GEOLOGY AND GROUND-WATER RESOURCES OF CALDWELL COUNTY, TEXAS

By

W. C. Rasmussen

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C O N T E N T S

ILLUSTRATIONS

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INTRODUCTION

Location and general features of the county

Caldwell County is in south-central Texas; Lockhart, the county seat, is about 30 miles south of Austin and about 60 miles northeast of San Antonio. The county has an area of 544 square miles and is roughly diamond-shaped. It is bounded on the northwest by Travis and Hays Counties, on the northeast by Bastrop County, on the southeast by Gonzales County, and on the southwest by Guadalupe County. The surface ranges from level to hilly. The minimum elevation is about 295 feet, at the southern tip of the county where Plum Creek joins the San Marcos River; the maximum is about 725 feet in the escarpment 2 or 3 miles west of Delhi, in the extreme eastern part of the county. In general, however, the surface rises from southeast to northwest. According to the U. S. Bureau of the Census, the county had a population of 24,893 in 1940, an average of 45.8 people per square mile. The principal cities and towns in the county and their population in 1940 are: Lockhart, 5,018; Luling, 4,437; Martindale, 500; Maxwell, 250; Fentress, 250; Prairie Lea, 275; McMahan, 250; Dale, 200; Lytton Springs, 200; and Mendoza, 100.

History and economic development

The region comprising Caldwell County was settled by English-speaking colonists in the 1840's. At a somewhat earlier date Byrd Lockhart, a surveyor and pioneer, obtained a grant of land around a group of perennially flowing springs, which became the site of the town of Lockhart. On August 12, 1840, a band of 400 raiding Comanche Indians were put to route by 200 Texas pioneers in the Battle of Plum Creek and a secondary battle at Boggy Creek, both near Lockhart. This volunteer army of the Republic of Texas was led by General Felix Houston, Colonel Edward Burleson, Captain Matthew Caldwell, and others. In 1848 the county was created from Gonzales County and named for Captain Matthew (Old Paint) Caldwell, Indian fighter and signer of the Texas Declaration of Independence 1/.

Approximately two-thirds of the county is farmed; cotton, corn, oats, forage, peanuts, and melons are the principal crops. The northwestern third of the county is in the black-land prairie belt, which is noted for its production of cotton. The raising of cattle, hogs, and poultry is becoming increasingly important. Some honey is produced. Some walnut, ash, and post oak is sold commercially, and a considerable quantity of pecan nuts is marketed. Numerous gravel pits are operated for road building. The production of oil has been important since 1922. During the year ending August 31, 1944, the total production of oil in the county was 2,290,093 barrels, according to the records of the State Comptroller of Public Accounts 2/. Fifteen fields have produced oil; of these, the Luling,

1/ O'Banion, Maurine, History of Caldwell County, Thesis, Univ. of Texas Library, 1931.

DeShields, J. T., Border wars of Texas, pp. 322-328, Tioga, Texas, Herald Co., 1912.

2/ Texas Almanac, Dallas Morning News, p. 241, 1946.

Salt Flat, and Branyon-Buchanan fields, developed along fault lines, and the Lytton Springs and Dale fields, developed in igneous plugs, are the largest. The county is served by the Missouri, Kansas and Texas, and the Texas and New Orleans Railroads, both of which connect with San Antonio and Houston. State Highways 20, 21, 29, 80, and 86 and U. S. Highway 90 provide good transportation facilities to large areas in the county.

Precipitation

According to records of the United States Weather Bureau, the average annual precipitation at Luling during 58 years from 1889 to 1946 was 32.33 inches. The greatest average precipitation occurs in April and May. The driest months are January, March, and August, but on the whole the precipitation is fairly well distributed throughout the year. The wettest years, with more than 45 inches of rain, were 1889, 1900, 1913, 1919, 1923, and 1936. The driest years were: 1893, 6.04 inches; 1894, 21.65 inches; 1901, 19.16 inches; 1909, 21.26 inches; 1917, 20.53 inches; and 1945, 21.07 inches. The lowest precipitation recorded during 12 successive months was 6.04 inches during 1893. The following table gives the precipitation by months and years during the 58-year period.

Precipitation, in inches, by months from 1889 to 1946, Caldwell County, Texas

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1889	4.76	3.87	4.87	1.73	3.97	7.78	2.84	2.97	5.56	1.07	5.63	.10	45.15
1890	2.15	3.29	.86	5.20	4.74	3.75	.01	2.04	2.21	1.40	.95	1.22	27.82
1891	5.70	1.90	.41	.43	.08	.89	2.24	1.65	3.10	1.68	0.00	7.32	25.40
1892	1.03	.09	1.58	0.00	2.48	.95	.25	4.77	3.72	3.07	1.56	3.10	22.60
1893	0.00	.15	0.00	1.24	.26	.17	.08	.62	.01	0.00	3.06	.45	6.04
1894	1.94	1.07	.72	6.12	1.54	2.55	.43	5.14	.79	1.28	0.00	.07	21.65
1895	.94	1.92	2.80	.35	8.04	7.61	.03	2.31	.92	1.48	3.48	1.32	31.20
1896	5.07	3.63	1.54	1.86	.60	.10	3.84	.26	5.99	4.20	1.17	.85	29.11
1897	1.37	.16	2.27	5.70	1.65	3.29	.88	.98	3.25	6.74	.78	2.62	29.69
1898	.59	4.87	1.79	1.76	1.85	3.83	2.43	.68	2.15	.47	2.49	1.68	24.59
1899	1.18	.58	.55	3.22	2.36	4.26	2.85	.13	1.65	1.62	2.74	3.50	24.64
1900	4.10	1.01	3.68	10.86	3.63	.79	5.10	2.91	2.21	6.03	5.94	.94	47.20
1901	.72	.88	.78	.61	4.70	1.86	2.11	.31	5.72	.10	.66	.71	19.16
1902	1.34	.74	.37	3.21	3.63	1.65	3.04	0.00	8.28	2.77	4.64	3.15	32.82
1903	2.06	8.86	1.55	2.40	1.73	3.17	11.63	1.25	.15	4.39	.10	1.32	38.61
1904	.06	.93	.45	2.42	6.34	2.05	3.42	2.84	6.31	3.46	.57	1.43	30.28
1905	1.43	1.95	3.95	4.78	2.13	4.87	3.11	1.00	.54	3.12	4.35	3.03	34.26
1906	.93	4.18	1.87	2.72	.88	.74	3.86	1.40	1.81	1.16	.96	4.89	25.40
1907	.67	5.94	1.62	5.29	9.62	3.03	3.76	.38	.99	4.96	7.60	1.61	44.57
1908	1.27	4.21	1.48	4.25	3.98	3.09	2.78	2.75	2.77	2.01	2.92	2.24	33.75
1909	.10	.37	.57	2.26	3.40	1.38	4.96	.95	1.18	2.51	1.29	2.29	21.26
1910	.81	1.49	1.40	4.17	3.55	1.05	1.00	.05	1.96	2.65	1.76	3.85	23.74
1911	.31	2.33	6.34	4.78	3.55	.08	4.00	1.35	.58	1.79	2.04	4.10	31.25
1912	.67	4.34	2.22	2.04	1.24	4.39	1.22	.46	.75	4.28	3.73	4.88	30.22
1913	.98	4.49	2.29	1.99	1.60	2.67	.04	3.70	6.57	10.12	5.94	7.10	47.49
1914	.21	2.17	2.60	5 61	8.76	1.50	.03	4.03	.99	3.85	5.29	5.00	40.04
1915	1.22	2.24	1.60	8.25	2.01	.09	.92	4.72	2.21	.68	.61	2.59	27.14
1916	4.65	0.00	T	1.40	6.36	.33	1.45	2.56	2.71	1.86	2.27	.27	23.86
1917	1.92	1.39	.32	2.82	6.85	.74	3.03	.94	.95	.51	1.03	.03	20.53
1918	.45	1.34	3.39	6.09	1.29	1.12	.62	3.62	1.62	5.46	3.63	6.15	34.78
1919	4.74	1.59	2.86	5.37	6.57	9.62	4.78	4.68	4.13	11.70	1.97	1.91	59.92
1920	5.11	.68	.50	.79	6.04	2.65	.63	3.88	.15	2.50	2.16	.55	25.64
1921	2.65	2.34	2.63	3.71	3.50	6.22	4.96	1.04	4.98	4.09	.44	1.97	38.53
1922	2.98	1.83	4.84	6.90	6.34	1.56	.42	.36	1.88	3.34	1.98	.28	32.71
1923	1.25	6.06	3.95	4.19	2.22	.60	2.79	3.59	5.54	2.86	5.94	6.45	45.44
1924	1.86	4.16	1.73	4.61	6.58	3.17	.48	.26	2.53	.10	.19	2.06	27.73
1925	.50	.18	.14	1.91	1.03	1.64	1.91	.81	4.36	9.17	2.92	1.35	25.92
1926	3.86	.38	7.04	5.26	3.19	2.49	4.49	1.56	1.29	4.83	3.00	3.54	40.93
1927	1.59	3.26	2.33	4.60	1.56	7.39	1.04	2.25	2.27	2.96	.06	3.15	32.46
1928	.72	3.95	1.46	2.24	1.96	2.95	3.30	.75	5.46	.46	3.77	3.12	30.14
1929	1.80	.82	3.89	3.91	17.18	2.16	2.55	.20	1.34	2.61	2.78	3.86	43.10
1930	2.24	2.12	2.25	1.04	6.71	3.93	.49	2.38	2.37	3.93	2.77	2.32	32.55
1931	3.71	3.64	1.76	1.04	2.15	2.72	2.41	2.38	.12	.32	.99	5.06	26.30
1932	8.35	3.57	1.64	1.74	1.89	2.50	2.42	3.81	6.10	.26	1.49	2.65	36.42

Precipitation, in inches, by months from 1889 to 1946, Caldwell County--Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1933	1.53	3.04	2.29	2.03	3.48	.94	4.65	1.86	2.93	2.00	.72	1.11	26.58
1934	5.15	1.77	3.06	2.99	1.20	.32	2.63	.28	3.41	.36	5.77	4.92	31.86
1935	1.90	3.44	1.15	1.99	9.28	4.41	2.09	1.00	9.00	1.78	1.28	5.89	43.21
1936	.59	1.16	1.67	2.18	9.25	1.02	13.49	1.82	5.93	3.70	3.28	1.64	45.73
1937	2.64	.53	5.84	1.20	.38	5.64	1.70	1.62	.72	2.26	2.00	4.88	29.41
1938	3.41	1.79	3.40	9.50	4.13	2.63	.44	.52	2.78	.46	2.88	1.55	33.49
1939	2.22	.91	.66	1.41	4.73	1.51	5.44	2.07	3.42	.48	1.35	.92	25.12
1940	.90	2.74	1.70	1.83	1.10	7.40	1.42	.94	.91	2.49	11.34	5.33	38.10
1941	.56	3.95	3.50	7.00	7.58	3.66	1.36	1.38	2.54	4.69	1.12	1.58	38.92
1942	.30	1.57	.95	5.13	1.98	1.20	11.89	1.77	7.07	3.29	2.40	1.54	39.09
1943	1.89	.08	1.84	.56	3.11	1.39	4.40	.27	2.69	.94	2.71	1.19	21.07
1944	4.79	2.10	2.88	2.65	5.85	1.76	1.76	5.35	.93	.20	6.03	3.75	38.05
1945	2.87	2.97	2.50	4.38	.33	5.08	3.05	0.86	2.86	3.56	0.95	1.18	30.59
1946	4.05	2.26	4.19	3.84	1.35	5.10	0.40	7.87	7.15	1.67	2.73	1.54	42.15
Avg. 1889-1946	2.12	2.28	3.44	3.41	3.86	2.79	2.75	1.93	2.97	2.79	2.62	2.63	32.33

Acknowledgments

The investigation in Caldwell County was made and this report was prepared under the general direction of O. E. Meinzer, chief of the Ground Water Division, U. S. Geological Survey, and under the direct supervision of W. N. White, district engineer in charge of the ground-water investigations in Texas. The work was done in cooperation with the Texas State Board of Water Engineers. Cheerful cooperation was given by the residents of Caldwell County by providing information and permitting well measurements and water sampling. Melbourne Lancaster, water superintendent of the city of Lockhart, was especially helpful in the early part of the field work. Pertinent geological literature, written principally by oil geologists who worked in the county and by the State Bureau of Economic Geology, was freely drawn upon.

OCCURRENCE AND MOVEMENT OF GROUND WATER

General principles

The fundamental principles of the occurrence and movement of ground water are elaborated in papers by Meinzer and Wenzel 3/. The discussion which follows is a brief outline of the general principles.

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

In most places ground water is slowly but steadily moving by gravity from areas of intake toward areas of discharge. In the more permeable rocks, such as coarse-grained sand and gravel and porous limestone, the water moves with comparative freedom, although the movement is slow. Such rocks are capable of yielding abundant supplies of water to wells. In less permeable rocks, such as shale or clay, molecular attraction and surface tension reduce the water movement to a rate that is almost infinitely slow. Such rocks yield little or no water to wells.

At the outcrop of the water-bearing beds, the water is usually unconfined and does not rise in wells above the water table, the upper surface of the zone of saturation. This is the case with most of the shallow wells in Caldwell County. The water table is seldom a level surface; it usually slopes in about the same direction as the slope of the land. It is generally high under areas of ground-water intake and low in areas of ground-water discharge. The land surface in places is lower than the water table in adjacent areas and in such localities some of the ground water emerges as springs. In Caldwell County springs are common along the Clear Fork and Town Branch tributaries of Plum Creek, where the beds of these streams have cut down to the water table. In some localities perched water accumulates above the main zone of saturation, especially during the winter and spring when the rates of evaporation and transpiration are low.

3/ Meinzer, O. E., The occurrence of ground water in the United States: U. S. Geol. Survey Water-Supply Paper 489, 1923; Outline of ground-water hydrology: U. S. Geol. Survey Water-Supply Paper 494, 1923; Outline of methods for estimating ground-water supplies: U. S. Geol. Survey Water-Supply Paper 638-C, pp. 99-145, 1931.

Meinzer, O. E., and Wenzel, L. K., Physics of the Earth, vol. 9, Hydrology, pp. 385-478, McGraw-Hill, New York, 1942.

Wenzel, L. K., Methods for determining permeability of water-bearing materials: U. S. Geol. Survey Water-Supply Paper 887, 1942.

Such supplies are usually small and are not dependable.

In areas down the dip of the water-bearing beds where the rocks are confined between relatively impermeable strata, the water is usually under artesian pressure and will rise in wells above the level at which it is first encountered. If the altitude to which the water will rise is greater than the altitude of the land surface, flowing wells may be obtained.

The rocks underlying southeastern Caldwell County to depths of 1,000 feet or more consist chiefly of marl or of clay interbedded with sands. The beds are inclined, the rocks of each formation appearing at or close to the surface in northeast-southwest trending bands of outcrop and thence dipping toward the Gulf of Mexico under younger rocks to progressively greater depths. The intake areas of the water-bearing sands at the outcrops are in general only slightly higher than the land surface to the southeast; hence, although in down-dip areas the water is under artesian pressure, the pressure is seldom great enough to produce a flow at the land surface.

As indicated in the geologic map, plate 1, several long strike faults cross the county from southwest to northeast. These faults tend to interfere with the movement of the ground water. In some places there may be an appreciable flow across the fault plane; in other places the down-dip movement may be blocked completely by the faulting.

Wells everywhere are subject to water-level fluctuations of varying magnitude. These fluctuations are due to many different causes, but most of them are a manifestation of a change in the ratio between the rate of ground-water intake or recharge and the rate of loss or discharge. In Caldwell County most of the wells that draw from alluvial sands and gravels or from sands in older formations at their outcrops are supplied in part from intake areas close at hand, and the water levels respond with a moderate lag to changes in rainfall. In very shallow wells in the outcrop areas the water levels may rise several feet in a comparatively brief period after heavy rains and decline until the wells become dry during prolonged droughts. Wells that draw from sand or sandstone in areas that are at considerable distances down the dip from the outcrops of the water-bearing beds seldom are affected by seasonal or annual differences in rainfall, although they may respond somewhat to the effects of a series of wet or dry years. Fluctuations in artesian pressure in such wells and the accompanying rise or decline in water levels are usually due to withdrawals of ground water from the well itself or from other wells.

When a well is pumped the water level in the well declines and a hydraulic gradient is developed toward the well from all directions. This hydraulic gradient causes water to flow toward the well. Within limits the rate at which water will enter the well varies directly with the amount the water level is lowered. For example, if a pumped well in fairly 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. The ratio of the yield of a well to the draw-down is called the specific capacity and may be expressed as yield in gallons a minute per foot of draw-down.

Heavy withdrawals of ground water are sure to be accompanied by a general lowering of the water table or artesian pressures, a cone of depression gradually spreading in all directions from the center of pumping until large areas may be affected. However, this is usually considered not very serious unless the rate of decline persists without a corresponding increase in the rate of pumping and the trend is such as to indicate that the pumping lift may eventually exceed the economic limit or that the sands may become unwatered to such an extent

that the transmissibility of the water-bearing beds will be lowered and the yield of the wells thereby seriously impaired. Some beds carrying fresh water are overlain or underlain by beds carrying salty water and excessive pumping may lead to the invasion of salt water into the wells.

GEOLOGIC FORMATIONS AND THEIR WATER-BEARING PROPERTIES

Caldwell County lies in the upper part of the Gulf Coastal Plain, in the belt bordering the Balcones escarpment on the southeast. The rocks from the surface down to a depth of about 3,000 feet in the western part of the county, and 6,000 feet in the eastern part, belong to the Quaternary, Tertiary, and Cretaceous systems. These rocks are shown in the geologic section comprising plate 2, which was compiled from the logs of eight selected oil tests along the line A-A' on plate 1, in the direction of the prevailing dip. The character of the rocks and their water-bearing properties are briefly discussed below according to the age of the rocks from older to younger. The information is based in part on logs of oil tests and water wells, in part on field investigations by the writer, in part on the geologic map of Texas compiled by the Federal Geological Survey, and in part on data in Bulletin 3232 of the Texas Bureau of Economic Geology 4/.

