TEXAS WATER DEVELOPMENT BOARD

Report 298

GROUND-WATER RESOURCES OF THE ANTLERS AND TRAVIS PEAK FORMATIONS IN THE OUTCROP AREA OF NORTH-CENTRAL TEXAS

By

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ABSTRACT

The Lower Cretaceous Antlers and Travis Peak Formations, along with more isolated Paleozoic rock units, crop out over a 3,900 square mile area of north-central Texas that includes all or parts of Brown, Callahan, Comanche, Eastland, Erath, and Hamilton Counties. Composed of carbonate and terriginous clastics, the formations supply practically all of the ground water used for domestic, industrial, and agricultural purposes in the outcrop area.

Aquifers in the Cretaceous strata are best developed in lower sand intervals of the Antlers Formation and laterally equivalent units making up the Hensell and Hosston Members of the Travis Peak Formation. More restricted Paleozoic aquifers generally occur in channel sandstone deposits of the Pennsylvanian Strawn Group.

Ground-water production from Lower Cretaceous and late Paleozoic aquifers in north-central Texas has grown steadily in recent years, with pumpage between 1967 and 1972 increasing from 16,000 to 28,000 acre-feet. Still, there are indications that even more ground water can be withdrawn from the aquifers, should the need arise.

Slight fluctuations in water levels throughout the outcrop area generally reflect variations in annual precipitation and the quantity of irrigation water pumped during the summer months. Over a ten-year period (1965-1975), no significant rise or decline in winter water levels was observed in the study area, even though the quantity of ground water pumped during summer months increased appreciably. At the end of extremely dry summers when wells were pumped continuously, many areas covered in the report experienced reduced yields and, in some instances, wells even went dry. Still, water levels rose during the non-pumping seasons back to previous static highs.

Two parts of the study area considered especially favorable for additional ground-water development are in Callahan County, where the Antlers Formation is beginning to be investigated as an irrigation water source, and in Erath County, where wells are drilled through the Paluxy and Glen Rose Formations to be completed in the Travis Peak Formation. Yields of over 500 gallons per minute have been measured on wells in Erath County. With only a few other isolated exceptions, all remaining outcrop areas in north-central Texas are already extensively developed.

Water quality in the outcrop area is generally acceptable for most purposes except industrial applications. High iron and silica contents along with the high calcium and carbonate levels prevent the water from being used in most industries. For domestic use, the water is very hard and contains border-line amounts of iron but is still acceptable. The ground water does have a medium to high salinity hazard to crops, but a high annual rainfall negates this problem to some degree, and in other respects the water is suitable for irrigation.

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INTRODUCTION

Location and Setting

The Lower Cretaceous Antlers and Travis Peak Formations crop out over a 3,900 square mile area of north-central Texas, including all or parts of Brown, Callahan, Comanche, Eastland, Erath, and Hamilton Counties. Located in the West Cross Timbers physiographic province, the outcrop area is covered with native vegetation that includes pecan, oak, mesquite, and cedar trees when it's not cleared for peanut cultivation and other farm crops. Rolling hills, sandy soils and winding river valleys characterize the region, with drainage being to the southeast into the Brazos and Colorado River basins.

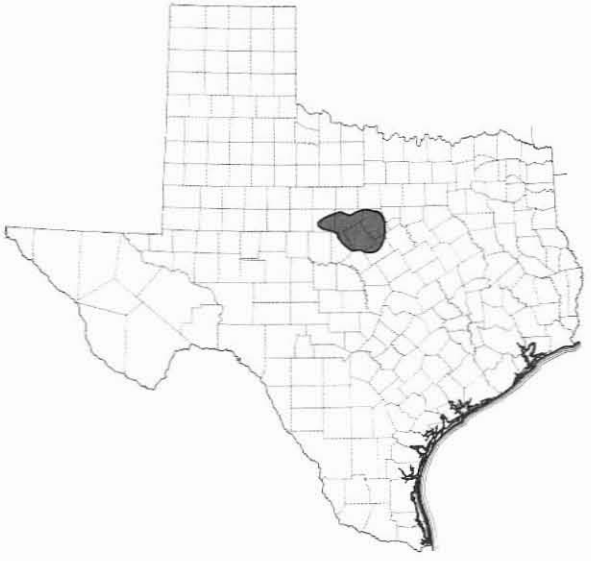

Figure 1.—Location of the Study Area

Purpose and Scope of the Investigation

The primary purpose of this study is to describe the hydrologic conditions of the Antlers and Travis Peak Formations in their outcrop area and to establish programs for the continuing collection of pertinent hydrologic data. The primary objectives were to determine the occurrence, availability, dependability, quality, and quantity of ground-water resources. Particular attention was given to the sources of water suitable for irrigation and public supply and to the areas of potential or present ground-water problems. The results of this study are presented as a guide for proper development and utilization of the available ground-water supplies.

More specifically, the scope of the study involves describing the following characteristics and conditions of the aquifer: areal extent, chemical quality of water, amount of pumpage, effects of pumpage on water levels and water quality, amount and extent of ground-water contamination, hydraulic characteristics, amount of water available, over and under-developed areas, and the proportion of rainfall that becomes runoff in the Antlers and Travis Peak outcrop areas.

A secondary purpose of this study is to determine and describe the occurrence, availability, and chemical quality of ground water occurring in the Paleozoic rocks. This covers only the areas where the Paleozoic rocks are hydrologically connected with the Antlers and Travis Peak Formations.

The report locates all known water wells in the study area (Figures 34 through 39), providing records of wells (Table 16) and a listing of electric logs of oil, gas, and stratigraphic tests made in the region (Table 17). Data from observation wells monitored for water-level information (Table 18) and analyses of water-quality samples collected for the study (Table 19) are also presented, as are ground-water pumpage figures (Table 7) and related pump-test data (Table 4).

Previous Investigations

The outcrop area of the Antlers and Travis Peak Formations has been previously discussed in numerous publications related to geology and ground-water resources. Some of the investigations leading to these publications were conducted by the U. S. Geological Survey, Texas Water Development Board, Bureau of Economic Geology of the University of Texas at Austin, private concerns, educational institutions, and individuals fulfilling partial requirements for advanced degrees.

During the late 1930's, the Works Progress Administration, sponsored by the State Board of Water Engineers, conducted a program for inventory of water wells which included a record of wells, drillers' logs, water-level measurements, chemical analyses, and a location map. Counties in which the well inventory was completed during this period in the report area are Brown, Callahan, and Eastland Counties.

Previous investigations conducted by the Texas Water Development Board include Report 46, "Occurrence and Quality of Ground Water in Brown County, Texas," and Report 195, "Ground-Water Resources of Part of Central Texas with Emphasis on the Antlers and Travis Peak Formations." It was because of Report 195 and its discovery of the tremendous development of ground water for irrigation on the outcrop area that this study was begun.

Economic Development

The primary basis for conducting this study was the rapid increase in ground-water usage for irrigation of peanuts and other crops in the Antlers and Travis Peak Formations outcrop area. In 1954, an estimated 663 acre-feet of ground water was pumped from approximately 60 irrigation wells completed in the Antlers and Travis Peak Formations. By 1967, pumpage in the same area had increased to 16,000 acre-feet from about 1,590 irrigation wells; and in 1972, pumpage again increased, to over 28,000 acre-feet from over 3,700 irrigation wells. These statistics clearly indicate not only why the study was undertaken, but also the tremendous increase in economic development through agriculture in the area.

Climate

The weather in the study area is characterized by long hot summers and short mild winters. The average daily minimum temperature in January is approximately 32°F while the average daily maximum temperature in July is approximately 96°F. The annual mean free air temperature for the period 1931 to 1960 was 65°F (Carr, 1967).

The mean annual precipitation ranges from 25 inches in the west to 30 inches in the eastern part of the study area. These figures are based on U.S. Weather Bureau records up to 1971, illustrated in Figure 2.

The average annual gross lake evaporation for the period 1940 to 1965 ranged from 80 inches in the northwest to 73 inches in the southeast (Kane, 1967).

Well-Numbering System

The numbers assigned to the water wells, oil wells, and test holes in this report conform to the statewide system adopted by the Texas Water Development Board (Figure 3). This system facilitates the location of wells and prevents duplication of well numbers in present and future studies. Each well is assigned a seven-digit number which is derived by using the following system.

The State is divided into quadrangles of one-degree of latitude and longitude. There are 89 such quadrangles numbered 01 through 89. Each one-degree quadrangle is further subdivided into 64 7-1/2 minute quadrangles numbered 01 through 64. Finally, each 7-1/2 minute quadrangle is then subdivided into nine 2-1/2 minute quadrangles, numbered 1 through 9. Within these 2-1/2 minute quadrangles, each well is assigned a two-digit number beginning with 01.

The first two digits of each well number identify the one-degree quadrangle; the third and fourth digits indicate the 7-1/2 minute quadrangle; the fifth digit identifies the 2-1/2 minute quadrangle; and the last two digits identify the well within the 2-1/2 minute quadrangle.

In addition to the seven-digit well number, a two-letter prefix is used to identify the county. The

prefixes for the six counties covered by this report are:

Prefix	County
BR	Brown
BX	Callahan
DY	Comanche
JD	Eastland
JP	Erath
LA	Hamilton

Acknowledgments

The staff of the Texas Water Development Board are indebted to the property owners who graciously supplied information on their wells and allowed access to their property for the purpose of gathering hydrologic data. The staff also gratefully acknowledge the cooperation of all the water well drillers, city officials, and water superintendents in furnishing assistance and information on their water supplies.

Special acknowledgment is extended to Ardean Kimmell, C. C. Craig, Doy Reynolds, Gene

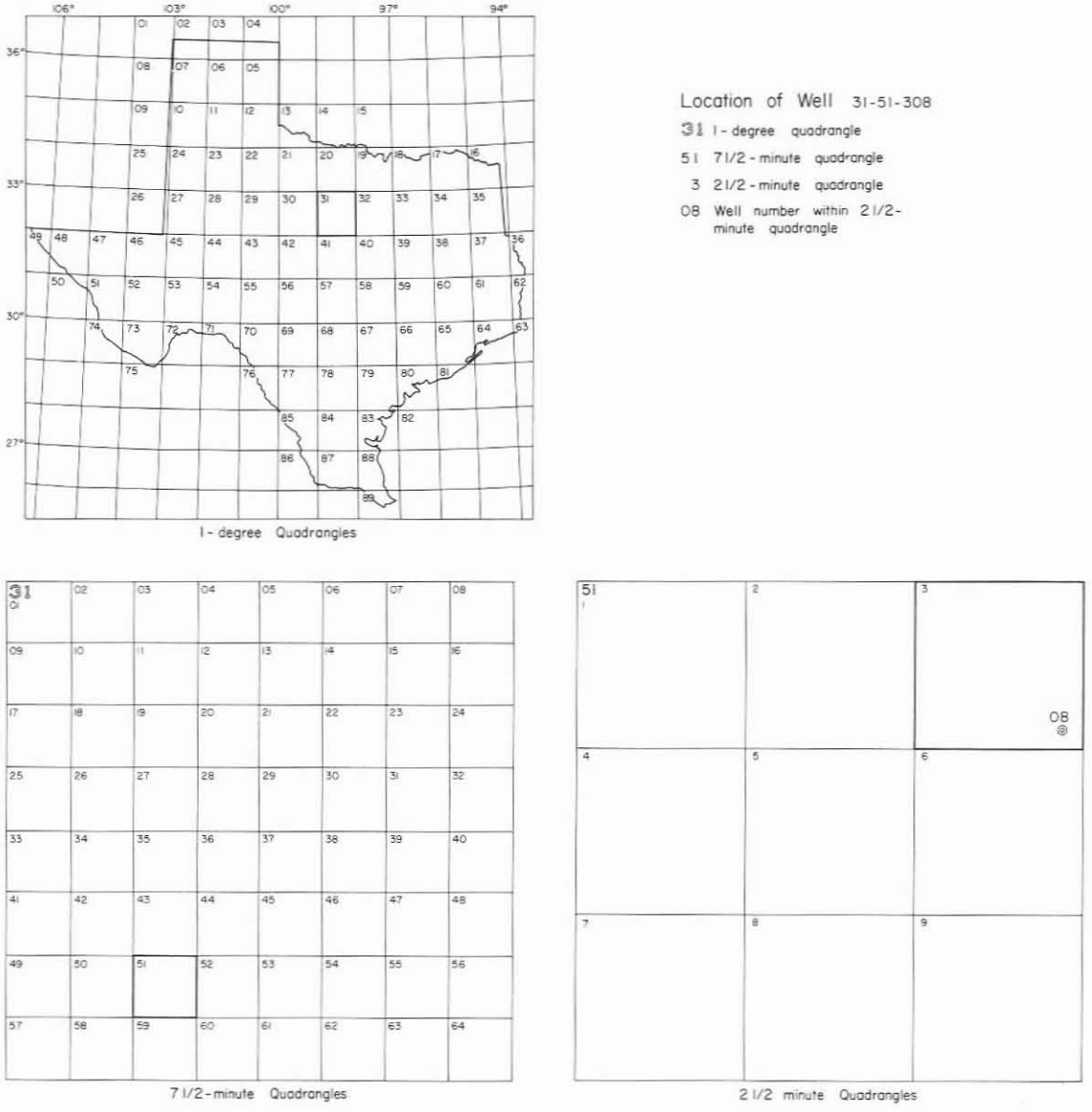

Figure 3.—Well-Numbering System

Gilbreath, James Ryon, and W. L. Medley for permitting us to drill test holes near their irrigation wells for the purpose of conducting aquifer tests. Also thanks are given to Mrs. Decker, Jerry Solomon, Jerry Grisham, and Bud Locke for their permission to build weirs for runoff studies and to emplace rain gauges on their properties for obtaining precipitation data. Special thanks also go to the electric co-ops in the area that allowed us to gather information on irrigation accounts, which facilitated the location of all the irrigation wells and determination of the amount of ground water produced for irrigation each year.

Data contained in this report were assembled by the author and by Henry Alvarez, Gene Davis, the late Robert Perkins, and Richard Preston. Tom Sieh conducted the well inventory in Callahan County that has been incorporated into this study. The report was prepared under the general direction of C. R. Baskin, Director of the Department's Data and Engineering Services Division, and Tommy R. Knowles, Chief of the Data Collection and Evaluation Section.

Metric Conversions

For readers interested in using the metric system, the English units used in this report may be converted to metric units by the following conversion factors.

From	Multiply by	To obtain
acres	0.4047	square hectometers (hm^2)
	.004047	square kilometers (km^2)
acre-feet	1,233.0	cubic meters (m^3)
	.001233	cubic hectometers (hm^3)
feet (ft)	.3048	meters (m)
feet per mile (ft/mi)	.189	meters per kilometer (m/km)
gallons (gal)	3.785	liters (l)
gallons per minute (gal/min)	.06309	liters per second (l/s)
gallons per minute per foot [(gal/min)/ft]	.207	liters per second per meter [(l/s)/m]
gallons per day per foot [(gal/d)/ft)]	12.418	liters per day per meter [(l/d)/m]
inches (in.)	25.4	millimeters (mm)
million gallons per day (million gal/d)	3.785	million liters per day (million l/d)
million gallons per square mile (million gal/mi^2)	.001461	million cubic meters per square kilometer (million m^3/km^2)
square miles (mi^2)	2.590	square kilometers (km^2)

GEOLOGY AS RELATED TO THE OCCURRENCE OF GROUND WATER

Geologic History

Paleozoic

Shallow seas covered much of the north-central Texas region in the early and middle Paleozoic Era, sometimes shoaling over the Llano Uplift region immediately south of the study area. Sediments deposited or precipitated in the marine environment were mainly constructional shallow-marine shelf carbonates with smaller amounts of clean sandstone and shale.

In the late Paleozoic Era, the north-central Texas region was raised above sea level as North and South America collided and the Ouachita Overthrust Belt became emergent to the east. Subaerial erosion and local faulting accompanied the uplift, with sediment dispersal patterns branching westward into the marine Permian Basin of West Texas. Marine waters then withdrew from the state entirely as regional uplift continued through the end of Paleozoic time.

Mesozoic

Meandering streams and rivers continued to traverse across the north-central Texas region in the early Mesozoic Era, carrying sediment loads first to enclosed lake basins in West Texas, then later to the east and southeast towards opening rift basins ringing a nascent Gulf of Mexico. By the Cretaceous Period, continued subsidence and rifting around the Gulf margin led to transgressive flooding of marine seas over north-central Texas again, depositing basal sands (including the Antlers and Travis Peak Formations) over eroded Paleozoic terrane.

Although interrupted by several minor regressive periods, marine seas continued to transgress over Texas, eventually covering the entire mid-continent region of North America. Then, in the Late Cretaceous Period, epirogenic uplift prompted wide spread oceanic withdrawals, leaving the north-central Texas region high and dry again.

Cenozoic

North-central Texas has been subaerially exposed and subject to stream erosion since the Mesozoic Era. As a consequence, many mid-Cretaceous rocks that once covered the region have been removed, exposing Lower Cretaceous sands in some places and leading to the accumulation of Quaternary alluvium in others. The exposure of Lower Cretaceous sands has enhanced recharge potential and contributed to the development of major aquifer zones in the Cretaceous and underlying Paleozoic sections of north-central Texas.

Stratigraphy

Stratigraphic units supplying fresh to slightly saline water to wells in the outcrop area range from the Pennsylvanian-age Strawn Group (oldest) to the Lower Cretaceous Antlers and Travis Peak (Twin Mountains) Formations (Table 1).The study areas's major aquifer is developed in the Antlers and Travis Peak Formations, with a minor, local aquifer also defined in the Strawn Group.

Paleozoic rocks in the study area include Pennsylvanian and Permian sandstones, limestones, and shales with numerous channel-fill deposits of sand, gravel, and clay. In order of decreasing age toward the northwest, the Strawn, Canyon, and Cisco Groups of Pennsylvanian age crop out, and Wichita Group of Permian age crops out in the western portion of the study area. The strike and dip of the groups are very similar; they strike generally north-northeast and dip west-northwest at a rate of approximately 50 feet per mile. The lithology and thickness of the formations vary laterally along the strike and hence, the quality and quantity of water obtained along the outcrop vary accordingly. Quality and quantity of ground water in the Paleozoic rocks are generally poor except in several areas where the Strawn Group provides moderate quantities of fresh to slightly saline water.

The Lower Cretaceous Trinity Group is the principal water-bearing group in most of central Texas. It contains the Travis Peak (Twin Mountains*) Formation, the Glen Rose Formation, and the Paluxy Formation. The Paluxy Formation consists of sand and shale and is capable of producing small quantities of fresh to slightly saline water to domestic and livestock wells along the edge of the outcrop. The Glen Rose Formation is predominantly a limestone that yields only small amounts of water, some of which is poor in quality. Neither the Paluxy Formation nor the Glen Rose Formation are discussed further in this report as previous studies have covered them amply and no further development for water supply has been observed in either unit

The Travis Peak Formation is composed of sand, gravel, shale, clay, and occasional conglomerate, sandstone, and limestone beds. It is the principal water-bearing formation of the Cretaceous System in the study area and yields moderate to large quantities of fresh to slightly saline water. The Travis Peak Formation is further divided into members which from oldest to youngest, are the Hosston Member, the Pearsall Member and the Hensell Member. The Hosston and Hensell Members consist predominantly of sand and gravel and provide practically all the water produced from the Travis Peak Formation. The Antlers Formation occurs, as shown on Figure 5, northwest of a line where the Glen Rose Formation pinches out and the Travis Peak and Paluxy Formations coalesce to form one unit.

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*In late 1966, a publication by W. L. Fisher and P. U. Rodda titled "Nomenclature Revision of Basal Cretaceous Rocks Between the Colorado and Red Rivers, Texas" described a division of lowermost Cretaceous rocks into three distinctive lithological sequences. These revisions were based on facies changes and are named as follows: (1) Twin Mountains Formation, characterized by siliceous conglomerates and lack of carbonate units; (2) Antlers Formation, northwest of the Glen Rose pinchout where the Paluxy and Twin Mountains Formations coalesce; and (3) the Travis Peak Formation in central Texas, mostly south of the present study, characterized by carbonate units and coarse, locally derived, limestone and dolomite conglomerates. According to this revision, the correct name for the principal Cretaceous aquifer in the study area is the Twin Mountains Formation. However, due to the use of the term Travis Peak in previous studies in this area from which field data were obtained and also due to the use of Hosston, Hensell, and Travis Peak on all well schedules, chemical analyses, and observation well records, it was decided that for this study the older terminology would be used. In future studies in this area, the term Travis Peak should be changed to Twin Mountains, and in those areas where the Pearsall is absent (updip of the Pearsall pinchout), the term Hosston should be changed to lower unit of the Twin Mountains Formation, and Hensell to upper unit. The only typical, highly calcareous Travis Peak in the study area occurs in central to southern Brown County. A type section of the Twin Mountains is shown on Figure 4.

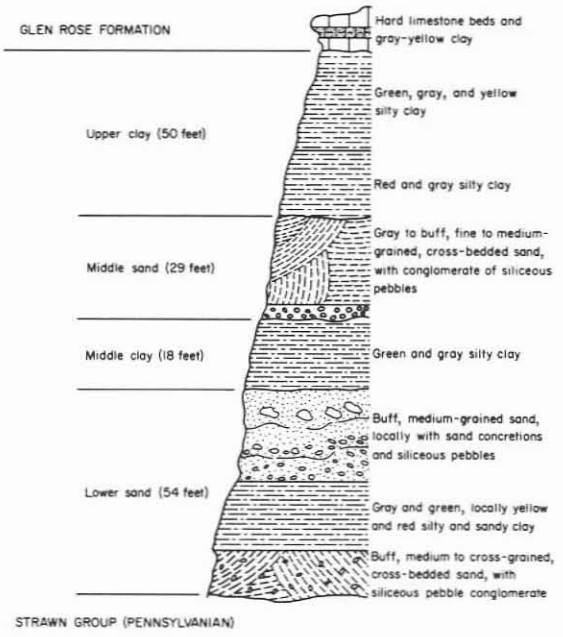


Figure 4.—Diagrammatic Section of the Twin Mountains Formation (Type Section), North Side of Twin Mountains, Erath County, Adapted from Fisher and Rodda (1966, P. 7)

Physical Characteristics and Water-Bearing Properties of Geologic Formations

Paleozoic Rocks

As shown on the geologic map in Figure 5, Paleozoic rocks of Pennsylvanian and Permian age are exposed in western portions of the study area where extensive surface erosion has removed overlying Cretaceous sediments. The Pennsylvanian rocks are divided into the Strawn, Canyon, and Cisco Groups. Of particular importance to this study is the Strawn Group, which contains the principal water-bearing strata in the Paleozoic rocks and crops out in a band through eastern Brown, western Comanche, eastern Eastland, and northern Erath Counties. Generally, the rocks of this group consist of sandstone, shale, and limestone; however, the limestone in many areas has been removed by erosion and replaced with channel-fill deposits of sand, gravel, and clay. The Strawn dips toward the west-northwest at an average rate of 50 feet per mile, and is angularly unconformable with overlying Cretaceous rocks elsewhere in the study area.

A water-bearing stratum in the Strawn Group, tentatively identified as the Brazos Sandstone, produces moderate quantities of water to irrigation wells in the Duster area of Comanche County. These irrigation wells range between 90 and 300 feet deep. Other than a short section of surface casing through Cretaceous rocks, the wells are generally completed as open holes.

The water-bearing strata in the Strawn Group are separated by beds of relatively impermeable shale and sandstone that appear to contain little or no water, and are characterized by friable sandstone and conglomerate interspersed with channel-fill deposits as seen in the outcrop along Copperas Creek south of Duster. The channel-fill deposits are highly cross-bedded and consist of sand, gravel, and clay. Many springs discharge into the streams, usually from the base of friable sandstone beds or channel-fill deposits where these overlie the beds of shale or impervious sandstone.

The quality of water in the Strawn Group deteriorates rapidly downdip from the outcrop so that the zone of usable quality water is usually limited to a narrow strip of land approximately five miles wide.

West of the Strawn Group, rocks of the Canyon Group crop out in a band five to 12 miles wide extending from central Brown County to north-eastern Eastland County (Figure 5). Dipping northwest, the Canyon Group is composed of relatively thick limestone beds that interfinger with nonresistant shales and sandstones. Occasional channel-fill deposits interrupt the sequence. Water quality in the Canyon Group is very poor, and, in most cases, unfit for domestic and livestock use.

The Cisco Group crops out in a band six to 11 miles wide extending from western Brown County to northwestern Eastland County and dips to the northwest. This group consists of alternating beds of limestone and sandstone with layers of shale and conglomerate, interrupted by numerous channel-fill deposits. Small-capacity water wells that produce from the Cisco are usually completed in the lenticular sandstones or channel-fill deposits. Water from the Cisco Group is generally poor in quality and small in quantity.

The Wichita Group of Permian age surfaces in Callahan, western Brown, and western Eastland Counties. This group consists of lenticular sand

Table 1.--Geologic Formations and Their Water-Bearing Properties

ERA	SYSTEM	SERIES	GROUP	STRATIGRAPHIC UNITS			THICKNESS (feet)		CHARACTER OF ROCKS		WATER-BEARING CHARACTERISTICS	
Mesozoic	Cretaceous	Comanche	Fredericksburg				0-160		Limestone, shale, and clay.		Yields small quantities of water to shallow wells.	
			Trinity	Antlers Formation	Paluxy Formation		0--250	0-100	Sand, gravel, shale, sandstone, and clay.	Sand, shale, and clay.	Yields moderate quantities of water to wells.	Yields small quantities of fresh to slightly saline water to wells.
					Glen Rose Formation			0-330		Limestone, marl, shale, and clay, with sand lenses.		Yields small quantities of water to shallow wells in localized areas.
					Travis Peak Formation (Twin Mountains Formation)	Hensell Member (Upper Unit)		0-185		Fine to coarse-grained sand, gravel, sandstone, shale, and clay.		Yields small to moderate quantities of fresh to slightly saline water.
						Pearsall Member (Middle Unit)		0-60		Clay, sandy clay, shale, and local sand lenses.		Yields no water or only small amounts along the outcrop.
						Hosston Member (Lower Unit)		0-125		Medium to coarse-grained sand, gravel, sandstone, shale, clay, and conglomerate (siliceous).		Yields moderate to large quantities of fresh to slightly saline water.
Paleozoic	Permian		Wichita				0-800		Limestone, sandstone, and sandy shale.		Locally yields small quantities of generally poor quality water to shallow wells.	
	Pennsylvanian		Cisco				0-1000		Limestone, sandstone, shale, and conglomerate with channel-fill deposits.		Do.	
			Canyon				0-1200		Limestone, sandstone, and shale, with channel-fill deposits.		Do.	
			Strawn						Sandstone, limestone, and shale, with channel-fill deposits of sand, gravel, and clay.		Yields small to moderate quantities of fresh to slightly saline water.	

stone, thin limestone beds, and sandy shale. Channel-fill deposits replace the limestone and shale beds locally. The Wichita Group yields only small quantities of water, generally of poor quality, to shallow wells in or very near the outcrop.

Antlers Formation

The Antlers Formation crops out mostly in Callahan, Brown, and Eastland Counties as shown on the geologic map in Figure 5. The formation is actually a coalescence of the Travis Peak and Paluxy Formations which occurs where the Glen Rose Formation is absent. The approximate boundary between the Antlers and Travis Peak Formations (Figure 5) is a line marking the approximate northwest extent of the Glen Rose Formation.

The Antlers has been subjected to extensive erosion and a complete section is found in only a few places, mostly in central Callahan County and in northeast Brown County. A total thickness of 220 feet of Antlers is present in well BX-30-46-901 in Callahan County. The erosional remnant of the Antlers Formation in most of its outcrop is less than 100 feet thick, as illustrated in Figure 6.

The Antlers Formation dips to the southeast at an average rate of 12 feet per mile, increasing slightly near its southeastern limit where it becomes differentiated into the various other Trinity Group formations. It overlies Paleozoic rocks of Pennsylvanian and Permian age and underlies the Fredericksburg Group.

The Antlers has been divided by Fisher and Rodda (1966) into three parts, referred to as the lower, middle, and upper units. The lower unit of the formation contains pebbly conglomerate and gravel, fine to coarse grained, siliceous sand and sandstone, and strips of red to green sandy clay. Most of the coarse sand and gravel in the Antlers is found in this lower unit, and it is the source of most of the water produced by wells. The middle unit is composed primarily of sandy, red-brown clays with streaks of siltstone, sandstone, and fine clayey sand. The upper unit of the formation is composed of friable, compact, massively bedded, fine-grained sandstone with interbedded red-brown to gray-green sandy clay and clay. In a few localities, conglomerate is present but not very extensive.

A stratigraphic test hole (BX-30-55-610) was drilled by the Texas Water Development Board 4 miles north of Cross Plains on the S.E. Page farm. The electrical survey and stratigraphic log of the test, which was drilled through the lower unit of the Antlers Formation into the Pennsylvanian rocks, is shown on Figure 8. All the irrigation wells in this area, and also the Cross Plains public-supply wells, are completed in similar Antlers material.

Travis Peak (Twin Mountains) Formation

The Travis Peak Formation is composed of sand, gravel, shale, clay and occasional conglomerate, sandstone, and limestone beds. As the principal water-bearing formation in the study area, it yields moderate to large quantities of fresh to slightly saline water to producing well heads.

Stratigraphically, the Travis Peak Formation is divided into three members, which from oldest to youngest, are the Hosston Member, the Pearsall Member and the Hensell Member. The Hosston and Hensell Members consist predominantly of sand and gravel and provide practically all of the water produced from the Travis Peak Formation. The Pearsall Member contains more clay and generally acts as an aquiclude between the formation's upper and lower units.

The Travis Peak Formation crops out mostly in Comanche and Erath Counties and in eastern portions of Brown and Eastland Counties (Figure 5). Also it overlies Pennsylvanian rocks in the study area and underlies the Glen Rose Limestone. The approximate altitude of the base of the Cretaceous rocks is illustrated on Figure 7. The Hosston Member of the Travis Peak Formation is geologically and hydrologically equivalent with the basal sands of the Antlers Formation and accordingly, the water levels in the Hosston and Antlers are shown on a single map (Figure 18). The upper sand (Hensell Member) was treated separately from the others due to different water level and chemical quality. The middle clay member (Pearsall) separates the upper and lower sand and gravel units and yields little or no water. Electric or gamma-ray logs of three representative stratigraphic test holes in the Travis Peak Formation in Comanche, Eastland, and Erath Counties are shown on Figures 9, 10, and 11.

Hosston Member.—The Hosston Member of the Travis Peak Formation consists primarily of sand and gravel with layers of sandstone, conglomerate, and clay. Containing more siliceous gravel and coarse sand than other members of the formation, it is the most productive source of water in the Lower Cretaceous section of north-central Texas. Large-capacity wells in the study area are generally completed in the Hosston Member, with many also tapping the overlying Hensell Member of the Travis Peak Formation. Water quality is good, with dissolved solids averaging 700 mg/l (milligrams per liter).

The Hosston is referred to by many drillers as the "second Trinity" or "bottom Trinity". The unit is easily recognized in electric logs and gamma-ray logs of water wells and oil tests due to the presence of clay and shale beds above (Pearsall Member) and below (Paleozoic rocks). In test holes drilled by the Texas Water Development Board, yellow to purple clay and shale beds were found to underlie the Hosston in many locations.

The Hosston is made up of medium to coarse sand, gravel, and sandy clay near the land surface, with the amounts of shale, sandstone, and conglomerate increasing with depth. The Hosston dips to the southeast at about 15 feet per mile, increasing to 20 feet per mile in the eastern portion of the study area. The approximate altitude of the top of the Hosston is shown on Figure 12. The clays are usually silty to sandy, and a siliceous cement binds the sandstone and conglomerate beds. Cross-bedding is very common. Conglomerate pebbles are chert or quartz and are found in a wide variety of colors, mostly red to black.

Thickness of the Hosston varies according to the distance from its outcrop to any down-dip location. It is about 40 feet thick in Comanche and over 100 feet thick in the eastern part of the study area (Figure 13). The thickness varies greatly along the lobate structures within the outcrop, with thicker sand and gravel deposits occurring along the central axis of the lobes. One such lobe is present from Gorman through DeLeon to Lake Proctor and is separated from other lobes by the Leon and Sabana Rivers. Figure 14 illustrates the complex thickness patterns found in this lobe with a Hosston thickness ranging from zero to 55 feet.

Pearsall Member.—The middle unit or Pearsall Member of the Travis Peak Formation is composed of silty to sandy, multicolored clays interbedded with lenses of sand and is commonly referred to by drillers as "red beds", especially in the eastern portion of the study area. This unit separates the water-bearing sands of the Hensell and Hosston and is an impervious barrier between the two sand units, permitting very little, if any , vertical recharge.

Ranging in thickness from zero to 60 feet in the study area, the Pearsall pinches out before reaching the area of the Antlers Formation to the west. The Pearsall thickens down-dip and local variations in thickness usually correspond with an opposite thinning or thickening of the underlying Hosston. The rate of dip is approximately the same as that of the Hosston Member.

Hensell Member.—The upper sand unit or Hensell Member of the Travis Peak Formation is overlain by the Glen Rose Limestone. The approximate altitude of the top of the Hensell is shown on Figure 15. It is locally termed the "upper Trinity" or "first Trinity". The Hensell is the second most important aquifer in North-Central Texas, and the quality and quantity of its water are more than sufficient for most purposes. Most of the small-capacity wells drilled in the Travis Peak Formation are completed in the upper member.

The Hensell consists of fine- to coarse-grained sand and sandstone with much cross-bedding, gravel or sandy conglomerate, usually poorly cemented, sandy to silty multicolored clays, and gray to green shales. The sand and conglomerate are predominantly siliceous with pebbles consisting of chert and quartz. The Hensell in the southernmost portion of the study area contains limestone and carbonaceous cemented beds. Conglomerates are usually found at the base of the Hensell and overlie the Pearsall. The Hensell outcrop is not shown separately on Figure 5; however, it is included within the Travis Peak Formation.

Unlike the middle and lower members of the Travis Peak Formation, the Hensell is thickest in the study area and thins down-dip. Thickness ranges from zero to over 140 feet as shown in Figure 16. Also, a decrease in the content of gravel, conglomerate, and coarse sand is noted to the southeast. The Hensell dips to the southeast at a rate of 14 feet per mile in Comanche County and increases to over 25 feet per mile in the easternmost part of the study area.

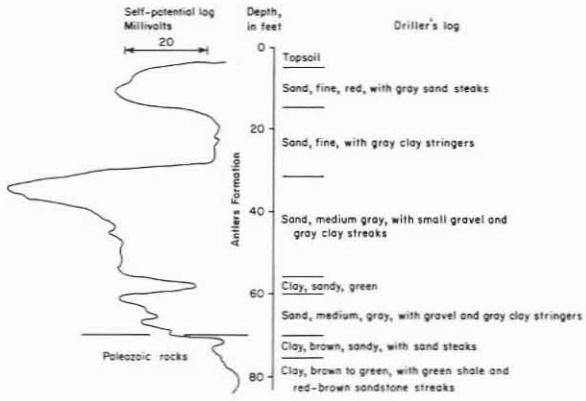


Figure 8.—Interpreted Logs of Stratigraphic Test Hole BX-30-55-610, Callahan County

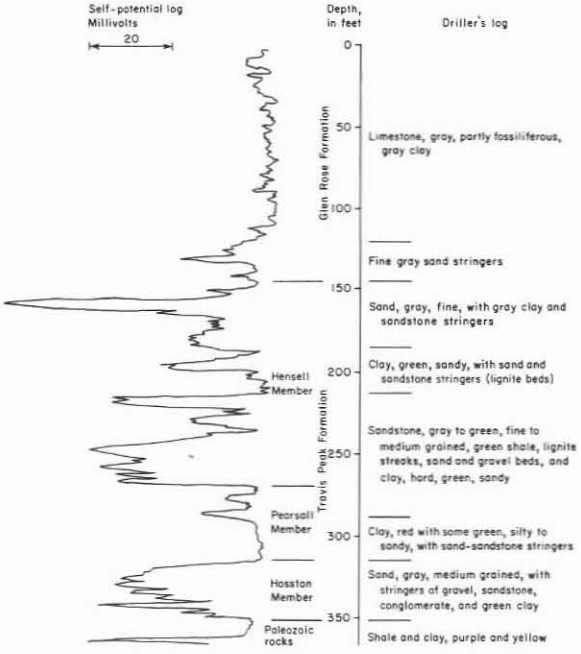


Figure 9.—Interpreted Logs of Stratigraphic Test Hole DY-41-06-502, Comanche County

GROUND-WATER HYDROLOGY

Hydrologic Cycle

The hydrologic cycle, as illustrated in Figure 17, is well defined in the study area. Warm, moist air, moving in from the Gulf of Mexico, periodically encounters cooler air masses over north-central Texas, forming storm fronts that rain on the outcrop, evaporated back into the atmosphere or returned to the Gulf region as surface runoff.

Rain water absorbed at the outcrop is often converted to ground water. Percolating downward,

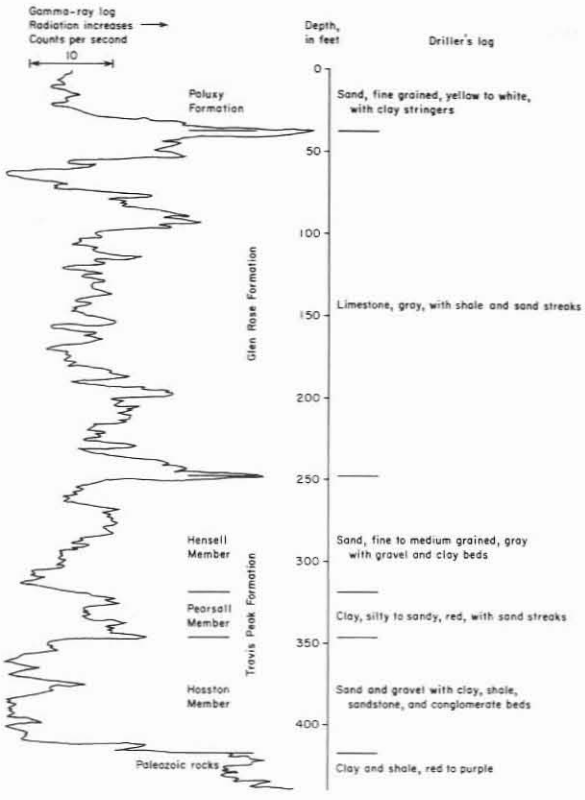
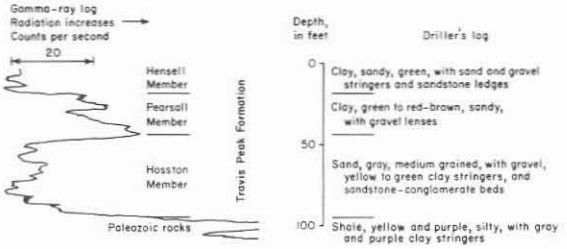
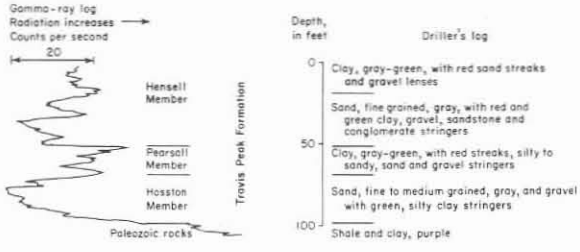


Figure 10.—Interpreted Logs of Abandoned Irrigation Well JP-31-55-201, Erath County



Well DY-31-53-405, Comanche County



Well JD-31-44-517, Eastland County

Figure 11.—Interpreted Logs of Two Stratigraphic Test Holes, Comanche and Eastland Counties

it remains mobile, sometimes entering aquifer systems that return it to the ground surface by way of

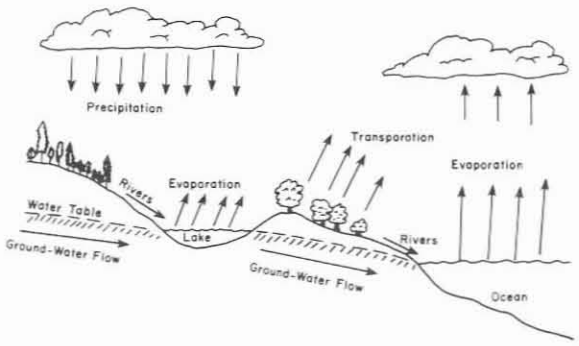


Figure 17.—Schematic Diagram of the Earth's Water Cycle—the Hydrologic Cycle

springs and seeps. In the study area, springs and seeps are particularly evident where exposed channel sandstone beds in Pennsylvanian Strawn Group overlie finer-grained deposits of silt and clay in the same unit.

Man influences the hydrologic cycle in the study area by returning ground water to the surface through well development and by building dams that impound surface drainage. Crop irrigation and reservoir containment increase evapotranspiration rates and also influence recharge characteristics in underground reservoirs. In the study area, man-made reservoirs include Lake Brownwood in Brown County, Proctor Lake in Comanche County, Lake Clyde in Callahan County and Lake Cisco in Eastland County.

Source and Occurrence of Ground Water

Rainfall regularly converts to ground water in the study area, both by direct infiltration at the outcrop and by later absorption along local streams and rivers. Percolating downward by gravity, the water generally flows down dip through the more pervious and permeable subsurface formations. More specifically, ground water in the study area preferentially flows through sand and gravel intervals in the Antlers and Travis Peak Formations where porosity and permeability are especially well developed.

Ground water generally occurs under water-table conditions at shallow depths in the outcrop area and under artesian conditions in deeper intervals where less permeable formations overlie the aquifer. Wells drilled in the outcrop tap only the lower unit, or Hosston,where slight artesian conditions exist. The artesian head is usually quickly pumped off and can be seen in the straight line graphs of aquifer tests conducted in this area using the modified non-equilibrium method. The line can be measured in two directions; the first occurs at the beginning of the test and has a steep gradient (low transmissivity) as the aquifer is dewatered, and the second part occurs when the head is pumped off and the water level assumes water-table characteristics displaying a gentle gradient (higher transmissivity). Artesian conditions exist in wells drilled through overlying formations like the Glen Rose Limestone and completed only in the Travis Peak Formation. The overlying impermeable beds confine the water under a pressure greater than the atmospheric pressure, causing the water to rise above the confining bed when penetrated by the drill.

Major sources of water to the Pennsylvanian rocks are precipitation on the outcrop and infiltration through overlying Antlers and Travis Peak Formations. Joints and fractures in the sandstone-conglomerate facies increase the quantity of recharge to this local aquifer. Water-table conditions exist throughout most of the area serviced by wells completed in the Paleozoic rocks.

Recharge and Movement of Ground Water

The water table has been defined as the upper surface of that part of the zone of saturation where water is free to move by gravity. The water table is not a level surface, but a sloping surface having irregularities in the form of mounds, depressions, and ridges related to the topography, geology, and hydrology of the area. Figures 18, 19, and 20 show the configuration of the water table in the Antlers Formation, the Hosston and Hensell Members of the Travis Peak Formation and Paleozoic (Pennsylvanian) rocks. The direction of ground-water movement is at right angles to the contours and in the direction of dip which is to the southeast for the Cretaceous aquifers and west for the underlying Paleozoic aquifers. Because of frictional resistance of the small interstices through which the water must pass, this movement is very slow. The slope of the water table varies inversely with the permeability of the aquifer; that is, in the areas where the water-bearing beds are more permeable, the slope of the water table is relatively flat and the water-table contours are of wide spacing.

Ground water in the outcrop area is derived from precipitation, streamflow, and irrigation water infiltration. Of the 3,900 square miles

covered by this report, approximately 1,750 square miles consists of Antlers and Travis Peak Formations outcrop. The mean annual precipitation of 27 inches amounts to nearly 470 million gallons per square mile and a total of more than 2.5 million acre-feet over the entire outcrop each year. Only a small part of the annual rainfall, however, reaches the ground-water reservoir. Evaporation, transpiration, and runoff account for a large portion of the rainfall. The small amount of water not discharged by these processes percolates downward to the zone of saturation. After the water reaches the water table, it moves down gradient slowly toward points of discharge such as wells, springs and streams, or to points of evaporation and transpiration.

In order to determine the amount of runoff on the outcrop, two drainage basins were selected for measurement, one on the Hosston Member outcrop and one on the Travis Peak. A weir board, stilling-well recorder, and rain gauge were installed at each location. One basin of 568 acres was located several miles west of Downing (Hosston Member outcrop), and the other basin of 986 acres on the border of Erath and Comanche Counties approximately five miles northeast of DeLeon (Travis Peak outcrop). These locations are shown on Figure 5. Both areas were covered predominantly by peanut fields with some areas also having brush and oak trees.

After two years of monitoring data from the weir-site recorders and rain gauges, it was concluded that 97 percent of the rainfall was retained by the soil. This percentage is composed of that amount which goes to evapotranspiration and that which reaches the water table as recharge. An estimate of the amount of recharge is presented in a later section of this report under the heading of "Ground Water Available for Development." About three percent of the rainfall was observed as runoff. In fact, the only time runoff occurred was during rain falls of high intensity and long duration (Figures 21 and 22 and Table 2). Using this three percent figure for runoff, a total of only 14 million gallons per square mile per year of the total rainfall occurs as runoff.

Most pumpage for irrigation in the study area occurs during the summer months, allowing the aquifer to recover completely after the irrigation season is over. During dry summer months many irrigation wells pump off or suffer a severe drop in yield and in some cases, quality; however, water-level observation wells throughout the study area show that recharge to the aquifer is adequate to cause water levels to rise to near normal each year. Not all irrigation water is used by plants, allowing a part of the water to infiltrate downward to the zone of saturation. It is estimated that up to 20 percent of the water used for irrigation returns to the aquifer as recirculated water.

Recharge from streams and rivers dissecting the outcrop area is also evident. The Leon, Sabana, and Paluxy Rivers contribute to the recharge of the Antlers and Travis Peak Formations. However, in the central and northwest parts of the outcrop area, the opposite is true. Where a creek or river bed cuts through the Cretaceous into the Paleozoic strata, seeps and springs occur, causing a natural discharge along the Cretaceous-Paleozoic contact.

In summary, ground water is discharged naturally from the Antlers and Travis Peak Formations by springs, seeps, and evapotranspiration, and is artificially discharged in the form of water-well pumpage. Recharge occurs primarily from rainfall and affluent streams. Recirculation of irrigation water also occurs in the Antlers and Travis Peak outcrop as irrigation returns. The exact amount of recharge is not readily determinable; however, an estimate is made in a later section of this report.

Hydraulic Characteristics

Under natural conditions, an aquifer is in a state of equilibrium and the piezometric surface is static except for minor fluctuations due to natural recharge and discharge. When a well is pumped, a cone of depression is created in the piezometric surface (water table) around the well; hence, the static water level is lowered to a new level commensurate with the rate of pumpage, geometric boundaries of the aquifer, and the coefficients of transmissivity and storage. The difference in elevation between the pumping level and the static water level is called the drawdown. When equilibrium of the pumping level is reached, assuming a constant yield, the aquifer boundaries and transmissivity control the shape and size of the cone of depression. The coefficient of storage influences the time at which this equilibrium condition is reached but has no control over the final shape of the cone.

