green | 18 | 288 |
| Clay, yellow | 9 | 32 | Rock, sandy | 2 | 290 |
| Clay, white | 17 | 49 | Shale, sandy | 4 | 294 |
| Clay, brown, sandy | 26 | 75 | Lime, glauconite | 8 | 302 |
| Sand and water | 15 | 90 | Shale, sandy | 47 | 349 |
| Shale, black | 12 | 102 | Marl, sandy | 20 | 369 |
| Lime, black | 3 | 105 | Lime, white | 16 | 385 |
| Gumbo, black | 9 | 114 | Shale, gray, soft, sandy | 8 | 393 |
| Shale, brown | 26 | 140 | Lime, gray | 3 | 396 |
| No description | 7 | 147 | Sand and water | 14 | 410 |
| Shale, gray | 9 | 156 | Shale, blue | 11 | 421 |
| Shale, black, sandy | 24 | 180 | Shale, blue, sandy | 7 | 428 |
| Lime, dark-gray | 3 | 183 | Shale, blue | 2 | 430 |
| Shale, black, sandy | 7 | 190 | Lime, dark-gray | 2 | 432 |
| Clay, gray, sandy | 3 | 193 | Shale, sandy | 8 | 440 |
| Shale, green, sticky | 12 | 205 | Shale, black | 15 | 455 |
| Clay, yellow, sandy | 30 | 235 | Lime, gray | 2 | 457 |
| | | | Gumbo | 8 | 465 |

Well I-6-36
[Owner: A. L. Haegelin. Driller: Medina Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface soil | 10 | 10 | Clay, hard, blue, with sandy streaks | 40 | 1,270 |
| Clay | 28 | 38 | Sand and gravel | 3 | 1,273 |
| Rock | 4 | 42 | Limestone (Anacacho) | 19 | 1,292 |
| Gravel and water | 10 | 52 | Shale, blue | 5 | 1,297 |
| Gumbo, boulders | 184 | 236 | Unknown formation | 297 | 1,594 |
| Gumbo with sand | 173 | 409 | Shale, gray | 16 | 1,610 |
| Gumbo with shale | 251 | 660 | Shale (Eagle Ford) | 35 | 1,645 |
| Gumbo, sandy | 30 | 690 | Lime (Buda) | 78 | 1,723 |
| Shale, sandy | 15 | 705 | Clay (Grayson shale, formerly Del Rio clay) | 77 | 1,800 |
| Gumbo | 255 | 960 | Limestone (Georgetown); sulfur water | 37 | 1,837 |
| Shale, blue | 13 | 973 | Lime, sandy (Georgetown), with possible water | 24 | 1,861 |
| Gumbo | 66 | 1,039 | Limestone (Edwards); flows fresh water | 12 | 1,873 |
| Limestone (Anacacho) | 53 | 1,092 | Limestone (Edwards); water; oil and gas show | 33 | 1,906 |
| Salt water; gas show | 5 | 1,097 | Limestone (Edwards) | 44 | 1,950 |
| Shale and blue azurite | 6 | 1,103 | | | |
| Limestone (Anacacho) | 59 | 1,162 | | | |
| Gumbo | 38 | 1,200 | | | |
| Limestone (Anacacho) | 18 | 1,218 | | | |
| Lime, sandy | 12 | 1,230 | | | |

Well I-6-44
[Owner: J. M. Fusselman. Driller: Kirby Petroleum Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Clay, sticky | 35 | 35 |
| Clay and gravel | 25 | 60 |
| Shale and rock, hard; streaks | 40 | 100 |
| Flint boulders, dark | 10 | 110 |
| Sandstone, hard flint, pyrite | 8 | 118 |
| Shale | 2 | 120 |
| Flint, hard | 1 | 121 |
| Shale, gravel, sandy; streaks | 29 | 160 |
| Sand | 2 | 162 |
| Sandstone, hard | 39 | 201 |
| Sand, hard | 3 | 204 |
| Sand, green, boulders | 26 | 230 |
| Sandy rock, green; streaks | 50 | 280 |
| Shale, sandy; streaks rock; oil show | 55 | 335 |
| Sand, hard; streaks | 32 | 367 |
| Sandstone; hard rock | 5 | 372 |
| Gumbo, shale | 50 | 422 |
| Sandstone | 16 | 438 |
| Shale and gumbo | 618 | 1,056 |
| Shale, sandy; fossils; gumbo | 44 | 1,100 |
| Shale, hard and gumbo | 5 | 1,105 |
| Shale (Anacacho), hard; streaks | 45 | 1,150 |
| Limestone (Anacacho), hard | 30 | 1,180 |
| Lime and limestone | 120 | 1,300 |
| Shale, hard and gumbo | 20 | 1,320 |
| Chalk | 10 | 1,330 |
| Lime conglomerate with multicolored rocks in 8 feet of core | 15 | 1,345 |
| Chalk, gumbo; blue shale | 20 | 1,365 |
| Chalk, dark | 35 | 1,400 |
| Chalk, rock | 120 | 1,520 |
| Chalk and shale; streaks | 75 | 1,595 |
| Chalk, hard | 65 | 1,660 |
| Chalk | 5 | 1,665 |
| Shale (Eagle Ford); streaks of limestone | 9 | 1,674 |
| Shale (Eagle Ford) | 16 | 1,690 |
| Limestone (Buda) | 70 | 1,760 |
| Clay (Grayson shale, formerly Del Rio clay) | 50 | 1,810 |
| Limestone (Georgetown) | 20 | 1,830 |
| Limestone, hard | 24 | 1,854 |
| Lime, with gumbo streaks | 8 | 1,862 |
| Limestone (Dobey) | 8 | 1,870 |
| Lime, hard, broken; streaks | 14 | 1,884 |
| Chert, very hard | 1 | 1,885 |
| Lime, hard and soft; streaks | 15 | 1,900 |
| Chert, hard | 1 | 1,901 |
| Lime, broken, chert; streaks | 15 | 1,916 |
| Lime, soft and hard; broken streaks | 24 | 1,940 |
| Lime, hard, broken | 10 | 1,950 |

Well I-6-48
[Owner: J. M. Fusselman. Driller: V. F. Neuhaus]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Clay | 20 | 20 |
| Clay and gravel | 20 | 40 |
| Clay, sandy | 15 | 55 |
| Rock, broken | 25 | 100 |
| Shale, rock | 35 | 135 |
| Shale, sandy | 22 | 157 |
| Rock | 1 | 158 |
| Shale | 4 | 162 |
| Shale, hard, sandy | 8 | 170 |
| Gumbo | 10 | 180 |
| Shale | 75 | 255 |
| Sandstone, hard | 5 | 260 |
| Shale, sandy; oil show | 10 | 270 |
| Sandstone, hard | 11 | 281 |
| Gumbo and shale | 69 | 350 |
| Shale | 10 | 360 |
| Rock | 2 | 362 |
| Sand and shale streaks; oil show | 18 | 380 |
| Gumbo and shale | 132 | 512 |
| Rock | 1 | 513 |
| Gumbo and shale | 100 | 613 |
| Rock | 2 | 615 |
| Shale; gumbo and sand streaks; oil | 88 | 703 |
| Shale, sandy; oil show | 50 | 753 |
| Rock, hard, sticky | 3 | 756 |
| Shale, sandy; oil show | 2 | 758 |
| Gumbo and shale | 27 | 785 |
| Gumbo, hard, tough | 20 | 805 |
| Sand; oil show | 4 | 809 |
| Shale, sandy; oil show | 41 | 850 |
| Gumbo, hard, tough | 15 | 865 |
| Shale, sandy | 25 | 890 |
| Gumbo, hard, tough | 10 | 900 |
| Shale, sandy, tough, fossiliferous | 65 | 965 |
| Shale, hard streaks | 37 | 1,002 |
| Limestone (Anacacho) | 18 | 1,020 |
| Lime, shaly gumbo | 32 | 1,052 |
| Limestone (Anacacho) | 28 | 1,080 |
| Lime, soft, sandy; gas show | 8 | 1,088 |
| Lime, hard to soft; streaks | 12 | 1,100 |
| Lime, hard to soft; streaks | 15 | 1,115 |
| Lime, hard, shaly; gumbo | 27 | 1,142 |
| Shale and gumbo | 48 | 1,190 |
| Shale, hard, chalky | 20 | 1,210 |
| Conglomerate, fine | 10 | 1,220 |
| Chalk, flinty | 27 | 1,247 |
| Chalk, rock | 143 | 1,390 |
| Chalk, shaly | 20 | 1,410 |
| Chalk, rock | 100 | 1,510 |
| Shale (Eagle Ford); hard lime streaks | 50 | 1,560 |
| Limestone (Buda) | 70 | 1,630 |
| Clay (Grayson shale, formerly Del Rio clay) | 57 | 1,687 |
| Limestone (Georgetown); oil show. | 67 | 1,754 |
| Lime (Dobey), broken | 2 | 1,756 |
| Limestone (Edwards), soft; streaks; water | 58 | 1,814 |

Well I-6-51
[Owner: A. A. Murrell. Driller: L. V. Doss]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Loam, sandy and brown clay | 20 | 20 |
| Marl, yellow | 10 | 30 |
| Caliche and gravel; water | 24 | 54 |
| Shale, blue | 11 | 65 |
| Shale, blue, sandy | 10 | 75 |
| Sand, dry | 5 | 80 |
| Shale, blue | 14 | 94 |
| Sand, hard and dry | 6 | 100 |
| Shale, blue | 1 | 101 |

Well I-6-53
[Owner: William Mann. Driller: Elstone Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Caliche | 30 | 30 |
| Gravel and water | 17 | 47 |
| Shale | 3 | 50 |
| Rock | 6 | 56 |
| Sand and water | 14 | 70 |
| Shale, blue | 255 | 325 |
| Shale, gray | 140 | 465 |
| Sand, gray | 105 | 570 |
| Shale, blue, hard | 195 | 765 |
| Shale, gray, sandy | 111 | 876 |
| Clay, hard | 27 | 903 |
| Rock, gray lime | 128 | 1,031 |
| Shale, gray | 10 | 1,041 |
| Marl, green | 9 | 1,050 |
| Shale, gray | 74 | 1,124 |
| Lime | 271 | 1,395 |
| Shale (Eagle Ford) | 45 | 1,440 |
| Limestone (Buda) | 85 | 1,525 |
| Clay (Grayson shale, formerly Del Rio clay) | 60 | 1,585 |
| Limestone (Georgetown) | 90 | 1,675 |
| Limestone (Edwards) | 7 | 1,682 |

Well I-6-59
[Owner: J. O. Redus. Driller: Whitherspoon Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Sand and gravel | 66 | 66 |
| Rock | 3 | 69 |
| Sand and boulders | 35 | 104 |
| Sand, packed | 2 | 106 |
| Shale and boulders | 22 | 128 |
| Rock | 3 | 131 |
| Sand, hard and boulders | 24 | 155 |
| Rock | 17 | 172 |
| Sand and water | 35 | 207 |
| Shale | 3 | 210 |
| Rock | 4 | 214 |
| Sand and boulders | 19 | 233 |
| Rock | 5 | 238 |
| Gumbo | 20 | 258 |
| Rock | 9 | 267 |
| Shale and boulders | 45 | 312 |
| Rock | 1 | 313 |
| Sand, soft | 42 | 355 |
| Gumbo | 40 | 395 |
| Rock | 1 | 396 |
| Shale | 8 | 404 |
| Gumbo | 22 | 426 |
| Rock | 7 | 433 |
| Shale | 21 | 454 |
| Rock | 1 | 455 |
| Shale and boulders | 42 | 497 |
| Rock | 1 | 498 |
| Shale and boulders | 59 | 557 |
| Sand rock | 5 | 562 |
| Shale and boulders | 23 | 585 |
| Rock | 1 | 586 |
| Shale and boulders | 20 | 606 |
| Gumbo | 25 | 631 |
| Shale and boulders | 129 | 760 |
| Gumbo | 20 | 780 |
| Shale and boulders | 15 | 795 |
| Gumbo | 18 | 813 |
| Rock | 1 | 814 |
| Shale and boulders | 11 | 825 |
| Gumbo | 85 | 910 |
| Shale | 54 | 964 |
| Rock | 1 | 965 |
| Gumbo | 19 | 984 |
| Shale and boulders | 60 | 1,044 |
| Gumbo | 15 | 1,059 |
| Shale, sandy | 25 | 1,084 |
| Rock | 1 | 1,085 |
| Sand | 10 | 1,095 |
| Shale, sandy | 40 | 1,135 |
| Rock | 3 | 1,138 |
| Shale and rock | 32 | 1,170 |
| Rock | 2 | 1,172 |
| Shale, sandy | 28 | 1,200 |
| Gumbo | 90 | 1,290 |
| Gumbo and shale | 12 | 1,302 |
| Gumbo | 60 | 1,362 |
| Shale; gumbo with sand streaks | 8 | 1,370 |
| Gumbo | 56 | 1,426 |
| Lime (Anacacho) with shale and sand | 12 | 1,438 |
| Gumbo, chalk | 22 | 1,460 |
| Chalk rock | 5 | 1,465 |
| Chalk rock, hard | 17 | 1,482 |
| Chalk rock | 4 | 1,486 |
| Chalk rock, hard | 28 | 1,514 |
| Lime rock, hard | 7 | 1,521 |
| Limestone | 8 | 1,529 |
| Chalk rock, hard | 3 | 1,532 |
| Limestone, hard | 8 | 1,540 |
| Chalk rock, hard | 10 | 1,550 |
| Limestone, hard | 15 | 1,565 |
| Chalk rock | 2 | 1,567 |
| Chalk rock, hard | 14 | 1,581 |
| Shale, hard | 11 | 1,592 |
| Gumbo and shale | 3 | 1,595 |
| Shale and chalky gumbo | 95 | 1,690 |
| Shale rock | 270 | 1,960 |
| Gumbo and shale | 20 | 1,980 |
| Limestone, hard | 8 | 1,988 |
| Lime, broken | 2 | 1,990 |
| Limestone, hard | 39 | 2,029 |
| Lime, broken | 40 | 2,069 |
| Lime | 46 | 2,115 |
| Clay (Grayson shale, formerly Del Rio clay) | 65 | 2,180 |
| Limestone (Georgetown) | 55 | 2,235 |
| Lime | 14 | 2,249 |
| Lime, soft | 1 | 2,250 |
| Lime | 8 | 2,258 |
| Limestone, with flint | 4 | 2,262 |
| Sand, soft, with limestone streaks; gas show | 15 | 2,277 |
| Sandstone and lime, hard | 5 | 2,282 |
| Lime, hard, porous and sand; oil show | 2 | 2,284 |
| Shell, hard, porous and sand | 2 | 2,286 |
| Lime, hard | 2 | 2,288 |
| Sand, broken with hard lime; streaks | 21 | 2,309 |
| Limestone (Edwards), hard and dry | 34 | 2,343 |

Well I-6-66
[Owner: F. B. Forrest. Driller: Letro Oil Corp.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 5 | 5 | Shale, sandy | 30 | 470 |
| Shale, yellow | 14 | 19 | Rock | 1 | 471 |
| Shale, blue | 46 | 65 | Sand and water | 1 | 472 |
| Sand and water | 3 | 68 | Shale, sandy | 26 | 498 |
| Shale, sandy | 117 | 185 | Sandstone | 2 | 500 |
| Sandstone | 1 | 186 | Shale, sandy | 26 | 526 |
| Sand and water | 2 | 188 | Sand; oil and gas show | 2 | 528 |
| Shale, green, sandy | 4 | 192 | Shale, sandy | 44 | 572 |
| Sandstone | 3 | 195 | Sandstone | 1 | 573 |
| Shale, sandy | 147 | 342 | Shale, sandy | 27 | 600 |
| Sand, streak | 1 | 343 | Sandstone | 2 | 602 |
| Shale, sandy | 46 | 389 | Shale, sandy | 149 | 751 |
| Sandstone | 2 | 391 | Limestone | 1 | 752 |
| Shale, sandy | 37 | 428 | Shale, hard, sandy | 203 | 955 |
| Sandstone | 2 | 430 | Limestone and shale | 35 | 990 |
| Sand and water | 2 | 432 | Sand; oil show | 22 | 1,015 |
| Shale, sandy | 6 | 438 | Shale | 5 | 1,020 |
| Sandstone | 2 | 440 | | | |

Well I-6-89
[Owner: Fritz Senne. Driller: A. D. Gaston]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 7 | 7 | Shale with limestone stringers | 20 | 800 |
| Sand, hard | 33 | 40 | Shale, sandy; oil show | 51 | 851 |
| Shale | 35 | 75 | Sandstone | 6 | 857 |
| Sandstone | 30 | 105 | Sand; good oil show | 2 | 859 |
| Shale | 40 | 145 | Shale, sandy; oil show | 10 | 869 |
| Sandstone | 22 | 167 | Sand, tight; oil show | 5 | 874 |
| Shale | 30 | 197 | Shale, sandy; oil show | 9 | 883 |
| Sandstone | 118 | 315 | Shale, hard | 18 | 901 |
| Shale, sticky | 35 | 350 | Shale, sandy; oil show | 9 | 910 |
| Sand; oil show | 17 | 367 | Sand streaks with shale | 12 | 922 |
| Shale, sandy | 8 | 375 | Shale, sandy; oil show | 14 | 936 |
| Shale, sticky | 225 | 600 | Sandstone | 14 | 950 |
| Shale and boulders | 180 | 780 | Shale, sticky | 25 | 975 |

Well I-6-92
[Owner: Albert Hoffman. Driller: Ina Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface | 4 | 4 | Salt water | 9 | 360 |
| Soil | 11 | 15 | Shale, hard, sandy | 22 | 382 |
| Clay | 15 | 30 | Rock, hard | 1 | 383 |
| Sand, hard and tight | 10 | 40 | Shale | 201 | 584 |
| Shale, sandy | 20 | 60 | Gumbo | 16 | 600 |
| Sandstone | 1 | 61 | Shale | 100 | 700 |
| Shale, brown | 33 | 94 | Shale, limy | 128 | 828 |
| Sandstone | 2 | 96 | Sand, gray | 27 | 855 |
| Shale, blue | 44 | 140 | Shale, hard, sandy | 12 | 867 |
| Rock | 2 | 142 | Shale, gray, sticky | 33 | 900 |
| Shale, sandy | 18 | 160 | Gumbo, tough | 50 | 950 |
| Sand and gas | 5 | 165 | Shale, gray, sandy | 55 | 1,005 |
| Shale | 15 | 180 | Shale, hard, sandy | 57 | 1,062 |
| Sandstone | 5 | 185 | Shale, gray, with lime streaks | 161 | 1,223 |
| Shale and boulders | 75 | 260 | Limestone (Anacacho), gray | 105 | 1,328 |
| Sandstone | 10 | 270 | Chalk, white, soft | 260 | 1,588 |
| Shale, hard | 30 | 300 | Chalk (Austin) | 50 | 1,638 |
| Rock | 7 | 307 | Shale (Eagle Ford) | 55 | 1,693 |
| Shale, limy | 11 | 318 | Limestone (Buda) | 77 | 1,770 |
| Rock, hard | 2 | 320 | Clay (Grayson shale, formerly Del Rio clay) | 60 | 1,830 |
| Shale, sandy | 24 | 344 | Limestone (Georgetown) | 82 | 1,912 |
| Sand; oil show | 6 | 350 | Limestone (Edwards) | 114 | 2,026 |
| Sandstone | 1 | 351 | | | |

Well I-6-105
[Owner: J. McAnnelley. Driller: R. E. Fair, Inc.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil; clay and silt | 81 | 81 |
| Gravel and sand | 39 | 120 |
| Sandstone | 62 | 182 |
| Sandstone with pyrite | 7 | 189 |
| Sandstone, hard | 42 | 231 |
| Shale with sand layers | 118 | 349 |
| Sand, hard | 26 | 375 |
| Limestone | 5 | 380 |
| Sand; gas show | 31 | 411 |
| Sand with shale streaks | 16 | 427 |
| Sand and shale | 180 | 607 |
| Sand, with shale, hard | 113 | 720 |
| Shale, sandy | 72 | 792 |
| Sand | 18 | 810 |
| Shale with hard layer of sandstone | 85 | 895 |
| Sand | 2 | 897 |
| Shale, sandy, hard | 13 | 910 |
| Sand | 14 | 924 |
| Shale | 241 | 1,165 |
| Shale, sandy | 49 | 1,214 |
| Limestone and shale | 10 | 1,224 |
| Shale, sandy, hard | 30 | 1,254 |
| Lime, sandy | 8 | 1,262 |
| Sand and lime | 40 | 1,302 |
| Shale, sandy, hard; lime streaks | 89 | 1,391 |
| Shale, sandy | 69 | 1,460 |
| Limestone | 35 | 1,495 |
| Shale | 45 | 1,540 |
| Shale and limestone | 51 | 1,591 |
| Chalk | 111 | 1,702 |
| Shale | 50 | 1,752 |
| Chalk and shale | 38 | 1,790 |
| Shale | 5 | 1,795 |
| Limestone (Buda) | 99 | 1,894 |
| Clay (Grayson shale, formerly Del Rio clay) | 53 | 1,947 |
| Limestone (Georgetown) | 61 | 2,008 |
| Lime and clay (Dobey) | 3 | 2,011 |
| Limestone (Edwards) | 14 | 2,025 |
| Lime and clay | 3 | 2,028 |
| Limestone, very hard, with flint | 31 | 2,059 |
| Limestone, shaly | 8 | 2,067 |
| Limestone, hard; gray to black flint | 24 | 2,091 |
| Limestone, brown, shaly | 10 | 2,101 |
| Clay | 12 | 2,113 |
| Limestone, gray, hard, porous | 14 | 2,127 |
| Limestone, gray, hard | 32 | 2,159 |
| Limestone, with clay | 10 | 2,169 |
| Limestone, gray, hard | 22 | 2,191 |
| Limestone, hard | 107 | 2,298 |
| Limestone, dark; hard porous streaks | 58 | 2,356 |
| Limestone, gray, hard | 253 | 2,609 |
| Limestone, sandy, hard, dark | 182 | 2,791 |
| Shale, hard, sandy | 5 | 2,796 |
| Limestone, gray, sandy, hard | 73 | 2,869 |
| Limestone (Glen Rose); alternating layers of limestone and shale | 127 | 2,996 |
| Shale | 5 | 3,001 |
| Limestone, shaly | 9 | 3,010 |
| Siltstone, hard, fine-grained | 15 | 3,025 |
| Limestone, porous | 10 | 3,035 |
| Limestone, hard, sandy | 15 | 3,050 |
| Shale and limestone | 21 | 3,071 |
| Siltstone, hard | 10 | 3,081 |
| Limestone and shale | 27 | 3,108 |
| Siltstone, hard, shaly | 15 | 3,123 |
| Limestone, hard, sandy | 33 | 3,156 |
| Shale and limestone | 41 | 3,197 |
| Siltstone, hard and limestone | 10 | 3,207 |
| Limestone, shaly | 33 | 3,240 |
| Limestone and shale | 70 | 3,310 |
| Limestone, white, porous | 25 | 3,335 |
| Limestone, soft | 76 | 3,413 |
| Limestone, gray, hard | 150 | 3,563 |
| Limestone, hard and black shale | 22 | 3,585 |
| Limestone, shaly | 18 | 3,603 |
| Limestone, alternating with shaly limestone | 278 | 3,881 |
| Shale, black, very hard | 10 | 3,891 |
| Limestone, gray, hard, slightly porous | 114 | 4,005 |
| Sandstone, dark, fine-grained, hard; slight sulfur odor | 6 | 4,011 |
| Limestone, sandy, hard | 23 | 4,034 |
| Limestone, shaly | 62 | 4,096 |
| Shale, black; thin layers of limestone | 48 | 4,144 |
| Limestone, hard, sandy | 42 | 4,186 |
| Shale, sandy | 15 | 4,201 |
| Limestone, sandy | 53 | 4,254 |
| Sandstone, fine-grained | 10 | 4,264 |
| Limestone, sandy | 22 | 4,286 |
| Shale, sandy | 22 | 4,308 |
| Anhydrite and sandy limestone | 32 | 4,340 |
| Limestone, sandy | 90 | 4,430 |
| Limestone, shaly | 22 | 4,452 |
| Limestone, sandy and anhydrite | 96 | 4,548 |
| Limestone and shale | 61 | 4,609 |
| Sandstone, white, fine-grained | 1 | 4,610 |
| Shale, brown, sandy | 80 | 4,690 |
| Shale, red, hard, sandy | 30 | 4,720 |
| Conglomerate and shale | 3 | 4,723 |
| Shale, red, hard | 15 | 4,738 |
| Sandstone, gray to red, fine-grained | 15 | 4,753 |
| Shale, sandy | 39 | 4,792 |
| Sandstone, brown, hard | 46 | 4,838 |
| Shale, sandy | 22 | 4,860 |
| Limestone, sandy | 23 | 4,883 |
| Shale, sandy, red | 17 | 4,900 |
| Sandstone, red, thin streaks of shale | 65 | 4,965 |
| Sandstone, red; some gravel | 76 | 5,041 |
| Shale, sandy | 11 | 5,052 |
| Sandstone, red | 63 | 5,115 |
| Sandstone and gravel | 2 | 5,117 |
| Shale | 22 | 5,139 |
| Sandstone, red and gravel | 2 | 5,142 |
| Sandstone and shale | 12 | 5,153 |
| Gravel and sand | 12 | 5,165 |
| Shale, sandy | 12 | 5,177 |
| Gravel and sand | 51 | 5,228 |
| Shale, red | 6 | 5,234 |
| Sandstone, red | 2 | 5,236 |
| Shale, sandy | 31 | 5,267 |
| Sandstone, red | 18 | 5,285 |
| Shale, sandy | 10 | 5,295 |
| Gravel and red sand | 38 | 5,333 |
| Shale, sandy | 11 | 5,344 |
| Sand, red and quartz | 9 | 5,353 |
| Shale, sandy | 9 | 5,362 |
| Gravel and sandy shale | 8 | 5,370 |
| Sandstone, red | 25 | 5,395 |
| Conglomerate, hard; red and black shale (Pennsylvanian?) | 32 | 5,427 |
| Shale, black; hard lignite with streaks of anhydrite | 88 | 5,515 |

Well I-6-106
[Owner: Hartley Howard. Driller: Pegg Bros.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Sand and clay | 18 | 18 | Shale and sand, green | 110 | 380 |
| Caliche and gravel | 12 | 30 | Shale | 85 | 465 |
| Shale and lignite | 125 | 155 | Shale and lime streaks | 81 | 546 |
| Sandstone | 3 | 158 | Shale; oil trace | 2 | 548 |
| Shale | 22 | 180 | Shale | 472 | 1,020 |
| Sand and water | 10 | 190 | Shale, hard | 20 | 1,040 |
| Lignite | 10 | 200 | Shale | 10 | 1,050 |
| Shale | 40 | 240 | Sand, oil-stained | 2 | 1,052 |
| Rock | 4 | 244 | Sand, hard | 3 | 1,055 |
| Sand and water | 26 | 270 | Sand, white | 11 | 1,066 |

Well I-6-107
[Owner: C. Adams. Driller: Carl and Flinders]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 5 | 5 | Shale, green, sandy | 14 | 190 |
| Clay, brown | 25 | 30 | Shale, blue | 30 | 220 |
| Clay, yellow | 5 | 35 | Shale, hard | 2 | 222 |
| Sand, river | 10 | 45 | Shale, blue, sandy | 15 | 237 |
| Gravel | 5 | 50 | Shale, green | 1 | 238 |
| Shale, brown | 18 | 68 | Shale, gray | 4 | 242 |
| Shale, gray, sandy | 27 | 95 | Shale, hard | 5 | 247 |
| Rock | 1 | 96 | Shale, black | 3 | 250 |
| Shale, sandy | 1 | 97 | Shale, hard | 5 | 255 |
| Sand | 3 | 100 | Shale, blue, sandy | 15 | 270 |
| Rock | 1 | 101 | Shale with hard streaks | 23 | 293 |
| Sand | 5 | 106 | Sand, green | 2 | 295 |
| Limestone | 3 | 109 | Shale, gray, sandy | 5 | 300 |
| Sand and water | 22 | 131 | Sand, gray | 8 | 308 |
| Sandstone | 32 | 163 | Shale, gray, sandy | 14 | 322 |
| Shale, blue | 7 | 170 | Shale, sandy; oil show | 13 | 335 |
| Rock | 1 | 171 | Sand and water | 5 | 340 |
| Shale, blue, sandy | 3 | 174 | Shale, gray, sandy | 25 | 365 |
| Shale, rock | 2 | 176 | | | |

Well I-6-109
[Owner: Carlton Adams, Jr. Driller: L. V. Doss]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface | 2 | 2 | Sand, gray | 38 | 56 |
| Rock, schist | 1 | 3 | Rock, schist | 2 | 58 |
| Clay, red | 2 | 5 | Sand, red, heaving | 45 | 103 |
| Rock, schist | 3 | 8 | Rock, hard, schist | 11 | 114 |
| Clay, red and gray | 7 | 15 | Gravel and rock | 6 | 120 |
| Rock, schist | 1 | 16 | Sand, gray; water | 18 | 138 |
| Clay, gray | 2 | 18 | | | |