It should be mentioned here that most of the rocks beneath Caldwell County are generally not water-bearing, or yield meager supplies of water that is too highly mineralized for most uses. Important exceptions are sands in the Wilcox group, the Carrizo sand, and sands and gravels in alluvial deposits. Some water may be available in the basal sands and sandstones of the Lower Cretaceous series, but with the possible exception of the extreme western part of the county the water is likely to be too highly mineralized for a satisfactory public supply or for most industrial uses.

Cretaceous system

Lower Cretaceous series

The Lower Cretaceous rocks crop out in the Balcones fault zone and the Edwards Plateau in Hays County and other counties to the west of Caldwell County. In Caldwell County they are deeply buried under younger sediments, the uppermost rocks of the system being from 800 to 900 feet beneath the surface at the western end of the county and more than 5,000 feet at the eastern end. The overall dip of the rocks is southeastward at the average rate of about 140 feet to the mile.

Logs of wells in Caldwell County indicate the occurrence of about 700 feet of shale, limestone, and sandstone at the base of the Cretaceous section. This part of the geologic section has long been called the Travis Peak formation and the sands within the formation have been called "Trinity sands". (See log of well 125.) However, Imlay 5/ on the basis of data obtained from an area extending from Arkansas to Mexico, has reclassified this part of the section. In this

4/ Sellards, E. H., Adkins, W. S., and Plummer, F. B., The geology of Texas, vol. 1, Stratigraphy: Texas Univ. Bull. 3232, pp. 259-651 and 776-797, 1932.

5/ Imlay, R. W., Subsurface Lower Cretaceous formations of South Texas: Am. Assoc. Petroleum Geologists Bull., vol. 29, pp. 1416-1469, 1945.

reclassification the basinward equivalent of the Travis Peak is placed higher in the section and assigned to a succession of limestones and shales to which the name Pearsall formation is given, and the older Cretaceous beds below the Pearsall are subdivided into the Sligo formation and still older Hosston formations of Coahuila age.

Hosston formation.- The "basal sand", which has always been more or less separated from the Travis Peak because the "basal sand" differs in age according to its geographic position, is at the base of the Hosston formation in Caldwell County.

One of the wells classified by Imlay is well 29 (see table of drillers' logs and pl. 2), the J. R. Black Company, Stark No. 1, in which a fault is indicated as passing through the Glen Rose limestone and having a displacement of 550 feet. The altitude at the surface of the well is reported as 577 feet, and the depth to the top of each formation is reported as follows: Georgetown limestone, 1,730 feet; Edwards limestone, 1,766 feet; Pearsall formation, 2,590 or 2,650 feet; Sligo formation, 2,740 or 2,800 feet; Hosston formation, 3,280 feet. The total depth is 3,360 feet.

"Fresh" water has been reported in three deep wells in the basal Cretaceous sands in Caldwell County.

At Maxwell in 1914, C. T. Schawe drilled 3,445 feet for water. The well passed through about 690 feet of basal Cretaceous rocks between the depths of 2,717 and 3,405 feet, of which about 70 percent was logged as sand rock 6/. The deep sandstone is reported by his son, Harry Schawe, to have contained potable water. An oil test of the United North and South Development Company, drilled during the period 1924 to 1928 in the Luling field, is said to have encountered "fresh" water sand at 4,723 feet. This is the approximate depth to the basal Cretaceous sandstone in that locality, according to the log of well 525 (see p.48). R. T. Clark of Lockhart reports that "apparently fresh water" was obtained from the basal sands of the Hosston formation ("Trinity sands") in well 29, a deep test in the Larremore oil field. No accurate information, however, is available regarding the chemical character of the water.

At several localities in neighboring counties that are farther up the dip than any part of Caldwell County except the extreme western end, the water from wells in the basal sands is rather highly mineralized. At San Marcos a well 1,495 feet deep was drilled into the basal sands by the U. S. Bureau of Fisheries to supply water for fish culture, but the water was high in hydrogen sulfide and on that account the well was plugged back and now draws from the Edwards limestone at about 200 feet. At Austin the water from the sands between 1,440 and 2,250 feet contains about 1,700 parts per million of dissolved solids and 600 parts per million of sulfate. The water is used mostly for swimming pools. At Manor, in Travis County, the water from the sands at 2,560 to 3,000 feet averages about 1,800 parts per million of dissolved solids, with 700 parts per million of sulfate. At Taylor, in Williamson County, the water from 3,260 to 3,380 feet contains 1,350 parts per million of dissolved solids and about 400 parts of sulfate. It is concluded that, with the possible exception of the extreme western part of the county, the water in the basal Cretaceous sands in Caldwell County is likely to be too highly mineralized for most uses.

6/ Sellards, E. H., The producing horizon of the Rios well in Caldwell County: Texas Univ. Bull. 2239, pp. 34-36, 1922.

Fredericksburg group.- The Fredericksburg group, in ascending order, consists of the Walnut clay, Comanche Peak limestone, and Edwards limestone, but these formations have not been differentiated in the wells of Caldwell County. The Edwards limestone is a hard flinty limestone, which is about 300 feet thick in the Austin area. It crops out in the Balcones fault zone in Hays County in a belt 6 to 8 miles wide, which passes through San Marcos 3 miles west of the Caldwell County line. In the extreme western part of Caldwell County the top of the Edwards is estimated to be 100 to 200 feet below sea level. Thence eastward and southeastward the formation is found at increasingly greater depths, and in the extreme eastern tip of the county it is estimated to be more than 5,000 feet below sea level. In each of the three major fault zones that cross the county in a northeast-southwest direction, the Edwards is faulted up to the southeast. The regional dip, including the effect of the faults, averages about 140 feet to the mile.

None of the Fredericksburg group is known as a source of fresh water in Caldwell County. In the Balcones fault zone the Edwards limestone carries large volumes of fresh water in solution cavities and is the source of the famous large springs at Austin in Travis County, San Marcos in Hays County, New Braunfels in Comal County, and San Antonio in Bexar County. In Caldwell County considerable water has been encountered in the limestone by oil wells and oil tests but the water invariably has been salty and often sulfurous. Large quantities of oil have been produced in the county from porous zones in the Edwards limestone along the upthrown side of the Luling, Salt Flat, and Staples-Larremore fault lines. So much salty water was produced with the oil that its disposal has become a serious problem, and locally the streams and shallow ground-water supplies have been contaminated.

Upper and Lower Cretaceous series

Washita group.- The Washita group consists of the Georgetown limestone of Lower Cretaceous age, and the Grayson (Del Rio) shale and Buda limestone of Upper Cretaceous age. The Georgetown limestone is about 80 feet thick in the outcrop at Austin. In wells in Caldwell County it is usually logged with the underlying Edwards and its thickness is uncertain. The Grayson (Del Rio) shale is easily recognized in well logs in Caldwell County because it consists of a clay 45 to 100 feet thick containing an index fossil, Exogyra arietina Roemer, often identified in cores and cuttings. The Buda limestone is about 45 feet in thickness and can be identified in logs of wells penetrating the formation in Caldwell County because it occurs between two clays, the Grayson shale below and the Eagle Ford shale above. None of the rocks of this group is likely to furnish usable water in Caldwell County.

Upper Cretaceous series

Gulf series

Eagle Ford shale, Austin chalk, Taylor marl, and Navarro group.- The Gulf series has been divided into four formations or groups in the immediate area of Caldwell County as follows: Eagle Ford shale, Austin chalk, Taylor marl, and the Navarro group.

The Eagle Ford shale as recorded in numerous well logs in Caldwell County consists of blue fossiliferous shale and flagstone having a thickness of about 40 feet. The contact of these beds with the overlying Austin chalk, which is well exposed in the Blanco River Valley in Hays County, a few miles west of Caldwell County, is often used as a structural marker in the interpretation of the logs of deep wells in Caldwell County.

The Austin chalk is about 300 feet thick, according to logs of oil tests.

The Taylor marl consists of about 550 feet of blue marl, chalk and clay. The upper part of the Taylor crops out in valley slopes and stream channels in the western tip of the county. The rocks are relatively impermeable, and where they are covered by alluvial deposits, springs are of frequent occurrence along the outcrops at the contact between the two.

The Navarro group consists of about 600 feet of marl and clay shale and occasional lenses of bluish-colored sandstone. Except where it has been thinly covered by alluvium or stream gravels, the Navarro crops out in a belt 3 to 5 miles wide in the western part of the county. The rocks of both the Taylor marl and the Navarro group weather to form a black soil which is among the most fertile in Texas.

The rocks of the Gulf series in Caldwell County ordinarily do not furnish water to wells, and in their outcrop areas farmers depend upon cisterns and stock ponds for water.

Igneous and metamorphic rocks.- Evidence of igneous activity in Caldwell County has been found in the rocks encountered in drilling oil wells at depths from 1,100 to 1,700 feet, within the horizons of the Austin chalk and the Taylor marl. The material is generally called serpentine. These rocks are irregular plugs and are the producing members of the Lytton Springs and Dale oil fields. Lonsdale 7/ examined cores and cuttings from the Lytton Springs field and found serpentine and reworked volcanic material. Some specimens, particularly in the upper part of the serpentine mass, were evidently of sedimentary origin; other specimens contained altered volcanic material. Rock specimens from wells in the Hilbig field, north of the Lytton Springs field, examined by Smiser and Winterman 8/ contained palagonite-tuff, which is altered volcanic glass.

Collingwood and Rettger 9/ have published analyses of water obtained from several horizons in Caldwell County oil fields. The water is too highly mineralized for most purposes. The possible effect of igneous intrusions on the movement of water in the deeper formations is not known.

Tertiary system

Paleocene series

Midway group.- The Midway group of rocks is of marine origin and consists chiefly of clay, silt, glauconitic sand, and lentils of limestone. In Caldwell County, as a result of faulting, the Midway is repeated in outcrop in several almost parallel belts that range from half a mile to 2 miles in width. The most prominent belt extends from Fentress northeastward through the west edge of Lockhart to the Lytton Springs oil field. The Midway group has been differentiated into the Kincaid and Wills Point formations. Their combined thickness is about

7/ Lonsdale, J. T., Igneous rocks in the Balcones fault region of Texas; Univ. Texas Bull. 2744, pp. 114-117, 1927.

8/ Smiser, J. S., and Winterman, David, Character and possible origin of producing rocks in the Hilbig oil field in Bastrop County, Texas; Am. Assoc. Petroleum Geologists Bull., vol. 19, p. 206, 1935.

9/ Collingwood, R. M., and Rettger, R. E., The Lytton Springs oil field, Caldwell County, Texas; Am. Assoc. Petroleum Geologists Bull., vol. 10, p. 971. 1926.

400 feet in Caldwell County. These formations are distinguished chiefly on the basis of micro-fossils and concretions, and as they yield little water practically everywhere in Texas further description is not needed here. Farmers living on the Midway outcrop store rain water in cisterns and stock ponds.

Eocene series

Wilcox group.- In Caldwell County the rocks of the Wilcox group are exposed in a belt that averages about 14 miles wide. They consist of clay, sandy clay, sand, sandstone, and silty shale. The sands are medium to fine-grained and consist mostly of quartz, but they contain some organic matter and dark-colored minerals, which give them a "salt and pepper" appearance. Most of the sands are light brown in color, but a few are reddish. In several counties to the north the group has been subdivided but, except for the observation that there is a lower sand, one or more medial sands, and an upper sand containing petrified wood, no general correlation has been made in Caldwell County. The individual beds of sand are lenticular, and although some are 50 feet or more in thickness it is difficult to correlate them between wells. This irregularity is explained by the continental origin of the beds as channel and lagoon deposits laid down by rivers shifting in a broad plain. Only two thin marine fossil beds, one in the lower Wilcox called the "Caldwell Knob oyster bed", and the other at the base of Plummer's Sabinetown formation (upper Wilcox), have been identified at several places in Caldwell County. The problem of correlation is complicated by the presence of at least four zones of normal faults, approximately along the strike of the bedding, which repeat the sedimentary sequence. The Wilcox group in Caldwell County is about 1,000 feet thick.

Potable water is found in wells within 400 feet of the surface throughout most of the outcrop area of the Wilcox group. Luling, Lytton Springs, Dale, and McMahan derive their water supplies from the formation, and almost every farm in the outcrop area has an adequate well. At the outcrops of the water-bearing sands the water occurs under water-table conditions, but in locations where the sands are blanketed by clays the water is under pressure; the pressure, however, is great enough in a few places to cause the wells to flow.

The logs of the two city wells at Luling (459 and 460) show alternating beds of sand, clay, and gumbo and a few beds of lignite. In these two wells the sand beds range from 2 to 58 feet in thickness. The total thickness of sand is 171 feet in well 459 and 144 feet in well 460.

Carrizo sand.- The Carrizo sand crops out in the eastern part of Caldwell County in a belt of sand hills 3 to 4 miles wide. The outcrop in general is covered by a thick growth of blackjack oak or hickory and brush, but a few scattered clearings are used for farming. The sand generally is white and consists of rounded to subangular, fine to coarse quartz grains. In places on the outcrop, reddish zones, indicating ferruginous cementation, appear and occasional lentils of yellow clay are seen. The strata are massive and commonly are cross-bedded. The Carrizo is disconformable with the underlying Wilcox and apparently conformable with the overlying Reklaw. Its thickness in Caldwell County is unknown. In Gonzales County to the southeast of Caldwell County and in Guadalupe and Wilson Counties to the southwest, the Carrizo sand is an important water-bearer. In Caldwell County, however, the area underlain by the sand is thinly populated and so far as could be learned development has been restricted to a few shallow farm wells. It is believed that the possibilities are reasonably good that abundant supplies could be obtained from the sand through properly constructed wells.

Mount Selman formation.- The Mount Selman formation has been divided into three members, in ascending order as follows: Reklaw member, Queen City sand member, and Weches greensand member.

The Reklaw member consists mostly of clay but contains some glauconite sand, particularly at the base. In the outcrop area in Caldwell County, consisting of a belt averaging about 1 mile wide, the glauconite has weathered to a red iron cement which has converted the basal clay to ironstone and the underlying Carrizo sand to a hard red sandstone. The ironstone and sandstone cap the hills in the outcrop area of the formation at Iron Peak, Iron Mountains, Round Mountain, and along several branches of the Sandy Fork of Peach Creek. The Reklaw does not contain much water, and farms in the outcrop area derive their supplies from the underlying Carrizo sand at depths ranging from a few feet to a hundred feet.

The Queen City sand member crops out in eastern Caldwell County, southeast of Delhi, in a low timbered ridge having an average width of about 3 miles. It consists of light-gray fine to medium-grained cross-bedded sand. Fresh water may be obtained from wells in most of the outcrop area, but the area is thinly populated and only a few wells are in use. No wells have completely penetrated the Queen City sand member in Caldwell County and its thickness is unknown.

The Weches greensand member crops out in the eastern tip of Caldwell County, where it occurs as a brown ferruginous clay. It is not known to furnish water to wells in Caldwell County.

Pliocene (?) series

Uvalde gravel.- Capping the highest divides in Caldwell County, particularly on the black lands of the western section, residual gravels that range from a few inches to a few feet in thickness loosely mantle the upper slopes. These are not shown on the geologic map. They consist chiefly of subangular flint particles that were presumably derived from the erosion of the Edwards Plateau and were deposited by ancient streams whose aggrading channel crossed the area when the general land surface was 100 or 200 feet higher than it is today. In places the gravels furnish small quantities of water to stock ponds, but they are not known to furnish water to wells anywhere in the county.

Quaternary system

Pleistocene series

Leona formation.- From Kyle in Hays County southeastward through Lockhart to the village of Brownsboro, 10 miles southeast of Lockhart, is a plain about 25 miles long and 2 to 3 miles wide with a southeastward gradient averaging about 10 feet to the mile. Near Kyle in Hays County the plain is about 100 feet above the Blanco River and has an altitude of about 700 feet. The eastern end of the plain is near the junction of Clear Fork and Plum Creeks about 80 feet above those streams and at an altitude of about 440 feet. The plain is bounded by the Koegler Hills, Dry Branch Creek, and Clear Fork Creek on the southwest and by the valley of Plum Creek on the northeast. Numerous gravel pits and wells on the plain show that in places the deposits consist of stratified gravel and sand, partly crossbedded, and occasional lenses of white earth or caliche. The gravel is composed chiefly of limestone pebbles but contains minor amounts of chert. The only fossils found in the formation are water-worn shells of the Fredericksburg group. Though few wells

completely penetrate the deposit, it appears that the thickness ranges from a few feet at the margins to more than 40 feet in places along the medial line of the plain. At the surface the deposit forms a black soil.

The alluvial plain is believed to have been formed by the Blanco River when the river was about 100 feet above its present level and crossed Caldwell County a little to the south of the present course of Plum Creek. Earth movements along the Balcones fault zone or simple capture by a gully tributary to the San Marcos River diverted the Blanco River to its present course. The ancient Blanco River evidently eroded actively in the Edwards Plateau and had seasonal velocities high enough to carry out pebbles and occasional cobbles which were deposited by a broad shifting stream on gentle slopes of shale and marl in Caldwell County. In addition, beds of white earth 5 feet thick, derived from the marl hills, were deposited in rock basins in the channel.

Weeks has called the gravel, sand, and caliche deposits the Uvalde formation after Hill; and by topographic correlation with terraces of the Colorado River from Austin to the Gulf, he has related them to an interglacial interval of the Wisconsin stage of the Pleistocene epoch 10/. However, the term Uvalde as originally defined by Hill 11/ is believed to apply to the post-Eocene flint gravels, and in the opinion of the writer the name Leona formation best fits the deposits underlying the plain extending from Kyle to Lockhart.

The alluvial deposits supply water to shallow wells throughout the plain. Several of the wells have been used for irrigation in years of extreme drought. The water supply for the city of Lockhart and part of the supply for the town of Maxwell come from the gravel. Numerous springs along Clear Fork, Town Branch, and smaller tributaries to Plum Creek are fed by water from the gravel. The underflow is in general toward the southeast, following the prevailing slope of the plain.