The quantity of water an aquifer can produce depends upon its ability to store and transmit water. Not all water in storage is available for pumping due to retention of water because of

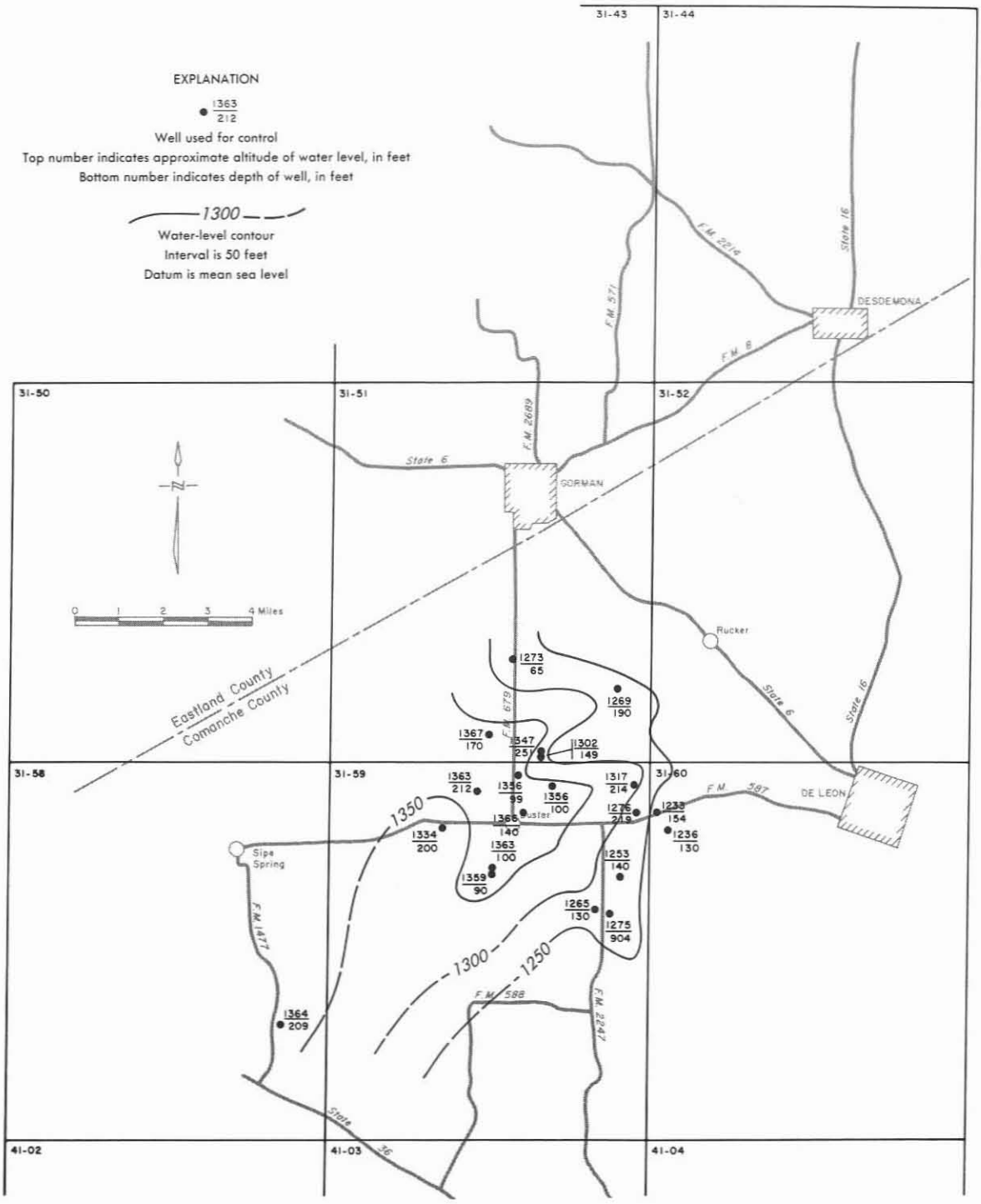


Figure 20

Approximate Altitude of Water Levels in Wells Completed in the Paleozoic Aquifer, 1972

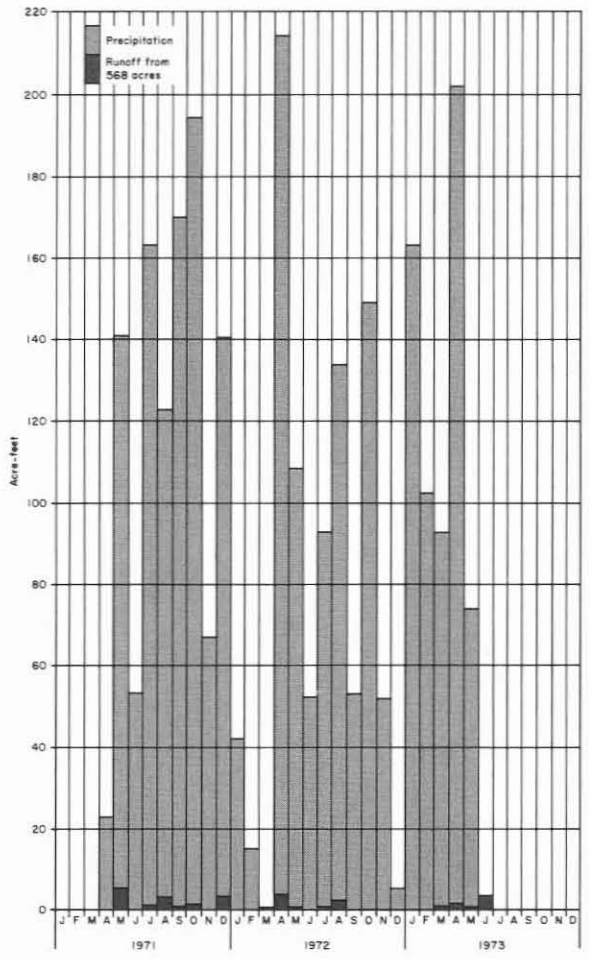


Figure 21.—Summary of Precipitation and Runoff at a Selected Site on the Outcrop of the Hosston Member of the Travis Peak Formation

molecular attraction between the rock particles and water molecules. Formulas have been developed to show relationships between well yield, the shape and size of the cone of depression, and the coefficients of permeability, transmissivity, and storage. Generally speaking, the formulas show that well yield varies directly with drawdown. This relationship is reflected in the specific capacity of a well. The specific capacity is a measure of the amount of water a well will yield with a certain amount of drawdown. This discharge per unit of drawdown is measured in gallons per minute per foot, and is found simply by dividing the measured yield in gallons per minute of the well by the observed drawdown in feet. The specific capacity is affected by the hydraulic characteristics of the aquifer and the type of completion, construction, and development of the well.

Table 3 gives the yields and specific capacities measured in wells throughout the study area and Figure 23 shows the location of these wells along with measured data. Averages of specific capacities from wells completed in the major aquifers in the study, computed from data from Table 3 are as follows:

Aquifer	Number of wells	Specific Capacity[1] Range	Specific Capacity[1] Average
Antlers	23	0.3-18.7	2.6
Hensell	5	0.7- 6.2	3.3
Hosston	19	0.4-12.8	3.5
Travis Peak	64	0.3-14.3	2.5
Paleozoic rocks [2]	4	0.5- 3.7	1.8

[1]Gallons per minute per foot of drawdown.
[2]Includes reported data.

The specific capacities are considerably higher along the central axis of the lobate structures of the outcrop, where the saturated thickness of the Hosston is at its greatest. These also correspond with the thicker deposits delineated on Figure 13.

Aquifer coefficients for the Antlers and Travis Peak Formations are shown in Table 4. Data from the aquifer tests were analyzed by using the Theis non-equilibrium formula, as modified by Cooper and Jacob (1946) and Wenzel (1942). The transmissibility is the quantity of water in gallons per day that will pass through a vertical strip of the aquifer one foot wide extending through the full saturated vertical thickness of the aquifer at a hydraulic gradient of one foot per foot and at the prevailing temperature of the water. In other words, this value is an index of the ability of an aquifer to transmit water.

The coefficient of permeability is defined as the quantity of water in gallons per day that will pass through a section of aquifer one foot square under a hydraulic gradient of one foot per foot. This value can be determined by dividing the transmissivity by the saturated thickness of the aquifer in feet.

The coefficient of storage, which is obtained from a pumping test when one or more observation wells are used, is the volume of water in cubic feet that will be released from or taken into storage by a vertical column of the aquifer having a base one

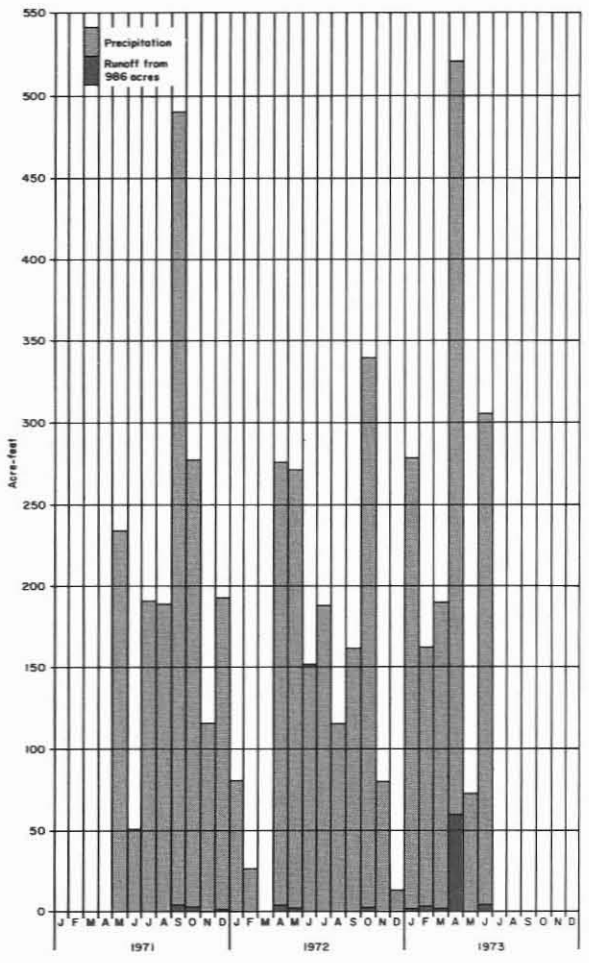


Figure 22.—Summary of Precipitation and Runoff at a Selected Site on the Outcrop of the Travis Peak Formation

foot square when the piezometric surface is lowered or raised one foot. Under water-table conditions, the storage coefficient is equal to the effective porosity of the aquifer and may be as large as 0.35. Under artesian conditions, the storage coefficient is very small, usually less than 0.001. This value is controlled by the compressibility of the aquifer, of the water, and of the clay interbedded within the aquifer. Any leakage of ground water from adjacent beds also affects the coefficient of storage.

Pumping tests conducted by the Texas Water Development Board within the study area indicate that the sand and gravel deposits of the Antlers and Travis Peak Formations are characterized by transmissibility values ranging from 1,140 to 14,375 (gal/d)/ft. The wide range in values is due to the extreme variation in saturated thickness and permeability in the outcrop. The permeability ranges from 87 to 440 (gal/d)/ft^2, and the coefficient of storage varies greatly; because ground water in the outcrop area occurs under both water-table and artesian conditions.

FLUCTUATIONS OF WATER LEVELS

Water levels in wells completed in the Antlers and Travis Peak Formation and the Paleozoic rocks within the study area fluctuate mainly in response to the relative quantities of recharge to and discharge from the aquifers. In the study area, the fluctuations are due to seasonal changes resulting from large withdrawal of ground water for irrigation during the summer months. Changes from year to year reflect the amount of recharge to the aquifers through rainfall. Recharge is relatively high due to the permeability of the sands on the outcrop and along streams and rivers. The hydrographs of representative wells throughout the study area show very little net change in water levels through the period of record.

A breakdown of the 126 observation wells by county is as follows: 15 in Brown, 4 in Callahan, 46 in Comanche, 20 in Eastland, 26 in Erath, and 15 in Hamilton. Records of measurements from these wells can be found in Table 18. Selected hydrographs from each county are shown in Figure 24. Pumping levels on many wells are recorded in the Remarks column of the records of wells (Table 16).

GROUND-WATER DEVELOPMENT

The well inventory for this report includes all public-supply wells and selected industrial, domestic, livestock, and irrigation wells. Table 5 lists all wells inventoried for this project, and Table 6 lists the irrigation well inventory by county.

Until 1965, the principal use of ground water in the study area was for public supply and domestic purposes. Beginning in 1965, major ground-water usage shifted to irrigation. In 1970, the amount of ground water used for irrigation was approximately 16 times that used for public supply purposes. Figure 25 reflects both irrigation and municipal pumpage for the period 1955 through 1971. This illustration graphically shows the impact of Proctor Lake which was completed in 1968. Prior to its completion, an additional 1,300 acre-feet of ground water was required annually

for municipal purposes. The use and amount of ground water pumped in 1970 is illustrated in Table 7.

Industrial use of ground water in the study area is limited to large feedlots, dairies, and turkey farms, and the only reason some of these were inventoried was due to the sizeable quantity of water pumped each year. There were only three feedlots of any size but there were, according to the Texas Almanac, 23,000 dairy cows in the study area, mostly in Erath County (Dallas Morning News, 1972). Assuming that at least half of the dairies operate on ground water, about one acre-

Table 2. Summary of Precipitation and Runoff at Two Instrumented Drainage Basins
(Locations are shown on Figure 5.)

Year	Month	Precipitation		Runoff	Percent Retention
		inches	acre-feet	acre-feet	
		Site of 986 Acres on the Outcrop of the Travis Peak Formation			
1971	May	2.85	234	—	
	June	.61	50	—	
	July	2.32	190	0.01	
	Aug.	2.27	188	.04	
	Sept.	5.96	465	4.54	
	Oct.	3.37	252	.40	
	Nov.	1.40	115	.00	
	Dec.	2.39	192	1.22	
	Subtotal	21.17	1,739	6.21	99.6
1972	Jan.	0.97	55	—	
	Feb.	.32	26	—	
	Mar.	.00	0	.00	
	Apr.	3.16	275	1.77	
	May	3.04	270	1.29	
	June	1.85	152	.11	
	July	2.13	187	.00	
	Aug.	1.43	115	.12	
	Sept.	2.02	161	.00	

Table 2. Summary of Precipitation and Runoff at Two Instrumented Drainage Basins—Continued

Year	Month	Precipitation		Runoff	Percent Retention
		inches	acre-feet	acre-feet	
		Site of 986 Acres on the Outcrop of the Travis Peak Formation—Continued			
1972	Oct.	4.13	339	1.45	
	Nov.	.97	55	.00	
	Dec.	.15	12	.00	
	Subtotal	20.17	1,657	4.14	99.7
1973	Jan.	3.24	277	0.04	
	Feb.	2.03	161	2.21	
	Mar.	2.21	189	1.16	
	Apr.	6.32	520	60.02	
	May	.87	72	.00	
	June 1-15	3.69	305	2.76	
	Subtotal	18.36	1,509	66.55	95.6
	Totals	59.70	4,905	76.90	98.5
		Site of 568 Acres on the Outcrop of the Hosston Member			
1971	May	2.98	142	5.41	
	June	1.13	53	.00	
	July	3.44	163	1.26	
	Aug.	2.61	123	2.39	
	Sept.	3.61	170	.24	
	Oct.	4.10	194	1.04	
	Nov.	1.42	67	.00	
	Dec.	2.98	140	2.98	
	Subtotal	22.27	1,052	13.32	98.7

Table 2. Summary of Precipitation and Runoff at Two Instrumented Drainage Basins—Continued

Year	Month	Precipitation		Runoff	Percent Retention
		inches	acre-feet	acre-feet	
		Site of 568 Acres on the Outcrop of the Hosston Member—Continued			
1972	Jan.	0.89	42	0.00	
	Feb.	.33	15	.00	
	Mar.	.00	0	.00	
	Apr.	4.52	214	3.39	
	May	2.28	108	.23	
	June	1.10	52	.00	
	July	1.95	92	.54	
	Aug.	2.82	134	1.98	
	Sept.	1.13	53	.00	
	Oct.	3.15	149	.00	
	Nov.	1.09	52	.00	
	Dec.	.12	5	.00	
	Subtotal	19.38	916	6.14	99.3
1973	Jan.	3.45	163	0.00	
	Feb.	2.16	102	.00	
	Mar.	1.93	92	.58	
	Apr.	4.26	202	1.75	
	May	1.56	74	.49	
	June 1-15	2.63	123	2.74	
	Subtotal	15.99	756	5.56	99.3
	Total	57.64	2,724	25.02	99.0

Table 3.—Measured Yields and Specific Capacities of Irrigation and Public-Supply Wells

Water Bearing Units: Kca, Antlers Formation; Kctp, Travis Peak Formation; Kche, Hensell Member of the Travis Peak Formation; Kcho, Hosston Member of the Travis Peak Formation; Pn, Pennsylvanian rocks.

Well	Aquifer	Yield (gal/min)	Specific Capacity (gal/min/ft)
		Brown County	
BR-31-57-449	Kca	61.5	—
847	Kca	41	1.5
		Callahan County	
BB-30-46-703	Kca	12	—
47-604	Kca	60	18.7
55-309	kca	43.7	1.7
512	Kca	48	1.4
608	Kca	53.2	1.9
933	Kca	27.7	1.6
		Comanche County	
Dy-31-51-603	Kctp	120	3.2
621	Kctp	152	9.2
52-201	Kctp	12.1	—
202	Kctp	19.5	—
203	Kctp	16	—
401	Kctp	114.7	5.0
411	Kcho	24	—
415	Kctp	37.2	2.4
502	Kctp	11.1	.3
521	Kctp	38.1	—
608	Kctp	137.1	2.4
609	Kctp	43.6	.8
623	Kctp	16	1.5
624	Kctp	20.2	1.0
625	Kctp	14.6	1.0
629	Kctp	93.1	—
703	Kctp	27	1.4
721	Kcho	231	12.8
722	Kcho	43	1.2
734	Kctp	30.6	—
737	Kctp	31	—
832	Kctp	20.6	—

Table 3.—Measured Yields and Specific Capacities of Irrigation and Public-Supply Wells—Continued

Well	Aquifer	Yield (gal/min)	Specific Capacity (gal/min/ft)
		Comanche County—Continued	
DY-31-52-845	Kcho	160.2	—
846	Kctp	37.8	1.9
902	Kctp	102.3	2.0
53-422	Kcho	35.5	
423	Kcho	69	2.5
451	Kctp	43	—
31-53-702	Kcho	33.3	1.1
703	Kcho	28.5	.9
704	Kcho	72.7	—
705	Kcho	73	—
706	Kcho	30.4	1.6
724	Kctp	10.9	.4
725	Kctp	8.3	—
739	Kctp	56.2	—
740	Kcho	34.4	.7
741	Kcho	32.5	—
57-604	Kca	73.5	2.6
58-703	Kctp	43.4	1.5
59-206	Pns	38.1	.5
215	Pns	188.9	—
305	Pns	23.1	—
306	Pns	18.1	—
310	Kho	7.2	—
311	Kcho	6.2	—
324	Kctp-Pns	8.1	—
325	Kctp-Pns	9.3	—
60-209	Kctp	72.7	4.3
210	Kctp	64.8	3.7
212	Kctp	35.8	
215	Kcho	80	2.6
335	Kctp	56	2.2
336	Kcho	28.4	—
502	Kctp	26.3	.8
605	Kctp	36.1	—
607	Kctp	48.7	—
608	Kctp	68.4	—
617	Kctp	102.5	—
618	Kctp	89.6	—
627	Kctp	60	—

Table 3.—Measured Yields and Specific Capacities of Irrigation and Public-Supply Wells—Continued

Well	Aquifer	Yield (gal/min)	Specific Capacity (gal/min/ft)
		Comanche County—Continued	
DY-31-60-701	Kctp	34.7	2.3
809	Kctp	64.7	—
810	Kctp	35.9	2.4
61-112	Kcho	21.2	1.4
113	Kcho	41.1	2.1
114	Kcho	33.4	1.7
115	Kcho	17.2	1.0
116	Kcho	42.9	2.2
117	Kcho	68.6	2.3
402	Kctp	57	—
403	Kctp	29	—
701	Kctp	90	1.2
703	Kctp	80	1.2
712	Kctp	108	—
802	Kctp	114.3	—
808	Kctp	107.7	1.8
815	Kctp	180	—
901	Kctp	58.5	1.1
41-02-201	Kctp	10.5	2.1
202	Kctp	20.7	—
203	Kctp	15.5	—
204	Kctp	25.1	—
03-101	Kctp	41.1	—
203	Kctp	29.7	—
604	Kctp	60	—
04-201	Kctp	51.6	—
202	Kctp	12.2	—
203	Kctp	30	—
502	Kcho	67	4.0
507	Kctp	56.2	—
701	Kche	50	6.2
803	Kctp	14.7	—
906	Kctp	120	—
05-205	Kctp	34.4	—
206	Kctp	71	1.4
207	Kctp	51	—
212	Kctp	50	—
213	Kctp	100	—
402	Kcho	120	4.3

Table 3.—Measured Yields and Specific Capacities of Irrigation and Public-Supply Wells—Continued

Well	Aquifer	Yield (gal/min)	Specific Capacity (gal/min/ft)
		Comanche County—Continued	
DY-41-05-502	Kctp	56.5	2.8
503	Kctp	218.1	—
603	Kctp	300	—
604	Kctp	560	—
704	Kctp	31.9	—
901	Kctp	66	—
905	Kctp	60	—
12-303	Kctp	95.7	—
304	Kctp	69.8	1.1
13-101	Kctp	92.3	1.2
201	Kctp	30	—
202	Kctp	21.3	—
204	Kctp	20	—
14-106	Kcho	61.1	.8
107	Kcho	53.3	.4
305	Kctp	96.7	2.9
		Eastland County	
JD-30-48-901	Kca	37.5	1.9
902	Kca	110	3.6
56-103	Kca	25.6	1.7
401	Kca	48.4	1.0
508	Kca	57.5	1.9
64-301	Kca	35.8	—
302	Kca	47	—
306	Kca	37.5	—
307	Kca	27.8	—
31-35-601	Kca	10.4	.7
36-702	Kca	8.3	.3
42-511	Kca	16	—
512	Kca	9.7	.3
513	Kca	18.8	.3
514	Kca	41.7	—
717	Kca	21.7	2.1
810	Kca	14.6	.9
811	Kca	12.4	—
812	Kca	13.8	—
901	Kca	34.3	—

Table 3.—Measured Yields and Specific Capacities of Irrigation and Public-Supply Wells—Continued

Well	Aquifer	Yield (gal/min)	Specific Capacity (gal/min/ft)
		Eastland County—Continued	
JD-31-42-902	Kca	64.8	2.0
43-420	Kca	50	—
752	Kca	25	—
804	Kca	16.6	—
805	Kca	20	—
807	Kca	45.1	—
888	Kca	34.9	—
843	Kca	10.1	—
844	Kca	26.8	—
909	Kca	75	—
911	Kca	68.9	—
940	Kca	34	—
44-113	Kca	33	—
114	Kca	33.7	—
115	Kca	29.5	—
403	Kca	41.2	—
404	Kca	36.7	—
405	Kca	48	—
406	Kca	43.6	3.1
407	Kca	23.8	—
503	Kctp	59.6	2.3
505	Kctp	87.6	1.9
506	Kctp	44	—
507	Kctp	66	—
515	Kca	27.3	—
603	Kctp	80	3.1
804	Kctp	21.3	1.2
805	Kctp	34.7	—
806	Kctp	40	—
51-102	Kca	20	—
205	Kca	55	2.3
215	Kca	125	2.8
224	Kca	56	—
225	Kca	47.1	—
226	Kca	61.1	—
239	Kca	90	5.1
258	Kca	78	—
57-137	Kca	30	—

Table 3.—Measured Yields and Specific Capacities of Irrigation and Public-Supply Wells—Continued

Well	Aquifer	Yield (gal/min)	Specific Capacity (gal/min/ft)
		Erath County	
JP-31-46-902	Kctp	223	—
48-302	Kctp	69.1	—
52-301	Kctp	142	6.5
302	Kctp	100	5.9
303	Kctp	150	—
304	Kctp	120	1.5
314	Kctp	103	—
317	Kctp	302	—
53-202	Kche	67	5.3
203	Kctp	137	—
208	Kcho	114	7.6
209	Kcho	128	9.1
403	Kctp	212	—
415	Kctp	240	2.9
417	Kctp	130	—
420	Kctp	150	—
439	Kctp	54.5	3.0
440	Kctp	37.5	.8
441	Kctp	63.2	—
503	Kctp	81.6	3.9
504	Kctp	48.8	—
514	Kctp	40.5	1.3
515	Kctp	91	1.0
517	Kctp	63.2	1.7
518	Kctp	68.6	.9
522	Kctp	120	1.4
527	Kctp	185.3	1.8
717	Kctp	29.6	—
718	Kctp	30	.5
732	Kctp	93	1.6
803	Kctp	47	1.1
804	Kctp	33	.5
806	Kche	71	4.3
808	Kctp	99	3.3
809	Kctp	94.5	—
817	Kctp	61.6	—
54-801	Kctp	200	2.1
803	Kctp	450	—
55-103	Kctp	188	2.6

Table 3.—Measured Yields and Specific Capacities of Irrigation and Public-Supply Wells—Continued

Well	Aquifer	Yield (gal/min)	Specific Capacity (gal/min/ft)
		Erath County—Continued	
JP-31-55-105	Kctp	140	—
115	Kctp	200	4.0
116	Kctp	150.4	1.0
201	Kctp	120	—
402	Kctp	195	—
407	Kctp	171.5	1.7
408	Kctp	141	—
801	Kctp	227	—
802	Kctp	157	1.5
803	Kctp	184.6	3.3
61-202	Kctp	200	14.3
204	Kctp	104	1.4
301	Kctp	173	9.6
601	Kche	64.8	—
62-201	Kctp	343	—
501	Kche	48	1.2
63-101	Kche	302	—
102	Kctp	446	—
203	Kctp	500	—
205	Kctp	400	—
301	Kche	200	—
502	Kctp	550	—
32-41-103	Kctp	200	4.0
		Hamilton County	
LA-40-01-401	Kctp	600	5.4
41-15-501	Kctp	350	—
23-301	Kche	52	.7
24-401	Kctp	103	2.3

foot per day would be used by the dairy industry alone.

Public Supply

The city of Stephenville in Erath County is the principal user of ground water for public supply in the report area. Table 8 gives the annual pumpage from all the cities using ground-water supplies in the study area from 1955 to 1972. Until the completion of Proctor Lake in 1968, DeLeon, Dublin, and Gorman pumped about 1,300 acre-feet of water from the Travis Peak Formation. Hamilton and Carbon have also changed to surface water, eliminating another 325 acre-feet per year of ground-water consumption. Hico, Cross Plains, and Rising Star are the next leading users of ground water in 1972, listed in decreasing order of usage.

Table 4.—Summary of Results of Aquifer Tests Conducted on Wells Completed in the Antlers and Travis Peak Formations

Aquifer: **Kca, Antlers Formation; Kctp, Travis Peak Formation; Kcho, Hosston Member of Travis Peak Formation; Kche, Hensell Member of Travis Peak Formation.**

Transmissibility values are the average of drawdown and recovery tests unless otherwise indicated in the remarks.

Well	Aquifer	Transmissibility (gal/d)/ft	Permeability (gal/d)/ft²	Coefficient of Storage	Yield gal/min	Specific Capacity (gal/min)/ft	Remarks
			Brown County				
BR-31-57-847	Kca	8,900	225	—	41	1.5	Pumping well
858	Kca	11,600	258	0.0043	—	—	Observation well
859	Kca	11,500	274	.0050	—	—	Do.
860	Kca	14,400	320	.03	—	—	Do.
			Comanche County				
DY-31-53-423	Kcho	7,900	208	—	69	2.4	Pumping well
448	Kcho	10,910	341	0.053	—	—	Observation well
449	Kcho	11,285	305	.05	—	—	Do.
450	Kcho	12,680	352	.043	—	—	Do.
451	Kcho	14,375	375	.021	—	—	Do.
41-05-401	Kcho	8,500	213	.0003	—	—	Observation well
402	Kcho	8,400	187	—	120	4.3	Pumping well

Table 4.—Summary of Results of Aquifer Tests Conducted on Wells Completed in the Antlers and Travis Peak Formations—Continued

Well	Aquifer	Transmissibility (gal/d)/ft	Permeability (gal/d)/ft²	Coefficient of Storage	Yield gal/min	Specific Capacity (gal/min)/ft	Remarks
			Comanche County—Continued				
DY-41-05-408	Kcho	12,200	321	.004	—	—	Observation well
409	Kcho	12,300	354	.13	—	—	Drawdown of observation well
			Eastland County				
JD-31-44-505	Kctp	5,140	260	—	70	2.5	Pumping well
516	kctp	6,050	200	—	—	—	Observation well
51-239	Kca	8,900	212	—	90	5.1	Pumping well
240	Kca	9,200	263	0.00	—	—	Observation well
270	Kca	9,000	300	.0042	—	—	Do.
271	Kca	7,500	300	.04	—	—	Do.
272	Kca	13,200	440	.068	—	—	Drawdown of observation well

For additional Pumping Tests see Table 4 of Texas Water Development Board Report 195 (Klemt and others, 1975.)

Table 5.—Inventory of Wells by Water Use

Use	County						
	Brown	Callahan	Comanche	Eastland	Erath	Hamilton	Total
Domestic	21	119	81	79	34	28	362
Public supply and livestock	8	30	25	27	32	10	132
Irrigation	95	45	779	683	219	8	1,829
Industrial	13	1	9	1	15	2	41
Abandoned	8	17	69	61	27	1	183
Total	145	212	963	851	327	49	2,547

Table 6.—Irrigation Well Inventory by County

County	Total Number of Irrigation Wells[1]	Irrigation Wells Inventoried[2]	Percent Inventoried
Brown	161	104	64.6
Callahan	45	45	100
Comanche	1,697	811	47.8
Eastland	1,243	720	57.9
Erath	304	225	74.0
Hamilton	8	8	100
Total	3,458	1,913	55.3

*Approximately 25-50 percent inventory of irrigation wells was the goal for this report.

[1]The number and location of all irrigation wells were determined in 1971 by field investigation and the number updated through reports submitted by drillers up until 1973.

[2]Except in several areas, inventory ceased in 1972 and includes irrigation wells that have been abandoned.

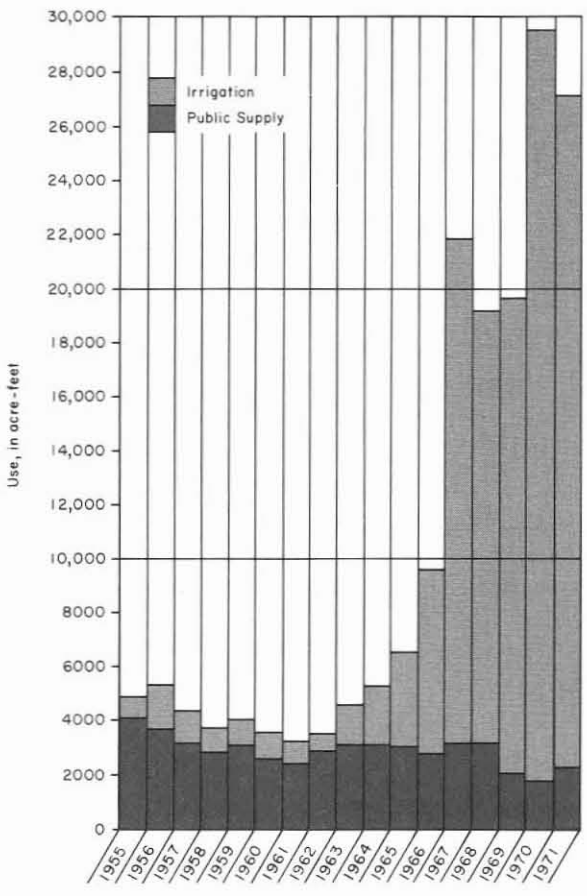


Figure 25.—Public Supply and Irrigation Ground-water Use from the Antlers and Travis Peak Formations and Paleozoic Rocks in the Study Area, 1955-71

In Stephenville, water is pumped from the Travis Peak Formation from 22 wells ranging in depth from 366 to 511 feet. Most of the wells pump about 150 gallons per minute although they are capable of much more. Wells are dispersed within the city limits and there are also eight city wells equally spaced to a distance six miles south of town towards Alexander along FM 914. During the summer months, 2.6 million gallons per day is pumped from all wells.

The city of Hico has two wells, one 311 feet deep (Hensell) and the other 600 feet deep (Travis Peak). The yield of the deeper well is approximately 200 gal/min while the Hensell well only yields about 115 gal/min. A new city well has been drilled recently but the information on it has not been received as yet. During the summer months, about one-quarter million gallons per day is pumped for city use.

The city of Cross Plains pumps from 26 wells completed in the Antlers Formation. The wells range from 45 to 70 feet in depth and pump about 127,000 gallons per day. The estimated yield for these wells is 10 to 15 gal/min. Cross Plains is situated on the edge of the Cretaceous—Paleozoic contact and therefore does not have the thickness of water saturated sand necessary for larger yields. Several miles north of Cross Plains, yields up to 40 gal/min can be attained.

The city of Rising Star has 15 municipal wells pumping water from the Antlers Formation at the rate of two million gallons per month. The wells range from 70 to 95 feet deep and produce about 40 gal/min. During the summer months when the heavily irrigated area surrounding the town is in full production, a serious drop in municipal well yields is experienced.

The other small towns in the study area pump about 100 acre-feet of ground water per year.

Irrigation

The irrigation boom did not start in the study area until around 1965 when irrigation and public supply ground-water use were about equal. Since that time, irrigation use has increased to over 25,000 acre-feet per year more than public supply use and over 85 percent of the total ground-water usage is for irrigation. Most of this economic development can be attributed to the growth in the peanut industry. Peanut production in the study area is the largest in Texas and according to the Texas Almanac, Comanche County is the leading peanut producing county in the State (Dallas Morning News, 1972). Also a large amount of ground water is used for irrigating grasses.

Table 9 shows the development of ground water for irrigation by county. Brown and Callahan Counties have begun to develop their agricultural capabilities through irrigation. Their production is estimated to have doubled since 1971. As an example of the growth experienced in the Rising Star area of Eastland and Brown Counties, 75 irrigation wells were drilled in a one month period in early 1974.

Comanche and Eastland Counties account for 85 percent of the irrigation wells located in the 1971 irrigation well inventory. A physical inventory of 55 percent of the irrigation wells provided more than sufficient information to determine the

Table 7.—Pumpage of Ground Water in the Study Area, 1970
(Quantities in acre-feet per year [1])

County	Irrigation	Industry	Public Supply	Domestic and Livestock	Total
Brown	410	< 1	49	282	741
Callahan	204	< 1	119	116	439
Comanche	13,380	1	28	844	14,253
Eastland	7,825	32	77	405	8,339
Erath	5,100	1	1,572	647	7,320
Hamilton	350	< 1	174	268	792
Total	27,269	34	2,019	2,562	31,884

[1]Quantities estimated in part.

hydraulic characteristics of the Antlers and Travis Peak Formations. The concentrations of irrigation wells are normally developed in the Antlers and Travis Peak Formations except in the Duster area of Comanche County where Paleozoic rocks are tapped for irrigation water.

The quantity of ground water used for irrigation was estimated from power and yield tests conducted on irrigation wells within the study area. The procedure used to estimate the irrigation pumpage is as follows: (1) the annual amount of power, in kilowatt-hours, supplied to the irrigated farms from 1957 through 1971 was obtained from power companies and electrical cooperatives supplying the irrigation district; (2) power and yield tests were conducted on selected irrigation wells to determine the average number of gallons produced per kilowatt-hour depending upon the irrigation system employed (open discharge into a pit, direct through a sprinkler system, and open discharge with a booster on the same line); and (3) the average number of gallons used per kilowatt-hour was multiplied by the total number of kilowatt-hours supplied to the irrigation system for that year. This gives the approximate number of gallons used that year by the system tested. An average number of gallons per kilowatt-hour was determined separately for each county except in certain areas where power and yield tests were insufficient in number. This was done to take into account the differences in hydraulic characteristics throughout the study area. The data and results collected from power and yield tests are given in Table 10. The average gallons per kilowatt-hour factors determined from these tests, listed by county, are as follows:

System Type	Comanche	Eastland	Erath
Open	898	911	1,044
Direct	597	536	613
Open with booster	405	409	565

The factors used for Brown and Callahan Counties were determined using the Eastland County tests (western half) and those used for Hamilton County were derived from Erath County tests. Also, these figures are from tests conducted on irrigation wells drilled on the outcrop. For those wells that were drilled through younger formations and into the Travis Peak, mainly in Erath and Hamilton Counties, a different set of factors was used because of the higher pumping lift.

Table 8.—Annual Public-Supply Pumpage of Ground Water, 1955-72, by City, in Acre-Feet (SW-changed to surface-water use.)

	Blanket	May	Zephyr	Cross Plains	DeLeon	Gustine	Carbon	Gorman	Rising Star	Dublin	Morgan Mills	Stephenville	Hamilton	Hico
1955	9	—	—	61	158	—	3	187	74	232	—	2,817	321	135
1956	17	—	—	101	190	—	3	175	110	232	—	2,302	401	157
1957	10	—	—	101	188	—	3	166	120	232	—	1,964	343	122
1958	13	—	—	101	155	—	5	196	84	307	—	1,560	240	129
1959	13	—	—	124	99	—	4	193	166	392	—	1,680	290	131
1960	8	—	—	89	148	—	1	193	166	387	—	1,105	323	142
1961	9	—	—	85	183	—	11	77	92	435	—	1,170	320	128
1962	9	—	—	84	177	—	4	79	123	555	—	1,292	307	154
1963	10	—	—	107	221	—	4	79	92	600	—	1,324	356	176
1964	10	—	—	122	362	—	4	85	107	657	—	1,298	297	152
1965	10	—	—	104	509	—	4	82	117	657	—	1,396	49	157
1966	10	—	—	107	521	—	2	82	77	562	—	1,326	14	140
1967	10	2	—	112	582	—	2	96	89	663	1	1,460	SW	190
1968	10	11	—	100	599	19	2	100	91	663	5	1,426	SW	139
1969	10	8	3	195	102	26	10	22	80	SW	5	1,479	SW	157
1970	10	9	30	119	SW	26	19	SW	58	SW	5	1,567	SW	171
1971	23	11	23	133	SW	28	SW	SW	89	SW	5	1,711	SW	184
1972	26	10	23	140	SW	29	SW	SW	38	SW	7	2,032	SW	192

Table 9.— Annual Pumpage of Ground Water for Irrigation (Acre-feet per year)

	COUNTY				
Year	Brown	Callahan	Comanche	Eastland	Erath
1967	130	58	10,760	4,125	3,250
1968	108	37	8,760	4,215	2,560
1969	155	84	9,805	4,730	2,775
1970	410	204	13,380	7,825	5,100
1971	620	310	12,960	4,810	6,100

In 1963, there were an estimated 180 irrigation wells supplied from the Antlers and Travis Peak Formations. By the end of 1967, about 1,600 irrigation wells were in operation and by 1972, there were over 3,700 irrigation wells capable of producing approximately 200 million gallons per day of ground water during the irrigation season.

Domestic and Livestock

The amount of ground water pumped from the Antlers and Travis Peak Formations for rural domestic purposes and livestock use in 1970 was approximately 2,562 acre-feet (Table 7). This amounts to only eight percent of the ground-water use for the entire study area. The pumpage for domestic and livestock purposes has been fairly constant from 1955 to 1971 with minor fluctuations occurring during wet or dry years.

The amount of ground water used was estimated by using the rural population as listed by county in the Texas Almanac (Dallas Morning News, 1972), and the livestock population as reported in Texas Livestock Statistics (Texas Department of Agriculture, 1971).

In areas where there is a normal section of Hensell and Hosston Members of the Travis Peak Formation, the domestic and livestock wells are usually completed only in the upper Hensell Member where there is sufficient water. These wells are usually not affected by the irrigation pumpage during the summer. However, in the Antlers Formation and in the Travis Peak where the Hensell is not present, these small-capacity wells are definitely affected by the heavy irrigation pumpage. Most irrigation wells are completed in either the Hosston Member only or in the entire Antlers or Travis Peak Formation.

GENERAL CHEMICAL QUALITY OF GROUND WATER

The types and concentrations of dissolved minerals carried in ground water are derived mainly from the soil and rocks through which the water percolates. As the water moves through its environment, the solvent power of water dissolves some of the minerals from the surrounding rocks. The concentration of the various dissolved mineral constituents depends upon the solubility of minerals in the formation, the length of time water is in contact with the rock, and the concentration of carbon dioxide present within the water. Therefore, the chemical character of the water mirrors the general mineral composition of the earth through which it has passed. Additionally, dissolved mineral concentrations generally increase with depth and temperature. The source and significance of dissolved-mineral constituents and properties of water are summarized in Table 11 which is modified from Doll and others (1963, p. 39-43), The chemical analyses of water from selected wells in Brown, Callahan, Comanche, Eastland, Erath, and Hamilton Counties are given in Table 19. The wells from which samples were taken are identified in the well-location maps by a bar over the well numbers.