Well I-6-110
[Owner: —Schmidt. Driller: E. H. Keater]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 6 | 6 | Lime, hard with sand streaks | 8 | 1,430 |
| Clay and sand | 29 | 35 | Lime, hard with brown sand streaks | 77 | 1,507 |
| Gravel | 6 | 41 | Shale with lime streaks | 109 | 1,616 |
| Shale | 72 | 113 | Lime and sand | 5 | 1,621 |
| Clay, shale and hard sand | 157 | 270 | Lime and shale, sandy | 9 | 1,630 |
| Shale | 15 | 285 | Lime | 9 | 1,639 |
| Sand and shale | 4 | 289 | Lime and shale, sandy | 7 | 1,646 |
| Sand | 11 | 300 | Chalk | 9 | 1,655 |
| Shale, sandy | 24 | 324 | Lime, streaks | 14 | 1,669 |
| Shale, sandy, with hard streaks | 151 | 475 | Lime with lime and shale streaks | 8 | 1,677 |
| Shale with hard sandy streaks | 81 | 556 | Shale with lime streaks | 10 | 1,687 |
| Shale | 10 | 566 | Lime | 14 | 1,701 |
| Shale; rock, hard | 4 | 570 | Chalk and shale streaks | 79 | 1,780 |
| Shale, sandy | 2 | 572 | Chalk | 40 | 1,820 |
| Sand | 5 | 577 | Shale, hard; with lime streaks | 78 | 1,898 |
| Shale, sandy | 1 | 578 | Lime | 58 | 1,956 |
| Shale, hard streaks, sandy | 87 | 665 | Shale | 9 | 1,965 |
| Shale, hard streaks | 225 | 890 | Lime | 19 | 1,984 |
| Shale, sandy | 130 | 1,020 | Lime, hard | 32 | 2,016 |
| Shale with hard sand; streaks | 330 | 1,350 | | | |
| Shale, sandy; oil odor | 72 | 1,422 | | | |

Well I-6-111
[Owner: Carlton Adams, Jr. Driller: L. V. Doss]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Gravel and water | 59 | 59 | Sand, gray; water | 148 | 256 |
| Sand and water | 49 | 108 | | | |

Well I-6-112
[Owner: Mame M. Adams. Driller: Mirando Gas Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface soil | 2 | 2 | Rock | 2 | 152 |
| Clay with gravel and flint | 5 | 7 | Sand and clay | 60 | 212 |
| Rock, hard | 3 | 10 | Rock | 4 | 216 |
| Sand, yellow | 5 | 15 | Sand | 4 | 220 |
| Clay, yellow, sandy | 10 | 25 | Sand and clay | 60 | 280 |
| Sand, yellow, hard | 33 | 58 | Rock | 5 | 285 |
| Clay, yellow, sandy | 7 | 65 | Sand and clay | 65 | 350 |
| Sand, gray | 24 | 89 | Rock | 10 | 360 |
| Shale and lignite, brown | 1 | 90 | Clay | 10 | 370 |
| Rock, hard | 1 | 91 | Shale | 30 | 400 |
| Shale and lignite, brown | 3 | 94 | Rock | 6 | 406 |
| Rock | 1 | 95 | Shale, hard | 44 | 450 |
| Shale; lignite, brown | 10 | 105 | Rock | 3 | 453 |
| Rock | 1 | 106 | Shale | 35 | 488 |
| Shale and lignite, brown | 3 | 109 | Rock | 14 | 502 |
| Rock | 2 | 111 | Shale and boulders | 228 | 730 |
| Lignite, brown | 3 | 114 | Shale, hard | 50 | 780 |
| Rock | 1 | 115 | Gumbo | 20 | 800 |
| Lignite, brown, tough | 4 | 119 | Shale and boulders | 50 | 850 |
| Rock, hard | 2 | 121 | Shale, sticky | 57 | 907 |
| Shale and lignite, tough | 9 | 130 | Shale, hard, sticky | 21 | 928 |
| Rock | 5 | 135 | Shale, sticky | 10 | 938 |
| Lignite, tough | 7 | 142 | Shale | 62 | 1,000 |
| Rock | 2 | 144 | Sand and gas | 14 | 1,014 |
| Shale; lignite, tough | 6 | 150 | | | |

Well I-6-116
[Owner: Mame M. Adams. Driller: Southern Gas Utility Inc.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay and gravel | 17 | 17 | Shale | 37 | 430 |
| Sandstone | 3 | 20 | Rock | 3 | 433 |
| Clay and gravel | 10 | 30 | Rock and sand, hard | 17 | 450 |
| Rock | 4 | 34 | Shale, hard | 50 | 500 |
| Clay and gravel | 6 | 40 | Rock | 3 | 503 |
| Sand, white | 110 | 150 | Gumbo | 12 | 515 |
| Rock | 3 | 153 | Shale, sandy; gas show | 55 | 570 |
| Shale | 22 | 175 | Shale, hard | 30 | 600 |
| Gumbo | 5 | 180 | Gumbo | 18 | 618 |
| Shale | 10 | 190 | Rock | 5 | 623 |
| Rock | 6 | 196 | Shale, hard | 57 | 680 |
| Shale | 84 | 280 | Shale and gas show | 10 | 690 |
| Rock | 4 | 284 | Shale | 20 | 710 |
| Sandstone and sand, packed | 8 | 292 | Gumbo | 10 | 720 |
| Shale, hard | 36 | 328 | Shale | 140 | 860 |
| Shale | 12 | 340 | Gumbo | 10 | 870 |
| Rock | 4 | 344 | Shale, hard | 35 | 905 |
| Shale | 36 | 380 | Shale | 31 | 936 |
| Rock | 13 | 393 | Sand and gas show | 8 | 944 |

Well I-6-117
[Owner: Mame M. Adams. Driller: Southern Gas Utility Inc.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay | 15 | 15 | Shale and sandstone | 27 | 447 |
| Gravel | 2 | 17 | Shale, soft | 3 | 450 |
| Sand | 72 | 89 | Limestone | 1 | 451 |
| Shells | 12 | 101 | Shale, sticky | 40 | 491 |
| Sand, black | 58 | 159 | Limestone | 1 | 492 |
| Sandstone, with pyrite | 3 | 162 | Shale | 8 | 500 |
| Shells | 2 | 164 | Limestone | 2 | 502 |
| Sandstone | 1 | 165 | Shale | 78 | 580 |
| Sand, blue | 45 | 210 | Limestone | 3 | 583 |
| Shale, blue | 20 | 230 | Shale, sandy | 20 | 603 |
| Sand | 54 | 284 | Shale, hard | 42 | 645 |
| Sandstone | 1 | 285 | Shale, blue | 3 | 648 |
| Shale, blue | 3 | 288 | Limestone, hard | 3 | 651 |
| Sandstone, hard | 6 | 294 | Shale | 17 | 668 |
| Shale | 16 | 310 | Shale, hard | 10 | 678 |
| Limestone and gypsum, hard | 3 | 313 | Shale, sandy | 24 | 702 |
| Shale | 17 | 330 | Shale, hard | 28 | 730 |
| Shale, hard | 2 | 332 | Sand, hard | 12 | 742 |
| Rock | 1 | 333 | Shale, hard | 12 | 754 |
| Limestone | 14 | 347 | Sandstone | 1 | 755 |
| Shale | 13 | 360 | Shale, hard | 20 | 775 |
| Shale and lime | 12 | 372 | Lime | 1 | 776 |
| Shale, hard | 6 | 378 | Shale, gummy | 54 | 830 |
| Limestone | 1 | 379 | Shale, hard | 10 | 840 |
| Shale, sandy | 11 | 390 | Lime | 1 | 841 |
| Limestone | 1 | 391 | Shale | 21 | 862 |
| Shale and gas show | 4 | 395 | Lime | 1 | 863 |
| Limestone | 2 | 397 | Shale, hard | 41 | 904 |
| Shale, hard | 13 | 410 | Shale | 28 | 932 |
| Limestone | 2 | 412 | Sand and gas | 12 | 944 |
| Shale | 8 | 420 | | | |

Well I-6-118
[Owner: Mame M. Adams. Driller: Southern Gas Utility Inc.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 6 | 6 | Shale | 13 | 362 |
| Sand | 8 | 14 | Rock | 2 | 364 |
| Gravel | 5 | 19 | Shale and boulders | 5 | 369 |
| Clay, yellow | 11 | 30 | Rock | 1 | 370 |
| Sand, yellow | 34 | 64 | Shale and boulders | 36 | 406 |
| Sandstone | 1 | 65 | Rock | 2 | 408 |
| Sand, yellow | 36 | 101 | Shale | 10 | 418 |
| Sandstone | 3 | 104 | Shale and boulders | 54 | 472 |
| Sand, blue and water | 30 | 134 | Shale, sticky | 33 | 505 |
| Sandstone | 1 | 135 | Shale, sandy | 19 | 524 |
| Shale, dark-green | 5 | 140 | Sandstone | 2 | 526 |
| Sand and water | 43 | 183 | Shale, sticky | 32 | 558 |
| Sandstone | 3 | 186 | Shale, hard | 22 | 580 |
| Sandstone, hard | 14 | 200 | Shale, sandy | 15 | 595 |
| Sandstone | 3 | 203 | Shale, hard | 23 | 618 |
| Sand, pack | 10 | 213 | Shale, gummy | 30 | 648 |
| Shale, sandy | 40 | 253 | Shale and boulders | 41 | 689 |
| Sandstone | 3 | 256 | Shale, hard | 14 | 703 |
| Shale | 5 | 261 | Shale and boulders | 20 | 723 |
| Sandstone | 3 | 264 | Sandstone | 2 | 725 |
| Shale, loose | 8 | 272 | Shale | 18 | 743 |
| Shale, hard | 26 | 298 | Rock | 2 | 745 |
| Sandstone | 1 | 299 | Shale and boulders | 15 | 760 |
| Shale and boulders | 15 | 314 | Sand and gas | 3 | 763 |
| Sandstone | 2 | 316 | Shale, gummy | 65 | 828 |
| Shale and boulders | 16 | 332 | Gas show, good | 2 | 830 |
| Rock | 2 | 334 | Shale, streaks | 76 | 906 |
| Shale and boulders | 10 | 344 | Cap rock | 1 | 907 |
| Sand, hard; gas show | 5 | 349 | Sand and gas | 3 | 910 |

Well I-6-123
[Owner: Gilbert Falbo. Driller: L. V. Doss]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Clay, brown, sandy | 6 | 6 |
| Clay, yellow, gray, sandy, with sandstone breaks | 12 | 18 |
| Clay, less sandy, with multicolored breaks | 42 | 60 |
| Gumbo, black, with pyrite | 10 | 70 |
| Clay, brown, sandy, with sandstone breaks | 25 | 95 |
| Shale, gray, sandy, with lignite | 40 | 135 |
| Sand, gray and water | 20 | 155 |
| Sandstone, gray | 3 | 158 |
| Sand, gray and water | 49 | 207 |
| Sandstone | 2 | 209 |
| Sand, gray and water | 32 | 241 |
| Shale, black, with lignite and limestone | 8 | 249 |
| Sandstone | 2 | 251 |

Well I-8-3
[Owner: L. O. Carle. Driller: Plateau Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Sand and surface clay | 25 | 25 |
| Gravel | 45 | 70 |
| Lignite | 15 | 85 |
| Shale and gumbo | 50 | 135 |
| Shale, blue | 9 | 144 |
| Shale with flint | 21 | 165 |
| Shale and sand, tight | 13 | 178 |
| Rock | 5 | 183 |
| Shale | 6 | 189 |
| Gumbo | 31 | 220 |
| Gumbo and shale | 8 | 228 |
| Rock, brown | 7 | 235 |
| Gumbo | 9 | 244 |
| Sand and water | 34 | 278 |
| Sand and gumbo | 11 | 289 |
| Shale and gumbo | 14 | 303 |
| Shale and gumbo | 19 | 322 |
| Gumbo and shale | 21 | 343 |
| Gumbo, shale and boulders | 42 | 385 |
| Sandstone | 5 | 390 |
| Gumbo, shale and boulders | 30 | 420 |
| Gumbo and boulders | 22 | 442 |
| Gumbo, shale and boulders | 151 | 593 |
| Gumbo, shale; oil show | 110 | 703 |
| Gumbo and shale | 22 | 725 |
| Gumbo | 66 | 791 |
| Gumbo ,shale and boulders | 44 | 835 |
| Gumbo | 66 | 901 |
| Gumbo and shale | 65 | 966 |
| Gumbo | 45 | 1,011 |
| Gumbo and shale | 22 | 1,033 |
| Gumbo | 44 | 1,077 |
| Limestone (Anacacho) | 219 | 1,306 |
| Clay (Upson) | 57 | 1,363 |
| Rock | 4 | 1,367 |
| Gumbo and rock | 8 | 1,375 |
| Gypsum | 14 | 1,389 |
| Gypsum and gumbo | 15 | 1,404 |
| Chalk and shale | 40 | 1,444 |
| Soapstone | 4 | 1,448 |
| Chalk | 15 | 1,463 |
| Chalk, hard | 44 | 1,507 |
| Chalk, hard and shale | 51 | 1,558 |
| Chalk, hard | 62 | 1,620 |
| Shale (Eagle Ford), hard | 67 | 1,687 |
| Limestone (Buda) | 30 | 1,717 |
| Lime and shale | 41 | 1,758 |
| Shale | 7 | 1,765 |
| Lime and shale, streaks | 4 | 1,769 |
| Shale | 13 | 1,782 |
| Lime and oil trace | 8 | 1,790 |
| Shale | 9 | 1,799 |
| Lime and shale | 40 | 1,839 |
| Limestone (Buda) | 26 | 1,865 |
| Lime | 48 | 1,913 |
| Lime and shale | 40 | 1,953 |
| Clay | 48 | 2,001 |
| Limestone (Georgetown) | 5 | 2,006 |
| Lime (Georgetown) | 44 | 2,050 |
| Limestone (Edwards) | 114 | 2,164 |

Well I-8-27
[Owner: Mrs. E. E. Wilson. Driller: Robertson Drilling Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Sand (Wilcox), shale, and boulders | 500 | 500 | Shale, black | 38 | 2,840 |
| Shale and boulders | 325 | 825 | Limestone (Buda) | 94 | 2,934 |
| Sand, sandy shale and sandy lime | 550 | 1,375 | Clay (Grayson shale, formerly Del Rio clay) | 68 | 3,002 |
| Sand, shale and gas show | 230 | 1,605 | Limestone (Georgetown) | 80 | 3,082 |
| Marl (Taylor) and gas show | 545 | 2,150 | Dobey, white, soft | 13 | 3,095 |
| Shale | 82 | 2,232 | Limestone (Edwards) and sulfur water | 5 | 3,100 |
| Chalk (Austin); oil and gas show; blue shale | 522 | 2,754 | Limestone (Edwards) | 26 | 3,126 |
| Shale (Eagle Ford) | 48 | 2,802 | | | |

Well I-8-30
[Owner: Sallie B. Little. Driller: United North & South Development Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Sand and gravel | 255 | 255 | Shale, sandy and oil show | 4 | 1,784 |
| Sand rock | 5 | 260 | Shale, sandy | 86 | 1,870 |
| Sand | 47 | 307 | Shale, gummy | 20 | 1,890 |
| Shale | 9 | 316 | Shale | 130 | 2,020 |
| Sand | 35 | 351 | Marl (Taylor) | 80 | 2,100 |
| Rock | 7 | 358 | Limestone (Anacacho) | 114 | 2,214 |
| Shale | 49 | 407 | Shale, limy | 97 | 2,311 |
| Shale, sandy and boulders | 150 | 557 | Limestone (Anacacho) | 6 | 2,317 |
| Rock | 19 | 576 | Shale and lime | 52 | 2,369 |
| Shale and boulders | 91 | 667 | Chalk (Austin) | 7 | 2,376 |
| Rock | 9 | 676 | Chalk | 129 | 2,505 |
| Shale and boulders | 27 | 703 | Chalk with shale streaks | 26 | 2,531 |
| Rock | 4 | 707 | Chalk (Eagle Ford) and shale | 100 | 2,631 |
| Shale and boulders | 124 | 831 | Shale (Eagle Ford) | 6 | 2,637 |
| Shale | 8 | 839 | Shale, calcareous | 28 | 2,665 |
| Rock | 2 | 841 | Lime and shale (Eagle Ford) | 78 | 2,743 |
| Shale and boulders | 24 | 865 | Shale (Eagle Ford) | 40 | 2,783 |
| Rock | 8 | 873 | Lime with shale lenses | 40 | 2,823 |
| Shale and boulders | 62 | 935 | Lime (Buda) | 55 | 2,878 |
| Rock | 4 | 939 | Clay (Grayson shale, formerly Del Rio clay) | 74 | 2,952 |
| Shale and boulders | 30 | 969 | Lime (Georgetown) | 79 | 3,031 |
| Rock | 6 | 975 | Limestone (Edwards) | 39 | 3,070 |
| Shale, calcareous and boulders | 82 | 1,057 | Cap rock | 1 | 3,071 |
| Shale and boulders | 8 | 1,065 | Limestone (Edwards) | 813 | 3,884 |
| Rock | 5 | 1,070 | Limestone | 20 | 3,904 |
| Shale and boulders | 26 | 1,096 | Limestone (Edwards) | 26 | 3,930 |
| Rock | 6 | 1,102 | Limestone (Glen Rose) | 307 | 4,237 |
| Shale and boulders | 198 | 1,300 | | | |
| Shale, limy | 480 | 1,780 | | | |

Well I-8-33, partial log
[Owner: G. A. Blackaller. Driller: Med-Frio Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Sand (Wilcox) | 2 | 2 |
| Clay and rock | 3 | 5 |
| Adobe, gray | 7 | 12 |
| Adobe, yellow | 18 | 30 |
| Adobe, red | 8 | 38 |
| Mud, blue | 30 | 68 |
| Rock, blue, hard | 2 | 70 |
| Rock, blue, sandy | 11 | 81 |
| Rock, blue, hard; water | 3 | 84 |
| Lignite | 36 | 120 |
| Sandstone, gray | 80 | 200 |
| Sand and rock, hard | 20 | 220 |
| Sandstone | 25 | 245 |
| Sandstone, gray and water | 25 | 270 |
| Sandstone, blue | 15 | 285 |
| Gumbo | 83 | 368 |
| Rock, gray | 4 | 372 |
| Gumbo | 23 | 395 |
| Asphalt | 17 | 412 |
| Rock, blue | 16 | 428 |
| Gumbo | 17 | 445 |
| Rock, blue | 2 | 447 |
| Gumbo | 4 | 451 |
| Rock, blue | 5 | 456 |
| Gumbo | 4 | 460 |
| Rock, flint | 3 | 463 |
| Gumbo | 17 | 480 |
| Rock, bluish-gray | 25 | 505 |
| Sand and rock, blue | 2 | 507 |
| Clay, blue | 48 | 555 |
| Rock, blue, with flint | 15 | 570 |
| Mud, blue | 18 | 588 |
| Rock, blue | 2 | 590 |
| Mud, blue | 39 | 629 |
| Limestone and calcite, brown | 49 | 678 |
| Mud, blue | 8 | 686 |
| Limestone and calcite, brown | 10 | 696 |
| Mud, blue | 10 | 706 |
| Limestone and calcite, brown | 7 | 713 |
| Mud, blue | 4 | 717 |
| Limestone and calcite, brown | 11 | 728 |
| Mud, blue and limestone | 21 | 749 |
| Limestone and calcite, brown | 5 | 754 |
| Gumbo, very hard | 3 | 757 |
| Gumbo | 12 | 769 |
| Gumbo, hard | 3 | 772 |
| Limestone, hard | 3 | 775 |
| Gumbo | 19 | 794 |
| Rock, blue | 1 | 795 |
| Gumbo | 19 | 814 |
| Rock, blue | 2 | 816 |
| Gumbo | 2 | 818 |
| Rock, blue, hard | 2 | 820 |
| Sand, sulfur water and salt | 2 | 822 |
| Rock, blue | 1 | 823 |
| Sand, gray | 3 | 826 |
| Rock, hard, blue | 3 | 829 |
| Sand, gray | 4 | 833 |
| Gumbo | 4 | 837 |
| Rock | 3 | 840 |
| Gumbo | 30 | 870 |
| Limestone, hard | 2 | 872 |
| Limestone, soft | 5 | 877 |
| Gumbo | 3 | 880 |
| Rock | 4 | 884 |
| Gumbo | 16 | 900 |
| Shale, white | 12 | 912 |
| Gumbo | 19 | 931 |
| Limestone | 3 | 934 |
| Gumbo | 17 | 951 |
| Limestone | 2 | 953 |
| Gumbo | 21 | 974 |
| Limestone | 2 | 976 |
| Gumbo | 16 | 992 |
| Limestone | 4 | 996 |
| Gumbo | 6 | 1,002 |
| Limestone, hard | 2 | 1,004 |
| Shale, gray | 8 | 1,012 |
| Limestone | 3 | 1,015 |
| Shale, gray | 5 | 1,020 |
| Limestone | 13 | 1,033 |
| Shale, gray | 28 | 1,061 |
| Rock | 3 | 1,064 |
| Shale, gray | 28 | 1,092 |
| Rock | 3 | 1,095 |
| Shale | 24 | 1,119 |
| Rock | 9 | 1,128 |
| Shale, gray | 25 | 1,153 |
| Rock | 1 | 1,154 |
| Shale, gray | 11 | 1,165 |
| Rock | 3 | 1,168 |
| Shale, gray | 46 | 1,214 |
| Rock | 1 | 1,215 |
| Shale | 28 | 1,243 |
| Rock | 1 | 1,244 |
| Shale, gray | 26 | 1,270 |
| Rock | 1 | 1,271 |
| Shale, gray; slight oil show | 7 | 1,278 |
| Rock | 3 | 1,281 |
| Shale, brown; oil show | 64 | 1,345 |
| Sandstone, gray | 5 | 1,350 |
| Shale, black and sandy clay | 54 | 1,404 |
| Soapstone, white | 3 | 1,407 |
| Shale, dark, sandy; oil show | 29 | 1,436 |
| Shale, light sandy | 46 | 1,482 |
| Sandstone, gray | 12 | 1,494 |
| Shale, dark-gray, sandy; slight oil show | 48 | 1,542 |
| Sandstone, gray | 4 | 1,546 |
| Shale, gray with gumbo and clay; oil show | 55 | 1,601 |
| Sandstone, dark-gray | 8 | 1,609 |
| Soapstone | 6 | 1,615 |
| Shale, dark-gray; oil show | 7 | 1,622 |
| Shale, light-gray | 16 | 1,638 |
| Sandstone, dark-gray | 4 | 1,642 |
| Shale, light-gray | 27 | 1,669 |
| Sandstone, dark-gray | 7 | 1,676 |
| Shale, light-gray | 44 | 1,720 |
| Total | 1,780 | 3,500 |

Well I-9-3
[Owner: John P. Nixon. Driller: James F. Greenlee]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil clay | 6 | 6 |
| Clay, sand, and gravel | 44 | 50 |
| Sand | 8 | 58 |
| Clay | 12 | 70 |
| Sand, hard, green | 10 | 80 |
| Rock | 4 | 84 |
| Sand and lignite | 4 | 88 |
| Rock | 3 | 91 |
| Sand and clay | 39 | 130 |
| Sand, soft | 6 | 136 |
| Sand and clay | 90 | 226 |
| Rock | 4 | 230 |
| Sand | 4 | 234 |
| Rock | 3 | 237 |
| Sand | 2 | 239 |
| Rock | 6 | 245 |
| Shale | 12 | 257 |
| Sand, dark boulders | 38 | 295 |
| Rock | 5 | 300 |
| Shale, boulders | 54 | 354 |
| Rock | 1 | 355 |
| Shale, boulders | 15 | 370 |
| Rock | 1 | 371 |
| Shale, sandy | 7 | 378 |
| Rock | 1 | 379 |
| Sand, shale streaks, boulders; gas show | 33 | 412 |
| Rock | 1 | 413 |
| Shale, sandy | 8 | 421 |
| Rock | 4 | 425 |
| Shale and boulders, sandy | 60 | 485 |
| Rock | 3 | 488 |
| Sand | 14 | 502 |
| Rock | 1 | 503 |
| Shale, sandy, and boulders | 47 | 550 |
| Shale and boulders | 264 | 814 |
| Rock | 1 | 815 |
| Shale, sticky | 110 | 925 |
| Rock | 1 | 926 |
| Shale, sandy | 16 | 942 |
| Shale, sticky | 30 | 972 |
| Shale rock | 2 | 974 |
| Sand | 7 | 981 |
| Shale, sticky | 11 | 992 |
| Shale rock | 2 | 994 |
| Sand and shale | 9 | 1,003 |
| Shale and boulders | 94 | 1,097 |
| Shale, sand stringers | 3 | 1,100 |
| Shale, sticky; oil show | 6 | 1,106 |
| Shale rock | 1 | 1,107 |
| Shale and sand | 8 | 1,115 |
| Shale, sticky | 8 | 1,123 |
| Shale, sticky, sandy | 3 | 1,126 |
| Shale, hard, sticky; oil show | 81 | 1,207 |
| Shale, sand and oil | 7 | 1,214 |
| Sand and streaks of shale and oil | 18 | 1,232 |
| Shale | 47 | 1,279 |
| Lime, sandy | 16 | 1,295 |
| Lime, sandy and shale stringers | 45 | 1,340 |

Well I-9-6
[Owner: E. Bohmfalk. Driller: Fritz Fuchs]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Surface sand | 5 | 5 |
| Clay | 15 | 20 |
| Shale and gumbo | 120 | 140 |
| Sand and water | 10 | 150 |
| Shale | 50 | 200 |
| Rock | 5 | 205 |
| Shale, sandy | 35 | 240 |
| Gumbo | 22 | 262 |
| Rock | 9 | 271 |
| Gumbo and shale | 152 | 423 |
| Rock | 7 | 430 |
| Shale, sandy | 72 | 502 |
| Rock | 2 | 504 |
| Shale | 149 | 653 |
| Rock | 56 | 709 |
| Gumbo and shale | 72 | 781 |
| Rock | 2 | 783 |
| Gumbo and shale | 142 | 925 |
| Rock | 2 | 927 |
| Gumbo | 19 | 946 |
| Shale | 170 | 1,116 |
| Slate and salt water | 25 | 1,141 |
| Sand and salt water | 9 | 1,150 |
| Shale, hard | 9 | 1,159 |
| Sand and salt water | 17 | 1,176 |
| Rock | 2 | 1,178 |
| Shale, sandy | 6 | 1,184 |
| Gumbo and shale | 29 | 1,213 |
| Rock | 1 | 1,214 |
| Shale | 5 | 1,219 |
| Gumbo, shale, and boulders | 71 | 1,290 |
| Rock | 2 | 1,292 |
| Shale | 33 | 1,325 |
| Gumbo | 20 | 1,345 |
| Rock, white | 59 | 1,404 |
| Shale, sandy | 152 | 1,556 |

Well I-9-13
[Owner: E. B. Chandler. Driller: C. P. Cortter]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil | 3 | 3 |
| Clay, red | 7 | 10 |
| Clay, white | 28 | 38 |
| Gravel | 11 | 49 |
| Boulders | 1 | 50 |
| Shale | 25 | 75 |
| Rock, hard | 5 | 80 |
| Shale, sandy | 35 | 115 |
| Rock, hard | 5 | 120 |
| Shale and boulders | 14 | 134 |
| Rock | 1 | 135 |
| Sand and coal | 22 | 157 |
| Shale, sandy and coal | 51 | 208 |
| Shale, sandy and lime | 35 | 243 |
| Shale boulders | 2 | 245 |
| Shale, black and boulders | 83 | 328 |
| Shale, blue, sandy, and lime stringers | 8 | 336 |
| Sandstone, blue | 7 | 343 |
| Sand | 5 | 348 |
| Rock | 1 | 349 |
| Shale and boulders | 33 | 382 |
| Rock, hard | 2.6 | 384.6 |
| Lime, gray and shale | 16.4 | 401 |
| Rock, hard | 1 | 402 |
| Shale, gray and boulders | 29 | 431 |
| Rock | 2 | 433 |
| Shale and limestone | 5 | 438 |
| Shale | 14 | 452 |
| Limestone | 3 | 455 |
| Limestone and shale | 45 | 500 |
| Limestone | 5 | 505 |
| Shale | 14 | 519 |
| Lime, soft, and hard shale | 23 | 542 |
| Limestone and shale | 45 | 587 |
| Rock, hard | 1 | 588 |
| Shale and limestone, black | 21.11 | 609.11 |
| Shale and limestone, gray | 23.89 | 633 |
| Shale, gray, sticky | 10 | 643 |
| Shale, black, hard, brittle | 26 | 669 |
| Shale, hard and gray lime streaks | 8 | 677 |
| Rock | .6 | 677.6 |
| Shale, gray | 22.4 | 700 |
| Shale | 35 | 735 |
| Rock, white | .6 | 735.6 |
| Shale, gray | 12.4 | 748 |
| Rock | 1.5 | 749.5 |
| Shale and limestone streaks | 26.5 | 776 |
| Shale, gray and limestone | 22 | 798 |
| Rock | 1 | 799 |
| Shale | 7 | 806 |
| Rock | 1 | 807 |
| Shale and limestone, gray | 22 | 829 |
| Shale and limestone | 3 | 832 |
| Shale, sticky | 8 | 840 |
| Shale, sandy | 2 | 842 |
| Shale and limestone | 13.3 | 855.3 |
| Rock | .6 | 855.9 |
| Shale | 11.1 | 867 |
| Rock | 3 | 870 |
| Shale | 2 | 872 |
| Shale, sticky | 23 | 895 |
| Shale and limestone | 78 | 973 |
| Sand and shale; oil stain | 11 | 984 |
| Shale, sandy; oil trace | 32 | 1,016 |
| Shale, sandy, dry | 20 | 1,036 |
| Shale, sandy | 9 | 1,045 |
| Sand | 9 | 1,054 |
| Limestone and sand, crystallized | 4 | 1,058 |
| Rock | 1 | 1,059 |
| Sand and fresh water | 51 | 1,110 |