Recent stream deposits underlying plain between San Marcos and Martindale.- A broad terrace extends along the Blanco and San Marcos Rivers from San Marcos in Hays County eastward to the vicinity of Martindale in Caldwell County. The terrace is bounded by the Koeglar Hills on the north and appears to extend southward from the San Marcos River into Guadalupe County, but this was not confirmed by the writer. Numerous wells and stream cut banks reveal that the deposits lie on Taylor marl and shale of the Navarro group and consists of two distinct sedimentary units: a sheet of stratified, in places crossbedded gravel and sand about 15 feet thick in the lower part; and massive buff-colored clayey silt, also about 15 feet thick, in the upper part. Sub-rounded fossil shells of Exogyra ponderosa and E. texana were found in the gravel by the writer, indicating that the lower gravels were derived from the erosion of the Edwards Plateau. The deposits range in thickness but they are about 30 feet thick in the vicinity of Reedville. The terrace slopes southeastward from an elevation of 600 feet above sea level at High Prairie School in Hays County, about 1½ miles northwest of Reedville, to about 500 feet at Morrison Creek near Martindale, a gradient of about 15 feet to the mile.

These deposits yield water to wells which is hard but otherwise of fair quality. It is reported that a few wells in the area were pumped for irrigation during the drought of 1925, and that one well (no. 8) had a yield of 750 gallons a minute. The Hoffman well (no. 7) supplies part of the town of Maxwell, but the water is more mineralized than that from most wells in the deposits. In some localities it is reported to be difficult to find water, apparently because the gravel layer is thin or absent. In most of the terrace the gravels are overlain by relatively impermeable beds of clay and silt and the recharge area of the gravel may be largely confined to outcrops along the upper margin of the terrace. Several springs emerge from the base of the gravels along gullies tributary to the San Marcos River.

10/ Weeks, A. W., Quaternary deposits of Texas Coastal Plain between Brazos River and Rio Grande: Am. Assoc.Petroleum Geologists Bull.,vol.29,pp.1693-1720,1945.

11/ Hill, R. T., and Vaughan, T. W., Geology of the Edwards Plateau and Rio Grande plain adjacent to Austin and San Antonio, Texas, with special reference to the underground waters: U.S.Geol.Survey 18th Ann.Report Pt.2,pp.244 and 253, 1897.

PRESENT DEVELOPMENT OF WATER SUPPLIES FROM WELLS

The development of ground water in Caldwell County thus far has been relatively small. Additional supplies of water can be obtained from wells in the deposits in parts of the Kyle-Lockhart and the San Marcos-Martindale plains, in sands of the Wilcox group, and possibly in large quantities from the Carrizo sand.

Some districts in the county can never obtain adequate supplies of ground water of good quality within reasonable depths because the underlying formations for many hundreds of feet consist of impermeable clays, shales, and marls. These districts are the Mendoza community north of Plum Creek, the district from Lockhart northeast to the Lytton Springs oil field, the Koeglar-Hills, and the Fentress-High Point School district. Each of these communities might obtain more or less highly mineralized water from the basal Cretaceous sands at depths ranging from 2,500 to 4,000 feet.

The development of ground water in different parts of the county is briefly discussed in the following pages.

Northern part of county -

Lytton Springs, Mendoza, and Uhland areas

Most of the territory between Lockhart and the northern corner of the county, including the Lytton Springs, Mendoza and Uhland areas, is underlain by 2,500 feet or more of marls, clays, shales, and limestones of Cretaceous and Paleocene (Midway) age. These rocks are generally barren of water and in most of the territory the water used for domestic supply and stock is derived from rainfall and storm runoff stored in cisterns and earthen reservoirs. The territory, however, includes two small southwest-northeast trending strips of outcropping sediments belonging to the Wilcox group, one in the Lytton Springs area and the other northeast of Lockhart. These sediments yield water to shallow wells. Faulting has caused the Midway strata to be repeated twice in outcrop in those localities and has isolated these areas from the main belt of the Wilcox to the east.

The town of Lytton Springs derives its water from Wilcox sediments by means of a shallow well of large diameter and an open pit. The water from the pit is pumped about 2 miles to the Lytton Spring oil field for domestic supply. The water is relatively low in dissolved minerals but is moderately hard. Farms on the outcrop of the Wilcox west of Lytton Springs obtain adequate supplies of water from shallow wells in the sands of the Wilcox. The water is hard and in some of the wells is rather high in chloride. The town of Uhland obtains its water through 4 miles of 2-inch pipe from a spring in the alluvial deposits near Plum Creek in Hays County. It is possible that the town also could be supplied from a collection gallery (infiltration gallery) in the alluvium about a mile southwest of the town.

Central part of county - Lockhart and vicinity

The city of Lockhart and farms on the Kyle-Lockhart plain west, northwest, and southeast of the city derive adequate supplies of water at shallow depths from sands and gravels in Leona formation. The area immediately east and northeast of Lockhart has no well water because the underlying rocks consist of clay and shale. Farther east and northeast, however, adequate supplies of water for farm use are obtained from wells in the lower sands of the Wilcox. In the area southwest of Lockhart, around the State Park small quantities of well water are obtained from the alluvium and sands of the Wilcox group.

The city of Lockhart obtains an average of about 200,000 gallons of water a day from a spring and two infiltration galleries. The spring (no. 97), located on Brazos Street near Town Branch of Plum Creek, has been developed with a collection tunnel and storage pit. The water is hard but otherwise is of good chemical quality, and it is chlorinated and pumped directly to the mains. The gallery most extensively used (61 in the tables) is located near the present site of the water tower. The water is very hard, about 450 parts per million calculated as calcium carbonate, and it is softened at the city plant by a lime-copperas mixture, which precipitates about 200 parts per million of the hardness. The other gallery, on Wassa Street (65 in the well tables) is dug 25 feet deep into the gravel. It yields water that is somewhat high in dissolved solids and is now used only as a reserve.

Between 1930 and 1943 the well and spring waters of Lockhart and vicinity are reported to have become progressively more saline. Analyses in the latter part of that period proved that the chloride and sulfate contents were gradually rising in all three sources of city supply, in many private wells within the city, and in the stretch of the Kyle-Lockhart plain extending about 3 miles northwest from the city. Much of the water became unsatisfactory for drinking or even for watering lawns and shrubbery. In the spring of 1943 the State Board of Health and later the Federal Geological Survey and the Texas State Board of Water Engineers conducted an inquiry, in which it was found that the area of contamination lay in the direction of a small oil field, the Larremore field, located on the terrace 3 miles northwest of town. In that field it had been the practice to dispose of large quantities of highly mineralized water produced with the oil by emptying the water into shallow wells and roadside ditches. It was revealed that both the surface of the plain and the water table in the underlying deposits slope toward Lockhart at an average gradient of about 15 feet per mile. In the summer of 1943 the oil field was shut down and the oil wells were plugged. Since then a series of analyses has shown that the water from most of the wells and springs at Lockhart and in the stretch between the city and the oil field has become progressively less saline and is now of acceptable chemical quality.

An additional supply of ground water probably could be developed for Lockhart, if needed, in localities 3 to 4 miles east of the city from sands in the Wilcox group. The water-bearing sands lie at comparatively shallow depths, the possibilities of such development could be determined by test drilling and pumping at a cost that should not be excessive.

Southern part of county -

Luling area

The city of Luling and farms in the surrounding territory obtain adequate supplies of ground water from wells in sands of the Wilcox group. The wells range in depth from a few feet to about 500 feet, the depth depending, in part, upon the nearness of the sands to the surface. In general, the water level in the wells ranges from 6 to 114 feet below the surface, and one well (no. 452) in the lowland area has a small artesian flow. The water supply for the city of Luling is derived from two wells (nos. 459 and 460), which yield an average of about 185,000 gallons a day; the water is soft but is high in bicarbonate, and though acceptable for drinking it is not satisfactory for watering lawns and gardens. Other wells yield a different type of water; for example, the well at the bottling plant (no. 461), 300 feet deep, and the well at the ice plant (no. 462), 150 feet deep, yield water that is very hard but is low in bicarbonate, and, therefore is satisfactory for watering lawns. The well at the Magnolia Petroleum Company (no. 453), a mile southeast of Luling, yields water that is high both in bicarbonate and in dissolved minerals. The question often has been raised as to whether the ground water in the Luling district has been contaminated by waste water from the nearby Luling and Salt Flat oil fields. The answer has not been found because the quality of the ground water prior to the development of the oil field is not known. However, it should be borne in mind that in other parts of Caldwell County that are remote from the oil fields the water in some of the Wilcox wells is highly mineralized. For example, well 447, 7½ miles north of Luling, furnished water of very high magnesium content, and 40 or 50 years before oil was discovered it was the source of supply for a Mineral Water Resort. A spring (no. 420), 4 miles northeast of Luling, issues from Wilcox deposits and has always yielded water high in sodium bicarbonate. The quality of the water in farm wells of the area drawing from Wilcox deposits ranges widely.

Western part of county -

Martindale, Reedville, and Maxwell area

The town of Martindale, population 500 in 1940, obtains its water from well 5 in the alluvial deposits closely adjacent to the San Marcos River. The well is 26 feet deep, 3 feet in diameter, and yields water for 110 customers. The water is hard but is chemically satisfactory in other respects. The town of Reedville, population estimated at 100, obtains water from several privately owned dug wells in the alluvium, of which wells 9, 10, and 11 are representative. The town of Staples, in Guadalupe County on the south side of the San Marcos River, obtains water from well 522.

Farmers in the vicinities of Martindale and Reedville obtain abundant supplies of water from shallow wells in the terrace deposits. In the drought of 1925, wells 3, 6, 8, 9, and 11 and several unrecorded wells in these deposits were used to irrigate an estimated average of 40 acres to a well. Yields up to 800 gallons a minute have been reported.

The town of Maxwell, population 250 in 1940, is on a low ridge of black land known as the Koeglar Hills. The rocks to a depth of about 2,700 feet contain no potable water, as revealed by the C. T. Schawe test well 12/. Maxwell derives its water supply via pipe line from two wells in the terrace deposits, one (no. 15) a

12/ Sellards, E. H., op. cit., pp. 34-36, 1922.

dug well 22 feet deep and 148 inches in diameter, 2 miles north of town; the other (no. 7) also dug, 25 feet deep and 69 inches in diameter, 2 miles southwest of town. The water is very hard and somewhat saline.

The farmers in the vicinity of Maxwell either have abundant well water from the terrace deposits or have no well water at all. North of Maxwell, along the upper reaches of the Clear Fork, farms derive adequate water from sands and gravels of the Leona formation, and a few wells were used for irrigation, (see remarks regarding wells 14, 16, and 17 in the table of well records).

In the immediate vicinity of Maxwell the farmers have resorted to cistern water for domestic supply and use tank water for stock. Twenty-two stock tanks were excavated with Federal aid in the community in 1944, 1945, and early 1946.

Southwestern part of county - Fentress-Prairie Lea area

East of an irregular line drawn between Fentress and Lockhart small quantities of water may be obtained from wells in the lower sands of the Wilcox group. North and west of this line for several miles well water is practically unobtainable, as the rocks at the surface are clays, shales, and marls, occasionally mantled with thin upland gravel, and these impermeable formations persist to depths of 3,000 feet or more.

The towns of Fentress and Prairie Lea, populations 250 and 275, respectively, in 1940, are supplied with water by the Fentress-Prairie Lea Utilities Company from a dug well (no. 515) in terrace deposits near the San Marcos River. The water is delivered to Prairie Lea through a 2-mile pipe line. In addition, the Company pumps river water to a large water tower at High Point, 4 miles north of Fentress, from which it is distributed to the surrounding rural area. The water is untreated, and when the river is muddy the water is turbid. The yield of the well supplying Fentress and Prairie Lea has gradually diminished until the supply is barely adequate, owing, it is said to the gravels from which the well draws being packed with silt by underflow from the river around a local dam. Moreover, the untreated river water is not a satisfactory source of supply for the rural area. For these reasons, the Company desires to prospect for a new source of ground water. Two possibilities apparently are present: a new well in the alluvium a few hundred feet northwest of the present well might provide the necessary quantity of clear water; or a well 250 feet or less in depth at Prairie Lea might obtain enough water from the sands in the Wilcox group. The Wilcox water, however, may be somewhat highly mineralized. Northeast and east of Prairie Lea are several wells ranging from 18 to 99 feet in the lower Wilcox sands. All but one of the wells (no. 514) is dug. The water they yield is of differing but usually of poor chemical quality.

Stairtown and the nearby Luling oil field, including about 50 families, are provided with pumped water from the San Marcos River by the Magnolia Petroleum Company.

Well 519, located near the High Point water tower, is reported to have been drilled to a depth of 630 feet into marls of the Navarro group and the Taylor marl. Although it is now blocked by tubing, it is said to have produced a few barrels of water a day, apparently from thin flint gravels at the surface.

Thirty-five stock-water tanks were excavated by farmers in the Fentress community with Federal aid in 1944 and 1945.

East-central part of county - Dale and McMahan areas

The towns of Dale and McMahan and farms in the territory surrounding them obtain water from wells in sands of the Wilcox group. Dale is supplied from privately owned wells, mostly from well 282. McMahan is supplied principally from the James Chamberlain well (no. 263), although there are several other privately owned wells in the town. Most of the farm wells in these areas are drilled and range from 100 to 300 feet in depth. A few are more than 300 feet deep, and one (no. 370) is 404 feet deep. Most of the wells are pumped by windmills or small powered pumps and yield fair supplies of water. Many of the farmers in the Dale area, however, supplement their supplies of well water with surface water stored in earthen tanks. The water in some of the sands is highly mineralized but in others is relatively free from mineral salts. Generally the undesirable horizons are cased off.

Eastern part of county

In an area of about 100 square miles in the eastern part of the county the Carrizo sand is present at the surface or underlies the rocks of the Mount Selman formation at moderate depths. The sand yields abundant supplies of water of good quality for irrigation in Gonzales County 20 to 30 miles southwest of Luling and in areas still farther to the southwest, but its development in Caldwell County and in closely adjacent territory in Gonzales and Bastrop Counties has been limited to a few farm wells used for domestic supply and stock. The water from the wells is of variable chemical quality. Without test drilling and pumping no definite statement can be made regarding the possibilities afforded by the sand as a source of large supplies for irrigation and other uses in Caldwell County, but it is tentatively concluded that the possibilities are reasonably good.

Records of wells and springs in Caldwell County, Texas

Well	Distance from Lockhart	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
1	12⅝ miles west	A. Harper	Alluvium	--	Spring	--	--	--
2	11¼ miles southwest	E. A. Eben	do.	1916	Dug	32	42	--
3	11 miles southwest	do.	do.	1925	do.	34	120	0
4	10½ miles west	Mrs. E. Kasch	do.	--	do.	29	36	1.4
5	10¾ miles southwest	T. B. Martin	do.	1924	do.	26	60	1.4
6	9 miles southwest	H. Conrad	do.	Old	do.	30	96	0
7	9 miles west	O. M. Hoffman	do.	1925	do.	25	69	2.0
8	9¾ miles west	T. G. Langham	do.	--	do.	34	96, 84	0.0
9	10¼ miles west	do.	do.	1916	do.	31	60	-5.6
10	10⅛ miles west	C. C. Fehlis	do.	1895	do.	22	45	0.8
11	10¾ miles west	J. T. Ellis	do.	1896	do.	25	42	2.3
12	9⅛ miles northwest	Harper Selig	do.	--	do.	29	42	3.0
13	9 miles west	Wm. Germer	do.	1925	do.	25	75	1.6
14	8 miles northwest	R. C. Rose	do.	1914	do.	21	36	0.0
15	7⅛ miles northwest	Schawe Gin Co.	do.	1916	do.	22	148	3.1
16	6½ miles west	M. Cabiness	do.	Old	do.	14	40	1.5
17	7½ miles northwest	J. A. Pfeiffer	do.	Old	do.	19	42	3.1
18	7⅛ miles northwest	Alvin Simon	do.	1921	do.	21	44	2.6
19	5¾ miles northwest	Mrs. -- Blanks	do.	Old	do.	26	42	3.4
20	4¼ miles northwest	A. J. Balser	do.	Old	do.	14	36	2.2
21	3⅜ miles northwest	Bruno Schneider	do.	Old	do.	30	42	0.3
22	4⅜ miles northwest	Edwin Ahlhardt	do.	Old	do.	25	30	2.9

a/ Measuring point is usually above ground at top of casing, pump base, pipe clamp or well curb. If below ground the figures are preceded by a minus (-) sign.
b/ Elevation of land surface, sea level datum.

Chemical analyses of water from most of these wells and springs are given in the table of analyses

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
1	--	--	--	Flows	N	Estimated flow 150 gallons a minute on July 3, 1946, from seeps at contact of gravel with Taylor
2	--	--	--	C,W	D,S	Blue clay reported beneath marl. gravel.
3	e/ 8	1946	--	Cf,G, 50	Irr	Reported to have irrigated 40 acres.
4	13.5	June 13, 1946	--	C,Cf, W,G	D,S, Ind	Supplies cotton gin.
5	16.5	Apr. 8, 1946	--	C,E, 5	P	Supplies 110 consumers in Martindale.
6	e/ 7	1946	--	Cf,G, 50	D,S	Yield reported sufficient for irrigation.
7	8.2	Feb. 14, 1946	--	C,E, 10	P,D	Supplies 24 customers in Maxwell. Drawdown reported 1½ feet after pumping 24 hours at 400 gallons a
8	14.5	Apr. 9, 1946	--	C,O, 25	Irr	Reported yield 750 minute. gallons a minute. Has irrigated
9	12.7	Mar. 28, 1946	--	J,E	D,S	At Reedville, Well 100 acres. fails in 30 minutes when pumped with 4-inch centrifugal pump.
10	11.3	do.	--	C,W	D,S	At Reedville. Concrete curb.
11	18.3	do.	--	C,W	D,S	At Reedville. Reported to have irrigated about 30 acres in 1925
12	16.8	June 13, 1946	--	J,E	D,S	Brick curb.
13	17.4	do.	--	C,W	D,S	Well in field 400 yards north of house.
14	8.5	June 12, 1946	--	C,W	S	Irrigation on small scale from this well and 2 others in 1925.
15	12.4	Feb. 14, 1946	--	C,O, 15	P,Ind	Supplies cotton gin and 18 families in Maxwell.
16	4.3	Mar. 29, 1946	--	C,W	D,S	An old well 50 yards away reported to have irrigated 70 acres in 1925.
17	8.8	June 12, 1946	--	C,W	D,S	
18	7.5	do.	--	B,H	D,S	Mixed with rain water from roof.
19	22.4	June 13, 1946	--	B,H	N	Wood curb.
20	4.8	June 12, 1946	--	C,W	D,S	Soil Conservation Service rain gauge near this well.
21	8.5	do.	--	B,H	D,S	Stone curb.
22	22.9	Jan. 24, 1946	--	C,W	D,S	Water pumped ¼ mile to house.

c/ T, turbine; Cf, centrifugal; C, cylinder; E, electric; G, gasoline; O, diesel or oil; J, jet; W, windmill; H, hand; B, bucket. Number indicates horsepower.