Quality Criteria or Standards

The degree and type of mineralization of ground water determines its suitability for munici-

Table 10.--Power and Yield Tests from Selected Irrigation Wells

BROWN COUNTY

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
1	31-57-847	Nov. 16, 1971	open	47	0		2.0		41		101.4	1,140	2.2	

Table 10.--Power and Yield Tests from Selected Irrigation Wells

COMANCHE COUNTY

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
1	31-51-605	Aug. 8, 1966	direct	4	0	174	5.0			101	33.5	720	8.4	2 wells-2 meters-pump through one line
	606						3.0							
2	621	July 15, 1970	do	4	0	192	20.0			152	77.0	474	19.3	
3	810	Aug. 25, 1970	open	5	30	75	1.5		80		30.5	866	5.5	3 wells pump through one discharge line
	811						1.5							
	812						1.5							
4	903	Aug. 25, 1970	do	4	30	71	1.0		82		22.5	888	5.0	3 wells pump through one discharge line
	904						1.5							
	905						1.5							
5	52-201	Aug. 17, 1967	do	23	45	79	2.0		12		173.0	392	7.3	3 wells pump through three discharge lines-
	202						3.0		20					booster not on
	203						3.0		16					
6	204	Aug. 10, 1967	direct	4	0	133	7.5			136	55.0	694	13.7	
	205						10.0							
7	401	Aug. 5, 1966	do	3	15	101	7.5			115	30.0	746	9.2	
8	411	July 10, 1970	open	5	0	77	1.0		24		9.5	758	1.9	
9	415	July 16, 1970	direct	4	0	106				37	13.0	687	3.3	
10	502	Aug. 8, 1966	open	24	0	84	.75		11		46.0	347	1.9	house and well on meter
11	521	July 16, 1970	do	17	0	55	1.5		38		30.0	1,295	1.8	
12	608	Aug. 5, 1966	direct	5	20	180	15.0			137	85.0	516	16.0	

Table 10.--Power and Yield Tests from Selected Irrigation Wells

COMANCHE COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in Gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
13	31-52-609	Aug. 8, 1966	direct	24	0	160	10.0			44	94	668	7.8	house and well on meter
14	611	Aug. 17, 1967	do	24	5		3.0			100	243.0	521	10.1	
	612						5.0							
	613					90	3.0							
15	623	July 16, 1970	open	4	0		1.0		16		25.0	488	6.3	3-wells pump through one discharge line
	624						1.5		30					
	625					70	1.0		15					
16	629	do	direct	4	0		7.5			93	23.5	952	5.9	
17	703	June 28, 1966	open	2	0	61	1.0		27		3.0	1,080	1.5	
18	704	Aug. 5, 1966	direct	6	0	150	5.0			87	74.0	421	12.3	3 wells-3meters-pump through 1 discharge line
	705						5.0							
	706						5.0							
19	721	July 16, 1970	do	3	0	188	25.0			231	70.0	594	23.3	
20	723	do	open	21	30	43	1.0		49		83.5	750	3.9	
	724						1.5							
21	804	Aug. 15, 1967	direct	17	35	119	10.0			213	460.0	487	26.3	
	805					119	15.0							
	806					125	10.0							
22	812	July 9, 1970	open	4	0		3.0		69		15.5	1,068	3.9	
22a	812	July 10, 1970	do	25	0		3.0		67		87.7	1,135	3.5	

Table 10.--Power and Yield Tests from Selected Irrigation Wells

COMANCHE COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
23	31-52-832	July 13, 1970	open-booster	24	0		2.0	15	21		29.5	100	12.3	
24	845	July 10, 1970	direct	4	0	175	20.0			160	60.0	641	15	
25	846	Aug. 18, 1970	open	4	0	125	3.0		84		25.0	802	6.3	
	812					120	3.0							
26	902	Aug. 8, 1966	direct	4	0	151	7.5			103	32.0	768	8.0	
27	913	July 9, 1970	do	3	20	144	5.0			85	30.0	563	9.0	
	918					143	5.0							
28	915	July 14, 1970	do	5	0		3.0			52	23.0	668	4.6	
	916					142	3.0							
29	53-423	Oct. 11, 1971	open	72	0	83	5.0		69		443.0	669	6.2	
30	702	July 29, 1966	do	4	0	105	3.0		33		20	741	5.0	
	703						3.0		29					
31	704	do	open-booster	5	0	99	5.0	15	73		82.0	534	16.4	
	705						5.0		73					
31a	704	do	open	1	20	99	5.0		73		10.0	1,163	7.6	
	705						5.0		73					
32	706	do	direct	4	0	128	5.0			31	13.0	561	3.2	
33	724	Aug. 5, 1966	open	6	50	74	1.0		11		23.0	342	3.3	
	725						1.0		8					

Table 10.--Power and Yield Tests from Selected Irrigation Wells

COMANCHE COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
34	31-53745	July 14, 1970	open-booster	26	45	132	3.0		56		285.0	314	10.7	
	750					143	3.0							
35	57-604	Aug. 9, 1966	direct	4	0	160	10.0			74	37.0	477	9.2	
36	58-703	do	open	4	0	66	3.0		44		8.5	1,224	2.1	
37	59-206	Aug. 25, 1970	direct	6	0		10.0			38	23.0	596	3.8	
38	215	do	do	6	0		20.0			189	83.5	814	13.9	
39	216	do	open-booster	2	0	139	1.5	7.5		196	36.0	654	18.0	
	217						2.0							
	218						7.5							
40	301	Aug. 11, 1966	direct	4	0		15.0			132	80.0	396	20.0	2 well-2 meters-pump through 1 line
	307					253	10.0							
41	305	July 28, 1966	open	4	0	50	1.5		18		16.0	618	4.0	
	306						2.0		23					
42	310	Aug. 25, 1970	do	5	0		.50		7		17.5	526	3.5	
	311						.50		6					
	324						.50		9					
	325					36	.75		8					
43	602	do	do	5.0	0		2.0		(52)		35.3	440	7.1	4 wells-2 meters-pump through one discharge pipe
	603						2.0							

Table 10.--Power and Yield Tests from Selected Irrigation Wells

COMANCHE COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
43	31-59-604	Aug. 25, 1970	open			121	3.0							
	605						1.0							
44	60-209	Aug. 16, 1966	do	25	0	87	3.0		73		190.0	1,086	7.6	house on same meter
	210						2.0		65					
45	212	Aug. 15, 1966	direct	12	5	152	3.0			36	41.0	634	3.4	
46	334	Aug. 20, 1970	open	3	0		1.5				21.6	702	7.2	
	335					150	2.0		(84)					
	336						1.5							
47	502	July 28, 1966	open	4	10	75	.75		26		4.0	1,644	1.0	
48	605	Aug. 15, 1967	do	24	8	71	3.0		36		79.0	662	3.3	
49	607	do	do	23	40	86	3.0		49		84.0	823	3.6	
50	608	do	open-booster	23	38	73	3.0	15	67		258.0	366	10.9	
51	617	Aug. 20, 1970	open	4	0		3.0		103		30.0	1,537	7.5	
	618	Aug. 20, 1970				107	3.0		90					
52	701	July 25, 1967	do	4	0	41	1.5		35		7.5	1,110	1.9	
53	809	do	do	4	30	61	3.0		65		17.0	1,028	3.8	
54	810	do	do	4	30	55	1.5		36		8.0	1,215	1.8	
55	811	do	direct	5	0	128	10.0			135	55.0	736	11.0	
	812						5.0							
56	61-109	Aug. 10, 1966	do	5	0		3.0			160	59.0	705	13.7	3 wells-2meters-pump through one sprinkler line

Table 10.--Power and Yield Tests from Selected Irrigation Wells

COMANCHE COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
56	31-61-110	Aug. 10, 1966	direct			170	3.0							
	111						5.0							
57	112	Aug. 16, 1967	open-booster	24	0		1.0	10	21		336.0	410	14.0	
	113					62	2.0		41					
	114	do					2.0		34					
58	115	do	open	22	40	62	1.0		17		228.0	768	10.1	
	116						2.0		43					
	117						7.5		69					
59	208	July 16, 1970	direct	4	0	332	7.5							
209	209						7.5			159	78.0	489	19.5	
60	402	June 29, 1966	open	7	0	102	3.0		57		35.0	1,032	5.0	
	403						1.5		29					
61	701	Aug. 3, 1966	direct	4	0	249	10.0			90	32.0	675	8.0	
62	703	do	open	4	0	159	5.0		80		21.0	914	5.2	
63	802	do	do	25	10	105	7.5		115		193.0	894	7.7	domestic well and shop on same meter
64	808	July 15, 1970	direct	4	0	218	15.0			108	70.0	370	17.5	
65	901	July 27, 1966	open	3	30	104	3.0		59		12.0	1,023	3.4	
66	41-02-201	Sept. 4, 1970	do	4	40	30	1.0		11		37.0	544	7.9	
	202						1.0		21					
	203						1.0		16					

Table 10.--Power and Yield Tests from Selected Irrigation Wells

COMANCHE COUNTY-Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
66	41-02-204	Sept. 4, 1970	open				3.0		25					
67	03-101	Aug. 7, 1967	do	18	0	55	5.0		41		42.0	1,057	2.3	
68	203	July 26, 1967	do	3	0	39	1.5		30		6.0	891	2.0	
69	04-201	Aug. 7, 1967	do	18	15	74	1.5		52		110.5	930	6.1	
	202						1.0		12					
	203						1.0		30					
70	204	July 25, 1967	direct	3	15	139	2.0			74	22.5	641	6.9	
	205						2.0							
	206						2.0							
71	502	June 29, 1966	open	5	0	94	5.0		67		18.0	1,117	3.6	
72	505	Aug. 4, 1966	direct	4	0	192	5.0			68	42.0	383	10.5	2 wells-2 meters-pump through one sprinkler line
	506						7.5							
73	507	Aug. 27, 1970	do	4	0	244	15.0			56	56.0	241	14.0	
74	803	do	open	22	0		3.0		15		54.0	359	2.5	
75	05-205	Aug. 2, 1966	open-booster	8	36	115	5.0	20	50		210.0	454	24.4	
	212						10.0		100					
	213						3.0		35					
76	206	June 21, 1966	open	3	0	102	5.0		71		14.5	881	4.8	
77	207	do	do	3	0		5.0		51		10.5	874	3.5	
78	210	Aug. 2, 1966	direct	4	45	229	5.0			45	30.0	429	6.3	

Table 10.--Power and Yield Tests from Selected Irrigation Wells

COMANCHE COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump Horse Power		Yield in Gal/min.		Total Kwh used	Gals/ Kwh	Kwh/ Hr	Remarks
				Hour	Min.		Well	Booster	Well	Sprinkler				
78	41-05-211	Aug. 2, 1966	direct				5.0							
79	402	Sept. 21, 1971	open	24	0		10.0		120		119.0	1,452	5.0	
80	502	Aug. 2, 1966	do	12	0		5.0	57			49.0	830	4.1	
81	503	do	do	4	0	86	7.5		218		27.0	1,939	6.7	
82	905	July 27, 1966	do	4	15	123	5.0		60		20.0	765	4.7	
83	12-303	July 12, 1966	do	14	45	135	7.5		96		85.0	996	5.8	
84	304	June 21, 1966	direct	2	0	101	10.0			70	16.0	524	8.0	
85	13-101	Aug. 4, 1966	open	6	30	126	7.5		92		40.0	900	6.1	
86	201	Aug. 8, 1967	do	5	0	152	3.0		30		25.0	616	5.0	
	202						3.0		21					
87	14-106	Aug. 4, 1966	do	4	0	170	5.0		30		50.0	403	12.5	
	107					182	15.0		54					
88	305	Aug. 8, 1967	direct	3	15	115	7.5			97	18.5	1,019	5.7	

Table 10.--Power and Yield Tests from Selected Irrigation Wells

EASTLAND COUNTY

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
1	30-48-901	Aug. 18, 1967	open	3	15	53	3.0		38		23.0	1,251	7.1	
	902						5.0		110					
2	56-103	do	direct	2	0		2.0			26	5.5	559	2.8	
3	401	Aug. 15, 1966	open	3	30	73	3.0		41		7.0	1,218	2.0	
4	508	Aug. 16, 1966	direct	5	0	126	5.0			56	20.0	863	4.0	
5	64-301	Aug. 17, 1966	open	4	0	60	2.0		36		34.0	849	8.5	
	302						2.0		47					
	306						3.0		38					
6	307	do	direct	3	0	201	5.0			28	11.0	455	3.7	
7	31-35-601	July 17, 1967	open	5	0	35	5.0		11		4.5	693	0.9	
8	36-702	July 12, 1967	do	2	30	56	2.0		13		6.0	320	2.4	
9	703	do	direct	2	30	95	5.0			51	37.0	204	14.8	
	704						5.0							
	705						5.0							
10	42-508	Aug. 18, 1966	open	4	0	45	1.5		(52)		11.0	1,139	2.8	
	509						1.0							
11	511	Aug. 20, 1970	do	4	0		1.5		16		24.0	862	6.0	
	512						1.5		10					
	513						1.5		19					
	514						1.5		42					

Table 10.--Power and Yield Tests from Selected Irrigation Wells

EASTLAND COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
12	31-42-606	Aug. 20, 1970	open	4	0		5.0				78	923	19.5	6 wells on 4 meters pump through one discharge pipe
	608						3.0							
	609						3.0		(300)					
	610						3.0							
	618						3.0							
	619						3.0							
13	704	Aug. 19, 1970	do	4	0		2.0				23.0	503	5.7	4 wells pump through one discharge pipe
	706						.75		(48)					
	707						.75							
	708						.75							
14	717	do	do	4	0	28	1.0		22		6.0	868	1.5	
15	810	Aug. 20, 1970	open-booster	26	0		3.0				384.0	394	14.8	5 wells pump through 4 discharge pipes
	811						5.0		(38)					
	812						3.0		15					
	818						2.0		24					
	834						.50		22					
16	901	Aug. 19, 1966	open	4	30	64	2.0		34		26	1,029	5.8	
	902						3.0		65					
17	903	do	direct	4	0	118	5.0			284	85.5	796	21.4	
	904						7.5							
	905						7.5							
	906						5.0							

Table 10.--Power and Yield Tests from Selected Irrigation Wells

EASTLAND COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
17	31-42-907	Aug. 19, 1966	open				7.5							
18	43-705		open-booster	24	0	39	1.5		(82)		274.0	432	11.4	4 wells on 2 meters pump through one discharge pipe
	706						1.5							
	707						2.0							
	709						1.5							
19	804	July 9, 1970	open	4	0	46	.75		17		4.8	828	1.2	
20	804	July 10, 1967	direct	3	0	159	3.0			42	19.0	399	6.3	2 wells-2 meters
	805						3.0							
21	806	do	open	17	30	56	.50		20		81.5	1,288	4.7	
	807						2.0		45					
	808						1.5		35					
22	843	July 9, 1970	open-booster	24	0		.50	7.5	10		201.0	265	8.4	
	844						1.0		27					
23	904	July 24, 1967	direct	3	0	162	7.5			174	48.0	653	16.0	3 wells-3 meters pump through one sprinkler line.
	51-306						7.5							
	307						3.0							
23a	43-904	July 15, 1970	do	5	0		7.5			321	120.3	800	24.0	4 wells-4 meters-pump through two sprinkler lines
	914						10.0							
	51-306						7.5							
	307						3.0							

Table 10.--Power and Yield Tests from Selected Irrigation Wells

EASTLAND COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
24	31-43-909	July 17, 1970	open-booster	24	0	76	3.0	20	75		470.0	575	19.6	
	911						3.0		69					
	940						3.0		34					
25	44-106	Aug. 16, 1967	direct	4	0	105	1.0			94	72.0	328	18.0	7 wells-3 meters-pump through one sprinkler line
	107						.50							
	108						.50							
	109						1.0							
	111						3.0							
	112						3.0							
26	113	Aug. 10, 1967	open	2	45	114	3.0		24		20.0	716	7.3	booster not on during test
	114						1.5		24					
	115						1.5		30					
27	403	July 17, 1967	open	16	30	26	2.0		41		103.0	1,274	6.2	
	404						2.0		37					
	405						2.0		55					
27a	405	July 10, 1970	do	4	0	71	1.5		44		17.0	1,293	4.3	
	406						2.0		48					
28	407	Aug. 14, 1967	direct	3	0	181	1.0			85	30.0	509	10.0	407 pumps into 408; 408 and 409 pump in one sprinkler line
	408						7.5							
	409						3.0							
29	503	July 18, 1967	open	4	0	47	2.0		60		11.0	1,300	2.8	

Table 10.--Power and Yield Tests from Selected Irrigation Wells

EASTLAND COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
30	31-44-505	July 18, 1971	direct	4	15	172	7.5			88	32.0	698	7.5	
30a	505	Sept. 18, 1971	open	72	0		7.5		70		570.0	531	7.9	
31	506	July 18, 1967	do	5	30	66	2.0		44		50.0	726	9.1	
	507						5.0		66					
32	602	Aug. 14, 1967	direct	4	0	230	5.0			140	80.0	422	20.0	
	603						5.0							
33	804	July 11, 1967	open	3	0	72	2.0		21		13.0	775	4.3	
	805						2.0		35					
34	806	July 18, 1967	do	20	15	66	3.0		40		4.5	1,080	2.2	
35	808	Aug. 15, 1967	do	19	0	68	2.0				84.0	896	4.4	3 wells pump into one sprinkler line
	809						2.0		(66)					
	810						2.0							
36	813	July 10, 1970	direct	5	0	249	7.5			154	135.0	341	27.0	814 pumps into 816; 813 and 816 pump through one sprinkler line
	814						5.0							
	816						7.5							
37	51-101	Aug. 9, 1967	open	5	30	55	3.0				31.0	565	5.6	4 wells-3 meters-pump through one sprinkler line
	102						3.0		(53)					
	103						1.5							
	104						1.0							
38	31-51-215	July 16, 1970	direct	5	0		7.5			263	136.0	578	27.2	4 wells-4 meters-pump through two sprinkler lines

Table 10.--Power and Yield Tests from Selected Irrigation Wells

EASTLAND COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
38	31-51-266	July 16, 1970	direct				7.5							
	267						7.5							
	268						7.5		(2.11)					
39	224	July 11, 1967	do	6	15	178	7.5			56	48.0	438	7.6	
40	225	July 10, 1967	open	16	0	67	3.0		61		110.5	940	6.9	
	226						3.0		47					
41	239	Nov. 8, 1970	do	34	0		7.5		90		228.0	805	6.7	
41a	239	Nov. 11, 1971	do	38	0		7.5		90		255.0	805	6.7	
42	506	Aug. 23, 1973	do	1	0		3.0		56		2.4	1,400	2.4	
43	512	July 14, 1970	do	5	0		3.0				55.7	1,134	11.1	4 wells-4 meters-pump through one discharge pipe
	513						3.0		(2.11)					
	514						3.0							
	515						3.0							
44	52-102	July 10, 1967	do	17	0	67	.75				53.0	924	3.1	3 wells-3meters-pump through one discharge pipe
	103						.50		(48)					
	104					23	1.0							
44a	102	July 9, 1970	do	3	0		.75							
	103						.50		(45)		9.2	879	3.1	Do.
	104					19	1.0							

Table 10.--Power and Yield Tests from Selected Irrigation Wells

ERATH COUNTY

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
1	31-39-502	Aug. 16, 1967	open	3	10	72	1.5		18		7.0	490	2.2	
2	48-302	do	direct	3	30	206	10.0			69	20	727	5.7	
3	52-301	July 18, 1966	open	2	0	46	10.0		142		10.0	1,704	5.0	
4	302	July 10, 1967	do	4	30	64	3.0		100		42.0	1,605	9.3	
	303					75	5.0		150					
5	304	July 19, 1966	direct	2	0	111	10.0			120	30.0	480	15.0	
6	314	July 10, 1967	do	5	0	161	7.5			110	50.0	660	10.0	
6a	314	Aug. 18, 1970	do	4	0		7.5			86	37.5	548	9.4	
6b	314	July 7, 1970	do	4	0	174	7.5			103	39.0	632	9.8	
7	317	Aug. 20, 1970	do	4	0		30.0			302	11.0	653	27.8	
8	53-202	July 14, 1966	open	16	0	67	5.0		67		53.0	1,213	3.3	
9	203	do	do	5	0		7.5		137		44	934	8.8	
10	208	July 8, 1970	direct	5	0	153	7.5			114	104.0	696	20.8	2 wells-2 sprinkler lines on 1 meter
	209					189	7.5			128				
11	403	July 14, 1966	do	7	0	84	20.0			212	140.0	636	20.0	
12	411	July 10, 1967	do	5	45		20.0			260	195.0	456	33.9	2 wells-1 meter-on 1 sprinkler line
	412						15.0							
13	415	July 15, 1970	do	4	30		20.0			240	70	925	17.5	
14	434	Aug. 19, 1970	do	5	0		5.0			228	100	685	20.0	3 wells on 1 meter through 1 sprinkler line
	435						7.5							

Table 10.--Power and Yield Tests from Selected Irrigation Wells

ERATH COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
14	31-53-436	Aug. 19, 1970	direct			199	7.5							
15	439	Aug. 18, 1970	open-booster	25	30		3.0		65		379.3	659	14.8	3 wells and pit pump on one meter
	440					55	1.5		28					
	441						3.0		70					
15a	439	July 7, 1970	do	24	0		3.0		55		315.5	709	13.1	Do.
	440					81	1.5		38					
	41						3.0		63					
16	503	July 12, 1966	open	2	0	103	5.0		57		9.0	760	4.5	
16a	503	July 8, 1970	do	4	0	100	5.0		82		17.5	1,119	4.4	
17	504	July 17, 1970	do	4	0	80	5.0		91		37.5	897	9.4	
	515						5.0		49					
18	514	do	direct	4	0	147	3.0			41	12.5	777	3.1	
19	517	July 14, 1970	open	4	10	86	5.0		63		35.0	941	8.4	
	518					121	5.0		69					
20	527	July 7, 1970	direct	4	0	260	20.0			185	85.0	523	21.3	
21	717	July 12, 1960	open	5	0	83	1.5		(60)		18.0	1,000	3.6	
	718					87	1.0							
22	732	July 7, 1967	direct	5	0	211	7.5			93	48.0	580	9.6	
23	733	July 6, 1967	do	4	0	201	7.5			93	64.0	348	16.0	
	734						5.0							

Table 10.--Power and Yield Tests from Selected Irrigation Wells

ERATH COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
24	31-53-803	July 8, 1970	open	4	0	75	3.0		47		15.0	744	3.8	
25	804	July 6, 1967	open-booster	5	15	120			33		100.0	328	19.0	2 wells and booster total 30 hp, all on one meter
	806								71					
26	808	July 6, 1967	open	5	15	158	7.5		100		37.0	851	7.1	
25a	804	June 6, 1967	do	2	15	120			33		20.0	702	4.4	
	806								71					
25b	806	July 12, 1966	do	12	0	70			56		40.0	1,008	3.3	
27	809	July 7, 1967	direct	5	0	225	7.5			95	55.0	515	11.0	
28	54-801	July 17, 1967	open	18	0	320	30.0		200		510.0	424	28.3	
29	55-116	July 18, 1967	direct	4	0	406	30.0			150	155.0	233	38.8	
30	201	July 12, 1967	open	9	45	365	20		120		270.0	420	27.7	
31	407	July 17, 1967	do	17	5	325	25.0		172		410.0	430	24.0	
32	803	Aug. 15, 1967	do	23	0	282	20		185		535.0	476	23.2	house and milk shed on one meter also with well
33	61-202	Aug. 19, 1970	do	5	10	90	7.5		200		65.0	954	12.6	
34	204	July 15, 1970	direct	4	35	267	15.0			104	40.0	715	8.7	
35	301	July 13,1966	do	5	0	121	20			173	90.0	577	18.0	
35a	301	do	do	5	0		20.0			180	105.0	513	21.0	
36	601	July 12, 1967	open	24	0	345	10.0		65		380.0	245	15.8	Domestic and stock wells and house on same meter as irrigation well.
37	62-501	July 17, 1967	do	23	10	250	5.0		48		153.0	436	6.6	do

Table 10.--Power and Yield Tests from Selected Irrigation Wells

ERATH COUNTY--Continued

Test no.	Well numbers	Date of test	Method of distribution	Length of test		Total head in feet	Pump horse power		Yield in gal/min		Total kwh used	Gals/ kwh	Kwh/ hr	Remarks
				Hour	Min		Well	Booster	Well	Sprinkler				
38	32-41-103	Aug. 17, 1967	open	5	10	110	5.0		120		30	1,240	5.8	

Table 11.—Source and Significance of Dissolved-Mineral Constituents and Properties of Water

(Adapted from Doll and others, 1963, p. 39-43)

Constituent or property	Source or cause	Significance
Silica (SiO_2)	Dissolved from practically all rocks and soils, commonly less than 30 mg/l. High concentrations, as much as 100 mg/l, generally occur in highly alkaline waters.	Forms hard scale in pipes and boilers. Carried over in steam of high pressure boilers to form deposits on blades of turbines. Inhibits deterioration of zeolite-type water softeners.
Iron (Fe)	Dissolved from practically all rocks and soils. May also be derived from iron pipes, pumps, and other equipment.	On exposure to air, iron in ground water oxidizes to reddish-brown precipitate. More than about 0.3 mg/l stain laundry and utensils reddish-brown. Objectionable for food processing, textile processing, beverages, ice manufacture, brewing, and other processes. Texas Department of Health (1977) drinking water standards state that iron should not exceed 0.3 mg/l. Larger quantities cause unpleasant taste and favor growth of iron bacteria.
Calcium (Ca) and Magnesium (Mg)	Dissolved from practically all soils and rocks, but especially from limestone, dolomite, and gypsum. Calcium and magnesium are found in large quantities in some brines, Magnesium is present in large quantities in sea water.	Cause most of the hardness and scale-forming properties of water; soap consuming (see hardness). Waters low in calcium and magnesium desired in electroplating, tanning, dyeing, and in textile manufacturing.
Sodium (Na) and Potassium (K)	Dissolved from practically all rocks and soils. Found also in oil-field brines, sea water, industrial brines, and sewage.	Large amounts, in combination with chloride, give a salty taste. Moderate quantities have little effect on the usefulness of water for most purposes. Sodium salts may cause foaming in steam boilers and a high sodium content may limit the use of water for irrigation.
Bicarbonate (HCO_3) and Carbonate (CO_3)	Action of carbon dioxide in water on carbonate rocks such as limestone and dolomite.	Bicarbonate and carbonate produce alkalinity. Bicarbonates of calcium and magnesium decompose in steam boilers and hot water facilities to form scale and release corrosive carbon-dioxide gas. In combination with calcium and magnesium, cause carbonate hardness.
Sulfate (SO_4)	Dissolved from rocks and soils containing gypsum, iron sulfides, and other sulfur compounds. Commonly present in some industrial wastes.	Sulfate in water containing calcium forms hard scale in steam boilers. In large amounts, sulfate in combination with other ions gives bitter taste to water. Texas Department of Health (1977) drinking water standards recommend that the sulfate content should not exceed 300 mg/l.
Chloride (Cl)	Dissolved from rocks and soils. Present in sewage and found in large amounts in oil-field brines, sea water, and industrial brines.	In large amounts in combination with sodium, gives salty taste to drinking water. In large quantities, increases the corrosiveness of water. Texas Department of Health (1977) drinking water standards recommend that the chloride content should not exceed 300 mg/l.
Fluoride (F)	Dissolved in small to minute quantities from most rocks and soils. Added to many waters by fluoridation of municipal supplies.	Fluoride in drinking water reduces the incidence of tooth decay when the water is consumed during the period of enamel calcification. However, it may cause mottling of the teeth, depending on the concentration of fluoride, the age of the child, amount of drinking water consumed, and susceptibility of the individual (Maier, 1950, p. 1120-1132).
Nitrate (NO_3)	Decaying organic matter, sewage, fertilizers, and nitrates in soil.	Concentration much greater than the local average may suggest pollution. Texas Department of Health (1977) drinking water standards suggest a limit of 10 mg/l (as N) or 44.3 (as NO_3). Waters of high nitrate content have been reported to be the cause of methemoglobinemia (an often fatal disease in infants) and therefore should not be used in infant feeding (Maxcy, 1950, p. 271). Nitrate shown to be helpful in reducing inter-crystalline cracking of boiler steel. It encourages growth of algae and other organisms which produce undesirable tastes and odors.
Boron (B)	A minor constituent of rocks and of natural waters.	An excessive boron content will make water unsuitable for irrigation. Wilcox (1955, p. 11) indicated that a boron concentration of as much as 1.0 mg/l is permissible for irrigating sensitive crops; as much as 2.0 mg/l for semitolerant crops; and as much as 3.0 mg/l for tolerant crops. Crops sensitive to boron include most deciduous fruit and nut trees and navy beans; semitolerant crops include most small grains, potatoes and some other vegetables, and cotton; and tolerant crops include alfalfa, most root vegetables, and the date palm.

Table 11.—Source and Significance of Dissolved-Mineral Constituents and Properties of Water—Continued

(Adapted from Doll and others, 1963, p. 39-43)

Constituent or property	Source or cause	Significance
Dissolved solids	Chiefly mineral constituents dissolved from rocks and soils.	Texas Department of Health (1977) drinking water standards recommend that waters containing more than 1,000 mg/l dissolved solids not be used if other less mineralized supplies are available. For many purposes the dissolved-solids content is a major limitation on the use of water. A general classification of water based on dissolved-solids content, in mg/l, is as follows (Winslow and Kister, 1956, p. 5): Waters containing less than 1,000 mg/l of dissolved solids are considered fresh; 1,000 to 3,000 mg/l, slightly saline; 3,000 to 10,000 mg/l, moderately saline; 10,000 to 35,000 mg/l, very saline; and more than 35,000 mg/l, brine.
Hardness as $CaCO_3$	In most waters nearly all the hardness is due to calcium and magnesium. All of the metallic cations other than the alkali metals also cause hardness.	Consumes soap before a lather will form. Deposits soap curd on bathtubs. Hard water forms scale in boilers, water heaters, and pipes. Hardness equivalent to the bicarbonate and carbonate is called carbonate hardness. Any hardness in excess of this is called non-carbonate hardness. Waters of hardness up to 60 mg/l are considered soft; 61 to 120 mg/l, moderately hard; 121 to 180 mg/l, hard; more than 180 mg/l, very hard.
Sodium-adsorption ratio (SAR)	Sodium in water.	A ratio for soil extracts and irrigation waters used to express the relative activity of sodium ions in exchange reactions with soil (U.S. Salinity Laboratory Staff, 1954, p. 72, 156). Defined by the following equation: $$SAR = \frac{Na^{+}}{\sqrt{\frac{Ca^{++} + Mg^{++}}{2}}},$$ where Na^{+}, Ca^{++}, and Mg^{++} represent the concentrations in milliequivalents per liter (me/l) of the respective ions.
Residual sodium carbonate (RSC)	Sodium and carbonate or bicarbonate in water.	As calcium and magnesium precipitate as carbonates in the soil, the relative proportion of sodium in the water is increased (Eaton, 1950, p. 123-133). Defined by the following equation: $$RSC = (CO_3^{--} + HCO_3^{-}) - (Ca^{++} + Mg^{++})$$ where CO_3^{--}, HCO_3^{-}, Ca^{++}, and Mg^{++} represent the concentrations in milliequivalents per liter (me/l) of the respective ions.
Specific conductance (micromhos at 25°C)	Mineral content of the water.	Indicates degree of mineralization. Specific conductance is a measure of the capacity of the water to conduct an electric current. Varies with concentration and degree of ionization of the constituents.
Hydrogen ion concentration (pH)	Acids, acid-generating salts, and free carbon dioxide lower the pH. Carbonates, bicarbonates, hydroxides, phosphates, silicates, and borates raise the pH.	A pH of 7.0 indicates neutrality of a solution. Values higher than 7.0 denote increasing alkalinity; values lower than 7.0 indicate increasing acidity. pH is a measure of the activity of the hydrogen ions. Corrosiveness of water generally increases with decreasing pH. However, excessively alkaline waters may also attack metals. The Texas Department of Health (1977) recommends a pH greater than 7.

pal, industrial, irrigation, and other uses. Several criteria for water-quality requirements have been developed through the years which serve as guidelines in determining the suitability of water for various uses. Subjects covered by the guidelines are bacterial content; physical characteristics, including color, taste, odor, turbidity, and temperature; and the chemical constituents. Water-quality problems associated with the first two subjects can usually be alleviated economically. The neutralization or removal of most of the unwanted chemical constituents is usually difficult and often very costly.

Total dissolved-solids content is usually the main factor which limits or determines the use of ground water. Winslow and Kister (1956, p. 5) used an applicable, general classification of waters

based on the dissolved-solids concentration in parts per million (ppm). The classification is as follows:

Description	Dissolved-Solids Content (ppm)
Fresh	Less than 1,000
Slightly saline	1,000 to 3,000
Moderately saline	3,000 to 10,000
Very saline	10,000 to 35,000
Brine	More than 35,000

In recent years, most laboratories have begun reporting analyses in mg/l (milligrams per liter) instead of ppm. These units, for practical purposes, are identical unless the dissolved-solids concentration of water reaches or exceeds 7,000 units (ppm or mg/l). The concentrations of chemical constituents reported in this report, other than for oil-field brines, are in mg/l (Tables 12 and 13). Most of the chemical concentrations are below 7,000 mg/l and therefore the units are interchangeable. For the more highly mineralized waters, a density correction should be made using the following formula:

$$\text{Parts per million} = \frac{\text{Milligrams per liter}}{\text{Specific gravity of the water}}.$$

Municipal

As the first step in setting national standards for drinking water quality under the provisions of the Safe Drinking Water Act of 1974, the U. S. Environmental Protection Agency (EPA) issued drinking water regulations on December 10, 1975. These standards apply, selectively, to all types of public water systems of Texas and became effective June 1977. The responsibility for enforcement of these standards was assumed by the Texas Department of Health on July 1, 1977. Minor revision of the standards became effective on November 30, 1977.

As defined by the Texas Department of Health, municipal systems are classified as three types as follows:

1. "Public Water Systems" means any system for the delivery to the public of piped water for human consumption, if such a system has four or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

2. "Community Water System" means any system which serves at least four or more service connections or regularly serves 25 permanent type residents for at least 180 days per year.

3. "Non-community Water System" means any public water system which is not a community water system.

Standards which relate to municipal supplies are of two types: (1) primary and (2) secondary. Primary standards are devoted to constituents and regulations affecting the health of consumers. Secondary standards are those which deal with the esthetic qualities of drinking water. Contaminants for which secondary maximum contaminant levels are set in these standards do not have a direct impact on the health of the consumers, but their presence in excessive quantities may discourage the use of the water.

Primary Standards

Maximum contaminant levels (MCL) for dissolved minerals applicable to public and community water systems are listed as follows:

Contaminant	Maximum level, mg/l
Arsenic (As)	0.05
Barium (Ba)	1.0
Cadmium (Cd)	.010
Chromium (Cr^6)	.05
Lead (Pb)	.05
Mercury (Hg)	.002
Selenium (Se)	.01
Silver (Au)	.05
Nitrate (as N)	10 .

At the time this report was compiled, no analyses were available for the trace metals as shown above. Except for nitrate content, none of the above contaminant levels for toxic minerals applies to non-community water systems. The maximum of 10 mg/l nitrate as N (about 44.3 mg/l nitrate as NO_3) applies to public, community, and non-community systems alike.

Maximum fluoride contaminant levels are applicable to public and community water systems

Table 12.—Average Concentrations of Constituents in Water Samples from Wells Completed in the Antlers and Travis Peak Formations

Constituent	Average concentration in mg/l					
	Brown	Callahan	Comanche	Eastland	Erath	Hamilton
Silica (SiO_2)	17	19	20	20	17	14
Calcium (Ca)	115	131	138	155	87	38
Magnesium (Mg)	46	32	32	26	23	18
Sodium (Na)	87	91	88	117	33	190
Potassium (K)	4	2	5	6	3	6
Iron (Fe)	—	0.1	0.5	0.4	0.4	0.3
Bicarbonate (HCO_3)	383	373	357	336	318	378
Sulfate (SO_4)	75	83	71	89	36	110
Chloride (Cl)	160	167	204	301	55	112
Fluoride (F)	0.7	0.7	0.5	0.5	0.4	0.8
Nitrate (NO_3)	7.3	23	10.6	17.0	8.4	4.2
Boron (B)	0.3	0.2	0.2	0.2	0.2	—
Dissolved solids	688	740	741	872	414	670
Total Hardness	456	464	470	487	313	170
Specific conductance	1,144	1,172	1,266	1,373	692	1,155
pH	7.7	7.5	7.3	7.7	7.4	7.6
Percent sodium	25.44	26.36	27.42	31.06	18.16	60.55
SAR	1.9	2.0	1.7	2.0	0.8	9.1
RSC	0.0	0.1	0.1	0.1	0.0	3.0
Number of samples collected	38	134	186	256	84	11

Table 13.—Average Concentrations of Constituents in Water Samples from Wells Completed in the Hensell, Hosston, and Paleozoic Aquifers

Constituent	Average Concentration in mg/l									
	Hensell Member				Hosston Member			Paleozoic Rocks		
	Brown	Comanche	Erath	Hamilton	Comanche	Eastland	Erath	Callahan	Comanche	Eastland
Silica (SiO_2)	16	16	15	12	18	16	15	17	14	—
Calcium (Ca)	97	94	76	44	135	356	94	87	90	126
Magnesium (Mg)	58	36	33	21	20	47	42	25	26	199
Sodium (Na)	59	47	15	143	75	194	12	87	111	60
Potassium (K)	—	—	3	7	5	7	—	2	6	—
Iron (Fe)	—	—	0.4	—	0.2	1.3	—	—	—	—
Bicarbonate (HCO_3)	372	406	371	377	318	368	263	341	343	558
Sulfate (SO_4)	123	57	23	120	52	91	92	96	68	93
Chloride (Cl)	113	58	21	55	186	780	108	83	147	461
Fluoride (F)	0.6	0.6	0.3	1	0.6	0.3	0.2	0.6	0.5	—
Nitrate (NO_3)	10	14.9	2.2	1.4	6.8	31.7	2.5	22.4	4.6	—
Boron (B)	—	—	0.2	—	0.2	—	0.1	0.4	—	—
Dissolved solids	657	527	371	580	644	1,698	316	583	640	924
Total Hardness	497	372	329	198	414	1,040	274	321	329	1,133
Specific conductance	1,142	858	644	885	1,117	2,975	528	1,011	1,089	—
pH	7.6	7.5	7.2	7.6	7.2	6.9	7.4	7.8	7.5	—
Percent sodium	21.2	19.87	9.02	53.85	27.12	27.97	8.76	33.11	40.13	10.33
SAR	1.1	1.0	0.3	6.7	1.5	2.5	0.3	2.1	5.6	0.7
RSC	0.0	0.1	0.0	2.6	0.0	0.0	0.0	0.3	1.1	0.0
Number of samples collected	2	23	24	26	84	2	3	4	21	5

and they vary with the annual average of the maximum daily air temperature at the location of the system. The following table gives the maximum permissible limits for fluoride based on ranges in the annual average maximum daily air temperature:

Temperature (°F)	Temperature (°C)	Maximum concentration (mg/l)
63.9—70.6	17.7—21.4	1.8
70.7—79.2	21.5—26.2	1.6
79.3—90.5	26.3—32.5	1.4

Maximum contaminant limits for organic chemicals apply only to public and community water systems and are specified as follows:

Constituent	Level, milligrams per liter	Level, micrograms per liter
1. Chlorinated hydrocarbons Endrin (1,2,3,4,10, 10-hexachloro-6,7,-epoxy-1,4,4a,5, 6,7,8,8a-octahydro-1,4-endo, endo-5, 8-dimethano napthalene).	0.0002	.2
Lindane (1,2,3,4,5,6,-hexachloro-cyclohexane, gamma isomer).	0.004	4.0
Methoxychlor (1,1,1-Trichloro-2,2-bis [p-methoxyphenyl] ethane).	0.1	100
Toxaphene ($C_{10}H_{10}Cl_8$ — Technical chlorinated camphene, 67-69 percent chlorine).	0.005	5.0
2. Chlorophenoxys: 2,4-D (2,4-Dichlorophenoxyacetic acid).	0.1	100
2,4,5-TP Silvex (2,4,5-Trichloro-phenoxy propionic acid).	0.01	10

Maximum levels for coliform bacteria, as specified by the Texas Department of Health, apply to public, community, and non-community water systems. The limits specified are basically the same as in the 1962 Public Health Service Standards which have been widely adopted in most states.

In addition to the previously stated requirements, there are also stringent rules regarding general sampling and the frequency of sampling which apply to all three types of municipal systems. Additionally, public and community water systems are subject to rigid radiological sampling and analytical requirements.

Secondary Standards

Recommended secondary constituent levels applicable to all public water systems are given in the following table:

Constituent	Level
Chloride	300 mg/l
Color	15 color units
Copper (Cu)	1.0 mg/l
Corrosivity	non-corrosive
Foaming agents	0.53 mg/l
Hydrogen sulfide (H_2S)	.05 mg/l
Iron (Fe)	.3 mg/l
Manganese (Mn)	.05 mg/l
Odor	3 Threshold Odor Number
pH	> 7.0
Sulfate (SO_4)	300 mg/l
Total dissolved solids	1,000 mg/l
Zinc (Zn)	5.0 mg/l

The above listed secondary constituent levels are recommended limits, except for water systems which are not in existence as of the effective date of these standards. For water systems which are constructed after the effective date, no source of supply which does not meet the recommended secondary constituent levels may be used without written approval by the Texas Department of Health. The determining factor will be whether or not there is an alternate source of supply of acceptable chemical quality available to the area to be served.

After July 1, 1977, for all instances in which drinking water does not meet the recommended limits and is accepted for use by the Texas Department of Health, such acceptance is valid only until such time as water of acceptable chemical quality can be made available at reasonable cost to the area in question from an alternate source. At such time, the water which was previously accepted would either have to be treated to lower the constituents to acceptable levels, or water would have to be secured from the alternate source.

Complying with the primary standards is compulsory and it is recommended that the secondary standards also be met. However, many water-supply systems, both municipal and domestic, have not met these standards and have been in

operation for long periods of time without any apparent ill effects on the user. Tables 12 and 13 show the average concentrations of constituents in water samples taken from the Antlers Formation, the Hensell and Hosston Members of the Travis Peak Formation, and Paleozoic formations, by county.

Water having a nitrate content in excess of 45 mg/l is potentially dangerous to infants and has been related to the incidence of infant cynosis or "blue baby" disease. This involves reduction of the oxygen content in the blood constituting a form of asphyxia (Maxcy, 1950, p. 271). The presence of nitrate may indicate contamination by sewage (Lohr and Love, 1954, p. 10), decaying organic matter, fertilizers, or nitrates in the soil. Out of 915 water samples collected to date from wells completed in various aquifers within the study area, the nitrate content exceeded 45 mg/l in only 23 samples. The highest concentration of nitrate occurred in well BR-30-64-602 where a sample taken in 1962 showed 576 mg/l and another in 1969 showed 2,058 mg/l. Water from a dug well about 350 feet away contained 85 mg/l nitrate in 1962.

When recommended amounts of fluoride are found in drinking water, the incidence of tooth decay in children is reduced. In some cases, excessive concentrations of fluoride may cause mottling of the teeth (Maier, 1950, p. 1120-1132). The fluoride concentrations depend upon climatic conditions because the amount of drinking water consumed is influenced by the air temperature. The upper fluoride limit in the study area is 1.6, based on the annual average of maximum daily air temperatures, which is within the range from 70.7 to 79.2°F (21.5 to 26.2°C). Concentrations greater than the maximum limits constitute grounds for rejection of public-water supply by the Texas Department of Health. The fluoride content of water samples from the Antlers and Travis Peak Formations ranged from 0.1 to 5.3 mg/l (Table 19). The highest fluoride content measured was 5.3 mg/l in Well BX-30-54-102.

Analyses in which the organic chemicals had been determined were not available at the time this study was completed, therefore an evaluation of these constituents could not be made.

Water having a chloride content exceeding 300 mg/1 may have a salty taste. Maps showing the locations of all sampled wells with their respective chloride and dissolved-solids content are shown in Figures 26, 27, and 28. Of the 877 samples taken from the Antlers and Travis Peak Formations, including the Hensell and Hosston Members, 159 of them contained chloride concentrations in excess of 300 mg/1. Thirteen samples were in excess of 1,000 mg/1 and four in excess of 2,000 mg/1. One of the samples taken from an abandoned dug well (JD-31-42-510) located in an oil field contained 5,200 mg/1.

An iron content in excess of 0.3 mg/l tends to give the water an objectionable taste and also may cause, along with manganese in excess of 0.05 mg/l, reddish-brown or dark-gray stains on laundry, utensils, and plumbing fixtures. The concentration of manganese in the outcrop area is generally negligible and was less than 0.05 mg/l in the wells tested. Of the 50 samples in which iron was tested, 20 exceeded 0.3 mg/l. The largest concentration was 16.8 mg/l found in well DY-31-52-907.

Water containing sulfate in excess of 300 mg/l may produce a laxative effect. It also will cause the water to have an undesirable taste. The sulfate content measured in 877 water samples taken from the Antlers and Travis Peak Formations, including Hensell and Hosston Members, ranged from 4 to 1,297 mg/l and only 37 samples exceeded the above established limit. Well JD-31-35-401 had the highest concentration of sulfate, 1,297 mg/l, followed by well DY-41-04-906 which had 800 mg/l.

Water having a dissolved-solids content in excess of 1,000 mg/l is not recommended for public supply if other, less mineralized supplies are available at reasonable cost. In many places, water is utilized having a dissolved-solids content in excess of the recommended limit without incurring any apparent adverse effects. Generally speaking, water containing more than 1,000 mg/l dissolved solids is unsuitable for many purposes. In the report area, the dissolved-solids content of water samples tested ranged from 104 to 13,102 mg/l. The dissolved-solids content exceeded 500 mg/l in 485 samples, 1,000 mg/l in 138 samples, and 2,000 mg/l in 27 samples. No wells were found in Erath, Hamilton, or southeastern Comanche Counties that produce water containing more than 1,000 mg/l dissolved solids. There is a trend for lower dissolved-solids content as the water moves

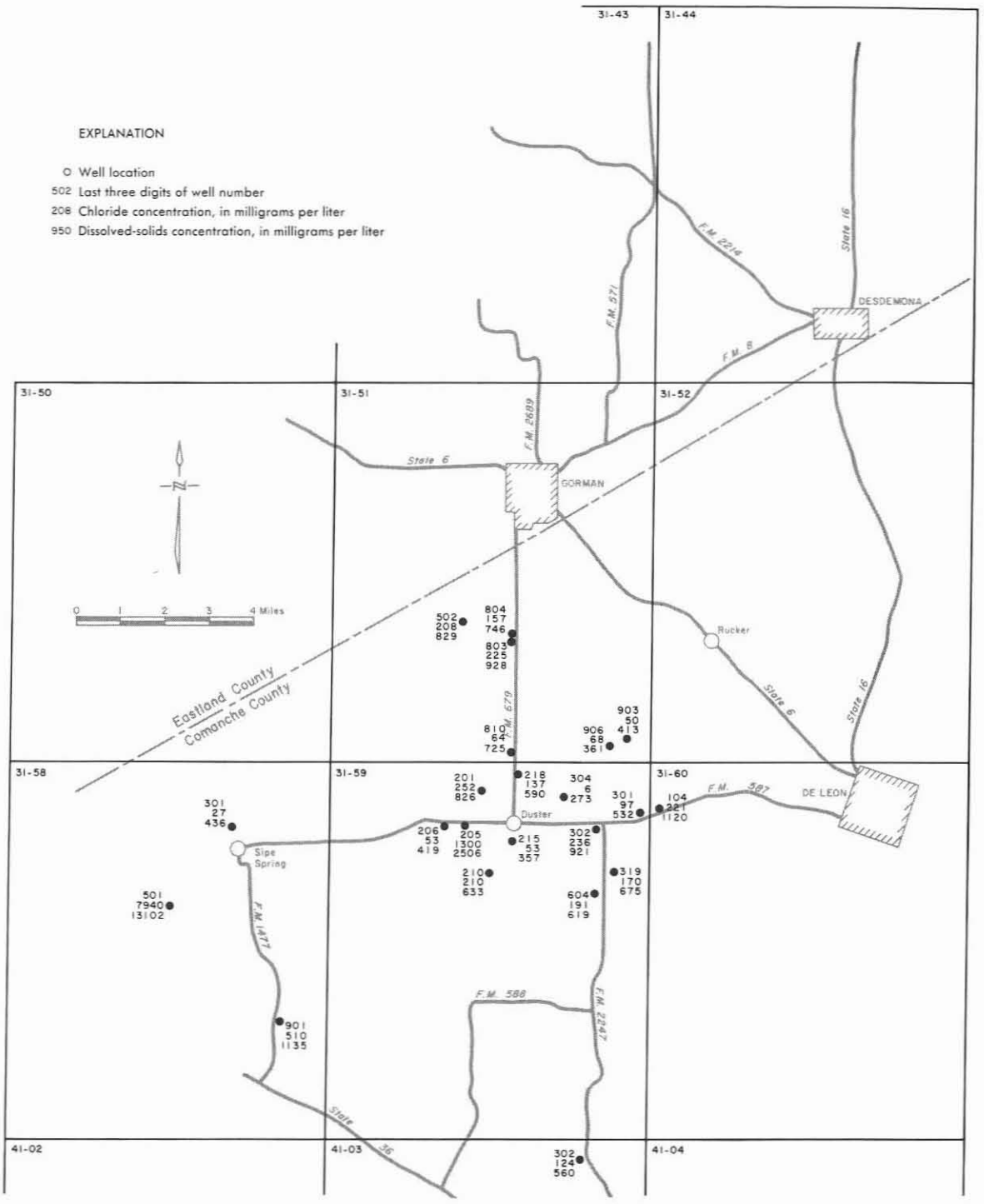


Figure 28

Chloride and Dissolved-Solids Content in Water from Wells Completed in the Paleozoic Aquifer

down-dip to the southeast, and only 18 percent of the water samples collected from wells in Erath and Hamilton Counties contained more than 500 mg/l.

Hardness in water is caused principally by calcium and magnesium. Excessive hardness of water causes an increase in soap consumption and encrustation, and in the formation of scale on hot water heaters, water pipes, and cooking utensils. No limits for hardness have been established by the U. S. Public Health Service or the Texas Department of Health, but the hardness of water becomes objectionable when it exceeds 100 mg/l (Hem, 1959, p. 147). A commonly accepted classification of water hardness and usability is shown in the following table:

Hardness Range (mg/l)	Classification	Usability
60 or less	Soft	Suitable for many uses without further softening
61 to 120	Moderately	Usable except in some industrial applications
121 to 180	Hard	Softening required by some industries
More than 180	Very hard	Softening desirable for most purposes

Water from wells completed in the Antlers and Travis Peak Formations is very hard. The average hardness is 393 mg/l for these wells; hardness is higher than 1,000 mg/l in 30 samples, and below 180 mg/l in 38 samples.

Domestic and Livestock

Ideally, waters used for rural domestic purposes should be as free of contaminants as those used for municipal purposes; however, this is not economically possible. At present there are no controls placed on private domestic or livestock wells. In general, the chemical constituents of waters used for domestic purposes should not exceed the concentrations shown in the following table, except in those areas where more suitable supplies are not available:

Substance	Concentration (mg/l)
Chloride (Cl)	300
Fluoride (F)	1.6*
Iron (Fe)	.3
Manganese (Mn)	.05
Nitrate (as N)	10.
Nitrate (as NO_3)	44.3
Sulfate (SO_4)	300.
Dissolved solids	1,000.

*Maximum fluoride limit based on annual average of maximum daily air temperature range of 70.7-79.2 °F, or 21.5-26.2°C (After Texas Department of Health, 1977).

Many areas of north-central Texas do not have and cannot obtain domestic water supplies which meet the above recommended standards; however, supplies which do not meet these standards have been used for long periods of time without any apparent ill effects to the user. It is not generally recommended that water used for drinking purposes contain more than a maximum of 2,000 mg/l dissolved solids; however water containing somewhat higher mineral concentrations has been used where water of better quality was not available.

Quality limits for livestock are variable. The limits of tolerance depend principally on the kind of animal and, according to Heller (1933, p. 22), the total amount of soluble salts in the drinking water, more so than the kind of salt, is the important factor. According to Hem (1959, p. 241), a high proportion of sodium or magnesium and sulfate in highly mineralized waters would make them very undesirable for livestock use. Heller suggests that as a safety rule 15,000 mg/l dissolved-solids content should be considered the upper limit for most of the more common livestock animals. According to Hem (1959, p. 241), the California State Pollution Control Board (1952) quotes other investigators who have also found concentrations as high as 15,000 mg/l to be safe for limited periods, but not for continuous use since water of considerably better quality is necessary for maximum growth and reproduction. In a 1950 publication relating to practices in Western Australia, the officers of the Department of Agriculture of that country quote

the following upper limits for dissolved-solids concentration in livestock water (Hem, 1959, p. 241).

Animal	Dissolved solids (mg/1)
Poultry	2,860
Hogs	4,290
Horses	6,435
Cattle (dairy)	7,150
Cattle (beef)	10,100
Adult sheep	12,900

In view of these high tolerance levels for livestock, no problems exist in this study area in regard to dissolved-solids content of the ground water.

In summary, ground water from wells completed in the Travis Peak Formation in the outcrop area meets most of the quality standards of the Texas Department of Health for both municipal and domestic uses. The nitrate and sulfate levels were well within the established limits while the iron content was borderline. The fluoride content was below the desirable limit, and the water is classified as very hard. Almost one-fourth of the samples exceeded the chloride limit, and over one-half (56 percent) of the samples surpassed the 1,000 mg/l recommended limit on dissolved solids.