Well I-9-14
[Owner: E. B. Chandler. Driller: B. C. Calvin]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Clay | 10 | 10 |
| Shale | 10 | 20 |
| Gravel | 30 | 50 |
| Shale | 20 | 70 |
| Shale, black | 50 | 120 |
| Sand and fresh water | 40 | 160 |
| Shale, black | 180 | 240 |
| Shale, sticky | 4 | 244 |
| Rock, red | 5 | 249 |
| Gumbo, black | 1 | 250 |
| Shale, blue, soft | 22 | 272 |
| Sand and shale, blue | 16 | 288 |
| Rock | 1 | 289 |
| Sand and shale, blue | 11 | 300 |
| Shale, blue | 33 | 333 |
| Rock | 3 | 336 |
| Sand and shale, blue | 24 | 360 |
| Shale | 5 | 365 |
| Shale, gray | 30 | 395 |
| Rock | 4 | 399 |
| Shale, brown | 9 | 408 |
| Rock and hard sandy shale | 1 | 409 |
| Shale, gray | 17 | 426 |
| Rock, chalk | 4 | 430 |
| Shale, gray | 20 | 450 |
| Chalk rock, white | 12 | 462 |
| Shale, gray | 6 | 468 |
| Rock, very hard | 2 | 470 |
| Lime, soft to hard | 55 | 525 |
| Rock, hard | 2 | 527 |
| Rock and lime | 13 | 540 |
| Shale, black, hard, brittle | 53 | 593 |
| Rock | 1 | 594 |
| Shale, sandy | 5 | 599 |
| Shale, gray, soft | 31 | 630 |
| Shale, sticky | 3 | 633 |
| Shale | 116 | 749 |
| Rock | 1 | 750 |
| Shale, soft and sticky | 50 | 800 |
| Lime and shale, black | 10 | 810 |
| Lime and shale, hard | 25 | 835 |
| Rock | 1 | 836 |
| Shale, sandy | 13 | 849 |
| Shale, sandy, calcareous | 21 | 870 |
| Rock | 6 | 876 |
| Shale, sticky | 14 | 890 |
| Shale, sandy; oil show | 53 | 943 |
| Shale, sandy | 9 | 952 |
| Sand | 1 | 953 |
| Shale | 4 | 957 |
| Rock | 1 | 958 |
| Shale, sandy | 2 | 960 |
| Shale, soft | 58 | 1,018 |
| Shale and limestone | 36.5 | 1,054.5 |
| Rock and lime, hard | 1 | 1,055.5 |
| Sand, oil odor | 5.5 | 1,061 |

Well I-9-26

[Owner: Amelia Zadich. Driller: J. E. Thomas & B. Rife]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Sand and clay | 37 | 37 |
| Sand | 226 | 263 |
| Shale | 17 | 280 |
| Sand | 26 | 306 |
| Rock | 1 | 307 |
| Shale | 58 | 365 |
| Sand | 47 | 412 |
| Shale | 39 | 451 |
| Rock | 2 | 453 |
| Shale | 410 | 863 |
| Rock | 2 | 865 |
| Shale | 20 | 885 |
| Rock | 6 | 891 |
| Shale | 17 | 908 |
| Rock | 3 | 911 |
| Shale | 3 | 914 |
| Rock | 2 | 916 |
| Shale | 26 | 942 |
| Rock | 3 | 945 |
| Shale and lime | 105 | 1,050 |
| Lime | 16 | 1,066 |
| Shale | 75 | 1,141 |
| Shale and lime | 87 | 1,228 |
| Lime | 8 | 1,236 |
| Shale and lime | 4 | 1,240 |
| Lime | 8 | 1,248 |
| Shale | 12 | 1,260 |
| Lime | 4 | 1,264 |
| Shale and lime | 34 | 1,298 |
| Lime | 6 | 1,304 |
| Shale and lime | 10 | 1,314 |
| Shale | 14 | 1,328 |
| Lime | 6 | 1,334 |
| Shale | 51 | 1,385 |
| Shale, fossiliferous | 10 | 1,395 |
| Lime and shale | 17 | 1,412 |
| Shale | 104 | 1,516 |
| Lime | 3 | 1,519 |
| Shale and lime | 7 | 1,526 |
| Shale | 126 | 1,652 |
| Lime and shale | 23 | 1,675 |
| Shale | 46 | 1,721 |
| Shale and shells | 101 | 1,822 |
| Shale | 73 | 1,895 |
| Lime | 2 | 1,897 |
| Shale and shells | 15 | 1,912 |
| Shale | 15 | 1,927 |
| Sandstone | 1 | 1,928 |
| Sand, oil show | 38 | 1,966 |
| Sand and shale | 9 | 1,975 |
| Sand | 30 | 2,005 |
| Sandstone | 3 | 2,008 |
| Sand | 30 | 2,038 |
| Sandstone | 2 | 2,040 |
| Sand | 23 | 2,063 |
| Shale | 37 | 2,100 |
| Shale, sandy | 16 | 2,116 |
| Shale | 59 | 2,175 |
| Shale, sandy | 84 | 2,259 |
| Sand and shale | 8 | 2,267 |
| Shale | 14 | 2,281 |
| Shale, sandy | 87 | 2,368 |
| Lime, sticky | 11 | 2,379 |
| Lime, sandy | 6 | 2,385 |
| Lime | 25 | 2,410 |
| Lime, sticky | 13 | 2,423 |
| Lime, hard, sandy | 57 | 2,480 |
| Lime | 32 | 2,512 |
| Shale, sandy | 12 | 2,524 |
| Shale and lime | 22 | 2,546 |
| Chalk; gas odor strong | 121 | 2,667 |
| Chalk, very hard | 103 | 2,770 |
| Chalk, hard | 13 | 2,783 |
| Chalk, gas odor | 25 | 2,808 |
| Chalk | 52 | 2,860 |
| Sand and shale, glauconitic; gas odor | 3.5 | 2,863.5 |
| Chalk | 65.5 | 2,929 |
| Shale | 66 | 2,995 |
| Lime, white, hard | 88 | 3,083 |
| Shale | 69 | 3,152 |
| Limestone (Georgetown) | 79 | 3,231 |
| Limestone (Edwards) | 101 | 3,332 |

Well I-9-27
[Owner: Mrs. T. A. Wilson. Driller: Clopton & Mitchell]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 3 | 3 | Sand, green | 38 | 841 |
| Sand | 32 | 35 | Shale | 40 | 881 |
| Gravel | 10 | 45 | Shale, sandy | 54 | 935 |
| Sand | 84 | 129 | Sand | 5 | 940 |
| Shale, blue | 15 | 144 | Shale, sandy | 13 | 953 |
| Sand, hard | 36 | 180 | Sand | 10 | 963 |
| Shale, sandy | 40 | 220 | Shale | 10 | 973 |
| Shale, blue | 6 | 226 | Shale, hard | 7 | 980 |
| Sand | 51 | 277 | Lime | 2 | 982 |
| Lime | 2 | 279 | Shale | 98 | 1,080 |
| Shale, blue | 4 | 283 | Lime | 1 | 1,081 |
| Sand, hard | 38 | 321 | Shale and limestone | 33 | 1,114 |
| Boulders | 2 | 323 | Limestone | 2 | 1,116 |
| Sand | 47 | 370 | Shale | 23 | 1,139 |
| Sand and shale | 20 | 390 | Shale, sticky | 21 | 1,160 |
| Sand, hard | 6 | 396 | Shale | 21 | 1,181 |
| Rock | 5 | 401 | Shale, sticky | 23 | 1,204 |
| Shale, hard, sandy | 15 | 416 | Shale | 40 | 1,244 |
| Sand rock | 15 | 431 | Lime | 8 | 1,252 |
| Shale | 8 | 439 | Shale and boulders | 13 | 1,265 |
| Boulders | 2 | 441 | Sand | 3 | 1,268 |
| Shale and boulders, sandy | 67 | 508 | Shale and lime, hard gray streaks | 232 | 1,500 |
| Lignite | 6 | 514 | Shale, gray, sticky | 32 | 1,532 |
| Sand | 38 | 552 | Rock | .5 | 1,532.5 |
| Rock | 1 | 553 | Shale, sandy | 5 | 1,537.5 |
| Sand, hard | 26 | 579 | Shale and boulders | 29.5 | 1,567 |
| Sandstone | 2 | 581 | Lime | 1 | 1,568 |
| Sand | 38 | 619 | Shale, sandy | 20 | 1,588 |
| Sandstone, hard | 31 | 650 | Shale with lime streak | 17 | 1,605 |
| Sand rock | 3 | 653 | Shale | 15 | 1,620 |
| Sand | 6 | 659 | Lime, hard, sandy | 7 | 1,627 |
| Shale | 10 | 669 | Shale | 96 | 1,723 |
| Sand rock | 1 | 670 | Shale, sandy | 1 | 1,724 |
| Sand | 5 | 675 | Sand | 3.5 | 1,727.5 |
| Sand rock | 1 | 676 | Sand, hard | 4.5 | 1,732 |
| Sand | 24 | 700 | Sand | 4 | 1,736 |
| Sand rock | 2 | 702 | Sand | 30 | 1,766 |
| Sandstone | 21 | 723 | Shale, sandy | 9 | 1,775 |
| Sand rock | 1 | 724 | Shale, sticky | 25 | 1,800 |
| Sand | 5 | 729 | Shale, sandy and gas | 2 | 1,802 |
| Sand rock | 2 | 731 | Sand | 37 | 1,839 |
| Sandstone, soft | 30 | 761 | Shale, sandy | 4 | 1,843 |
| Shale | 1 | 762 | Sand | 7 | 1,850 |
| Sand and boulders | 11 | 773 | Sandstone | 3 | 1,853 |
| Shale | 17 | 790 | Sand | 21 | 1,874 |
| Lime | 3 | 793 | Shale | 11 | 1,885 |
| Sand | 6 | 799 | Sand | 4 | 1,889 |
| Shale | 4 | 803 | Shale | 116 | 2,005 |

Well I-9-50
[Owner: B. D. Bomba. Driller: A. F. Mann]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay | 31 | 31 | Sandstone | 6 | 68 |
| Sandstone | 8 | 39 | Sand and water | 28 | 96 |
| Shale | 23 | 62 | Shale, gray | 3 | 99 |

Well J-1-41
[Owner: F. C. Stinson. Driller: J. Rogers]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil | 3 | 3 |
| Gravel | 26 | 29 |
| Shale, blue | 36 | 65 |
| Shale, gray | 50 | 115 |
| Lime, bluish-gray | 20 | 135 |
| Lime, brown | 13 | 148 |
| Lime, brownish-gray, with shale | 17 | 165 |
| Shale, gray; little water | 39 | 204 |
| Shale, blue | 3 | 207 |
| Shale, gray and limestone | 13 | 220 |
| Shale, blue | 58 | 278 |
| Lime, white and gray flint; dolomite and tuff | 32 | 310 |
| Lime, gray, with pyrite | 10 | 320 |
| Lime, white and gray | 70 | 390 |
| Lime, gray, with pyrite | 20 | 410 |
| Lime, gray | 48 | 458 |
| Shale, blue | 2 | 460 |
| Lime | 25 | 485 |
| Lime, gray, with mud | 10 | 495 |
| Mud, dark-gray | 20 | 515 |
| Lime, white | 25 | 540 |
| Lime, white and gray | 28 | 568 |
| Lime, gray, white, and light-blue with very hard flint | 4 | 572 |
| Shale, blue | 12 | 584 |
| Shale, blue, with limestone and pyrite | 11 | 595 |
| Shale, fossiliferous | 20 | 615 |
| Lime, hard, white; water | 26 | 641 |

Well J-1-45
[Owner: Anton Burger. Driller: W. Peters]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Escondido, Navarro, Taylor, and Anacacho formations and Austin chalk: | | |
| Black earth | 3 | 3 |
| Gravel | 41 | 44 |
| Yellow clay | 190 | 234 |
| Blue shale | 2 | 236 |
| Blue lime | 9 | 245 |
| Blue shale | 19 | 264 |
| Blue shale and thin sand lenses | 1 | 265 |
| Blue lime | 5 | 270 |
| Blue shale and thin sand lenses | 2 | 272 |
| Blue shale | 118 | 390 |
| Blue lime | 3 | 393 |
| Blue shale | 59 | 452 |
| Blue lime | 292 | 654 |
| Escondido, Navarro, Taylor and Anacacho formations and Austin chalk—continued: | | |
| White limestone: some marly limestone | 168 | 822 |
| Dark shale | 6 | 828 |
| Austin chalk | 267 | 1,095 |
| Eagle Ford shale: Lignite shale | 41 | 1,136 |
| Buda limestone: Hard creamy white limestone | 62 | 1,198 |
| Grayson shale (Del Rio clay): Blue mud | 60 | 1,285 |
| Georgetown limestone: | | |
| Gray limestone | 32 | 1,290 |
| Hard yellowish-white limestone | 10 | 1,300 |
| Edwards limestone: Porous sandy limestone; sulfur water | 15 | 1,315 |

Well J-1-44
[Owner: Fritz Fuos. Driller: Pegg Bros.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil | 4 | 4 |
| Gravel | 12 | 16 |
| Clay | 25 | 41 |
| Shale | 474 | 515 |
| Limestone (Anacacho) | 85 | 600 |
| Marl (Taylor) | 89 | 689 |
| Chalk (Austin) | 246 | 935 |
| Shale (Eagle Ford) | 43 | 978 |
| Limestone (Buda) | 57 | 1,035 |
| Clay (Grayson shale, formerly Del Rio clay) | 63 | 1,098 |
| Limestone (Georgetown) | 22 | 1,120 |
| Limestone (Edwards) | 12 | 1,132 |
| Limestone and water | 3 | 1,135 |
| Limestone | 81 | 1,216 |

Well J-1-53
[Owner: J. Jagge. Driller: J. Jagge]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil and gravel | 7 | 7 |
| Limestone (Anacacho) | 38 | 45 |
| Lime, soft | 182 | 227 |
| Chalk (Austin) | 138 | 365 |
| Shale (Eagle Ford) | 36 | 401 |
| Limestone (Buda) | 61 | 462 |
| Clay (Grayson shale, formerly Del Rio clay) | 67 | 529 |
| Limestone (Georgetown and Edwards) | 38 | 567 |

Well J-1-62
[Owner: John Nietenhoefer. Driller: G. P. Oakes]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Gravel | 50 | 50 | Shale, blue | 55 | 915 |
| Clay, yellow | 7 | 57 | Shale, green | 25 | 940 |
| Rock, yellow | 1 | 58 | Rock and sand, green | 7 | 947 |
| Shale, blue | 72 | 130 | Sand, white, brackish | 13 | 960 |
| Sandstone and water seep | 2 | 132 | Shale, green | 10 | 970 |
| Shale, blue | 278 | 410 | Unknown | 5 | 975 |
| Rock | 3 | 413 | Shale, blue | 5 | 980 |
| Shale, green | 87 | 500 | Rock, green and lime | 225 | 1,205 |
| Shale, green, sandy | 35 | 535 | Shale, green | 40 | 1,245 |
| Shale, green | 40 | 575 | Shale, light-green | 5 | 1,250 |
| Sand, green | 10 | 585 | Lime, green | 20 | 1,270 |
| Sand, dark-green | 10 | 595 | Shale, green | 5 | 1,275 |
| Shale, sandy | 26 | 621 | Lime, green | 35 | 1,310 |
| Shale, green | 109 | 730 | Shale, blue | 60 | 1,370 |
| Serpentine streaks | 5 | 735 | Lime, green and sulfur water | 42 | 1,412 |
| Shale, green | 125 | 860 | | | |

Well J-1-64
[Owner: O. A. Schmidt. Driller: C. A. Schweers]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 2 | 2 | Rock, gray | 1 | 283 |
| Gravel | 2 | 4 | Shale, gray | 169 | 452 |
| Clay, yellow | 28 | 32 | Rock, gray | 2 | 454 |
| Clay, dark-gray | 59 | 91 | Shale | 191 | 645 |
| Clay, bluish-gray | 2 | 93 | Shale, gray, soft, friable | 29 | 674 |
| Clay, blue | 57 | 150 | Shale, dark-gray | 30 | 704 |
| Rock, gray | 5 | 155 | Shale, gray | 8 | 712 |
| Shale, blue | 15 | 170 | Sand, green | 20 | 732 |
| Rock, gray | 5 | 175 | Shale, light-gray | 18 | 750 |
| Shale, gray | 13 | 188 | Lime, gray | 52 | 802 |
| Rock, gray | 3 | 191 | Shale, gray | 4 | 806 |
| Shale, gray | 11 | 202 | Lime, gray | 36 | 842 |
| Rock, gray | 2 | 204 | Shale, dark | 68 | 910 |
| Shale, gray | 78 | 282 | Lime, white and salt water | 30 | 940 |

Well J-1-83
[Owner: City of Castroville. Driller: Cravens Drilling Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 26 | 26 | Shale (Eagle Ford) | 33 | 525 |
| Gravel | 2 | 28 | Limestone (Buda) | 75 | 600 |
| Marl (Taylor) | 100 | 128 | Clay (Grayson shale, formerly Del Rio clay) | 98 | 698 |
| Limestone (Anacacho) | 82 | 210 | Limestone (Edwards), cavernous | 17 | 715 |
| Chalk (Austin) | 282 | 492 | | | |

Well J-1-86
[Owner: J. Courand. Driller: Golden West Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Gravel | 10 | 10 | Sand | 17 | 920 |
| Shale | 200 | 210 | Shale | 12 | 932 |
| Lime; gas show 200 feet | 15 | 225 | Lime | 71 | 1,003 |
| Shale and slight oil show | 172 | 397 | Clay | 19 | 1,022 |
| Sand | 35 | 432 | Sand and oil trace | 10 | 1,032 |
| Shale | 35 | 467 | Shale | 20 | 1,052 |
| Lime and oil trace | 413 | 580 | Sand and water | 15 | 1,067 |
| Shale | 80 | 660 | Lime and water | 32 | 1,099 |
| Lime and water | 140 | 800 | Sand and water | 23 | 1,122 |
| Shale | 5 | 805 | Lime and sand | 5 | 1,127 |
| Sand | 15 | 820 | Lime, hard and water | 20 | 1,147 |
| Lime | 83 | 903 | | | |

Well J-2-15
[Owner: A. J. Wurzbach. Driller: J. I. Moore]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Caliche and shale | 93 | 93 |
| Clay, brown | 17 | 110 |
| Shale, black | 148 | 258 |
| Lime, white | 42 | 300 |
| Lime, gray | 21 | 321 |
| Shale, gray | 57 | 378 |
| Lime, gray | 20 | 398 |
| Sand and gravel, contain water | 17 | 415 |
| Lime | 18 | 433 |
| Shale, blue | 5 | 438 |
| Lime | 2 | 440 |
| Gravel and water | 12 | 460 |
| Lime, broken | 17 | 477 |
| Shale, blue | 53 | 530 |
| Lime | 70 | 600 |
| Lime, broken | 14 | 614 |
| Sand and water | 8 | 622 |
| Lime | 39 | 661 |
| Sand, hard, fine | 14 | 675 |
| Lime | 34 | 709 |
| Gravel | 5 | 714 |
| Lime | 11 | 725 |
| Lime, honeycomb and water | 4 | 729 |
| Lime, gray | 16 | 745 |
| Lime | 60 | 805 |
| Lime, gray | 155 | 960 |
| Lime and shale | 35 | 995 |
| Lime | 5 | 1,000 |
| Lime, gray | 25 | 1,025 |
| Lime, brown | 5 | 1,030 |
| Lime, brown, porous | 10 | 1,040 |
| Lime, gray and water | 25 | 1,065 |
| Lime, porous | 35 | 1,100 |
| Lime, broken | 30 | 1,130 |
| Lime, gray | 100 | 1,230 |
| Lime and broken chalk | 12 | 1,242 |
| Shale, gray, broken | 8 | 1,250 |
| Shale, broken | 25 | 1,275 |
| Lime, gray | 110 | 1,385 |
| Shale, blue | 10 | 1,395 |
| Lime, gray, hard | 25 | 1,420 |
| Lime, gray | 11 | 1,431 |
| Shale, gray, sticky | 9 | 1,440 |
| Shale, sticky | 29 | 1,469 |
| Shale and limestone | 26 | 1,495 |
| Lime, brown | 12 | 1,507 |
| Lime, broken | 8 | 1,515 |
| Lime, brown | 10 | 1,525 |
| Lime, brown, hard | 10 | 1,535 |
| Lime, brown | 63 | 1,598 |
| Lime, white | 7 | 1,605 |
| Shale, gray | 40 | 1,645 |
| Lime and broken shale | 15 | 1,660 |
| Lime and shale; lime broken | 57 | 1,717 |
| Lime, brown | 23 | 1,740 |
| Lime, gray-brown, broken | 10 | 1,750 |
| Lime, brown | 70 | 1,820 |
| Lime, gray-brown, broken | 15 | 1,835 |
| Lime, gray | 50 | 1,885 |
| Lime, brown | 15 | 1,900 |
| Lime | 6 | 1,906 |
| Lime, sandy | 14 | 1,920 |
| Lime, gray-brown and brown | 15 | 1,935 |
| Lime and shale | 45 | 1,980 |
| Shale | 5 | 1,985 |
| Lime, dark | 13 | 1,998 |
| Shale, blue | 20 | 2,018 |
| Lime | 14 | 2,032 |
| Lime, brown | 7 | 2,039 |
| Lime, brown, hard | 16 | 2,055 |
| Lime and sand; sulfur water | 2 | 2,057 |
| Shale | 28 | 2,085 |
| Shale, blue | 15 | 2,100 |
| Lime | 5 | 2,105 |
| Lime and shale | 6 | 2,111 |
| Shale, blue | 44 | 2,155 |
| Lime, gray | 25 | 2,180 |
| Lime, gray, broken | 30 | 2,210 |
| Lime, gray | 30 | 2,240 |
| Shale, blue | 13 | 2,253 |
| Lime, broken | 12 | 2,265 |
| Lime, broken | 5 | 2,270 |
| Lime, gray | 30 | 2,300 |
| Lime, gray; hole full of water | 25 | 2,325 |
| Lime, gray | 12 | 2,337 |
| Sand, hard | 8 | 2.345 |
| Shale, lime, and blue limestone | 10 | 2,355 |
| Lime | 70 | 2,425 |
| Lime, gray | 30 | 2,455 |
| Lime, broken, sandy | 35 | 2,490 |
| Lime | 6 | 2.496 |
| Lime, broken | 26 | 2,522 |
| Shale, red | 3 | 2,525 |
| Shale, blue | 6 | 2,531 |
| Lime, gray | 19 | 2,550 |
| Shale, broken | 20 | 2,570 |
| Lime | 5 | 2,575 |
| Lime, hard | 15 | 2,590 |
| Lime | 60 | 2,650 |
| Lime, hard | 10 | 2,660 |
| Lime | 30 | 2,690 |
| Shale, red | 2 | 2,692 |
| Sand and water | 28 | 2,720 |
| Sand, hard | 15 | 2,735 |
| Sand | 16 | 2,751 |
| Lime, hard | 4 | 2,755 |
| Lime | 4 | 2,759 |
| Sand and water | 11 | 2,770 |
| Sand | 15 | 2,785 |
| Sand and gravel | 30 | 2,815 |
| Sand | 1 | 2,816 |
| Lime, gray | 9 | 2,825 |
| Lime, sandy | 13 | 2,838 |
| Lime, brown | 3 | 2,841 |
| Shale, brown | 4 | 2,845 |
| Lime, sandy | 19 | 2,864 |
| Lime, black | 6 | 2,870 |
| Sand | 4 | 2,874 |
| Lime, black | 26 | 2,900 |
| Lime | 10 | 2,910 |
| Lime, black, hard | 15 | 2,925 |
| Lime, black | 268 | 3,193 |

Well J-4-2
[Owner: E. Krewald. Driller: Pegg Bros.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Caliche | 4 | 4 | Limestone (Anacacho) | 310 | 750 |
| Clay, yellow, sticky | 58 | 62 | Chalk (Austin) | 360 | 1,110 |
| Shale, black | 48 | 110 | Shale (Eagle Ford) | 35 | 1,145 |
| Shale, sand stringers and gas | 20 | 130 | Limestone (Buda) | 55 | 1,200 |
| Sand, hard | 1 | 131 | Clay (Grayson shale, formerly Del Rio clay) | 60 | 1,260 |
| Shale and sand, lenses | 44 | 175 | Limestone (Georgetown) | 25 | 1,285 |
| Escondido formation: shale and sandstone | 265 | 440 | Limestone (Edwards) | 100 | 1,385 |

Well J-4-5
[Owner: T. S. McClure. Driller: F. M. Burkett]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 20 | 20 | Clay, fine-grained sand, and hard gray glauconitic limestone | 20 | 470 |
| Clay, dark, sandy and limestone concretion | 40 | 60 | Clay and fine-grained gray calcareous sand | 20 | 490 |
| Clay, light-gray, sandy and blue-gray very fine grained limy clay | 40 | 100 | Sandstone, greenish-gray, fine-grained, glauconitic | 20 | 510 |
| Clay, gray, limy | 20 | 120 | Clay, greenish-gray, sandy, glauconitic | 60 | 570 |
| Clay, bluish-gray, calcareous, and fine sandy clay | 20 | 140 | Clay, gray, hard, massive, and sandy clay | 20 | 590 |
| Clay, bluish-gray, sandy, calcareous | 20 | 160 | Clay, fine-grained, glauconitic, calcareous, sandy | 40 | 630 |
| Clay, bluish-gray, calcareous | 20 | 180 | Clay, gray, sandy, calcareous | 50 | 680 |
| Clay, gray, calcareous, sandy | 20 | 200 | Chalk, light-gray and gray calcareous clay | 40 | 720 |
| Clay, gray, plastic, calcareous | 20 | 220 | Limestone, gray, hard, sandy | 20 | 740 |
| Clay, gray, plastic and fossil-fragments | 20 | 240 | Chalk, light-gray | 32 | 772 |
| Clay, gray, calcareous, sandy | 20 | 260 | Chalk, light-gray, argillaceous | 98 | 870 |
| Clay, gray, sandy, calcareous | 20 | 280 | Limestone, hard | 14 | 884 |
| Clay, sandy and fine-grained argillaceous gray sand | 20 | 300 | Limestone and calcareous shale | 16 | 900 |
| Clay, gray, hard, massive, calcareous | 20 | 320 | Chalk and calcareous shale with pyrite | 38 | 998 |
| Clay gray, hard and fine-grained sandstone | 20 | 340 | Shale, calcareous and limestone | 19 | 1,017 |
| Clay, gray, hard, massive, calcareous | 80 | 420 | Chalk, light-gray, shaly | 15 | 1,032 |
| Clay, greenish-gray, hard, massive, calcareous | 15 | 435 | Chalk, light-gray | 25 | 1,057 |
| Chalk, and glauconite clay containing fragments of *Crenella serica* Conrad | 3 | 438 | Chalk, light-gray and gray calcareous shale | 12 | 1,069 |
| Sandstone, brown, fine-grained and glauconitic gray chalky limestone | 12 | 450 | Chalk, white | 41 | 1,110 |
| | | | Shale (Eagle Ford), dark-gray, calcareous | 40 | 1,150 |

Well J-4-6
[Owner: R. J. Noonan. Driller: E. T. Peters]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay and gravel | 30 | 30 | Shale and gumbo | 287 | 820 |
| Rock | 10 | 40 | Limestone (Anacacho) | 76 | 896 |
| Gumbo | 8 | 48 | Shale and gumbo | 8 | 904 |
| Rock | 3 | 51 | Chalk and rock, gummy | 104 | 1,008 |
| Sand | 15 | 66 | Chalk, sticky | 14 | 1,022 |
| Rock | 3 | 69 | Chalk | 198 | 1,220 |
| Sand and water | 1 | 70 | Shale (Eagle Ford) | 71 | 1,291 |
| Rock | 3 | 73 | Limestone (Buda) | 88 | 1,379 |
| Shale | 12 | 85 | Lime | 12 | 1,391 |
| Rock | 3 | 88 | Clay (Grayson shale, formerly Del Rio clay) | 49 | 1,440 |
| Gumbo and boulders | 52 | 140 | Limestone (Georgetown) | 44 | 1,484 |
| Shale | 110 | 250 | Limestone (Edwards) | 55 | 1,539 |
| Shale and boulders | 80 | 330 | Lime with flint | 5 | 1,544 |
| Gumbo | 46 | 376 | Lime with pyrite | 1 | 1,545 |
| Rock | 2 | 378 | Lime, dry, with flint | 5 | 1,550 |
| Shale | 42 | 420 | Lime with pyrite | 1 | 1,551 |
| Gumbo, tough | 45 | 465 | Lime with flint | 28 | 1,579 |
| Rock | 1 | 466 | Lime with pyrite | 1 | 1,580 |
| Shale and boulders | 67 | 533 | | | |