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

e/ Water level reported.

Records of wells and springs in Caldwell County -- Continued

Well	Distance from Lockhart	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
23	4¾ miles northwest	Mrs. -- Blanks	Alluvium	Old	Dug	17	42	0.3
24	4½ miles northwest	Floyd Jolley	do.	Old	do.	26	32	2.4
25	4¼ miles northwest	Fred J. Adams	do.	Old	do.	16	37	2.0
26	4 miles west	Coopwood Chapmen	do.	1850	do.	12	60	3.4
27	3¾ miles northwest	A. B. Schaeffer	do.	Old	do.	22	60	0.8
28	do.	do.	do.	1880	do.	29	44	1.3
29	3½ miles northwest	E. Starcke	--	1940	Drilled	3,367	10	--
30	3¾ miles northwest	A. W. Jolley	Alluvium	Old	Dug	13	36	0.2
31	3½ miles west	do.	do.	1896	do.	23	36	3.0
32	3¼ miles west	Mrs. G. J. Merritt	do.	Old	do.	21	29	1.6
33	3 miles west	Richard Best	do.	Old	do.	10	40	2.6
34	2¾ miles west	Willie Barrier	do.	Old	do.	21	38	0.3
35	do.	do.	do.	Old	do.	21	100	0.5
36	3 miles west	E. Conley	do.	Old	do.	23	30	2.7
37	3 miles northwest	A. W. Livengood	do.	Old	do.	28	24	0.0
38	3¼ miles northwest	Ed. Starcke	do.	1889	do.	23	36	0.0
39	3 miles northwest	do.	do.	Old	do.	24	42	0.7
40	3½ miles northwest	H. F. Bartling	do.	Old	do.	22	36	0.0
41	2½ miles northwest	Emil Wilms	do.	Old	do.	17	36	1.2
42	2¼ miles northwest	M. Cardwell Est.	do.	Old	do.	24	30	2.1
43	do.	Jessie Cardwell	do.	Old	do.	30	42	2.9
44	do.	do.	do.	Old	do.	25	72	0.0
45	2½ miles west	E. H. Strandtman	do.	Old	do.	16	25	0.1
46	do.	do.	do.	Old	do.	19	44	2.1

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
23	13.8 14.5	May 8, 1943 Jan. 24, 1946	579.5	B,H	D,S	
24	17.8 20.1	May 8, 1943 Jan. 24, 1946	582.6	C,W	D,S	
25	11.9 11.9	May 8, 1943 Jan. 24, 1946	571.9	B,H	D	
26	5.4	Mar. 28, 1946	--	None	N	Brick curb. Reported to have been used for irrigation.
27	15.0 14.7	May 8, 1943 Jan. 24, 1946	572.0	C,H	D,S	
28	26.3 25.8	May 8, 1943 Jan. 24, 1946	587.0	C,W,G	D	
29	--	--	--	None	N	John R. Black oil test. "Good" water reported by driller between 3,281 and 3,367 feet. See log.
30	11.0 10.3	May 8, 1943 Jan. 24, 1946	564.4	None	N	
31	15.5 14.6	May 8, 1943 Jan. 25, 1946	566.2	C,W,E	D,S	
32	13.2 13.0	May 8, 1943 Jan. 24, 1946	560.8	C,E	D	
33	8.0 7.1	May 8, 1943 Jan. 24, 1946	553.3	B,H	N	
34	16.1 15.2	May 8, 1943 Jan. 25, 1946	555.6	C,W	D,S	
35	17.0 15.5	May 8, 1943 Jan. 25, 1946	556.0	Cf,-	N	
36	16.4 15.9	May 8, 1943 Jan. 25, 1946	560.4	T,E, $\frac{1}{5}$	D	
37	25.0 21.1	May 8, 1943 Jan. 25, 1946	564.3	B,H	D,S	
38	17.7 17.7	May 8, 1943 Jan. 25, 1946	574.5	None	N	
39	18.0 18.3	May 8, 1943 Jan. 25, 1946	575.0	C,W	D,S	
40	15.4 15.9	May 8, 1943 Jan. 24, 1946	573.9	C,W	D,S	
41	10.8 8.8	May 7, 1943 Jan 24, 1946	558.3	C,W	D,S	
42	15.0 14.0	May 7, 1943 Jan. 24, 1946	562.1	C,W	D,S	
43	19.2 17.5	May 8, 1943 Jan. 24, 1946	552.1	C,H	S	
44	17.4 15.8	May 8, 1943 Feb. 4, 1946	552.9	Cf,5	Irr	
45	16.0 15.0	May 8, 1943 Jan. 25, 1946	549.8	None	N	
46	17.4 17.0	May 8, 1943 Jan. 25, 1946	554.5	C,W	D,S	

Records of wells and springs in Caldwell County -- Continued

Well	Distance from Lockhart	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
47	1¾ miles northwest	Henry Schneider	Alluvium	Old	Dug	18	30	0.8
48	2 miles west	do.	do.	Old	do.	15	31	1.0
49	1¾ miles west	Wiley Kelly	do.	Old	do.	35	39	2.4
50	1¾ miles northwest	Henry Schneider	do.	Old	do.	20	38	-5.1
51	do.	do.	do.	Old	do.	19	36	0
52	1½ miles northwest	Lockhart Creamery	do.	Old	do.	28	36	0.9
53	do.	W. W. Cardwell	do.	Old	do.	18	24	1.3
54	1¼ miles northwest	do.	do.	Old	do.	21	36	3.3
55	1¼ miles west	A. Howard	do.	Old	do.	29	38	2.4
56	In Lockhart	Lockhart Creamery	do.	Old	do.	8	50	0
57	do.	Newton Wilson	do.	Old	do.	17	84	0.2
58	do.	Tasco Escavada	do.	Old	do.	14	49	2.5
59	do.	City of Lockhart	do.	1938	do.	15	93x29	6.0
60	do.	Clayton Withers	do.	Old	do.	20	28	2.1
61	do.	Lou Storey	do.	Old	do.	11	36	2.6
62	do.	City of Lockhart	do.	1914	do.	25	--	-11.9
63	do.	R. V. Muckelroy	do.	1895	do.	16	48	0
64	do.	Walter Seeliger	do.	Old	do.	31	36	1.7
65	do.	Tobe Smith Est.	do.	Old	do.	28	48	2.2
66	do.	Floyd Wilson	do.	Old	do.	31	24	2.1
67	do.	J. M. Wilson	do.	Old	do.	25	36	0.8
68	do.	Mrs. Will Blanks	do.	Old	do.	23	48	1.6
69	do.	Tom Joseph	do.	Old	do.	21	48	2.2
70	do.	Lockhart High School	do.	Old	do.	13	74x74	1.4
71	do.	Emil Seeliger	do.	--	Spring	--	--	--

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
47	14.4	May 8, 1943	544.0	C,H	D	
	12.4	Jan. 25, 1946				
48	12.0	May 8, 1943	543.4	None	N	
	11.3	Jan. 25, 1946				
49	28.3	May 8, 1943	554 0	C,W,E	D,S	
	25.9	Jan. 25, 1946				
50	14.4	May 7, 1943	545.1	Cf,E	D	
	13.2	Jan. 23, 1946				
51	17.0	May 7, 1943	543.7	None	N	
	15.6	Feb. 4, 1946				
52	20.3	May 7, 1943	542.4	Cf,E	D,S	
	16.5	Jan. 29, 1946				
53	11.8	May 7, 1943	564.6	C,W	D,S	
	14.1	Jan. 29, 1946				
54	16.0	May 7, 1943	537.3	C,W	D,S	
	13.0	Jan. 29, 1946				
55	24.3	May 7, 1943	546.4	C,W	D,S	
	23.1	Jan. 29, 1946				
56	8.8	May 7, 1943	528.3	None	N	
	6.7	Jan. 29, 1946				
57	9.8	May 7, 1943	526.5	Cf,E, 5	Irr	
	9.1	Jan. 29, 1946				
58	10.4	May 7, 1943	527.1	B,H	D	
	8.7	Jan. 29, 1946				
59	4.0	May 8, 1943	520.7	Cf,E, 5	P	City No. 3. Average yield 150,000 gallons a day from pit and collection gallery.
60	18.9	June 9, 1943	--	None	N	
	17.0	Jan. 30, 1946				
61	3.8	June 12, 1943	515.4	None	N	
	.8	Feb. 4, 1946				
62	16.9	Jan. 12, 1946	530.3	Cf,E, 5	P	City No. 2, pit and collection gallery, used as reserve.
63	11.1	1943	520.77	C,E	N	
	9.5	Jan. 30, 1946				
64	28.9	May 8, 1943	542.9	None	N	
	24.9	Feb. 4, 1946				
65	21.6	June 12, 1943	534.2	None	N	
	19.5	Jan. 30, 1946				
66	25.7	June 8, 1943	539.3	C,W	D	
	23.9	Jan. 30, 1946				
67	21.7	June 8, 1943	533.6	C,E	D	
	19.6	Jan. 30, 1946				
68	19.0	June 8, 1943	531.0	C,E	D	
	17.1	Jan. 30, 1946				
69	13.9	June 8, 1943	526.7	C,E	D	Temperature 71° F.
	12.6	Jan. 30, 1946				
70	7.1	June 8, 1943	518.4	C,E	Irr	Used to water football field.
	6.6	Feb. 4, 1946				
71	--	--	514.5	None	N	Measured flow 25 gallons a minute on February 4, 1946.

Records of wells and springs in Caldwell County -- Continued

Well	Distance from Lockhart	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
72	In Lockhart	Lockhart High School	Alluvium	--	Spring	--	--	--
73	do.	Neely Etheridge	do.	--	do.	--	--	--
74	do.	Walter Seeliger	do.	Old	Dug	14	33	1.8
75	do.	Alamo Lumber Co.	do.	Old	do.	17	41	2.4
76	do.	J. W. Myrick	do.	--	Spring	--	--	--
77	do.	Lockhart Builders Supply	do.	Old	Dug	22	40	3.2
78	do.	George Cardwell	do.	Old	do.	31	30	1.5
79	do.	Allie Shinn	do.	Old	do.	38	30	2.2
80	do.	B. C. Cheatham	do.	Old	do.	31	24	1.4
81	do.	Edgar Vogel	do.	Old	do.	31	28	1.2
82	do.	Henry Fielder	do.	Old	do.	31	36	2.0
83	do.	E. B. Coopwood	do.	Old	do.	26	35	0.8
84	do.	Bob Leyendecker	do.	Old	do.	29	30	1.7
85	do.	W. D. Newsom	do.	Old	do.	26	36	0
86	do.	Lockhart Creamery	do.	Old	do.	23	20	2
87	do.	City of Lockhart	do.	1905	Spring	---	--	0.9
88	do.	Texas Public Utilities	do.	Old	Dug	6	240	0.6
89	do.	Bob Blundell	do.	Old	do.	9	43	0.5
100	do.	Pedro Tomayo	do.	Old	do.	15	28	2.6
101	do.	Matilda Larremore	do.	Old	do.	24	41	2.4
102	do.	Dave Jose	do.	1935	do.	25	33	1.5
103	5 miles west	G. Norman Martindale	do.	Old	do.	25	48	1.0

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
72	--	--	500.7	Flows	P	Estimated flow 150 gallons a minute February 1946; Issues from solution channels. Supplies swimming pool. Temperature 74° F.
73	--	--	501.4	None	N	Estimated flow 50 gallons a minute February 1946.
74	11.0	June 17, 1943	518.2	C,E	D	
	10.0	Feb. 4, 1946				
75	13.3	June 17, 1943	520.5	B,H	Ind	
	11.8	Feb. 4, 1946				
76	--	--	502.0	None	D	Estimated aggregate flow 100 gallons a minute February 1946, Operates hydraulic ram pump.
77	16.8	June 1943	524.8	B,H	Ind	
	15.0	Feb. 1, 1946				
78	26.6	June 8, 1943	536.3	None	N	
	25.0	Jan. 30, 1946				
79	28.0	June 8, 1943	540.8	C,E	D	
	25.4	Jan. 29, 1946				
80	29.5	June 8, 1943	541.9	C,E	D,S	
	26.0	Jan. 29, 1946				
81	28.0	June 8, 1943	536.7	C,W	D	
	26.6	Feb. 1, 1946				
82	25.3	June 8, 1943	536.1	C,E	D	
	24.1	Jan. 30, 1946				
83	21.8	June 8, 1943	532.3	C,E	D	
	19.2	Feb. 1, 1946				
84	21.0	June 8, 1943	531.1	J,E	D	
	19.0	Feb. 1, 1946				
85	15.9	June 8, 1943	523.3	C,E	D	
	14.4	Feb. 1, 1946				
86	16.7	June 8, 1943	522.1	Cf,E, 3	Ind	
	12.7	Feb. 1, 1946				
87	7.9	June 8, 1943	--	Cf,E 5	P	City well 1, spring developed with collection gallery; yield about 350 gallons a minute, January 1946. Elevation of water level 494.61 on March 1, 1946. Temperature 68° F. same date.
	8.9	Mar. 1, 1946				
88	4.0	June 1943	500.5	Cf,E	P	
	3.5	Feb. 1, 1946				
89	6.1	June 1943	510.0	B,H	N	Near springs.
	5.7	Feb. 1, 1946				
100	8.4	June 1943	504.2	B,H	D	
	7.5	Feb. 1, 1946				
101	12.0	June 8, 1943	500.6	B,H	D	
	6.7	Feb. 1, 1946				
102	22.3	Feb. 13, 1946	--	C,W	D,S	Temperature 71° F., Feb. 13, 1946.
103	16.4	Mar. 28, 1946	--	C,W	D,S	Adjacent to electrically pumped well. Temperature 69°F. Mar. 28, 1946.

Records of wells and springs in Caldwell County -- Continued

Well	Distance from Lockhart	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
104	5 miles southwest	G. N. Martindale, Jr.	Alluvium	--	Spring	--	--	--
105	4 miles west	F. M. Thompson	do.	--	do.	--	--	--
106	4 miles northwest	G. A. Borchert	do.	1913	Dug	20	30	2.4
107	2⅞ miles southwest	Bill Lamb	do.	--	Spring	--	--	--
108	2½ miles southwest	State of Texas	do.	1937	Dug	28	72	0
109	2⅝ miles southwest	do.	do.	1937	do.	16	72	2.4
110	1¼ miles southwest	R. F. Page	do.	Old	do.	28	30	1.2
111	do.	A. D. Mebane	do.	Old	do.	28	33	1.6
112	3 miles south	Fred Adams	Sand of Wilcox group?	Old	do.	29	35	1.3
113	8 miles northwest	-- Becker	Edwards limestone	1938	Drilled	1,200+	7	--
114	1½ miles south	Mrs. A. D. Mebane	do.	1938	do.	1,980	10	--
201	10⅜ miles northeast	A. Comilion	Sand of Wilcox group	1946	Dug	23	30	1.8
202	10⅝ miles northeast	A. L. Pearson	do.	Old	do.	38	48	2.3
203	9⅝ miles northeast	J. E. Coopwood	do.	1870	do.	44	33	1.5
204	9¼ miles northeast	Lytton Springs Gin Co.	do.	1910	do.	49	--	0
205	9 miles northeast	Lytton Springs Park Association	do.	Old	do.	18	210	0
206	8¼ miles northeast	Ben Forister	do.	1941	do.	72	33	1.8
207	7¾ miles northeast	Pat S. King	do.	Old	do.	67	42	0
208	6¾ miles northeast	Reuben Webb	do.	1945	Drilled	300	4	--
209	6⅓ miles northeast	Pat S. King	do.	Old	Dug	20	42	2.5
210	5⅝ miles northeast	C. C. Chapman	do.	Old	do.	49	30	1.1
211	5 miles northeast	Jim Cardwell	do.	1925	do.	26	42	1.0
212	4⅝ miles northeast	J. C. Taylor	do.	1934	do.	35	36	4.0
213	5⅛ miles northeast	R. M. Alexander	do.	1902	Drilled	130	6	--

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
104	--	--	--	C,W	S	One of several springs along north bank of Dry Branch. Temperature
105	--	--	--	--	D,S	Estimated flow 10 gallons 69° F. a minute March 29, 1946. One of numerous springs along Clear Fork. Temperature same date 68° F.
106	15.6	Apr. 19, 1946	--	C,E	D,S	Temperature 69° F, April 19, 1946.
107	--	--	--	Flows	N	Aggregate flow about 300 gallons a minute January 1946 from seeps in
108	2.2	Apr. 19, 1946	--	None	N	Formerly supplied Boggy Creek, park. Temperature 68° F, April
109	9.6	do.	--	None	N	Formerly supplied 19, 1946. caretaker's house.
110	24.9 23.4	June 8, 1943 Feb. 1, 1946	535.1	C,W	D,S	
111	25.1 23.0	June 8, 1943 Feb. 1, 1946	534.4	C,W	D	
112	21.4	Mar. 20, 1946	--	J,E	S	
113	--	--	--	None	N	Carolina Western oil test. Sulphur water obtained at 1,200 feet.
114	--	--	--	None	N	Lincoln Total depth unknown. Petroleum Company oil test. Sand and gravel reported from 20 to 60 feet in terrace deposits. See log.
201	13.2	June 11, 1946	--	B,H	D	
202	27.4	July 24, 1946	--	B,H	S	
203	38.5	June 11, 1946	--	C,G	D,S	
204	47.4	Feb. 27, 1946	--	J,E	D,Ind	Supplies residents of Lytton Springs and cotton gin.
205	16.9	do.	--	C,G	P	Supplies residents of Lytton
206	60.0	do.	--	C,W	D,S	Springs and Lytton Springs oil Near outcrop of field. Caldwell knob fossil bed.
207	46.7	June 11, 1946	--	C,W	S	Reported a "strong" well.
208	e/88	1946	--	C,G	N	Reported weak.
209	3.1	June 11, 1946	--	C,W	S	In creek bottom.
210	44.5	Apr. 12, 1946	--	B,H	D,S	
211	21.4	June 11, 1946	--	None	N	
212	29.6	do.	--	C,W	D	
213	e/60	1946	--	C,W	D	Reported a weak well.