Irrigation

The suitability of water for irrigation depends upon the chemical quality of the water, composition and drainage of the soil, irrigation practices, types of crops grown, and the climate of the region. According to the U.S. Salinity Laboratory Staff (1954, p. 69), the most important characteristics in determining the quality of ground water for irrigation are the salinity hazard as measured by the electrical conductivity of the water, the sodium hazard as measured by the sodium-adsorption ratio (SAR), and the concentration of boron or other elements that may be toxic.

The U.S. Salinity Laboratory Staff (1954, p. 69-82) has prepared a classification for irrigation waters in terms of salinity and sodium hazards. Empirical equations were used in developing a diagram, reproduced and modified in form as shown by Figure 29, which uses SAR and specific conductance in classifying irrigation waters. With respect to salinity and sodium hazards, waters are divided into four classes; low, medium, high, and very high. This range encompasses those waters which can be used for irrigation of most crops on most soils as well as those generally unsuitable for irrigation.

High concentrations of dissolved salts in irrigation water may cause a buildup of salt in the soil and eventually may make the soil saline. Increased salinity of the soil may drastically reduce crop yields by decreasing the ability of the plants to take up water and essential nutrients from the soil. The tendency of irrigation water to cause a high buildup of salts in the soil is called the salinity hazard of the water. The specific conductance of the water is used as an index of the salinity hazard. Irrigation wells sampled in the outcrop area had a specific conductance range from 153 to 12,000 at 25° C, with an average of about 1,200. As can be seen in the diagrams for the classification of irrigation waters, the majority of samples fall in the medium and high salinity hazard classes.

High concentrations of sodium relative to the concentrations of calcium and magnesium in irrigation water may adversely affect soil structure. Cations in the soil solution become fixed on the surface of the soil particles. Consequently, soils may become plastic, and movement of water through the soil would then be restricted, drainage problems could develop, and cultivation would be rendered difficult. This adverse effect on soil structure, caused by high sodium concentrations in an irrigation water, is called the sodium hazard. An index used for predicting the sodium hazard is the sodium-absorption ratio (SAR), which is defined by the equation given in Table 11. The SAR ranges from 0.1 to 13.0 with an overall median value of less than 2.0 for the irrigation wells that were sampled. Figure 29 shows that the most samples fall in the low sodium hazard range.

Ground water pumped from the Antlers and Travis Peak Formations in the outcrop area is used primarily for irrigation. Even though the salinity hazard of the ground water is medium to high, its sodium hazard is low and is generally considered satisfactory for the crops grown. Wilcox (1955, p. 16) contends that the classification as devised by the U.S. Salinity Laboratory Staff is not directly applicable to supplemental waters used in areas of relatively high annual rainfall. Therefore, the classification may not be valid in the area of this report

because of the high annual rainfall and the crop rotation practices employed.

Another guide used to determine irrigation water suitability is the percent sodium. When a soil containing exchangeable calcium and magnesium ions is irrigated with water in which the sodium ions greatly outnumber other cations, the calcium and magnesium of the soil will tend to be replaced with sodium. If irrigation is extensive and prolonged, it may cause the soil to become very alkaline and impair its permeability and tilth (Hem, 1959, p. 148). Using the percent sodium and dissolved solids as a reference, the loss of calcium and magnesium from the soil can be predicted. This condition does not begin to become important until the sodium percentage passes the 50 percent point. Using the chemical analyses from the 410 irrigation wells that were sampled, the average sodium percentage was below 30 percent, so this water suitability guide for irrigation waters also proved positive for use in this area.

The residual sodium carbonate (RSC) is also used to assess the quality of water for irrigation purposes. Excessive RSC will cause the water to be alkaline, and the organic material in the soil will tend to dissolve. Wilcox (1955, p. 11) states that laboratory and field studies have resulted in the following conclusions:

RSC	Suitability
Less than 1.25	Safe
1.25 to 2.5	Marginal
More than 2.5	Not suitable

Good irrigation practices and proper use of soil amendments might make it possible to use marginal water successfully. Additionally, the degree of leaching will modify the permissible limit to some extent (Wilcox, Blair, and Bower, 1954, p. 265). The RSC of 502 samples from irrigation wells in the Antlers and Travis Peak Formations ranged from 0 to 6.7 me/l (milliequivalents per liter). Eight samples contained more than 1.25 me/l while 94 percent of the samples had no RSC.

Boron is essential in trace quantities for plant growth but becomes toxic to some plants when present at concentrations as small as 1.0 mg/l in irrigation water. Scofield (1936, p. 286) suggests the following permissible limits of boron for irrigation water:

Classes of Water		Sensitive	Semitolerant	Tolerant
Rating	Grade	crops (mg/l)	crops (mg/l)	crops (mg/l)
1	Excellent	0.33	0.67	1.00
2	Good	0.33 to 0.67	0.67 to 1.33	1.00 to 2.00
3	Permissible	0.67 to 1.00	1.33 to 2.00	2.00 to 3.00
4	Doubtful	1.00 to 1.25	2.00 to 2.50	3.00 to 3.75
5	Unsuitable	1.25	2.50	3.75

The average boron concentration in water samples from wells completed in the outcrop area was 0.2 mg/l and is not a problem in the study area.

In summary, other than the medium to high salinity hazard which may not be a problem due to high annual rainfall and crop rotation practices, ground water in the study area is suitable for irrigation purposes as based on the criteria discussed.

Industrial

Ground water from the Antlers-Travis Peak outcrop is generally not considered suitable for industrial uses due to its high content of silica (average of 18 mg/l), iron (0.1 to 0.5mg/l), hardness (average of 393 mg/l), and sodium bicarbonate. Most of the industrial wells listed in the records of wells, Table 16, were dairy farm wells which were considered as being industrial owing to the large quantity of water used each day in their operation. Efficient and economical water treatment technology would have to be perfected before the growth of many types of industry could be supported by the ground water in this area.

Changes in Ground-Water Quality

Contamination of ground water is a problem in several areas in the aquifer outcrop that are affected by contaminants from two apparent sources, oil-field brines and organic material. Some of these areas are shown on Figure 30 and can be detected by referring to Figures 26 and 27, which show the location of all the wells sampled and the chloride and dissolved-solids content of the water.

Most reported contamination in this area is salt-water contamination resulting from disposal of oil-field brines. These brines have caused vegetation kills in several areas where the brine was allowed to flow out on the ground. Because of the

sandy nature of the soil, much of the brine percolates downward to contaminate the ground water. Table 15 shows the high concentration of salts that can be present in an oil-field brine. The resulting increase in dissolved solids has in some areas made the ground water unsuitable for drinking and irrigation purposes.

Abandoned oil or natural gas wells that have been improperly plugged sometimes allow the oil, natural gas, or salt water to invade the fresh-water sands. This would cause a serious hazard not only to crops and livestock but to municipal water uses as well. In a few irrigation wells that are located near abandoned, unplugged oil tests, the quality of the ground water has improved after the oil test wells were re-entered and properly plugged.

Another contaminant in some areas is organic matter in the form of sewage or feedlot runoff. High bacterial counts and high nitrate concentration are often associated with this type of pollution. As mentioned previously, a nitrate concentration in excess of 45 mg/l has been known to cause "blue baby" disease. This contamination from organic matter generally occurs in shallow wells, either dug or drilled, where surface water is allowed to enter the well. Properly casing and cementing wells will help prevent this type of contamination.

Chemical Quality Monitoring Network

A statewide program has been initiated to establish and maintain a system of water quality monitoring wells that accurately determine the location, degree, extent, and possible migration of ground-water contamination.

The first step in setting up the program was to select representative wells, regardless of use, for every aquifer within each county in Texas. Wells were selected that had complete records, were easily accessible, and could be readily sampled. The wells will be sampled periodically when pumpage is at a maximum. Finally, the chemical analyses are compared with those from previous years. In this way, significant changes in chemical constituents can be identified and possible solutions may be available before contaminations become irreversible.

The network within the study area consists of 60 wells (Figure 45). Chemical analyses from the select wells are included with other available analyses in Table 19. The wells are designated in the Remarks column of the Records of Wells (Table 16) by footnote.

After careful analysis of the chemical quality data for each of the wells, it was found that most wells experienced only minor fluctuations of constituent levels each year and only a few of the 60 network wells had a steady increase or decrease in certain chemical constituents.

In four of the wells there was gradual but steady improvement in water quality year after year. The following chart shows these quality improvements:

Well	Date of sampling	Ca	Mg	Na	SO_4	Cl	Dissolved solids
BR-41-18-650	7-20-71	114	90	82	76	285	872
	6-19-72	97	74	70	53	209	731
	8-22-73	75	60	49	33	124	560
DY-31-51-621	7-15-70	274	17	150	51	550	1,221
	7-16-71	305	22	207	52	700	1,455
	8-10-72	249	19	148	66	520	1,143
	8-21-73	208	15	79	66	346	850
DY-31-52-309	5-21-70	61	9	73	67	138	420
	7-23-71	46	8	57	48	107	327
	7-25-72	56	7	49	42	91	328
	8-23-73	45	6	45	34	79	290
DY-41-04-803	8-27-70	159	61	176	263	295	1,181
	7-19-71	86	58	91	130	128	705
	7-20-72	84	48	86	113	111	655
	8-24-73	69	48	67	84	77	550

In studying the above chart, a decrease in the amount of calcium, sodium, sulfate, and chloride seems to be the major difference although some of the wells show steady decreases in bicarbonate levels also. The gradual quality improvement of water in the aquifer in these areas could be the result of oil-field contaminants being flushed or diluted with good quality recharge water.

In the case of water from well JD-31-44-505, yearly samples have been very similar. However, while conducting a pumping test on this well in 1971, it was noticed that the three samples taken at different time intervals during the test were improving in quality with continued pumping. The results are as follows:

Well	Date of sampling	Ca	Mg	Na	SO_4	Cl	Dissolved solids
JD-31-44-505	10-18-71	188	19	142	96	268	946
	10-19-71	150	14	94	59	196	712
	10-21-71	130	13	71	44	155	591

Two other samples were taken on this well when not previously pumping, and these analyses correspond with the analysis of the sample collected on October 18, 1971 in the above test.

It was also noted that in two wells the water quality has steadily deteriorated. These results were as follows:

Well	Date of sampling	Ca	Mg	Na	SO_4	Cl	Dissolved solids
DY-41-05-503	7- 9-65	197	32	75	68	279	868
	7-16-71	291	37	129	108	490	1,287
	9-13-72	340	46	159	102	650	1,528
	8-21-73	479	50	190	136	930	2,030
JD-30-64-202	3- 3-69	492	90	600	96	1,810	3,292
	7-14-71	520	91	610	112	1,870	3,386
	7-19-72	620	98	690	105	2,170	3,863
	8-22-73	650	93	730	97	2,390	4,150

Well (JD-30-64-202) listed above is within the Pioneer Oil Field in Eastland County and is probably being contaminated by brine. The cause for the contamination of well DY-41-05-503, in Comanche County, is not known. There is no oil development near the well and also every constituent in the analysis has increased. Continued monitoring of this well and all others in the network could lead to a better understanding of the chemical makeup of the ground water and the effects caused by added pollutants versus the flushing action of recharge.

Disposal of Salt Water in Areas of Oil and Gas Field Operations

Most of the saltwater production from oil and gas fields in the study area occurs in Brown, Callahan, and Eastland Counties. In this region, there are numerous oil and gas fields, most of which are relatively shallow, ranging from about 500 to 4,400 feet in depth. The oil and gas fields have been in operation since the 1920's and many are still active.

The amount of brine produced in 1961 and 1967, and the method of disposal, are given in Table 14 for Brown, Callahan, Comanche, Eastland, and Erath Counties. The location of brine producing areas, amount of brine produced, method of disposal, and location of reported contamination areas are illustrated in Figure 30.

Prior to 1969, a large proportion of salt water produced in connection with oil and gas fields in the study area was disposed of in unlined open pits that were dug in the porous and permeable sands of the Antlers and Travis Peak Formations. The pits seldom filled or overflowed, and their evaporation rate was not sufficient to account for the large volume of salt water placed in them; therefore, the water must have percolated downward into the underlying sands.

Oil-field brines are very saline, often containing as much as 100,000 ppm dissolved solids and occasionally going as high as 200,000 ppm. Various selected chemical analyses of oil-field brines in this area are given in Table 15. A comparison of native ground water, apparently contaminated ground water, and typical oil-field brines is illustrated in Figure 31.

The recharge and movement of water through the sands is a relatively slow process, and movement may be in the order of only a few feet a year. Therefore, in severely contaminated areas the water may remain contaminated for many years after the source of contamination has been removed. It is also possible that the contaminated water may migrate downdip, generally east or southeast, and affect areas that presently contain good quality water. Periodic checks on the chemical quality of the ground water should be made in order to make residents aware of any possible future contamination. The Chemical Quality Monitoring Network has been established for just such a purpose.

The Railroad Commission of Texas issued a "no-pit" order effective January 1969 for the entire State. The present method of oil field brine disposal is generally through wells that inject the salt water into formations that do not contain fresh water.

WELL CONSTRUCTION AND COMPLETION

Types of water-well construction (Figure 32) vary in the study area, as do casing and completion practices (Table 16). Except for shallow dug wells used for domestic and livestock purposes, nearly all wells in the study area are cased, with slots or perforation intervals located opposite water-bearing formations. A few wells, drilled mostly in Pennsylvanian rocks, are completed as open holes.

Table 14.—Reported 1961 and 1967 Brine Production and Method of Disposal in Brown, Callahan, Comanche, Eastland, and Erath Counties

(Production and method of disposal taken from Railroad Commission of Texas, 1961 and 1967 salt water production and disposal questionnaires)

Area shown on Figure 30	Year	County	Disposal in pits (bbls)	Disposal in injection wells (bbls)	Other Disposal (bbls)	Total brine production (bbls)
K-1	1961	Callahan	45,192	899,331	2,625	947,148
	1967	Callahan	36	566,809	4,380	571,225
K-2	1961	Callahan	2,280	10,950	0	13,230
	1967	Callahan	0	12,775	0	12,775
K-3	1961	Callahan	14,057	380,021	0	394,078
		Eastland	168,255	28,470	0	196,725
		Subtotals	182,312	408,491	0	590,803
	1967	Callahan	3	66,158	0	66,161
		Eastland	0	112,368	0	112,368
		Subtotals	3	178,526	0	178,529
K-4	1961	Callahan	11,251	0	4,200	15,451
		Eastland	1,927	6,570	0	8,497
		Subtotals	13,178	6,570	4,200	23,948
	1967	Callahan	72	5,030	0	5,102
		Eastland	0	12,957	0	12,957
		Subtotals	72	17,987	0	18,059
K-5	1961	Eastland	32,462	14,600	0	47,062
	1967	Eastland	1,140	5,840	365	7,345

Table 14.—Reported 1961 and 1967 Brine Production and Method of Disposal in Brown, Callahan, Comanche, Eastland, and Erath Counties—Continued

Area shown on Figure 30	Year	County	Disposal in pits (bbls)	Disposal in injection wells (bbls)	Other Disposal (bbls)	Total brine production (bbls)
K-6	1961	Brown	12,166	0	0	12,166
		Comanche	5,721	128,625	0	134,346
		Eastland	55,356	0	0	55,356
		Subtotals	73,243	128,625	0	201,868
	1967	Brown	3,185	0	0	3,185
		Comanche	7,771	0	0	7,771
		Eastland	3,174	7,300	0	10,474
		Subtotals	14,130	7,300	0	21,430
K-7	1961	Eastland	54,109	0	3,650	57,759
	1967	Eastland	0	153,513	0	153,513
K-8	1961	Eastland	104,394	1,515,015	0	1,619,409
	1967	Eastland	80,190	1,357,098	0	1,437,288
K-9	1961	Erath	10,950	0	0	10,950
	1967	Erath	8,688	19,356	0	28,044
K-10	1961	Comanche	3,926	0	0	3,926
		Eastland	33,772	2,555	0	36,327
		Erath	3,285	0	0	3,285
		Subtotals	40,983	2,555	0	43,538
	1967	Comanche	291	0	0	291
		Eastland	20,088	17,141	0	37,229
		Erath	1,174	0	0	1,174
		Subtotals	21,553	17,141	0	38,694

Table 14.—Reported 1961 and 1967 Brine Production and Method of Disposal in Brown, Callahan, Comanche, Eastland, and Erath Counties—Continued

Area shown on Figure 30	Year	County	Disposal in pits (bbls)	Disposal in injection wells (bbls)	Other Disposal (bbls)	Total brine production (bbls)
K-11	1961	Comanche	2,032	0	474	2,506
	1967	Comanche	152	0	0	152
K-12	1961	Brown	92,944	521,215	9,855	624,014
	1967	Brown	9,086	444,123	0	453,209
K-13	1961	Comanche	800	0	0	800
	1967	Comanche	0	0	0	0
Total brine production and method of disposal on or immediately adjacent to the outcrop of Cretaceous rocks	1961	Brown	105,110	521,215	9,855	636,180
		Callahan	72,780	1,290,302	6,825	1,369,907
		Comanche	12,479	128,625	474	141,578
		Eastland	450,275	1,567,210	3,650	2,021,135
		Erath	14,235	0	0	14,235
		Totals	654,879	3,507,352	20,804	4,183,035
	1967	Brown	12,271	444,123	0	456,394
		Callahan	111	650,772	4,380	655,263
		Comanche	8,214	0	0	8,214
		Eastland	104,592	1,666,217	365	1,771,174
		Erath	9,862	19,356	0	29,218
		Totals	135,050	2,780,468	4,745	2,920,263
P-1	1961	Callahan	6,939	1,114,187	365	1,121,491
	1967	Callahan	13,378	2,572,291	0	2,585,669

Table 14.—Reported 1961 and 1967 Brine Production and Method of Disposal in Brown, Callahan, Comanche, Eastland, and Erath Counties—Continued

Area shown on Figure 30	Year	County	Disposal in pits (bbls)	Disposal in injection wells (bbs)	Other Disposal (bbls)	Total brine production (bbls)
P-2	1961	Callahan	5,340	157,222	0	162,562
	1967	Callahan	0	88,177	0	88,177
P-3	1961	Callahan	93,533	1,746,922	3,087	1,843,542
		Eastland	122,131	304,426	4,185	430,742
		Subtotal	215,664	2,051,348	7,272	2,274,284
	1967	Callahan	4	2,939,576	0	2,939,580
		Eastland	2,191	614,692	28,250	645,133
		Subtotal	2,195	3,554,268	28,250	3,584,713
P-4	1961	Brown	263,038	119,005	6,825	388,868
		Callahan	46,240	859,075	1,823	907,138
		Subtotal	309,278	978,080	8,648	1,296,006
	1967	Brown	12,896	488,529	0	501,425
		Callahan	0	2,045,232	0	2,045,232
		Subtotal	12,896	2,533,761	0	2,546,657
P-5	1961	Brown	11,670	32,850	0	44,520
	1967	Brown	365	34,675	0	35,040
P-6	1961	Eastland	4,127	0	0	4,127
	1967	Eastland	2,932	0	0	2,932

Table 14.—Reported 1961 and 1967 Brine Production and Method of Disposal in Brown, Callahan, Comanche, Eastland, and Erath Counties—Continued

Area shown on Figure 30	Year	County	Disposal in pits (bbls)	Disposal in injection wells (bbls)	Other Disposal (bbls)	Total brine production (bbls)
P-7	1961	Eastland	701	0	0	701
	1967	Eastland	1,061	0	0	1,061
P-8	1961	Eastland	83,486	90,459	0	173,945
	1967	Eastland	109,500	61,468	7,036	178,004
P-9	1961	Eastland	557	0	0	557
	1967	Eastland	0	0	0	0
Total brine production and method of disposal on the outcrop of Pennsylvanian and Permian rocks	1961	Brown	274,708	151,855	6,825	433,388
		Callahan	152,052	3,877,406	5,275	4,034,733
		Eastland	211,002	394,885	4,185	610,072
		Totals	637,762	4,424,146	16,285	5,078,193
	1967	Brown	13,261	523,204	0	536,465
		Callahan	13,382	7,645,276	0	7,658,678
		Eastland	115,684	677,160	35,286	827,130
		Totals	142,327	8,844,660	35,286	9,022,273
Total brine production in all areas and counties	1961	Brown	379,818	673,070	16,680	1,069,568
		Callahan	224,832	5,167,708	12,100	5,404,640
		Comanche	12,479	128,625	474	141,578
		Eastland	661,277	1,962,095	7,835	2,631,207
		Erath	14,235	0	0	14,235
		Totals	1,292,641	7,931,498	37,089	9,261,228

Table 14.—Reported 1961 and 1967 Brine Production and Method of Disposal in Brown, Callahan, Comanche, Eastland, and Erath Counties—Continued

Area shown on Figure 30	Year	County	Disposal in pits (bbls)	Disposal in injection wells (bbls)	Other Disposal (bbls)	Total brine production (bbls)
Total brine production in all areas and counties	1967	Brown	25,532	967,327	0	992,859
		Callahan	13,493	8,296,048	4,380	8,313,921
		Comanche	8,214	0	0	8,214
		Eastland	220,276	2,342,377	35,651	2,598,304
		Erath	9,862	19,356	0	29,218
		Totals	277,377	11,625,108	40,031	11,942,516

Most of the irrigation wells completed in the outcrop of the Antlers and Travis Peak Formations have straight-wall, slotted steel, or perforated plastic casings. Gravel-packed well completion is very common, and in some instances, the casing is cemented to seal off undesirable water zones. Large-capacity irrigation wells down-dip from the outcrop usually employ cementing to seal off water above the Hensell.

Municipal wells, especially those in Erath County, utilize well screens. The wells are usually underreamed, gravel-packed and cemented from the ground surface down to screened intervals. Twelve to 16 inch surface casing is usually cemented in place and eight to 12 inch hole casings extended to total depth. In a few instances, municipal well casings are cemented entirely from the ground surface to total depth and then gun-perforated opposite desirable water-bearing zones in an aquifer. Electric, radioactive and driller's logs are commonly used to locate water-bearing zones in the wells.

Domestic and livestock wells are of small diameter (three to six inches) and are completed using either perforated plastic pipe or slotted steel casing. Many are sealed at the top by cementing. There are many dug wells throughout this area but only a small number are still in use. Poor water quality from surface-water seepage usually limits use of dug wells.

GROUND WATER AVAILABLE FOR DEVELOPMENT

Ground-water availability estimates for the Antlers and Travis Peak Formations are based on average annual precipitation rates over the 1,750 square mile outcrop area. In a computer simulation study of the Central Texas Trinity aquifer, Klemt and others (1975) estimated that approximately 0.1 foot of precipitation is absorbed in the study area every year to become ground-water recharge. This equals approximately four percent of the region's total annual precipitation—or about 112,000 acre-feet of recharge annually.

In 1970, approximately 32,000 acre-feet of ground water was withdrawn in the outcrop areas and in the immediate vicinity (Table 7). Therefore, under the estimated conditions of recharge, and allowing for the movement of recharge to the downdip areas, the Antlers and Travis Peak Formations in the study area should be capable of supplying twice the 1970 pumpage rate. To fully develop the available water on a sustained basis would require numerous small-capacity wells evenly distributed over the outcrop.

AREAS MOST FAVORABLE FOR FUTURE DEVELOPMENT OF GROUND WATER, AND AREAS OF OVERDEVELOPMENT

The areas most favorable for future development of ground water from the Antlers and Travis

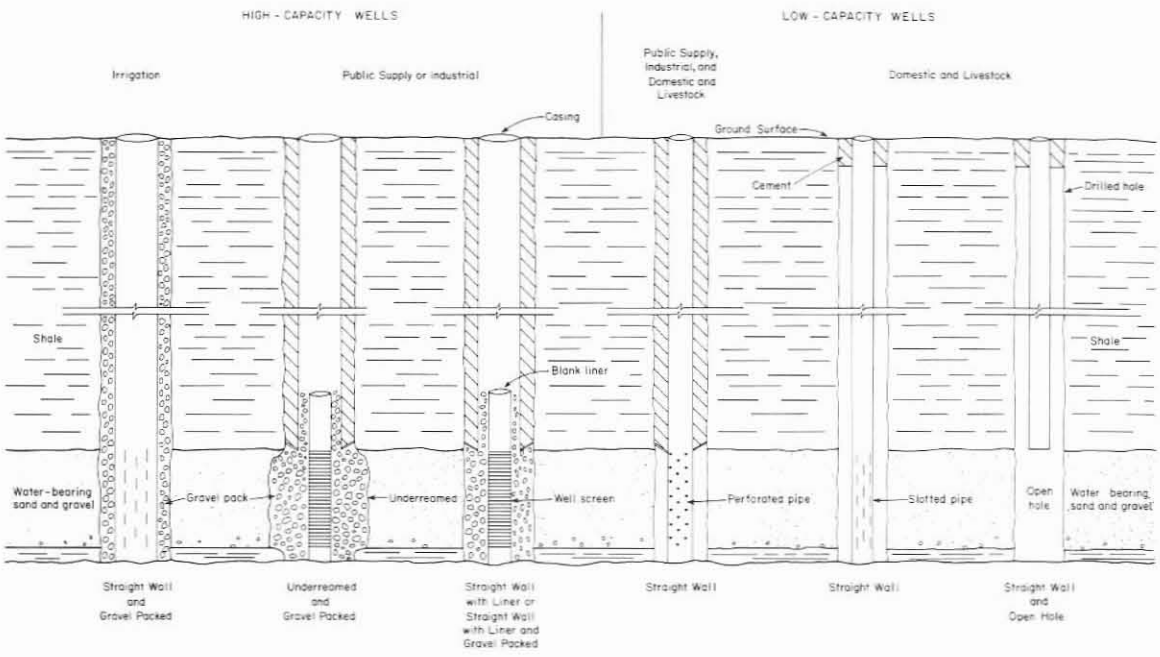


Figure 32.—Diagrams of Water-Well Construction

Peak Formations and the Paleozoic rocks are shown in Figure 33. The map shows areas favorable for future ground-water development and areas that are overdeveloped. It was prepared using information such as saturated thickness of the aquifer, water-level declines (Table 18), water-well development, water quality, and tillable land available for irrigation.

Production of irrigation water from the Paleozoic rocks is a relatively new development and this aquifer still has the capacity for increased utilization of its ground-water reserve. The area in which Paleozoic rocks contain fresh to slightly saline water in quantities sufficient to sustain irrigation is relatively small. It should be understood that this ground water was available at the conclusion of the fieldwork and that extensive irrigation development has occurred since; therefore, the area may no longer be a favorable one for additional development.

Large-capacity wells producing as much as 600 gallons per minute have been developed in an area extending from Stephenville to Hico. A large majority of these wells were drilled within the last few years and are, therefore, not included in this report. These wells are drilled through the Paluxy and Glen Rose Formations into the Travis Peak Formation. They pump water from both members of the Travis Peak Formation to irrigate peanut crops on the Paluxy outcrop. Artesian conditions exist in this area, and the large well yields make this region lucrative for irrigators. A limitation in this area is the amount of tillable land. As is illustrated on Figure 5, the Paluxy outcrop is highly irregular in shape, and the ground surface is in many areas unsuitable for farming. To give an indication of the amount of water used, it is estimated that 25 of these large-capacity wells are being used which yield an average of 500 gal/min per well. This is equivalent to 12,500 gal/min or approximately 3,300 acre-feet per year.

Another favorable area for ground-water development is southeastern Callahan County, southwestern Eastland County, and northeastern Brown County. The Antlers Formation has been heavily developed in this area in recent years; however, at the conclusion of the fieldwork there is still potential for additional development. Small well yields have held this area in check for some time, but the peanut industry has expanded to this area and the rising price for peanuts has made irrigation economically feasible.

In several areas, the aquifers have been overdeveloped and are consequently experiencing lowered water levels during the summer months along with diminished well yields. These areas

Table 15.—Selected Chemical Analyses of Oil-Field Brines
(Constituent concentrations are in parts per million.)

County	Area	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Dissolved Solids·	pH
Brown	K-12	1,000	340	11,200	244	trace	20,000	42,660	6.4
	P-5	7,440	830	26,400	207	380	56,000	91,260	6.1
Callahan	K-2	6,890	1,752	21,200	50	359	49,700	80,000	6.8
	K-3	4,800	1,205	32,100	70	740	60,980	105,150	6.0
	P-3	8,787	1,518	32,030	66	329	69,085	111,815	6.2
Comanche	K-6	1,360	313	8,300	83	4	16,300	26,300	7.3
Eastland	K-3	9,300	3,150	37,000	37	50	84,200	133,700	6.1
	K-4	12,100	1,655	43,904	74	138	93,780	151,610	4.7
	K-5	7,880	3,010	34,600	299	5	76,000	121,640	6.6
	K-7	2,833	857	19,150	168	214	36,810	62,800	6.9
	K-8	11,034	1,960	41,932	99	191	89,722	143,970	6.2
	K-10	7,680	339	29,800	126	945	59,800	98,900	6.6
Erath	K-10	3,160	559	24,184	124	30	44,587	72,856	7.4

*Area shown on Figure 30.

include the vicinity of Carbon, Gorman, DeLeon, Rucker, Downing, Stephenville, and north of Desdemona. These areas have large peanut farms with a large number of irrigation wells.

FUTURE STUDIES

This report represents the second regional study covering the Antlers and Travis Peak Formations in its outcrop of Brown, Comanche, Eastland, and Erath Counties. A preceeding study, covering much of north-central Texas, was completed in 1968 and published by the Texas Water Development Board (Klemt and others, 1975). Further comprehensive studies of the study area are not recommended; however, the collection of basic data such as municipal pumpage, number of irrigation wells drilled, measurement of water levels, and collection of water samples for analysis should be continued to keep abreast of ground-water developments.

An extensive program of water-level observation wells and chemical quality monitoring network wells has been established. A periodic monitoring of the number of irrigation wells drilled could be accomplished by reviewing the Texas Water Commission files and determining which reports have been submitted by drillers for irrigation wells drilled since 1972. This would give an approximation of the number of wells drilled and an indication of the amount of water pumped for irrigation.

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Table 16. - Records of Wells
BROWN COUNTY

All wells are drilled unless otherwise noted in remarks column.
Water Level: Reported water levels are given in feet, measured water levels are given in feet and tenths.
Method of lift and type of power: A, air; B, bucket; C, cylinder; E, electric; G, gas, butane, diesel; H, hand pump; J, jet; N, none, P, pistons; S, submersible; T, turbine; W, windmill. Number indicates horsepower.
Use of water: D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, livestock.
Water-bearing unit: Kca, Antlers Formation; Kctp, Travis Peak Formation; Kche, Hensell Member of the Travis Peak Formation; Kcho, Hosston Member of the Travis Peak Formation; Kcpa, Paluxy Formation; Pn, Paleozoic rocks.

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*30-64-601	-- Rippy	--	--	40	24	--	Kca	1,677	28.9 26.7	Apr. 23, 1962 Mar. 11, 1969	N	N	Abandoned dug well. Texas Department of Water Resources observation well.
* 602	H.H. Lawson	--	1880	43	48	--	Kca	1,675	33 29	Oct. 25, 1960 Apr. 23, 1962	J,E ½	D,S	Dug well. Pump set at 38 feet. Reported yield 2 gal/min. Temp. 64°F.
609	Kenith Smith	Curtis Alford	1969	65	8	65	Kca	1,680	5.1	June 17, 1970	S,E 2	Irr	Slotted 35 to 65 feet. Gravel packed.
610	do	do	1969	60	8	60	Kca	1,675	--	--	S,E	Irr	Slotted 30 to 60 feet. Gravel packed.
611	do	do	1969	62	6	62	Kca	1,680	--	--	S,E	Irr	Slotted 32 to 62 feet. Gravel packed.
612	do	do	1969	59	6	59	Kca	1,675	13.0	June 17, 1970	S,E 1½	Irr	Slotted 29 to 59 feet. Gravel packed.
621	Atlas Butler	do	1968	85	6	85	Kca	1,695	--	--	S,E 2	Irr	Perforated 42 to 66 feet. Reported yield 35 gal/min.
622	do	do	1968	83	6	83	Kca	1,698	--	--	S,E 2	Irr	Perforated 42 to 71 feet. Reported yield 30 gal/min.
623	do	do	1969	75	6	75	Kca	1,698	--	--	S,E	Irr	Perforated 35 to 65 feet. Reported yield 50 gal/min.
* 624	Bob McClure	Morrow Drilling Co.	1970	80	6	56	Kca	1,650	8	Dec. 16, 1970	S,E 1	Irr	Slotted 6 to 60 feet. Reported yield 25 gal/min. Temp. 67°F.
625	do	do	1970	56	6	56	Kca	1,655	6	Dec. 17, 1970	S,E ¾	Irr	Slotted 6 to 56 feet. Reported yield 20 gal/min.
* 919	F.P. Clark	--	1947	50	5	49	Kca	1,594	20.6 21.3 21.4	May 1, 1962 Apr. 28, 1966 Mar. 23, 1967	C,E	D,S	--
31-57-405	Mrs. Greynolds	G. Greynolds	--	75.5	8	75.5	Kca	1,635	27	May 2, 1963	J,E	S, Irr	--
406	Mrs. Greynolds	G. Greynolds	--	73.5	8	73.5	Kca	1,635	21.7 14.0	May 2, 1963 Mar. 11, 1969	C,W	S, Irr	Observation well.
430	E.O. Kizer	Curtis Alford	1969	80	8	80	Kca	1,678	47.7	Sept. 3, 1970	S,E	D,S	Slotted 45 to 80 feet. Gravel packed.
431	do	Carl A. Taylor	1969	100	7	100	Kca	1,670	44 48.9	July 15, 1969 Sept. 3, 1970	S,E 1	D,S Irr	Slotted 49 to 95 feet. Pump set at 95 feet. Gravel packed.
* 432	do	do	1969	86	8	86	Kca	1,665	31.0	do	S,E 2	Irr	Slotted 40 to 75 feet. Temp. 66°F. Gravel packed.
433	do	James Richard Morrow	1970	90	8	90	Kca	1,670	40	Apr. 4, 1970	S,E 5	Irr	Slotted 40 to 90 feet. Gravel packed.
434	do	do	1970	52	8	52	Kca	1,638	0.3 7.36	Apr. 7, 1970 Sept. 3, 1970	N	Irr	Slotted 8 to 52 feet.
437	Dina B. Senawick	Carl A. Taylor	1969	76	5	60	Kca	1,673	54 52.91	June 28, 1969 Sept. 3, 1970	S,E ½	Irr	Slotted 20 to 60 feet. Gravel packed.
438	do	do	1969	75	7	60	Kca	1,677	57.2	do	S,E ½	Irr	Do.
439	Marion West	Vernon Dale Phillips	1967	94	6	70	Kca	1,650	30 26.6	Aug. 31, 1967 Sept. 3, 1970	S,E 1	Irr	Slotted 40 to 70 feet. Reported yield 50 gal/min. Gravel packed. Drilled to 95 feet. Plugged back to 70 feet.
440	do	do	1967	78	6	77	Kca	1,658	35 34.6	Sept. 13, 1967 Sept. 3, 1970	S,E ½	Irr	Perforated 50 to 77 feet. Reported yield 55 gal/min.
441	D.E. Ware	Carl A. Taylor	1969	87	7	86	Kca	1,658	33.2	Sept. 2, 1970	S,E 1½	Irr	Slotted 30 to 83 feet. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
BROWN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-57-442	D. E. Ware	do	1969	86	7	--	Kca	1,660	34.8	do	S,E 1	Irr	--
443	Joe Butler	Curtis Alford	1971	69	5	69	Kca	1,650	--	--	S,E 3	Irr	Reported yield 35 gal/min. Gravel packed.
444	do	do	1971	70	5	70	Kca	1,652	--	--	S,E 3	Irr	Reported yield 50 gal/min. Gravel packed.
445	do	do	1971	90	5	90	Kca	1,655	--	--	S,E 3	Irr	Reported yield 30 gal/min. Gravel packed.
446	do	do	1971	88	5	88	Kca	1,657	--	--	S,E 3	Irr	Reported yield 50 gal/min. Gravel packed.
447	do	do	1971	90	5	90	Kca	1,660	--	--	S,E 3	Irr	Reported yield 45 gal/min. Gravel packed.
448	Joe Butler	Curtis Alford	1971	95	5	95	Kca	1,664	--	--	S,E 3	Irr	Reported yield 45 gal/min. Gravel packed.
449	do	do	1971	101	5	101	Kca	1,675	41.2	May 17, 1972	S,E 3	Irr	Reported yield 50 gal/min. Measured yield 61.5 gal/min.Temp. 67°F.[3]
450	do	do	1971	97	5	97	Kca	1,672	--	--	S,E 3	Irr	Reported yield 60 gal/min. Gravel packed.
452	Marion West	Fortune Drilling Co.	1971	70	5	60	Kca	1,676	38	July 28, 1971	S,E	Irr	Perforated 40-60 feet. Reported yield 30 gal/min. Gravel packed.
453	Dena Semeniak	do	1971	80	7	80	Kca	1,684	55	July 29, 1971	S,E	Irr	Slotted 60 to 80 feet. Reported yield 40 gal/min. Gravel packed.
454	D.E. Ware	Morrow Drilling Co.	1970	86	6	85	Kca	1,665	40	July 30, 1970	N	Irr	Slotted 40 to 85 feet. Reported yield 50 gal/min. Gravel packed.
455	do	do	1972	83	7	83	Kca	1,673	51.7	May 30, 1973	N	Irr	Slotted 63 to 83 feet. Reported yield 35 gal/min. Gravel packed.
456	do	do	1972	83	7	83	Kca	1,654	30	July 28, 1972	S,E	Irr	Slotted 43 to 83 feet. Gravel packed.
457	do	do	1972	95	7	95	Kca	1,652	--	--	S,E 3	Irr	Slotted 55 to 95 feet. Gravel packed.
458	do	do	1972	105	7	105	Kca	1,654	30	Aug. 1, 1972	S,E 3	Irr	Slotted 65 to 105 feet. Gravel packed.
459	do	do	1972	95	7	95	Kca	1,656	--	--	S,E,3	Irr	Slotted 55 to 95 feet. Gravel packed.
520	A.M. Goss	Timmie Johnson	1954	155	7	118	Kca	1,690	75	May 31, 1963	S,E	D,S	Well deepened from 115 to 155 feet in 1967. Slotted 78 to 118 feet
						153			75	May 1967	3	Irr	perforated from 113 to 153 feet. Pump set at 100 feet. Reported yield 90 gal/min. Temp. 72°F.
523	do	--	--	116.2	6	--	Kca	1,681	68.6	May 8, 1963	C,W	S	Observation well.
									69.6	Mar. 11, 1965			
531	James R. Jackson	Timmie Johnson	1969	106	7	106	Kca	1,654	38.9	Sept. 1, 1970	S,E 7½	Irr	Slotted 46 to 106 feet. Gravel packed.
532	J.W. Gifford	do	1968	107	7	107	Kca	1,648	30.5	do	S,E 5	Irr	Perforated 32 to 75 feet. Reported yield 90 gal/min. Gravel packed.
533	do	Carl A. Taylor	1969	120	7	120	Kca	1,643	25	do	S,E 5	Irr	Slotted 35 to 115 feet. Gravel packed.
534	do	do	1969	135	7	135	Kca	1,640	21.0	do	S,E 5	Irr	Slotted 40 to 130 feet. Gravel packed.
535	J.W. Gifford	Carl A. Taylor	1970	107	7	107	Kca	1,655	26	July 21, 1969	S,E 1	Irr	Slotted 30 to 102 feet.
536	D.E. Ware	do	1969	130	8	130	Kca	1,663	35	Aug. 12, 1979	S,E 1½	Irr	Slotted 69 to 130 feet. Gravel packed.
537	do	do	1969	130	7	130	Kca	1,661	40.4	Sept. 2, 1970	S,E 1½	Irr	Slotted 36 to 130 feet. Gravel packed.
538	do	do	1969	135	8	135	Kca	1,655	36.7	Sept. 2, 1970	S,E 1½	Irr	Slotted 60 to 135 feet. Gravel packed.
541	J.W. Gifford	Morrow Drilling Co.	1970	117	7	117	Kca	1,655	18	July 5, 1970	S,E-5	Irr	Slotted 40 to 117 feet. Reported yield 100 gal/min.
542	D.E. Ware	Carl Taylor	1970	130	8	130	Kca	1,652	36.2	Sept. 2, 1970	S,E 5	Irr	Slotted. Gravel packed.
546	do	Morrow Drilling Co.	1971	140	5	140	Kca	1,668	45	July, 15, 1971	S,E-3	Irr	Slotted 90 to 140 feet. Reported yield 50 gal/min.
547	do	do	1971	140	5	140	Kca	1,672	50	July 17, 1971	S,E 3	Irr	Do.
548	do	do	1971	70	5	70	Kca	1,675	45	July 18, 1971	S,E 1	Irr	Slotted 55 to 70 feet. Reported yield 25 gal/min.
549	do	do	1971	140	5	140	Kca	1,670	35	July 19, 1971	S,E 3	Irr	Slotted 100 to 140 feet. Reported yield 50 gal/min.

See footnotes at end of county.

Table 16. - Records of Wells
BROWN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31 57 550	D. E. Ware	do	1971	90	5	90	Kca	1,659	32.6	July 10, 1972	S,E 3	Irr	Slotted 45 to 90 feet. Pump set at 85 feet. Reported yield 60 gal/min. Temp. 68°F.
551	do	do	1971	90	5	90	Kca	1,663	35	July 1971	S,E-3	Irr	Slotted 55 to 90 feet. Reported yield 50 gal/min.
601	B. Richards	A. Turpin	--	100	5	100	Kca	1,682	--	--	C,W	D,S	--
* 620	Larry White	Morrow Drilling Co.	1971	97	8	97	Kca	1,660	45	May 3, 1971	S,E 3	Irr	Slotted 57 to 97 feet. Pump set at 85 feet. Reported yield 30 gal/min. Gravel packed.Temp. 68°F.
621	do	do	1971	78	7	78	Kca	1,645	40	May 5, 1971	S,E 2	Irr	Slotted 38 to 78 feet. Pump set at 70 feet.Reported yield 40 gal/min.
622	do	do	1971	72	7	72	Kca	1,642	40	May 7, 1971	S,E 1½	Irr	Slotted 42 to 72 feet. Pump set at 65 feet. Reported yield 50 gal/min.
623	do	do	1971	90	7	90	Kca	1,640	35	May 8, 1971	S,E 2	Irr	Slotted 55 to 90 feet. Pump set at 70 feet. Reported yield 50 gal/min.
624	Larry White	Morrow Drilling Co.	1971	74	7	74	Kca	1,638	35	May 9, 1971	S,E 2	Irr	Slotted 40 to 70 feet. Pump set at 65 feet. Reported yield 50 gal/min.
723	Earl Bruno	do	1970	90	5	90	Kca	1,637	10	Apr. 30, 1970	S,E 1	S	Slotted 10 to 30 feet, 52 to 55 feet, 62 to 66 feet, 78 to 80 feet. Reported yield 25 gal/min.
724	do	do	1971	85	5	85	Kca	1,635	49.3	July 10, 1972	S,E	Irr	Slotted 55 to 85 feet. Pump set at 80 feet. Reported yield 70 gal/min.
725	do	do	1971	85	5	85	Kca	1,639	61	Aug. 1971	S,E 2	Irr	Slotted 55 to 85 feet. Reported yield 50 gal/min.
* 726	do	do	1971	89	5	89	Kca	1,640	38.3	July 10, 1972	S,E ¾	Irr	Slotted 59 to 89 feet. Pump set at 85 feet. Reported yield 25 gal/min. Temp. 68°F.
727	do	do	1971	72	5	72	Kca	1,630	16	Aug. 19, 1971	S,E 2	Irr	Slotted 42 to 72 feet. Pump set at 70 feet. Reported yield 45 gal/min.
* 728	do	do	1971	72	5	72	Kca	1,630	9.2	July 10, 1972	S,E ¾	Irr	Slotted 52 to 72 feet. Pump set at 66 feet. Reported yield 25 gal/min. Temp. 68°F.
729	do	do	1971	84	5	84	Kca	1,637	16	Aug. 19, 1971	S,E 2	Irr	Slotted 60 to 84 feet. Pump set at 76 feet. Reported yield 40 gal/min.
805	Annie Lester	--	--	32.4	48	32.4	Kca	1,625	16.1 14.1	May 10, 1963 Mar. 11, 1969	C,E ½	D,S	Dug well with rock wall from 32.4 feet to surface. Observation well.
841	N. Lankster	do	1969	134	7	134	Kca	1,656	54.6	do	S,E	Irr	Slotted 104 to 134 feet. Temp. 68°F. Observation well.
842	Lee Roy Laughlin	do	1968	123	8	123	Kca	1,615	45.5	do	N	N	Abandoned well. Slotted 71 to 123 feet.
* 843	C.B. Nichols	Timmie Johnson	1969	140	7	140	Kca	1,687	76.4	Sept. 1, 1970	S,E 5	Irr	Slotted 100 to 140 feet. Pump set 127 feet. Reported yield 150 gal/min.
844	W.L. Medley	Curtis Alford	1969	105	6	105	Kca	1,633	12.0	Sept. 2, 1970	N	Irr	Perforated 40 to 70 feet. Reported yield 20 gal/min. Gravel packed.
845	do	do	1969	90	6	92	Kca	1,630	8.03	Feb. 9, 1971 Nov. 11, 1971	S,E 1	Irr	Perforated from 40 to 70 feet. Pump set at 80 feet. Pumping level 45 feet at 90 gpm when drilled and 44.56 feet on Sept. 2, 1970.
846	do	do	1969	98	6	98	Kca	1,640	--	--	S,E 1½	Irr	Perforated 40 to 75 feet. Pump set at 80 feet. Reported yield 35 gal/min. Pumping level 38.0 feet on Sept. 2, 1970. Gravel packed.
* 847	do	do	1969	90	6	90	Kca	1,632	11.8 13.6 9.8	Feb. 9, 1971 Aug. 11, 1970 Nov. 16, 1971	S,E 2	Irr	Perforated 40 to 70 feet. Pump set at 80 feet. Reported yield 90 gal/min. Pumping level 37.4 feet at 41 gal/min. on November 16,1971 and 61.9 feet on September 16, 1971.[2,3,4]
848	Roy Rankin	Timmie Johnson	1970	78	7 10	78 30	Kca	1,615	17	May 19, 1970	S,E	Irr	Slotted 34 to 78 feet. Pump set at 75 feet. Pumping level 47 feet at 30 gal/min when drilled.[2]
849	do	do	1970	78	10 7	30 78	Kca	1,622	18	May 22, 1970	S,E	Irr	Slotted 44 to 78 feet. Pump set at 75 feet. Reported yield 65 gal/min.
850	do	do	1970	86	7	86	Kca	1,623	22	May 24, 1970	S,E	Irr	Slotted 44 to 86 feet. Cemented from 1 to 23 feet. Pumping level 80 feet at 65 gal/min when drilled.[2]
851	do	do	1970	70	7	70	Kca	1,630	10	May 29, 1970	S,E	Irr	Slotted 40 to 75 feet. Cemented to 30 feet. Pump set at 70 feet. Pumping level 50 feet at 40 gal/min when drilled.[2]
852	do	do	1970	70	7	70	Kca	1,630	12	July 12, 1970	S,E	Irr	Slotted 44 to 70 feet. Pump set at 70 feet. Pumping level 50 feet at 40 gal/min when drilled.[2]
853	do	do	1970	102	10 7	31 80	Kca	1,620	19	July 14, 1970	S,E	Irr	Slotted 34 to 79 feet. Open hole from 79 to 102 feet. Pump set at 100 feet. Pumping level 90 feet at 35 gal/min when drilled.