Well J-4-11
[Owner: Wm. Edgar. Driller: Sun Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Surface soil, black | 3 | 3 |
| Gravel and flint | 5 | 8 |
| Caliche | 6 | 14 |
| Shale, yellow | 42 | 56 |
| Shale, yellow, blue streaks | 14 | 70 |
| Shale, blue | 6 | 76 |
| Shale, gray, sandy; oil odor | 2 | 78 |
| Shale, gray, hard; oil odor | 9 | 87 |
| Shale, gray, sandy | 13 | 100 |
| Shale, blue | 30 | 130 |
| Shale, dark-blue, and sandy lime | 10 | 140 |
| Shale, blue and sandstone lenses; oil odor | 40 | 180 |
| Shale, blue, hard, sandy | 5 | 185 |
| Shale, blue | 5 | 190 |
| Shale, blue and fossils | 5 | 195 |
| Shale, blue and sand lenses | 5 | 200 |
| Shale, gray, hard | 12 | 212 |
| Shale, soft, sandy | 3 | 215 |
| Shale, hard, stratified, sandy; oil show | 5 | 220 |
| Shale, hard, sandy and sandstone lenses | 18 | 238 |
| Shale, hard, and sandstone lenses; oil show | 2 | 240 |
| Shale, blue | 25 | 265 |
| Shale, gray, hard; lenses | 10 | 275 |
| Shale, blue | 5 | 280 |
| Shale, gray, hard and sand | 5 | 285 |
| Shale, gray, hard, sandy | 10 | 295 |
| Shale, blue | 5 | 300 |
| Lime, gray, hard, sandy | 2 | 302 |
| Shale, blue | 30 | 332 |
| Rock and shale, gray, hard | 10 | 342 |
| Shale, blue | 33 | 375 |
| Shale, gray, hard, stratified | 3 | 378 |
| Shale, blue, hard | 7 | 385 |
| Shale, gray, hard | 3 | 388 |
| Shale, hard | 7 | 395 |
| Marl and shale, hard | 20 | 415 |
| Marl, gray | 20 | 435 |
| Marl, blue | 35 | 470 |
| Shale, gray | 10 | 480 |
| Shale, blue | 20 | 500 |
| Shale, gray, hard; sand lenses; oil odor | 20 | 520 |
| Shale, gray, hard | 42 | 562 |
| Shale and boulders, hard, gray | 9 | 571 |
| Lime, gray, sandy | 29 | 600 |
| Lime, dark-gray, sandy | 70 | 670 |
| Lime, gray, marly | 10 | 680 |
| Limestone, brown; oil odor | 15 | 695 |
| Limestone, white-brown, hard | 5 | 700 |
| Gray streaks | 30 | 730 |
| Limestone, gray | 10 | 740 |
| Limestone, gray, sandy | 30 | 770 |
| Lime, gray, marly | 45 | 815 |
| Shale, blue, sandy | 80 | 895 |
| Lime, white | 90 | 985 |
| Limestone, light-gray; oil odor | 15 | 1,000 |
| Lime, white | 5 | 1,005 |
| Shale, brownish | 10 | 1,015 |
| Lime, white | 10 | 1,025 |
| Lime, gray | 95 | 1,120 |
| Shale, black, hard | 33 | 1,153 |
| Lime, white, hard | 70 | 1,223 |
| Shale, blue, sticky | 65 | 1,288 |
| Lime, white | 7 | 1,295 |
| Lime, yellow, hard | 5 | 1,300 |
| Rock and water | 1 | 1,301 |
| Lime, yellow, hard | 7 | 1,303 |
| Cavern | 4 | 1,312 |
| Lime, hard | 13 | 1,325 |

Well J-4-15
[Owner: J. O. Pike. Driller: T. W. Bain]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil | 7 | 7 |
| Gravel | 6 | 13 |
| Shale, gray | 137 | 150 |
| Rock | 4 | 154 |
| Shale | 79 | 233 |
| Sand, green and oil | 108 | 341 |
| Rock | 3 | 344 |
| Shale and fossils | 3 | 347 |
| Shale, gray | 29 | 376 |
| Lime | 2 | 378 |
| Shale, gray | 23 | 401 |
| Shell | 2 | 403 |
| Shale, gray | 24 | 427 |
| Sand, dry and oil trace | 1 | 428 |
| Shale, blue | 27 | 455 |
| Sand, oil | 6 | 461 |

Well J-4-23
[Owner: J. Tschirhart. Driller: Johnson Bros.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil | 3 | 3 |
| Gravel | 13 | 16 |
| Clay, yellow | 4 | 20 |
| Sand rock | 8 | 28 |
| Shale | 104 | 132 |
| Gumbo | 14 | 146 |
| Shale | 78 | 224 |
| Sand | 6 | 230 |
| Shale | 290 | 520 |
| Sand | 18 | 538 |
| Chalk | 452 | 990 |
| Shale, hard | 8 | 998 |
| Sand, hard | 8 | 1,006 |
| Gumbo, tough | 12 | 1,018 |
| Limestone, hard | 8 | 1,026 |
| Shale, hard | 32 | 1,058 |
| Shale, sticky | 60 | 1,118 |
| Shale, blue | 114 | 1,232 |
| Limestone | 8 | 1,240 |
| Shale, broken | 61 | 1,301 |
| Limestone | 111 | 1,412 |
| Sand and gas | 2 | 1,414 |
| Rock | 6 | 1,420 |
| Shale, black | 24 | 1,444 |
| Sand, very hard | 16 | 1,460 |
| Lime, broken | 122 | 1,582 |
| Rock | 19 | 1,601 |
| Lime, sandy and oil show | 9 | 1,610 |
| Lime and sulfur water | 8 | 1,618 |

Well J-4-25
[Owner: H. V. Haas. Driller: Thomas and Ryan]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Surface | 80 | 80 |
| Shale, fine, sandy | 40 | 120 |
| Shale, sandy | 30 | 150 |
| Shale, hard and rock streaks | 50 | 200 |
| Shale with sand streaks; oil | 30 | 230 |
| Shale, hard | 120 | 350 |
| Shale and gumbo and rock streaks | 140 | 490 |
| Shale and sand, streaks | 30 | 520 |
| Shale and gumbo | 80 | 600 |
| Shale (Taylor), sandy | 35 | 635 |
| Shale, hard | 24 | 659 |
| Gumbo | 22 | 681 |
| Gumbo, tough | 119 | 800 |
| Shale, gumbo, and sand streaks | 60 | 860 |
| Shale, hard; gumbo; sandy streaks | 72 | 932 |
| Lime (Anacacho); heavy oil show | 52 | 984 |
| Shale, hard, calcareous | 12 | 996 |
| Shale, hard, sandy | 94 | 1,090 |
| Shale, hard and bluish-green calcareous sand | 58 | 1,148 |
| Rock, blue, with flint | 1 | 1,149 |
| Chalk | 11 | 1,160 |
| Rock, blne, hard, with flint | 2 | 1,162 |
| Chalk and serpentine, conglomerated, and blue clay | 10 | 1,172 |
| Chalk and gumbo | 13 | 1,185 |
| Chalk | 105 | 1,290 |
| Chalk, shaly | 80 | 1,370 |
| Shale, hard and chalk streaks | 28 | 1,398 |
| Lime, streaks (Eagle Ford) shale | 2 | 1,400 |
| Shale (Eagle Ford) | 26 | 1,426 |
| Limestone (Buda) | 64 | 1,490 |
| Clay (Grayson shale, formerly Del Rio clay) | 55 | 1,545 |
| Limestone (Georgetown) | 38 | 1,583 |
| Shale (Dobey), breaks | 1 | 1,584 |
| Chert, lime | 1 | 1,585 |
| Limestone (Edwards) | 5 | 1,590 |
| Limestone (Edwards), dry | 40 | 1,630 |
| Limestone (Edwards), hard and dry | 18 | 1,648 |
| Chert, black, hard | 1 | 1,649 |
| Limestone (Edwards), hard and dry | 1 | 1,650 |

Well J-4-27
[Owner: Albert Bendele. Driller: Stovers & May]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Midway, Escondido, and Navarro formation, Taylor marl, Austin chalk, and Anacacho limestone: | | |
| Black soil | 10 | 10 |
| Gravelly clay | 6 | 16 |
| Pack sand | 4 | 20 |
| Clay | 20 | 40 |
| Pack sand | 6 | 46 |
| Water sand | 4 | 50 |
| Rock | 3 | 53 |
| Sand with water | 17 | 70 |
| Sandy shale | 5 | 75 |
| Rock | 32 | 107 |
| Sand | 8 | 115 |
| Rock | 3 | 118 |
| Shale and boulders | 42 | 160 |
| Chalk | 2 | 162 |
| Shale | 11 | 173 |
| Rock | 5 | 178 |
| Shale | 12 | 190 |
| Water sand | 10 | 200 |
| Rock | 3 | 203 |
| Shale and boulders | 42 | 245 |
| Rock | 2 | 247 |
| Sand | 2 | 249 |
| Shale | 13 | 262 |
| Shale | 123 | 385 |
| Shale and boulders | 50 | 435 |
| Shale | 35 | 470 |
| Pack sand | 10 | 480 |
| Shale | 20 | 500 |
| Rock | 3 | 503 |
| Shale | 17 | 520 |
| Rock | 5 | 525 |
| Shale and boulders | 25 | 550 |
| Shale | 20 | 570 |
| Rock | 2 | 572 |
| Sticky shale | 28 | 600 |
| Rock | 4 | 604 |
| Shale and shell, showing oil | 8 | 612 |
| Midway, Escondido, and Navarro formation, Taylor marl, Anstin chalk, and Anacacho limestone—Continued | | |
| Hard shale | 28 | 640 |
| Shale | 15 | 655 |
| Rock | 3 | 658 |
| Gumbo | 22 | 680 |
| Gray-blue hard shale | 50 | 730 |
| Hard shale | 60 | 790 |
| Gumbo | 30 | 820 |
| Sticky shale | 20 | 840 |
| Rock | 2 | 842 |
| Gumbo | 33 | 875 |
| Shale | 20 | 895 |
| Anacacho | 25 | 920 |
| Lime and shale | 40 | 960 |
| Shale | 90 | 1,050 |
| Sandy lime | 35 | 1,085 |
| Red clay; top of chalk | 15 | 1,100 |
| Hard chalk | 25 | 1,125 |
| Chalk | 87 | 1,212 |
| Hard dry chalk | 58 | 1,270 |
| Hard chalk | 80 | 1,350 |
| Chalk | 15 | 1,365 |
| Black shale | 10 | 1,375 |
| Chalk | 17 | 1,392 |
| Eagle Ford shale | 23 | 1,415 |
| Buda limestone | 45 | 1,460 |
| Grayson shale (formerly Del Rio clay) | 60 | 1,520 |
| Georgetown limestone: | | |
| Limestone | 2 | 1,522 |
| Broken limestone | 13 | 1,535 |
| Hard limestone | 15 | 1,550 |
| Limestone | 6 | 1,556 |
| Edwards limestone: | | |
| Hard dry lime | 29 | 1,585 |
| Hard broken lime | 50 | 1,635 |
| Hard dry brown lime | 21 | 1,656 |
| Hard brown lime, black streaks | 16 | 1,672 |

Well J-4-30
[Owner: L. A. Haby. Driller: Mid-Kansas Oil and Gas Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Surface rock | 55 | 55 |
| Clay and shale | 330 | 385 |
| Shale | 495 | 880 |
| Rock | 1 | 881 |
| Shale, sandy | 24 | 905 |
| Shale, sticky | 160 | 1,065 |
| Shale, chalky | 12 | 1,077 |
| Shale, sandy and pyrite | 93 | 1,170 |
| Shale, sandy and boulders | 137 | 1,307 |
| Chalk (Austin) | 105 | 1,412 |
| Shale (Eagle Ford) | 74 | 1,486 |
| Limestone (Buda) | 24 | 1,510 |
| Clay (Grayson shale, formerly Del Rio clay) | 35 | 1,545 |
| Limestone (Georgetown) | 60 | 1,605 |

Wel J-4-31
[Owner: Jake Haby]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Sand, soft, surface | 10 | 10 |
| Rock, gray, soft | 4 | 14 |
| Sand, gray, soft | 6 | 20 |
| Gravel, white, hard | 20 | 40 |
| Rock, hard | 4 | 44 |
| Clay and gravel; soft clay | 10 | 54 |
| Rock, soft | 1 | 55 |
| Clay, blue, soft | 5 | 60 |
| Shale boulders | 325 | 385 |
| Shale, blue, hard | 50 | 435 |
| Shale and boulders; oil and gas | 80 | 515 |
| Rock | 61 | 576 |
| Shale and boulders | 224 | 800 |
| Lime, hard | 31 | 831 |
| Sand, gray, soft and shale; gas | 1 | 832 |
| Sand, gray, hard | 44 | 876 |
| Shale, sandy; oil show | 66 | 942 |
| Shale, blue, hard, sandy | 63 | 1,005 |
| Rock, hard | 10 | 1,015 |
| Shale, hard, chalky | 17 | 1,032 |
| Shale, chalky | 27 | 1,059 |
| Chalk, hard | 1 | 1,060 |
| Shale, blue, hard | 16 | 1,076 |
| Lime, gray, hard | 38 | 1,114 |
| Chalk, white, hard | 154 | 1,268 |
| Chalk, medium | 67 | 1,335 |
| Shale, brown (Eagle Ford) | 35 | 1,370 |
| Limestone (Buda) | 54 | 1,424 |
| Clay, blue (Grayson shale, formerly Del Rio clay) | 60 | 1,484 |
| Limestone (Georgetown) and shale; oil | 16 | 1,500 |
| Limestone (Edwards) | 42 | 1,542 |
| Clay (Grayson shale, formerly Del Rio clay) | 50 | 1,592 |
| Lime (Georgetown) and water | 15 | 1,607 |
| Lime (Edwards) | 9 | 1,616 |

Well J-4-37
[Owner: D. F. Davis. Driller: M. Stewart & Sons]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil | 3 | 3 |
| Clay | 7 | 10 |
| Sand | 20 | 30 |
| Rock | 10 | 40 |
| Sand | 60 | 100 |
| Sand, hard | 38 | 138 |
| Rock, hard | 1 | 139 |
| Shale | 10 | 149 |
| Rock | 2 | 151 |
| Sand, black | 5 | 156 |
| Shale, hard | 55 | 211 |
| Shale, sticky | 23 | 234 |
| Rock | 2 | 236 |
| Shale | 4 | 240 |
| Rock | 2 | 242 |
| Shale | 1 | 243 |
| Rock | 3 | 246 |
| Shale | 19 | 265 |
| Rock | 1 | 266 |
| Shale, sandy | 38 | 304 |
| Rock | 3 | 307 |
| Shale and boulders; hard shale | 202 | 509 |
| Sand, hard | 4 | 513 |
| Shale, sandy | 326 | 839 |
| Shale, hard | 20 | 859 |
| Shale, hard, sandy, broken | 20 | 879 |
| Shale, hard, sandy, streaks | 47 | 926 |
| Shale, sticky | 229 | 1,155 |
| Lime (Anacacho) | 215 | 1,370 |
| Shale, sticky | 70 | 1,440 |
| Chalk | 247 | 1,687 |
| Shale, black | 48 | 1,735 |
| Chalk | 79 | 1,814 |
| Shale (Eagle Ford) | 75 | 1,889 |
| Limestone (Buda) | 64 | 1,953 |
| Clay (Grayson shale, formerly Del Rio clay) | 37 | 1,990 |
| Limestone (Georgetown) | 30 | 2,020 |
| Limestone (Edwards) | 61 | 2,081 |

Well J-4-47, partial log
[Owner: Christilles Estate. Driller: Johnson & Hyslop]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| No record | 1,132 | 1,132 |
| Chalk (Austin) | 4 | 1,136 |
| Chalk (Austin), soft | 47 | 1,183 |
| Chalk (Austin), hard | 2 | 1,185 |
| Chalk (Austin), broken | 3 | 1,188 |
| Chalk (Austin), soft | 72 | 1,260 |
| Chalk (Austin), hard | 1 | 1,261 |
| Chalk (Austin), soft | 87 | 1,348 |
| Chalk (Austin), broken | 59 | 1,407 |
| Chalk (Austin), hard; oil show | 10 | 1,417 |
| Chalk (Austin), broken | 18 | 1,435 |
| Chalk (Austin), Eagle Ford | 1 | 1,436 |
| Shale (Eagle Ford), broken | 10 | 1,446 |
| Shale (Eagle Ford), hard | 12 | 1,458 |
| Shale (Eagle Ford), broken | 22 | 1,480 |
| Lime (Buda), hard and soft streaks | 40 | 1,520 |
| Shale (Grayson shale, formerly Del Rio clay) | 32 | 1,552 |
| Shale (Grayson shale, formerly Del Rio clay), hard | 9 | 1,561 |
| Shale (Grayson shale, formerly Del Rio clay), broken | 26 | 1,587 |
| Shale (Grayson shale, formerly Del Rio clay), hard streaks | 13 | 1,600 |
| Lime (Georgetown), hard | 30 | 1,630 |
| Lime (Georgetown), black | 11 | 1,641 |
| Lime (Edwards), very hard | 12 | 1,653 |
| Lime (Edwards), gray | 1 | 1,654 |
| Lime (Edwards), bluish-white, gray | 4 | 1,658 |
| Lime (Edwards), gray and black | 2 | 1,660 |
| Lime (Edwards), black | 3 | 1,663 |
| Lime (Edwards); oil and gas | 2 | 1,665 |
| Lime (Edwards), gray, hard | 4 | 1,669 |
| Lime (Edwards), gray and black; fossils | 2 | 1,671 |
| Lime (Edwards), gray, very hard | 2 | 1,673 |
| Lime, gray; sulfur water | 3 | 1,676 |
| Lime, gray, hard, porous | 11 | 1,687 |
| Limestone (Edwards), gray, hard | 12 | 1,699 |
| Limestone (Edwards), gray, very hard | 1 | 1,700 |

Well J-4-52
[Owner: W. J. Conger. Driller: E. R. Thomas, and others]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil, black | 2 | 2 |
| Clay, yellow and gravel | 8 | 10 |
| Clay and gravel | 31 | 41 |
| Gumbo | 29 | 70 |
| Shale, gumbo, and sand | 10 | 80 |
| Sand, probably water | 5 | 85 |
| Shale, gummy and sand streaks | 25 | 110 |
| Rock | 11 | 121 |
| Shale, gummy and sand streaks | 14 | 135 |
| Rock, fishtail | 2 | 137 |
| Shale, gummy | 13 | 150 |
| Rock | 9 | 159 |
| Shale, gummy | 6 | 165 |
| Rock | 1 | 166 |
| Shale, gummy and sand streaks | 7 | 173 |
| Boulders and shale | 7 | 180 |
| Shale, gummy and lime boulders | 72 | 252 |
| Sand, streaks; oil and shale | 38 | 290 |
| Shale, gummy | 20 | 310 |
| Shale and boulders | 50 | 360 |
| Shale and sand; oil | 10 | 370 |
| Shale and boulders | 184 | 554 |
| Shale and sand; oil | 16 | 570 |
| Gumbo | 105 | 675 |
| Shale | 40 | 715 |
| Gumbo | 2 | 717 |
| Shale and sand; oil (Taylor) | 23 | 740 |
| Sand, oil, and shale | 5 | 745 |
| Gumbo and oil show | 49 | 794 |
| Gumbo, tough | 52 | 846 |
| Gumbo | 44 | 890 |
| Gumbo, tough, chalky | 26 | 916 |
| Gumbo | 14 | 930 |
| Lime, hard, streaks | 78 | 1,008 |
| Limestone (Anacacho) with sand and chalk | 12 | 1,020 |
| Limestone (Anacacho) | 24 | 1,044 |
| Limestone, sandy and oil | 2 | 1,046 |
| Limestone (Anacacho) | 8 | 1,054 |
| Sand, streaks and oil | 6 | 1,060 |
| Shale, hard | 6 | 1,066 |
| Rock, chalk | 34 | 1,100 |
| Chalk, hard | 46 | 1,146 |
| Chalk, shaly | 54 | 1,200 |
| Chalk, soft and oil | 36 | 1,236 |
| Chalk, shaly | 40 | 1,276 |
| Chalk rock; oil show | 4 | 1,280 |
| Shale | 30 | 1,310 |
| Lime, hard | 2 | 1,312 |
| Lime rock | 20 | 1,332 |
| Lime | 8 | 1,340 |
| Chalk, streaks, and clay | 22 | 1,362 |
| Shale, hard | 40 | 1,402 |
| Shale (Eagle Ford) | 99 | 1.501 |
| Lime (Buda) | 89 | 1,590 |
| Clay (Grayson shale, formerly Del Rio clay) | 75 | 1,665 |
| Lime (Georgetown) | 35 | 1,700 |
| Lime (Edwards), and streaks | 40 | 1,740 |
| Limestone (Edwards) | 20 | 1,760 |
| Lime, very hard | 10 | 1,770 |
| Lime, broken | 10 | 1,780 |
| Lime, broken, soft and hard streaks | 5 | 1,785 |

Well J-4-58
[Owner: Mary E. Jungman. Driller: W. L. Umburn]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 3 | 3 | Shale, blue | 7 | 148 |
| Clay, yellow | 3 | 6 | Rock | 1 | 149 |
| Gravel and water | 24 | 30 | Shale, gray | 11 | 160 |
| Rock, hard | 2 | 32 | Marl, green | 5 | 165 |
| Sand | 2 | 34 | Sand, green | 65 | 230 |
| Gravel | 9 | 43 | Shale, gray, sandy | 10 | 240 |
| Clay, yellow | 27 | 70 | Shale, gray | 37 | 277 |
| Shale, blue, sandy | 10 | 80 | Shale, hard | 3 | 280 |
| Shale, sandy | 10 | 90 | Shale, gray | 19 | 299 |
| Shale, blue | 20 | 110 | Rock | 20 | 319 |
| Rock | 1 | 111 | Shale, top gray; oil odor | 4 | 323 |
| Shale, sandy | 29 | 140 | Shale | 28 | 351 |
| Rock | 1 | 141 | Sand, dry | 2 | 353 |

Well J-4-59
[Owner: Jungman Heirs. Driller: J. H. Lynd and A. M. Hepler]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface clay and gravel | 50 | 50 | Shale, blue | 47 | 647 |
| Shale, brown | 45 | 95 | Shale and boulders | 43 | 690 |
| Shale and boulders | 58 | 153 | Shale, sticky | 25 | 715 |
| Rock | 3 | 156 | Shale | 61 | 776 |
| Shale, sandy, and boulders | 22 | 178 | Rock | 21 | 797 |
| Rock | 1 | 179 | Shale, sticky | 23 | 820 |
| Shale and boulders | 58 | 237 | Shale and boulders | 50 | 870 |
| Rock | 1 | 238 | Shale | 62 | 932 |
| Sand, green | 30 | 268 | Shell bed | 15 | 947 |
| Rock | 2 | 270 | Shale, sticky | 5 | 952 |
| Shale, gray | 40 | 310 | Shale, sandy | 39 | 991 |
| Rock | 2 | 312 | Shale, sticky | 39 | 1,030 |
| Shale, sandy | 77 | 389 | Gumbo | 60 | 1,090 |
| Lime, hard | 4 | 393 | Shale, sandy | 40 | 1,130 |
| Shale, sandy | 27 | 420 | Shale, sticky | 60 | 1,190 |
| Shale, sand, and boulders | 10 | 430 | Shale and boulders | 90 | 1,280 |
| Sandstone, hard | 5 | 435 | Lime (Anacacho) | 129 | 1,409 |
| Shale, sandy | 34 | 469 | Shale and gray chalk | 73 | 1,482 |
| Sandstone | 1 | 470 | Serpentine | 218 | 1,700 |
| Sand, oil show | 6 | 476 | Chalk | 138 | 1,838 |
| Rock | 3 | 479 | Shale (Eagle Ford) | 32 | 1,870 |
| Shale, sandy | 41 | 520 | Limestone (Buda) | 72 | 1,942 |
| Rock | 3 | 523 | Clay (Grayson shale, formerly Del Rio Clay) | 73 | 2,015 |
| Shale and boulders | 50 | 573 | Limestone (Georgetown) | 4 | 2,019 |
| Shale, sandy | 27 | 600 | | | |

Well J-4-60
[Owner: Von Mangold. Driller: T. N. T. Drilling Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 4 | 4 | Shale, hard | 27 | 1,260 |
| Clay | 4 | 8 | Lime, hard | 4 | 1,264 |
| Rock | 1 | 9 | Lime, hard and gumbo | 4 | 1,268 |
| Clay-gravel | 25 | 34 | Lime, hard | 3 | 1,271 |
| Rock | 4 | 38 | Lime, hard, with pyrite | 2 | 1,273 |
| Shale, gumbo, and hard streaks | 107 | 145 | Shale, hard, limy | 7 | 1,280 |
| Shale and tough gumbo | 30 | 175 | Lime, hard and pyrite | 4 | 1,284 |
| Shale and gumbo | 205 | 380 | Gumbo streaks, pyrite and serpentine | 50 | 1,334 |
| Sandstone | 1 | 381 | Lime, hard | 20 | 1,354 |
| Sandstone; gas show | 9 | 390 | Lime, black, hard | 6 | 1,360 |
| Shale, hard and sand streaks | 60 | 450 | Serpentine, unknown | 5 | 1,365 |
| Shale, hard and gumbo | 13 | 463 | Chalk, black, hard with flint | 23 | 1,388 |
| Gumbo | 18 | 481 | Chalk, hard | 20 | 1,408 |
| Shale, hard, sandy, and sandstone streaks | 19 | 500 | Chalk (Eagle Ford) and serpentine | 18 | 1,426 |
| Sandstone | 4 | 504 | Shale (Eagle Ford) | 16 | 1,442 |
| Shale, hard, sandy; shale streaks | 61 | 565 | Limestone (Buda) | 30 | 1,472 |
| Shale, hard and tough gumbo | 85 | 650 | Limestone (Buda) and serpentine | 40 | 1,512 |
| Sand, hard, with shale streaks | 7 | 657 | Limestone (Buda), hard streaks and serpentine | 10 | 1,522 |
| Shale and gumbo | 56 | 713 | Clay (Grayson shale, formerly Del Rio clay) | 48 | 1,570 |
| Shale, hard | 67 | 780 | Lime, hard, with gumbo | 5 | 1,575 |
| Limestone | 84 | 864 | Limestone (Georgetown) and black streaks | 15 | 1,590 |
| Shale, hard, dry | 59 | 923 | Limestone, black | 3 | 1,593 |
| Rock, hard | 6 | 929 | Limestone | 42 | 1,635 |
| Serpentine, soft and chalk | 16 | 945 | Shale (Dobey) | 3 | 1,638 |
| Serpentine, green | 55 | 1,000 | Limestone (Edwards) | 12 | 1,650 |
| Serpentine and gumbo | 10 | 1,010 | Limestone, hard, dark-brown | 24 | 1,674 |
| Serpentine, chalky | 30 | 1,040 | Limestone, brown, hard and chert | 15 | 1,689 |
| Serpentine and gumbo | 75 | 1,115 | Limestone, hard and black flint | 2 | 1,691 |
| Serpentine | 55 | 1,170 | Limestone, hard | 9 | 1,700 |
| Chalk, hard and streaks | 41 | 1,211 | | | |
| Chalk, very hard | 8 | 1,219 | | | |
| Serpentine | 12 | 1,231 | | | |
| Shale, hard; streaks and serpentine | 2 | 1,233 | | | |

Well J-4-61
[Owner: J. Tschirhart. Driller: Cromwell & Cromwell]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 7 | 7 | Clay, blue, hard | 28 | 698 |
| Clay, yellow | 9 | 16 | Shale, gray, hard | 141 | 839 |
| Gravel | 11 | 27 | Sand, hard, coarse | 12 | 851 |
| Clay, yellow | 22 | 49 | Sand, hard, coarse and shale | 23 | 874 |
| Shale, blue | 4 | 53 | Sand, fine, hard | 11 | 885 |
| Rock, hard, blue | 4 | 57 | Sand, coarse and shale; oil show | 33 | 918 |
| Shale, gray | 26 | 83 | Limestone, blue, with oil | 1 | 919 |
| Rock, blue, hard | 1 | 84 | Limestone, brown | 3 | 922 |
| Shale, gray | 6 | 90 | Limestone, chalky; gas | 13 | 935 |
| Rock, hard; fresh water | 9 | 99 | Limestone, brown | 21 | 956 |
| Shale, sandy, gray | 165 | 264 | Limestone, white, hard, chalky | 4 | 960 |
| Shale, light-gray, sandy | 115 | 379 | Limestone, sandy, hard, with water | 5 | 965 |
| Shale, gray; oil show | 17 | 396 | Limestone, white, chalky, hard | 35 | 1,000 |
| Shale, gray; gas | 4 | 410 | Shale, gray and sand | 29 | 1,029 |
| Rock, hard | 2 | 412 | Shale, dark-gray, sandy | 16 | 1,045 |
| Shale, gray | 8 | 420 | Chalk (Austin) | 63 | 1,118 |
| Rock, shelly | 1 | 421 | Limestone, gray, hard | 55 | 1,173 |
| Shale, dark-gray | 45 | 466 | Chalk, hard | 97 | 1,270 |
| Rock, hard; gas | 2 | 468 | Limestone, sandy, hard | 25 | 1,295 |
| Shale, dark-gray, hard; oil show | 44 | 512 | Shale, hard | 28 | 1,323 |
| Shale, sandy, dark-gray | 8 | 520 | Limestone (Buda) | 81 | 1,404 |
| Shale, blue | 61 | 581 | Clay (Grayson shale, formerly Del Rio clay) | 40 | 1,444 |
| Rock, hard | 19 | 600 | Limestone (Edwards); contains water | 16 | 1,460 |
| Shale, sandy; oil show | 11 | 611 | | | |
| Sand, fine-grained | 29 | 640 | | | |
| Clay | 10 | 650 | | | |
| Sand and shale | 20 | 670 | | | |

Well J-4-62
[Owner: F. Mangold. Driller: Pearson Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay, sandy | 53 | 53 | Shale and sand, green | 69 | 282 |
| Sand, white | 3 | 56 | Lime and gray shale | 42 | 324 |
| Clay, yellow, sandy | 29 | 85 | Shale, blue | 32 | 356 |
| Sand and fresh water | 5 | 90 | Sand; salty water | 4 | 360 |
| Shale and rock | 123 | 213 | | | |

Well J-4-63
[Owner: Medina Farms, Inc. Driller: Chas. E. Wagener]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 2 | 2 | Shale, gray | 16 | 128 |
| Gravel | 3 | 5 | Sand, green | 64 | 192 |
| Clay, yellow | 51 | 56 | Shale, gray, hard | 111 | 303 |
| Rock | 1 | 57 | Sand; oil show | 7 | 310 |
| Shale, blue | 55 | 112 | | | |