Records of wells and springs in Caldwell County -- Continued

Well	Distance from Lockhart	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
214	6 miles northeast	Perry Gillis	Sand of Wilcox group	1916	Drilled	165	6	--
215	6¼ miles northeast	W. M. Riddle	do.	1902	do.	128	6	0.8
216	6⅜ miles northeast	Clinch Walker	do.	Old	do.	90	6	--
217	9⅜ miles northeast	--	do.	Old	Dug	27	36	2.5
218	8⅜ miles northeast	J. S. Hellums	--	Old	Drilled	150	6	--
219	8 miles northeast	Leland Riddle	Sand of Wilcox group	1945	do.	97	7	--
220	7¼ miles northeast	M. H. Riddle	do.	1926	Bored	70	6	0.8
221	7¼ miles northeast	W. H. Riddle	do.	Old	Drilled	165	6	--
222	7¼ miles northeast	Alton Osteen	do.	1927	do.	110	7	0.3
223	7 miles northeast	A. J. Lackey	do.	1914	do.	114	6	--
224	6⅜ miles northeast	A. J. Elliott	do.	1945	do.	38	6	--
225	3¼ miles southeast	W. P. McGee Est.	--	Old	do.	2,539	10	--
226	2¼ miles southeast	J. M. Purcell	--	Old	do.	2,500	10	--
227	do.	do.	Sand of Wilcox group	1905	Dug	50	54	1.0
228	2¼ miles south	L. M. Harrison	Alluvium	Old	do.	76	43	2.9
229	3¼ miles southeast	Elgin Bowers	do.	1935	Bored	59	10	0.4
230	3⅜ miles southeast	Troy Williams	do.	1940	Drilled	76	5	0.1
231	3¼ miles southeast	-- Deaton	do.	Old	Dug	52	50	1.5
232	5⅜ miles southeast	Pete Rodenburg	Sand of Wilcox group	Old	do.	40	30	2.5
233	5¼ miles southeast	Charley Carter	Carrizo sand	Old	do.	17	15	0
234	4⅜ miles southeast	W. P. McGee Est.	Sand of Wilcox group	1926	Drilled	100	8	1.5
235	4¾ miles southeast	do.	do.	Old	Dug	39	30	2.6

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
214	--	--	--	C,W	D,S	Reported never to have failed.
215	95.2	Apr. 12, 1946	--	B,H	N	Temperature 73° F, April 12, 1946.
216	--	--	--	C,W	D	
217	19.3	Aug. 7, 1946	--	B,H	D,S	Water may be supplied by seepage from creek.
218	--	--	--	C,W	D	Reported never to have failed.
219	e/62	1946	--	C,E	D	Bailed at 400 gallons an hour without failing.
220	58.3	Apr. 12, 1946	--	C,W	D	Reported to "blow" when wind is from the south.
221	--	--	--	C,G,W	D,S	Reported never to have failed.
222	71.6	Feb. 27, 1946	--	C,E	P	Supplies 20 families in Dale.
223	--	--	--	C,W	D	
224	--	--	--	C,W	D	
225	--	--	--	Flows	N	Oil test converted to water well. Water probably coming from upper 300 feet. Estimated flow 10 gallons a minute, January 1946. Temperature 72° F. See log.
226	--	--	--	Flows	S	Oil test converted to water well. Estimated flow 2 gallons a minute, January 1946. Temperature 72° F.
227	33.8	Jan. 30, 1946	--	C,W	D,S	
228	34.8	Mar. 20, 1946	--	C,W	S	
229	34.3	May 3, 1946	--	C,W	D,S	Probably yields water also from lower sand of the Wilcox group.
230	37.9	Apr. 16, 1946	--	None	N	
231	30.0	do.	--	None	N	Elevation 481 feet above land surface.
232	27.9	June 27, 1946	--	None	N	Near fault.
233	10.1	July 31, 1946	--	None	N	On valley slope.
234	86.8	June 17, 1946	--	C,W	D,S	
235	9.4	June 27, 1946	--	C,W	S	

Records of wells and springs in Caldwell County -- Continued

Well	Distance from McMahan	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
236	3½ miles west	Addis De Viney	Sand of Wilcox group	Old	Drilled	153	6	0.1
237	2¾ miles northwest	J. B. Moore	do.	1895	Dug	30	43	2.7
238	2½ miles northwest	Wilford Chew	do.	1880	do.	53	31	--
239	do.	Mrs. -- Alexander	do.	1926	Drilled	--	6	--
240	3½ miles northwest	R. M. Medlin	do.	1931	do.	206	4	--
241	3¾ miles northwest	--	do.	Old	Dug	26	32	1.3
242	5¾ miles north	W. E. Dinges	do.	1927	Drilled	174	6	--
243	6¼ miles north	Ilene Lovell	do.	1934	do.	185	6	--
244	5¼ miles northeast	J. R. Pearson	do.	1934	do.	200	6	--
245	3½ miles northeast	Clyde Alexander	do.	1916	do.	250	6	--
246	3¼ miles northeast	Loy Taylor	do.	1912	do.	327	6	1.9
247	2¼ miles northeast	J. A. Baker	do.	Old	do.	200	4	--
248	2¾ miles northwest	--	do.	Old	do.	--	6	--
249	2½ miles north	D. T. Lackey	do.	1930	do.	216	6	0.3
250	1 mile northwest	Addis De Viney	do.	Old	do.	140	6	--
251	1¼ miles northwest	Morris Robuck	do.	Old	do.	100	6	--
252	1½ miles west	J. L. Reed	do.	1940	do.	87	6	0.3
253	1¼ miles west	M. J. Huddleston	do.	1942	do.	104	4	--
254	2¾ miles southwest	Charley Murphy	do.	1945	do.	149	--	--
255	1¼ miles southwest	Clyde Alexander	do.	Old	do.	126	8	0.4
256	1½ miles southeast	-- Bozarth	do.	1946	do.	340	4	1.2
257	1 mile southeast	J. J. Brown	do.	1902	do.	66	5	--
258	do.	do.	do.	1926	do.	125	5	--
259	do.	do.	do.	1946	--	335	4	2.0

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
236	98.9	June 17, 1946	--	C,W	D,S	
237	11.1	June 27, 1946	--	C,W	D,S	
238	--	--	--	C,W	D,S	Yield reported small.
239	--	--	--	C,W	D,S	
240	--	--	--	C,W	D	Highly mineralized water reported at 41 feet.
241	15.1	Apr. 17, 1946	--	None	N	
242	e/36	1946	--	C,W	D,S	Water reported in blue sand.
243	--	--	--	C,W	D,S	
244	--	--	--	C,W	D,S	Reported a weak well.
245	--	--	--	C,W	D,S	
246	157.8	Apr. 17, 1946	--	C,E,W	D,S	Reported as "strongest" well around Taylorsville. Supplied drilling water simultaneously to 4 oil wells. Temperature 71° F.
247	--	--	--	C,W	D,S	
248	--	--	--	C,W	S	
249	120.6	Apr. 17, 1946	--	C,G,W	D,S	Temperature 77° F, April 17, 1946.
250	--	--	--	C,W	D	
251	--	--	--	C,H	D,S	
252	49.0	June 19, 1946	--	C,W	D,S	
253	e/54	1946	--	C,W	D	Water in black speckled fine-grained sand.
254	e/50	1946	--	C,-	N	Supplied oil test (No. 277) during drilling in 1946.
255	56.3	July 16, 1946	--	C,W	D,S	
256	51.3	June 24, 1946	--	None	N	Well drilled by Johnny Reed of Luling.
257	64.6	June 20, 1946	--	None	N	First sand reported at 85 feet.
258	e/65	1946	--	None	N	
259	67.6	June 20, 1946	--	None	N	Upper water from 85 to 125 feet cased off. Well drilled by Johnny Reed of Luling.

Records of wells and springs in Caldwell County -- Continued

Well	Distance from McMahan	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
260	¾ mile southeast	A. R. Jeffrey	Sand of Wilcox group	1935	Dug	30	36	3.7
261	do.	G. C. Jowers	do.	1895	Drilled	147	6	0.1
262	½ mile east	J. R. Gray	do.	1943	do.	215	5	1.4
263	do.	James Chamberlain	do.	1929	do.	300	5	0
	1 mile northeast	Exa Alexander	do.	1940	do.	260	4	--
265	1½ miles northeast	Jim Watts	do.	1917	do.	151	6	--
266	2 miles northeast	M. T. Baker	do.	1914	do.	200	6	2.3
	3¼ miles northeast	T. B. Taylor	do.	1928	do.	240	6	--
268	4¾ miles northeast	Joe Fischer	do.	1930	do.	335	5	--
269	4 miles northeast	G. C. McKean	do.	Old	do.	--	6	--
270	3½ miles northeast	E. M. Hutcheson	do.	1924	do.	404	6	--
271	4½ miles northeast	Louis Voight	do.	1927	do.	350	6	--
272	3¼ miles east	Claude Galloway	do.	1905	do.	170	5	2.5
273	2½ miles southeast	J. F. Jowers	do.	1925	Bored	104	6	3.0
274	7¼ miles southeast	E. I. Reid	Carrizo sand	Old	Dug	14	15	1.5
275	8 miles east	Tilman Est.	do.	1945	Bored	67	6	0.5
276	4½ miles southwest	-- Callihan	Edwards limestone	1930	Drilled	2,406	10	--
277	3 miles southwest	Dr. E. Smith, No.1	do.	1946	do.	2,655	9, 6-5/8	--
278	7¾ miles southeast	E. I. Reid	Carrizo sand	1911	do.	70	6	--
401	8 miles southeast	W. A. Cox	do.	1920	do.	77	6	0.8
402	9 miles southeast	W. L. Council	Mt. Selman formation	1929	Bored	56	6	0.5
403	8½ miles southeast	J. Sherry Est.	Carrizo sand	1944	Drilled	171	2	2.0
404	7¾ miles southeast	D. C. McMullen	do.	Old	do.	--	3	0.4

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
260	13.0	June 20, 1946	--	C,W	D,S	
261	53.2	June 24, 1946	--	C,W	D,S	Temperature 76° F, June 24, 1946.
262	46.8	Mar. 1, 1946	--	J,E	D,S	Reported drilled by Johnny Reed, Luling. Temperature 73° F, March 1, 1946.
263	--	do.	--	J,E	P	Well supplies 15 families in McMahan. Water level reported at 48 feet in November 1945 while well was being cleaned. Temperature 73° F.
264	e/100	1946	--	C,W	S	
265	e/120	1946	--	C,W	D	Streaks of lignite encountered in drilling. Reported a good well.
266	156.7	Aug. 3, 1946	--	C,W	D	Water has sulphur odor.
267	e/ 60	1946	--	C,W	D,S	Forty feet of rock penetrated above water-bearing sand.
268	--	--	--	C,W	D,S	Reported that well never failed.
269	--	--	--	C,W	D,S	
270	--	--	--	C,W	D	Sands at 160, 165, 365 and 390 feet. Casing blown with dynamite at 165 feet. Yield reported small.
271	--	--	--	C,W	D,S	
272	39.5	Apr. 17, 1946	--	None	N	Sabinetown fossil bed in nearby field.
273	77.6	June 24, 1946	--	C,W	N	
274	7.4	Apr. 18, 1946	--	C,H	N	Temperature 70° F.
275	42.8	do.	--	None	N	Temperature 71° F, April 18, 1946.
276	--	--	--	None	N	H. R. Smith et al oil test. See log.
277	--	--	--	None	N	Ogden B. Klein oil test. Yields sulphur water. See log.
278	--	--	--	C,H,W	D,S	Sheet metal casing.
401	66.8	Mar. 1, 1946	--	C,W	S	Temperature 73° F.; March 1, 1946.
402	53.0	Apr. 18, 1946	--	B,H	D	Tile casing.
403	88.0	Apr. 26, 1946	--	C,H	D	Temperature 71½° F, April 26, 1946.
404	47.5	do.	--	C,G	N	

Records of wells and springs in Caldwell County -- Continued

Well	Distance from McMahan	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
405	7⅞ miles southeast	Kurz Ranch	Austin chalk	1934	Drilled	4,110	8	--
406	12 miles southeast	Mrs. G. R. Barrer	Mt. Selman formation	1900	Dug	97	48	--
407	9¾ miles southeast	R. L. McCall	do.	Old	do.	16	36	2.3
408	8¾ miles southeast	J. J. Holloway	Carrizo sand	1923	Drilled	250	4	--
409	10 miles southeast	W. W. Wilkinson	do.	1925	do.	158	4	--
	Distance from Luling							
410	11½ miles northeast	Ray Russell	do.	1945	do.	37	4	1.5
411	do.	do.	do.	1945	do.	92	5	1.7
412	9¾ miles northeast	E. V. Killian	do.	1944	Dug	21	36	1.7
413	8 miles east	G. T. Westbrook	do.	Old	Bored	80	6	1.9
414	5 miles southeast	Ben Huff	do.	1935	Drilled	91	5	1.8
415	4½ miles southeast	Tom Blackwell	Sand of Wilcox group	1935	do.	100	4	--
416	4 miles southeast	W. J. and C. B. McCleary	do.	1934	Dug	19	24	0.4
417	2 miles southeast	N. R. Griffen	do.	1939	Drilled	81	4	--
418	5 miles northeast	Clifford Davis	do.	Old	Dug	19	30	0.1
419	3½ miles northeast	Mrs. J. M. Brewer	do.	1895	do.	24	24	2.6
420	4 miles northeast	--	do.	--	Spring	--	--	--
421	5½ miles northeast	A. G. Probst	do.	1915	Dug	14	30	0.2
422	do.	W. B. Hand	do.	1870	do.	46	48	1.4
423	8 miles northeast	M. A. Workman	do.	1945	Drilled	311	4	--
424	7½ miles northeast	W. H. Watts	do.	1912	Dug	31	34	2.6
425	5¾ miles northeast	Floyd Gray Est.	do.	Old	do.	49	33	0
426	7¾ miles northeast	Briscoe Est.	do.	1896	Drilled	35	6	--
427	8 miles northeast	Will Pope	Alluvium	1921	Dug	19	42	2.1

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift	Use of water	Remarks
405	--	--	--	None	N	Kurz Oil Production Company oil test. Water reported in sand at 100 to 120 feet. See log.
406	82.4	Apr. 26, 1946	--	C,W	S	Temperature 72° F.
407	7.1	Apr. 16, 1946	--	B,H	D	Temperature 67° F, April 16, 1946.
408	e/40	1944	--	C,W	D,S	Watered 100 head of cattle during drought in 1925.
409	e/47	1925	--	C,W	D,S	Temperature 76° F.
410	16.6	May 17, 1946	--	C,H	S	Temperature 77° F, May 17, 1946.
411	33.0	do.	--	C,W	S	
412	17.0	do.	--	B,H	S	Water reported to taste of alum. Temperature 71° F, May 17, 1946.
413	73.1	May 7, 1946	--	B,H	S	Water reported to have sulphur taste. Temperature 75° F. May 7,
414	78.2	May 3, 1946	--	B,H	D,S	Temperature 74° F, May 1946. 3, 1946.
415	e/20	1945	--	C,W	S	Also used for swimming pool. Too salty for human consumption. Tem-
416	16.2	May 7, 1945	--	B,H	Ind	Used to wash autos. perature 73°F. Temperature 73° F, May 7, 1945.
417	e/60	1939	--	C,W	D,S	Water has sulphur odor. Treated by aeration. Temperature 76° F.
418	16.5	July 3, 1946	--	C,W	D,S	Water turns green after standing in tank. Temperature 72° F, July
419	18.5	July 16, 1946	--	C,W	D,S	Reported never to have 3, 1946. pumped dry.
420	--	--	--	Flows	S	Soda Springs on Plum Creek.
421	6.3	July 16, 1946	--	C,W	D,S	Reported that well "cannot be pumped dry".
422	37.3	do.	--	C,W	D,S	
423	--	--	--	C,-	N	Drilled by Johnny Reed, Luling, through AAA Lockhart.
424	20.4	May 17, 1946	--	B,H	D,S	Temperature 71° F, May 17, 1946.
425	22.9	June 14, 1946	--	None	N	In Salt Flat oil field. Temperature 74° F, June 14, 1946.
426	e/65	1946	--	C,W	D,S	
427	14.9	June 14, 1946	--	C,W	N	Temperature 73° F, June 14, 1946.