See footnotes at end of county.

Table 16. - Records of Wells
BROWN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-57-854	Roy Rankin	do	1971	130	7	93	Kca	1,625	14	July 29, 1970	S,E	Irr	Slotted 47 to 93 feet. Open hole from 93 to 130 feet. Pumping level 54 feet at 60 gal/min. when drilled.[2]
855	J. R. Hardy	do	1968	92	7	67	Kca	1,609	--	--	N	Irr	Gravel packed.[1]
* 856	do	do	1970	66	12 7	10 66	Kca	1,612	14	May 9, 1970	S,E 2	Irr	Slotted 30 to 64 feet. Cemented to 10 feet. Pumping level 24 feet at 50 gal/min. when drilled. Temp. 68°F.
857	do	do	1970	66	12 7	3 66	Kca	1,615	19.0	Aug. 18, 1971	S,E 3	Irr	Slotted 34 to 66 feet. Pumping level 30 feet at 50 gal/min. when drilled.[2]
858	W.L. Medley	TWDB	1971	91	2	91	Kca	1,632	13.3 11.0	Aug. 12, 1971 Oct. 6, 1971	N	N	Slotted 26.2 to 68.3 feet. Drilled as observation well for pumping test on well 31-57-847.[2]
859	do	do	1971	98	2	98	Kca	1,632	15.1 11.1	Sept. 16, 1971 Oct. 6, 1971	N	N	Slotted 23.2 to 65.2 feet. Drilled as observation well for pumping test on well 31-57-847.[2]
860	do	do	1971	104	2	104	Kca	1,632	11.1 11.0	Aug. 23, 1971 Oct. 6, 1971	N	N	Slotted 40.4 to 81.4 feet. Drilled as observation well for pumping test on well 31-57-847.[2]
861	Roy Rankin	Timmie Johnson	1971	92	7	90	Kca	1,,620	16	Feb. 26, 1971	E	Ind	Slotted 44 to 87 feet. Cemented to 6 feet. Pump set at 90 feet. Pumping level 61 feet at 155 gal/min. when drilled.[2]
862	do	do	1971	96	7 10	43 88	Kca	1,616	14	Mar. 5, 1971	S,E	Ind	Slotted 66 to 88 feet. Pump set at 85 feet. Pumping level 74 feet at 90 gal/min. when drilled. Underreamed and gravel packed.
863	do	do	1971	94	7	94	Kca	1,618	17	Mar. 9, 1971	S,E	Ind	Slotted 41 to 86 feet. Pump set at 85 feet. Pumping level 77 feet at 100 gal/min. when drilled.[2]
864	C.A. Barr	do	1970	129	7	124	Kca	1,670	70	Aug. 9, 1970	S,E 3	Irr	Slotted 78 to 124 feet. Pump set at 125 feet. Pumping level 105 feet at 73 gal/min. when drilled.[2]
865	do	do	1970	138	7	130	Kca	1,670	75	do	S,E 3	Irr	Slotted 84 to 130 feet. Pump set at 130 feet. Pumping level 125 feet at 40 gal/min. when drilled.[2]
* 866	do	Morrow Drilling Co.	1971	158	7	155	Kca	1,680	75	Mar. 26, 1971	S,E 5	Irr	Slotted 75 to 155 feet. Pump set at 155 feet. Reported yield 50 gal/min. Temp. 68°F.
867	Roy Rankin	Timmie Johnson	1970	70	7	70	Kca	1,603	10	May 28, 1970	S,E	Ind	Slotted 25 to 70 feet. Cemented to 20 feet. Pump set at 68 feet. Pumping level 50 feet at 42 gal/min. when drilled.[2]
868	do	do	1971	101	7	101	Kca	1,625	25	Mar. 16, 1971	S,E	Ind	Slotted 56 to 101 feet. Pump set at 95 feet. Pumping level 65 feet at 45 gal/min. when drilled.[2]
869	N. Lankster	do	1971	157	7	133	Kca	1,660	60	Dec. 24, 1971	S,E 3	Irr	Slotted 73 to 122 feet. Pump set at 128 feet. Pumping level 85 feet at 50 gal/min. when drilled.
914	Ben Moore	--	--	169	6	169	Kca	1,730	139 136.8	May 29, 1963 May 11, 1969	C,G	S	Observation well.[1]
* 922	Keneth H. Morrison	Curtis Alford	1965	142	7	120	Kca	1,697	--	--	S,E 2	Irr	Open hole from 120 to 142 feet. Cemented to 120 feet. Pump set at 136 feet. Pumping level 123.38 feet on September 3, 1970 and 108.50 feet on July 14, 1971. Reported yield 30 gal/min. Temp. 70°F.
41-01-201	George Bean Estate	A. Turpin	--	85	5	--	Kctp	1,651	71.1 60.3	Oct. 26, 1960 Mar. 11, 1969	N	N	Observation well.[1]
234	Max Water Supply Corp.	Curtis Alford	1967	118	8	118	Kctp	1,650	65.8 66.1	Mar. 23, 1967 Mar. 11, 1969	S,E	P	Perforated 70 to 100 feet. Reported yield 45 gal/min. Gravel packed. Temp. 72°F. Observation well.[1]
235	W. H. Whitaker	Timmie Johnson	1968	128	7	128	Kctp	1,662	77.7	Sept. 4, 1970	S,E 3	Irr	Slotted 88 to 128 feet. Pump set at 124 feet.
236	Ray Rankin	do	1970	103	7	103	Kca	1,622	55	Aug. 12, 1970	S,E	Ind	Slotted 40 to 95 feet. Cemented to 10 feet. Pump set at 100 feet. pumping level 90 fet at 55 gal/min. when drilled. Gravel packed.
237	Ira Nelson	do	1971	92	7	92	Kca	1,612	20	Feb. 2, 1971	S,E	Irr Ind	Slotted 48 to 92 feet. Reported yield 75 gal/min. Gravel packed.
238	do	do	1971	106	7	106	Kca	1,613	33	July 6, 1971	S,E	Irr Ind	Slotted 50 to 94 feet. Pump set at 100 feet. Pumping level 80 feet at 30 gal/min. when drilled.
239	do	do	1971	99	7	99	Kca	1,640	46	July 10, 1971	S,E	Irr Ind	Slotted 54 to 99 feet. Pump set at 95 feet. Pumping level 90 feet at 20 gal/min. when drilled.
240	do	do	1971	96	7	96	Kca	1,620	32	July 16, 1971	S,E 2	Irr	Slotted 52 to 96 feet. Pump set at 95 feet. pumping level 70 feet at 70 gal/min. when drilled.
241	do	do	1971	105	7	105	Kca	1,618	31	July 2, 1971	S,E 2	Irr Ind	Slotted 50 to 90 feet. Pump set at 102 feet. Pumping level 55 feet at 25 gal/min. when drilled.
242	do	do	1971	96	7	96	Kca	1,620	23	July 26, 1971	S,E 2	Irr Ind	Pumping level 80 feet at 30 gal/min. when drilled.
243	do	do	1971	99	7	99	Kca	1,620	31	July 29, 1971	S,E ¾	Irr	Slotted 42 feet. Pump set at 95 feet. Pumping level 80 feet at 75 gal/min. when drilled.
308	D. L. Wagnon	--	--	200	5	200	Kctp	1,755	100	May 31, 1963	C,W	S	

See footnotes at end of county.

Table 16. - Records of Wells
BROWN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-01-402	Marshall Crume	--	--	33	5	33	Kca	1,590	23	Apr. 19, 1963	C,W	D,S	
420	Wm. Wade	George W. Boyd	1965	49	5	49	Kctp	1,574	9.5	Sept. 4, 1970	Cf, E 3	Irr	Slotted 0 to 49 feet. Observation well.[1]
514	Anna Lee Yoes	--	--	175	5	175	Kctp	1,708	125	Apr. 9, 1963	C,W	D,S	Reported caved.
827	J. C. Nance	Timmie Johnson	1970	79	7	73	Kctp	1,610	15.2	Aug. 19, 1971	N	Irr	Pumping level 21 feet at 50 gal/min. when drilled. Gravel packed.
828	do	do	1969	116	7/5	80/116	Kctp	1,600	17.0	do	N	Irr	Slotted. Pumping level 25 feett at 50 gal/min. when drilled.
829	Marvin Chambers	do	1970	102	7 5	65 102	Kctp	1,645	60	Feb. 5, 1970	S,E	S, Irr	Slotted 65 to 102 feet. Cemented to 65 feet. Pumping level 70 feet at 50 gal/min. when drilled.
* 830	Oliver Steel	Morrow Drlg. Co.	1971	104	7	21	Kctp	1,595	--	--	N	Irr	Slotted from 10 to 20 feet. Temp. 68°F.
918	Claude McInnis	--	--	135	5	135	Kctp	1,675	107.2	Mar. 11, 1969	C,E	D,S	Observation Well.[1]
* 02-108	W. O. Henderson	--	--	165	5	165	Kctp	1,670	60	Apr. 6, 1963	C,W	D,S	
* 09-303	A. G. Wilkinson	--	--	102	5	102	Kctp	1,600	74.5 78.4	Mar. 9, 1963 Mar. 12, 1969	C,W	D,S	Observation well.
* 10-320	City of Blanket	Watts Drlg. Co.	1970	241	6	203	Kctp	1,670	203	Nov. 17, 1970	S,E 2	P	Completed from 220 to 240 feet. Cemented to 203 feet. Pump set at 231 feet. Pumping level 230 feet at 196 gal/min. when drilled.[2]
* 424	Wayne Furry	George Bolton	1964	110	7	110	Kctp	1,535	67.4	July 6, 1965	S,E 5	Irr	Perforated 65 to 110 feet. Pump set at 100 feet. Reported yield 125 gal/min. Gravel packed. Temp. 68°F.
* 602	City of Blanket	do	1957	250	6	250	Kctp	1,657	200	Feb. 22, 1963	S,E/2	P	
* 603	do	S,Elmer Simpson	1928	180	6	180	Kche	1,640	171.5	May 8, 1968	S,E/1	P	
604	do	Tatum Drlg. Co.	--	196	6	196	Kctp	1,628	176	Feb. 22, 1963	C,E 2	P	Unused well.
* 639	do	Robert M. Virdell	1963	207	7	207	Kctp	1,623	154.8	Mar. 12, 1969	S,E 1-1/2	P	Pump set at 190 feet. Reported yield 10 gal/min. Temp. 68°F. Observation well.[2]
640	do	Watts Drlg. Co.	1970	450	8 6	195 240	Kctp	1,660	197	Nov. 17, 1970	S,E 2	P	Completed from 220 to 240 feet. Cemented to 195 feet. Pumping level 231 feet at 17 gal/min. Pump set at 231 feet.
641	do	do	1970	240	6	240	Kctp	1,650	201	Nov. 17, 1970	S,E 2	P	Slotted 220 to 240 feet. Cemented to 203 feet. Pump set at 231 feet. Pumping level 228 feet at 20 gal/min. when drilled.[2]
* 725	W. S. Byrd	--	1954	139	5	139	Kctp	1,495	96	Jan. 16, 1963	C,W	S	
* 903	W. J. Bettis	--	--	124	5	124	Kctp	1,550	76.7 71.3	Jan. 18, 1963 Mar. 12, 1969	C,W	D,S	Observation well.[1]
* 11-721	S,Earl Stewart	--	--	120	5	120	Kche	1,556	21.6 20.3	Feb. 9, 1963 Mar. 12, 1969	S,E	D,S	Observation well.[1]
18-205	Joe Foster	--	--	181	5	181	Kctp	1,610	138.0 140.8	Jan. 3, 1963 Mar. 12, 1969	C,W	S	Do.[1]
* 303	Carl Taylor	--	--	120	5	120	Kctp	1,530	78.0	Mar. 12, 1969	C,W	D,S	Do.[1]
* 620	A. R. Sikes	--	--	144	5	144	Kctp	1,462	41.5 5.0	Nov. 29, 1962 Mar. 12, 1969	C,W	D,S	
* 650	Brigg Young	Timmie Johnson	1968	134	5	134	Kctp	1,475	22.3	Mar. 26, 1970	S,E 3	Irr	Slotted. Cemented to 30 feet. Reported yield 25 gal/min. Gravel packed. Observation well.[1]
810	Mrs. Zelma Locks	--	1905	110	5	110	Kctp	1,495	60	Nov. 15, 1962	C,W	D,S	
* 930	Pete Sanchez	--	1953	143	5	143	Pn, Kcho	1,419	69 94.2	Oct. 23, 1962	C,W	D,S	[1]
19-110	C. R. Bease	--	--	189	5	189	Kctp	1,590	155.9 156.0	Dec. 21, 1962 Mar. 12, 1969	N	N	Observation well.[1]
411	do	--	--	160	5	160	Kche	1,590	100	Jan. 9, 1963	C,W	N	

* For chemical analysis of water see Table 19.

[1] For water-level measurements of observation wells, see Table 18.

[2] For summary of aquifer tests, see Table 4.

[3] For measured yields and specific capacities of wells, see Table 3.

[4] For power and yield tests ons wells, see Table 10.

Table 16. - Records of Wells
CALLAHAN COUNTY

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*30-45-901	Dr. J.E. Mikeska, Jr.	--	--	24.6	6	--	Kca	1,898	16.2	Sept. 10, 1970	N	N	Dug well.
* 902	Elisk Gilliam	--	--	23.2	30	23.2	Kca	1,890	10.5 12.5	Sept. 5,1940 Sept. 22, 1970	W,C	S	Dug well, estimated yield 10 gal/min. Temp. 69°F.
903	Bill Varner	--	--	Spring	--	--	Kca	1,875	+	Sept. 22, 1970	Flows	S	Estimated flow of 5-20 gal/min. at contact between Antlers and Permian rocks.
904	do	Jack Leonard	1967	42	5	42	Kca	1,908	30	Apr. 28, 1971	S,E ⅓	S	Slotted from 30-42 feet. Cemented to 3 feet. Reported yield 15 gal/min. Gravel packed.
* 46-701	Dr. J.E. Mikeska, Jr.	M&M Water Wells	1965	53	8	53	Kca	1,915	23.5 22.9	Sept. 10, 1970 Mar. 24, 1970	C,W	S	Observation well.
* 702	Mogan Stokes	--	--	91	36	--	Kca	1,970	76.1 77.3	Sept. 5, 1940 Sept. 22, 1970	J,E ⅓	N	Open hole completion.
* 703	C.N. Eller, Sr.	M&M Water Wells	1965	76	5	40	Kca	1,940	45	Oct. 14, 1970	S,E ¾	D,Irr	Perforated from 40 to 75 feet. Gravel packed. Measure yield 12 gal/min. Temp. 70°F.
704	do	do	1968	75	8	75	Kca	1,945	47	do	C,W	D	Originally 50 feet dug well deepened to 75 feet. Reported yield 10-15 gal/min.
705	Charles Eller, Jr.	do	1966	72	8	70	Kca	1,915	35	do	C,W	S	Slotted from 48 to 70 feet. Estimated yield 15 gal/min. Gravel packed.
* 706	Andy Myers	--	1920	19.5	72 60	8 19.5	Kca	1,892	12.9	do	Cf,E ⅓	D,S	Open hole completion.
707	Dave Pillars	A.L. Varner	1964	75	7	75	Kca	1,910	25.7	do	N	N	Gravel packed. Unused irrigation well.
708	do	M&M Water Wells	1965	48	5	48	Kca	1,913	25.5	do	Cf,E ½	S	Perforated from 20 to 48 feet.
* 801	W.O. Wyile	--	--	17	36	9	Kca	1,848	9.2 7.3	Sept. 5, 1940 Mar. 5, 1971	N	N	Open hole completion.
* 902	Couty of Callahan	None	--	Spring	--	--	Kca	1,966	+	Jan. 13, 1971	Flows	S	Yield 30-40 gal/min. Temp. 68°F reported.
* 903	Bob Beckham	A.L. Varner	1965	266	6	265	Kca	2,070	234.1	do	C,W	S	Reported yield 2-5 gal/min. Temp. 64°F.
* 47-601	E.R. Battle	Fed Sprawls	1920	25	48	25	Kca	1,783	15.3 13.3	Mar. 19, 1940 Mar. 5, 1969	J,E ⅓	D,S	Open end completion. Pump set at 22 feet. Estimated yield 4 gal/min. Water sand at 18 feet. Temp. 59°F. Observation well.
602	Raymond Sprawles	A.L. Varner	1970	34	7	30	Kca	1,772	16 14.8	July 1970 Jan. 14, 1971	S,E 1½	Irr	Slotted from 15 to 25 feet. Gravel packed. Estimated yield 35 gal/min.
* 603	do	do	1970	41	7	30	Kca	1,772	16 15	July 1970 Jan. 14, 1971	S,E 1½	Irr	Slotted from 15 to 25 feet. Gravel packed. Estimated yield 25 gal/min. Temp. 70°F.
* 604	do	do	--	23	48	23	Kca	1,772	15.4 15.5	Jan. 14, 1971 June 15, 1971	S,E 1½	D,S Irr	Open end completion. Dug well. Reported 10 feet of water sand. Pumping level 18.70 feet on June 15, 1971 pumping 60 gal/min. Estimated yield 20 gal/min. Temp. 70°F.
* 605	W.W. Scott	J.W. Huff	1964	19.1	36	19.1	Kca	1,772	12.7	Oct. 6, 1970	C,E 1	D,S	Dug well. Water sand 13 to 19 feet. Temp. 69°F.
* 606	G.A. Reece	M&M Water Wells	1966	45	6	45	Kca	1,787	18.6	do	J,E 1	D,S	Gravel packed. Reported yield 80 gal/min.
701	Wendlon Gary	--	--	45	30	4	Kca	1,855	29.9	Sept. 21, 1970	C,W	S	Dug well. Bed rock at 45 fee. Open end completion. Temp. 74°F.
* 702	do	--	--	Spring	--	--	Kca	1,800	+	do	Flows	S	Temp. 76°F.
* 703	Loyd Gary	A.L. Varner	1951	118	5	118	Kca	1,900	66.8	Sept. 21, 1970	C,W	D,S	Reported slotted 88-118 feet. Small seep at 18 feet. Blue shale at 80 feee. Sandstone and blue clay 80-118 feet.
* 704	La Reata Ranch	J. & L. Drilling Co.	1966	134	6	--	Kca	1,907	85.3	Oct. 1, 1970	S,E ¾	D	Gravel packed. Estimated yield 5 gal/min. Temp. 69°F.
705	do	--	Old	114	6	114	Kca	1,933	100.6	Oct. 7, 1970	C,W	S	Red bed reported at 114 feet.
* 801	La Reata Ranch	--	--	18	36	--	Kca	1,790	10.7 7.3	Aug. 2, 1940 Oct. 1, 1970	C,W	D,S	Dug well. Red beds at 18 feet.
* 901	Jerry Dehling	Jack Leonard	1966	50	12	50	Kca	1,798	36	Sept. 24, 1970	S,E 1½	Irr	Gravel packed. Slotted from 20 to 50 feet. Water sand at 27 feet and red bed at 50 feet. Reported yield 100 gal/min. Temp. 66°F.
902	do	do	1966	--	12	--	Kca	1,798	33.9	Sept. 23, 1970	S,E 1½	Irr	Gravel packed. Slotted. Water sand at 27 feet. Reported yield 100 gal/min.
903	do	do	--	50	12	50	Kca	1,798	32.7	do	S,E 1½	Irr	Gravel packed. Slotted. Red beds at 50 feet. Reported yield 100 gal/min.
* 904	Jerry Dehlinger	Jack Leonard	1968	60	12	60	Kca	1,978 1,798	32.2	Sept. 23, 1970	S,E 1½	Irr	Gravel packed. Slotted from 20 to 60 feet. Reported yield 65 gal/min.
* 905	Dwight Black	Dwight Black	1950	21	36	8	Kca	1,965 1,765	11.8	Oct. 1, 1970	J,E 1	D,S	Dug well. Open end completion. Pack sand from 8 to 21 feet. Temp. 69°F.

See footnotes at end of county.

Table 16. - Records of Wells
CALLAHAN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
* 906	S.A. Black Est.	--	1935	16	30	--	Kca	1,964	10.4	Mar. 19, 1940	C,W	N	Dug well. Open end completion. Red clay at 16 feet.
								1,764	9.6	oct. 1, 1970			
907	Foy Jobe	--	--	18	36	--	Kca	1,766	5.9	do	N	D,S	Dug well. Open end completion. Red clay shale at 18 feet.
* 908	J.L. Marinelli	Vernon Phillips	1966	35	8	33	Kca	1,776	8.8	Oct. 6, 1970	J,E	S	Slotted from 12 to 33 feet. Gravel packed. Temp. 69°F.
* 48-402	Morris L. Morgan	Morris L. Morgan, Sr.	1918	17	36	17	Kca	1,740	9.5	Oct. 6, 1970	H	S	Dug well. Estimated yield 10 gal/min.
.705	D.L. Sessions	--	1955	55	36	55	Kca	1,810	34.0	Mar. 15, 1971	J,E	S	
* 53-301	Alton Hornsby	--	--	8	20	3	Kca	1,878	2.9	Sept. 5, 1940	N	N	Open hole from 3-8 feet. Temp. 78°F.
									4.6	Sept. 22, 1970			
54-101	Robert McLain	J&L Drilling Co.	1966	90	8	88	Kca	1,920	30.2	Sept. 22, 1970	J,G	S	Slotted from 30 to 45 feet and 86 to 88 feet. Gravel packed. Reported yield 60 gal/min. Temp. 69°F.
											3		
* 102	do	do	1969	31	8	31	Kca	1,880	7.8	do	J,E	D,S	Slotted from 11 to 31 feet. Gravel packed. Reported yield 75 gal/min. Sand from 2 to 31 feet. Temp. 69°F.
											½		
* 103	H.J. Gibbs	W.D. Clark	1970	70	6	70	Kca	1,905	46.5	do	J,E	D,S	Perforated from 50 to 70 feet. Gravel packed. Reported yield 5-6 gal/min. Temp. 70°F.
											⅓		
* 104	Bob Dye	M&M Drilling Co.	1970	70	6	70	Kca	1,944	50.2	Oct. 7, 1970	S,E	D	Slotted from 45 to 70 feet. Gravel packed. Reported yield 16 gal/min. Water sand from 45 to 70 feet ending in red bed.
											½		
105	Russell H. Dye	Morrow Drilling Co.	1970	102	6	102	Kca	1,951	62.3	Oct. 14, 1970	S,E	D	Perforated from 62 to 102 feet. Gravel packed. Measured 10 gal/min.
											½		
* 106	John E. Downs	--	1916	30	36	30	Kca	1,887	13.4	Jan. 13, 1971	J,E	S	Dug well. Open end completion. Reported yield 50 to 10 gal/min. Temp. 60°F.
											½		
201	W.M. Price	--	--	23	36	--	Kca	1,910	21.0	Mar. 21, 1940	C,W	S	Dug well.
									18.8	Oct. 9, 1970			
* 202	do	--	1946	26	36	26	Kca	1,900	12.5	Oct. 13, 1970	C1,E	D,S	Reported yield 5-10 gal/min.
											1		
203	do	--	--	Spring	--	--	Kca	1,880	+	do	Flows	S	Dug well. Estimated flow 5-10 gal/min.
											C,W		
204	W.L. Lawrence	M&M Drilling Co.	1961	120	6	120	Kca	1,935	50.4	Oct. 14, 1970	J,E	D,S	Dug well deepened from 60 feet. Perforated from 60 to 100 feet. Estimated yield 2 to 5 gal/min. Temp. 69°F.
											½		
* 206	Bob Beckham	Bill Varner	1937	200	5	160	Kca	2,138	173.5	Mar. 11, 1971	C,W	S	Reported yield 75 gal/min. Temp. 64°F.
207	do	Bud Goble	--	220	6	220	Kca	2,111	135.0	do	C,W	S	Reported yield 75 gal/min. Water sand from 200 to 220 feet.
* 302	Caldwell Ranch	Cecil Goble	1950	190	5	190	Kca	2,005	31.5	Mar. 6, 1969	S,E	D,S	Pump set at 100 feet. Estimated yield 4 gal/min. Temp. 66°F.
											⅓		
* 303	Ray Fairecloth	Will Varner	1939	119	5	119	Kca	1,919	87.2	Apr. 4, 1940	N	D,S	Perforated from 99 to 119 feet. Not used.
									87.2	Sept. 21, 1970			
* 304	A.A. Holley	--Murdock	--	120	6	120	Kca	1,910	54.4	Sept. 23, 1970	C,W	D,S	Reported yield 6 gal/min. Reported casing collapsed from 110 to 120 feet. Temp. 70°F.
305	Bob Beckham	Bud Goble	1936	186	6	184	Kca	1,994	135.3	Mar. 11, 1971	C,W	S	Slotted from 163 feet to 184 feet.
306	do	William Varner	1928	120	4	120	Kca	2,048	74.1	do	C,W	S	Water sand and gravel from 90 to 120 feet.
* 307	do	do	1947	56	8	56	Kca	1,985	20.5	do	S,E	S	Red bed at 56 feet.
											½		
* 401	Wndlon Gary	J.D. Childress	1955	60	6	60	Kca	1,876	5.2	Sept. 18, 1970	J,E	D	Gravel packed. Temp. 74°F.
									5.0	Jan. 12, 1971	1		
* 402	Olin English	--	1920	16	30	10	Kca	1,882	11.5	Sept. 5, 1940	C,W	D,S	Dug well. open end completion. Rock at 16 feet.
									11.1	Mar. 9, 1971			
* 403	Walter B. Black	--	--	16	30	6	Pn	1,855	3.8	Sept. 5, 1940	J,E	D,S	Dug well. Open end completion.
									7.1	Mar. 9, 1971	½		
* 501	Elizabeh Burks	Curtis Alford Drilling and Well Service	1955	101	6	101	Kca	1,925	83.1	Oct. 7, 1970	J,E	D,S	Reported yield 10-15 gal/min.
											¾		
502	Lee Caldwell	Murl Bales	1964	78	8	78	Kca	1,897	51.6	Mar. 15, 1971	C,W	S	Slotted from 58 to 73 feet. Gravel packed. Reported yield 5 gal/min.
* 601	J.C. Childress	J.C. Childress	1964	38	12	10	Kca	1,840	20.4	Sept. 4, 1970	J,E	D	Open end completion. Temp. 72°F.
									19.9	Oct. 15, 1970	½		
* 602	do	--	--	Spring	--	--	Kca	1,815	+	--	Flows	S	Temp. 76°F.
* 603	John T. Crawley	J.E. Wood	1955	70	6	70	Kca	1,870	35.1	Sept. 23, 1970	J,E	D,S	Gravel packed. Reported yield 10 to 20 gal/min. Temp. 66°F.
											¾		
* 604	do	W.D. Clark	1969	70	6	70	Kca	1,882	30.6	do	S,E	Irr	Slotted from 15 to 65 feet. Gravel packed. Reported yield 12 gal/min. Temp. 68°F.
											½		
* 605	Glen Wooten	--	1945	60	6	60	Kca	1,852	25	Oct. 9, 1970	J,E	D	Gravel packed. Reported yield 15 gal/min. Reporeted 10 feet of water sand. Temp. 69°F.
606	do	J&L Drilling Co.	1964	94	8	94	Kca	1,873	46.7	Oct. 7, 1970	C,W	S	Gravel packed. Reported yield 100 gal/min.

See footnotes at end of county.

Table 16. - Records of Wells
CALLAHAN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
30-54-607	Glen Wooten	--	1920	55	6	55	Kca	1,986	32.8	Oct. 7, 1970	C,W	S	Water from upper Antlers only.
* 608	do	--	1900	65	36	65	Kca	1,875	47.5	do	C,W	S	Dug well. Sixty feet of sucker rods. Temp. 69°F.
609	do	J&L Drilling Co.	1964	85	8	85	Kca	1,866	33.6	do	N	S	Gravel packed. Reported yield 80 gal/min. Reported red bed and blue clay from 83 to 85 feet.
610	do	--	1920	155	6	150	Kca	1,965	98.8	do	C,W	S	142 feet of sucker rods in well. Well in upper Antlers only.
* 611	Edgar Albright	Eddie Woods	1964	90	6	90	Kca	1,890	47.6	Feb. 17, 1971	C,E	D,S	Gravel packed. Estimated yield 9 gal/min. Temp. 63°F. Bad water seep at about 45 to 50 feet.
* 612	do	do	1970	100	6	100	Kca	1,900	74.5	do	C,W	S	Slotted from 78 to 100 feet. Gravel packed. Reported yield 10 gal/min. Cemented from 37 to 60 feet. Temp. 63°F.
* 801	Mrs. Fred Heyser	--	--	15	36	8	Kca	1,759	2.9	Apr. 16, 1940	N	N	Abandoned dug well.
					48	15			12.6	Mar. 9, 1971			
* 901	O.M. Holland	--	--	40	6	--	Kca	1,822	14.4	Sept. 15, 1970	J,E	D	Gravel packed.
									14.3	Jan. 12, 1971	⅓		
* 902	Dr. R.H. Tull	J.C. Childress	1964	28	6	28	Kca	1,805	6.2	Sept. 15, 1970	C,E 3	Irr	Perforated from 13 to 28 feet. Gravel packed. Reported yield 60 gal/min. Temp. 69°F.
* 55-101	H.H. Chaney	W.D. Clark	1964	110	6	100	Kca	1,880	61.0	Sept. 18, 1970	J,E ⅓	D	Gravel packed. Reported yield 100 gal/min. Red bed at 100 feet. Temp. 70°F.
* 102	do	Neal Dillard	1964	85	8	85	Kca	1,874	55.5	do	J,E ½	D,S Irr	Gravel packed. Reported yield 100 gal/min. Red bed at 85 feet. Temp. 68°F.
* 103	Emmit Price	--Nordyke	1905	102	5	102	Kca	1,885	63.3	Apr. 4, 1940	J,E	D,S	Red bed reported at 102 feet. Reported yield 5-10 gal/min. Temp. 69°F.
									62.2	Sept. 21, 1970	⅓		
104	Red Duncan	W.D. Clark	1971	110	8	110	Kca	1,893	74.9	Mar. 11, 1971	S,E 1	D,S	Gravel packed. Reported yield 30 gal/min.
105	A.L. Varner	A.L. Varner	1967	218	7	218	Kca	1,970	155.1	Mar. 24, 1971	S,E 1	S	Gravel packed. Pump set at 190 feet. Reported yield 10 gal/min.
106	J.T. Howard	do	1965	125	7	125	Kca	1,870	52.9	do	S,E ½	D,S	Slotted from 63 to 95 feet. Reported yield 12 gal/min.
* 201	N.G. Wilcoxen	Cecil Gobles	1954	88	3	80	Kca	1,862	--	--	C,W	D,S	Open end completion from 80 to 88 feet. Temp. 70°F.
* 202	Ed & Everett Wilcoxen	--	--	175	7	175	Kca	1,880	77.6	Sept. 15, 1970	N	N	
									77.0	Jan. 14, 1971			
203	Charles Sowell	A.L. Varner	1966	130	8	130	Kca	1,875	70	Sept. 15, 1970	S,E 5	Irr	Slotted from 85 to 115 feet. Gravel packed. Reported yield 185 gal/min.
204	do	do	1966	135	8	135	Kca	1,865	65	do	S,E 3	Irr	Gravel packed. Reported yield 100 gal/min.
205	do	do	1966	140	8	140	Kca	1,857	60	do	S,E 3	Irr	Gravel packed. Reported yield 100 gal/min.
* 206	do	do	1966	105	8	105	Kca	1,853	55	do	S,E 3	Irr	Slotted from 65 to 95 feet. Gravel packed. Estimated yield 100 gal/min. Temp. 70°F.
* 207	do	do	1966	130	8	130	Kca	1,877	74	do	S,E 3	D Irr	Gravel packed. Reported yield 100 gal/min. Temp. 72°F.
* 208	Mrs. M.P. Lovell	Eddie Woods	1964	60	6	60	Kca	1,850	33.3	Sept. 18, 1970	J,E	D	Gravel packed. Reported yield 5-10 gal/min. Temp. 74°F. Yellow clay at 60 feet.
									33.5	Jan. 13, 1971	⅓		
* 209	W.D. Clark	W.D. Clark	1967	61	6	60	Kca	1,827	21.5	Sept. 21, 1970	S,E ¾	D,S	Slotted from 30 to 60 feet. Gravel packed. Reported yield 15-20 gal/min. Temp. 70°F.
210	do	do	1967	58	5	58	Kca	1,825	18.1	do	N	Irr	Slotted from 28 to 58 feet. Gravel packed. Reported yield 20 gal/min.
211	do	do	1967	58	5	58	Kca	1,825	18.7	do	N	Irr	Slotted from 28 to 58 feet. Gravel packed. Reported yield 20 gal/min.
* 212	do	do	1967	60	10	60	Kca	1,824	19.6	do	S,E 1½	Irr	Gravel packed. Reported yield 100 gal/min. Red bed at 60 feet. Temp. 70°F.
213	W.D. Clark	W.D. Clark	1967	67	6	67	Kca	1,824	19	Sept. 21, 1970	S,E ¾	Irr	Perforated from 37 to 60 feet. Gravel packed. Reported yield 30 gal/min.

See footnotes at end of county.

Table 16. - Records of Wells
CALLAHAN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
30-55-214	W. D. Clark	do	1967	58	8	58	Kca	1,824	18.6	do	S,E 1 ½	Irr	Slotted from 37 to 58 feet. Gravel packed. Reported yield 100 gal/min.
* 215	Jack Smith	Cecil Gobles	1954	150	5	150	Kca	1,880	70	Sept. 17, 1970	J,E 1	D,S	Gravel packed. Estimated yield 60 gal/min. Red bed at 160 feet. Temp. 71°F.
216	do	Jake Childress	1964	155	7	155	Kca	1,870	64.2 61.9	Sept. 18, 1970 Jan. 13, 1971	S,E 5	Irr	Gravel packed. Reported yield 185 gal/min.
* 217	J. Nisbitt	Curtis Alford Drilling & Well Service	1963	31	5	30	Kca	1,801	16.2	Oct. 19, 1970	C,H	S	Perforated from 20 to 30 feet. Gravel packed. Esitmated yield 5 gal/min.
218	N.A. Yarbough	A.L. Varner	1966	75	8	75	Kca	1,815	16	do	T,E 5	Irr	Gravel packed. Reported yield 185 gal/min.
* 219	A.L. Varner	do	1970	135	7	135	Kca	1,890	76	Mar. 24, 1971	S,E ½	S	Gravel packed. Estimated yield 25 gal/min. Temp. 65°F.
220	do	do	1970	135	10	135	Kca	1,890	76.1 72.7	Mar. 24, 1971 June 15, 1971	N	Irr	Slotted from 89 to 115 feet. Well tested at 132 gal/min.
221	Leonard Mosely	do	1971	100	5	100	Kca	1,910	30	July 30, 1971	J,E ½	S	Slotted from 50 to 90 gal/min. Reported yield 5-10 gal/min.
* 302	Mrs. J.T. Hewes	--	1900	90	6	90	Kca	1,827	45.1	Sept. 24, 1970	J,E ⅓	D,S	Slotted from 50 to 90 feet. Reported yield 5-6 gal/min. Red clay at 90 feet. Temp. 68°F.
* 303	Nathan Foster	--	--	130	4	130	Kca	1,855	81.5	do	C,W	S	Reported filled in to about 100 feet.
* 304	Dr. A.J. Pope	--	--	80	8 6	6 80	Kca	1,935	56.3	Oct. 19, 1970	C,W	S	
* 305	Mrs. W.T. McClure	E.E. Thate	1963	275	8 7	173 275	Kca	2,020	241.8	Mar. 11, 1971	N	P	Slotted from 220 to 275 feet. Reported yield 120 gal/min.
306	do	--	--	160	6	160	Kca	2,000	124.5	Mar. 15, 1971	C,W	S	Reported yield 5-10 gal/min. Reported water coming from upper Antlers.
307	Nathan Foster	Kit Carrson	1964	132	5	132	Kca	1,919	51.7	Mar. 24, 1971	C,W	S	Gravel packed. Estimated yield 5-10 gal/min.
* 308	Marcus A. Tatom	Vernon Phillips	1971	117	8	117	Kca	1,855	50	Mar. 22, 1971	S,E 5	Irr	Slotted from 83 to 112 feet. Gravel packed. Estimated yield 80-100 gal/min. Reported pumping level 70 feet. Temp. 65°F.
* 309	Robert Brashear	J&L Drilling Co.	1971	100	8	100	Kca	1,840	48.5	May 6, 1971	S,E 5	Irr	Slotted from 53 to 93 feet. Gravel packed. Pumping level 75.0 feet while pumping 43.7 gal/min. on July 22, 1971
* 401	Claude C. Joy	--Gobels	1952	80	6	80	Kca	1,833	22.4 14.0	Sept. 10, 1970 Jan. 13, 1971	J,E 1	D,S	Perforated from 25 to 80 feet. Gravel packed. Red bed reported at 50 feet.
* 402	do	W.D. Clark	1967	80	8	80	Kca	1,847	31.0 40.4	Sept. 10, 1970 Jan. 14, 1971	S,E 1 ½	Irr	Gravel packed. Red beds at 80 feet. Unused in 1970-71.
* 403	do	Jack Leonard	1967	80	8	80	Kca	1,860	50.3	do	E 2	Irr	Gravel packed. Estimated yield 90 gal/min.
404	do	W.D. Clark	1967	80	8	80	Kca	1,865	60.1	do	S,E	Irr	Gravel packed. Estimated yield 90 gal/min.
* 405	do	do	1967	80	8	80	Kca	1,851	52.6	do	S,E 2	Irr	Gravel packed. Estimated yield 90 gal/min.
* 406	Dan L. Childress	Glen Vaughn	1955	30	6	30	Kca	1,798	10.3	Oct. 1, 1970	J,E ⅓	D	Slotted from 22 to 30 feet. Gravel packed. Reported yield 12 gal/min. Temp. 69°F.
* 407	O.O. Sandifer	Eddie Woods	1965	30	6	30	Kca	1,810	14.8	do	J,E 2	D,S	Slotted from 16 to 22 feet. Gravel packed. Reported yield 12 gal/min.
* 408	J.B. Green	J&L Drilling Co.	1967	40	7	40	Kca	1,764	14.6	Mar. 9, 1971	J,E ½	D,S	Perforated from 24 to 33 feet. Reported yield 10 gal/min.
409	C.M. Kinnard	W.D. Clark	1965	58	7	58	Kca	1,840	23.1	Mar. 11, 1971	J,E ⅓	S	Slotted from 50 to 60 feet. Measured yield 4 gal/min.
501	W.W. Robinson	--	1915				Kca		13.0	Mar. 8, 1960		D	Well destroyed.
502	W.A. Gill	J&L Drilling Co.	1966	48	5	48	Kca	1,801	13.1	Apr. 29, 1966	S,E	D	Perforated from 32 to 40 feet. Gravel packed.[1]
503	--	--	1927	82	--	--	Kca	1,866	77.5 77.2	Mar. 29, 1966 Mar. 21, 1968	C,W	N	Observation well.[1]
* 504	Lester Bush	--Murdock	--	91	6	91	Kca	1,850	64.5 65.8	Sept. 4, 1970 Jan. 12, 1971	S,E ½	D,S	Perforated from 56 to 91 feet. Temp. 72°F.
505	Glen E. Winfrey	W.D. Clark	1969	75	8	75	Kca	1,801	30.6	Jan. 13, 1971	S,E	Irr	Perforated from 35 to 75 feet. Gravel packed. Pumping level - 35.83 feet. Sept. 11, 1970. Reported yield 75 gal/min.
506	do	do	1969	85	8	85	Kca	1,840	39.3	do	S,E 2	Irr	Perforated from 45 to 85 feet. Gravel packed. Pump set at 83 feet. Reported yield 75 gal/min.
* 507	do	do	1969	65	8	67	Kca	1,800	21.8	do	S,E ½	Irr	Perforated from 25 to 65 feet. Gravel packed. Pump set at 63 feet. Pumping level 48.27 feet on Sept. 11, 1970. Reported yield 30 gal/min.

See footnotes at end of county.

Table 16. - Records of Wells
CALLAHAN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
30-55-508	Glen E. Winfrey	do	1969	85	8	85	Kca	1,832	46.5 40.5	Sept. 11, 1970 Jan. 14, 1971	S,E 2	Irr	Perforated from 45 to 85 feet. Gravel packed. Pump set at 83 feet. Reported yield 50 gal/min. Most water from sand and gravel from 60 to 75 feet with blue shale from 75 to 85 feet.
* 509	do	do	1969	100	8	98	Kca	1,845	58.2	Jan. 13, 1971	S,E 3	Irr	Perforated from 58 to 98 feet. Gravel packed. Reported yield 100 gal/min. Pumping level 84.29 on Sept. 11, 1970. Temp. 71°F.
510	do	do	1969	85	8	85	Kca	1,830	51.8	do	S,E ½	Irr	Perforated from 43 to 83 feet. Gravel packed. Pump set at 83 feet. Reported yield 20 gal/min.
511	do	do	1969	75	8	73	Kca	1,827	43.1	do	S,E 2	Irr	Perforated from 33 to 73 feet. Gravel packed. Reported yield 24 gal/min.
* 512	do	do	1970	98	7	98	Kca	1,840	50.1	do	S,E 3	Irr	Perforated from 35 to 98 feet. Gravel packed. Pump set at 97 feet. Temp. 70°F.
513	do	Morrow Drilling Co.	1970	99	7	98	Kca	1,838	57.1	Jan. 13, 1971	S,E 3	Irr	Perforated from 35 to 99 feet. Gravel packed. Reported yield 65 gal/min.
* 514	do	W.D. Clark	1969	85	6	85	Kca	1,830	41.6 40.4	Sept. 11, 1970 Jan. 12, 1971	J,E ½	D	Gravel packed. Reported yield 35 gal/min.
* 515	Richard Smith	M&M Water Wells	1965	35	5	35	Kca	1,777	7.7 7.6	Sept. 17, 1970 Jan. 12, 1971	J,E ⅓	D,S	Slotted from 17 to 35 feet. Gravel packed. Reported yield 5-10 gal/min. Temp. 74°F.
* 516	Norman Coffey	J.E. Wood	1967	31	6	31	Kca	1,815	15.1	Sept. 23, 1970	J,E ⅓	D	Gravel packed. Yellow clay at 31 fet. Temp. 72°F.
* 517	Mrs. Bryan Bennett	A.L. Varner	1965	100	6	98	Kca	1,835	50.1	Oct. 15, 1970	J,E 1	D,S	Gravel packed. Temp. 69°F.
518	Troy Lamb	Jack Leonard	1966	24	8	24	Kca	1,748	2.1	Mar. 9, 1971	S,E ⅓	S	Perforated from 16 to 24 feet. Gravel packed. Reported yield 75 gal/min.
602	Mike Cuningham	--	--	113	6	113	Kca	1,855	95.4 42.6	Aug. 2, 1940 Oct. 19, 1970	C,W	S	
603	Mrs. W.T. McClure	--Woods	1951	70	8	70	Kca	1,865	30.6	Oct. 19, 1970	C,W	S	
604	do	do	1951	120	6	120	Kca	1,830	55.3	do	J,E 1	D,S	Gravel packed.
* 605	do	Dale Taylor	1965	180	5	180	Kca	1,867	95.3	do	J,E 1	D,S	Red clay reported at 130 feet.
607	Arvin Brashearr	J&L Drilling Co.	1971	122	5	122	Kca	1,870	111.3	Mar. 19, 1971	S,E ¾	D,S	Slotted from 112 to 122 feet. Reported yield 15 gal/min.
608	S.E. Page	do	1971	83	8	83	Kca	1,810	40.5 38.8 39.9	May 6, 1971 Aug. 25, 1971 Oct. 6, 1971	S,E 5	Irr	Slotted from 40 to 80 feet. Gravel packed. Pump set at 75 feet. Pumping level 67.70 feet on July 22, 1971 while pumping 53.2 gal/min.
609	do	do	1971	82	7	82	Kca	1,810	38.1	Oct. 6, 1971	S,E 3	Irr	Gravel packed.
610	do	Texas Water Development Board	1971	83.5	3	83.5	Kca	1,815	46.8 39.3	Sept. 16, 1971 Oct. 6, 1971	N	N	Slotted from 41.5 to 83.5 feet.
611	do	do	1971	82.5	3	82.5	Kca	1,818	42.9 39.9	Sept. 16, 1971 oct. 6, 1971	N	N	Slotted from 40.3 to 82.5 feet.
* 702	Howard Cox	J&L Drilling Co.	1966	45	7	45	Kca	1,805	18.3	Mar. 24, 1970	J,E 1	D,S	Perforated from 20 to 40 feet. Gravel packed.
* 703	Kenneth Fowler	J.E. Woods	1967	72	5	72	Kca	1,855	60.0	Oct. 1, 1970	J,E 1	D	Gravel packed. Water sand and gravel from 65 to 72 feet ending in red bed.
704	Kenneth Whithurst	L.E. Hayhurst	1970	46	5	46	Kca	1,807	12.6	Feb. 16, 1971	N	D,S	Slotted from 18 to 46 feet. Gravel packed. Estimated yield 5 gal/min.
705	do	--	--	Spring	--	--	Kca	1,787	+	do	Flows	S	Estimated flow 10-20 gal/min.
706	Oran Bains, Jr.	W.D. Clark	1971	60	5	50	Kca	1,788	27.1	Mar. 9, 1971	N	N	Slotted from 22 to 29 feet. Estimated 2 gal/min.
* 801	M.E. Dill	--	--	50	48	4	Kca	1,797	39.0	Sept. 18, 1970	J,E ⅓	D,S	Dug well. Open end completion. pack sand from 4 to 50 feet. Temp. 66°F.
* 802	Fred F. Davis	Fred F. Davis	1965	15	36	15	Kca	1,745	7.6	Oct. 27, 1970	J,E ⅓	D,S	Dug well.
* 803	G.B. Booth	--	1930	28	36	14	Kca	1,733	14.2	do	H	D	Dug well. Open end completion. Hard red clay at 28 feet.
* 804	Sam Ingram	J&L Drilling Co.	1967	65	8	65	Kca	1,735	29.6	do	J,E 1	D	Slotted from 35 to 65 feet. Gravel packed. Reported yield 1 gal/min. Pump set at 63 feet. Temp. 66°F.
* 805	Douglas Ingram	--	--	17	42	17	Kca	1,709	8.6	Mar. 25, 1971	J,E ½	D,S	Dug well. Temp. 63°F.

See footnotes at end of county.