Well J-4-64
[Owner: San Antonio Trust Co. Driller: Schermerhorn Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 21 | 21 | Shale | 25 | 700 |
| Sand and clay | 19 | 40 | Shale and boulders | 10 | 710 |
| Rock | 2 | 42 | Gumbo | 7 | 717 |
| Sand and clay | 31 | 73 | Shale, sandy | 18 | 735 |
| Rock | 1 | 74 | Shale, gummy | 5 | 740 |
| Sand and clay | 36 | 110 | Shale and boulders | 35 | 775 |
| Rock, hard | 2 | 112 | Shale, sandy | 25 | 800 |
| Sand and clay | 18 | 130 | Shale | 50 | 850 |
| Sandstone, hard | 7 | 137 | Shale and boulders | 45 | 895 |
| Sand and clay | 11 | 148 | Shale, sandy | 30 | 925 |
| Sandstone | 3 | 151 | Lime, sandy | 8 | 933 |
| Shale | 59 | 210 | Lime, broken | 5 | 938 |
| Lignite | 1 | 211 | Shale, sticky and gumbo | 16 | 954 |
| Rock, hard | 2 | 213 | Gumbo, hard | 43 | 997 |
| Shale | 46 | 259 | Shale, sticky and gumbo | 45 | 1,042 |
| Rock | 4 | 263 | Gumbo, hard | 20 | 1,062 |
| Shale | 17 | 280 | Shale, gummy | 30 | 1,092 |
| Gumbo | 20 | 300 | Gumbo | 8 | 1,100 |
| Shale, gummy | 20 | 320 | Shale, gummy | 6 | 1,106 |
| Rock | 5 | 325 | Gumbo and gypsum | 38 | 1,144 |
| Shale | 75 | 400 | Gumbo | 20 | 1,164 |
| Rock | 2 | 402 | Gumbo and shale, sticky | 44 | 1,208 |
| Shale | 33 | 435 | Gumbo | 41 | 1,249 |
| Shale and boulders | 28 | 463 | Shale, gummy | 38 | 1,287 |
| Shale | 12 | 475 | Shale | 38 | 1,325 |
| Sandstone | 2 | 477 | Chalk, rock | 81 | 1,406 |
| Shale and boulders | 26 | 503 | Chalk, rock, sand; oil | 30 | 1,436 |
| Limestone, hard | 4 | 507 | Shale | 85 | 1,521 |
| Shale and boulders | 23 | 530 | Clay | 10 | 1,531 |
| Limestone | 1 | 531 | Shale, hard | 7 | 1,538 |
| Shale and boulders | 44 | 575 | Limestone, hard | 35 | 1,573 |
| Shale | 15 | 590 | Shale, sticky | 1 | 1,574 |
| Gumbo | 10 | 600 | Gumbo, hard | 4 | 1,578 |
| Shale, hard | 40 | 640 | Limestone (Edwards) | 41 | 1,619 |
| Shale and boulders | 35 | 675 | | | |

Well J-4-67
[Owner: Mary Jungman. Driller: Chacon Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil, dark | 5 | 5 | Shale | 2 | 259 |
| Sand, yellow | 4 | 9 | Rock | 1 | 260 |
| Sandstone, gray | 13 | 22 | Shale, gummy and gypsum | 13 | 273 |
| Gravel and clay | 7 | 29 | Rock with pyrite | 3 | 276 |
| Sand, black, white | 5 | 34 | Shale, sandy | 3 | 279 |
| Sand and shale | 7 | 41 | Shale, gummy | 15 | 294 |
| Gypsum and shale | 2 | 43 | Shale, sandy; fossils | 13 | 307 |
| Sandstone | 2 | 45 | Shale and lenses | 4 | 311 |
| Sand, gray | 3 | 48 | Rock | 1 | 312 |
| Sand and shale and gray shale | 3 | 51 | Shale and limestone | 4 | 316 |
| Sand, gray, course | 2 | 53 | Lime, pyrite; fossils | 11 | 327 |
| Shale, boulders, and sand stringers | 23 | 76 | Shale, gummy, with sand lenses | 13 | 340 |
| Sand, coarse | 2 | 78 | Shale and boulders | 15 | 355 |
| Shale, sandy | 11 | 89 | Rock | 1 | 356 |
| Shale | 9 | 98 | Shale | 10 | 366 |
| Shale, marly | 4 | 102 | Rock | 1 | 367 |
| Sandstone | 5 | 107 | Shale, gummy | 4 | 371 |
| Sand with pyrite | 2 | 109 | Rock | 1 | 372 |
| Sand, glauconitic | 3 | 112 | Shale, gummy | 29 | 401 |
| Sand, "salt and pepper", fossils | 11 | 123 | Rock | 1 | 402 |
| Shale, sandy, with pyrite | 4 | 127 | Shale | 5 | 407 |
| Lime rock | 2 | 129 | Shale, gummy | 7 | 414 |
| Shale, sandy, with pyrite | 11 | 140 | Rock | 1 | 415 |
| Shale, sandy, glauconitic | 13 | 153 | Shale and sand | 54 | 469 |
| Rock | 1 | 154 | Rock | 2 | 471 |
| Shale, sandy, glauconitic | 14 | 168 | Shale and sand | 3 | 474 |
| Rock | 3 | 171 | Rock | 6 | 480 |
| Sand, gray, glauconitic | 14 | 185 | Shale, dry | 3 | 483 |
| Shale, sandy; fossils | 35 | 220 | Rock | 5 | 488 |
| Shale, sandy | 12 | 232 | Shale, gray | 3 | 491 |
| Rock with pyrite | 3 | 235 | Shale, gummy | 1 | 492 |
| Shale, gummy and gypsum | 7 | 242 | Rock | 1 | 493 |
| Shale | 5 | 247 | Sand | 4 | 497 |
| Shale, gummy and gypsum | 9 | 256 | Shale, sandy | 42 | 539 |
| Rock | 1 | 257 | Shale, gummy, with sand lenses | 32 | 571 |

Well J-4-69
[Owner: John T. Kirby. Driller: W. Lancaster]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 6 | 6 | Shale, gray, sandy | 12 | 84 |
| Clay | 9 | 15 | Shale, gray | 16 | 100 |
| Caliche | 7 | 22 | Lime, light | 4 | 104 |
| Caliche and flint rock; water | 6 | 28 | Shale, gray, sandy | 11 | 115 |
| Soapstone | 8 | 36 | Shale, sandy, dark | 15 | 130 |
| Sandstone; water (bad taste) | 5 | 41 | Shale and gumbo | 9 | 139 |
| Flint rock | 5 | 46 | Sand and water | 9 | 148 |
| Rock, yellow | 26 | 72 | | | |

Well J-4-70
[Owner: San Antonio Trust Co. Driller: Schermerhorn Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil | 8 | 8 | Shale, sand, and boulders | 17 | 607 |
| Rock | 1 | 9 | Shale and boulders, sticky | 25 | 632 |
| Sand, clay, and gravel | 23 | 32 | Gumbo | 24 | 656 |
| Clay and sand | 43 | 75 | Shale and boulders | 58 | 714 |
| Clay, sand, and gravel | 43 | 118 | Rock | 1 | 715 |
| Rock | 1 | 119 | Shale and boulders | 126 | 841 |
| Sand and clay | 36 | 155 | Shale, sandy | 37 | 878 |
| Shale and boulders | 15 | 170 | Rock | 1 | 879 |
| Sand and shale | 15 | 185 | Shale and boulders | 92 | 971 |
| Sand rock | 2 | 187 | Shale, hard, with very hard boulders | 83 | 1,054 |
| Shale, sandy | 33 | 220 | Rock | 1 | 1,055 |
| Rock | 124 | 344 | Shale and sandy boulders | 20 | 1,075 |
| Shale and boulders | 1 | 345 | Rock | 1 | 1,076 |
| Rock | 26 | 371 | Shale, sandy | 5 | 1,081 |
| Shale, sandy | 24 | 395 | Shale, hard | 39 | 1,120 |
| Shale, sticky | 20 | 415 | Shale with sand streaks | 196 | 1,316 |
| Rock | 5 | 420 | Shale, sand, and chalk | 30 | 1,346 |
| Shale and boulders | 22 | 442 | Chalk | 58 | 1,404 |
| Sand and boulders | 15 | 457 | Shale | 2 | 1,406 |
| Rock | 4 | 461 | Chalk, broken | 13 | 1,419 |
| Shale and boulders | 38 | 499 | Shale, sand, and chalk | 19 | 1,438 |
| Rock | 1 | 500 | Chalk and shale breaks | 51 | 1,489 |
| Shale and boulders | 21 | 521 | Shale | 56 | 1,545 |
| Shale, sandy | 15 | 536 | Shale with lime streaks | 35 | 1,580 |
| Rock | 3 | 539 | Clay | 12 | 1,592 |
| Shale, sand, and boulders | 26 | 565 | Lime, hard | 5 | 1,597 |
| Rock | 4 | 569 | | | |
| Shale, hard | 21 | 590 | | | |

Well J-4-78
[Owner: Yancy Russell. Driller: F. M. Burkett]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil, black, sandy | 3 | 3 | Lignite | 5 | 74 |
| Clay, yellow | 25 | 28 | Clay, blue | 36 | 110 |
| Water, strong salt | 2 | 30 | Sand and water | 5 | 115 |
| Clay, yellow | 30 | 60 | Clay, blue | 3 | 118 |
| Gravel and salt water | 7 | 67 | Sand and water | 22 | 140 |
| Clay, yellow | 2 | 69 | | | |

Well J-4-80
[Owner: S. E. Schaefer. Driller: F. M. Burkett]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil, yellow, sandy | 2 | 2 | Sand and gravel; water | 8 | 68 |
| Clay, yellow | 16 | 18 | Clay | 12 | 80 |
| Water (seep) | 10 | 28 | Sand and water | 62 | 142 |
| Clay, yellow | 32 | 60 | | | |

Well J-4-102
[Owner: M. A. Keller. Driller: Grayburg Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Soil and clay | 24 | 24 | Shale, black, hard; oil show | 21 | 938 |
| Caliche | 7 | 31 | Shale, hard, sandy | 32 | 970 |
| Shale | 34 | 65 | Shale, hard, with black layers | 34 | 1,004 |
| Sandstone | 3 | 68 | Shale, black, sandy | 22 | 1,026 |
| Shale | 36 | 104 | Shale, green, sandy | 14 | 1,040 |
| Sandstone | 2 | 106 | Clay | 30 | 1,070 |
| Shale | 26 | 132 | Shale, sandy | 12 | 1,082 |
| Sand | 36 | 168 | Sandstone, green, hard; oil show | 2 | 1,084 |
| Shale | 46 | 214 | Shale, green, sandy | 50 | 1,134 |
| Rock | 3 | 217 | Clay | 12 | 1,146 |
| Shale | 63 | 280 | Sand, brown; oil | 20 | 1,166 |
| Sandstone | 7 | 287 | Sandstone, green, hard | 20 | 1,186 |
| Shale | 31 | 318 | Clay, green | 66 | 1,252 |
| Siltstone | 14 | 332 | Sandstone, hard | 8 | 1,260 |
| Shale, hard | 14 | 346 | Shale and clay | 70 | 1,330 |
| Shale and sandstone | 64 | 410 | Shale, brown | 92 | 1,422 |
| Shale, brown | 85 | 495 | Shale, hard, sandy, with black limestone | 63 | 1,485 |
| Rock | 3 | 498 | Shale, black | 35 | 1,520 |
| Shale, brown and hard sandstone | 52 | 550 | Limestone, hard | 24 | 1,544 |
| Shale, brown | 10 | 560 | Chalk, light-gray | 371 | 1,915 |
| Limestone, sandy | 4 | 564 | Shale | 67 | 1,982 |
| Shale, brown | 6 | 570 | Chalk | 93 | 2,075 |
| Sandstone, hard, green | 45 | 615 | Shale, black | 40 | 2,115 |
| Shale, brown, hard | 165 | 780 | Limestone, hard | 63 | 2,178 |
| Shale, dark-gray | 58 | 838 | Clay, sticky | 80 | 2,258 |
| Shale, brown, hard, sandy | 2 | 840 | Limestone | 30 | 2,288 |
| Shale, green | 70 | 910 | Shale, soft | 2 | 2,290 |
| Sand, green, glauconitic | 2 | 912 | Limestone (Edwards) | 82 | 2,372 |
| Shale, brown, sandy | 5 | 917 | | | |

Well J-7-1
[Owner: J. R. Howard. Driller: National Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Soil, black | 3 | 3 |
| Sand, yellow | 13 | 16 |
| Sandstone | 12 | 28 |
| Clay | 9 | 37 |
| Sandstone | 7 | 44 |
| Sand, green | 14 | 58 |
| Shale | 6 | 64 |
| Sandstone, hard | 1 | 65 |
| Sandstone | 11 | 76 |
| Sand | 8 | 84 |
| Sandstone | 2 | 86 |
| Shale, black | 16 | 102 |
| Sandstone | 2 | 104 |
| Sand, green | 22 | 126 |
| Pyrite and rock | 1 | 127 |
| Sand, white | 13 | 140 |
| Sandstone | 2 | 142 |
| Sand, green | 18 | 160 |
| Sandstone | 5 | 165 |
| Sand, white | 38 | 203 |
| Lignite | 2 | 205 |
| Pyrite and rock | 1 | 206 |
| Lignite | 18 | 224 |
| Pyrite and rock | 2 | 226 |
| Sand, white | 14 | 240 |
| Pyrite and rock | 6 | 246 |
| Sand, white | 19 | 265 |
| Sandstone | 2 | 267 |
| Sand, packed | 33 | 300 |
| Lignite | 3 | 303 |
| Sand, white | 21 | 324 |
| Pyrite and rock | 4 | 328 |
| Shale | 17 | 345 |
| Lignite | 5 | 350 |
| Sand and shale | 50 | 400 |
| Marl, green | 10 | 410 |
| Limestone | 2 | 412 |
| Shale, brown | 3 | 415 |
| Sandstone and lime | 8 | 423 |
| Shale, sandy | 5 | 428 |
| Pyrite and rock | 1 | 429 |
| Shale | 5 | 434 |
| Limestone | 1 | 435 |
| Marl and sand | 40 | 475 |
| Sandstone | 2 | 477 |
| Marl and sand | 8 | 485 |
| Shale, sticky | 41 | 526 |
| Sand, green, with show of oil | 4 | 530 |
| Shale | 11 | 541 |
| Sandstone | 5 | 546 |
| Sand and shale | 19 | 565 |
| Sandstone | 3 | 568 |
| Shale, sandy | 32 | 600 |
| Limestone and shells | 11 | 611 |
| Shale, sandy | 11 | 622 |
| Limestone | 2 | 624 |
| Shale and boulders | 36 | 660 |
| Limestone | 2 | 662 |
| Shale | 19 | 681 |
| Limestone | 2 | 683 |
| Shale | 5 | 688 |
| Limestone | 2 | 690 |
| Shale | 4 | 694 |
| Limestone | 3 | 697 |
| Shale and boulders | 8 | 705 |
| Limestone | 4 | 709 |
| Shale | 22 | 731 |
| Shale, sandy | 14 | 745 |
| Limestone | 2 | 747 |
| Shale and boulders | 16 | 763 |
| Shale and pyrite | 61 | 824 |
| Limestone | 3 | 827 |
| Shale, sandy | 27 | 854 |
| Shale, sticky | 32 | 886 |
| Limestone | 2 | 888 |
| Shale, sandy | 32 | 920 |
| Sandstone | 1 | 921 |
| Shale, hard | 30 | 951 |
| Shale, sandy; oil show | 70 | 1,021 |
| Shale, sticky | 29 | 1,050 |
| Limestone | 2 | 1,052 |
| Shale, sticky | 78 | 1,130 |
| Shale, sandy | 17 | 1,147 |
| Gumbo | 18 | 1,165 |
| Shale | 49 | 1,214 |
| Gumbo | 10 | 1,224 |
| Limestone | 2 | 1,226 |
| Shale, sticky | 22 | 1,248 |
| Limestone, sandy | 32 | 1,280 |
| Sandstone | 40 | 1,320 |
| Shale, sticky | 6 | 1,326 |
| Sand, hard | 59 | 1,385 |
| Shale, sandy, hard | 91 | 1,476 |
| Gumbo | 49 | 1,525 |
| Shale, sandy | 15 | 1,540 |
| Shale | 70 | 1,610 |
| Sand and oil show | 35 | 1,645 |
| Shale | 18 | 1,663 |
| Limestone and shale | 207 | 1,870 |
| Shale and limestone | 37 | 1,907 |
| Chalk (Austin) | 265 | 2,172 |
| Shale (Eagle Ford) | 48 | 2,220 |
| Limestone (Buda) | 90 | 2,310 |
| Clay (Grayson shale, formerly Del Rio clay) | 66 | 2,376 |
| Limestone (Georgetown) | 58 | 2,434 |
| Limestone (Edwards) | 20 | 2,454 |
| Limestone (Edwards) and fresh water | 126 | 2,580 |
| Limestone and black flint | 14 | 2,594 |
| Limestone, brown | 2 | 2,596 |
| Limestone and flint | 37 | 2,633 |

Well J-7-16
[Owner: Flora H. Briscoe. Driller: Kelfar Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface sand and clay | 29 | 29 | Shale | 5 | 880 |
| Sand, hard | 14 | 43 | Lime | 62 | 942 |
| Clay, sandy | 35 | 78 | Shale | 8 | 950 |
| Sand and water | 14 | 92 | Shale, sticky | 23 | 973 |
| Sand and clay | 56 | 148 | Shell and shale | 41 | 1,014 |
| Rock, hard | 24 | 172 | Shale, sticky | 16 | 1,030 |
| Sand and red clay | 34 | 206 | Shale, sandy | 40 | 1,070 |
| Sand and dark shale | 79 | 285 | Shale and boulders | 55 | 1,125 |
| Rock, hard, with shale streaks | 17 | 302 | Shale and hard lime | 127 | 1,252 |
| Shale, brown | 28 | 330 | Shale with lime streaks | 148 | 1,400 |
| Rock, hard | 4 | 334 | Shale and hard lime | 191 | 1,591 |
| Shale, hard, sandy | 68 | 402 | Shale, sticky | 14 | 1,605 |
| Shale, sandy | 26 | 428 | Shale, sandy | 1 | 1,606 |
| Rock | 4 | 432 | Shale and sand | 6 | 1,612 |
| Shale, hard, sandy | 84 | 516 | Sand and shale; no odor or color | 5 | 1,617 |
| Rock | 1 | 517 | Sand, shale, and lime | 12 | 1,629 |
| Shale and lignite | 6 | 523 | Shale, hard | 171 | 1,800 |
| Shale and boulders | 26 | 549 | Shale, sticky | 25 | 1,825 |
| Boulders and sticky shale | 24 | 573 | Shale, brittle | 8 | 1,833 |
| Rock | 1 | 574 | Shale | 196 | 2,029 |
| Shale, sandy | 3 | 577 | Shell, hard | 1 | 2,030 |
| Rock | 7 | 584 | Sand | 1 | 2,031 |
| Sand and shale | 6 | 590 | Shale, sandy and ash streaks | 26 | 2,057 |
| Shale | 22 | 612 | Shale | 36 | 2,093 |
| Rock | 3 | 615 | Lime, hard | 44 | 2,137 |
| Sand and shale | 20 | 635 | Lime, dark | 44 | 2,181 |
| Rock | 45 | 680 | Lime, white | 26 | 2,207 |
| Shale and coarse sand | 5 | 685 | Lime, dark | 7 | 2,214 |
| Rock | 8 | 693 | Lime, hard | 52 | 2,266 |
| Shale, hard | 7 | 700 | Lime, gummy | 4 | 2,270 |
| Rock | 2 | 702 | Lime, hard | 23 | 2,293 |
| Shale, hard | 8 | 710 | Lime, broken; with sticky streaks | 66 | 2,359 |
| Boulders and sticky shale | 20 | 730 | Lime | 12 | 2,371 |
| Shale, sticky | 53 | 783 | Chalk, very hard | 17 | 2,388 |
| Sand, hard | 12 | 795 | Chalk, hard | 89 | 2,477 |
| Shale, sandy, hard | 25 | 820 | Chalk | 46 | 2,523 |
| Shale and broken lime | 55 | 875 | | | |

Well J-7-20
[Owner: City of Devine. Driller: A. F. Mann]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface sand | 3 | 3 | Sand, dark | 117 | 447 |
| Sand, reddish | 52 | 55 | Shale (Navarro) | 24 | 471 |
| Sand, yellow | 75 | 130 | Sand rock, white, hard | 1 | 472 |
| Sand, white | 47 | 177 | Sand, white, soft | 59 | 531 |
| Sand rock | 52 | 229 | Sand rock, white, hard | 4 | 535 |
| Sand, white | 91 | 320 | Sand, white, soft | 58 | 593 |
| Sand, yellow | 10 | 330 | Shale, sandy | 20 | 613 |

Well J-7-26
[Owner: W. A. Thompson. Driller: J. R. McCaldin]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Sand | 210 | 210 | Shale and broken lime | 25 | 905 |
| Shale, brown | 38 | 248 | Shale | 49 | 954 |
| Rock | 1 | 249 | Rock | 8 | 962 |
| Shale and sand | 19 | 268 | Shale | 23 | 985 |
| Rock | 2 | 270 | Gumbo | 10 | 995 |
| Sand | 16 | 286 | Boulders and green shale | 83 | 1,078 |
| Gumbo | 8 | 294 | Lime | 1 | 1,079 |
| Rock | 8 | 302 | Shale and boulders | 36 | 1,115 |
| Shale, brown | 28 | 330 | Lime | 2 | 1,117 |
| Rock | 4 | 334 | Shale | 5 | 1,122 |
| Shale | 10 | 344 | Lime | 4 | 1,126 |
| Gumbo | 6 | 350 | Shale streaked with lime, sandy, with pyrite | 13 | 1,139 |
| Shale | 15 | 365 | Shale and boulders | 112 | 1,251 |
| Rock | 1 | 366 | Rock | 2 | 1,253 |
| Shale | 4 | 370 | Shale and boulders | 142 | 1,395 |
| Rock | 2 | 372 | Gumbo | 8 | 1,403 |
| Shale | 13 | 385 | Shale and boulders | 167 | 1,570 |
| Rock | 3 | 388 | Gumbo | 15 | 1,585 |
| Shale | 6 | 394 | Shale and lime, streaks | 22 | 1,607 |
| Rock | 6 | 400 | Lime | 13 | 1,620 |
| Shale | 26 | 426 | Gumbo | 10 | 1,630 |
| Sand, packed; gas show | 7 | 433 | Shale, hard | 10 | 1,640 |
| Rock | 5 | 438 | Shale | 10 | 1,650 |
| Shale, sandy | 12 | 450 | Gumbo | 15 | 1,665 |
| Gumbo | 15 | 465 | Shale and boulders | 47 | 1,712 |
| Shale | 40 | 505 | Shale, sandy; gas show | 18 | 1,730 |
| Rock | 6 | 511 | Shale, gummy | 20 | 1,750 |
| Shale and boulders | 36 | 547 | Lime, hard | 14 | 1,764 |
| Rock | 1 | 548 | Shale and sand, streaks | 72 | 1,836 |
| Shale | 7 | 555 | Shale, sandy | 13 | 1,849 |
| Rock | 10 | 565 | Gumbo | 11 | 1,860 |
| Shale and sand, streaks | 50 | 615 | Shale | 65 | 1,925 |
| Gumbo | 49 | 664 | Gumbo | 50 | 1,975 |
| Shale, gummy and sandy, with boulders | 51 | 715 | Shale, gummy | 49 | 2,024 |
| Gumbo | 15 | 730 | Shale, sandy and lime streaks | 30 | 2,054 |
| Shale | 35 | 765 | Shale, gummy, with boulders | 81 | 2,135 |
| Gumbo | 10 | 775 | Lime with gummy streaks | 253 | 2,388 |
| Rock | 4 | 779 | Lime, hard and chalk (Austin) | 222 | 2,610 |
| Shale | 27 | 806 | Shale (Eagle Ford) | 34 | 2,644 |
| Rock | 2 | 808 | Limestone (Buda), hard | 146 | 2,790 |
| Shale | 48 | 856 | Clay (Grayson shale, formerly Del Rio clay) | 53 | 2,843 |
| Rock | 5 | 861 | Limestone (Georgetown) | 65 | 2,908 |
| Gumbo | 4 | 865 | Limestone (Edwards) | 104 | 3,012 |
| Rock | 7 | 872 | | | |
| Shale | 8 | 880 | | | |

Well J-7-28
[Owner: R. W. Foster. Driller: Edwill Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Top soil | 3 | 3 | Shale | 54 | 904 |
| Clay and gravel | 32 | 35 | Shale, gray and boulders | 4 | 908 |
| Clay, red | 5 | 40 | Shale, gray, hard | 94 | 1,002 |
| Sand, dry | 120 | 160 | Rock | 8 | 1,010 |
| Sandstone | 2 | 162 | Sand, blue | 2 | 1,012 |
| Sand, white | 8 | 170 | Shale, sticky | 28 | 1,040 |
| Sand, blue | 31 | 201 | Shale, blue | 22 | 1,062 |
| Sandstone | 3 | 204 | Shale, gray | 73 | 1,135 |
| Sand, blue and water | 16 | 220 | Rock | 80 | 1,215 |
| Shale, sandy | 190 | 410 | Boulders and shale, gray | 2 | 1,217 |
| Sandstone | 8 | 418 | Rock | 359 | 1,576 |
| Sand, gray | 15 | 433 | Shale and boulders | 5 | 1,581 |
| Shale, blue | 7 | 440 | Shale, gray | 19 | 1,600 |
| Lignite coal | 6 | 446 | Shale, sandy | 38 | 1,638 |
| Shale, gray | 14 | 460 | Shale, sticky | 34 | 1,672 |
| Sandstone | 6 | 466 | Shale | 29 | 1,701 |
| Shale, sticky | 49 | 515 | Rock | 11 | 1,712 |
| Sand and rock | 5 | 520 | Shale, gray | 2 | 1,714 |
| Sand, gray | 15 | 535 | Shale, sandy | 173 | 1,887 |
| Shale, gray | 15 | 550 | Shale | 3 | 1,890 |
| Rock | 6 | 556 | Shale, sticky | 100 | 1,990 |
| Sand, gray | 12 | 568 | No record | 34 | 2,024 |
| Lignite coal | 7 | 575 | Shale, sandy | 1 | 2,025 |
| Shale, gray | 125 | 700 | Shale, salt, and sand | 29 | 2,054 |
| Shale | 14 | 714 | Rock | 10 | 2,064 |
| Shale and serpentine | 32 | 746 | Chalk | 176 | 2,240 |
| Shale and boulders | 59 | 805 | Shale | 20 | 2,260 |
| Shale, sand, and rock | 12 | 817 | Limestone (Buda) | 15 | 2,275 |
| Shale, green | 33 | 850 | | | |