Records of wells and springs in Caldwell County -- Continued

Well	Distance from Luling	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
428	7¾ miles northeast	Claude Dickerson	Sand of Wilcox group	1911	Drilled	70	6	--
429	8 miles northeast	F. W. Weigand	do.	1938	do.	125	4	1.0
430	9 miles northeast	Mrs. Jeff Connolly	do.	1910	Dug	34	40	3.1
	Distance from McMahan							
431	4 miles south	Alvin F. White	do.	1938	Drilled	171	4	1.6
432	3½ miles southeast	J. L. Reed	Carrizo sand	Old	Dug	27	38	2.8
433	1¾ miles southeast	Dan Garner	Sand of Wilcox group	1925	Drilled	--	5	--
434	do.	Rex Gideon	do.	1943	do.	237	4	--
435	1¾ miles southwest	Odus Owen	do.	1918	Dug	71	52	2.8
436	2¼ miles south	Mrs. Mamie McGee	do.	1944	Drilled	352	4	--
437	3¾ miles south	C. C. Franks	Austin chalk	1935	do.	3,073	10	--
438	4 miles southwest	L. P. Williams	Sand of Wilcox group	1944	Dug	20	36	--
439	do.	H. Taylor	do.	1940	Drilled	290	4	--
440	do.	Fritz Anton	do.	Old	Dug	50	28	3.0
	Distance from Lockhart							
441	7 miles southeast	Elgin Bowers	do.	Old	do.	47	30	2.5
442	6½ miles southeast	W. M. Bergfeld	do.	1906	Drilled	88	5	0.8
443	7 miles southeast	S. M. Blackwell	do.	1906	do.	113	5	--
444	6½ miles southeast	Frank Teas	do.	1920	do.	150	4	0.3
445	4¾ miles southeast	Alton Rector	do.	1860	Dug	68	50	0.6
446	do.	do.	do.	1911	Drilled	86	6	--
447	7¼ miles south	--	do.	--	Dug	35	30	0

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
428	e/70	1946	--	C,W	D,S	Temperature 80° F.
429	18.6	Feb. 15, 1946	--	C,E	D,S	Temperature 72° F, February 15, 1946.
430	25.8	May 17, 1946	--	C,W	S	Temperature 72° F, May 17, 1946.
431	68.0	Feb. 15, 1946	--	None	N	Temperature 68° F.
432	14.9	June 19, 1946	--	None	N	Temperature 71° F.
433	e/80	1946	--	C,W	D,S	
434	e/80	1946	--	C,W	D,S	Temperature 75° F, June 19, 1946
435	61.8	June 19, 1946	--	C,W	D,S	
436	e/70	1944	--	C,W	D,S	Temperature 75° F, June 19, 1946.
437	--	--	--	None	N	H. H. Coffield oil test. Water reported in sand at 191 to 215
438	e/ 8	1946	--	None	N	Water of poor feet. See log.
439	e/ 5	1946	--	C,W	D,S	quality, corrosive. Many wells Tem- dug on place, all poor.
440	35.2	May 17, 1946	--	None	N	perature 71½° F, June 19, 1946. Brick curb.
441	31.8	Apr. 16, 1946	--	C,W	N	Temperature 72° F, April 16, 1946.
442	36.0	May 3, 1946	--	C,W	D,S	Reported ruined by oil test in 1930. Well now has 755 parts per
443	e/55	1906	--	C,W	D,S	Temperature million chloride. 80° F.
444	32.6	May 3, 1946	--	C,H	D,S	Pumped fine-grained sand. Temperature 72° F, May 3, 1946.
445	47.5	do.	--	None	N	Temperature 72° F, May 3, 1946.
446	e/70	1911	--	C,W	D,S	
447	29.1	Feb. 2, 1946	--	None	N	Used for many years by Burdett health resort. Has 67 parts per million of magnesium.

Records of wells and springs in Caldwell County -- Continued

Well	Distance from Luling	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
448	5¾ miles north	Gus T. Brown	Sand of Wilcox group	Old	Dug	44	38	1.4
449	3¼ miles northeast	Humble Oil and Refining Co.	do.	1936	Drilled	300	10	--
450	2⅝ miles northeast	Gulf Oil Corporation	do.	1930	do.	209	7	1.0
451	2½ miles northwest	N. Casey	do.	Old	do.	190	8	--
452	1⅛ miles southeast	Magnolia Pipeline Co.	do.	1927	do.	150	10	--
453	1¼ miles southeast	Magnolia Petroleum Co.	do.	1930	do.	519	12	1.0
454	1¾ miles south	Walker Bros.	do.	Old	Dug	31	36	2.0
455	1 mile southeast	do.	do.	1945	Drilled	--	6	--
456	do.	do.	do.	1945	Dug	41	48	0
457	In Luling	Jessie Day	do.	1890	do.	40	45	0
458	do.	Ray Tiller	do.	Old	do.	24	36	--
459	do.	City of Luling	do.	1926	Drilled	320	16	0
460	do.	do.	do.	1926	do.	304	16	--
461	do.	E. L. Schumann	do.	1942	do.	300	6	--
462	do.	Southwestern Ice and Cold Storage Co.	do.	1941	do.	150	6	--
463	do.	Mrs. Geo. Huff	do.	1895	Dug	20	52	2.0
464	do.	Geo. F. Huff	do.	1908	do.	50	60	--
465	do.	I. F. Petty	do.	1945	Drilled	265	5	--
466	do.	N. O. Stair	do.	1945	do.	239	5	0.7
467	do.	T. I. Johnson	do.	1946	do.	282	5	0.5
468	do.	I. L. Horne	do.	1942	do.	165	5	--
469	1 mile southwest	Luling Foundation Farm	do.	--	do.	194	6	--

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
448	32.5	May 7, 1946	--	C,G	S	Temperature 72½° F, May 7, 1946.
449	--	--	--	T,E, 15	D,Ind	In Salt Flat oil field. Supplies 12 families. Temperature 78° F.
450	56.0	May 2, 1946	--	C,E	P,Ind	In Salt Flat oil field. Supplies 12 families. Temperature 78° F,
451	--	--	--	C,E	D	Salty water May 2, 1946. See log, at 75 feet was cased off.
452	--	--	--	Flows	--	Flow estimated at 10 gallons a minute on July 26, 1946. Reported to draw water from sands at 60 feet, and near bottom.
453	34.1	July 3, 1946	--	T,E, 40	Ind	Well had been pumped earlier in morning, when measured water level may not have recovered completely from pumping earlier in the morning. Temperature 80° F. See log.
454	28.9	July 26, 1946	--	B,H	D,S	Near San Marcos River, at south end of Country Club.
455	--	--	--	C,W	D,S	
456	36.3	July 26, 1946	--	B,H	D,S	
457	36.3	do.	--	B,H	D	Irrigated 6 acres several years ago.
458	--	--	--	None	N	Now dry.
459	80.0	Feb. 7, 1946	--	T,E, 30	P	Average pumpage about 100,000 gallons a day. Drawdown reported 35 feet after 7 hours pumping at 460 gallons a minute. See log.
460	--	--	--	T,E, 25	P	Average pumpage about 85,000 gallons a day. See log.
461	e/35	1942	--	T,E, 3	Ind	Supplies bottling plant.
462	e/50	1945	--	T,E, 3	Ind	Supplies ice house.
463	18.4	July 26, 1946	--	None	N	
464	e/18	1946	--	C,W	D,S	Formerly irrigated 2 acres.
465	e/45	1945	--	J,E	D	Temperature 72° F.
466	45.5	Feb. 7, 1946	--	None	N	Drilled by Johnny Reed, Luling.
467	44.8	Aug. 6, 1946	--	None	N	Drilled by Powell, Luling. Temperature 75° F, August 6, 1946.
468	e/45	1946	--	C,G, 4	D	Has been used to irrigate victory garden.
469	e/40	1946	--	C,G	S	See log.

Records of wells and springs in Caldwell County -- Continued

Well	Distance from Luling	Owner	Geological horizon (formation or group of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
470	1¼ miles west	Magnolia Petroleum Co.	Sand of Wilcox group	1926	Drilled	149	7	--
471	1½ miles northwest	T. L. McWilliams	do.	1931	do.	126	8	0.5
472	2 miles northwest	H. O. Meaddox	do.	Old	do.	150	6	--
501	3 miles west	Pierce Ranch	do.	Old	Dug	36	34	0
502	5 miles west	--	Alluvium	Old	Bored	27	6	3.6
503	4½ miles northwest	W. W. McNeal	Sand of Wilcox group	1944	Drilled	120	5	--
504	4 miles northwest	W. M. Sanders	do.	1908	do.	123	6	--
505	4⅜ miles northwest	J. E. Boggus	do.	1910	do.	95	6	--
506	4½ miles northwest	F. L. Fields	do.	1930	do.	182	5	0.6
507	6½ miles northwest	A. B. Etheridge	do.	1925	Dug	14	36	2.6
508	8⅛ miles north	Jim Guckian	do.	--	Drilled	168	6	1.4
509	9 miles north	Ed Cocpwood	do.	--	do.	94	6	0.6
510	8 miles northwest	Mrs. Charley Clark	do.	1908	Dug	65	28	2.4
511	8¾ miles northwest	Warner Polk	do.	1880	do.	42	24	2.9
512	8½ miles northwest	Claude Giden	do.	1928	do.	56	33	1.9
513	7¾ miles northwest	W. E. Langley	do.	1942	do.	69	48	0
514	do.	N. A. Langley	do.	1945	Drilled	99	4	0.3
515	9½ miles northwest	Fentress-Prairie Lea Utilities Co.	Alluvium	--	Dug	27	72x 72	2.2
516	9¼ miles northwest	W. E. Langley	Sand of Wilcox group	1938	do.	18	30	2.6
517	do.	do.	do.	1937	do.	30	32	2.7
518	do.	John M. Roberts	do.	--	do.	29	36	2.9
519	11½ miles northwest	P. C. Chaudoin	Navarro group	1920	Drilled	630	3	--
520	13 miles northwest	Dr. Clay Nichols	Alluvium	--	Dug	24	40	2.4

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
470	e/88	1926	--	C,E, 20	Ind	Supplies 7 families. Temperature 75° F. See log.
471	61.1	Feb. 12, 1946	--	C,W	D	Temperature 71° F, February 12, 1946.
472	--	--	--	C,E	D	
501	18.0	June 25, 1946	--	C,W	D,S	Near Dunlap fault. Temperature 72° F, June 25, 1946.
502	24.4	do.	--	None	N	Temperature 72° F, June 25, 1946.
503	--	--	--	C,W	D,S	Originally drilled to 300 feet, but cemented back. Temperature 77° F.
504	e/80	1946	--	C,W	D,S	Reported a weak well. Water at 85 feet, and 118 feet.
5	--	--	--	C,W	D,S	Has been pumped with gas engine. Never failed.
506	113.4	Mar. 20, 1946	--	C,W	D,S	
507	5.8	do.	--	C,E	D,S	Temperature 64° F, March 20, 1946.
508	80.5	do.	--	C,W	D,S	
509	51.9	do.	--	C,W	D,S	
510	55.8	Apr. 3, 1946	--	C,W	N	
511	17.4	do.	--	C,-	N	
512	49.9	do.	--	C,W	D,S	
513	44.8	do.	--	None	N	Seep.
514	25.3	do.	--	C,H	N	
515	24.3	Feb. 25, 1946	--	C,E, 15	P	Supplies Fentress and Prairie Lea. Temperature 70° F, Feb. 25, 1946.
516	3.8 3.8	Apr. 3, 1946 May 3, 1946	--	None	N	Temperature 70° F.
517	12.2	Apr. 3, 1946	--	B,H	D,S	
518	14.8	do.	--	C,W	D,S	
519	70	Apr. 1, 1946	--	None	N	
520	21.7	Apr. 8, 1946	--	C,W	P	Supplies about 10 families. Adjacent to electric pumped well rated at 50[illegible] gallons an hour.

Records of wells and springs in Caldwell County -- Continued

Well	Distance from Luling	Owner	Geological horizon (formation or groups of formations)	Date completed	Type of well	Depth of well (ft.)	Diameter of well (in.)	Height of measuring point above ground (ft.) a/
521	13 miles northwest	Maurice Waldrip	Alluvium	1923	Dug	30	72	0.6
522	do.	Staples Water Works	do.	1931	do.	17	72	--
523	14½ miles northwest	R. C. Hill	do.	Old	do.	35	48	--
524	15 miles northwest	W. R. Krunk	do.	Old	do.	35	36	--
525	6¼ miles northwest	Geo. Kelley	Schist	1928	Drilled	7,854	12 to 6-5/8	--
	Distance from Lockhart							
526	5 miles northeast	Gus Hemphill	Sand of Wilcox group	1918	Bored	94	6	2.0
527	4 miles northeast	Charlie Alexander	do.	1922	Drilled	60	5	2.0
528	3¾ miles east	T. I. Branyon	do.	1941	Dug	60	48	1.5
529	4½ miles east	do.	do.	1916	do.	40-45	48	1.3
530	4 miles east	W. E. Schuelke, Jr.	do.	1946	Drilled	80	4	1.0
531	4½ miles east	Sylvester Johnson	do.	1924	Bored	94	6	1.3
532	5½ miles southeast	Emma Fleming	do.	1925	Dug	52	42	2.8
533	6½ miles east	Mrs. Alice McConnell	do.	1937	Drilled	130	6-5/8	1.1
	Distance from Luling							
534	8 miles east	Mrs. J. E. Ledbetter	Carrizo sand	1946	Drilled	117	5	2.7
535	7½ miles east	A. Moore	do.	1932?	Bored	71	6	2.6

a/ Measuring point is usually above ground at top of casing, pump base, pipe clamp or well curb. If below ground the figures are preceded by a minus (-) sign.
b/ Elevation of land surface, sea level datum.

Well	WATER LEVEL: Below land surface (ft.)	WATER LEVEL: Date of measurement	Elevation b/	Method of lift c/	Use of water d/	Remarks
521	22.2	Apr. 8, 1946	--	C,H,G	D	Irrigated 25 acres in 1925.
522	e/14	1936	--	C,-	D,S, Ind	Well is pumped at 70 gallons a minute with hydraulic power developed from low level dam.
523	e/15	1946	--	C,W	D,S	
524	e/15	1946	--	C,W	D,S	
525	--	--	--	None	N	United North and South Development Company oil test. See log.
526	56.92	Apr. 3, 1947	--	B,H	D,S	Well bored by Emmit Danley of Dale.
527	36.68	do.	--	C,W	D	
528	45.17	do.	--	C,W	D,S	
529	30.64	do.	--	B,H	D,S	Supplies several families.
530	59.03	Apr. 4, 1947	--	C,H,E	N	Not used at present; electrical connections not yet made.
531	69.91	do.	--	B,H	N	Casing partly collapsed below 70 feet.
532	43.9	do.	--	B,H	D	
533	15.04	do.	--	C,W	D,S	Near oil field. Water leaking back into well from pump. Drilled by -- Maten from Luling.
534	62.4	do.	--	C,W	D,S	
535	68.0	do.	--	B,H	D,S	

c/ T, turbine; Cf, centrifugal; C, cylinder; E, electric; G, gasoline; O, diesel or oil; J, jet; W, windmill; H, hand; B, bucket. Number indicates horsepower.
d/ P, public supply; D, domestic; Irr, irrigation; Ind, industrial; S, stock; N, not used.
e/ Water level reported.

Table of drillers' logs, Caldwell County, Texas

	Thickness (feet)	Depth (feet)
Well 29		
E. Starcke No. 1, 3½ miles northwest of Lockhart.		
Surface soil	5	5
Yellow clay and gravel	73	78
Shale and boulders	1020	1098
Marl, chalk, clay and limestone	2107	3205
Sand and shale	76	3281
Medium hard sandstone	86	3367
Well 114		
Mrs. A. D. Mebane, 1¼ miles south of Lockhart.		
Surface soil	20	20
Sand and gravel	40	60
Shale and boulders	210	270
Shale	690	960
Marl, chalk, clay and limestone	1020	1980
Well 225		
W. P. Magee Estate, 3-3/4 miles southeast of Lockhart.		
Sand	8	8
Clay	27	35
Shale	55	90
Sand rock	2	92
Shale and boulders	78	170
Boulders	14	184
Sandy shale	11	195
Shale and boulders	80	275
Sand rock	2	277
Sand (water)	8	285
Shale and boulders	33	318
Sand (water)	21	339
Sand	15	354
Boulders	3	357
Shale	55	412
Sand	5	417
Hard sand rock	73	490
Boulders	2	492
Sticky shale	46	538
Well 225--Continued		
Hard sandy shale and boulders	122	660
Shale	12	672
Sandy shale	73	745
Shale and boulders	3	748
Sandy shale	32	780
Sticky shale	15	795
Sandy shale	5	800
Shale and boulders	70	870
Hard sand with gas	5	875
Shale and boulders	20	895
Sand rock	10	905
Shale and shells	163	1068
Hard sand	19	1087
Sticky shale	15	1102
Shale, shell and lime	38	1140
Shale	70	1210
Shale with sandstone	150	1360
Shale and shells	170	1530
Sticky shale	223	1753
Shale and shells	95	1848
Marl, chalk, clay and limestone	681	2529
Well 276		
-- Callihan, 4-3/4 miles southwest of McMahan		
Clay	28	28
Sand and boulders	139	167
Sandy shale	28	195
Lignite	3	198
Sandy shale	22	220
Sticky shale	480	700
Hard shale and lime	960	1660
Marl, chalk, shale, clay and limestone	746	2406
Well 277		
Dr. E. Smith No. 1, 3¼ miles southwest of McMahan		
Sandy clay	20	20
Sand, shale and boulders	305	325

(continued on next page)

Table of drillers' logs, Caldwell County--Continued

	Thickness (feet)	Depth (feet)
Well 277--Continued		
Sand and pyrite	55	380
Shale and boulders	755	1135
Shale and shell	54	1189
Shale and hard sand	34	1223
Shale	302	1525
Shale and shell	40	1565
Hard shale	81	1646
Marl, chalk, shale, clay and limestone	1023	2669
Well 405		
Kurz Ranch, 7¼ miles southeast of McMahan.		
Sandy loam	5	5
Sand and clay	65	70
Sand (water)	10	80
Clay and marl	20	100
Sand (water)	20	120
Sand, clay and marl	307	427
Soft shale	1273	1700
Sandstone	4	1704
Sand, shale	296	2000
Hard shale	100	2100
Soft shale	1400	3500
Marl, broken	12	3512
Marl with some limestone	598	4110
Well 437		
C. C. Franks, 3½ miles south of McMahan.		
Clay	24	24
Shale and boulders	167	191
Sand (water)	24	215
Shale and boulders	140	355
Sand	16	371
Black shale	24	395
Lignite	6	401
Sand and boulders	212	613
Shale	12	625
Sand and boulders	263	888
Sandy shale and boulders	34	922
Shale and boulders	157	1079
Shale and limestone	113	1192
Shale	166	1358
Sandstone	1	1359
Shale	202	1561
Hard shell (show of gas)	4	1565
Shale	354	1919
Shell	2	1921
Shale	316	2237
Hard sticky shale	103	2340
Soft shale	178	2518
Shale	87	2605
Chalk and shale	468	3073
Well 449		
Humble Oil and Refining Co., 3¼ miles northeast of Luling.		
Clay and sand	18	18
Blue clay	34	52
Lignite	3	55
Blue water sand	2	57
Shale and shell rock	83	140
Sand (water)	1	141
Shale and boulders	100	241
Blue water sand	44	285
Shale	15	300
Well 453		
Magnolia Petroleum Co., 1¼ miles southeast of Luling.		
Clay and gravel	5	5
Sandy shale	50	55
Rock	5	60
Clay, gravel, lignite	6	66
Sand	9	75
Hard sandy shale	41	116
Rock	2	118
Sandy shale	18	136
Clean sand and shale	16	152
Sand (water)	33	185
Soapstone	5	190
Rock	1	191