Table 16. - Records of Wells
CALLAHAN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*30-55-806	Lilly McMillian	--	1930	20	36	20	Kca	1,761	15.6	do	J,E ¼	D	Dug well. Reported yield 3-5 gal/min. Temp. 63°F.
901	City of Cross Plains	--	1950	60	7	60	Kca	1,778	30 45.6	Oct. 5, 1959 Oct. 21, 1970	J,E 1	P	Reported yield 6 gal/min. Red bed at 60 feet.
902	do	--	1950	60	6	60	Kca	1,780	47.0	Oct. 21, 1970	J,E 1	P	Reported yield 6 gal/min. Red bed at 60 feet.
903	do	--	1950	60	8	60	Kca	1,781	49.3	do	J,E 1	P	Reported yield 6 gal/min. Red bed at 60 feet.
904	do	--	1950	60	6	60	Kca	1,774	30 47.6	Oct. 5, 1959 Oct. 21, 1970	J,E 2	P	Reported yield 10 gal/min. Slotted from 40 to 55 feet.
* 905	do	--	1950	60	6	60	Kca	1,767	30 44	Oct. 5, 1959 Oct. 21, 1970	S,E ¾	P	Slotted from 40 to 55 feet. Gravel packed. Reported yield 35 gal/min. Temp. 70°F.
906	do	--	1950	60	7	60	Kca	1,760	30 32	Oct. 5, 1959 Oct. 21, 1970	Jet,E 1	P	Slotted from 40 to 55 feet. Reported yield 10 gal/min.
907	do	--	1950	65	7	65	Kca	1,756	30 19.0	Oct. 5, 1959 Oct. 21, 1970	N	P	Slotted from 40 to 55 feet. Reported yield 5-6 gal/min. Red bed at 65 feet.
908	do	J&L Drilling Co.	1950	65	7	65	Kca	1,755	21.0	Oct. 21, 1970	S,E 1	P	Reported slotted from 40 to 55 feet. Reported yield 15 gal/min. Red bed at 65 feet.
909	do	--	1950	65	7	65	Kca	1,760	21.4	do	J,E 1½	P	Slotted from 40 to 55 feet.
910	do	--	1950	65	7	65	Kca	1,760	21	Oct. 21, 1970	J,E 1½	P	Reported slotted from 40 to 55 feet. Reported yield 10 gal/min.
911	do	J&L Drilling Co.	1964	70	7	70	Kca	17,65	36.8	do	S,E ½	P	Slotted from 50 to 65 feet. Pump set at 63 feet. Gravel packed. Cemented from 40 feet to surface. Reported yield 10 gal/min.
* 912	City of Cross pines	E.E. Thate	1940	48	8 10	28 48	Kca	1,762	22.8	do	N	P	Perforated from 28 to 48 feet. Estimated yield 10 gal/min. Temp. 71°F.
913	do	J&L Drilling Co.	1964	70	7	70	Kca	1,750	17.0	do	S,E ½	P	Slotted from 40 to 60 feet. Pump set at 63 feet. Gravel packed. Cemented from 40 feet to surface. Reported yield 10 gal/min.
914	do	do	1964	70	7	70	Kca	1,750	18.0	do	S,E ¾	P	Slotted from 40 to 60 feet. Pump set at 63 feet. Gravel packed. Cemented from 40 feet to surface. Reported yield 10 gal/min.
* 915	do	do	1964	70	7	70	Kca	1,748	18.0	do	S,E ½	P	Slotted from 40 to 60 feet. Pump set at 63 feet. Gravel packed. Cemented from 40 feet to surface. Reported yield 10 gal/min. Temp. 68°F.
916	do	do	1964	70	7	70	Kca	1,748	18.5	do	S,E ½	P	Slotted from 40 to 60 feet. Pump set at 63 feet. Gravel packed. Cemented from 40 feet to surface. Reported yield 10 gal/min.
* 917	do	do	1964	70	7	70	Kca	1,748	17.4	Mar. 3, 1969	S,E ½	P	Slotted from 40 to 60 feet. Pump set at 63 feet. Gravel packed. Cemented 40 feet to surface. Temp. 66°F.
* 918	do	--	1926	50	60	35	Kca	1,764	28.9	Oct. 21, 1970	J,E 1½	P	Dug well with brick wall from 35 feet to surface. Open hole from 35 to 50 feet. Reported yield 15 gal/min.
* 919	do	--	1926	49	48 8	49 49	Kca	1,764	28.1	do	J,E 1	P	Well is a drilled and a dug well 10 feet apart and connected by a 4 inch tunnel. 8 inch perforated casing below water.
* 920	do	City Employees	1938	44	60	39	Kca	1,764	30.9 27.5	Sept. 4, 1940 Oct. 21, 1970	N	N	Dug well with brick wall from 39 feet to surface. Open hole from 39 to 44 feet. Abandoned public supply well.
* 921	do	Ben Welch	1926	48	8	48	Kca	1,763	21	do	J,E 1½	P	Perforated. Reported yield 10 gal/min. Reported wanter sand from 23 to 45 feet.
* 922	do	E.E. Thate	1940	47	8 10	27 47	Kca	1,758	22.4	do	J,E 1½	P	Perforated from 27 to 47 feet. Reported yield 10 gal/min. Temp. 70°F.
* 923	do	--	Old	50	72	--	Kca	1,747	30 13.7	Oct. 5, 1959 Mar. 11, 1969	J,E 2	P	Dug well. Reported yield 15 gal/min. Texas Observation well.[1]
* 924	do	--	--	50	48	--	Kca	1,745	12.2	Oct. 21, 1970	J,E ½	P	Dug well. Reported yield 15 gal/min.
* 925	Harvey Wilcoxen	J&L Drilling Co.	1970	85	8	85	Kca	1,771	24.2	Oct. 19, 1970	S,E	Irr	Slotted from 30 to 70 feet. Gravel packed. Reported yield 40 gal/min.
926	Harvey Wilcoxen	J&L Drilling Co.	197	85	8	85	Kca	1,776	35	Sept. 2, 1970	S,E	Irr	Slotted from 30 to 70 feet. Gravel packed. Gravel packed. Reported yield 40 gal/min.
* 927	Thomas E. Buck	Parker Bawn	1964	40	3	40	Kca	1,775	15.4	Oct. 19, 1970	Cf,E ⅓	D,S	Gravel packed. Estimated yield 5 gal/min. Water sand reported from 20 to 40 feet.
* 928	Morris Thomas	J&L Drilling Co.	1970	60	8	60	Kca	1,746	17.3	do	J,E ½	D	Slotted from 30 to 50 feet. Gravel packed. Reported yield 10 gal/min. Temp. 70°F.
931	Ben Odom	Eddie Woods	1968	30	6	30	Kca	1,776	16.7	Mar. 25, 1971	H	D	Slotted from 20 to 30 feet. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
CALLAHAN COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
30-55-932	O.B. Evanson	J&L Drilling Co.	1971	60	8	60	Kca	1,780	28.6	do	J,E	S	Gravel packed. 20 feet of water sand and gravel reported. Bottomed in red bed.
933	Dick Vestal	--	--	--	5	--	Kca	1,777	--	--	1½ S,E 1	Irr	Pumping level 41.60 feet on June 29, 1971 pumping 27.7 gal/min.
* 56-413	W.R. Erwin	--	1940	25	36	25	Kca	1,780	14.2	Oct. 27, 1970	C,W	D,S	Dug well. Temp. 65°F.
* 63-101	L.M. Hogees	J&L Drilling Co.	1967	55	5	55	Kca	1,770	12.0	Feb. 15, 1971	J,E	D,S	Gravel packed. Pump set at 50 feet. Temp. 62°F.
* 201	James Hickman	--	1934	28	42	12	Kca	1,751	22.2 13.1	Sept. 4, 1970 Oct. 13, 1970	⅓ C,W	S,Irr	Dug well. Open end completion. Reported yield 5 gal/min.
* 202	J.O. Freeman	--	--	150	6	150	Pn	1,719	130	Jan. 13, 1971	C,E	D,S	Slotted. Pump set at 141 feet. Reported yield 1 gal/min. Temp. 65°F.
* 203	Alford Franke	E.D. Schfard	1934	90	8	60	Pn	1,670	53.9	Feb. 15, 1971	½ C,E	D,S	Open hole from 60-90 feet. Water reported from limestone from 55-90 feet. Not used for drinking.
* 205	Traves Sanders	M.E. Howell	1930	13	24 36	2 13	Kca	1,735	7.4	Feb. 17, 1971	J,E	S	Dug well. Underreamed. Red bed at 13 feet. Temp. 63°F.
208	Mrs. R.B. Belyeu	--	1930	16	42	16	Kca	1,711	9.3	Mar. 15, 1971	N	N	Dug well. Water reported to have bad taste and odor.
* 303	City of Cross Plains	--	1945	62	8	62	Kca	1,770	30 42	Oct. 5, 1959 Oct. 21, 1970	J,E 2	P	Reported yield 5 gal/min.
* 304	do	--	1945	50	8	50	Kca	1,772	44.2	do	N	P	Reported yield 5 gal/min. Gravel packed.
305	do	--	1941	61	8	61	Kca	1,772	40	do	J,E ¾	P	Reported yield 15 gal/min.
306	do	--	1941	66	8	66	Kca	1,770	30 36.7	Oct. 5, 1959 Oct. 21, 1970	J,E 2	P,S	Reported yield 5 gal/min.
307	do	J&L Drilling Co.	1963	70	7	70	Kca	1,773	--	--	S,E ½	P	Slotted from 45 to 60 feet. Pump set at 63 feet. Gravel packed. Cemented from 40 feet to surface. Pumping level 53.40 feet on June 29, 1971.
* 308	City of Cross Plains	J&L Drilling Co.	1963	70	7	70	Kca	1,773	42	Oct. 21, 1970	S,E ½	P	Slotted from 45 to 60 feet. Pump set at 63 feet. Gravel packed. Cemented from 40 feet to surface. Pumping level 51.40 feet on June 29, 1971. Estimated yield 8 gal/min. Red bed from 60 to 70 feet. Temp. 70°F.
* 309	Dale Crawford	Curtis Alford Drilling and Well Service	1962	80	8 5	40 80	Kca	1,772	44.7	Mar. 3, 1969	J,E ½	D	Perforated from 50 to 70 feet. Pump set at 70 feet. Gravel packed. Cemented from 40 feet to surface. Temp. 64°F. Estimated yield 10 gal/min.
310	Fred Wilson	do	1963	63	6	63	Kca	1,761	36.8 27.2	Sept. 4, 1970 Oct. 15, 1970	J,E 1	N	Perforated from 51 to 63 feet. Gravel packed. Reported poor water quality.
* 311	Dan Applin	J&L Drilling Co.	1965	40	5	40	Kca	1,732	23.0	Oct. 13, 1970	J,E ½	D,S	Gravel packed. Red bed at 40 feet.
* 312	C.M. Garrett	do	1966	48	8	48	Kca	1,680	21.8	do	S,E ½	D,S	Slotted from 33 to 48 feet. Well penetrates Permian clay.
* 313	do	T.C. Thorn	1890	60	6	60	Kca	1,682	24.1 22.4	Sept. 4, 1940 Oct. 13, 1970	J,E ½	N	
* 314	H.R. Miner	Jack Leonard	1970	62	6	62	Kca	1,720	30	Oct. 27, 1970	S,E 1	D	Slotted from 40 to 62 feet. Gravel packed. Estimated yield 6 gal/min.
315	do	--	1951	72	5	72	Kca	1,725	29.2	do	C,W	S	Reported yield 15 gal/min.
* 316	Mrs. Ed Long	--	1904	19	36 60	6 19	Kca	1,685	10.0 10.1	Arp. 4, 1940 Oct. 27, 1970	C,W	D,S	Dug well. Estimated yield 2 gal/min.
318	Red Grider	Eddie Woods	--	35	8	35	Kca	1,735	26.6	June 3, 1971	C,W	S	
* 404	G.L. Klutz	--	--	15	36	6	Kca	1,705	12.5	Mar. 25, 1971	N	N	
* 607	J.H. Balkum	--	1920	24.9	36	16	Kca	1,701	14.4 13.8	Apr. 19, 1962 Oct. 13, 1970	J,E ⅓	D	Dug well. Open hole completion. Temp. 69°F.

* For chemical analysis of water from wells and springs, see Table 19.