Well J-7-38
[Owner: W. Adams. Driller: J. C. Webster Oil & Gas Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Surface sand | 4 | 4 |
| Gravel | 4 | 8 |
| Sand, red | 15 | 23 |
| Gravel | 13 | 36 |
| Sand, yellow | 19 | 55 |
| Sand, gray | 20 | 75 |
| Sand, white | 18 | 93 |
| Sand, white and water | 32 | 125 |
| Sand, hard packed | 10 | 135 |
| Sand, gray and water | 9 | 144 |
| Sand rock, gray | 7 | 151 |
| Sand, gray | 24 | 175 |
| Sand, packed | 10 | 185 |
| Shale and sand | 15 | 200 |
| Sand, white, water | 56 | 256 |
| Rock, hard and sand | 7 | 263 |
| Lignite | 3 | 266 |
| Sand | 19 | 285 |
| Sand rock | 9 | 294 |
| Sand boulders | 22 | 316 |
| Rock, hard | 8 | 324 |
| Shale, brown | 26 | 350 |
| Rock | 6 | 356 |
| Shale, brown | 8 | 364 |
| Pyrite | 3 | 367 |
| Sand, gray | 12 | 379 |
| Shale, brown | 6 | 385 |
| Lime rock | 7 | 392 |
| Shale, sandy | 8 | 400 |
| Lime rock | 2 | 402 |
| Sand and boulders | 46 | 448 |
| Pyrite | 2 | 450 |
| Sand, gray | 21 | 471 |
| Sand, with pyrite | 5 | 476 |
| Sand and boulders | 64 | 540 |
| Lignite | 3 | 543 |
| Sand rock | 79 | 622 |
| Pyrite | 6 | 628 |
| Sand, gray; boulders; water | 58 | 686 |
| Gumbo | 12 | 698 |
| Sand and shale | 17 | 715 |
| Pyrite rock | 3 | 718 |
| Shale and boulders | 15 | 733 |
| Shale, with pyrite | 5 | 738 |
| Shale and boulders | 19 | 757 |
| Shale | 48 | 805 |
| Marl, sand, and limestone | 35 | 840 |
| Sand rock, hard | 4 | 844 |
| Marl, sand, shale, and limestone | 57 | 901 |
| Shale and boulders | 19 | 920 |
| Sand rock | 4 | 924 |
| Shale | 6 | 930 |
| Lime, shale, and rock | 3 | 933 |
| Sand water | 9 | 942 |
| Lime, shale, and rock | 8 | 950 |
| Sand and shale | 15 | 965 |
| Lime rock | 2 | 967 |
| Shale, sticky | 17 | 984 |
| Lime rock | 5 | 989 |
| Shale | 23 | 1,012 |
| Lime and shale rock | 3 | 1,015 |
| Shale, hard | 5 | 1,020 |
| Lime and sand rock | 3 | 1,023 |
| Shale | 12 | 1,035 |
| Lime and shale rock | 3 | 1,038 |
| Shale | 7 | 1,045 |
| Lime rock | 2 | 1,047 |
| Shale and boulders | 9 | 1,056 |
| Lime and shale rock | 3 | 1,059 |
| Shale, sandy | 11 | 1,070 |
| Shale, gray | 44 | 1,114 |
| Lime rock | 4 | 1,118 |
| Shale, sticky | 6 | 1,124 |
| Pyrite | 2 | 1,126 |
| Shale and boulders | 10 | 1,136 |
| Lime rock | 3 | 1,139 |
| Shale and boulders | 11 | 1,150 |
| Lime rock | 3 | 1,153 |
| Shale | 10 | 1,163 |
| Shale, rock, and boulders | 81 | 1,244 |
| Shale, gray | 62 | 1,306 |
| Shale, rock, and boulders | 49 | 1,355 |
| Gumbo | 55 | 1,410 |
| Shale and boulders | 50 | 1,460 |
| Lime rock | 1 | 1,461 |
| Gumbo and shale, streaks | 74 | 1,535 |
| Rock | 1 | 1,536 |
| Shale, sticky | 34 | 1,570 |
| Shale and oil show | 12 | 1,582 |
| Gumbo | 23 | 1,605 |
| Shale, sandy; gas and oil odor | 7 | 1,612 |
| Shale, streaks | 55 | 1,667 |
| Lime, sandy | 14 | 1,681 |
| Gumbo | 61 | 1,742 |
| Sand, hard; no odor | 13 | 1,755 |
| Hard cap | 1 | 1,756 |
| Sand | 4 | 1,760 |
| Sand, salt taste | 22 | 1,782 |
| Gumbo | 53 | 1,835 |
| Sand rock | 1 | 1,836 |
| Sand and salt water | 4 | 1,840 |
| Sand and shale rock | 2 | 1,842 |
| Sand, hard | 2 | 1,844 |
| Sand and shale streaks | 4 | 1,848 |
| Shale, sandy | 32 | 1,880 |
| Sand, dry | 14 | 1,894 |
| Shale, sandy | 18 | 1,912 |
| Lime rock | 1 | 1,913 |
| Shale, sandy | 15 | 1,928 |
| Gumbo | 44 | 1,972 |
| Shale | 23 | 1,995 |
| Gumbo | 85 | 2,080 |
| Shale, hard | 18 | 2,098 |
| Shale, sticky | 42 | 2,140 |
| Shale, sandy | 20 | 2,160 |
| Shale and oil | .5 | 2,160.5 |
| Shale, sandy | 19.5 | 2,180 |
| Shale, sticky | 32 | 2,212 |
| Lime (Anacacho) | 68 | 2,280 |
| Lime, hard | 14 | 2,294 |
| Lime, hard streaks, and sticky shale | 146 | 2,440 |
| Shale, hard; gas odor | 10 | 2,450 |
| Shale and lime, hard | 40 | 2,490 |
| Chalk (Austin) top | 10 | 2,500 |
| Chalk (Austin), with glauconite; gas and oil, odor strong | 26 | 2,526 |
| Chalk (Austin), with pyrite and flint | 208 | 2,734 |
| Shale (Eagle Ford); oil odor | 57 | 2,791 |
| Lime (Buda); oil show | 24 | 2,815 |
| Lime (Buda) | 67 | 2,882 |
| Pyrite, solid | 52 | 2,934 |
| Clay (Grayson shale, formerly Del Rio clay) | 5 | 2,939 |
| Lime (Georgetown) | 69 | 3,008 |
| Dobey | 20 | 3,028 |
| Lime (Edwards) | 45 | 3,073 |
| Limestone (Edwards); crevice dry | 1 | 3,074 |

Well J-7-40
[Owner: W. Adams. Driller: Donaldson Oil Co.]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Surface sand | 7 | 7 |
| Sand rock, soft | 3 | 10 |
| Sand and thin layers of clay | 40 | 50 |
| Sand, red | 25 | 75 |
| Sand, white | 20 | 95 |
| Sand, packed | 33 | 128 |
| Sand, green | 28 | 156 |
| Rock and sand | 4 | 160 |
| Sand, layered | 34 | 194 |
| Shale, red, sandy | 12 | 206 |
| Rock, hard | 5 | 211 |
| Boulders, shale | 26 | 237 |
| Rock | 2 | 239 |
| Gumbo and lignite streaks | 14 | 253 |
| Sand, green and lignite | 37 | 290 |
| Rock | 2 | 292 |
| Boulders and sand, green | 109 | 401 |
| Rock | 5 | 406 |
| Boulders and sand, green | 247 | 653 |
| Shale, gummy | 37 | 690 |
| Rock | 5 | 695 |
| Sand, green and shale streaks | 55 | 750 |
| Rock, pyrite | 1 | 751 |
| Sand, green | 59 | 810 |
| Rock | 63 | 873 |
| Shale and lignite | 10 | 883 |
| Sand and boulders | 16 | 899 |
| Rocky pyrite | 5 | 904 |
| Boulders, gummy shale | 96 | 1,000 |
| Gumbo, tough, blue | 11 | 1,011 |
| Gumbo and streaks of shale | 18 | 1,029 |
| Rock | 4 | 1,033 |
| Shale and shells | 15 | 1,048 |
| Rock | 1 | 1,049 |
| Sand rock | 82 | 1,131 |
| Shale and shells | 143 | 1,274 |
| Gumbo | 30 | 1,304 |
| Shale, sandy | 5 | 1,309 |
| Gumbo | 18 | 1,327 |
| Rock | 3 | 1,330 |
| Gumbo, shale and layers of lime | 253 | 1,583 |
| Rock | 1 | 1,584 |
| Gumbo | 15 | 1,599 |
| Gumbo and shale, layered | 79 | 1,678 |
| Lime, broken and green sand; gas | 17 | 1,695 |
| Shale | 15 | 1,710 |
| Shale, streaks: gumbo; oil show | 82 | 1,792 |
| Lime rock | 2 | 1,794 |
| Sand, green | 2 | 1,796 |
| Sand and streaks of shale | 44 | 1,840 |
| Gumbo and thin streaks of sand | 25 | 1,865 |
| Lime rock | 3 | 1,868 |
| Gumbo and streaks of sand, green | 25 | 1,893 |
| Lime rock | 1 | 1,894 |
| Sand, green | 5 | 1,899 |
| Sand and streaks of gumbo | 19 | 1,918 |
| Gumbo rock and layered sand | 79 | 1,997 |
| Gumbo | 23 | 2,020 |
| Sand and shale, thin streaks; strong gas | 43 | 2,063 |
| Gumbo | 17 | 2,080 |
| Limestone | 180 | 2,260 |
| Sand, hard with shale streaks; oil show | 270 | 2,530 |
| Chalk (Austin); oil show | 265 | 2,795 |
| Shale (Eagle Ford) | 55 | 2,850 |
| Limestone (Buda) | 70 | 2,920 |
| Clay (Grayson shale, formerly Del Rio clay) | 52 | 2,972 |
| Limestone (Georgetown) | 36 | 3,008 |
| Limestone (Edwards) | 117 | 3,125 |

Well J-7-48
[Owner: W. McMenery. Driller: W. C. Campbell]

| | Thickness (feet) | Depth (feet) |
|---|---|---|
| Rock and pyrite | 914 | 914 |
| Shale | 11 | 925 |
| Sand, hard | 16 | 941 |
| Shale | 17 | 958 |
| Shale and sand, hard | 79 | 1,038 |
| Lime, hard | 1 | 1,039 |
| Shale | 7 | 1,046 |
| Lime, hard | 2 | 1,048 |
| Shale, hard | 4 | 1,052 |
| Shale, sandy | 108 | 1,160 |
| Sand, green | 30 | 1,190 |
| Shale, sandy | 22 | 1,212 |
| Lime and boulders | 14 | 1,226 |
| Shale, lime, and boulders | 34 | 1,260 |
| Shale bed | 10 | 1,270 |
| Shale with hard boulders | 6 | 1,276 |
| Shale and boulders | 57 | 1,333 |
| Shale, lime and shells | 122 | 1,455 |
| Limestone | 7 | 1,462 |
| Shale and boulders | 222 | 1,684 |
| Shale, hard | 56 | 1,740 |
| Shale, sticky | 47 | 1,787 |
| Shale | 66 | 1,853 |
| Shale, sticky; few boulders | 132 | 1,985 |
| Shale, hard | 25 | 2,010 |
| Shale, sticky | 60 | 2,070 |
| Sand | 17 | 2,087 |
| Sand, hard | 18 | 2,105 |
| Sand | 35 | 2,140 |
| Sand and hard lime | 43 | 2,183 |
| Shale, hard, sticky, with streaks of sandy shale | 65 | 2,248 |
| Shale, sticky and sandy | 146 | 2,394 |
| Shale, sticky and sandy lime | 141 | 2,535 |
| Limestone | 45 | 2,580 |
| Lime, hard | 5 | 2,585 |
| Lime, hard, broken | 31 | 2,616 |
| Lime, broken | 22 | 2,638 |
| Shale and limestone | 35 | 2,673 |
| Lime, broken | 18 | 2,691 |
| Shale and lime, sticky and broken | 56 | 2,747 |
| Lime, broken | 70 | 2,817 |
| Chalk (Austin) | 81 | 2,898 |

Well J-7-52

[Owner: Mary Blatz. Driller: Lewis Production Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Surface soil | 10 | 10 | Shale | 16 | 2,019 |
| Clay | 5 | 15 | Shale and sand | 40 | 2,059 |
| Sand | 325 | 340 | Sand, oil show | 8 | 2,067 |
| Shale | 5 | 345 | Shale, sandy | 15 | 2,082 |
| Sand rock, hard | 1 | 346 | Shale | 26 | 2,108 |
| Shale | 8 | 354 | Sand, oil | 4 | 2,112 |
| Rock | 3 | 357 | Sandstone, hard | 2 | 2,114 |
| Shale | 33 | 390 | Sand and shale | 40 | 2,154 |
| Shale, sandy | 460 | 850 | Shale, sandy | 26 | 2,180 |
| Boulders, shale, sandy | 117 | 967 | Boulders, sand and shale | 30 | 2,210 |
| Shale, sandy and hard sand; rock streaks | 151 | 1,118 | Shale, sandy | 40 | 2,250 |
| Sand and shale | 263 | 1,381 | Shale, hard | 208 | 2,458 |
| Boulder and hard sandy shale | 132 | 1,513 | Shale | 22 | 2,480 |
| Shale | 17 | 1,530 | Marl, hard | 33 | 2,513 |
| Shale, sandy | 75 | 1,605 | Lime and hard marl | 130 | 2,643 |
| Shale, sandy, with shells | 19 | 1,624 | Lime | 62 | 2,705 |
| Shale, sandy | 96 | 1,720 | Lime and hard shale | 67 | 2,772 |
| Shale | 140 | 1,860 | Lime Chalk, hard | 3 | 2,775 |
| Shale, sandy | 121 | 1,981 | Lime Chalk | 131 | 2,906 |
| Sand and oil | 2 | 1,983 | Shale | 94 | 3,000 |
| Sand, hard | 2 | 1,985 | Shale (Eagle Ford) | 25 | 3,025 |
| Sand, shaly | 2 | 1,987 | Limestone (Buda) | 62 | 3,087 |
| Sand, no odor | 3 | 1,990 | Shale (Grayson shale, formerly Del Rio clay) | 88 | 3,175 |
| Shale | 5 | 1,995 | Limestone (Georgetown) | 52 | 3,227 |
| Shale, sandy | 8 | 2,003 | Limestone (Edwards) | 11 | 3,238 |

Well J-7-62

[Owner: I. & G. N. RR.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Clay | 18 | 18 | Limestone | 7 | 829 |
| Sand, gravel, and clay | 91 | 109 | Gumbo | 6 | 835 |
| Sandstone | 7 | 116 | Sand | 7 | 842 |
| Clay | 6 | 122 | Shale | 6 | 848 |
| Sandstone with pyrite | 2 | 124 | Gumbo and boulders | 72 | 920 |
| Sand and gravel | 8 | 132 | Limestone | 6 | 926 |
| Soapstone | 2 | 134 | Gumbo and boulders | 62 | 988 |
| Gumbo | 33 | 167 | Limestone | 4 | 992 |
| Sand with pyrite | 5 | 172 | Gumbo and boulders | 48 | 1,040 |
| Sand, packed | 37 | 209 | Shale and boulders | 14 | 1,054 |
| Gumbo and boulders | 48 | 257 | Gumbo and boulders | 49 | 1,103 |
| Sandstone, soft | 52 | 309 | Shale and boulders | 31 | 1,134 |
| Gumbo and boulders | 7 | 316 | Shale | 9 | 1,143 |
| Sand, packed | 10 | 326 | Gumbo | 81 | 1.224 |
| Gumbo and boulders | 42 | 368 | Limestone | 2 | 1,226 |
| Sand | 12 | 380 | Gumbo, boulders, and lime | 22 | 1,248 |
| Gumbo | 69 | 449 | Gumbo | 616 | 1,864 |
| Sandstone | 29 | 478 | Shale, lime, and boulders | 50 | 1,914 |
| Gumbo | 17 | 495 | Gumbo | 88 | 2,002 |
| Sandstone | 9 | 504 | Sand sand shale | 40 | 2,042 |
| Gumbo | 38 | 542 | Lime and shale | 33 | 2,075 |
| Sandstone | 8 | 550 | Shale, gummy | 10 | 2,085 |
| Gumbo | 51 | 601 | Gumbo | 6 | 2,091 |
| Shale | 22 | 623 | Limestone | 4 | 2,095 |
| Sandstone | 2 | 625 | Shale, hard | 18 | 2,113 |
| Gumbo and boulders | 37 | 662 | Shale, lime, and boulders | 37 | 2,150 |
| Gumbo | 71 | 733 | Shale, hard | 10 | 2,160 |
| Sandstone | 25 | 758 | Sand | 27 | 2,187 |
| Shale | 31 | 789 | Shale | 5 | 2,192 |
| Gumbo | 15 | 804 | Sand | 8 | 2,200 |
| Limestone | 7 | 811 | Shale and boulders | 187 | 2,387 |
| Sand and boulders | 11 | 822 | Chalk (Austin) | 66 | 2,453 |

Well J-8-3
[Owner: W. S. Lilly. Driller: Gilcrease Oil Co.]

| | Thickness (feet) | Depth (feet) | | Thickness (feet) | Depth (feet) |
|---|---|---|---|---|---|
| Sand | 33 | 33 | Shale, sandy, hard | 49 | 1,940 |
| Sand and shale, sandy | 267 | 300 | Sand | 56 | 1,996 |
| Sand | 40 | 340 | Sand and shale | 20 | 2,016 |
| Shale, sandy | 25 | 365 | Sand | 34 | 2,050 |
| Shale, sandy and boulders | 75 | 440 | Shale | 50 | 2,100 |
| Shale, sandy | 335 | 775 | Shale, hard | 5 | 2,105 |
| Shale, sandy and boulders | 372 | 1,147 | Shale, hard, broken | 44 | 2,149 |
| Rock, hard | 8 | 1,155 | Shale, hard | 61 | 2,210 |
| Shale, sandy | 15 | 1,170 | Shale, sandy | 69 | 2,279 |
| Boulders | 25 | 1,195 | Shale, hard | 66 | 2,345 |
| Shale, sandy | 49 | 1,244 | Rock, hard | 5 | 2,350 |
| Rock, hard | 3 | 1,247 | Lime | 263 | 2,613 |
| Shale, sandy, hard | 15 | 1,262 | Shale and lime | 51 | 2,664 |
| Rock, hard | 1 | 1,263 | Shale and lime, sticky | 48 | 2,712 |
| Shale, sandy | 2 | 1,265 | Chalk | 15 | 2,727 |
| Shale, sandy, hard streaks | 250 | 1,515 | Shale | 343 | 3,070 |
| Shale | 25 | 1,540 | Limestone (Buda) | 15 | 3,085 |
| Shale and sand, hard, in streaks | 35 | 1,575 | Clay (Grayson shale, formerly | | |
| Shale, sandy | 251 | 1,826 | Del Rio clay) | 66 | 3,151 |
| Shale | 8 | 1,834 | Limestone (Georgetown) | 64 | 3,215 |
| Shale, sticky | 57 | 1,891 | Limestone (Edwards) | 4 | 3,219 |

TABLE 11.—*Water levels in wells in Medina County, Tex.*

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Well C-7-13 [Owner: G. M. Merritt. Altitude of land surface: 1,361.5 feet] | | | | | |
| Oct. 11, 1950 | 243.14 | May 9, 1951 | 246.90 | June 9, 1952 | 255.37 |
| Jan. 2, 1951 | 248.29 | July 3, | 245.50 | Nov. 5 | 248.41 |
| Mar. 12 | 249.74 | Jan. 14, 1952 | 253.22 | | |
| Well C-7-19 [Owner: Carl Porter. Altitude of land surface: 1,279.5 feet] | | | | | |
| Jan. 9, 1951 | 182.39 | Sept. 11, 1951 | 188.33 | Sept. 3, 1952 | 186.46 |
| Feb. 2 | 185.75 | Nov. 6 | 200.76 | Nov. 5 | 188.38 |
| Mar. 9 | 188.29 | Jan. 14, 1952 | 188.54 | Aug. 25, 1954 | 183.22 |
| May 9 | 185.80 | Mar. 19 | 190.29 | | |
| July 6 | 187.00 | June 9 | 180.77 | | |
| Well C-8-27 [Owner: R. Zuberbueler. Altitude of land surface: 1,119.9 feet] | | | | | |
| Aug. 17, 1950 | 219.11 | May 9, 1951 | 226.45 | Jan. 14, 1952 | 224.57 |
| Jan. 9, 1951 | 222.60 | July 3 | 224.80 | Mar. 18 | 228.68 |
| Feb. 5 | 224.18 | Sept. 6 | 213.74 | Nov. 9, 1954 | 228.27 |
| Mar. 8 | 225.73 | Nov. 6 | 238.44 | | |
| Well C-9-38 [Owner: B. DeGrodt. Altitude of land surface: 1,129.1 feet] | | | | | |
| Nov. 13, 1950 | 210.00 | May 10, 1951 | 181.60 | June 10, 1952 | 168.38 |
| Jan. 12, 1951 | 210.79 | July 9 | 191.60 | Aug. 25 | 217.21 |
| Feb. 8 | 211.36 | Jan. 15, 1952 | 174.07 | Nov. 7 | 218.73 |
| Mar. 14 | 192.83 | Mar. 19 | 193.46 | Nov. 8, 1954 | ±177.10 |
| Well D-7-25 [Owner: R. Murray. Altitude of land surface: 1,086.5 feet] | | | | | |
| Dec. 12, 1950 | 153.71 | May 11, 1951 | 158.77 | June 10, 1952 | 103.91 |
| Jan. 25, 1951 | 150.85 | Nov. 1 | 110.71 | Aug. 25 | 104.73 |
| Mar. 5 | 136.29 | Jan. 17, 1952 | 114.22 | Nov. 6 | 96.95 |
| Well D-7-37 [Owner: M. Haby. Altitude of land surface: 1,168.1 feet] | | | | | |
| Nov. 7, 1950 | 309.56 | Nov. 1, 1951 | 311.46 | Mar. 26, 1952 | 316.83 |
| Sept. 12, 1951 | 308.19 | Jan. 16, 1952 | 313.92 | June 10 | 293.26 |
| Well I-1-7 [Owner: E. L. Kelley. Altitude of land surface: 1,167.0 feet] | | | | | |
| Oct. 11, 1950 | 381.99 | July 6, 1951 | 395.96 | June 9, 1952 | 420.82 |
| Jan. 9, 1951 | 387.12 | Sept. 17 | 404.69 | Sept. 3 | 414.61 |
| Feb. 5 | 390.56 | Nov. 6 | 408.60 | Nov. 5 | 417.97 |
| Mar. 15 | 392.61 | Dec. 13 | 413.74 | | |
| May 12 | 392.56 | Mar. 19, 1952 | 414.54 | | |

Well I-2-16
[Owner: A. Schlentz. Altitude of land surface: 1,021.7 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| May 17, 1930 | 244.00 | Aug. 31, 1943 | 195.89 | Jan. 8, 1951 | 216.26 |
| Oct. 22, 1934 | 220.35 | Dec. 14 | 203.76 | Feb. 5 | 221.57 |
| July 8, 1937 | 168.82 | May 3, 1944 | 192.88 | Mar. 8 | 224.62 |
| Aug. 11 | 173.58 | Aug. 19 | 194.32 | May 9 | 224.62 |
| Sept. 23, 1938 | 189.98 | Dec. 19 | 193.41 | June 1 | 217.96 |
| Apr. 10, 1939 | 204.60 | June 4, 1945 | 180.81 | July 3 | 223.48 |
| Aug. 1 | 209.30 | July 2, 1947 | 192.16 | Aug. 2 | 233.99 |
| Sept. 18 | 210.92 | Nov. 7 | 202.25 | Sept. 6 | 228.10 |
| Oct. 25 | 212.00 | Apr. 23, 1948 | 212.35 | Oct. 3 | 229.47 |
| Jan. 16, 1940 | 216.14 | Aug. 2 | 212.51 | Nov. 2 | 232.74 |
| Feb. 21 | 218.02 | Jan. 6, 1949 | 222.08 | Nov. 6 | 231.16 |
| Mar. 18 | 219.15 | Mar. 9 | 218.12 | Dec. 4 | 233.42 |
| Apr. 23 | 217.05 | Apr. 12 | 219.75 | Jan. 3, 1952 | 244.61 |
| May 23 | 219.04 | Aug. 26 | 199.53 | Feb. 5 | 245.33 |
| June 17, 1940 | 219.32 | Nov. 2 | 202.05 | Mar. 12 | 237.49 |
| July 22 | 216.90 | Dec. 9 | 202.12 | Apr. 27 | 237.62 |
| Aug. 23 | 220.23 | Jan. 26, 1950 | 204.00 | June 9 | 236.96 |
| Sept. 24 | 222.24 | Feb. 23 | 200.63 | July 2 | 238.50 |
| Oct. 21 | 223.88 | Mar. 28 | 197.95 | Sept. 3 | 251.92 |
| Dec. 2 | 225.60 | May 1 | 202.13 | Nov. 5 | 244.44 |
| Jan. 20, 1941 | 221.26 | June 1 | 201.51 | Apr. 9, 1953 | 262.39 |
| May 26 | 189.38 | July 3 | 202.17 | Aug. 13 | 255.42 |
| Aug. 11 | 193.25 | Aug. 1 | 199.33 | Nov. 23 | 247.55 |
| Nov. 12 | 198.26 | Sept. 1 | 207.72 | Apr. 16, 1954 | 260.76 |
| Apr. 6, 1942 | 206.10 | Oct. 2 | 207.13 | July 15 | 256.40 |
| Aug. 4 | 202.24 | Nov. 1 | 210.36 | Aug. 24 | 257.08 |
| Nov. 30 | 186.43 | Dec. 3 | 213.24 | Nov. 9 | 260.35 |
| Apr. 26, 1943 | 196.69 | | | | |

Well I-2-23
[Owner: L. Finger. Altitude of land surface: 1,067.5 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Sept. 22, 1950 | 270.08 | May 12, 1951 | 280.07 | Jan. 14, 1952 | 293.73 |
| Jan. 9, 1951 | 277.30 | July 6 | 285.20 | Mar. 18 | 297.18 |
| Feb. 2 | 278.74 | Sept. 11 | 286.68 | June 9 | 298.05 |
| Mar. 13 | 280.36 | Nov. 6 | 289.87 | | |

Well I-2-40
[Owner: W. A. Weynand. Altitude of land surface: 995.7 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| May 17, 1930 | 236.2 | June 17, 1940 | 198.05 | Feb. 2, 1951 | 213.48 |
| Oct. 22, 1934 | 195.9 | July 22 | 202.28 | Mar. 13 | 205.92 |
| July 8, 1937 | 156.23 | Aug. 23 | 199.22 | May 9 | 207.52 |
| Aug. 11 | 156.75 | Sept. 26 | 200.76 | Sept. 7 | 210.84 |
| Sept. 23 | 169.22 | Oct. 21 | 201.86 | Jan. 4, 1952 | 217.19 |
| Apr. 10, 1939 | 188.11 | Dec. 2 | 203.77 | Mar. 18 | 220.74 |
| Aug. 1 | 187.72 | Jan. 20, 1941 | 202.55 | June 9 | 222.95 |
| Sept. 18 | 189.30 | May 26 | 184.43 | Aug. 29 | 212.10 |
| Oct. 25 | 190.80 | Nov. 12 | 177.20 | Sept. 5 | 225.34 |
| Jan. 16, 1940 | 194.05 | Nov. 30 | 173.34 | Nov. 5 | 227.47 |
| Feb. 21 | 195.71 | Apr. 26, 1943 | 175.15 | Aug. 24, 1954 | 241.57 |
| Mar. 18 | 196.65 | Aug. 29, 1950 | 212.07 | | |
| May 20 | 197.60 | Jan. 8, 1951 | 212.73 | | |

Well I-2-55
[Owner: O. C. Holloway]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| July 11, 1950 | 258.45 | Sept. 1, 1950 | 197.42 | Sept. 5, 1951 | 201.30 |
| Aug. 3 | 193.39 | Oct. 2 | 174.26 | Aug. 25, 1954 | 190.69 |

Well I-2-75
[Owner: Ed Weynand. Altitude of land surface: 934.5 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Jan. 10, 1951 | 32.38 | May 9, 1951 | 49.72 | Mar. 12, 1952 | 67.32 |
| Feb. 2 | 33.22 | July 6 | 41.82 | June 9 | 43.53 |
| Mar. 13 | 34.09 | Jan. 4, 1952 | 69.13 | Aug. 24, 1954 | 81.67 |

Well I-3-7
[Owner: Emil Britch. Altitude of land surface: 1,011.3 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Oct 30, 1950 | 183.46 | Mar. 12, 1951 | 194.67 | Nov. 14, 1951 | 218.33 |
| Jan. 10, 1951 | 191.11 | May 10 | 198.21 | Jan. 15, 1952 | 220.89 |
| Feb. 6 | 193.09 | July 9 | 200.32 | Mar. 17 | 222.40 |

Well I-3-19
[Owner: Milton Heyen. Altitude of land surface: 1,012.7 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Dec. 11, 1950 | 224.98 | May 10, 1951 | 243.27 | Mar. 19, 1952 | 256.89 |
| Jan. 12, 1951 | 238.06 | July 9 | 248.07 | June 10 | 259.99 |
| Feb. 1 | 241.35 | Oct. 31 | 250.60 | Aug. 23, 1954 | 276.46 |
| Mar. 14 | 248.40 | Jan. 3, 1952 | 259.41 | | |

Well I-3-34
[Owner: Walter Brucks. Altitude of land surface: 915.2 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Jan. 3, 1951 | 202.70 | Oct. 31, 1951 | 217.78 | June 10, 1952 | 225.62 |
| Feb. 1 | 204.92 | Jan. 15, 1952 | 220.27 | | |
| Mar. 14 | 206.67 | Mar. 23 | 224.94 | | |

Well I-3-43
[Owner: H. W. McClain. Altitude of land surface: 944.2 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 20, 1930 | 217.30 | Apr. 29, 1944 | 182.62 | Jan. 12, 1951 | 205.27 |
| Oct. 18, 1934 | 193.05 | Aug. 19 | 183.32 | Feb. 2 | 207.64 |
| July 8, 1937 | 157.83 | Dec. 19 | 180.50 | Mar. 14 | 210.40 |
| Aug. 11 | 159.62 | June 4, 1945 | 172.31 | May 10 | 210.05 |
| Sept. 23, 1938 | 169.10 | Apr. 4, 1946 | 179.97 | June 1 | 208.46 |
| Jan. 16, 1940 | 189.03 | July 2, 1947 | 177.13 | July 9 | 211.03 |
| Feb. 21 | 190.85 | Nov. 7 | 181.87 | Aug. 1 | 213.23 |
| Mar. 18 | 192.06 | Apr. 24, 1948 | 182.88 | Sept. 7 | 217.83 |
| Apr. 23 | 193.15 | Aug. 2 | 195.07 | Oct. 3 | 218.59 |
| May 20 | 193.65 | June 6, 1949 | 204.35 | Oct. 31 | 220.07 |
| June 17 | 194.45 | Mar. 9 | 201.80 | Dec. 4 | 222.45 |
| July 22 | 194.04 | Apr. 13 | 203.00 | Jan. 4, 1952 | 223.01 |
| Aug. 23 | 196.32 | Aug. 26 | 193.20 | Feb. 5 | 224.62 |
| Sept. 24 | 197.89 | Nov. 2 | 190.55 | Mar. 17 | 226.93 |
| Oct. 21 | 199.10 | Dec. 9 | 193.18 | Apr. 27 | 227.61 |
| Dec. 2 | 200.53 | Jan. 26, 1950 | 194.29 | July 2 | 230.15 |
| Jan. 20, 1941 | 198.94 | Feb. 23 | 194.22 | Aug. 25 | 235.01 |
| May 26 | 175.71 | Mar. 28 | 194.66 | Nov. 7 | 236.63 |
| Aug. 11 | 176.41 | May 1 | 194.70 | Apr. 9, 1953 | 237.00 |
| Nov. 12 | 174.58 | June 1 | 195.58 | Nov. 23 | 233.63 |
| Apr. 6, 1942 | 177.30 | July 3 | 195.08 | Apr. 16, 1954 | 245.77 |
| Aug. 4 | 176.28 | Aug. 1 | 196.10 | June 3 | 244.82 |
| Nov. 30 | 169.99 | Sept. 1 | 197.48 | July 15 | 245.96 |
| Apr. 26, 1943 | 174.79 | Oct. 2 | 198.71 | Aug. 23 | 247.02 |
| Aug. 27 | 176.70 | Nov. 3 | 200.33 | Nov. 9 | 248.41 |
| Dec. 14 | 182.15 | Dec. 4 | 202.56 | | |