(continued on next page)

Table of drillers' logs, Caldwell County--Continued

	Thickness (feet)	Depth (feet)
Well 453--Continued		
Sand	7	198
Shale	14	212
Hard layers	3	215
Shale	45	260
Hard layers	5	265
Shale	18	283
Rock	2	285
Hard water sand	35	320
Sand (water)	14	334
Rock	2	336
Hard water sand	8	344
Sand (water)	56	400
Shale	10	410
Hard shale	15	425
Shale	9	434
Rock	2	436
Shale	22	458
Sand (water)	17	475
Sand (water) and lignite	7	482
Sand (water)	18	500
Soapstone	2	502
Sand	10	512
Shale	7	519
Well 459		
City of Luling No. 1, in Luling.		
Gravel	20	20
Sand	20	40
Sand rock	1	41
Blue shale	38	79
Rock	2	81
Mud and sand	11	92
Lignite	15	107
Hard shale	33	140
Soft shale	12	152
Fine-grained sand	15	167
Shale	6	173
Sand rock	3	176
Rock	4	180
Sand	26	206
Rock	2	208
Sand	6	214
Rock	2	216
Sand	58	274
Rock	2	276
Sand	4	280
Rock	2	282
Sand	38	320
Well 460		
City of Luling No. 2, in Luling.		
Clay and boulders	48	48
Clay and sand	63	111
Rock	5	116
Sand	5	121
Rock gumbo	4	125
Sand	20	145
Gumbo	20	165
Sand	7	172
Gumbo	4	176
Sand	11	187
Gumbo	4	191
Sand	42	233
Gumbo	3	236
Sand	10	246
Gumbo	5	251
Sand	27	278
Sand and boulders	22	300
Lignite	4	304
Well 469		
Luling Foundation Farm, 1 mile southwest of Luling.		
Sand	3	3
Clay gravel	35	38
Gravel and sand (water)	2	40
Brown shale	20	60
Lignite	3	63
Brown shale	35	98
Hard sand	6	104
Sand (water)	6	110
Hard sand	5	115
Blue shale	19	134
Hard rock	3	137
Blue shale	6	143
Rock	2	145
Blue shale	14	159
Rock	1	160
Blue shale	7	167
Rock	1	168
Brown shale	2	170
Lignite	2	172
Brown shale	8	180
Blue sandy shale	14	194

Table of drillers' logs, Caldwell County--Continued

	Thickness (feet)	Depth (feet)
Well 470		
Magnolia Petroleum Company, west edge of Luling.		
Sandy clay	20	20
Sandy blue shale (show of water)	15	35
Gumbo	15	50
Brown sandy shale	5	55
Yellow clay	5	60
White water sand	7	67
Blue shale	23	90
Brown shale	10	100
Blue sandy shale (some water)	3	103
Brown shale	4	107
Gray shale	26	133
Brown shale	4	137
Blue shale	5	142
Sand (water)	7	149
Rock		149
Well 525		
George Kelley, 6¼ miles northwest of Luling, in Luling oil field.		
Clay and boulders	25	25
Sand and boulders	20	45
Rock	5	50
Sand and boulders	11	61
Shale	59	120
Rock	3	123
Shale	5	128
Rock	5	133
Shale and boulders	55	188
Rock	3	191
Shale and boulders	38	229
Rock	3	232
Shale	50	282
Rock	3	285
Shale	10	295
Rock	3	298
Shale	234	532
Shale and boulders	269	801
Rock	3	804
Shale and boulders	447	1251
Boulders	19	1270
Gumbo	10	1280
Shale and boulders	184	1464
Limey shale	36	1500
Shale	316	1816
Chalk	196	2012
Limestone	103	2115
Clay	47	2162
Limestone, shale and sandy shale	2517	4679
Sand and gravel	36	4715
Cored, looked like fresh water sand		
Red shale, mica calcite	8	4723
Schist and quartz	3131	7854

Partial analyses of water from wells and springs in Caldwell County, Texas

Analyzed by the U. S. Geological Survey, Austin, Texas, under the direction of W. W. Hastings, District Chemist. Results are in parts per million. Well numbers correspond to numbers in table of well records.

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
							Alluvium								
2	E. A. Eben	32	Aug. 9, 1946	-	-	-	-	-	-	294	26	33	-	55	252
4	Mrs. E. Kasch	29	June 13, 1946	-	-	-	-	-	-	265	60	102	-	60	300
5	T. B. Martin	26	Feb. --, 1943	386	14	0.08	90	23	21	325	19	21	-	57	319
7	O. M. Hoffman	25	Feb. 14, 1946	1,400	14	0.06	244	28	177	265	183	426	0.6	99	724
8	T. G. Langham	34	Apr. 9, 1946	-	-	-	-	-	-	244	170	450	-	52	513
9	do.	31	Mar. 28, 1946	-	-	-	-	-	-	294	65	71	-	59	315
10	C. C. Fehlis	22	do.	-	-	-	-	-	-	286	34	64	-	47	300
11	J. T. Ellis	25	do.	-	-	-	-	-	-	356	65	141	-	176	525
12	Harper Selig	29	July 13, 1946	-	-	-	-	-	-	270	16	16	-	30	248
13	Wm. Germer	25	do.	-	-	-	-	-	-	251	130	282	-	45	360
14	R. C. Rose	21	July 12, 1946	-	-	-	-	-	-	246	20	16	-	41	240
15	Schawe Gin Co.	22	Feb. 14, 1946	513	-	-	122	5.1	38	268	40	81	-	40	326
16	M. Cabiness	14	Mar. 29, 1946	-	-	-	-	-	-	248	65	239	-	38	405
17	J. A. Pfeiffer	19	July 12, 1946	-	-	-	-	-	-	226	32	26	-	34	240
18	Alvin Simon	21	do.	-	-	-	-	-	-	150	13	28	-	60	232
19	Mrs. -- Blanks	26	July 13, 1946	-	-	-	-	-	-	253	25	27	-	55	225
20	A. J. Balser	14	July 12, 1946	-	-	-	-	-	-	308	65	32	-	25	255
21	Bruno Schneider	30	do.	-	-	-	-	-	-	234	54	70	-	33	248
22	Edwin Ahlhardt	25	Jan. 24, 1946	-	-	-	-	-	-	326	46	22	-	26	322
23	Mrs. -- Blanks	17	do.	-	-	-	-	-	-	282	26	38	-	39	300
24	Floyd Jolley	26	do.	-	-	-	-	-	-	278	14	17	-	16	308
25	Fred J. Adams	16	do.	-	-	-	-	-	-	253	35	26	-	-	-
26	Coopwood Chapman	12	Mar. 23, 1946	-	-	-	-	-	-	310	34	32	-	30	338
27	A. B. Schaeffer	22	Jan. 24, 1946	-	-	-	-	-	-	273	30	35	-	49	315
28	do.	29	do.	-	-	-	-	-	-	316	45	37	-	26	235
30	A. W. Jolley	13	do.	-	-	-	-	-	-	268	32	33	-	49	330
31	do.	23	Jan. 25, 1946	-	-	-	-	-	-	278	45	27	-	-	-

Partial analyses of water from wells and springs in Caldwell County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
						Alluvium									
32	Mrs.G.J.Merritt	21	Jan. 25, 1946	-	-	-	-	-	-	276	45	32	-	-	-
33	Richard Best	10	do.	-	-	-	-	-	-	277	40	29	-	-	-
34	Willie Barrier	21	July 14, 1943	-	-	-	-	-	-	-	-	370	-	-	-
			Aug. 23, 1943	-	-	-	-	-	-	-	-	390	-	-	-
			Jan. 25, 1946	-	-	-	-	-	-	251	70	191	-	-	-
35	do.	21	July 14, 1943	1,049	-	-	252	9	112	226	108	402	-	55	666
			Jan. 25, 1946	-	-	-	-	-	-	358	60	102	-	-	-
36	E. Conley	23	Aug. 23, 1943	-	-	-	-	-	-	-	-	30	-	-	-
			Jan. 25, 1946	-	-	-	-	-	-	274	28	32	-	48	235
37	A.W.Livengood	28	July 2, 1943	926	-	-	158	12	121	299	127	215	-	32	444
			July 14, 1943	-	-	-	-	-	-	-	-	210	-	-	-
			Aug. 23, 1943	-	-	-	-	-	-	-	-	197	-	-	-
			Jan. 25, 1946	-	-	-	-	-	-	320	70	155	-	-	-
38	Ed Starcke	23	do.	-	-	-	-	-	-	506	260	1,170	-	-	-
39	do.	24	do.	-	-	-	-	-	-	310	60	68	-	25	315
40	H. F. Bartling	22	Jan. 24, 1946	-	-	-	-	-	-	298	45	30	-	-	-
41	Emil Wilms	17	do.	-	-	-	-	-	-	303	90	100	-	-	-
42	M.Cardwell Est.	24	do.	-	-	-	-	-	-	381	90	72	-	-	-
43	Jessie Cardwell	30	do.	-	-	-	-	-	-	340	230	327	-	102	525
44	do.	25	Feb. 4, 1946	-	-	-	-	-	-	310	120	201	-	-	-
45	E.H.Strandtman	16	Jan. 25, 1946	-	-	-	-	-	-	283	40	34	-	-	-
46	do.	19	July 14, 1943	-	-	-	-	-	-	-	-	195	-	-	-
			Aug. 23, 1943	-	-	-	-	-	-	-	-	209	-	-	-
			Jan. 25, 1946	-	-	-	-	-	-	274	60	42	-	16	292
47	Henry Schneider	18	do.	-	-	-	-	-	-	305	90	68	-	-	-
48	do.	15	July 2, 1943	2,560	-	-	299	36	448	273	421	830	-	45	894
			July 14, 1943	-	-	-	-	-	-	-	-	770	-	-	-
			Aug. 23, 1943	-	-	-	-	-	-	-	-	745	-	-	-
			Jan. 25, 1946	-	-	-	-	-	-	318	190	350	-	-	-
49	Wiley Kelly	35	do.	-	-	-	-	-	-	330	40	46	-	-	-
50	Henry Schneider	20	Jan. 24, 1946	-	-	-	-	-	-	292	65	274	-	80	458
51	do.	19	Feb. 4, 1946	-	-	-	-	-	-	315	85	104	-	-	-
52	Lockhart Creamery	28	Jan. 29, 1946	-	-	-	-	-	-	332	105	292	-	-	-

Partial analyses of water from wells and springs in Caldwell County -- Continued
(Results are in parts p r million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
							Alluvium								
53	W. W. Cardwell	18	Jan. 29, 1946	-	-	-	-	-	-	268	95	93	-	165	405
54	do.	21	July 14, 1943	-	-	-	-	-	-	-	-	262	-	-	-
			Aug. 23, 1943	-	-	-	-	-	-	-	-	315	-	-	-
			Jan. 29, 1946	-	-	-	-	-	-	361	60	162	-	-	-
55	A. Howard	29	July 14, 1943	-	-	-	-	-	-	-	-	88	-	-	-
			Aug. 23, 1943	-	-	-	-	-	-	-	-	84	-	-	-
			Jan. 29, 1946	-	-	-	-	-	-	278	34	43	-	61	300
56	Lockhart Creamery	8	do.	-	-	-	-	-	-	300	115	174	-	-	-
57	Newton Wilson	17	do.	-	-	-	-	-	-	314	180	254	-	-	-
58	Tasco Escavada	14	do.	-	-	-	-	-	-	307	90	158	-	-	-
59	City of Lockhart	15	Feb. --, 1943	1,283	8.5	0.15	209	16	195	20	103	592	0.5	62	588
			Jan. 12, 1946	-	-	-	-	-	-	301	130	226	-	35	450
			Feb. 8, 1946	979	15	0.14	166	10	158	308	174	218	-	60	456
	a/		do.	-	-	0.22	-	-	-	174	115	156	-	49	228
60	Clayton Withers	20	Jan. 30, 1946	-	-	-	-	-	-	336	320	422	-	-	-
61	Lou Storey	11	Feb. 4, 1946	-	-	-	-	-	-	382	200	386	-	-	-
62	City of Lockhart	25	Feb. 19, 1942	1,946	-	-	384	21	298	226	187	912	-	33	1,045
			Jan. 12, 1946	-	-	-	-	-	-	288	260	502	-	31	720
			Feb. 8, 1946	1,620	12	0.96	246	15	284	293	321	465	0.6	60	676
63	R.B.Muckelroy	16	Jan. 30, 1946	-	-	-	-	-	-	302	400	568	-	-	-
64	Walter Seeliger	31	Feb. 4, 1946	-	-	-	-	-	-	280	50	46	-	-	-
65	Tobe Smith Est.	28	Jan. 30, 1946	-	-	-	-	-	-	288	140	266	-	-	-
66	Floyd Wilson	31	do.	-	-	-	-	-	-	364	65	112	-	41	338
67	J. M. Wilson	25	do.	-	-	-	-	-	-	339	50	148	-	-	-
68	Mrs.Will Blanks	23	do.	-	-	-	-	-	-	299	35	48	-	-	-
69	Tom Joseph	21	do.	-	-	-	-	-	-	290	55	68	-	41	345
70	Lockhart High School	13	Feb. 4, 1946	-	-	-	-	-	-	275	110	316	-	-	-

a/ After treatment.

Partial analyses of water from wells and springs in Caldwell County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
				T Alluvium											
71	Emil Seeliger	Spring	Feb. 1, 1946	-	-	-	-	-	-	288	280	440	-	29	540
72	Lockhart High School	Spring	Feb. 4, 1946	-	-	-	-	-	-	292	190	348	-	-	-
73	Neeley Etheridge	Spring	do.	-	-	-	-	-	-	293	115	197	-	-	-
74	Walter Seeliger	14	do.	-	-	-	-	-	-	288	120	195	-	-	-
75	Alamo Lumber Co.	17	do.	-	-	-	-	-	-	287	80	161	-	-	-
76	J. V. Myrick	Spring	do.	-	-	-	-	-	-	288	85	129	-	-	-
77	Lockhart Builders' Supply	22	Feb. 1, 1946	-	-	-	-	-	-	244	40	59	-	57	270
78	George Cardwell	31	Jan. 30, 1946	-	-	-	-	-	-	336	45	166	-	-	-
79	Allie Shinn	38	Jan. 29, 1946	-	-	-	-	-	-	333	35	166	-	-	-
80	B.C.Cheatham	31	do.	-	-	-	-	-	-	328	40	156	-	-	-
81	Edgar Vogle	31	Feb. 1, 1946	-	-	-	-	-	-	262	70	492	-	53	510
82	Henry Fielder	31	Jan. 30, 1946	-	-	-	-	-	-	318	36	166	-	68	398
83	E.B.Coopwood	26	Feb. 1, 1946	-	-	-	-	-	-	361	35	206	-	-	-
84	Bob Leyendecker	29	do.	-	-	-	-	-	-	380	45	199	-	-	-
85	W. D. Newsom	26	do.	-	-	-	-	-	-	382	40	152	-	-	-
86	Lockhart Creamery	23	do.	-	-	-	-	-	-	316	40	48	-	-	-
87	City of Lockhart	Spring	Jan. 12, 1946	-	-	-	-	-	-	316	28	60	-	35	352
			Feb. 8, 1946	566	14	0.04	126	6.1	66	322	47	82	0.0	54	340
88	Texas Public Utilities	6	Feb. 1, 1946	-	-	-	-	-	-	318	50	90	-	-	-
89	Bob Blundell	9	do.	-	-	-	-	-	-	312	48	98	-	21	375
100	Pedro Tomayo	15	do.	-	-	-	-	-	-	312	50	85	-	-	-
101	Matilda Larreymore	24	do.	-	-	-	-	-	-	234	90	106	-	216	435
102	Dave Joseph	25	Feb. 13, 1946	-	-	-	-	-	-	216	11	48	-	18	292
103	G.N.Martindale	25	Mar. 28, 1946	-	-	-	-	-	-	264	110	358	-	58	450
104	G.N.Martindale, Jr.	Spring	do.	-	-	-	-	-	-	306	240	248	-	81	405
105	Fred Thomson	Spring	Mar. 29, 1946	-	-	-	-	-	-	300	36	27	-	19	270
106	G. A. Borchert	20	Apr. 19, 1946	-	-	-	-	-	-	309	75	98	-	86	315
107	Bill Lamb	Spring	Jan. 30, 1946	-	-	-	-	-	-	261	36	36	-	49	308

Partial analyses of water from wells and springs in Caldwell County -- Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
							Alluvium								
108	State of Texas	28	Apr. 19, 1946	-	-	-	-	-	-	304	40	72	-	62	300
109	do.	16	do.	-	-	-	-	-	-	396	90	90	-	31	300
110	R. F. Page	28	Feb. 1, 1946	-	-	-	-	-	-	332	55	103	-	29	308
111	A. D. Mebane	23	do.	-	-	-	-	-	-	320	40	60	-	37	315
112	Fred J. Adams	29	Mar. 20, 1946	-	-	-	-	-	-	357	20	157	-	150	502
223	L. M. Harrison	76	do.	-	-	-	-	-	-	346	100	770	-	260	765
229	Elgin Bowers	59	May 3, 1946	-	-	-	-	-	-	348	34	222	-	110	360
427	Will Pope	19	June 14, 1946	-	-	-	-	-	-	230	16	6	-	3.2	270
515	Fentress-Prairie Lea Utilities Co.	27	Feb. --, 1943	298	15	0.05	67	19	15	257	26	20	0.6	10	245
520	Dr. Clay Nichols	24	Apr. 8, 1946	-	-	-	-	-	-	296	55	30	-	33	270
521	Maurice Waldrip	30	do.	-	-	-	-	-	-	391	24	28	-	0.5	248
523	R. C. Hill	35	May 9, 1946	-	-	-	-	-	-	420	210	443	-	168	765
524	W. R. Krunk	35	Aug. 9, 1946	-	-	-	-	-	-	268	65	126	-	108	258
							Sands in the Wilcox group								
201	Alton Gomilion	23	June 11, 1946	-	-	-	-	-	-	328	16	94	-	2.2	210
202	A. L. Pearson	38	July 24, 1946	-	-	-	-	-	-	397	130	1,490	-	-	-
203	J.E.Coopwood	44	June 11, 1946	-	-	-	-	-	-	84	13	102	-	41	255
204	Lytton Springs Gin Co.	49	Feb. 27, 1946	-	-	-	-	-	-	66	28	41	-	62	165
205	Lytton Springs Park Association	18	do.	298	35	1.7	46	6.7	40.6	153	20	51	0.2	9.8	142
206	B. Forister	72	do.	-	-	-	-	-	-	336	85	560	-	1.5	668
207	Pat S. King	67	June 11, 1946	-	-	-	-	-	-	298	24	54	-	0	225
209	do.	20	do.	-	-	-	-	-	-	340	1,150	1,240	-	-	-
210	C. C. Chapman	49	Apr. 12, 1946	-	-	-	-	-	-	412	80	94	-	0.5	315
211	Jim Cardwell	26	June 11, 1946	-	-	-	-	-	-	338	430	900	-	-	-