1 For water-level measurements in wells, see Table 18.

Table 16. - Records of Wells
COMANCHE COUNTY

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31-51-308	Robert C. Atchinson	Continental Water Well Drilling Co.	1966	168	8	160	Kctp	1,430	55	Mar. 13, 1966	S,E 7½	Irr	Perforated from 36 to 160 feet. Pumping level 155 feet at 80 gal/min. when drilled. Gravel packed.
* 309	do	do	1966	200	8	180	Kctp	1,450	72.3 71.7	July 10, 1968 Mar. 24, 1969	S,E 10	Irr	Perforated from 40 to 180 feet. Reported yield 100 gal/min. Gravel packed. Texas Department of Water Resources observation well.[1]
501	J.E. Browning	Steward Drilling Co.	1954	60	6	60	Kctp	1,415	23	Jan. 14, 1960	S,E ⅓	D	
* 502	A.F. McMullen	do	1951	217	6	60	Pn	1,315	+3.0 15.3	Jan. 23, 1973	H	S	
517	A.D. Mauney	Sanders Drilling Co.	1968	60	5	47	Kctp	1,396	--	--	S,E 2	Irr	Perforated from 15 to 46 feet. Open end completion from 46 to 60 feet. Gravel packed. Reported yield 75 gal/min.
518	do	do	1968	100	5	79	Kctp	1,399	--	--	S,E 2	Irr	Perforated from 30 to 79 feet. Open end completion from 79 to 100 gal/min. Reported yield 80-90 gal/min. Gravel packed.
519	do	do	1968	68	5	68	Kctp	1,404	--	--	S,E 3	Irr	Perforated from 28 to 68 feet. Gravel packed. Reported yield 75 gal/min.
520	do	do	1968	59	5	59	Kctp	1,411	--	--	S,E 3	Irr	Perforated from 20 to 59 feet. Gravel packed. Reported yield 75 gal/min.
521	do	do	1968	75	5	75	Kctp	1,413	--	--	S,E 3	Irr	Perforated from 27 to 75 feet. Gravel packed. Reported yield 100 gal/min.
522	do	do	1968	59	5	59	Kctp	1,415	--	--	S,E 3	Irr	Perforated from 20 to 59 feet. Gravel packed. Reported yield 75 gal/min.
* 523	do	do	1968	60	5	40	Kctp	1,407	--	--	S,E 1	Irr	Perforated from 25 to 40 feet. Gravel packed. Reported yield 30 gal/min. Temp. 68°F.
525	James E. Thompson	F & F Drilling Co.	1970	45	5	45	Kctp	1,397	16.0	Apr. 12, 1971	S,E 1½	Irr	Perforated from 20 to 45 feet. Gravel packed. Pump set at 42 feet.
526	James. E. Thompson	F & F Drilling Co.	1970	50	5	50	Kctp	1,400	19.7	Apr. 12, 1971	S,E 1½	Irr	Perforated from 20 to 50 feet. Gravel packed. Pump set at 48 feet.
527	do	do	1970	60	5	60	Kctp	1,405	25.1	do	S,E 1½	Irr	Perforated from 25 to 60 feet. Gravel packed. Pump set at 58 feet.
528	do	do	1970	50	5	50	Kctp	1,403	23.1	do	N	N	Perforated from 20 to 50 feet. Gravel packed. Unused irrigation well.
601	Homer Woods	--	1910	30	42	30	Kctp	1,343	12.4 10.1	May 31, 1937 Jan. 13, 1960	J,E ¼	D,S	
602	Norman Parks	N.L. Box Drilling Contractor	--	120	8	120	Kctp	1,424	--	--	S,E 7½	Irr	Perforated from 60 to 110 feet. Pump set at 90 feet. Reported yield 115 gal/min. Pumping level 72.23 feet on July 22, 1965.
* 603	George Warren	do	1965	56	7	56	Kctp	1,372	12 15	June 4, 1965 July, 28, 1965	S,E 5	Irr	Slotted from 18 to 48 feet. Pumping level 50 feet at 120 gal/min. on July 10, 1965. Pump set at 47 feet. Gravel packed.
604	do	do	1965	58	7	58	Kctp	1,373	--	--	S,E 5	Irr	Completed from 19 to 52 feet. Pump set at 50 feet. Reported yield 70 gal/min. Pumping level 39.64 feet on July 28, 1965 Gravel packed.
* 605	R.A. Barnett	do	1965	75	7	75	Kctp	1,375	15	July 28, 1969	S,E 5	Irr	Slotted from 30 to 71 feet. Pump set at 65 feet. Reported yield 95 gal/min. Pumping level 59.0 feet on Aug. 8, 1966. Gravel packed. Temp. 75°F.
* 606	do	do	1965	75	7	75	Kctp	1,371	26.3 26.0	Mar. 23, 1966 Mar. 24, 1969	S,E 3	Irr	Slotted from 24 to 65 feet. Pump set at 68 feet. Reported yield 51 gal/min. Pumping level 57.21 feet on July 28, 1965. Gravel packed. Temp. 74°F. Observation well.[2] [4]
* 607	Mrs. Rainey	Ardean Kimmel Irrigation Service	1964	90	8	90	Kctp	1,439	46.4	Aug. 9, 1965	S,E 3	Irr	Completed from 40-90 feet. Pump set at 80 feet. Gravel packed. Temp. 70°F.
608	Mrs. Rainey	Robert Lee - Bob Barnhill	1965	105	8	105	Kctp	1,437	39.8	Aug. 9, 1965	S,E 5	Irr	Completed from 39 to 53 and 65 to 95 feet. Pump set at 92 feet. Reported yield 100 gal/min. Gravel packed.
609	R.A. Barnett	N.L. Box Drilling Contractor	1965	78	8	78	Kctp	1,369	9	Dec. 28, 1965	S,E 7½	Irr	Slotted from 20 to 74 feet. Pumping level 65 feet at 125 gal/min. on Dec. 28, 1965. Gravel packed.
610	do	do	1965	63	7	63	Kctp	1,365	10	do	S,E ¾	Irr	Slotted from 20 to 60 feet. Pumping level 60 feet at 20 gal/min. on Dec. 23, 1965. Gravel packed.
611	do	do	1966	75	7	74	Kctp	1,371	10	Jan. 3, 1966	S,E 3	Irr	Slotted from 26 to 72 feet. Pumping level 65 feet at 40 gal/min. on Jan. 3, 1966. Gravel packed.
612	George Warren	do	1966	45	7	45	Kctp	1,433	9	Feb. 28, 1966	S,E	Irr	Slotted from 14 to 29 feet. Pumping level 39 feet at 75 gal/min. on Feb. 28, 1966. Gravel packed.
613	Arnold Butler	Continental Water Well Drilling Co.	1966	100	8	84	Kctp	1,364	10	Feb. 3, 1966	S,E 7½	Irr	Perforated from 12 to 84 feet. Pumping level 75 feet at 110 gal/min. on Feb. 3, 1966. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
* 618	W.C. SMith	Robert Lee - Bob Barnhill	1968	46	8	46	Kctp	1,408	10.5	July 29, 1970	S,E 1½	Irr	Gravel packed. Temp. 69°F.
619	do	do	1968	50	8	50	Kctp	1,408	14.2	do	N	Irr	Slotted from 20 to 40 feet. Gravel packed. Unused irrigation well. Reported yield 75 gal/min.
620	do	do	1968	55	8	55	Kctp	1,405	--	--	N	Irr	Slotted from 15 to 40 feet. Gravel packed. Unused irrigation well. Reported yield 60 gal/min.
* 621	T.C. Hale	--	1945	115	8	115	Kctp	1,445	77.8	July 15, 1970	S,E 20	Irr	Pumping level 94.30 feet at 152 gal/min. on July 16, 1971. Temp. 70°F.
622	Arnold Butler	Curtis Alford Drilling & Well Service	1967	38	8	38	Kche	1,360	--	--	S,E ½	Irr	Slotted from 15 to 35 feet. Gravel packed.
623	do	do	1967	75	8	75	Kctp	1,358	--	--	S,E 5	Irr	
624	do	do	1967	80	8	31	Kche	1,368	--	--	S,E 3	Irr	Gravel packed.
625	do	do	1967	105	5	105	Kctp	1,380	--	--	S,E 1	Irr	Gravel packed.
626	do	do	1969	63	6	63	Kche	1,374	--	--	S,E ¾	Irr	Perforated 32 feet. Reported yield 30 gal/min.
627	do	do	1969	65	6	65	Kctp	1,370	--	--	S,E 2	Irr	Perforated 30 feet. Reported yield 30 gal/min.
628	do	do	1969	80	6	80	Kctp	1,365	--	--	S,E ¾	Irr	Perforated 30 feet. Reported yield 15 gal/min.
629	do	do	1969	75	8	75	Kcho	1,398	25.5	Sept. 9, 1970	S,E 7½	Irr	Perforated from 45 to 75 feet. Reported yield 154 gal/min. Pump set at 70 feet. Gravel packed.
* 630	Jack Perry	do	1968	66	5	66	Kctp	1,372	--	--	S,E ½	Irr	Reported yield 25 gal/min. Gravel packed. Temp. 68°F.
631	do	do	1968	67	5	67	Kctp	1,366	22	Sept. 10, 1970	N	Irr	Reported yield 30 gal/min. Gravel packed. Unused irrigation well.
* 632	do	do	1968	99	8	99	Kctp	1,381	--	--	S,E 3	Irr	Gravel packed. Temp. 68°F.
633	George Warren	Curtis Alford Drilling & Well Service	1968	46	8	46	Kctp	1,370	--	--	S,E 3	Irr	Gravel packed.
634	George Warren	Curtis Alford Drilling & Well Service	1969	70	5	70	Kctp	1,372	--	--	S,E	D,S	Perforated from 40 to 60 feet. Reported yield 18 gal/min. Gravel packed.
635	Billy Fred Jay	do	1967	81	8	81	Kctp	1,372	--	--	S,E 3	Irr	Gravel packed.
636	do	do	1967	85	8	85	Kctp	1,373	--	--	S,E 3	Irr	Gravel packed.
637	do	do	1967	85	8	85	Kctp	1,375	--	--	S,E 1½	Irr	Gravel packed.
638	do	do	1967	82	8	82	Kctp	1,377	--	--	S,E 2	Irr	Gravel packed.
639	do	do	1967	83	8	83	Kctp	1,375	--	--	S,E 1	Irr	Gravel packed.
640	Arvil Barnett	do	1969	77	5	76	Kctp	1,371	--	--	S,E	Irr	Reported yield 20 gal/min. Gravel packed.
641	do	do	1969	67	5	67	Kctp	1,373	--	--	S,E	Irr	Reported yield 25 gal/min. Gravel packed.
642	do	do	1969	85	5	85	Kctp	1,376	--	--	S,E	Irr	Reported yield 25 gal/min. Gravel packed.
802	-- Kirk	--	1906	100	5	--	Pn	1,392	57.2	May 26, 1937	T,E ¼	D,S	Unused.
* 803	V.L. Files	--	1917	6	42	6	Pn	1,310	3.6 0.0 +0.3	May 27, 1937 Jan. 14, 1960 Jan. 23, 1973	J,E ½	S	Dug well with rock wall.
* 804	do	-- Bradford	1949	193	6	193	Pn	1,330	11.0 17	Jan. 14, 1960 Jan. 23, 1973	C,E ½	D	
805	Ray Williams	Sam H. Smith Drilling Contractor	1965	170	8	170	Pn	1,375	19.6 8.1	Mar. 22, 1971 Mar. 6, 1972	S,E	Irr	Slotted. Cemented to 10 feet. Reported yield 50 gal/min. Gravel packed. Observation well.[1]
806	J.B. Hodges	M&L Drilling Co.	1964	251	8 7	153 251	Kctp Pn	1,400	53.0	July 20, 1965	S,E 7½	Irr	Completed from 40 to 55 feet, 118 to 250 feet. Pump set at 240 feet. Reported yield 80 gal/min. Pumping level 118 feet on July 20, 1965. Gravel packed to 150 feet.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-51-807	J. B. Hodges	Ardean Kimmell Irrigation Service	1964	149	10	149	Pn	1,398	96.0	do	S,E 3	Irr	Pump set at 135 feet. Reported yield 60 gal/min. Gravel packed.
808	do	M & L Drilling Co.	1964	150	10	150	Pn	1,392	--	--	N	N	Completed from 0 to 150 feet. Gravel packed. Unused irrigation well.
809	Vernon Files	Robert Lee - Bob Barnhill	1966	65	8	50	Pn	1,288	15.9	Sept. 9, 1970	N	N	Slotted, pumping level 49 feet at 62 gal/min. on May 11, 1966, gravel packed. Unused irrigation well.
* 810	Fred Hammit	F&F Drilling Co.	1969	85	6	85	Pn	1,382	--	--	S,E 1½	Irr	Slotted from 45 to 85 feet. Pump set at 85 feet. Gravel packed. Temp. 69°F.[4]
811	do	do	1969	85	6	85	Pn	1,381	--	--	S,E 1½	Irr	Slotted from 45 to 85 feet. Pump set at 85 feet. Gravel packed.[4]
812	do	do	1969	85	6	85	Pn	1,380	--	--	S,E 1½	Irr	Slotted from 45 to 85 feet. Pump set at 85 feet. Pumping level 74.30 feet on Aug. 25, 1970. Gravel packed.Temp. 69°F.[4]
901	Elvin Walker	Pate Water Well Service	1964	127	7	50	Kctp	1,328	1.1 + .1	Aug. 11, 1965 Mar. 26, 1969	P,G	Irr	Pump set at 30 feet. Estimated yield 120 gal/min. Gravel packed. Observation well.[1]
902	do	do	1964	44	7	44	Kctp	1,330	3.2	Aug. 11, 1965	P,E 1	Irr	Completed from 6 to 44 feet. Pump set at 30 feet. Reported yield 50 gal/min. Gravel packed.
* 903	Truitt Coffman	Carson Drilling Co.	1967	65	8	65	Pn	1,313	13	Mar. 20, 1967	S,E 1	Irr	Slotted from 42 to 65 feet. Gravel packed. Temp. 68°F.[4]
904	Truitt Coffman	Carson Drilling Co.	1967	71	8	71	Pn	1,319	13	Mar. 15, 1967	S,E 1½	Irr	Slotted from 36 to 66 feet. Gravel packed. Pumping level 64.90 feet on Aug. 25, 1970. Temp. 68°F.[4]
905	do	Wylie Drilling Co.	1967	80	8	80	Pn	1,319	--	--	S,E 1½	Irr	Slotted from 50 to 80 feet. Gravel packed. Temp. 68°F.[4]
* 906	W.I. Forrest	F&F Drilling Co.	1969	90	8	30	Pn	1,331	35	Jan. 8, 1969	S,E ¾	Irr	Open end completion from 30 to 90 feet. Reported yield 25 gal/min.
907	W.T. Morris	Lightfoot & McCrum	1970	190	5	123	Pn	1,315	46.1	Jan. 25, 1971	N	D	Perforated from 80 to 110 feet. Gravel packed. Plugged back from 190 to 135 feet. Observation well.[1]
908	Bobby Skaggs	F&F Drilling Co.	1971	80	4	80	Pn	1,323	45	Jan. 1, 1971	S,E	Irr	Perforated from 55 to 80 feet. Gravel packed.
909	do	do	1971	40	5	40	Kctp	1,325	4	Jan. 3, 1971	S,E	Irr	Perforated from 20 to 40 feet. Gravel packed.
910	do	do	1971	40	5	40	Kctp	1,327	4	Jan. 4, 1971	S,E	Irr	Perforated from 20 to 40 feet. Gravel packed.
911	do	do	1971	40	5	40	Kctp	1,327	4	Jan. 5, 1971	S,E	Irr	Perforated from 20 to 40 feet. Gravel packed.
52-108	Arvil Setzler	Lightfoot & McCrum	1969	45	6	45	Kctp	1,326	25	Feb. 23, 1969	S,E 1½	Irr	Slotted from 20 to 39 feet. Pumping level 40 feet at 120 gal/min. on Feb. 24, 1969. Gravel packed.
* 109	do	do	1969	47	6	47	Kctp	1,327	20	do	S,E 1½	Irr	Slotted from 20 to 44 feet. Reported yield 80 gal/min. Gravel packed.
110	do	do	1969	54	8	54	Kctp	1,330	20	Feb. 28, 1969	S,E 1½	Irr	Slotted from 25 to 50 feet. Pumping level 40 feet at 80 gal/min. on Mar. 1, 1969.
111	do	do	1969	49	8	49	Kctp	1,333	20	Mar. 3, 1969	S,E/1½	Irr	Slotted from 27 to 47 feet. Reported yield 90 gal/min.
112	Arvil Setzler	Ardean Kimmell Irrigation Service	1967	88	8	88	Kctp	1,360	30 17.2	Jan. 9, 1967 May 19, 1970	N	Irr	Slotted from 30 to 45 and 61 to 77 feet. Pumping level 78 feet at 80 gal/min. Unused irrigation well. Observation well.[1]
113	do	do	1967	77	8	78	Kctp	1,348	33	Jan. 9, 1967	N	Irr	Slotted from 11 to 30 and 56 to 64 feet. Pumping level 77 feet at 80 gal/min. on Jan. 20, 1967. Unused irrigation well.
114	David Glover	Robert Lee - Bob Barnhill	1969	72	8	72	Kctp	1,372	41.0	May 14, 1970	S,E 1	Irr	Reported yield 35 gal/min. Gravel packed.
115	do	do	1969	88	8	88	Kctp	1,371	--	--	S,E 7½	Irr	Reported yield 60 gal/min. Gravel packed.
116	do	do	1969	73	8	73	Kctp	1,366	33.1	May 14, 1970	S,E 2	Irr	Reported yield 70 gal/min. Gravel packed.
117	do	do	1969	40	8	40	Kctp	1,329	--	--	S,E	Irr	Reported yield 60 gal/min. Gravel packed.
118	do	do	1969	46	8	46	Kctp	1,332	16.3	May 14, 1970	S,E 5	Irr	Reported yield 70 gal/min. Gravel packed.
* 119	Arvil Setzler	Lightfoot & McCrum	1970	50	8	50	Kctp	1,330	18	Jan. 2, 1970	S,E	Irr	Slotted from 20 to 40 feet. Reported yield 50 gal/min. Gravel packed.
* 120	do	do	1970	45	8	45	Kctp	1,332	15	Jan. 5, 1970	S,E	Irr	Slotted from 25 to 38 feet. Reported yield 50 gal/min. Gravel packed.
121	do	do	1970	43	8	43	Kctp	1,333	15	Jan. 7, 1970	S,E	Irr	Slotted from 31 to 42 feet. Reported yield 40 gal/min. Gravel packed.
125	B.F. Dominy	N.L. Box Drilling Contractor	1965	107	8	107	Kctp	1,420	60	Aug. 6, 1965	S,E 3	Irr	Slotted from 60 to 102 feet. Pumping level 100 feet at 30 gal/min. on Aug. 9, 1965. Gravel packed.
126	David Glover	R. Lee - B. Barnhill	1970	72	6	72	Kctp	1,360	32	Apr. 13, 1970	S,E	Irr	Reported yield 60 gal/min. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31-52-201	R.W. Duke	R.W. Duke	1967	80	8	80	Kctp	1,375	--	--	S,E 2	Irr	Perforated from 60 to 80 feet. Pump set at 77 feet. Reported yield 12 gal/min.Pumping level 74.1 feet at 12.1 gal/min. on Aug. 17, 1967. Gravel packed.[4]
202	do	do	1966	96	8	96	Kctp	1,380	--	--	S,E 3	Irr	Perforated from 76 to 96 feet. Pump set at 93 feet. Reported yield 20 gal/min. Measured yield 19.5 gal/min. on Aug. 17, 1967. Gravel packed.[4]
203	do	do	1966	92	8	92	Kctp	1,372	--	--	S,E 3	Irr	Perforated from 72 to 92 feet. Pump set at 89 feet. Pumping level 88.0 feet at 16 gal/min. on Aug. 17, 1967. Gravel packed.[4]
204	R.M. Pack	B.G. Watson	1966	100	8	100	Kctp	1,366	--	--	S,E 7½	Irr	Slotted, pump set at 89 feet.[4]
205	do	do	1966	106	8	106	Kctp	1,368	48.8	Sept. 10, 1968	S,E 10	Irr	Slotted, pump set at 94 feet. Gravel packed.[4]
* 206	T.J. Boen	Ardean Kimmell Irrigation Service	1966	114	8	114	Kctp	1,362	29.2	May 20, 1970	S,E 7½	Irr	Slotted from 6 to 15, 38 to 60, 70 to 109 feet. Pump set at 105 feet. Pumping level 105 feet at 135 gal/min. on May 26, 1966. Gravel packed. Temp. 68°F.
208	Elmon Kerby	do	1966	105	5 8	75 105	Kctp	1,328	20.6	June --, 1970	S,E 1½	Irr	Perforated from 10 to 20 & 40 to 60 feet. Open end completion from 75 to 105 feet. Reported yield 25 gal/min. Gravel packed.
209	do	do	1966	75	5	75	Kctp	1,330	22.8	do	S,E 2	Irr	Perforated from 36 to 67 feet. Reported yield 30 gal/min. Gravel packed.
210	Sue Wilson	Comco Drilling Co.	1967	80	8	80	Kctp	1,332	24.9	do	S,E 3	Irr	Slotted from 35 to 75 feet. Reported yield 60 gal/min. Gravel packed.
211	Elmon Kerby	Ardean Kimmell Irrigation Service	1966	85	8	85	Kctp	1,332	14.6	do	S,E 3	Irr	Slotted from 3 to 24 and 35 to 75 feet. Pumping level 80 feet at 50 gal/min. when drilled. Gravel packed.
212	Elmon Kerby	Ardean Kimmell Irrigation Service	1966	83	8	83	Kctp	1,335	17.9	June --, 1970	S,E 5	Irr	Slotted from 23 to 33, 45 to 72 feet. Pumping level 60 feet at 60 gal/min. when drilled. Gravel packed.
* 213	L.E. Singleton	B.G. Watson	1966	165	8	105	Kctp	1,378	32.8 34.2	June 23, 1971 Mar. 7, 1973	S,E 7½	Irr	Slotted from 30 to 90 feet. Gravel packed. Temp. 66°F.
* 214	do	George Parker	1964	125	7	125	Kctp	1,380	34.3	Mar. 11, 1969	S,E 10	Irr	Completed from 49 to 125 feet. Gravel packed. Temp. 68°F. Observation well.[1]
* 215	do	B.G. Watson	1966	114	8	114	Kctp	1,378	31.5	do	S,E 7½	Irr	Slotted from 30 to 114 feet. Gravel packed. Temp. 68°F.
216	George Brazell	Waston Drilling Co.	1970	60	7	60	Kctp	1,328	10	June 27, 1970	S,E	Irr	Slotted from 45 to 60 feet. Gravel packed.
217	Eddie Lindley	do	1971	71	6	71	Kctp	1,320	42	Feb. 10, 1971	S,E	Irr	Slotted from 42 to 65 feet. Gravel packed.
* 309	C.L. Tarrance Company	McDonald Drilling Co.	1967	110	12	110	Kctp	1,365	31.1	May 21, 1970	S,E 3	Irr	Reported perforated from 40 to 55 and 90 to 110 feet. Reported yield 60 gal/min. Pumping level 44.9 feet on July 25, 1972. Gravel packed. Temp. 68°F.
* 310	A.J. Stewart	H & L Drilling & Pump Company	1969	125	8	125	Kctp	1,348	17.5	May 26, 1970	S,E 10	Irr	Slotted from 35 to 125 feet. Pump set at 120 feet. Gravel packed. Temp. 67°F. Deepened from 96 feet.
311	do	do	1966	116	8	116	Kctp	1,342	12.9	do	S,E 15	Irr	Slotted from 23 to 116 feet. Pump set at 112 feet. Gravel packed.
401	Roy Parks	N.L. Box Drilling Contractor	1961	84	7	84	Kctp	1,332	26.2 27.4 24.1	Oct. 6, 1965 June 28, 1966 May 14, 1970	S,E 7½	Irr	Pump set at 76 feet. Reported yield 225 gal/min. Measured yield 114.7 gal/min. Power and yield test. Pumping level 51.0 feet at 115 gal/min on Aug. 5, 1966.
* 402	R.M. Higginbotham	--	1925	60	--	--	Kctp	1,380	34	May 21, 1937	--	D	
403	Cedric Bettis	A.L. Varner	1965	95	7	95	Kctp	1,345	--	--	S,E 7½	Irr	Slotted. Gravel packed.
404	do	do	1965	70	7	70	Kctp	1,340	--	--	S,E 5	Irr	Slotted. Gravel packed.
405	Herman Gilder	Lightfoot and McCrum	1964	58	7	58	Kctp	1,355	--	--	C,W 1	Irr	Slotted from 8 to 52 feet. Gravel packed.
406	do	do	1965	80	7	80	Kctp	1,342	19	Dec. 14, 1965	--	Irr	Slotted from 36 to 46 and 50 to 67 feet. Reported yield 70 gal/min. Gravel packed.
407	do	Ardean Kimmell Irrigation Service	1966	78	8	78	Kctp	1,326	--	--	--	Irr	Slotted from 15 to 67 feet. Gravel packed.
* 408	N.B. Gilbreath	Lightfoot and McCrum	1967	80	8	80	Kche, Kcho	1,350	18	Sept. 2, 1967	N	Irr	Slotted from 20 to 24 and 60 to 71 feet. Reported yield 70 gal/min. Gravel packed.
* 409	do	do	1967	84	8	84	Kcho	1,352	45	Mar. 6, 1967	N	Irr	Slotted from 60 to 73 feet. Pumping level 80 feet at 140 gal/min. when drilled. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31-52-410	N. B. Gilbreath	do	1967	80	8	80	Kcho	1,342	28.7	Jan. 5, 1971	N	Irr	Slotted from 55 to 71 feet. Pumping level 75 feet at 120 gal/min. when drilled. Gravel packed. Observation well.[1]
* 411	Melvin R. Daniels	Wylie Drilling Co.	1967	152	8	112	Kcho	1,352	--	--	S,E 1	Irr	Slotted from 82 to 112 feet. Measured yield 24 gal/min. Pumping level 64.1 feet at 24 gal/min. Temp. 68°F.[4]
412	do	do	1967	100	8	100	Kcho	1,361	57.8	May 19, 1970	S,E 1	Irr	Slotted from 70 to 100 feet. Gravel packed.
413	John Ed Grisham	Robert Lee - Bob Barnhill	1966	94	8	94	Kctp	1,385	8	May 21, 1966	N	Irr	Slotted. Reported yield 30 gal/min. Unused irrigation well.
* 414	do	do	1966	100	7	100	Kctp	1,385	53.4	May, 20, 1970	J,E ¾	D,S	Slotted. Reported yield 60 gal/min. Pump set at 89 feet. Gravel packed. Temp. 71°F.
415	J.C. Dycus	Lightfoot and McCrum	1969	80	8	80	Kctp	1,358	40	June 2, 1969	S,E 3	Irr	Slotted from 46 to 72 feet. Pumping level 55.2 feet at 37.2 gal/min. on July 16, 1970. Gravel packed.[4]
416	do	do	1969	90	6	90	Kctp	1,386	47.8	May 21, 1970	S,E 3	Irr	Slotted from 55 to 82 feet. Reported yield 45 gal/min. Gravel packed. Observation well.[1]
417	Sullivan Mauney	do	1968	107	8	107	Kcho	1,400	30	May 25, 1968	S,E 3	Irr	Slotted from 60 to 97 feet. Reported yield 65 gal/min. Gravel packed.
418	John Warren	Curtis Alford Drilling and Well Service	1966	102	8	102	Kctp	1,431	--	--	S,E 10	Irr	Slotted from 60 to 100 feet. Pump set at 100 feet. Gravel packed.
419	do	do	1967	118	8	118	Kctp	1,428	--	--	S,E 10	Irr	Slotted from 60 to 115 feet. Pump set at 115 feet. Gravel packed.
420	Wayne Setzler	Lightfoot and McCrum	1968	72	5	72	Kcho	1,353	20	Feb. 15, 1968	S,E 1	Irr	Perforated from 50 to 65 feet. Reported yield 45 gal/min. Gravel packed.
421	do	do	1969	72	5	72	Kctp	1,355	20	Feb. 16, 1968	S,E 1½	Irr	Perforated from 25 to 47 and 50 to 67 feet. Reported yield 80 gal/min. Gravel packed.
422	Wayne Setzler	Lightfoot and McCrum	1969	70	5	70	Kcho	1,357	21	Feb. 18, 1969	S,E 1	Irr	Perforated from 49 to 65 feet. Reported yield 45 gal/min. Gravel packed.
423	do	do	1969	60	5	60	Kctp	1,351	14.3	May 14, 1970	S,E 1	Irr	Perforated from 20 to 53 feet. Reported yield 40 gal/min. Gravel packed.
424	Herman Gilder	Ardean Kimmell Irrigation Service	1968	93	8	93	Kctp	1,339	23	Mar. 6, 1968	S,E 2	Irr	Slotted from 18 to 90 feet. Gravel packed.
425	do	Lightfoot and McCrum	1969	60	8	60	Kctp	1,336	3	Apr. 4, 1969	S,E 3	Irr	Slotted from 28 to 32 and 43 to 52 feet. Pumping level 43 feet at 120 gal/min. when drilled. Gravel packed.
* 426	do	do	1969	54	8	54	Kctp	1,340	2.2	May 14, 1970	S,E 7½	Irr	Slotted from 8 to 46 feet. Pumping level 42 feet at 320 gal/min. when drilled. Gravel packed.
427	D.D. George	Johnny Weir Drilling	1969	85	8	85	Kctp	1,377	--	--	S,E 3	Irr	Reported slotted from 55 to 80 feet. Reported pumping level 75 feet at 75 gal/min. Pump set at 80 feet. Gravel packed.
428	do	do	1969	86	8	86	Kctp	1,375	--	--	S,E 4	Irr	Reported slotted from 55 to 80 feet. Reported pumping level 78 feet at 130 gal/min. Pump set at 80 feet. Gravel packed.
429	Donald Setzler	F & F Drilling Co.	1969	75	--	--	Kctp	1,366	30	Jan. 5, 1969	N	N	Plugged with cement.
430	-- Dodd	Lightfoot and McCrum	1966	90	8	90	Kctp	1,372	25	June 6, 1966	N	Irr	Slotted from 31 to 35 and 65 to 78 feet. Pumping level 65 feet at 25 gal/min. when drilled. Gravel packed.
431	Royal Hampton	Curtis Alford Drilling and Well Service	1967	76	8	76	Kctp	1,389	--	--	S,E 7½	Irr	Slotted. Gravel packed.
432	do	do	1967	80	8	80	Kctp	1,390	--	--	S,E 5	Irr	Do.
* 433	do	do	1968	88	8	88	Kctp	1,380	--	--	S,E	Irr	Slotted. Pumping level 33.50 feet on July 24, 1972. Gravel packed. Temp. 69°F and 66°F.
434	do	do	1969	98	8	98	Kctp	1,382	--	--	S,E 7½	Irr	Slotted. Gravel packed.
435	William Roy Park	N.L. Box Drilling Contractor	1966	80	5	80	Kcho	1,332	--	--	N	N	Unused irrigation well. Slotted from 53 to 77 feet. Reported yield 65 gal/min. Gravel packed.
436	do	do	1966	55	5	55	Kctp	1,332	--	--	N	N	Unused irrigation well. Perforated from 27 to 50 feet. Reported yield 35 gal/min. Gravel packed.
437	John Warren	Curtis Alford Drilling and Well Service	1967	111	8	111	Kctp	1,428	--	--	S,E 10	Irr	Slotted. Gravel packed.
438	John Warren	Curtis Alford Drilling and Well Service	1967	112	8	112	Kctp	1,426	--	--	N	Irr	Slotted. Gravel packed.
439	do	do	1968	117	8	117	Kctp	1,432	--	--	S,E 5	Irr	Do.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31-52-440	Dearl Pittman	F & F Drilling Co.	1970	100	5	100	Kcho	1,385	44.3	Feb. 10, 1971	S,E 1	Irr	Perforated from 60 to 100 feet. Gravel packed.
* 441	do	do	1970	100	5	100	Kcho	1,386	42.4	do	S,E 2	Irr	Perforated from 60 to 100 feet. Gravel packed.
* 442	do	do	1970	100	5	100	Kcho	1,388	40.9	do	S,E 2	Irr	Perforated from 60 to 100 feet. Pumping level 64.06 feet on July 8, 1971. Gravel packed. Temp. 69°F.
443	Cedric Bettis	do	1971	78	5	78	Kcho	1,335	33.2	Feb. 24, 1971	S,E 1½	Irr	Perforated from 50 to 80 feet. Gravel packed.
444	do	do	1971	78	5	78	Kcho	1,335	33.4	do	S,E 2	Irr	Perforated from 50 to 80 feet. Gravel packed.
445	do	do	1971	79	5	79	Kcho	1,335	34	do	S,E 1½	Irr	Perforated from 50 to 80 feet. Gravel packed.
446	do	do	1971	85	5	85	Kcho	1,340	34.2 36.8	do Apr. 26, 1972	S,E 2	Irr	Perforated from 50 to 85 feet. Pump set at 82 feet. Gravel packed.
448	D.D. George	Lightfoot and McCrum	1971	65	8	65	Kctp	1,360	35	May 30, 1971	S,E 3	Irr	Slotted from 35 to 56 feet. Reported yield 70 gal/min. Gravel packed.
449	do	do	1971	68	8	68	Kctp	1,360	35	June 2, 1971	S,E 3	Irr	Slotted from 44 to 57 feet. Gravel packed.
450	do	do	1971	67	5	67	Kctp	1,360	33	June 4, 1971	S,E 2	Irr	Perforated. Gravel packed.
501	N.L. Box	N.L. Box Drilling Contractor	1953	90	7	90	Kctp	1,320	38	June 28, 1966	C,E 1½	Irr	Completed from 42 to 48 and 58 to 77 feet. Pump set at 84 feet. Reported yield 40 gal/min. Gravel packed.
502	Clarence Craig	do	1958	91	8	91	Kctp	1,326	35.7	July 14, 1965	S,E ¾	Irr	Completed from 55 to 85 feet. Reported yield 40 gal/min. Pumping level 81.45 feet at 11.1 gal/min. on Aug. 8, 1966. Gravel packed.[4]
503	N.L. Box	do	–	93	7	93	Kctp	1,338	14.3 15.8 14.9	Oct. 12, 1965 Mar. 24, 1969 Oct. 7, 1971	N	N	Completed from 40 to 83 feet. Reported yield 18 gal/min. Observation well.[1]
* 504	Clyde Setzler	do	1964	74	7	74	Kctp	1,320	--	--	S,E 3	Irr	Completed from 40 to 68 feet. Pump set at 65 feet. Reported yield 52 gal/min. Pumping level 40.68 feet on July 13, 1965. Gravel packed. Temp. 70°F.
* 505	G.W. Carter	do	1963	83	6	83	Pn	1,255	--	--	J,E ½	D	Perforated from 44 to 54 feet. Water tastes and smells like crude oil.
506	Cedric Bettis	Alford James Price	1966	87	8	87	Kctp	1,318	--	--	S,E 1½	Irr	Slotted. Reported yield 50 gal/min. Gravel packed.
507	do	do	1966	65	8	65	Kctp	1,325	--	--	N	Irr	Unused irrigation well. Gravel packed.
508	Donal Setzler	Ardean Kimmell Irrigation Service	1966	56	8	50	Kctp	1,297	6.1	May 19, 1970	S,E 5	Irr	Perforated from 4 to 35 feet. Pump set at 35 feet. Pumping level 45 feet at 80 gal/min. when drilled. Gravel packed.
509	do	do	1966	45	8	45	Kctp	1,297	8	May 29, 1966	S,E 5	Irr	Do.
* 510	do	Lightfoot and McCrum	1967	47	5	47	Kctp	1,297	7.0	May 19, 1970	S,E 1½	Irr	Perforated from 25 to 40 feet. Reported yield 50 gal/min. Gravel packed. Temp. 68°F.
511	T.L. Morris	Wylie Drilling Co.	1969	100	6	100	Kcho	1,342	--	--	S,E 1	Irr	Slotted from 70 to 100 feet. Pump set at 95 feet. Gravel packed.
* 512	T.L. Morris	Wylie Drilling Co.	1969	100	6	100	Kcho	1,325	--	--	S,E ¾	Irr	Slotted from 70 to 100 feet. Pump set at 90 feet. Pumping level 64.60 feet on May 21, 1970. Gravel packed. Temp. 68°F.
513	do	do	1969	100	6	100	Kcho	1,332	--	--	S,E ¾	Irr	Slotted from 70 to 100 feet. Pump set at 95 feet. Gravel packed.
514	do	do	1969	80	6	80	Kctp	1,328	7.3	May 21, 1970	S,E ¾	Irr	Slotted from 50 to 80 feet. Pump set at 75 feet. Gravel packed.
515	C.C. Setzler	Lightfoot and McCrum	1967	72	5	72	Kcho	1,330	35.7	May 22, 1970	S,E ⅓	Irr	Perforated from 53 to 65 feet. Pump set at 68 feet. Pumping level 60 feet at 15 gal/min. Gravel packed.
516	Ottis Cogburn	do	1969	75	5	75	Kcho	1,340	45	Jan. 8, 1969	S,E ½	Irr	Perforated from 50 to 70 feet. Reported yield 15 gal/min. Gravel packed.
517	do	do	1969	70	5	70	Kcho	1,320	40	Jan. 9, 1969	N	Irr	Perforated from 45 to 65 feet. Reported yield 15 gal/min. Gravel packed. Unused irrigation well.
518	do	do	1966	100	5	100	Kctp	1,342	30	July 16, 1966	J,E ¾	D,S	Perforated from 47 to 75 feet. Reported yield 14 gal/min. Gravel packed.
519	do	do	1966	70	5	70	Kctp	1,323	20	July 18, 1966	N	Irr	Perforated from 35 to 52 feet. Reported yield 14 gal/min. Gravel packed. Unused irrigation well.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-52-520	N.L. Box	N.L. Box Drilling Contractor	1967	80	5	80	Kctp	1,332	--	--	S,E 2	Irr	Perforated from 35 to 77 feet. Reported yield 55 gal/min. Pump set at 75 feet. Gravel packed.
* 521	Cedric Bettis	Ed's Pump Service	1969	70	6	70	Kctp	1,316	--	--	S,E 1½	Irr	Slotted. Pumping level 49.1 feet at 38.1 gal/min. Gravel packed. Temp. 71°F.[4]
522	Donald Setzler	Lightfoot and McCrum	1970	40	5	40	Kctp	1,295	20	Jan. 25, 1970	S,E 1½	Irr	Perforated from 23 to 33 feet. Reported yield 50 gal/min. Gravel packed.
523	Frank W. McCrum	Lightfoot and McCrum	1966	100	8	100	Kctp	1,350	18	Mar. 8, 1966	N	N	Slotted from 30 to 35, 47 to 96 feet. Pumping level 90 feet at 40 gal/min. when drilled. Gravel packed. Unused irrigation well.
524	Cedric Bettis	F & F Drilling Co.	1971	60	5	60	Kctp	1,315	30	Jan. 8, 1971	S,E 1½	Irr	Perforated from 30 to 60 feet. Gravel packed.
605	B.E. Hanson	Carson Drilling Co.	1965	88	8	88	Kctp	1,282	37.6 28.1	Mar. 24, 1969 Mar. 17, 1971	S,E 15	Irr	Pump set at 72 feet. Reported yield 300 gal/min. Gravel packed. Observation well.[1]
606	do	Lightfoot and McCrum	1965	104	10	104	Kctp	1,288	--	--	S,E 5	Irr	Pumping level at 74.19 feet on July 16, 1965. Gravel packed.
607	do	Carson Drilling Co.	1965	95	8	95	Kctp	1,292	--	--	S,E 5	Irr	Reported yield 100 gal/min. Pumping level 88.79 feet on July 16, 1965. Gravel packed.
* 608	C.H. George	N.L. Box Drilling Contractor	1963	103	8	103	Kctp	1,310	37.5	Aug. 9, 1965	S,E 15	Irr	Pump set at 95 feet. Reported yield 248 gal/min. Pumping level 92.9 feet at 137.1 gal/min. Gravel packed. Temp. 68°F.[4]
609	do	Robert Lee - Bob Barnhill	1964	131	8	112	Kctp	1,318	50.7	do	S,E 10	Irr	Pump set at 106 feet. Pumping level 102.35 feet at 43.6 gal/min. on Aug. 8, 1965. Gravel packed.[4]
610	B.E. Hanson	Lightfoot and McCrum	1965	104	8	104	Kctp	1,285	--	--	--	Irr	Slotted from 35 to 79 feet. Gravel packed.
611	L.V. Park	Ardean Kimmell Irrigation Service	1967	77	8	77	Kctp	1,354	23.7	Mar. 24, 1969 Mar. 9, 1972	S,E 3	Irr	Slotted from 26 to 56 feet. Pump set at 75 feet. Pumping level 75 feet at 66 gal/min. when drilled and 53.7 feet on Aug. 18, 1967. Power and yield test. Gravel packed. Observation well.[14]
612	do	do	1967	92	8	92	Kctp	1,348	17	Jan. 30, 1967	S,E 5	Irr	Slotted from 18 to 40, 70 to 82 feet. Pump set at 85 feet. Pumping level 83 feet at 80 gal/min. when drilled and 69.5 feet on Aug. 18, 1967. Gravel packed.[4]
613	L.V. Park	Ardean Kimmell Irrigation Service	1967	116	8	109	Kctp	1,356	30	Mar. 14, 1967	S,E 3	Irr	Slotted from 35 to 50 feet, 70 to 107 feet. Pump set at 103 feet. Pumping level 102 feet at 85 gal/min. when drilled and 88.5 feet on Aug. 18, 1967. Power and yield test. Gravel packed.
618	T.R. Rogers	Lightfoot and McCrum	1967	84	7	84	Kctp	1,319	15	Sept. , 1967	S,E 3	Irr	Slotted from 15 to 20 feet and 38 to 77 feet. Pumping level 75 feet at 100 gal/min. when drilled. Pump set at 78 feet. Gravel packed.
619	do	do	1967	80	7	80	Kctp	1,317	17	do	S,E 3	Irr	Slotted from 15 to 20 feet, 42 to 68 feet. Pumping level 70 feet at 95 gal/min. when drilled. Pump set at 73 feet. Gravel packed.
620	do	do	1968	75	8	75	Kctp	1,314	18	Jan. 5, 1968	S,E 2	Irr	Slotted from 15 to 20 feet and 42 to 60 feet. Pumping level 60 feet at 70 gal/min. when drilled. Pump set at 60 feet. Gravel packed.
621	C.H. George	Ardean Kimmell Irrigation Service	1966	101	8	101	Kctp	1,305	--	--	S,E 10	Irr	Slotted from 16 to 32 feet and 73 to 101 feet. Reported yield 220 gal/min. Pump set at 95 feet. Gravel packed.
622	D.D. Lowery	N.L. Box Drilling Contractor	1966	96	5	96	Kctp	1,290	--	--	S,E 1	Irr	Perforated from 35 to 92 feet. Reported yield 38 gal/min. with 45 feet drawdown. Gravel packed.
623	do	do	1966	72	8	72	Kctp	1,270	--	--	S,E 1½	Irr	Slotted from 20 to 67 feet. Reported yield 58 gal/min. with 40 feet drawdown. Measured yield 16 gal/min. Gravel packed.[4]
624	do	do	1966	70	5	70	Kctp	1,278	17.4	June 20, 1970	S,E 1	Irr	Slotted from 22 to 70 feet. Pump set at 63 feet. Pumping level 61.5 feet at 20.2 gal/min. on July 16, 1970. Gravel packed.[4]
625	D.D. Lowery	N.L. Box Drilling Contractor	1966	78	5	78	Kctp	1,278	--	--	S,E	Irr	Slotted from 22 to 73 feet. Pump set at 70 feet. Pumping level 65.8 feet at 14.6 gal/min. on July 16, 1970. Gravel packed.[4]
626	D.D. Lowery	N.L. Box Drilling Contractor	1966	64	5	64	Kcho	1,292	37.2	June 20, 1970	S,E ¾	Irr	Perforated from 43 to 61 feet. Reported yield 35 gal/min. Gravel packed.
627	do	do	1966	90	5	90	Kcho	1,292	40.0	do	S,E 1	Irr	Perforated from 40 to 88 feet. Reported yield 32 gal/min. Gravel packed.
628	Wayne Chambers	Ardean Kimmell Irrigation Service	1967	107	5	98	Kctp	1,300	30	Dec. 14, 1967	N	N	Perforated from 9 to 63 feet and 83 to 98 feet. Unused irrigation well. Reported yield 30 gal/min. Gravel packed.
629	B.E. Hanson	Jim Saunders	1969	95	8	95	Kcho	1,287	--	--	S,E 7½	Irr	Slotted from 55 to 95 feet. Pump set at 85 feet. Measured yield 93.1 gal/min. Gravel packed.[4]
630	T.R. Rodgers	Lightfoot and McCrum	1969	67	8	67	Kctp	1,320	10	Oct. 22, 1969	S,E 2	Irr	Slotted from 5 to 40 feet. Reported yield 50 gal/min. Gravel packed.
632	B.E. Hanson	do	1973	76	8	76	Kcho	1,272	30	May 12, 1973	S,E	Irr	Slotted from 35 to 65 feet. Reported yield 70 gal/min. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-52-633	B. E. Hanson	do	1973	73	8	73	Kcho	1,283	22	May 14, 1973	S,E	Irr	Slotted from 25 to 64 feet. Reported yield 80 gal/min. Gravel packed.
634	do	do	1973	91	8	91	Kcho	1,286	40	May 18, 1973	N	Irr	Slotted from 45 to 60 and 65 to 82 feet. Gravel packed.
701	R. Robinson	N.L. Box Drilling Contractor	--	67	7	67	Kctp	1,350	12.7	Jan. 13, 1960	J,E ¼	D	Gravel packed.
702	J.L. Lightfoot	--	--	60	42	37	Kctp	1,388	23	do	J,E ½	D,S	Dug.
* 703	Larry Womack Nursery	N.L. Box Drilling Contractor	1963	90	5	90	Kctp	1,364	37.1 42	July 13, 1965 Mar. 13, 1969	S,E 1	Irr	Pump set at 85 feet. Pumping level 57.02 feet at 27 gal/min. on June 28, 1966. Gravel packed. Temp. 69°F.
704	Claude Devoll	Lightfoot and McCrum	1963	80	7	80	Kctp	1,355	46.1	July 29, 1965 June 21, 1966	S,E 5	Irr	Pump set at 70 feet. Gravel packed.[4]
* 705	do	do	1963	119	7	119	Kctp	1,365	61	July 29, 1965	S,E 5	Irr	Pumping level 72.1 feet on Aug. 5, 1966. Gravel packed. Temp. 68°F.[4]
706	do	Roy Parker	1963	109	7	109	Kctp	1,338	27.8	do	S,E 5	Irr	Gravel packed.[4]
* 707	Dale George	Robert Lee - Bob Barnhill	1964	82	7	82	Kctp	1,365	59 40.3	July 13, 1965 June 28, 1966	S,E 5	Irr	Completed from 20 to 74 feet. Pump set at 76 feet. Reported yield 80 gal/min. Gravel packed. Temp. 67°F.
708	do	do	1964	85	7	85	Kctp	1,370	31.7 42.9	July 13, 1965 June 28, 1966	S,E 5	Irr	Completed from 20 to 74 feet. Pump set at 77 feet. Reported yield 80 gal/min. Gravel packed.
709	do	do	1965	110	7	110	Kctp	1,372	50 50	June 30, 1966 Mar. 24, 1969	S,E 2½	Irr	Perforated from 63 to 90 feet. Reported yield 50 gal/min. Gravel packed. Observation well.[1]
* 710	Larry Womack Nursery	Womack Drilling Co.	1967	100	8	100	Kctp	1,375	57.6	Mar. 13, 1969	S,E 5	Irr	Pump set at 90 feet. Temp. 68°F.
711	N.B. Gilbreath	Lightfoot and McCrum	1969	98	8	98	Kcho	1,386	58	Apr. 24, 1969	S,E 5	Irr	Slotted from 47 to 60 feet and 68 89 feet. Pumping level 88 feet at 80 gal/min. when drilled. Gravel packed.
712	do	do	1967	99	8	99	Kcho	1,385	51.2	May 14, 1970	S,E 7½	Irr	Slotted from 53 to 61 feet and 66 to 90 feet. Pumping level 90 feet at 120 gal/min. when drilled. Gravel packed.
713	do	do	1967	90	8	90	Kcho	1,380	40	Mar. 1, 1967	S,E 5	Irr	Slotted from 35 to 50 feet and 57 to 78 feet. Pumping level 75 feet at 65 gal/min. when drilled. Gravel packed.
* 714	N.B. Gilbreath	Lightfoot and McCrum	1967	100	8	100	Kcho	1,374	40	Sept. 4, 1967	S,E 1½	Irr	Slotted from 45 to 50, 62 to 75 feet, 81 to 93 feet. Pumping level 48.50 feet on July 16, 1971. Temp. 68°F. Gravel packed.
715	do	do	1969	103	5	103	Kctp	1,371	20	Apr. 15, 1969	S,E 3	Irr	Perforated. Reported yield 70 gal/min. Gravel packed.
716	do	do	1969	90	5	90	Kctp	1,362	20	Apr. 11, 1969	S,E 1½	Irr	Perforated from 20 to 40 feet and 60 to 80 feet. Reported yield 50 gal/min. Gravel packed.
717	do	do	1969	77	6	77	Kctp	1,349	15	Apr. 20, 1969	S,E 2	Irr	Slotted from 15 to 22 feet and 37 to 67 feet. Pumping level 65 feet at 95 gal/min. when drilled. Gravel packed.
718	Mack Hale	Wylie Drilling Co.	1969	80	6	80	Kcho	1,340	36	May 22, 1970	S,E ¾	Irr	Slotted from 50 to 80 feet. Pump set at 75 feet. Estimated yield 35 gal/min. Gravel packed.
719	do	do	1969	80	6	80	Kcho	1,340	--	--	S,E ¾	Irr	Slotted from 50 to 80 feet. Pump set at 75 feet. Gravel packed.
720	do	do	1969	80	6	80	Kcho	1,341	--	--	S,E ¾	Irr	Slotted from 40 to 80 feet. Pump set at 75 feet. Gravel packed.
* 721	D.W. Hardin	F & F Drilling	1969	117	6	117	Kcho	1,370	54	May 22, 1970	T,E 25	Irr	Slotted from 55 to 115 feet. Pumping level 72.30 feet at 231 gal/min. on July 16, 1970. Gravel packed. Temp. 69°F.[4]
* 722	James E. Vinson	Lightfoot and McCrum	1969	78	6	78	Kcho	1,330	32	Apr. 29, 1969	S,E ¾	Irr	Slotted from 38 to 70 feet. Pumping level 68 feet at 43 gal/min. when drilled. Gravel packed.
723	James E. Vinson	Lightfoot and McCrum	1969	52	6	52	Kctp	1,310	15	May 1, 1969	S,E 1	Irr	Slotted from 30 to 45 feet. Pumping level 21 feet on July 16, 1970. Pumping level 44 feet at 85 gal/min. when drilled. Power and yield test.
* 724	do	F & F Drilling Co.	1969	60	5	60	Kctp	1,314	5.9	May 22, 1970	S,E 1½	Irr	Slotted from 20 to 60 feet. Gravel packed. Temp. 68°F.[4]
725	T.L. Bunting	do	1969	100	8	100	Kcho	1,350	45	Feb. 26, 1969	S,E 5	Irr	Perforated from 50 to 100 feet. Gravel packed.
726	do	do	1969	112	8	112	Kcho	1,355	45	Feb. 27, 1969	S,E 5	Irr	Perforated from 85 to 110 feet. Gravel packed.
727	do	do	1969	116	8	116	Kcho	1,361	48	Feb. 28, 1969	S,E 5	Irr	Perforated from 65 to 115 feet. Gravel packed.
728	Cedric Bettis	Lightfoot & McCrum	1969	73	8	73	Kctp	1,344	22	June 30, 1969	N	Irr	Slotted from 25 to 28 & 40 to 65 feet. Reported yield 70 gal/min. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-52-729	R.D. Price	do	1969	98	8	98	Kctp	1,354	23.8	May 27, 1970	S,E 5	Irr	Slotted from 20 to 23 feet & 47 to 89 feet. Pump set at 95 feet. Pumping level 88 feet at 120 gal/min. when drilled. Gravel packed.
* 730	Ed Glover, Jr.	Rober Lee -Bob- Barnhill	1967	65	8	65	Kctp	1,312	--	--	S,E	Irr	Reported yield 30 gal/min. Gravel packed. Temp 71°F.
731	do	do	1967	60	8	60	Kctp	1,313	23	June 28, 1967	S,E	Irr	Reported yield 65 gal/min. Gravel packed.
732	do	do	1968	60	6	60	Kctp	1,315	--	--	S,E	Irr	Reported yield 100 gal/min. Gravel packed.
733	do	do	1967	60	8	60	Kctp	1,300	--	--	S,E	Irr	Slotted. Reported yield 65 gal/min. Gravel packed.
* 734	do	do	1968	50	6	50	Kctp	1,300	--	--	S,E	Irr	Perforated. Measured yield 30.6 gal/min. Gravel packed. Temp 68°F.
735	do	do	1968	62	6	62	Kctp	1,307	--	--	N	Irr	Reported yield 70 gal/min. Gravel packed.
736	Ed Glover, Jr.	Robert Lee -Bob- Barnhill	1968	59	6	59	Kctp	1,309	22.2	June 16, 1970	N	Irr	Reported yield 70 gal/min. Gravel packed.
* 737	James Vinson	Bill Lively	1969	100	7	100	Kctp	1,330	--	--	S,E 1½	Irr	Slotted from 40 to 100 feet. Measured yield 31 gal/min. Gravel packed. Temp 68°F.
738	do	do	1967	70	7	70	Kctp	1,322	--	--	N	N	Slotted. Gravel packed. Unused irrigation well.
801	Cedric Bettis	N.L. Box Drilling Contractor	1958	107	8	107	Kctp	1,362	50.9	July 19, 1965	S,E 5	Irr	Perforated. Reported yield 104 gal/min. Gravel packed.
802	S,E. Joiner	do	--	107	--	--	Kctp	1,314	--	--	J,E ¼	D	
803	Cedric Bettis	A.L. Varner	1965	97	7	97	Kctp	1,360	--	--	S,E 7½	Irr	Slotted. Gravel packed.
804	John W. Boswell	Johnny Weir Drilling	1967	140	8	140	Kctp	1,367	80.7 80.0	Mar. 24, 1969 Mar. 19, 1970	S,E 10	Irr	Slotted. Pump set at 135 feet. Pumping level 117.5 feet on Aug. 15, 1967. Observation well.[4]
805	do	do	1967	131	8	131	Kctp	1,360	35	Jan. 11, 1967	S,E 15	Irr	Slotted from 71 to 131 feet. Pump set at 125 feet. Pumping level 117.6 on Aug 16, 1967.[4]
806	do	do	1967	146	.8	146	Kctp	1,372	--	--	S,E 10	Irr	Slotted from 86 to 146 feet. Pump set at 140 feet. Pumping level 123.8 feet on Aug. 16, 1967.[4]
807	Sam Weaver	do	1968	105	8	105	Kcho	1,323	41.9	May 21, 1970	S,E 5	Irr	Pumping level 95 feet at 120 gal/min. when drilled. Temp 68°F.
808	do	do	1968	108	8	108	Kcho	1,320	35.9	do	S,E 5	Irr	Pumping level 98 feet at 120 gal/min when drilled. Gravel packed.
* 809	do	do	1968	105	8	106	Kcho	1,320	45.8	do	S,E 5	Irr	Pumping level 95 feet at 120 gal/min. when drilled. Gravel packed. Temp 68°F.
810	Mrs. Clyde Wall	Lightfoot and McCrum	1968	79	8	79	Kctp	1,316	24.4	May 21, 1970	S,E 2	Irr	Slotted from 50 to 66 feet with gravel guard from 66 to 70 feet. Pumping level 75 feet at 65 gal/min. when drilled. Gravel packed.
811	do	do	1968	83	8	83	Kctp	1,320	15.4	do	S,E 1½	Irr	Slotted from 45 to 70 feet with gravel guard from 70 to 74 feet. Pumping level 60 feet at 60 gal/min. when drilled. Gravel packed.
812	do	do	1968	92	8	92	Kcho	1,330	34.8	do	S,E 3	Irr	Slotted from 45 to 79 feet. Pumping level 75 feet at 30 gal/min. when drilled. Gravel packed.
813	do	do	1968	99	8	99	Kcho	1,344	44.7	do	S,E 3	Irr	Slotted from 60 to 90 feet. Pumping level 85 feet at 85 gal/min. when drilled. Gravel packed.
814	do	do	1968	99	8	99	Kcho	1,348	47.6	do	S,E 3	Irr	Slotted from 65 to 90 feet. Pumping level 87 feet at 80 gal/min. when drilled. Gravel packed.
* 815	W.H. Smith	Johnny Weir Drilling	1967	108	8	108	Kctp	1,345	29.3	May 27, 1970	S,E 10	Irr	Slotted from 35 to 103 feet. Gravel packed. Temp 68°F.
816	do	do	1967	129	8	129	Kcho	1,348	--	--	S,E 15	Irr	Slotted from 89 to 129 feet. Gravel packed.
817	do	do	1967	124	8	124	Kctp	1,350	30	Feb. 6, 1967	S,E 15	Irr	Slotted from 64 to 124 feet. Gravel packed.
818	do	do	1967	121	8	121	Kctp	1,338	30	Feb. 8, 1968	S,E 15	Irr	Slotted from 61 to 121 feet. Gravel packed.
819	do	F&F Drilling Co.	1968	136	8	136	Kcho	1,376	50	Dec. 6, 1968	S,E-10	Irr	Perforated from 80 to 136 feet. Gravel packed.
820	Lee Roy Morris	Lightfoot and McCrum	1966	92	8	92	Kcho	1,350	44.6	May 27, 1970	S,E 2	Irr	Slotted from 55 to 82 feet. Pumping level 75 feet at 45 gal/min. when drilled. Gravel packed.
* 821	Lee Roy Morris	Lightfoot and McCrum	1966	103	8	103	Kcho	1,361	48.4 57.9 58.2	May 27, 1970 June 16, 1971 July 24, 1972	S,E 7½	Irr	Slotted from 60 to 92 feet. Reported yield 130 gal/min. Gravel packed. Temp 67°F. and 69°F.
822	do	do	1967	101	8	101	Kctp	1,356	55	May 13, 1967	S,E 2	Irr	Slotted from 28 to 36 feet & 65 to 86 feet. Pumping level 95 feet at 75 gal/min. when drilled. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-52-823	Lee Roy Morris	do	1967	92	8	92	Kctp	1,350	42	May 15, 1967	S,E 10	Irr	Slotted from 52 to 82 feet. Pumping level 82 feet at 80 gal/min. when drilled. Gravel packed.
* 824	W. W. Sadberry	do	1966	93	8	93	Kcho	1,348	27.6	May 27, 1970	S,E 3	Irr	Slotted from 56 to 83 feet. Pumping level 70 feet at 80 gal/min. when drilled. Pump set at 90 feet. Gravel packed.
* 825	do	Wylie Drilling Co.	1967	99	8	99	Kcho	1,351	--	--	S,E 2	Irr	Slotted from 64 to 99 feet. Pump set at 95 feet. Gravel packed.
* 826	do	do	1967	114	8	114	Kcho	1,360	39.3	May 27, 1970	S,E 5	Irr	Slotted from 79 to 114 feet. Pump set at 110 feet. Gravel packed.
* 827	do	H&L Drilling & Pump Company	1967	97	6	97	Kcho	1,357	--	--	S,E ¾	Irr	Slotted from 65 to 91 feet. Pump set at 93 feet. Gravel packed.
* 828	do	do	1967	121	6	121	Kcho	1,364	--	--	S,E 3	Irr	Slotted from 65 to 118 feet. Pump set at 117 feet. Gravel packed.
829	John Beaty	Lightfoot and McCrum	1969	80	5	80	Kctp	1,312	22	June 30, 1969	S,E ¾	S	Perforated from 20 to 25 feet, 60 to 78 fet. Reported yield 60 gal/min. Gravel packed.
830	Scott Campbell	do	1966	97	8	97	Kctp	1,330	20	June 1, 1966	S,E 3	Irr	Slotted from 18 to 23 feet, 54 to 90 feet. Pumping level 70 feet at 95 gal/min. when drilled. Gravel packed.
831	do	do	1966	97	7	97	Kctp	1,328	16.5	May 27, 1970	S,E 3	Irr	Slotted from 18 to 23 feet, 65 to 89 feet. Pumping level 68 feet at 95 gal/min. when drilled. Gravel packed.
* 832	Scott Campbell	Lightfoot and McCrum	1967	87	7	87	Kctp	1,320	30	Aug. 31, 1967	S,E 2	Irr	Slotted from 15 to 20 feet & 58 to 82 feet. Reported yield 70 gal/min. Measured yield 20.6 gal/min. Gravel packed.[4]
833	Roy Olgesby	Ardean Kimmell Irrigation Service	1967	150	8	150	Kcho	1,390	82.1	June 12, 1970	S,E 15	Irr	Slotted from 70 to 82 feet, 85 to 101 feet & 115 to 139 feet. Pumping level 140 feet at 350 gal./min when drilled. Pump set at 140 feet. Gravel packed.
834	Delton Cogburn	do	1966	100	8	100	Kctp	1,350	21	May 25, 1966	S,E 10	Irr	Perforated from 10 to 35 feet & 44 to 89 feet. Pump set at 75 feet. Pumping level 90 feet at 240 gal/min. when drilled. Gravel packed.
835	Mrs. Gordon Grisham	Lightfoot and McCrum	1966	113	8	113	Kctp	1,352	20	May 22, 1966	S,E 10	Irr	Slotted from 20 to 25 feet & 48 to 103 feet. Reported yield 135 gal/min. Gravel packed.
836	do	do	1966	107	8	107	Kctp	1,356	20	May 24, 1966	S,E 15	Irr	Slotted from 28 to 38 feet & 62 to 81 feet. Reported yield 200 gal/min. Gravel packed.
837	do	Johnny Weir Water Well Service	1967	111	8	111	Kctp	1,364	--	--	S,E 5	Irr	Slotted from 51 to 111 feet. Gravel packed.
838	do	do	1967	112	8	112	Kctp	1,362	--	--	N	Irr	Slotted from 52 to 112 feet. Gravel packed.
839	do	do	1967	104	8	104	Kctp	1,360	do	do	N	Irr	Slotted from 44 to 104 feet. Gravel packed.
840	do	do	1967	113	8	113	Kctp	1,351	45.7	June 12, 1970	S,E 7½	Irr	Slotted from 53 to 113 feet. Gravel packed.
841	M.E. Nowlin	Lightfoot and McCrum	1966	99	7	99	Kcho	1,348	25	July 9, 1966	S,E 1	Irr	Slotted from 60 to 90 feet. Pump set at 90 feet. Reported yield 80 gal/min.
842	D.S. Williams	do	1969	115	8	115	Kctp	1,370	55.7	June 12, 1970	S,E 7½	Irr	Slotted from 25 to 50 feet & 85 to 110 feet. Pumping level 100 feet at 150 gal/min. when drilled. Gravel packed.
843	V.O. Setzler	Ardean Kimmell Irrigation Service	1967	102	8	102	Kctp	1,322	38	Jan. 21, 1967	S,E	Irr	Slotted from 50 to 65 feet & 75 to 87 feet. Pumping level 95 feet at 80 gal/min. when drilled. Gravel packed.
* 844	do	Lightfoot and McCrum	1967	94	7	94	Kctp	1,329	40	Sept. 9, 1967	S,E	Irr	Slotted from 70 to 83 feet. Reported yield 60 gal/min. Gravel packed.
* 845	O.B. Oglesby	N.L. Box Drilling Contractor	1966	92	8	92	Kcho	1,320	--	--	T,E 20	Irr	Slotted from 60 to 92 feet. Pump set at 90 feet. Measured yield 160.2 gal/min. Gravel packed. Temp 71°F. at sprinkler
* 846	Mrs. Dillard Lee	Lightfoot and McCrum	1969	90	8	90	Kctp	1,328	41.6	Feb. 8, 1971	S,E 2	Irr	Slotted from 50 to 80 feet. Pumping level 76.7 feet 37.8 gal/min. on Aug. 18, 1970. Pumping level 67.02 feet on July 14, 1971. Gravel packed. Temp 68°F..
847	R.V. Singleton	--	--	72	--	20	Kctp	1,325	--	--	N	N	
848	W.W. Sadberry	Lightfoot and McCrum	1970	109	6	109	Kcho	1,365	40	Aug. 18, 1970	S,E	Irr	Slotted from 70 to 100 feet. Reported yield 60 gal/min. Gravel packed.
849	D.S. Williams	do	1970	116	6	116	Kcho	1,380	35	Dec. 30, 1970	S,E 7½	Irr	Slotted from 75 to 108 feet. Reported yield 70 gal/min. Gravel packed.
* 850	Roy L. Oglesby	F&F Drilling Co.	1971	130	6	130	Kcho	1,345	66.1	Apr. 26, 1972	S,E 5	Irr	Perforated from 90 to 130 feet. Pump set at 127 feet. Reported yield 75 gal/min. Gravel packed. Temp 67°F.
* 851	M.E. Nowlin	Lightfoot and McCrum	1971	96	5	96	Kcho	1,355	25	do	S,E	Irr	Perforated from 50 to 60 feet & 62 to 85 feet. Estimated yield 35 gal/min. Gravel packed. Temp 68°F.
852	do	do	1971	89	5	89	Kcho	1,355	49.1	do	S,E	Irr	Perforated from 50 to 78 feet. Reported yield 60 gal/min. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-52-853	Gerald L. Locke	J. Weir Drilling and Service	1970	112	8	112	Kctp	1,333	--	--	S,E 3	Irr	Slotted. Reported yield 100 gal/min. Gravel packed.
854	Olin Oglesby	Lightfoot and McCrum	1971	93	8	93	Kcho	1,315	34.6	May 4, 1972	N	Irr	Slotted. Reported yield 65 gal/min. Gravel packed.
855	Gerald Locke	F&F Drilling Co.	1972	80	6	80	Kctp	1,315	40	Dec. 18, 1972	S,E 3	Irr	Perforated from 40 to 80 feet. Gravel packed.
856	do	do	1972	90	6	90	Kctp	1,330	45	Dec. 19, 1972	S,E 3	Irr	Perforated from 50 to 90 feet. Gravel packed.
857	do	do	1972	85	6	85	Kctp	1,315	--	--	S,E 3	Irr	Perforated from 45 to 85 feet. Gravel packed.
858	W.W. Sadberry	Lightfoot and McCrum	1972	92	6	92	Kcho	1,325	43.7	May 22, 1973	S,E 3	Irr	Perforated from 56 to 75 feet. Reported yield 70 gal/min. Gravel packed.
859	do	do	1972	90	5	90	Kcho	1,327	--	--	S,E 3	Irr	Perforated from 58 to 70 feet. Reported yield 70 gal/min. Gravel packed.
860	do	do	1972	91	5	91	Kcho	1,330	--	--	S,E 3	Irr	Perforated from 54 to 80 feet. Reported yield 70 gal/min. Gravel packed.
901	R.L. George	N.L. Box Drilling Contractor	1964	102	7	102	Kctp	1,298	46	July 13, 1965	S,E 5	Irr	Completed from 18 to 34 feet and 47 to 97 feet. Pump set at 95 feet. Reported yield 63 gal/min. Gravel packed.
902	do	do	1965	104	8	104	Kctp	1,306	6	Feb. 11, 1965	S,E 7½	Irr	Slotted from 15 to 19 feet and 22 to 100 feet. Pumping level 100 feet at 190 gal/min. when drilled and 74 feet at 102.3 gal/min. on Aug. 8, 1966. Gravel packed.[4]
903	do	do	1964	101	8	100	Kctp	1,304	--	--	S,E 7½	Irr	Completed from 46 to 96 feet. Pump set at 88 feet. Reported yield 155 gal/min. Gravel packed.
904	Feltz Terrill	Pate Water Well Service	1964	97	6	97	Kctp	1,294	15 33.6	July 15, 1965 Mar. 24, 1969	N	Irr	Completed 15 to 97 feet. Gravel packed. Observation well.[1]
* 905	do	do	1965	95	7	95	Kctp	1,295	13	July 15, 1965	N	Irr	Completed 15 to 95 feet. Gravel packed.
906	Alvis Kimmell	Ardean Kimmell Irrigation Service	1965	114	8	113	Kctp	1,310	22	Nov. 10, 1965	S,E 7½	Irr	Slotted. Pumping level 113 feet at 125 gal/min. when drilled. Pump set at 106 feet. Reported yield 115 gal/min. Gravel packed.
* 907	Ray Joiner	Johnny Weir Drilling	1967	110	8	110	Kctp	1,300	39	Mar. 10, 1969	S,E	Irr	Slotted from 75 to 103 feet. Gravel packed. Temp 65°F.
908	do	do	1967	111	8	111	Kctp	1,300	--	--	S,E	Irr	Slotted from 85 to 100 feet. Gravel packed.
909	do	do	1967	110	8	110	Kctp	1,300	--	--	S,E	Irr	Slotted. Gravel packed.
* 910	Gene Kieth	Lightfoot and McCrum	1966	89	8	89	Kcho	1,290	25.8	May 22, 1970	S,E 5	Irr	Slotted from 50 to 81 feet. Pumping level 70 feet at 100 gal/min. when drilled. Pumping level 77.30 feet on Aug. 26, 1970. Gravel packed. Temp 68°F.
911	do	do	1966	88	7	88	Kcho	1,300	25	Dec. 29, 1966	S,E 5	Irr	Slotted from 53 to 78 feet. Pumping level 75 feet at 80 gal/min when drilled. Gravel packed.
912	do	do	1967	94	8	94	Kcho	1,304	30	Jan. 4, 1967	S,E 5	Irr	Slotted from 53 to 85 feet. Pumping level 75 feet at 100 gal/min. when drilled. Gravel packed.
* 913	Feltz Terrell	do	1966	95	7	95	Kctp	1,291	14.4	May 21, 1970	S,E 3	Irr	Slotted from 18 to 26 feet, 44 to 72 feet & 76 to 82 feet. Pumping level 42 feet at 50 gal/min. when drilled. Pumping level 62.2 feet on July 9, 1970. Gravel packed.[4]
914	W.T. Owen	N.L. Box Drilling Contractor	1966	86	4	86	Kcho	1,277	53.1	June 9, 1970	N	Irr	Perforated from 50 to 81 feet. Reported yield 25 gal/min. Gravel packed.
915	A.D. McClellan	Bill Lively	1968	90	7	90	Kcho	1,245	--	--	S,E 3	Irr	Slotted from 84 to 90 feet. Pump set at 88 feet. Reported yield 40 gal/min. Gravel packed.[4]
* 916	A.D. McClellan	Bill Lively	1968	90	7	90	Kcho	1,250	--	--	S,E 3	Irr	Slotted from 84 to 90 feet. Pump set at 88 feet. Reported yield 30 gal/min. Pumping level 52.6 feet on July 14, 1970. Gravel packed. Temp 68°F.[4]
917	do	do	1969	95	7	95	Kcho	1,250	--	--	N	N	Slotted from 85 to 95 feet. Unused irrigation well.
* 918	Feltz Terrell	Lightfoot and McCrum	1965	93	7	93	Kctp	1,291	18	Aug. 30, 1965	S,E 3	Irr	Slotted from 18 to 26 feet, 44 to 72 feet & 76 to 82 feet. Pump set at 87 feet. Pumping level 63.2 feet on July 9, 1970. Gravel packed.[4]
919	George Jerrill	N.L. Box Drilling Contractor	1966	61	5	61	Kctp	1,325	33.7	Nov. 25, 1970	S,E 1½	D	Perforated from 38 to 70 feet. Pump set at 54 feet. Pumping level 58 feet at 40 gal/min. when drilled. Gravel packed.
* 920	Feltz Terrell	Lightfoot and McCrum	1970	90	5	90	Kcho	1,293	12	Nov. 27, 1970	S,E 1	Irr	Perforated from 70 to 85 feet. Reported yield 20 gal/min. Gravel packed.
* 53-407	Ardean Kimmell	N.L. Box Drilling Contractor	1961	120	8	102	Kctp	1,290	--	--	S,E 10	Irr	Completed 38 to 96 feet. Pump set at 95 feet. Reported yield 120 gal/min. Estimated yield 40 gal/min. Gravel packed.Temp 70°F.
408	do	Ardean Kimmell Irrigaiton Service	1964	92	8	92	Kctp	1,290	20.8	July 16, 1965	S,E 3	Irr	Completed 28 to 92 feet. Reported yield 80 gal/min. Pumping level 72 feet when drilled.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-53-409	Alvis Kimmell	do	1965	103	8	100	Kctp	1,300	25	Nov. 4, 1965	S,E 7½	Irr	Slotted. Pump set at 95 feet. Pumping level 100 feet at 125 gal/min. when drilled. Reported yield 115 gal/min. Gravel packed.
414	Ardean Kimmell	do	1968	115	8	115	Kcho	1,303	55.3 53	Mar. 27, 1969 Mar. 11, 1971	N	N	Slotted from 55 to 105 feet. Pumping level 105 feeta 65 gal/min. when drilled. Gravel packed. Observation well (Recorder).[1]
418	Alvis Kimmell	Wylie Drilling Co.	1968	110	8	110	Kcho	1,294	51.6	May 27, 1970	S,E 7½	Irr	Slotted from 45 to 110 feet. Pump set at 105 feet. Gravel packed.
419	J.V. Stewart	Wilmer Ocie Davis	1969	100	8	100	Kctp	1,288	14.1 20.3	June 12, 1970 Nov. 12, 1970	S,E 7½	Irr	Slotted from 16 to 100 feet.
421	do	Ardean Kimmell Irrigation Service	1965	99	8	99	Kctp	1,290	19.5 19.3	Mar. 4, 1966 June 16, 1970	S,E 10	Irr	Slotted 25 to 85 feet. Reported yield 175 gal/min. Gravel packed.
* 422	Ardean Kimmell	do	1967	111	8	111	Kcho	1,288	31.7	May 27, 1970	S,E 5	Irr	Slotted 40 to 102 feet. Measured yield 35.5 gal/min. on Aug. 8, 1972. Pump set at 96 feet. Gravel packed. Temp 68°F.
* 423	do	do	1967	108	8	108	Kcho	1,290	36.6 54.5	do Nov. 10, 1971	S,E 5	Irr	Slotted 55 to 102 feet. Pump set at 92 feet. Pumping level 100 feet at 135 gal/min. when drilled and 88.1 feet at 69 gal/min. on Oct. 11, 1971. Pumping test. Temp 68°F. Gravel packed.[4]
424	do	do	1967	101	8	101	Kcho	1,296	30.8	May 27, 1970	S,E 1½	Irr	Slotted 49 to 101 feet. Pump set at 97 feet. Estimated yield 50 gal/min.
425	do	do	1968	115	8	115	Kctp	1,288	34	June 25, 1968	S,E 5	Irr	Slotted 27 to 105 feet. Pump set at 110 feet. Pumping level 100 feet at 94 gal/min. Reported yield 80 gal/min. Gravel packed.
448	do	TWDB	1971	104	6 3	40.2 103.7	Kcho	1,290	54.2	Nov. 10, 1971	N	N	Slotted 39 to 103 feet. Drilled as observation well for pumpinmg tes on well 31-53-423.
449	do	do	1971	105	6 4	39.3 103.5	Kcho	1,290	58	Aug. 18, 1971	N	N	Slotted 48.7 to 103 feet. Drilled as observation well for pumping test on well 31-53-423.
* 450	do	do	1971	109	6 4	39.5 108	Kcho	1,287	55.9 51.6	do May 17, 1973	S,E ¾	Irr	Slotted 49.2 to 108 feet. Drilled as observation well for pumping test on well 31-53-423. Pump set at 104 feet. Measured yield 10 gal/min. Temp 69°F.
451	Ardean Kimmell	Lightfoot and McCrum	1971	105	8	105	Kctp	1,297	58.2 58	Aug. 18, 1971 Oct. 11, 1971	S,E 3	Irr	Slotted from 15 to 30 feet & 50 to 97 feet. Pump set at 98 feet. Reported yield 75 gal/min. Measured yield 43 gal/min. on Aug. 8, 1972. Used as ovservation well for pumping test with well 31-53-423. Gravel packed.[1, 5]
453	Alvis Kimmell	Wilmer Ocie Davis	1971	110	8	110	Kcho	1,297	--	--	S,E 7½	Irr	Slotted from 80 to 110 feet. Gravel packed.
454	Ardean Kimmell	Lightfoot and McCrum	1972	105	6	105	Kcho	1,290	37.7	May 17, 1973	S,E	Irr	Slotted from 67 to 96 feet. Reported yield 50 gal/min. Gravel packed.
455	do	do	1972	105	6	105	Kcho	1,294	43	do	S,E 1½	Irr	Slotted from 75 to 96 feet. Reported yield 60 gal/min. Gravel packed.
456	do	do	1973	110	6	110	Kctp	1,310	43.6	Aug. 20, 1973	S,E 5	Irr	Slotted from 30 to 37 feet & 60 to 95 feet. Reported yield 70 gal/min. Gravel packed.
701	James D. Gardner	N.L. Box Drilling Contractor	1957	116	6	116	Kcho	1,275	67 67.7 68.9	Oct. 1, 1959 Mar. 26,1969 Mar. 8, 1972	S,E 1	Irr	Completed 40 to 116 feet. Pump set at 100 feet. Reported yield 30 gal/min. Pumping level 81.44 feet on July 13, 1965. Gravel packed. Observation well.[1]
702	do	do	1955	120	6	120	Kcho	1,278	68	Oct. 1, 1959	T,E 3	Irr	Completed 40 to 120 feet. Pump set at 105 feet. Reported yield 45 gal/min. Pumping level 99.75 feet at 33.3 gal/min. on July 29, 1966.[2, 4]
* 703	do	do	1955	112	6	112	Kcho	1,278	70	do	T,E 3	Irr	Completed 40 to 112 feet. Reported yield 45 gal/min. Pumping level 103.4 feet at 28.5 gal/min. on July 29, 1966 and 97.08 feet on July 13, 1965. Temp 69°F.[4]
704	do	do	1955	130	6	130	Kcho	1,275	--	--	T,E 5	Irr	Completed 40 to 120 feet. Pump set at 115 feet. Estimated yield 100 gal/min. Pumping level 96.5 feet at 72.7 gal/min. on July 29, 1966.
705	James D. Gardner	N.L. Box Drilling Contractor	1955	126	6	126	Kcho	1,275	--	--	T,E 5	Irr	Completed 40 to 120 feet. Pump set at 115 feet. Reported yield 100 gal/min. Measured yield 73 gal/min. on July 29, 1966.[4]
* 706	do	Terry Drilling and Supply Co.	1952	128	5	128	Kcho	1,299	77.4 81.9	Oct. 1, 1959 July 13, 1965	T,E 5	Irr	Completed 40 to 128 feet. Pump set at 105 feet. Reported yield 75 gal/min. Pumping level 100.63 feet at 30.4 gal/min. on July 29, 1966. Pumping test.[4]
707	do	N.L. Box Drilling Contractor	1956	128	6	128	Kcho	1,289	--	--	T,E 5	Irr	Slotted from 84 to 128 feet. Pump set at 125 feet. Reported yield 200 gal/min.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-53-708	James D. Gardner	do	1956	118	6	118	Kctp	1,289	--	--	T,E 5	Irr	Perforated from 22 to 25 feet, 40 to 48 feet & 97 to 114 feet. Pump set at 115 feet. Reported yield 80 gal/min.
709	R. D. Ross	Roy Parker	1956	100	10	100	Kctp	1,255	38	Oct. 22, 1959	T,E 25	Irr	Slotted. Pump set at 95 feet. Estimated yield 140 gal/min.
719	James D. Gardner	N.L. Box Drilling Contrator	1961	118	6	118	Kctp	1,289	--	--	T,E 5	Irr	Slotted. Pump set at 110 feet. Gravel packed.
720	Deryl Johnson	Lightfoot and McCrum	1965	116	7	116	Kctp	1,255	45	Mar. 8, 1965	S,E 7½	Irr	Completed 45 to 98 feet. Pump set at 100 feet. Pumping level 88.53 on July 15, 1965. Gravel packed.
721	Dale Johnson	do	1965	105	7	105	Kctp	1,285	45 42.7	Mar. 21, 1967 Mar. 21, 1972	S,E 2	Irr	Completed 25 to 40 feet and 60 to 97 feet. Pump set at 85 feet. Preported yield 50 gal/min. Pumping level 60.9 feet on July 15, 1965. Gravel packed.[1] Observation well.
722	do	do	1965	112	7	112	Kctp	1,285	54.3 51	Apr. 19, 1966 Mar. 26, 1969	S,E 5	Irr	Completed 62 to 105 feet. Pump set at 105 feet. Reported yield 70 gal/min. Pumping level 81.35 feet on July 15, 1965. Gravel packed. Observation well.[1]
723	Dale Johnson	Dale Johnson	1964	40	7	40	Kche	1,285	--	--	S,E 2	Irr	Completed to 35 to 40 feet. Pump set at 37 feet. Reported yield 100 gal/min. Pumping level 32.66 feet on July 15, 1965. Gravel packed.
* 724	Alvis Kimmell	Ardean Kimmell Irrigation Service	1966	96	8	96	Kctp	1,285	50.9	July 11, 1968	S,E 1	Irr	Slotted from 25 to 96 feet. Pumping level 85 feet at 30 gal/min. on Mar. 4, 1966. Pumping level 73.0 feet at 10.9 on Aug. 5, 1966. Gravel packed. Temp 68°F.[2,4]
725	do	do	1966	80	5	80	Kctp	1,278	14	May 4, 1968	S,E 1	Irr	Perforated from 5 to 15 feet, 32 to 40 feet, and 56 to 74 feet. Pump set at 70 feet. Reported yield 30 gal/min. Measured yield 8.3 gal/min. Gravel packed.[4, 5]
726	P.R. George	N.L. Box Drilling Contractor	1966	102	7	102	Kctp	1,255	--	--	S,E 3	Irr	Slotted from 45 to 95 feet. Reported yield 130 gal/min. Gravel packed.[2]
727	do	do	1966	102	7	102	Kctp	1,255	--	--	--	Irr	Slotted from 45 to 95 feet. Reported yield 115 gal/min. Gravel packed.[2]
728	William L. Owens	do	1966	83	5	83	Kctp	1,240	31	Feb. 18, 1966	S,E 1	Irr	Slotted from 32 to 82 feet. Pump set at 78 feet. Reported yield 30 gal/min. Gravel packed.
729	do	do	1966	66	5	66	Kctp	1,235	26	Feb. 21, 1966	S,E 1½	Irr	Slotted from 20 to 63 feet. Pump set at 58 feet. Reported yield 50 gal/min. Gravel packed.
730	Dale Johnson	Lightfoot and McCrum	1966	110	7	110	Kctp	1,285	30	Mar. 12, 1966	S,E	Irr	Slotted from 30 to 35 feet and 55 103 feet. Reported yield 60 gal/min. Gravel packed.
731	Deryl Johnson (Centex Rept)	Lightfoot and McCrum	1966	102	7	102	Kctp	1,255	30	Mar. 18, 1966	S,E	Irr	Slotted from 40 to 96 feet. Reported yield 75 gal/min. Gravel packed.
735	Dale Johnson	Lightfoot and McCrum	1967	107	7	107	Kctp	1,291	32	Feb. 18, 1967	S,E 2	Irr	Slotted from 30 to 35 feet & 77 to 99 feet. Pump set at 98 feet. Pumping level 97 feet at 95 gal/min when drilled. Gravel packed.[3]
736	do	do	1967	144	7	144	Kctp	1,318	55.3	May 27, 1970	N	Irr	Slotted from 50 to 55 feet & 91 to 131 feet. Pumping level 125 feet at 65 gal/min when drilled.[1, 2]
737	do	do	1967	152	7	152	Kctp	1,324	59.9	do	S,E 5	Irr	Slotted from 55 to 60 feet & 106 to 139 feet. Pumping level 145 feet at 85 gal/min. when drilled. Pump set at 146 feet. Gravel packed.
738	do	Johnny Weir Water Well Service	1968	152	8	152	Kcho	1,328	76.6	do	S,E 5	Irr	Slotted from 105 to 152 feet. Pump set at 148 feet. Gravel packed.
* 739	do	do	1968	158	8	158	Kctp	1,305	49.3	do	S,E 5	Irr	Slotted from 181 to 148 feet. Pump set at 149 feet. Measured yield 56.2 gal/min. Gravel packed. Temp 69°F.
740	Brooks Ross	Lighfoot and McCrum	1967	135	7	135	Kcho	1,302	57.3	May 28, 1970	S,E 5	Irr	Slotted from 100 to 125 feet. Pump set at 125 feet. Pumping level 110 feet at 60 gal/min. when drilled. Pumping level 111.2 feet at 34.4 gal/min on July 9, 1970. Gravel packed.[2]
741	do	do	1967	143	7	143	Kcho	1,304	55.1	May 27, 1970	S,E 5	Irr	Slotted from 100 to 130 feet. Pump set at 130 feet. Pumping level 120 feet at 75 gal/min when drilled. Measured yield 32.5 gal/min. Gravel packed.[2]
742	James D. Gardner	Ardean Kimmell Irrigation Service	1966	120	8	120	Kctp	1,275	59.8	June 9, 1970	S,E 2	Irr	Perforated from 25 to 38 feet & 80 to 111 feet. Pumping level 110 feet at 75 gal/min. when drilled. Gravel packed.[2]
743	do	Lightfoot and McCrum	1967	127	7	127	Kctp	1,310	73.9	do	S,E 1½	Irr	Slotted from 40 to 45 feet & 98 to 119 feet. Pump set at 100 feet. Reported yield 50 gal/min. Gravel packed.
744	William L. Owens	N.L. Box Drilling Contractor	1967	50	8	50	Kctp	1,230	15	do	S,E 3	Irr	Slotted from 28 to 46 feet. Pump set at 45 feet. Reported yield 120 gal/min. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-53-745	Don Ray Keith	W.O. Davis Drilling and Pump Service	1966	198	8	198	Kctp	1,328	--	--	S,E 3	Irr	Perforated from 43 to 153 feet. Pump set at 147 feet. Pumping level 93.21 feet on June 18, 1970 and 142.1 feet on July 14, 1970. Gravel packed.[4]
748	P.R. George	N.L. Box Drilling Contractor	1966	100	10 7	55 100	Kctp	1,254	--	--	N	Irr	Slotted from 57 to 95 feet. Reported yield 38 gal/min. Gravel packed.[2]
* 749	do	Lightfoot and McCrum	1967	96	8	96	Kctp	1,250	40	June 10, 1967	S,E 3	Ind	Slotted from 42 to 87 feet. Pump set at 87 feet. Pumping level 80 feet at 90 gal/min when drilled. Gravel packed. Temp 70°F.[2]
750	Don Ray Keith	Earl Prater	1965	135	8	135	Kcho	1,330	--	--	S,E 3	Irr	Slotted from 100 feet to 135 feet. Pump set at 126 feet. Pumping level 131.2 feet on July 14, 1970. Gravel packed.[4]
751	do	do	1965	135	8	135	Kcho	1,332	--	--	S,E ¾	Irr	Slotted from 100 to 125 feet. Pump set at 125 feet. Gravel packed.
752	do	W.O. Davis Drilling and Pump Service	1970	130	8	130	Kctp	1,300	48	-- -- 1970	S,E 7½	Irr	Slotted from 48 to 127 feet. Pump set at 123 feet. Pumping level 120 feet at 185 gal/min. when drilled. Reported yield 100 gal/min. Gravel packed.[2]
753	Ardean Kimmell	Lightfoot and McCrum	1971	105	6	105	Kctp	1,285	32	June 13, 1971	S,E 1½	Irr	Slotted from 35 to 50 feet & 78 to 95 feet. Reported yield 80 gal/min. Gravel packed.
754	do	do	1971	106	6	106	Kctp	1,280	20	June 15, 1971	S,E 1½	Irr	Slotted from 22 to 27 feet & 58 to 92 feet. Reported yield 80 gal/min. Gravel packed.
* 57-604	Oscar White	Roy Michael	1955	100	10	100	Kca	1,642	55.4 56	Dec. 10, 1959 Mar. 6, 1969	S,E 5	Irr	Slotted from 60 to 100 feet. Reported yield 140 gal/min. Pumping level 85.00 at 73. 5 gal/min. on Aug. 9, 1966. Pumping level 85.00 at 73.5 gal/min. on Aug. 9, 1966. Pumping level 81.22 on July 5, 1965 and 72.1 on July 20, 1971. Temp. 70°F.[4, 6]
605	Oscar White	Windham and Michael	1964	105	10	105	Kca	1,638	56.1	July 5, 1965	S,E 5	Irr	Perforated at 43 feet. Pumps oil at times, and water smells like gas.
* 606	do	J.R. Marr	--	100	10	100	Kca	1,638	40.5 41.6	July 5, 1965 Mar. 15, 1967	N	N	Abandoned irrigation well. Observation well.[1]
609	J.L. Newberry	Timmie Johnson	1969	62	8	62	Kca	1,612	15.2	May 5, 197	S,E 2	Irr	Slotted from 23 to 62 feet. Reported yield 50 gal/min. Gravel packed.
610	do	do	1969	62	8	62	Kca	1,610	--	--	S,E 2	Irr	Slotted from 32 to 62 feet. Reported yield 75 to 90 gal/min. Gravel packed.
611	do	do	1969	61	8	61	Kca	1,608	15.2	May 6, 1970	S,E 2	Irr	Slotted from 39 to 61 feet. Reported yield 50 gal/min. Gravel packed.
612	Homer G. West	do	1969	68	7	68	Kca	1,625	--	--	S,E 1	Irr	Slotted from 28 to 68 feet. Reported yield 50 gal/min. Gravel packed.
613	do	do	1969	72	7	72	Kca	1,625	--	--	S,E 2	Irr	Perforated from 33 to 72 feet. Reported yield 50 to 60 gal/min. Gravel packed.
614	do	do	1969	74	7	74	Kca	1,625	--	--	S,E 2	Irr	Perforated from 32 to 74 feet. Reported yield 50 gal/min. Gravel packed.
615	do	do	1969	72	7	72	Kca	1,625	40	Aug. 3, 1969	S,E 2	Irr	Slotted from 42.5 to 72. 5 feet. Pumping level 55 feet at 35 gal/min. when drilled.[2]
617	do	do	1971	87	7	87	Kca	1,619	25	Apr. 29, 1971	S,E 2	Irr	Slotted from 43 to 87 feet. Pump set at 85 feet. Pumping level 65 feet at 80 gal/min. when drilled. Gravel packed.[2]
618	do	do	1971	73	7	73	Kca	1,618	25	May 5, 1971	S,E 3	Irr	Slotted from 29 to 73 feet. Pump set at 70 feet. Pumping level65 feet at 115 gal/min. when drilled. Gravel packed.[2]
619	do	do	1971	67	7	67	Kca	1,617	25	May 14, 1971	S,E 2	Irr	Slotted from 23 to 67 feet. Pump set at 65 feet. Pumping level 65 feet at 80 gal/min. when drilled. Gravel packed.
* 58-301	Robert Humphrey	--	1895	20	72	20	Pn	1,420	7 3 3.4	May 26, 1937 Mar. 10, 1946 Dec. 10, 1959	T,E 1½	P	
* 501	Guy Houser	--	Old	266	7	256	Pn	1,380	60	do	C,E 1	N	Reported yield 20 gal/min.
* 702	Harold Pierson	Akin & Tower	1938	56	22 18 15	36 46 56	Kctp	1,590	22	July 9, 1965	S,E 3	Irr	Completed from 30 to 50 feet. Pump set at 46 feet. Reported yield 50 gal/min. Gravel packed. Temp. 66°F.
703	T.E. Simonton	T.E. Simonton	1963	68	7	68	Kctp	1,606	34.4 33.6	Mar. 24, 1966 Mar. 6, 1972	S,E 3	Irr	Slotted from 28 to 40 feet & 50 to 68 feet. Pump set at 65 feet. Reported yield 60 gal/min. Pumping level 46.73 feet on July 9, 1965 and 64.42 at 43.4 gal/min. on Aug. 9, 1966. Gravel packed. Observation well.[2, 3, 4]