Well I-3-75
[Owner: Gus Britch. Altitude of land surface: 933.5 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 20, 1930 | 214.20 | Apr. 26, 1943 | 172.25 | Oct. 2, 1950 | 200.75 |
| Oct. 18, 1934 | 184.10 | Aug. 27 | 175.60 | Nov. 1 | 207.11 |
| July 8, 1937 | 149.98 | Dec. 14 | 178.69 | Dec. 3 | 221.20 |
| Aug. 11 | 161.58 | Apr. 29, 1944 | 180.61 | Jan. 10, 1951 | 221.46 |
| Sept. 22, 1938 | 172.35 | Aug. 19 | 182.13 | Feb. 2 | 217.66 |
| Apr. 10, 1939 | 186.20 | Dec. 19 | 176.77 | Mar. 14 | 229.94 |
| Aug. 1 | 187.37 | June 4, 1945 | 169.61 | May 10 | 125.17 |
| Sept. 18 | 187.88 | Apr. 4, 1946 | 181.69 | June 1 | 186.40 |
| Oct. 26 | 194.32 | July 2, 1947 | 182.98 | Aug. 1 | 219.83 |
| Jan. 16, 1940 | 191.02 | Nov. 7 | 195.28 | Sept. 7 | 224.16 |
| Feb. 21 | 191.05 | Apr. 23, 1948 | 194.51 | Oct. 3 | 223.11 |
| Mar. 18 | 193.02 | Aug. 2 | 198.28 | Oct. 31 | 224.46 |
| Apr. 23 | 196.09 | Jan. 6, 1949 | 214.96 | Dec. 4 | 225.69 |
| May 20 | 192.36 | Mar. 9 | 121.94 | Jan. 3, 1952 | 220.28 |
| June 17 | 194.43 | Apr. 13 | 195.76 | Feb. 5 | 226.09 |
| July 22 | 192.65 | Aug. 26 | 177.52 | Mar. 13 | 229.01 |
| Sept. 24 | 198.39 | Nov. 2 | 120.59 | Apr. 27 | 225.14 |
| Oct. 21 | 200.34 | Dec. 9 | 179.31 | Aug. 25 | 246.00 |
| Dec. 2 | 202.43 | Jan. 26, 1950 | 188.34 | Apr. 9, 1953 | 240.16 |
| Jan. 20, 1941 | 196.84 | Feb. 23 | 182.60 | Aug. 13 | 248.97 |
| May 26 | 146.35 | Mar. 28 | 192.40 | Nov. 23 | 231.91 |
| Aug. 11 | 170.35 | May 1 | 196.43 | Apr. 16, 1954 | 247.04 |
| Nov. 12 | 168.58 | June 1 | 191.16 | June 3 | 243.51 |
| Apr. 6, 1942 | 174.73 | July 3 | 193.59 | Nov. 9 | 252.75 |
| Aug. 4 | 171.67 | Aug. 1 | 196.57 | | |
| Nov. 30 | 156.40 | Sept. 1 | 198.38 | | |

Well I-3-118
[Owner: United States Government. Altitude of land surface: 905.0 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Apr. 27, 1950 | 205.51 | Jan. 25, 1951 | 220.04 | Jan. 4, 1952 | 238.75 |
| May 7 | 209.05 | Mar. 2 | 220.34 | Mar. 12 | 235.48 |
| June 3 | 208.80 | May 12 | 219.61 | Sept. 5 | 245.27 |
| July 2 | 211.57 | July 3 | 224.76 | Nov. 5 | 240.45 |
| Aug. 3 | 215.39 | Sept. 5 | 229.89 | Aug. 26 | 254.24 |
| Oct. 5 | 217.24 | Oct. 3 | 231.11 | | |
| Dec. 1 | 218.47 | Nov. 2 | 233.23 | | |

Well I-4-1
[Owner: Ross Kennedy Estate. Altitude of land surface: 967.3 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 19, 1930 | 248.2 | Jan. 20, 1941 | 229.85 | Dec. 6, 1950 | 242.58 |
| Oct. 18, 1934 | 227.95 | May 26 | 199.74 | Jan. 13, 1951 | 242.28 |
| July 8, 1937 | 191.31 | Aug. 11 | 199.91 | Feb. 6 | 244.82 |
| Aug. 11 | 193.96 | Nov. 12 | 192.38 | Mar. 13 | 245.65 |
| Sept. 26 | 198.13 | Apr. 6, 1942 | 201.01 | May 12 | 246.59 |
| Oct. 19 | 200.68 | Aug. 4 | 205.63 | June 4 | 246.78 |
| Nov. 20 | 203.05 | Nov. 30 | 198.13 | July 6 | 248.79 |
| Dec. 20 | 202.44 | Aug. 31, 1943 | 211.80 | Aug. 1 | 249.24 |
| Feb. 25, 1938 | 202.68 | Dec. 15 | 219.41 | Sept. 5 | 255.37 |
| Mar. 16 | 202.98 | Apr. 30, 1944 | 218.16 | Oct. 3 | 254.37 |
| Apr. 26 | 201.94 | Aug. 19 | 212.59 | Nov. 2 | 256.62 |
| May 27 | 200.15 | June 4, 1945 | 204.41 | Dec. 4 | 257.34 |
| June 28 | 200.82 | Apr. 3, 1946 | 219.58 | Jan. 3, 1952 | 259.01 |
| July 26 | 200.86 | June 28, 1947 | 212.59 | Feb. 5 | 260.72 |
| Aug. 23 | 202.99 | Nov. 7 | 220.01 | Mar. 17 | 261.63 |
| Sept. 23 | 204.76 | Apr. 23, 1948 | 230.38 | Apr. 27 | 264.75 |
| Oct. 26 | 204.38 | Aug. 2 | 236.45 | June 9 | 266.02 |
| Dec. 9 | 210.50 | Jan. 5, 1949 | 243.75 | July 2 | 261.03 |
| Jan. 27, 1939 | 213.59 | Mar. 7 | 237.36 | Aug. 9 | 266.26 |
| Mar. 2 | 215.32 | Apr. 15 | 236.87 | Sept. 6 | 268.80 |
| May 4 | 220.00 | Aug. 26 | 227.59 | Nov. 5 | 268.29 |
| Oct. 25 | 223.65 | Nov. 2 | 225.31 | Dec. 22 | 267.45 |
| Jan. 16, 1940 | 226.40 | Dec. 9 | 226.39 | Apr. 9, 1953 | 259.08 |
| Feb. 24 | 226.76 | Jan. 24, 1950 | 226.91 | Aug. 13 | 274.00 |
| Mar. 21 | 228.35 | Feb. 23 | 227.10 | Nov. 24 | 269.82 |
| Apr. 23 | 228.72 | Mar. 28 | 227.93 | Apr. 16, 1954 | 276.43 |
| May 20 | 228.40 | May 1 | 228.78 | June 3 | 275.34 |
| June 17 | 228.31 | June 2 | 228.96 | July 15 | 277.25 |
| July 22 | 227.34 | July 3 | 229.78 | July 23 | 277.97 |
| Aug. 23 | 229.63 | Aug. 3 | 231.58 | Aug. 24 | 279.73 |
| Sept. 21 | 231.08 | Sept. 1 | 233.27 | Nov. 12 | 281.40 |
| Oct. 21 | 232.42 | Oct. 2 | 235.15 | | |
| Dec. 2 | 233.23 | Nov. 3 | 240.40 | | |

Well I-4-12
[Owner: Curtis White. Altitude of land surface: 950.0 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Apr. 21, 1930 | 236.7 | June 6, 1945 | 194.06 | May 12 | 236.40 |
| Oct. 23, 1934 | 216.75 | Apr. 3, 1946 | 207.52 | June 4 | 234.87 |
| July 8, 1937 | 180.92 | June 28, 1947 | 202.15 | July 6 | 236.86 |
| Aug. 11 | 184.00 | Nov. 7 | 212.08 | Aug. 1 | 239.86 |
| Sept. 23, 1938 | 194.28 | Apr. 22, 1948 | 219.41 | Sept. 11 | 244.07 |
| Jan. 16, 1940 | 214.70 | Aug. 2 | 225.33 | Oct. 3 | 242.79 |
| Feb. 21 | 215.99 | Jan. 5, 1949 | 232.16 | Nov. 2 | 245.00 |
| Mar. 21 | 216.13 | Mar. 7 | 226.54 | Dec. 4 | 245.64 |
| May 20 | 217.24 | Apr. 12 | 225.80 | Jan. 3, 1952 | 246.99 |
| June 17 | 216.85 | Aug. 26 | 216.66 | Feb. 4 | 248.52 |
| July 22 | 215.93 | Nov. 2 | 214.25 | Mar. 17 | 249.57 |
| Oct. 21 | 221.24 | Dec. 9 | 215.51 | Apr. 27 | 250.42 |
| Dec. 2 | 221.26 | Jan. 26, 1950 | 216.56 | June 9 | 249.64 |
| Jan. 20, 1941 | 218.16 | Feb. 23 | 216.18 | July 2 | 252.29 |
| May 26 | 189.29 | Mar. 28 | 217.17 | Aug. 9 | 254.47 |
| Aug. 13 | 189.38 | May 1 | 217.93 | Sept. 3 | 267.09 |
| Nov. 12 | 182.95 | June 2 | 218.12 | Nov. 5 | 256.00 |
| Apr. 6, 1942 | 191.07 | July 3 | 220.16 | Dec. 22 | 253.90 |
| Aug. 4 | 195.47 | Aug. 1 | 224.68 | Apr. 9, 1953 | 257.51 |
| Dec. 3 | 187.82 | Sept. 1 | 222.34 | Aug. 13 | 268.02 |
| Apr. 26, 1943 | 194.78 | Oct. 2 | 223.87 | Nov. 23 | 261.68 |
| Aug. 31 | 201.28 | Nov. 3 | 230.94 | Apr. 16, 1954 | 264.41 |
| Dec. 15 | 208.34 | Dec. 6 | 229.19 | June 3 | 263.60 |
| May 3, 1944 | 210.12 | Jan. 8, 1951 | 230.81 | July 13 | 265.36 |
| Aug. 19 | 208.12 | Feb. 6 | 232.57 | Aug. 24 | 268.14 |
| Dec. 19 | 203.53 | Mar. 15, 1951 | 234.63 | Nov. 12 | 269.55 |

Well I-5-8
[Owner: C. Steurnthaler. Altitude of land surface: 893.8 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 3, 1951 | 210.44 | Sept. 5, 1951 | 210.30 | Aug. 9, 1952 | 216.30 |
| Mar. 13 | 206.10 | Nov. 15 | 210.40 | Aug. 26, 1954 | 232.58 |
| Apr. 2 | 205.58 | Jan. 17, 1952 | 214.74 | Nov. 12 | 230.25 |
| May 11 | 202.07 | Mar. 12 | 214.14 | | |
| July 6 | 206.50 | June 9 | 215.66 | | |

Well I-5-55

[Owner: Ray McGlauphlin. Altitude of land surface: 784.1 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| May 30, 1930 | 72.94 | May 3, 1944 | 41.87 | Mar. 13, 1951 | 69.43 |
| Oct. 23, 1934 | 51.50 | Aug. 19 | 41.32 | May 12 | 70.22 |
| July 8, 1937 | 17.02 | June 6, 1945 | 28.96 | June 4 | 69.58 |
| Aug. 11 | 18.85 | Apr. 3, 1946 | 42.37 | July 6 | 72.16 |
| Sept. 23, 1938 | 29.31 | June 20, 1947 | 37.38 | Aug. 1 | 70.76 |
| Jan. 16, 1940 | 49.21 | Nov. 7 | 43.90 | Sept. 11 | 78.21 |
| Feb. 21 | 50.73 | Apr. 22, 1948 | 54.08 | Oct. 3 | 77.68 |
| Mar. 18 | 51.96 | Aug. 2 | 60.05 | Nov. 2 | 85.74 |
| Apr. 23 | 52.19 | Jan. 5, 1949 | 66.15 | Dec. 4 | 80.37 |
| May 20 | 52.02 | Apr. 12 | 59.75 | Jan. 3, 1952 | 81.83 |
| June 17 | 51.64 | Aug. 26 | 51.27 | Feb. 4 | 83.23 |
| July 22 | 50.73 | Nov. 2 | 48.72 | Mar. 17 | 84.16 |
| Aug. 23 | 53.28 | Dec. 9 | 50.17 | May 27 | 85.07 |
| Sept. 24 | 54.74 | Jan. 26, 1950 | 51.14 | June 9 | 84.49 |
| Oct. 21 | 55.78 | Feb. 23 | 50.66 | Aug. 9 | 89.18 |
| Dec. 2 | 55.95 | Mar. 28 | 51.65 | Sept. 3 | 91.97 |
| Jan. 20, 1941 | 52.84 | May 1 | 53.47 | Nov. 5 | 90.82 |
| May 26 | 24.24 | June 2 | 53.56 | Dec. 22 | 90.70 |
| Aug. 11 | 25.31 | July 3 | 53.59 | Apr. 9, 1953 | 91.20 |
| Nov. 12 | 18.15 | Aug. 1 | 55.30 | Aug. 13 | 100.58 |
| Apr. 6, 1942 | 26.07 | Sept. 1 | 57.02 | Nov. 23 | 91.80 |
| Aug. 4 | 30.43 | Oct. 2 | 58.62 | Apr. 16, 1954 | 98.50 |
| Dec. 3 | 22.67 | Nov. 3 | 60.11 | June 3 | 97.97 |
| Apr. 26, 1943 | 29.78 | Dec. 6 | 63.61 | July 13 | 101.45 |
| Aug. 31 | 36.40 | Jan. 8, 1951 | 65.35 | Aug. 24 | 102.78 |
| Dec. 15 | 43.20 | Feb. 6 | 67.31 | Nov. 12 | 103.52 |

Well I-6-4

[Owner: F. W. Bohmfalk. Altitude of land surface: 851.4 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Aug. 31, 1951 | 175.03 | Mar. 15, 1952 | 179.37 | Nov. 9, 1954 | 193.33 |
| Nov. 2 | 174.97 | Nov. 6 | 182.70 | | |
| Jan. 3, 1952 | 176.99 | Aug. 26, 1954 | 196.85 | | |

Well J-1-3

[Owner: A. Haby. Altitude of land surface: 925.9 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Jan. 8, 1934 | 89.40 | May 11, 1951 | 67.91 | Mar. 19, 1952 | 81.77 |
| Dec. 12, 1950 | 60.14 | July 11 | 81.35 | June 10 | 81.79 |
| Jan. 29, 1951 | 62.47 | Sept. 13 | 78.72 | Aug. 25 | 81.87 |
| Feb. 5 | 64.29 | Nov. 1 | 75.67 | Nov. 6 | 65.89 |
| Mar. 14 | 65.91 | Jan. 15, 1952 | 79.94 | Aug. 23, 1954 | 99.26 |

Well J-1-9

[Owner: A. C. Wurzbach. Altitude of land surface: 923.1 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Aug. 29, 1934 | 200.30 | May 11, 1951 | 220.10 | Jan. 15, 1952 | 246.42 |
| Jan. 7, 1951 | 211.87 | July 11 | 235.09 | Mar. 11 | 237.20 |
| Feb. 13 | 213.30 | Sept. 5 | 233.70 | June 10 | 225.01 |
| Mar. 15 | 216.81 | Nov. 1 | 235.82 | Aug. 23, 1954 | 268.57 |

Well J-1-16

[Owner: H. F. Haefelin. Altitude of land surface: 968.7 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Jan. 15, 1934 | 149.45 | Mar. 14, 1951 | 171.89 | Jan. 15, 1952 | 224.98 |
| Nov. 28, 1950 | 171.96 | May 11 | 172.75 | Mar. 16 | 229.82 |
| Jan. 22, 1951 | 172.02 | July 9 | 182.28 | | |
| Feb. 1 | 172.25 | Nov. 1 | 181.43 | | |

Well J-1-22

[Owner: Frank Haby. Altitude of land surface: 1,042.6 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Jan. 12, 1934 | 219.29 | May 11, 1951 | 241.51 | Jan. 15, 1952 | 259.96 |
| Jan. 12, 1951 | 237.02 | July 9 | 245.72 | Mar. 24 | 264.63 |
| Feb. 1 | 237.97 | Sept. 12 | 242.43 | June 10 | 260.54 |
| Mar. 14 | 239.14 | Oct. 31 | 224.42 | | |

Well J-1-41
[Owner: F. C. Stinson. Altitude of land surface: 846.0 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 20, 1930 | 150.00 | Aug. 23, 1938 | 137.71 | Aug. 4, 1942 | 140.73 |
| Jan. 8, 1934 | 144.24 | Dec. 8 | 141.25 | Nov. 30 | 129.40 |
| Apr. 20 | 141.99 | Jan. 27, 1939 | 142.35 | Apr. 26, 1943 | 139.62 |
| May 23 | 144.92 | Mar. 2 | 138.25 | Aug. 26 | 144.50 |
| June 21 | 147.55 | Apr. 3 | 145.27 | Dec. 14 | 147.04 |
| July 31 | 147.31 | May 4 | 147.89 | Apr. 29, 1944 | 143.61 |
| Aug. 24 | 149.96 | June 9 | 148.20 | Aug. 19 | 145.53 |
| Sept. 21 | 151.43 | July 6 | 151.52 | Dec. 19 | 140.50 |
| Oct. 8 | 151.50 | Aug. 17 | 148.05 | June 4, 1945 | 136.40 |
| Nov. 21 | 152.57 | Sept. 16 | 149.61 | Apr. 4, 1946 | 145.29 |
| Dec. 21 | 153.32 | Oct. 26 | 151.15 | Jan. 7, 1951 | 168.89 |
| Feb. 3, 1935 | 153.38 | Jan. 17, 1940 | 151.71 | Feb. 9 | 170.33 |
| Mar. 2 | 153.55 | Feb. 21 | 152.59 | Mar. 15 | 171.39 |
| Apr. 9 | 154.44 | Mar. 18 | 154.44 | May 11 | 171.10 |
| May 21 | 144.28 | Apr. 26 | 155.30 | July 11 | 176.67 |
| June 28 | 126.72 | May 20 | 155.58 | Sept. 5 | 181.77 |
| Aug. 2 | 128.75 | June 17 | 154.86 | Nov. 1 | 181.25 |
| Sept. 27 | 126.68 | July 22 | 153.86 | Jan. 16, 1952 | 181.35 |
| Jan. 20, 1936 | 130.00 | Aug. 23 | 157.44 | Mar. 11 | 182.22 |
| Aug. 27 | 128.11 | Sept. 24 | 158.42 | June 10 | 183.64 |
| Jan. 4, 1937 | 124.80 | Oct. 21 | 158.85 | Aug. 25 | 191.74 |
| Feb. 27, 1938 | 129.62 | Dec. 2 | 153.46 | Nov. 6 | 186.24 |
| Apr. 26 | 132.78 | Jan. 23, 1941 | 153.00 | Aug. 23, 1954 | 199.85 |
| May 27 | 130.66 | Nov. 12 | 133.60 | Nov. 11 | 195.65 |
| June 28 | 134.50 | Apr. 6, 1942 | 138.40 | | |

Well J-1-68
[Owner: J. Krenmueller. Altitude of land surface: 986.1 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Aug. 21, 1937 | 67.89 | July 25, 1940 | 68.59 | Sept. 1, 1950 | 62.48 |
| Sept. 26 | 68.68 | Sept. 26 | 69.50 | Oct. 2 | 62.85 |
| Oct. 19 | 63.88 | Oct. 25 | 68.70 | Nov. 1 | 64.38 |
| Nov. 15 | 64.51 | Dec. 2 | 68.47 | Dec. 5 | 66.45 |
| Dec. 23 | 65.67 | Jan. 20, 1941 | 67.76 | Jan. 6, 1951 | 67.96 |
| Jan. 19, 1938 | 63.37 | May 26 | 61.29 | Feb. 9 | 68.69 |
| Feb. 26 | 62.84 | Aug. 11 | 62.69 | Mar. 14 | 69.44 |
| Mar. 16 | 62.49 | Nov. 12 | 62.69 | May 11 | 64.76 |
| Apr. 26 | 63.04 | Apr. 8, 1942 | 62.08 | June 1 | 63.98 |
| May 26 | 62.33 | Dec. 3 | 60.63 | July 10 | 69.95 |
| June 28 | 63.90 | Aug. 26, 1943 | 64.89 | Aug. 2 | 66.92 |
| July 26 | 63.94 | Dec. 14 | 65.20 | Sept. 11 | 67.89 |
| Aug. 23 | 65.05 | Apr. 29, 1944 | 62.80 | Oct. 3 | 65.61 |
| Sept. 23 | 63.29 | Aug. 19 | 64.39 | Oct. 31 | 60.70 |
| Oct. 26 | 63.98 | Dec. 19 | 60.98 | Dec. 3 | 65.67 |
| Dec. 9 | 63.87 | June 4, 1945 | 61.50 | Jan. 16, 1952 | 67.41 |
| Jan. 27, 1939 | 63.58 | July 1, 1947 | 62.24 | Feb. 4 | 73.52 |
| Mar. 2 | 64.40 | Nov. 7 | 61.40 | Mar. 13 | 66.80 |
| Apr. 3 | 64.36 | Apr. 24, 1948 | 61.34 | Apr. 27 | 67.15 |
| May 4 | 65.50 | Aug. 2 | 63.78 | June 10 | 66.54 |
| June 9 | 66.71 | Jan. 5, 1949 | 64.11 | July 2 | 68.67 |
| Aug. 17 | 66.20 | Apr. 12 | 63.45 | Aug. 25 | 72.71 |
| Sept. 16 | 68.82 | Aug. 26 | 65.63 | Nov. 6 | 68.15 |
| Oct. 26 | 70.33 | Dec. 21 | 60.06 | Apr. 9, 1953 | 69.43 |
| Jan. 17, 1940 | 66.11 | Feb. 23, 1950 | 59.31 | Aug. 13 | 70.44 |
| Feb. 21 | 67.24 | Mar. 28 | 60.40 | Nov. 24 | 68.72 |
| Mar. 18 | 67.80 | May 1 | 60.37 | Apr. 16, 1954 | 70.84 |
| Apr. 26 | 68.38 | June 2 | 60.58 | July 15 | 74.56 |
| May 20 | 67.60 | July 3 | 62.45 | Nov. 9 | 69.48 |
| June 17 | 67.14 | Aug. 2 | 65.34 | | |

Well J-1-86
[Owner: J Courand. Altitude of land surface: 854.2 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| May 22, 1951 | 193.59 | Mar. 13, 1952 | 205.36 | Nov. 6, 1952 | 209.79 |
| Nov. 1 | 202.73 | June 10 | 206.42 | Aug. 28, 1954 | 222.36 |
| Jan. 3, 1952 | 208.13 | Aug. 25 | 214.29 | Nov. 9 | 220.75 |

Well J-2-14

[Owner: M. H. Bippert. Altitude of land surface: 766.8 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Jan. 12, 1934 | 89.40 | July 11, 1951 | 106.43 | June 10, 1952 | 111.72 |
| Jan. 5, 1951 | 98.19 | Sept. 5 | 111.11 | Nov. 6 | 114.88 |
| Feb. 2 | 99.34 | Oct. 31 | 113.21 | Aug. 26, 1954 | 127.83 |
| Mar. 14 | 100.66 | Jan. 16, 1952 | 111.51 | | |
| May — | 103.12 | Mar. 11 | 110.42 | | |

Well J-4-7

[Owner: L. M. Samuels. Altitude of land surface: 916.8 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| July 18, 1951 | 167.12 | Jan. 16, 1952 | 170.74 | Mar. 13, 1952 | 172.68 |
| Nov. 16 | 155.24 | | | | |

Well J-5-3

[Owner: Southern Pacific Lines. Altitude of land surface: 724.4 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 19, 1930 | 49.90 | Feb. 13, 1951 | 55.79 | May 11, 1952 | 57.64 |
| Jan. 5, 1934 | 32.61 | Mar. 14 | 56.25 | June 10 | 67.53 |
| June 28 | 36.85 | May 11 | 57.64 | Aug. 25 | 76.22 |
| Aug. 31 | 39.06 | Sept. 13 | 66.09 | Nov. 6 | 70.06 |
| Oct. 9 | 39.13 | Nov. 1 | 70.12 | Aug. 28, 1954 | 83.42 |
| Nov. 22, 1935 | 19.85 | Jan. 21, 1952 | 65.51 | Nov. 12 | 78.72 |
| Jan. 8, 1951 | 55.44 | Mar. 24 | 66.85 | | |

Well J-8-24

[Owner: K. G. Howard. Altitude of land surface: 653.01 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 21, 1930 | 85.20 | June 24, 1952 | 76.82 | Nov. 23, 1953 | 77.14 |
| June 30, 1951 | 76.74 | Sept. 24 | 76.85 | Feb. 23, 1954 | 77.28 |
| Nov. 16 | 78.15 | July 24, 1953 | 77.40 | | |

Well J-7-42

[Owner: A. A. Lilly. Altitude of land surface: 657.6 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 21, 1930 | 101.75 | Jan. 16, 1952 | 95.66 | Nov. 23, 1953 | 97.63 |
| June 30, 1951 | 95.46 | June 24 | 96.20 | Feb. 23, 1954 | 98.06 |
| July 19 | 95.49 | Sept. 24 | 96.45 | June 9 | 98.06 |
| Nov. 15 | 95.53 | July 24, 1953 | 97.42 | Sept. 15 | 98.74 |

Well J-7-47

[Owner: W. Cavhart. Altitude of land surface: 661.1 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 21, 1930 | 106.55 | June 24, 1952 | 102.05 | Nov. 23, 1953 | 102.74 |
| June 30, 1951 | 101.26 | Sept. 24 | 101.74 | Feb. 25, 1954 | 102.87 |
| Sept. 18 | 101.40 | Apr. 24, 1953 | 102.60 | June 9 | 104.36 |
| Nov. 15 | 94.46 | July 24 | 103.43 | Sept. 16 | 104.01 |

Well J-7-49

[Owner: D. J. Bartlett. Altitude of land surface: 649 feet]

| Date | Water level | Date | Water level | Date | Water level |
|---|---|---|---|---|---|
| Feb. 22, 1930 | 95.47 | Jan. 16, 1952 | 107.54 | July 24, 1953 | 105.21 |
| June 30, 1951 | 94.22 | June 24 | 95.50 | | |
| Nov. 15 | 102.32 | Sept. 24 | 94.78 | | |