Partial analyses of water from wells and springs in Caldwell County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
						Sands in the Wilcox group									
212	J. C. Taylor	35	June 11, 1946	–	–	–	–	–	–	340	755	148	–	–	–
213	R. M. Alexander	130	Apr. 12, 1946	–	–	–	–	–	–	380	180	221	–	34	412
214	Perry Gillis	165	Aug. 7, 1946	–	–	–	–	–	–	412	60	192	–	2.0	255
215	W. M. Riddle	128	Apr. 12, 1946	–	–	–	–	–	–	508	90	408	–	2.5	465
216	Clinch Walker	90	Aug. 7, 1946	–	–	–	–	–	–	166	260	113	–	0.0	402
217	—	27	do.	–	–	–	–	–	–	317	46	38	–	0.0	300
218	J. S. Hellums	150	do.	–	–	–	–	–	–	339	60	44	–	0.0	228
219	Leland Riddle	97	do.	–	–	–	–	–	–	332	45	101	–	–	267
220	M. H. Riddle	70	Apr. 12, 1946	–	–	–	–	–	–	100	75	374	–	5.5	420
221	W. H. Riddle	165	Aug. 7, 1946	–	–	–	–	–	–	272	70	97	–	0.0	570
222	A. R. Osteen	110	Mar. 14, 1946	647	36	0.88	132	18	53	376	72	85	0.0	0.8	404
223	A. J. Lackey	114	Aug. 7, 1946	–	–	–	–	–	–	356	28	177	–	0.0	397
224	A. J. Elliott	38	do.	–	–	–	–	–	–	196	16	124	–	3.0	228
225	W. P. McGee Est.	2,539	Aug. 23, 1943	588	37	0.06	87	20	104	369	26	139	0	0.2	299
			Jan. 30, 1946	–	–	–	–	–	–	374	26	126	–	–	–
226	J. M. Purcell	2,500	do.	970	–	–	66	19	279	356	50	358	–	1.2	242
227	do.	50	do.	–	–	–	–	–	–	309	16	36	–	32	315
230	Troy Williams	76	Apr. 16, 1946	–	–	–	–	–	–	292	12	80	–	118	442
231	-- Deaton	52	do.	–	–	–	–	–	–	292	15	20	–	20	270
232	Pete Rodenberg	40	June 27, 1946	–	–	–	–	–	–	244	760	405	–	3.5	960
234	W. P. McGee Est.	100	June 17, 1946	–	–	–	–	–	–	57	140	179	–	34	315
235	do.	39	June 27, 1946	–	–	–	–	–	–	294	90	209	–	1.0	330
236	Addis De Viney	153	June 17, 1946	–	–	–	–	–	–	322	120	158	–	1.8	210
237	J. B. Moore	30	June 27, 1946	–	–	–	–	–	–	324	85	42	–	0.5	375
238	Wilford Chew	53	Aug. 3, 1946	–	–	–	–	–	–	118	13	19	–	12	111
240	R. M. Medlen	206	Aug. 2, 1946	–	–	–	–	–	–	370	26	35	–	–	132
241	—	26	Apr. 17, 1946	–	–	–	–	–	–	44	25	6	–	7.8	23
242	W. E. Dinges	174	Aug. 5, 1946	–	–	–	–	–	–	622	200	141	–	0.0	525
243	Ilene Lovell	185	do.	–	–	–	–	–	–	416	220	372	–	0.0	1,140
244	J. R. Pearson	200	do.	–	–	–	–	–	–	517	70	308	–	–	802

Partial analyses of water from wells and springs in Caldwell County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
							Sands in the Wilcox group								
245	Clyde Alexander	250	Aug. 3, 1946	-	-	-	-	-	-	600	115	605	-	-	-
246	Loy Taylor	327	Apr. 17, 1946	-	-	-	-	-	-	264	42	164	-	-	210
			Aug. 3, 1946	-	-	-	-	-	-	266	25	152	-	-	210
247	J. A. Baker	200	do.	-	-	-	-	-	-	352	20	76	-	-	237
248	—	-	do.	-	-	-	-	-	-	360	75	93	-	-	273
249	D. T. Lackey	216	Apr. 17, 1946	-	-	-	-	-	-	592	480	180	-	-	675
250	Addis De Viney	140	Aug. 2, 1946	-	-	-	-	-	-	446	45	181	-	22	420
251	Morris Robuck	100	do.	-	-	-	-	-	-	302	40	90	-	0.5	237
252	J. L. Reed	87	June 19, 1946	-	-	-	-	-	-	164	50	206	-	0.0	315
253	M.J.Huddlestone	104	Aug. 1, 1946	-	-	-	-	-	-	74	45	93	-	0.0	207
255	Clyde Alexander	126	July 16, 1946	-	-	-	-	-	-	358	60	230	-	0.0	315
257	J. J. Brown	66	June 20, 1946	-	-	-	-	-	-	360	250	550	-	6.5	900
259	do.	335	do.	-	-	-	-	-	-	296	150	375	-	-	555
260	A. R. Jeffrey	30	do.	-	-	-	-	-	-	385	190	224	-	5.5	562
261	G. C. Jowers	147	June 24, 1946	-	-	-	-	-	-	406	120	98	-	4.5	270
262	J. R. Gray	215	Mar. 1, 1946	-	-	-	-	-	-	342	50	149	-	-	405
263	James Chamberlain	300	Mar. 14, 1946	946	22	0.19	96	59	150	430	96	229	0.6	22	482
264	Exa Alexander	260	June 24, 1946	-	-	-	-	-	-	394	30	298	-	-	608
265	Jim Watts	151	Aug. 5, 1946	-	-	-	-	-	-	337	55	186	-	0.5	324
266	M. T. Baker	200	Aug. 3, 1946	-	-	-	-	-	-	386	50	202	-	-	303
267	T. B. Taylor	240	Aug. 5, 1946	-	-	-	-	-	-	548	65	418	-	-	690
268	Joe Fischer	335	do.	-	-	-	-	-	-	346	380	590	-	-	-
269	G. C. McKean	-	do.	-	-	-	-	-	-	240	270	695	-	-	-
270	F. M. Hutcheson	404	Aug. 3, 1946	-	-	-	-	-	-	662	95	332	-	-	495
271	Louis Voight	350	Aug. 5, 1946	-	-	-	-	-	-	364	130	205	-	-	292
273	J. F. Jowers	104	June 24, 1946	-	-	-	-	-	-	364	565	300	-	1.5	728
415	Tom Blackwell	100	May 7, 1946	-	-	-	-	-	-	1,090	1	1,210	-	0	-
416	W. J. and C. B. McCleary	19	do.	-	-	-	-	-	-	145	280	246	-	3.0	308
417	W. R. Griffin	81	do.	-	-	-	-	-	-	978	55	215	-	0	165

Partial analyses of water from wells and springs in Caldwell County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
							Sands in the Wilcox group								
418	Clifford Davis	19	July 3, 1946	-	-	-	-	-	-	75	32	78	-	100	232
419	Mrs.J.M.Brewer	24	July 16, 1946	-	-	-	-	-	-	281	60	39	-	7.6	180
420	--	Spring	Feb. 2, 1946	1,910	-	-	4.6	1.9	736	1,082	2	558	-	2.0	20
421	A. G. Probst	14	July 16, 1946	-	-	-	-	-	-	62	190	83	-	76	210
422	W. B. Hand	46	do.	-	-	-	-	-	-	410	17	146	-	9.4	360
424	W. H. Watts	31	May 17, 1946	-	-	-	-	-	-	170	848	658	-	-	-
425	Floyd Gray Est.	49	June 14, 1946	-	-	-	-	-	-	394	80	224	-	0	382
428	Claude Dickerson	70	do.	-	-	-	-	-	-	234	8	16	-	57	255
429	F. W. Weigand	125	Feb. 15, 1946	-	-	-	-	-	-	265	4	16	-	0.5	225
430	Mrs.Jeff Connolly	34	May 17, 1946	-	-	-	-	-	-	122	40	57	-	9.6	72
431	A. F. White	171	Feb. 15, 1946	-	-	-	-	-	-	101	7	181	-	0.8	278
432	J. L. Reed	27	June 19, 1946	-	-	-	-	-	-	68	75	40	-	7.5	120
434	Rex Gideon	237	June 20, 1946	-	-	-	-	-	-	434	150	247	-	-	135
435	Odus Owen	71	June 19, 1946	-	-	-	-	-	-	50	764	338	-	1.5	990
436	Mrs. Mamie McGee	352	June 20, 1946	-	-	-	-	-	-	390	30	106	-	-	330
439	H. Taylor	290	Feb. 15, 1946	-	-	-	-	-	-	82	70	104	-	-	240
440	Fritz Anton	50	May 17, 1946	-	-	-	-	-	-	312	56	286	-	0.5	390
441	Elgin Bowers	47	Apr. 16, 1946	-	-	-	-	-	-	330	16	22	-	45	330
442	W. M. Bergfeld	88	May 3, 1946	-	-	-	-	-	-	549	65	755	-	125	915
443	S. M. Blackwell	113	do.	-	-	-	-	-	-	307	17	25	-	0.8	202
444	Frank Teas	150	do.	-	-	-	-	-	-	252	14	30	-	85	232
445	Alton Rector	68	do.	-	-	-	-	-	-	258	22	35	-	126	322
446	do.	86	do.	-	-	-	-	-	-	265	16	33	-	130	322
447	--	35	Feb. 2, 1946	1,990	-	-	364	67	172	432	613	400	-	1.5	1,180
448	Gus T. Brown	44	May 7, 1946	-	-	-	-	-	-	302	360	184	-	8.7	390
449	Humble Oil and Refining Co.	300	do.	-	-	-	-	-	-	292	120	153	-	3.5	195
450	Gulf Oil Corp.	209	May 17, 1946	-	-	-	-	-	-	226	120	196	-	2.0	248
451	N. Casey	190	May 9, 1946	-	-	-	-	-	-	118	13	70	-	0.0	120

Partial analyses of water from wells and springs in Caldwell County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
				Sands in the Wilcox group											
452	Magnolia Pipeline Co.	150	July 26, 1946	-	-	-	-	-	-	1,114	2	493	-	0.0	48
453	Magnolia Petroleum Co.	519	Feb. 7, 1946	1,390	15	0.12	2.2	1.3	547	682	212	222	0.4	1.2	11
454	Walker Bros.	31	July 26, 1946	-	-	-	-	-	-	474	80	54	-	91	294
455	do.	-	do.	-	-	-	-	-	-	351	6	17	-	-	192
456	do.	41	do.	-	-	-	-	-	-	226	9	45	-	142	291
457	Jessie Day	40	do.	-	-	-	-	-	-	272	9	16	-	14	234
459	City of Luling	320	Feb. --, 1943	1,098	6.0	0.02	2.7	1.7	424	534	178	163	0.2	0.0	14
460	do.	304	Feb. —, 1943	1,097	8.0	0.09	2.0	1.4	421	457	227	170	0.0	0.0	11
461	E. L. Schumann	300	Feb. 7, 1946	583	26	0.62	122	6.1	38	427	63	68	0.0	0.5	330
462	Southwestern Ice and Cold Storage	150	do.	501	21	2.2	90	23	72	419	23	72	0.0	0.2	319
463	Mrs.Geo.Huff	20	July 26, 1946	-	-	-	-	-	-	335	30	82	-	0.50	255
464	Geo. F. Huff	50	do.	-	-	-	-	-	-	278	35	32	-	90	309
465	I. F. Petty	265	Feb. 7, 1946	-	-	-	-	-	-	374	23	44	-	-	75
467	T. I. Johnson	282	Aug. 6, 1946	-	-	-	-	-	-	803	3	1,410	-	-	-
468	I. L. Horne	165	Feb. 7, 1946	-	-	-	-	-	-	284	115	232	-	9.9	285
469	Luling Foundation Farm	194	Feb. 12, 1946	468	-	-	116	8.8	42	396	7	60	-	0	326
470	Magnolia Petroleum Co.	149	Apr. 22, 1946	-	-	-	-	-	-	258	55	158	-	0.8	144
471	T.L.McWilliams	126	Feb. 12, 1946	-	-	-	-	-	-	366	3	84	-	0.0	285
472	H. O. Meaddox	150	May 9, 1946	-	-	-	-	-	-	264	65	222	-	0.0	342
501	Pierce Ranch	36	June 25, 1946	-	-	-	-	-	-	360	8.0	18	-	9.6	330
502	—	27	do.	-	-	-	-	-	-	538	140	164	-	24	525
503	W. W. McNeal	120	Aug. 6, 1946	-	-	-	-	-	-	407	50	83	-	0.0	382
504	W. M. Sanders	123	Aug. 9, 1946	-	-	-	-	-	-	242	1,110	468	-	0.0	1,080
505	J. F. Boggus	95	do.	-	-	-	-	-	-	88	260	575	-	0.0	705
506	F. L. Fields	182	Mar. 20, 1946	-	-	-	-	-	-	226	500	231	-	0.5	780
507	A. B. Ethridge	14	do.	-	-	-	-	-	-	106	100	49	-	110	270
508	Jim Guckian	168	do.	-	-	-	-	-	-	344	140	156	-	0.5	300

Partial analyses of water from wells and springs in Caldwell County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
							Sands in the Wilcox group								
509	E. Coopwood	94	Mar. 20, 1946	-	-	-	-	-	-	300	650	430	-	30	930
510	Mrs.Charley Clark	65	Apr. 3, 1946	-	-	-	-	-	-	38	850	190	-	-	900
511	Warner Polk	42	do.	-	-	-	-	-	-	542	55	104	-	0	225
512	Claude Giden	56	do.	-	-	-	-	-	-	408	44	42	-	1.0	240
513	W.E.Langley	69	do.	-	-	-	-	-	-	212	90	32	-	1.0	262
514	N. A. Langley	99	do.	-	-	-	-	-	-	308	260	845	-	1.5	1,220
516	W. E. Langley	18	do.	-	-	-	-	-	-	309	1,460	467	-	-	-
517	do.	30	do.	-	-	-	-	-	-	638	340	308	-	231	405
518	John M. Roberts	29	do.	-	-	-	-	-	-	478	300	480	-	540	870
526	Gus Hemphill	94	Apr. 3, 1947	676	-	-	136	29	59	324	60	184	-	0.0	458
527	Charlie Alexander	60	do.	258	-	-	15	5.9	52	86	67	20	-	8.3	62
528	T. I. Branyon	60	do.	3,120	-	-	590	156	129	76	2,130	82	-	0.2	2,110
529	do.	45?	do.	350	-	-	30	8.0	72	104	50	78	-	21	108
531	Sylvester Johnson	94	Apr. 4, 1947	614	-	-	118	23	43	236	120	116	-	2.0	389
532	Mrs.Emma Fleming	52	do.	266	-	-	17	3.6	49	130	15	26	-	6.2	57
533	Allie McConnell	130	do.	396	-	-	23	5.2	135	390	11	30	-	0.0	79
							Carrizo sand								
233	Charley Carter	17	Aug. 1, 1946	-	-	-	-	-	-	236	70	370	-	8.0	577
274	E. I. Reid	14	Apr. 18, 1946	-	-	--	-	-	-	16	200	154	-	40	300
275	Tilman Estate	67	do.	-	-	-	-	-	-	-	320	246	-	1.0	420
278	E. J. Reid	70	Mar. 1, 1946	-	-	-	-	-	-	87	46	134	-	8.0	158
401	W. A. Cox	77	do.	-	-	-	-	-	-	-	300	738	-	1.0	645
403	J. Sherry Estate	171	Apr. 26, 1946	-	-	-	-	-	-	-	1,100	700	-	-	-
408	J.J.Holloway	250	May 17, 1946	-	-	-	-	-	-	-	240	114	-	0	285
409	W.W.Wilkinson	158	do.	-	-	-	-	-	-	109	360	165	-	0	465
410	Ray Russell	37	do.	-	-	-	-	-	-	-	1,050	317	-	-	-
412	E. V. Killian	21	do.	-	-	-	-	-	-	-	860	508	-	0	-
413	G.T.Westbrook	80	May 7, 1946	-	-	-	-	-	-	-	85	69	-	0	52
414	Ben Huff	91	May 3, 1946	-	--	-	-	-	-	29	14	57	-	0	30
534	Mrs.J.E.Ledbetter	117	Apr. 4, 1947	655	-	-	32	22	118	8.0	185	154	-	15	170
535	Abner Moore	70	do.	324	-	-	23	10	70	20	55	116	-	16	98

Partial analyses of water from wells and springs in Caldwell County — Continued
(Results are in parts per million)

Well	Owner	Depth of well (ft.)	Date of collection	Total dissolved solids	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na+K) (calc.)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Total hardness as $CaCO_3$ (calc.)
			Queen City sand member of the Mount Selman formation												
402	W. L. Council	56	Apr. 18, 1946	-	-	-	-	-	-	72	90	95	-	76	96
406	Mrs.G.R.Barrer	97	May 2, 1946	-	-	-	-	-	-	65	45	256	-	3.5	292
407	R. L. McCall	16	Apr. 26, 1946	-	-	-	-	-	-	238	35	102	-	110	240
			Partial analysis of surface (tank) water at Mendoza, Caldwell County, Texas												
	Raney-Stromberg Gin Co.		Mar. --, 1946	-	-	-	-	-	-	93	85	8	-	1.5	195