TABLE 12.—*Analyses of water from wells and springs in Medina County, Tex.*

[Chemical constituents, in parts per million]

| Well or spring | Owner | Depth of well (feet) | Date of collection | Silica ($SiO_2$) | Iron (Fe) in solution | Calcium (Ca) | Magnesium (Mg) | Sodium and potassium (Na + K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (Fl) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids | Hardness as $CaCO_3$ | Percent sodium | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| C-7-9 (Spring). | Elton Miller | | Oct. 12, 1950 | 10 | | 88 | 11 | 5.8 | 280 | 16 | 10 | | 21 | | 314 | 264 | 5 | 520 | 7.6 |
| C-7-13 | G. M. Merritt | 400 | Jan. 14, 1952 | 11 | | 186 | 141 | 52 | 350 | 783 | 37 | 0.5 | .5 | | 1,380 | 1,040 | 10 | 1,790 | 7.3 |
| C-7-20 | C. P. Rugh | 486 | Oct. 10, 1950 | 12 | | 82 | 86 | 18 | 472 | 174 | 20 | | 1.0 | | 682 | 558 | 7 | 1,030 | 7.4 |
| C-7-29 (Spring in cave). | J. Woodard | | June 1, 1952 | 13 | | 152 | 7.0 | 14 | 269 | 33 | 8.0 | | 212 | 0.18 | 610 | 408 | 7 | 843 | 7.5 |
| C-8-1 | H. Eckardt | 200 | Aug. 17, 1950 | 10 | 0.00 | 363 | 268 | 54 | 298 | 1,750 | 40 | | 3.2 | | 2,640 | 2,010 | 6 | 2,940 | 7.6 |
| C-8-6 | H. E. Reiber | 200 | Aug. 15, 1950 | 13 | .00 | 538 | 344 | 54 | 303 | 2,480 | 30 | | 1.2 | | 3,610 | 2,760 | 4 | 3,640 | 7.3 |
| C-8-12 | J. Ulbrich | 354 | Aug. 16, 1950 | 13 | .00 | 457 | 267 | 46 | 264 | 2,000 | 26 | | 3.5 | | 2,940 | 2,240 | 4 | 3,100 | 7.4 |
| C—8-18 | B. C. Jagge | 400 | Aug. 4, 1950 | 13 | .00 | 176 | 58 | 12 | 244 | 468 | 10 | | 4.5 | | 862 | 678 | 4 | 1,190 | 7.5 |
| C-8-23 | F. D. Garrison | 300 | Jan. 1, 1951 | 10 | | 560 | 164 | 12 | 214 | 1,830 | 12 | | 0 | | 2,690 | 2,070 | 1 | 2,820 | 7.1 |
| C-8-25 | B. C. Jagge | 500 | Aug. 4, 1950 | 20 | | 88 | 14 | 7.5 | 330 | 6.2 | 14 | | 2.5 | | 330 | 277 | 6 | 558 | 8.2 |
| C-8-27 | R. Zuberbueler | 300 | Jan. 9, 1951 | 10 | | 70 | 8.8 | 4.6 | 239 | 7.1 | 7.9 | | 4.5 | | 248 | 211 | 5 | 434 | 7.4 |
| C-8-29 | do | 500 | July 28, 1950 | 12 | 2.00 | 75 | 11 | 4.3 | 260 | 13 | 9 | | 3.8 | | 273 | 232 | 39 | 454 | 7.7 |
| C-8-32 (Spring). | Bob Depuy | | Jan. 14, 1952 | 15 | | 102 | 18 | 7.4 | 353 | 23 | 20 | | 4.0 | | 384 | 328 | 5 | 625 | 7.7 |
| C-9-4 | Joe Short | 400 | June 12, 1950 | | | | | | | 1,400 | 13 | | | | | | | 2,410 | |
| C-9-5 (Spring). | do | | Oct. 18, 1950 | 10 | | 69 | 9.4 | 3.7 | 238 | 3.5 | 9 | | 9.3 | | 238 | 211 | 4 | 416 | 8.0 |
| C-9-8 (Spring). | E. J. Leinweber | | Jan. 22, 1952 | 12 | | 57 | 14 | 4.8 | 221 | 11 | 11 | | 3.5 | 0.16 | 223 | 200 | 5 | 429 | 7.7 |
| C-9-24 | J. L. Hensely | (?)360 | Jan. 10, 1951 | 12 | | 176 | 107 | 9.0 | 273 | 625 | 11 | | .8 | | 1,070 | 879 | 2 | 1,410 | 7.4 |
| C-9-29 | W. DeGrodt | 275 | Jan. 15, 1952 | 13 | | 84 | 6.3 | 6.5 | 280 | 7.7 | 8.5 | | 1.0 | | 265 | 236 | 6 | 467 | 7.8 |
| C-9-33 | R. Mumme | 585 | Nov. 6, 1950 | 9.5 | .19 | 540 | 434 | 61 | 251 | 2,900 | 27 | | 4.0 | | 4,100 | 3,130 | 4 | 4,080 | 6.7 |
| C-9-38 | B. DeGrodt | 346 | Oct. 18, 1951 | 14 | | 83 | 27 | 10 | 285 | 88 | 9.5 | | 5.5 | | 402 | 318 | 6 | 622 | 7.5 |
| C-9-45 | A. W. Schulte | 310 | Jan. 15, 1952 | 12 | | 76 | 5.4 | 3.6 | 222 | 3.0 | 8.5 | | 28 | | 262 | 212 | 4 | 436 | 8.3 |
| C-9-57[1] | Joe Short | 91 | Dec. 4, 1951 | 17 | .09 | 83 | 53 | 21 | 311 | 179 | 21 | 2.2 | .4 | | 550 | 425 | 10 | | 8.3 |
| C-9-58[1] | do | 237 | Oct. 23, 1951 | 30 | .14 | 248 | 157 | 42 | 238 | 1,090 | 18 | 4.2 | .4 | | 1,780 | 1,260 | 7 | | 7.6 |
| C-9-63 | J. S. Morris | 800 | Mar. 27, 1952 | 1.6 | .9 | | | 13 | 143 | 622 | 65 | | 14 | | | 840 | 3 | 1,730 | 7.9 |
| C-9-64 (Spring). | do | | do | 1.4 | .01 | | | 27 | 216 | 430 | 175 | | 2.0 | | | 815 | 6 | 1,600 | 8.0 |
| D-7-3 | I. McKay | 220 | Sept. 20, 1951 | 13 | .62 | 476 | 106 | 53 | 184 | 1,500 | 18 | | 0 | | 2,260 | 1,620 | 7 | 2,490 | 7.8 |
| D-7-20 | J. L. Hensely | 495 | Jan. 10, 1951 | 9.5 | | 540 | 369 | 17 | 238 | 2,580 | 16 | | 0 | | 3,650 | 2,860 | 1 | 3,690 | 7.0 |
| D-7-25 | R. Murray | 274 | Jan. 17, 1952 | 7.8 | | 68 | 23 | 8.7 | 196 | 93 | 14 | .1 | 1.5 | | 324 | 264 | 7 | 523 | 7.6 |
| D-7-37 | M. Haby | 450 | Nov. 7, 1950 | 14 | | 74 | 8.2 | 2.2 | 245 | 4.1 | 12 | | 1.5 | | 248 | 218 | 2 | 431 | 7.3 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D-7-45 | Medina Valley Irrigation District (Medina Lake). | | Oct. 19, 1951 | 11 | .00 | 58 | 21 | 8.5 | 3.6 | 168 | 93 | 13 | .1 | 2.2 | .61 | 350 | 235 | 7 | 484 | 8.1 |
| D-8-8 | O. W. Schuchart | 671 | June 18, 1952 | 11 | | 486 | 347 | 4.4 | | 230 | 2,320 | 23 | 4.0 | 3.0 | .65 | 3,310 | 2,640 | 4 | 3,530 | 7.9 |
| I-1-3 | J. Woodard | 1,009 | June 20, 1952 | 12 | | 329 | 291 | 122 | | 306 | 1,860 | 59 | 5.2 | .0 | 1.30 | 2,880 | 2,020 | 12 | 3,220 | 7.6 |
| I-1-7 | E. L. Kelley | 412 | Mar. 15, 1951 | 13 | | 65 | 11 | 3.9 | | 230 | 14 | 10 | | 5.0 | | 250 | 207 | 4 | 416 | 7.7 |
| I-1-8 | do | 400 | June 21, 1951 | 12 | | 66 | 10 | 8.4 | | 230 | 15 | 11 | | 5.5 | | 241 | 206 | 8.1 | 426 | 7.7 |
| I-1-12 | Tena Rothe | 432 | Mar. 1, 1951 | 12 | | 68 | 11 | 7.9 | | 247 | 14 | 8.8 | | 2.5 | | 258 | 215 | 13 | 429 | 8.0 |
| I-1-17 | M. Tschirhart | 585 | Mar. 2, 1951 | 12 | .16 | 66 | 13 | 13 | | 247 | 22 | 14 | | 1.5 | | 272 | 218 | 11 | 451 | 7.6 |
| I-1-22 | A. L. Rothe | 1,140 | Jan. 19, 1952 | 14 | | 56 | 28 | 31 | | 261 | 31 | 53 | .4 | .8 | | 346 | 254 | 21 | 622 | 7.8 |
| I-2-16 | A. Schlentz | 400 | May 17, 1930 | | .05 | 66 | 13 | 4.4 | | 234 | 18 | 9.0 | | 5.6 | | 231 | 218 | | | |
| I-2-18 | A. C. Gilliam | 436 | July 26, 1950 | 12 | | 67 | 14 | 6.7 | | 237 | 18 | 9 | | 4.5 | | 258 | 225 | 6.1 | 434 | 7.9 |
| I-2-21 | Herman Ney | 450 | Sept. 6, 1950 | 12 | | 68 | 10 | 5.1 | | 238 | 9.1 | 8.2 | | 4.8 | | 246 | 210 | 5 | 423 | 7.4 |
| I-2-37 | Albert Saathoff | 330 | July 12, 1950 | 12 | | 74 | 11 | 7.0 | | 250 | 19 | 11 | | 7.3 | | 274 | 230 | 6.2 | 455 | 7.9 |
| I-2-40 | W. A. Weynand | (?)285 | May 20, 1930 | | .23 | 74 | 13 | 3.5 | | 258 | 20 | 9.0 | | 1.0 | | 248 | 238 | | | |
| I-2-47 | J. Amberson | 707 | Aug. 31, 1951 | 14 | | 69 | 13 | 9.0 | | 258 | 14 | 12 | | 2.2 | | 264 | 226 | 8 | 457 | 7.4 |
| I-2-50 | O. E. Lacey | 495 | July 11, 1950 | | | | | | | | 12 | 13 | | | | | | | 436 | |
| I-2-51 | A. C. Reuss | 447 | do | | | | | | | | 14 | 11 | | | | | | | 470 | |
| I-2-61 | R. A. Saathoff | 295 | Oct. 16, 1950 | 23 | | 153 | 21 | 95 | | 340 | 105 | 203 | | .0 | | 813 | 468 | 31 | 1,350 | 7.4 |
| I-2-73 | W. Lutz | 40 | Aug. 17, 1950 | 24 | | 134 | 10 | 40 | | 458 | 31 | 21 | | 30 | | 549 | 376 | 19 | 880 | 7.4 |
| I-2-88 | C. Langfeld | 400 | July 17, 1951 | 13 | | 69 | 65 | 445 | | 585 | 278 | 452 | | .0 | | 1,610 | 440 | 69 | 2,680 | 7.9 |
| I-2-95 | W. Glasscock | 1,100 | Mar. 21, 1951 | 11 | | 64 | 18 | 6.5 | | 260 | 21 | 13 | | .0 | | 274 | 234 | 6 | 476 | 7.8 |
| I-3-16 | B. A. Schweers | 307 | Jan. 9, 1951 | 12 | | 68 | 14 | 3.7 | | 256 | 13 | 8.2 | | .5 | | 246 | 227 | 3.4 | 436 | 7.5 |
| I-3-19 | Milton Heyen | 420 | Feb. 19, 1952 | 12 | | 52 | 9.4 | 5.4 | | 197 | 5 | 10 | | .5 | | 200 | 168 | 4 | 442 | 8.4 |
| I-3-23 | C. E. Martin | 372 | Feb. 26, 1951 | 12 | .04 | 84 | 9.0 | 4.9 | | 285 | 7.6 | 9.5 | | 2.5 | | 283 | 246 | 42 | 467 | 7.5 |
| I-3-34 | Walter Brucks | 258 | Oct. 15, 1951 | 13 | | 56 | 9.7 | 18 | | 232 | 10 | 11 | | 3.0 | | 235 | 180 | 18 | 449 | 8.3 |
| I-3-50 | L. H. Heyen | 278 | Apr. 30, 1930 | 16 | .08 | 73 | 11 | 8.2 | | 266 | 12 | 9.0 | | 4.2 | | 266 | 228 | | | |
| I-3-78 | R. L. Mumme | 280 | June 12, 1950 | 15 | | 62 | 23 | 35 | | 304 | 34 | 24 | | 8.0 | | 371 | 249 | 23 | 644 | 7.7 |
| I-3-81 | W. Britch | 805 | do | 16 | .96 | 124 | 12 | 18 | | 275 | 21 | 37 | | 106 | | 526 | 359 | 10 | 787 | 7.7 |
| I-3-82 (Spring). | Eugene Moos | | Sept. 13, 1950 | 10 | | 30 | 5.9 | 12 | | 116 | 8.0 | 12 | | 5.0 | | 162 | 99 | 20 | 255 | 7.0 |
| I-3-91 | H. Nietenhoefer | 200 | July 19, 1950 | | | | | | | | 51 | 311 | | | | | | | 1,550 | |
| I-3-115 | Glenn Gooding | 650 | Nov. 8, 1950 | 14 | .00 | 102 | 32 | 82 | | 310 | 144 | 114 | | | | 669 | 386 | 32 | 1,070 | 7.2 |
| I-3-117 | U. S. Government | 1,510 | May 5, 1944 | 13 | .10 | 68 | 15 | 6.7 | | 256 | 15 | 12 | 0.0 | 3.5 | | 264 | 231 | | | 7.6 |
| I-3-118 | U. S. Government | 1,418 | May 5, 1944 | 13 | .15 | 70 | 16 | 1.4 | | 254 | 16 | 11 | .2 | 3.5 | | 275 | 240 | | | 7.4 |
| I-3-125 (Spring). | E. Wiemers | | Jan. 17, 1952 | 15 | | 106 | 8.3 | 47 | | 217 | 22 | 124 | | 36 | | 465 | 298 | 25 | 895 | 7.6 |
| I-3-130 | F. M. Ward | 100 | June 26, 1951 | 68 | | 178 | 13 | 139 | | 304 | 49 | 308 | | 81 | | 985 | 498 | 38 | 1,670 | 7.4 |
| I-3-131 | G. Sadler | 60 | do | 31 | | 172 | 21 | 248 | | 356 | 44 | 288 | | 387 | | 1,370 | 516 | 51 | 2,180 | 7.4 |
| I-3-133 | City of Hondo | 1,500 | Nov. 2, 1945 | 14 | .08 | 66 | 16 | 4.8 | 3.4 | 244 | 16 | 18 | .2 | 3.8 | | 263 | 230 | | 438 | 7.0 |
| I-3-134 | do | 1,600 | Apr. 30, 1930 | 15 | .03 | 63 | 16 | 7.8 | | 251 | 15 | 11 | | 2.9 | | 227 | 226 | | | |
| I-3-134 | do | 1,600 | Nov. 2, 1945 | 13 | .05 | 64 | 16 | 7.1 | 4.4 | 255 | 14 | 14 | .2 | 3.5 | | 255 | 226 | | 476 | 7.2 |
| I-4-1[2] | Ross Kennedy Estate | 1,600 | Jan. 19, 1936 | | | 73 | 12 | 12 | | 262 | 18 | 18 | | | | | 233 | | | |
| I-4-10 | Gene Ilse | 450 | May 21, 1930 | | .41 | 84 | 77 | 431 | | 749 | 13 | 592 | | .75 | | 1,567 | 526 | | | |
| I-4-14 | W. C. Scott | 210 | Aug. 21, 1951 | 44 | | 242 | 41 | 310 | | 344 | 183 | 690 | | 2.2 | | 1,680 | 772 | 47 | 2,940 | 7.7 |
| I-4-18 | A. L. Rehm | 4,200 | Nov. 20, 1951 | 20 | .48 | 137 | 67 | 533 | | 376 | 919 | 358 | 2.8 | .2 | | 2,220 | 618 | 65 | 3,260 | 7.4 |
| I-5-3 | D'Hanis Catholic School | 41 | May 16, 1930 | | | 60 | 17 | 2.6 | | 233 | 13 | 13 | | 3.0 | | 223 | 220 | | | |
| I-5-4 | D'Hanis High School | 260 | Jan. 8, 1952 | 24 | | 109 | 9.8 | 38 | | 301 | 44 | 43 | .0 | 52 | | 484 | 312 | 21 | 762 | 7.8 |
| I-5-5 | J. Tschirhart | 39 | May 15, 1930 | | .57 | 128 | 9.9 | 30 | | 264 | 23 | 48 | | 146 | | 515 | 361 | | | |
| I-5-8 | C. Steurnthaler | 1,462 | Apr. 10, 1951 | 13 | .09 | 266 | 41 | 5.7 | | 330 | 17 | 398 | | .2 | | 903 | 832 | 1 | 1,780 | 6.9 |

[1] Analysis by Texas State Department of Health.
[2] Analysis by Works Progress Administration.

| Well or spring | Owner | Depth of well (feet) | Date of collection | Silica ($SiO_2$) | Iron (Fe) Iron in solution | Calcium (Ca) | Magnesium (Mg) | Sodium and potassium (Na + K) | Bicarbonate ($HCO_3$) | Sulfate ($SO_4$) | Chloride (Cl) | Fluoride (F) | Nitrate ($NO_3$) | Boron (B) | Dissolved solids | Hardness as $CaCO_3$ | Percent sodium | Specific conductance (micromhos at 25°C) | pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| I-5-31 | W. A. Nehr | 414 | Jan. 18, 1952 | 4.7 | | 23 | 17 | 429 | 405 | 9.1 | 510 | | .5 | | 1,190 | 128 | 88 | 2,190 | 8.3 |
| I-5-36 | Otto Mainz | 550 | Feb. 15, 1951 | 28 | | 119 | 9.8 | 95 | 425 | 32 | 68 | | 83 | | 675 | 338 | 38 | 1,020 | 7.5 |
| I-5-42 | A. L. Haegelin | 196 | Feb. 6, 1952 | 35 | | 170 | 28 | 102 | 400 | 110 | 231 | | 1.0 | .58 | 896 | 539 | 29 | 1,490 | 7.5 |
| I-5-48 | J. A. Rowe | 1,700 | Jan. 19, 1952 | 9.4 | | 56 | 18 | 9.9 | 246 | 11 | 15 | .4 | .0 | | 241 | 214 | 9 | 435 | 9.4 |
| I-5-55 | R. McGlauphlin | 2,000 | Apr. 30, 1930 | 13 | .07 | 59 | 19 | 15 | 244 | 18 | 26 | .7 | | | 259 | 225 | | | |
| I-5-57 | H. H. Wheeles | 275 | Aug. 7, 1951 | 17 | | 22 | 20 | 596 | 592 | 243 | 490 | | 5.0 | | 1,680 | 137 | 90 | 2,880 | 8.3 |
| I-6-3 | Alfred Winkler | 50 | June 25, 1951 | 25 | | 93 | 9.6 | 102 | 366 | 34 | 83 | | 51 | | 578 | 272 | 45 | 961 | 7.6 |
| I-6-4 | F. W. Bohmfalk | (?)1530 | Oct. 15, 1951 | 15 | .54 | 64 | 36 | 14 | 252 | 95 | 23 | | | | 402 | 308 | 9 | 643 | 7.6 |
| I-6-13 | H. H. Haby | 142 | July 21, 1951 | 34 | | 449 | 135 | 552 | 430 | 622 | 1,330 | | 1.0 | | 3,330 | 1,680 | 42 | 5,390 | 8.0 |
| I-6-78 | W. G. Bearmen | 49 | Sept. 19, 1951 | 42 | | 236 | 11 | 138 | 340 | 81 | 312 | | 164 | | 1,150 | 634 | 32 | 1,910 | 7.0 |
| I-6-93 | H. E. Mofield | 125 | Feb. 28, 1951 | 16 | .02 | 286 | 63 | 374 | 445 | 625 | 545 | | 4.0 | | 2,130 | 972 | 46 | 3,220 | 7.4 |
| I-6-96 | F. G. Senne | 44 | Feb. 28, 1951 | 62 | | 1,560 | 278 | 2,080 | 127 | 1,630 | 5,500 | | | | 11,200 | 5,040 | 47 | 16,400 | 6.8 |
| I-6-97 | Vernon Gruenwald | 55 | Oct. 15, 1951 | 87 | | 102 | 17 | 280 | 348 | 164 | 330 | | 14 | | 1,160 | 324 | 65 | 1,930 | 8.0 |
| I-6-100 | G. C. McAnell y | 55 | Aug. 24, 1951 | 66 | | 213 | 24 | 196 | 410 | 229 | 322 | | 34 | | 1,290 | 630 | 40 | 2,080 | 8.1 |
| I-6-122 | Gilbert Falbo | 186 | Sept. 31, 1951 | 49 | | 84 | 19 | 98 | 263 | 124 | 110 | | | | 613 | 288 | 42 | 1,150 | 7.5 |
| I-7-3 | Henry Gross | 400 | Aug. 23, 1951 | 16 | | 196 | 80 | 520 | 471 | 733 | 565 | | 4.8 | | 2,350 | 818 | 58 | 3,610 | 7.2 |
| I-8-1 | Lewis Gross | 300 | do | 14 | | 48 | 31 | 991 | 586 | 393 | 1,070 | | 4.0 | | 2,840 | 248 | 90 | 4,830 | 7.8 |
| I-8-2 | L. O. Carle | 260 | Oct. 24, 1939 | | | 74 | 45 | 1,410 | 381 | 638 | 1,730 | .3 | 10 | | 4,090 | 370 | | | |
| I-8-3 | do | 2,164 | do | | | 398 | 96 | 3,920 | 126 | 1 | 6,960 | | | | 11,400 | 4,390 | | | |
| I-8-7 | Marvin Uzzell | 172 | Oct. 5, 1951 | 38 | | 592 | 142 | 494 | 187 | 1,820 | 740 | | 55 | | 3,970 | 2,060 | 34 | 5,090 | 7.0 |
| I-8-9 | M. S. Koch | 159 | Oct. 9, 1951 | 28 | | 59 | 11 | 27 | 157 | 35 | 61 | | .2 | | 348 | 192 | 24 | 671 | 7.8 |
| I-8-13 | Frank Martin | 300 | May 18, 1930 | | 10 | 197 | 61 | 636 | 390 | 740 | 730 | | 6.0 | | 2,560 | 743 | | | |
| I-9-2 | Emma Wiemers | 51 | Apr. 2, 1951 | 31 | | 156 | 28 | 74 | 260 | 165 | 215 | | 1.8 | | 799 | 504 | 24 | 1,420 | 7.8 |
| I-9-18 | J. W. Harris | 126 | Oct. 4, 1951 | 27 | | 58 | 6.7 | 46 | 106 | 81 | 67 | | 7.8 | | 355 | 172 | 37 | 577 | 7.6 |
| I-9-24 | Leo Bohles | 176 | do | 36 | | 67 | 8.1 | 43 | 193 | 33 | 69 | | 5.0 | | 362 | 200 | 32 | 598 | 7.5 |
| I-9-29 | J. H. Cunningham | 110 | May 20, 1930 | | | 111 | 12 | 42 | 403 | 40 | 28 | | 7.5 | | 439 | 327 | | | |
| I-9-32 | F. Duncan Estate | 92 | Oct. 8, 1951 | 51 | | 394 | 42 | 173 | 300 | 728 | 374 | | .2 | | 1,910 | 1,160 | 25 | 2,650 | 7.0 |
| J-1-3 | A. Haby | 260 | Jan. 17, 1952 | 14 | | 118 | 42 | 40 | 292 | 171 | 98 | | 2.5 | | 630 | 467 | 16 | 1,050 | 7.7 |
| J-1-22 | Frank Haby | 350 | Jan. 15, 1952 | 9.8 | | 61 | 15 | 2.6 | 245 | 4.2 | 10 | | .5 | | 223 | 214 | 3 | 442 | 8.1 |
| J-1-30 | F. Jungman | 880 | Jan. 15, 1952 | 12 | | 68 | 18 | 12 | 237 | 48 | 16 | | 3.0 | | 294 | 244 | 9 | 496 | 7.5 |
| J-1-38 | J. Hutzler | 571 | Jan. 25, 1951 | 9.5 | | 72 | 35 | 39 | 306 | 110 | 31 | | .0 | | 470 | 324 | 21 | 757 | 7.6 |
| J-1-41 | F. C. Stinson | 641 | Jan. 17, 1952 | 11 | | 69 | 28 | 185 | 285 | 25 | 298 | | 1.0 | | 757 | 287 | 58 | 1,440 | 7.9 |
| J-1-44 | Fritz Fuos | 1,216 | Oct. 15, 1951 | 13 | | 69 | 12 | 15 | 256 | 22 | 14 | | 2.0 | | 273 | 222 | 13 | 443 | 8.2 |
| J-1-49 | L. W. Burrell | 180 | May 16, 1930 | | 5.5 | 84 | 20 | 38 | 355 | 35 | 33 | | .0 | | 385 | 292 | | | |
| J-1-56 | do | 565 | do | | .17 | 74 | 16 | 7.8 | 164 | 108 | 14 | | 1.0 | | 302 | 251 | | | |
| J-1-59 | A. Schneider | 62 | Sept. 20, 1951 | 30 | | 110 | 17 | 99 | 294 | 30 | 82 | | 213 | | 740 | 344 | 38 | 1,150 | 7.3 |
| J-1-83 | City of Castroville | 715 | Aug. 24, 1950 | 13 | | 65 | 15 | 4.8 | 247 | 13 | 12 | | .5 | | 240 | 224 | 5 | 448 | 8.1 |
| J-1-86 | J. Courand | 1,147 | June 10 1952 | 11 | | 74 | 31 | 195 | 282 | 15 | 345 | .4 | 1.0 | .94 | 893 | 312 | 58 | 1,580 | 8.0 |
| J-2-1 | W. J. Haby | 749 | Oct. 17, 1951 | 14 | | 54 | 27 | 156 | 323 | 42 | 196 | | .0 | | 648 | 246 | 58 | 1,220 | 8.1 |
| J-2-8 | A. J. Wurzbach | 445 | Jan. 17, 1952 | 12 | | 67 | 18 | 6.7 | 246 | 32 | 14 | | 1.5 | | 285 | 242 | 6 | 481 | 7.4 |
| J-2-14 | M. H. Bippert | 1,180 | Jan. 23, 1952 | 13 | | 62 | 17 | 13 | 243 | 14 | 24 | .4 | 4.8 | | 272 | 225 | 11 | 476 | 7.8 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| J-4-2 | E. Krewald | (?)1385 | Nov. 16, 1951 | 6.0 | ------ | 48 | 15 | 13 | | 202 | 17 | 13 | ------ | .5 | ------ | 214 | 182 | 14 | 387 | 7.6 |
| J-4-7 | L. M. Samuels | 1,285 | Jan. 23, 1952 | 11 | ------ | 62 | 17 | 8.7 | | 245 | 13 | 18 | ------ | 4.8 | ------ | 256 | 225 | 8 | 450 | 8.1 |
| J-4-19 | Joe A. Turner | 84 | Sept. 27, 1951 | 43 | ------ | 129 | 14 | 285 | | 222 | 255 | 384 | ------ | 13 | ------ | 1,230 | 380 | 62 | 2,230 | 7.5 |
| J-4-40 | W. T. Brady | 111 | June —, 1951 | 50 | ------ | 294 | 27 | 469 | | 526 | 297 | 778 | ------ | 35 | ------ | 2,210 | 844 | 55 | 3,680 | 7.4 |
| J-4-50 | E. J. Bendele | 145 | Aug. 20, 1951 | 16 | ------ | 52 | 39 | 1,020 | | 834 | 15 | 1,290 | ------ | ------ | ------ | 2,840 | 290 | 88 | 4,080 | 7.6 |
| J-4-69 | John T. Kirby | 148 | Sept. 5, 1951 | 25 | ------ | 85 | 31 | 91 | | 366 | 48 | 132 | ------ | 2.0 | .70 | 595 | 340 | 37 | 1,070 | 7.5 |
| J-4-75 | Guy Mayhew | 60 | July 17, 1951 | 47 | ------ | 592 | 71 | 256 | | 435 | 554 | 978 | ------ | 18 | ------ | 2,730 | 1,770 | 24 | 4,420 | 7.2 |
| J-4-86 | W. D. O'Bryant | 20 | Sept. 25, 1951 | 68 | ------ | 82 | 14 | 209 | | 353 | 103 | 225 | ------ | 2.5 | ------ | 889 | 262 | 63 | 1,480 | 7.4 |
| J-4-104 | Hartley Howard | 200 | Oct. 5, 1951 | 25 | ------ | 82 | 25 | 43 | | 333 | 40 | 61 | ------ | .2 | ------ | 440 | 308 | 23 | 833 | 7.9 |
| J-4-109 | Mrs. Arthur Conrad | 130 | Oct. 19, 1951 | 28 | .63 | 169 | 22 | 41 | | 376 | 95 | 138 | ------ | .5 | ------ | 786 | 512 | 15 | 1,160 | 8.0 |
| J-4-118 | T. J. Mason | 12 | Aug. 24, 1951 | 60 | ------ | 33 | 8.2 | 192 | | 391 | 98 | 52 | ------ | 47 | ------ | 682 | 116 | 78 | 1,030 | 8.3 |
| J-4-119 | L. E. Sauter | 195 | Aug. 25, 1951 | 29 | .06 | 91 | 30 | 94 | | 423 | 120 | 58 | ------ | 1.8 | ------ | 633 | 350 | 37 | 1,080 | 8.3 |
| J-4-124 | G. C. Clark | 18 | Aug. 24, 1951 | 70 | ------ | 78 | 10 | 47 | | 295 | 64 | 20 | ------ | 1.5 | ------ | 452 | 236 | 30 | 664 | 8.3 |
| J-4-127 | J. R. Gayer | 81 | Aug. 29, 1951 | 45 | ------ | 38 | 12 | 178 | | 446 | 80 | 31 | ------ | 47 | ------ | 650 | 144 | 73 | 1,020 | 8.3 |
| J-4-140 | J. T. Kirby | 240 | June 2, 1952 | 72 | ------ | 558 | 139 | 563 | | 390 | 915 | 1,300 | .6 | 20 | 1.9) | 3,760 | 1,960 | 38 | 5,670 | 7.1 |
| J-4-142 | Medina Valley Irrigation District (Chocorn Reservoir). | ------ | Feb. 12, 1952 | 12 | .05 | 90 | 23 | 26 | | 206 | 137 | 46 | .3 | .2 | .22 | 493 | 319 | 14 | 715 | 7.7 |
| J-7-21 | City of Devine | 250 | Feb. 19, 1946 | 13 | .00 | 63 | 15 | 98 | 10 | 346 | 77 | 56 | .6 | .0 | ------ | 498 | 218 | ------ | ------ | 7.7 |
| J-7-22 | do | 613 | do | 11 | .00 | 70 | 16 | 111 | 15 | 388 | 76 | 71 | .6 | 2.5 | ------ | 562 | 240 | ------ | 953 | 7.6 |
| J-7-30 | C. A. Robinson | (?)134 | May 16, 1930 | ------ | .09 | 66 | 14 | 42 | | 126 | 30 | 127 | ------ | .8 | ------ | 342 | 222 | ------ | ------ | ---- |
| J-7-37 | C. Weldon | 135 | May 20, 1930 | ------ | 10 | 16 | ------ | 27 | | 39 | 20 | 42 | ------ | 2.3 | ------ | 131 | 56 | ------ | ------ | ---- |
| J-7-41 | City of Devine | 141 | June 2, 1952 | 42 | ------ | 42 | 8.6 | 67 | | 110 | 34 | 112 | .4 | 1.5 | .21 | 382 | 140 | 51 | 643 | 7.0 |
| J-7-51 | Josephine Haegelin | 86 | Apr. 25, 1930 | 31 | .02 | 71 | 22 | 62 | | 42 | 40 | 126 | ------ | 162 | ------ | 529 | 268 | ------ | ------ | ---- |

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