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31-58-705	Gibb Moore	Timmie Johnson	1971	87	7	70	Kctp	1,530	12.7	July 6, 1972	S,E 3	Irr	Slotted from 26 to 70 feet. Reported yield 40 gal/min. Pump set at 75 feet. Gravel packed. Temp. 67°F.
706	do	Harris Drilling Co.	1971	85	5	50	Kctp	1,542	15	July 29, 1971	S,E 3	Irr	Perforated from 20 to 50 feet. Pump set at 47 feet. Pumping level 50 feet at 40 gal/min. when drilled. Gravel packed.[2]
801	Frank Rodgers	Curtis Alford Drilling and Well Service	1969	56	5	56	Kctp	1,510	14.5	Feb. 10, 1971	S,E 1	S Irr	Perforated from 25 to 56 feet. Pump set at 45 feet. Reported yield 25 gal/min. Gravel packed.
802	W.J. Huddleston	do	1971	71	5	71	Kctp	1,565	24	July 12, 1972	N	Irr	Perforated from 30 to 60 feet. Reported yield 40 gal/min. Gravel packed.
803	do	do	1971	63	5	63	Kctp	1,560	--	--	N	Irr	Perforated from 30 to 60 feet. Reported yield 50 gal/min. Gravel packed.
804	do	do	1971	55	5	55	Kctp	1,555	--	--	N	Irr	Perforated from 30 to 50 feet. Reported yield 40 gal/min. Gravel packed.
* 901	Burns K. Carroll	Harris Drilling Co.	1968	209	5	209	Pn	1,467	103.4	June 19, 1970	S,E 1	D	Perforated from 189 to 209 feet. Pump set at 195 feet. Cemented from 30 to 40 feet & 140 to 150 feet. Reported yield 15 gal/min. Gravel packed. Temp. 70°F.
* 59-201	Webb Heathington	-- Bradley	1940	160	6	--	Kctp Pn	1,440	--	--	C,E ½	D	
202	Dean Pounds	J.R. Quarles	1965	85	8	85	Kctp	1,384	18	July 20, 1956	T,G	Irr	Completed from 26 to 85 feet. Pump set at 70 feet. Estimated yield 150 gal/min. Gravel packed.
* 203	do	Carl A. Taylor	1966	75	8	52	Kctp	1,382	17	Jan. 15, 1966	S,E 15	Irr	Slotted from 15 to 52 feet and open hole from 52 to 75 feet. Pump set at 50 feet. Reported yield 250 gal/min. Gravel packed. Temp. 68°F.
204	do	do	1966	75	8	52	Kctp	1,385	20	Feb. 18, 1966	S,E 3	Irr	Slotted from 17 to 52 feet and open hole from 52 to 75 feet. Reported yield 30 gal/min. Gravel packed.[1]
* 205	Toye Keith	--	--	106	5	106	Kctp Pn	1,424	--	--	J,E ¾	S	Pump set at 75 feet. Reported yield 10 gal/min. Temp. 60°F.
* 206	Toye Keith	Lightfoot and McCrum	1967	200	8	200	Pn	1,366	32.2 31.8	May 7, 1970 May 6, 1972	S,E 7½	Irr	Slotted from 80 to 130 feet & 135 to 190 feet. Pumping level 190 feet at 65 gal/min when drilled 112.70 feet at 38.1 gal/min on Aug. 25, 1970. Gravel packed. Temp. 71°F.[1, 2, 3, 4]
207	N.W. Pounds Est.	F&F Drilling Co.	1968	130	8	15	Pn	1,413	48.6	May 7, 1970	N	Irr	Open hole from 15 130 feet.[1]
208	J.D. Pounds	do	1968	140	8	15	Pn	1,411	44.9	do	S,E 15	Irr	Open hole from 15 to 140 feet.
209	Donald A. Nowlin	do	1968	110	8	15	Pn	1,402	50	Dec. 28, 1969	N	Irr	Open hole from 15 to 110 feet.[1]
* 210	do	do	1968	100	8	25	Pn	1,392	28.9	May 7, 1970	S,E 3	Irr	Open hole from 25 to 100 feet.
211	Donald A. Nowlin	F&F Drilling Co.	1968	120	8	15	Pn	1,392	29.2	May 7, 1970	S,E 5	Irr	Open hole from 15 to 120 feet.
212	do	do	1968	110	8	15	Pn	1,388	28.0	do	N	Irr	Open hole from 15 to 110 feet.
213	do	do	1968	110	8	15	Pn	1,383	26.0	do	S,E 5	Irr	Open hole from 15 to 110 feet.
214	do	do	1968	90	8	15	Pn	1,378	18.8	do	N	Irr	Open hole from 15 to 90 feet.
* 215	Dean Pounds	Dozier	1967	75	8	15	Pn	1,395	--	--	T,E 20	Irr	Open hole from 15 to 75 feet. Pump set at 56 feet. Measured yield 188.9 gal/min. Temp. 68°F.[1, 4]
216	J.B. Hodges	Nate Smith	1969	90	6	90	Pn	1,374	--	--	S,E 7½	Irr	Slotted from 60 to 90 feet. Pump set at 80 feet. Gravel packed.[4]
217	do	do	1969	97	6	97	Pn	1,377	--	--	S,E 2	Irr	Slotted from 60 to 97 feet. Pump set at 80 feet. Gravel packed.[4]
* 218	do	do	1969	99	6	99	Pn	1,382	25.9	Mar. -- 1970	S,E 1½	Irr	Slotted from 60 to 99 feet. Pump set at 80 feet. Pumping level 50.2 on Aug. 25, 1970. Observation well. Gravel packed.[1, 4]
219	W.W. Heathington	F&F Drilling Co.	1970	160	6	60	Pn	1,420	40	Feb. 24, 1970	S,E 7½	Irr	Open hole from 60 to 160 feet.
220	do	do	1970	165	8	22	Pn	1,425	40	Feb. 25, 1970	S,E 10	Irr	Open hole from 22 to 165 feet.
221	Lee Glider	Lightfoot and McCrum	1970	212	8	212	Kctp Pn	1,420	56.7	Apr. 12, 1971	N	N	Slotted from 40 to 45 feet & 120 to 200 feet. Pumping level 140 feet at 80 gal/min. when drilled. Abandoned irrigation well. Gravel packed.
* 301	Tom Johnson	N.B. Box Drilling Contractor	1964	219	7	218	Pn	1,334	58	July 19, 1965	S,E 15	Irr	Completed from 167 to 213 feet. Pump set at 213 feet. Reported yield 120 gal/min. Gravel packed. Temp. 70°F.[4]
* 302	E.L. White	Timmie Johnson	1964	262	7	262	Kctp Pn	1,340	46.2 20.8	Mar. 23, 1966 Mar. 26, 1969	S,E 15	Irr	Completed from 20 to 40 feet and 222 to 262 feet. Pump set at 257 feet. Reported yield 85 gal/min. Pumping level 210.74 feet on Aug. 10, 1965. Temp. 74°F. Observation well.[3]

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-59-303	L.E. Farley	Lightfoot and McCrum	1965	190	--	--	Kctp Pn	1,346	--	--	N	N	Plugged and abandoned.
* 304	Charlie Counts	Timmie Johnson	1964	145	8 7	22 145	Kctp Pn	1,356	--	--	T,G 20	Irr	Completed from 18 to 22 feet, open from 22 to 62 feet, and completed from 62 to 72 feet. Pump set at 92 feet. Reported yield 220 gal/min. Temp. 68°F.
305	Wendell Pounds	Carl A. Taylor	1965	100	8	100	Pn	1,371	17	Dec. 30, 1965	S,E 2	Irr	Slotted from 25 to 95 feet. Measured yield 23.1 gal/min. Gravel packed.[4]
306	do	do	1966	100	8	64	Pn	1,370	15	Jan. 19, 1966	S,E 1½	Irr	Slotted from 20 to 64 feet & open hole to 100 feet. Reported yield 30 gal/min. Measured yield 18.1 gal/min. Gravel packed.[4]
307	Tom Johnson	Lightfoot and McCrum	1966	205	8	205	Kctp Pn	1,336	20	Jan. 11, 1966	S,E 10	Irr	Slotted from 20 to 32 feet and 169 to 197 feet. Reported yield 70 gal/min. Pumping level 189.0 feet on Aug. 11, 1966. Gravel packed.[4]
308	L.E. Farley	Smith and Wolf Drilling Co.	1966	42	6	42	Kcho	1,349	2.4	May 8, 1970	S,E ¾	Irr	Slotted from 22 to 42 feet. Pump set at 40 feet. Gravel packed.
309	do	do	1966	46	6	46	Kcho	1,347	--	--	S,E ½	Irr	Slotted from 26 to 46 feet. Pump set at 42 feet. Gravel packed.
* 310	L.E. Farley	Smith and Wolf Drilling Co.	1966	43	6	43	Kcho	1,355	--	--	S,E ½	Irr	Slotted from 31 to 43 feet. Pump set at 42 feet. Pumping level 30.0 feet at 7.2 gal/min. on Aug. 25, 1970. Gravel packed. Temp. 68°F.[4]
311	do	do	1966	42	6	42	Kcho	1,355	--	--	S,E ½	Irr	Slotted from 22 to 42 feet. Pump set at 41 feet. Measured yield 6.2 gal/min. Gravel packed.[4]
312	do	do	1966	117	6	64	Kcho	1,370	--	--	S,E ¾	Irr	Gravel packed.
313	M.J. Pounds Est.	F&F Drilling	1968	90	8 5	16 90	Pn	1,366	40	Dec. 29, 1968	N	Irr	Perforated.
314	do	do	1968	110	5	100	Pn	1,366	10.3	May 7, 1970	S,E 1½	Irr	Perforated from 40 to 100 feet. Gravel packed.
315	do	do	1968	140	5	130	Pn	1,368	20	Nov. 20, 1968	S,E 1½	Irr	Perforated from 70 to 130 feet. Gravel packed.
316	do	do	1968	80	8	65	Kctp	1,368	20	Nov. 21, 1968	S,E 3	Irr	Perforated from 25 to 65 feet. Gravel packed.
317	Tom Johnson	N.L. Box Drilling Contractor	1967	76	8	76	Kctp	1,338	16	May 7, 1970	S,E 7½	Irr	Slotted from 20 to 73 feet. Reported yield 120 gal/min. Gravel packed.
318	do	do	1967	202	6	202	Pn	1,330	88	do	S,E 5	Irr	Slotted from 160 to 200 feet.
* 319	J.L. Chandler	do	1967	140	7	140	Pn	1,315	61.8	do	S,E 2	Irr	Slotted from 120 to 135 feet. Reported yield 30 gal/min. Packed at 120 feet.
320	do	do	1967	111	8	111	Pn	1,293	23	July 31, 1967	T,E 15	Irr	Slotted from 74 to 108 feet. Pump set at 100 feet. Pumping level 93 feet at 258 gal/min. when drilled. Gravel packed.[2]
321	Charlie Counts	Lightfoot and McCrum	1968	75	8	75	Kcho	1,353	25	Nov. 15, 1968	N	Irr	Slotted from 60 to 72 feet. Gravel packed.
322	Ralph N. Stewart Est.	Wylie Drilling Co.	1967	219	8	219	Pn	1,328	10.6	Sept. 9, 1970	N	N	Slotted from 159 to 219 feet. Reported yield 30 gal/min. Abandoned irrigation well. Gravel packed.
323	L.E. Farley	Dosier	--	57	5	57	Kctp	1,370	--	--	N	Irr	Slotted from 20 to 57 feet. Gravel packed..
324	do	--	1966	300	7	64	Kctp Pn	1,355	--	--	S,E ¾	Irr	Open hole from 64 to 300 feet. Pump set at 42 feet. Pumping level31.3 feet at 8.1 gal/min. on Aug. 25, 1970. Gravel packed.[4]
325	do	--	1966	65	5	65	Kctp	1,355	--	--	J,E ½	Irr	Slotted from 30 to 65 feet. Pump set at 42 feet. Measured yield 9.3 gal/min. Gravel packed.[4]
326	J.B. Hodges	Nate Smith	1969	79	6	79	Kctp	1,380	--	--	N	N	Slotted from 40 to 79 feet. Gravel packed. Abandoned irrigation well.
327	Tom Johnson	J. Weir Well Drilling Service	1970	210	6	210	Pn	1,330	--	--	S,E --	Irr	Slotted from 160 to 210 feet. Reported yield 70 gal/min. Gravel packed.
601	Herbert W. Buchanan	N.L. Box Drilling Contractor	1964	95	7	94	Pn	1,295	12.8 12.8 15.8 20.6	July 20, 1965 Mar. 23, 1966 Mar. 21, 1967 Mar. 22, 1968	S,E 2	Irr	Completed from 66 to 90 feet. Reported yield 60 gal/min. Gravel packed. Historical observation well.
602	Revis Smith	Smith and Wolf	1967	130	12	130	Pn	1,298	--	--	S,E 2	Irr	Slotted from 100 to 130 feet. Pump set at 127 feet. Gravel packed.[4]
603	do	do	1967	130	12	130	Pn	1,299	32.8	Mar. 6, 1972	S,E 2	Irr	Slotted from 100 to 130 feet. Pump set at 127 feet. Gravel packed. Observation well.[3, 4]

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31-59-604	Revis Smith	Smith & Wolf	1967	140	12	140	Pn	1,297	--	--	S,E 3	Irr	Slotted from 110 to 140 feet. Pump set at 137 feet. Pumping level 104.2 feet on Aug. 25, 1970. Gravel packed. Temp. 70°F.[4]
605	do	Bill Lively	1967	160	6	160	Pn	1,318	--	--	S,E 1	Irr	Slotted from 135 to 160 feet. Pump set at 157 feet. Gravel packed.[4]
703	Charles Carter	Mac Bradford	1959	100	14	58	Kctp	1,467	23.6	June 29, 1966	N	N	Perforated. Gravel packed. Abandoned irrigation well.
					7	100			23.9	Mar. 26, 1969			Observation well.[1, 3]
901	Jack Martin	-- Taylor	1870	42	48	--	Kctp	1,345	26.9	Oct. 28, 1959	J,E ½	D,S	Dug well with brick wall. Observation well.[3]
									25.0	Mar. 26, 1969			
902	Clinton Geyes	Wylie Drilling Co.	1967	93	8	93	Kctp Pn	1,310	--	--	S,E 10	Irr	Slotted. Reported yield 200 gal/min. Gravel packed.
* 903	do	--	1969	80	8	--	Kctp Pn	1,310	--	--	Sub,E 3	Irr	Slotted. Estimated yield 35 gal/min. Gravel packed. Temp. 68°F.
60-101	Elvin Walker	Pate Water Well Service	1964	35	7	35	Kctp	1,268	10.0	Aug. 11, 1956	P,E 1	Irr	Completed from 6 to 35 feet. Pump set at 30 feet. Reported yield 60 gal/min. Gravel packed. Observation well.[3]
									8.7	Mar. 22, 1968			
									11.3	Mar. 17, 1971			
102	do	do	1965	30	5	30	Kctp	1,270	9.7	Aug. 11, 1965	N	Irr	Completed from 6 to 35 feet. Pump set at 30 feet. Reported yield 20 gal/min. Gravel packed.
103	do	do	--	30	7	30	Kctp	1,270	7.62	Aug. 11, 1965	N	Irr	Completed from 6 to 35 feet. Reported yield 30 gal/min. Gravel packed.
* 104	R.D. Walker	Smith & Wolf Drilling Co.	1967	154	8	154	Pn	1,309	76.0	Sept. 29, 1970	S,E 1½	Irr	Perforated from 114 to 154 feet. Gravel packed. Temp. 69°F.
105	B.L. Barnes	do	1967	130	8	130	Pn	1,312	76.1	do	N	Irr	Perforated from 95 to 130 feet.
106	B.L. Barnes	Smith & Wolf Drilling Co.	1967	129	8	129	Pn	1,315	--	--	N	Irr	Perforated from 89 to 129 feet. Observation well.[1, 3]
107	R.V. Singleton	Ardean Kimmell Irrigation Service	1967	77	5	62	Kctp	1,310	33.1	Sept. 28, 1970	S,E 1	Irr	Perforated from 34 to 54 feet. Open Hole from 62 to 77 feet. Pump set at 42 feet. Pumping level 55 feet at 20 gal/min. when drilled. Estimated yield 5 gal/min. Gravel packed.[2]
* 108	do	do	1967	60	5	60	Kctp	1,315	30	Jan. 14, 1967	S,E ½	Irr	Perforated from 34 to 54 feet. Pump set at 45 feet. Reported yield 30 gal/min. Gravel packed. Temp. 68°F.
109	Deryl Johnson	Lightfoot and McCrum	1966	200	7	200	Pn	1,285	45	Dec. 16, 1966	S,E --	Irr	Slotted from 147 to 180 feet. Pumping level 150 feet at 40 gal/min. when drilled. Gravel packed.
110	Elmon Kerby	--	--	30	5	30	Kctp	1,280	--	--	N	Irr	
111	do	--	--	30	5	30	Kctp	1,280	--	--	N	Irr	
112	R.V. Singleton	--	--	50	--	--	Kctp	1,315	--	--	N	N	Abandoned irrigation well.
201	C.W. Crawford	N.L. Box Drilling Contractor	1954	74	8	74	Kctp	1,320	50	Oct. 21, 1959	C,E 1	Irr	Completed from 50 to 74 feet. Gravel packed.
* 202	C.W. Crawford	do	1958	74	8	74	Kctp	1,320	47.0	do	S,E 1	D	Completed from 50 to 70 feet. Pumping level 55 feet at 35 gal/min. Reported yield 40 gal/min. Gravel packed.
									44.9	July 12, 1965			
203	L.M. Richmon	L.M. Ricmon	1956	85	7	85	Kctp	1,325	57	Oct. 22, 1959	T,E 3	Irr	Completed from 60 to 85 feet. Pump set at 84 feet. Reported yield 80 gal/min. Well was drilled to 115 feet and plugged back to 85 feet.
204	do	do	1956	85	5	85	Kctp	1,315	52	do	T,E 3	Irr	Perforated from 48 to 55 feet 59 to 78 feet and 79 to 81 feet. Reported yield 80 gal/min.
205	do	--	1955	85	7	85	Kctp	1,301	61	do	T,E 3	Irr	Perforated. Pump set at 85 feet. Reported yield 70 gal/min.
206	Bill Dendy	N.L. Box Drilling Contractor	1956	71	6	71	Kcho	1,337	45	Dec. 9, 1959	S,E	Irr	Completed from 43 to 63 feet. Reported yield 75 gal/min.
									42.1	Mar. 24, 1969			Observation well.[1, 3]
* 209	L.M. Richmon	M&L Drilling Co.	1964	103	6	103	Kctp	1,319	67.1	Mar. 24, 1966	S,E 3	Irr	Reported yield 80 gal/min. Pumping level 83.4 feet at 72.7 gal/min on Aug. 16, 1966. Gravel packed. Temp. 70°F.[4]
									66.9	Mar. 7, 1967			
210	do	do	1964	103	6	103	Kctp	1,318	66.3	Mar. 24, 1966	S,E 2	Irr	Pumping level 83.7 feet at 64.8 gal/min on Aug. 16, 1966. Gravel packed.[4]
									67.0	Mar. 7, 1967			
211	do	do	1964	103	6	103	Kctp	1,311	59.2	Sept. 1, 1966	S,*E 2	Irr	Pumping level 84 feet at 140 gal/min in 1964 and 88.36 feet on July 7, 1972 Observation well.[2, 3]
									58.8	Mar. 26, 1969			
212	C.A. Short	Holdridge Drilling Co.	1966	106	7	102	Kctp	1,340	--	--	S,E 3	Irr	Slotted from 52 to 58 feet & 80 to 102 feet. Pump set at 91 feet. Pumping level 88 feet at 35.8 gal/min. on Aug. 15, 1966. Gravel packed.[4]
* 213	Bill Wilkerson	N.L. Box Drilling Contractor	1964	98	5	98	Kcho	1,308	52.9	Mar. 26, 1969	S,E 2	Ind	Completed from 72 to 93 feet. Gravel packed. Temp. 70°F.
									50.4	Mar. 8, 1972			Observation well.[3]
214	N.L. Box	do	1966	100	8	100	Kcho	1,315	38.9	Jan. 23, 1969	S,E	Irr	Slotted from 42 to 95 feet. Pumping level 90 feet at 100 gal/min. on Dec. 5, 1966. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31-60-215	N.L. Box	N.L. Box	1967	100	8	100	Kcho	1,316	41.9 41.6 42.9	Jan 23, 1969 Mar. 25, 1969 July 25, 1972	S,E 7½	Irr	Slotted from 46 to 96 feet. Pumping level 84 feet at 125 gal/min. on Aug. 2, 1967. Pumping level 72 feet at 80 gal/min. on Mar. 25, 1969. Pump set at 95 feet. Reported yield 100 gal/min. Gravel packed.[2, 5, 6]
216	do	Texas Water Development Board	1969	101	7 2	46 101	Kcho	1,323	40.5 40	Mar. 21, 1969 Mar. 23, 1969	N	N	Slotted from 38 to 101 feet. Well drilled as observation well for pumping test on well DY-31-60-215. Casing pulled and well plugged and abandoned.[5]
* 217	do	do	1969	103	7 2	46 103	Kcho	1,324	41.4 40.7	Mar. 21, 1969 Mar. 23, 1969	N	N	Slotted from 40 to 103 feet. Well drilled as observatin well for pumping test on well DY-31-60-215. Casing pulled and well plugged and abandoned.[5]
* 218	do	do	1969	101	7 2	42 85	Kcho	1,326	42.2 41.6	Mar. 21, 1969 Mar. 24, 1969	N	N	Slotted from 43 to 84 feet. Well drilled as observation well for pumping test on DY-31-60-215. Casing pulled and well plugged and abandoned.[1, 5]
219	do	do	1969	105	5 2	44 105	Kcho	1,322	40.0 39.8	Mar. 21, 1969 Mar. 24, 1969	N	N	Slotted from 40 to 105 feet. Well drilled as observation well for pumping test on well DY-31-60-215. Casing pulled and well plugged and abandoned.[1, 5]
220	do	do	1969	105	7 2	39 105	Kcho	1,321	39.5 38.4 39.2	Mar. 21, 1969 Mar. 23, 1969 Mar. 25, 1969	N	N	Slotted from 42 to 105 feet. Well drilled as observation well for pumping on test well DY-31-60-215. Temp. 67°F. Casing pulled and well plugged and abandoned.[15]
* 221	do	do	1969	32	2	32	Kche	1,322	14.2 13.0 13.7	Mar. 19, 1969 Mar. 23, 1969 Mar. 25, 1969	N	N	Slotted from 20.6 to 31 feet. Well drilled as observation well for pumping test on well DY-31-60-215. Temp. 67°F. Casing pulled and well plugged and abandoned.[1]
222	Roy Oglesby	Ardean Kimmell Irrigation Service	1967	134	8	134	Kctp	1,354	47	Feb. 28, 1967	S,E 10	Irr	Slotted from 38 to 75 feet & 95 to 124 feet. Pump set at 130 feet. Pumping level 131 feet at 350 gal/min. when drilled. Gravel packed.[2]
223	John Boswell	Johnny Weir Water Well Service	1967	147	8	147	Kcho	1,370	--	--	Sub,E 10	Irr	Slotted from 87 to 147 feet. Gravel packed.
* 224	W.S. Mathis	N.L. Box Drilling Contractor	1966	76	8	76	Kctp	1,310	43.6	Sept. 28, 1970	S,E 3	Irr	Slotted from 38 to 70 feet. Pump set at 67 feet at 58 gal/min. when drilled. Reported yield 48 gal/min. Temp. 68°F.[2]
225	do	do	1966	105	8	70	Kctp	1,310	40	July 14, 1966	S,E 2	Irr	Slotted from 39 to 65 feet. Pump set at 60 feet. Pumping level 65 feet at 45 gal/min. when drilled. Drilled to 105 feet and plugged back to 70 feet. Gravel packed.[2]
226	do	do	1966	106	8	75	Kctp	1,290	22	July 17, 1966	S,E 5	Irr	Slotted from 22 to 70 feet. Pump set at 68 feet. Pumping level 67 feet at 85 gal/min. when drilled. Drilled to 106 and plugged back to 75 feet. Gravel packed.[2]
227	do	do	1966	65	8	58	Kctp	1,288	--	--	S,E 3	Irr	Slotted from 30 to 53 feet. Pump set at 47 feet. Reported yield 57 gal/min. Plugged back to 58 feet from 65 feet. Gravel packed.
228	do	do	1966	61	7	61	Kctp	1,290	25.4	Sept. 28, 1970	S,E 2	Irr	Slotted from 20 to 56 feet. Pump set at 50 feet. Reported yield 36 gal/min. Gravel packed.[2]
229	do	do	1966	54	7	54	Kctp	1,282	21.3	do	S,E 3	Irr	Slotted from 24 to 61 feet. Pump set at 44 feet. Reported yield 47 gal/min. Gravel packed.[2]
230	N.L. Box	do	1969	102	8	102	Kcho	1,318	31	Apr. 5, 1969	N	Irr	Slotted from 53 to 98 feet. Pumping level 91 feet at 150 gal/min. when drilled. Gravel packed.[2]
231	Mrs. Allene Box	do	1966	113	8	113	Kctp	1,320	34	Dec. 10, 1966	S,E 5	Irr	Slotted from 34 to 110 feet. Pump set at 110 feet. Pumping level 94 feet at 80 gal/min. when drilled. Gravel packed.[2]
* 232	Hedley Scott	Hedley Scott	1969	87	5	87	Kcho	1,332	64	Apr. -- 1969	S,E	D	Perforated from 67 to 84 feet. Reported yield 40 gal/min. Gravel packed.
* 233	Hedley Scott	Hedley Scott	1969	76	6	76	Kcho	1,310	45	Apr. 23, 1969	S,E 2	Irr	Perforated from 54 to 75 feet. Reported yield 120 gal/min. Gravel packed.
* 234	do	do	1969	66	8	66	Kcho	1,302	37	Apr. -- 1969	S,E 2	Irr	Perforated from 41 to 64 feet. Gravel packed.
235	do	do	1969	76.5	6	76	Kcho	1,316	--	--	N	Irr	Perforated from 53 to 75 feet. Reported yield 50 gal/min. Gravel packed.[1]
* 236	do	do	1969	67	8	67	Kcho	1,308	--	--	S,E 2	Irr	Perforated from 40 to 64 feet. Reported yield 150 gal/min. Gravel packed.
237	do	do	1969	89	6	89	Kcho	1,320	53	Apr. -- 1969	N	Irr	Perforated from 60 to 84 feet.[1]
* 238	James Miers	Bennie Watson	1966	80	8	80	Kctp	1,288	40	-- -- 1966	S,E --	Irr	Slotted from 40 to 80 feet. Reported yield 120 gal/min. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-60-239	Millard Richmon	Lightfoot and McCrum	1969	102	7	102	Kcho	1,315	60	July 30, 1969	S,E	Irr	Slotted from 67 to 93 feet. Pumping level 98 feet at 80 gal/min. when drilled. Gravel packed.
240	do	do	1969	101	8	101	Kcho	1,310	65	Aug. 1, 1969	S,E	Irr	Slotted from 78 to 94 feet. Pumping level 85 feet at 80 gal/min. when drilled. Gravel packed.
241	John Johnson	do	1968	78	5	78	Kcho	1,330	41	Nov. 21, 1968	S,E	Irr	Perforated from 45 to 70 feet. Reported yield 20 gal/min. Gravel packed.
242	do	do	1968	76	5	76	Kcho	1,325	40	Nov. 22, 1968	S,E	Irr	Perforated from 50 to 68 feet. Reported yield 30 gal/min. Gravel packed.
243	do	do	1968	77	5	77	Kcho	1,325	40	Nov. 23, 1968	S,E	Irr	Perforated from 48 to 68 feet. Reported yield 40 gal/min. Gravel packed.
244	J.T. Wilkerson	F&F Drilling	1969	53	8	53	Kctp	1,280	17	July 16, 1969	S,E	Irr	Perforated from 20 to 50 feet. Gravel packed.
245	J.T. Wilkerson	F&F Drilling	1969	50	6	50	Kctp	1,280	17	July 17, 1969	S,E	Irr	Perforated from 17 to 47 feet. Gravel packed.
246	do	do	1969	50	6	50	Kctp	1,280	20	do	S,E	Irr	Perforated from 20 to 50 feet. Gravel packed.
247	Sebora Golden	Lightfoot and McCrum	1968	70	6	70	Kcho	1,300	40	Dec. 31, 1968	S,E 3	Irr	Slotted from 45 to 62 feet. Pumping level 60 feet 45 gal/min. when drilled. Gravel packed.
248	Charles Grissom	do	1970	85	5	85	Kcho	1,300	45	July 18, 1970	S,E 3	Irr	Perforated from 58 to 77 feet. Reported yield 40 gal/min. Gravel packed.
301	M.K. & T. Railroad Co.	--	--	150	8	150	Kctp	1,285	34.4	Oct. 15, 1959	T,E 5	P	Pump set at 140 feet.
303	Fred Cuze	M.L. Box Drilling Contractor	--	70	8	30	Kctp	1,286	26.2 27.4	Apr. 1, 1966 Mar. 7, 1967	N	D	Well drilled to 110 feet and plugged back to 70 feet.
305	City of Deleon	--	--	178	4	--	Kctp, Pn	1,268	45	Mar. 20, 1946	N	N	Well plugged and abandoned.
306	do	--	--	150	6	--	Kctp, Pn	1,320	100	do	S,E 3	P	Well drilled to 210 feet and plugged back to 150 feet.
307	City of Deleon	--	--	210	6	--	Kctp, Pn	--	100	do	N	N	Well plugged and abandoned.
308	do	--	--	200	6	--	Kctp, Pn	--	100	do	N	N	Abandoned.
309	do	--	--	200	6	--	Kctp, Pn	1,320	100	do	T,E	P	Pump set at 165 feet. Reported yield 25 gal/min.
310	do	J.B. Tatum	--	150	6	--	Kctp, Pn	--	100	Oct. 21, 1960	T,E 3	P	Abandoned.
311	do	--	--	150	6	--	Kctp, Pn	1,310	100	Mar. 20, 1946	T,E 3	P	Pump set at 145 feet. Reported yield 25 gal/min.
* 312	City of DeLeon	J.B. Tatum	--	200	6	--	Kctp, Pn	--	--	--	N	N	Abandoned.
313	do	do	--	150	8	--	Kctp, Pn	--	--	--	N	N	Abandoned.
314	do	do	--	200	6	--	Kctp, Pn	1,310	--	--	T,E 3	P	Pump set at 165 feet. Reported yield 25 gal/min.
* 315	do	do	--	200	6	--	Kctp, Pn	1,305	--	--	T,E 3	P	Pump set at 165 feet. Reported yield 25 gal/min. Temp. 68.5°F.
316	Charles Rogers	--	1912	230	5	230	Pn	1,282	58	Sept. 9, 1970	N	D	
317	M.K. & T. Railroad Co.	--	--	195	8	--	Kctp, Pn	1,285	--	--	T,E 7½	p	Pump set at 145 feet. Reported yield 96 gal/min.
318	do	--	--	155	8	--	Kctp, Pn	1,285	--	--	T,E 7½	P	Pump set at 140 feet. Reported yield 93 gal/min.
319	do	--	--	125	8	--	Kctp, Pn	1,285	--	--	T,E 5	P	Pump set at 110 feet.
320	do	--	--	150	6	--	Kctp, Pn	1,285	--	--	S,E 3	P	Pump set at 110 feet.
312	City of DeLeon	--	--	150	8	--	Kctp, Pn	1,305	--	--	T,E 3	P	Pump set at 140 feet.
322	do	--	--	150	8	--	Kctp, Pn	1,300	--	--	T,E 3	P	Pump set at 145 feet.
323	do	--	--	150	8	--	Kctp, Pn	1,310	--	--	T,E 3	P	Pump set at 145 feet.
324	do	--	--	150	8	--	Kctp, Pn	1,305	--	--	T,E 3	P	Pump set at 145 feet.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-60-325	J.J. Mathis	Ardean Kimmell Irrigation Service	1966	94	8	94	Kctp	1,280	50	Apr. 5, 1966	S,E 3	Irr	Slotted from 58 to 94 feet. Pumping level 80 feet at 90 gal/min. when drilled. Gravel packed.[2]
326	do	do	1966	87	8	87	Kctp	1,260	54	Apr. 13, 1966	S,E 3	Irr	Slotted from 50 to 82 feet. Pumping level 80 feet to 140 gal/min. when drilled. Gravel packed.[2]
327	do	do	1966	86	8	86	Kctp	1,260	50	Apr. 18, 1966	S,E 3	Irr	Slotted 55 to 84 feet. Pumping level 80 feet at 90 gal/min. when drilled. Gravel packed.[2]
328	do	do	1966	80	8	80	Kctp	1,250	40	Apr. 20, 1966	S,E 3	Irr	Slotted 45 to 80 feet. Pumping level 70 feet at 150 gal/min. when drilled. Gravel packed.[2]
329	Odis Shugart	Holdridge Drilling Co.	1967	70	8	70	Kctp	1,250	37.1	Sept. 29, 1970	S,E 5	Irr	Slotted 40 to 65 feet. Reported yield 95 gal/min. Gravel packed.
* 330	do	do	1967	70	8	70	Kctp	1,250	37	do	S,E 5	Irr	Slotted 40 to 65 feet. Pumping level 64 feet at 117 gal/min. when drilled. Gravel packed. Temp. 68°F.[2]
* 331	Delbert Otwell	Lightfoot and McCrum	1969	90	6	90	Kctp	1,270	50	Oct. 2, 1970	S,E 1	Irr	Slotted 27 to 52 feet and 55 to 82 feet. Pump set at 80 feet. Pumping level 50 feet at 30 gal/min. when drilled. Gravel packed. Temp. 70°F.[2]
332	do	do	1969	82	6	82	Kctp	1,265	45	July 9, 1969	S,E 2	Irr	Slotted 50 to 70 feet. Pump set at 70 feet at 50 gal/min when drilled. Reported yield 60 gal/min. Gravel packed.[2]
333	-- Newman	N.L. Box Drilling Contractor	1966	94	5	94	Kcho	1,285	70	Aug. 17, 1966	N	N	Perforated from 71 to 91 feet. Reported yield 18 gal/min. Abandoned irrigation well. Gravel packed.[1]
334	J.J. Mathis	John Weir Drilling	1968	100	8	100	Kctp	1,269	--	--	S,E 1½	Irr	Perforated. Reported yield 50 gal/min. Gravel packed.[4]
335	J.J. Mathis	Kimmell Irrigation Service	1967	100	8	100	Kcho	1,269	68	Mar. 15, 1968	S,E 2	Irr	Slotted 7 to 22 feet, 35 to 87 feet. Pumping level 100 feet at 70 gal/min. when drilled and 79.7 feet at 56 gal/min. on Aug. 8, 1970. Gravel packed.[2,4]
336	do	do	1967	100	8	100	Kcho	1,265	60	Mar. 22, 1968	S,E 1½	Irr	Slotted 60 to 74 feet. Pumping level 86 feet at 60 gal/min. when drilled. Measured yield 28.4 gal/min. Gravel packed.[2,4]
337	Jack Johnson	Lightfoot and McCrum	1966	90	7	90	Kcho	1,260	40	Apr. 5, 1966	S,E	Irr	Slotted 50 to 79 feet. Pumping level 75 feet at 75 gal/min. when drilled. Gravel packed.[2]
338	do	do	1966	101	7	101	Kcho	1,265	45	Apr. 8, 1966	S,E	Irr	Slotted 40 to 90 feet. Pumping level 85 feet at 75 gal/min when drilled. Gravel packed.
* 339	Loyd Armstrong	do	1970	96	6	96	Kcho	1,280	35	July 3, 1970	S,E 1½	Irr	Perforated from 75 to 86 feet. Reported yield 30 gal/min. Gravel packed. Temp. 68°F.
401	O.G. Gilchrist	N.L. Box Drilling Contractor	--	55	5	55	Kctp	1,294	13.2 12.8	Mar. 24, 1966 Mar. 26, 1969	J,E	D	Reported yield 2.5 gal/min. Temp. 69°F. Observation well.[1,3]
501	Billy Gray	do	1964	85	7	85	Kctp	1,260	39.9	Sept. 28, 1965	S,E 3	Irr	Completed from 25 to 80 feet. Pump set at 80 feet. Reported yield 42 gal/min. Gravel packed.
502	Tommie Lawless	do	--	95	5	95	Kctp	1,275	41.3	Mar. 7, 1967	S,E ¾	Irr	Reported yield 29 gal/min. Pumping level 73.8 feet at 26.3 gal/min on July 28, 1966.[4]
503	do	do	--	55	5	55	Kctp	1,253	16 17.4	Mar. 24, 1966 Mar. 26, 1969	J,E ½	D	Gravel packed. Observation well.[3]
* 504	N.L. Box	N.L. Box Drilling	1967	109	6	109	Kctp	1,300	55.6	Oct. 1, 1970	S,E ¾	Irr	Slotted 46 to 106 feet. Reported yield 23 gal/min. Temp. 67°F.
* 505	N.L. Box	N.L. Box Drilling Contractor	1967	121	5	121	Kctp	1,312	55	Mar. 31, 1967	S,E ¾	Irr	Perforated from 60 to 116 feet. Pump set at 116 feet. Reported yield 32 gal/min. Gravel packed.
* 506	do	do	1967	86	8	86	Kctp	1,280	40	Apr. 3, 1967	S,E 7½	Irr	Slotted 50 to 83 feet. Pump set at 83 feet. Reported yield 100 gal/min. Gravel packed.
* 507	do	do	1967	86	8	86	Kctp	1,285	45.4	Apr. 3, 1967	S,E 10	Irr	Slotted 50 to 83 feet. Pump set at 83 feet. Reported yield 150 gal/min. Gravel packed.
* 508	do	do	1967	90	5	90	Kctp	1,290	43.7	do	S,E 3	Irr	Perforated from 50 to 87 feet. Reported yield 34 gal/min. Gravel packed.
509	-- Lightfoot	Hester Drilling Co.	1969	43	8	43	Kctp	1,255	14	Nov. 17, 1970	S,E	Irr	Slotted 12 to 41 feet. Pumping level 24 feet at 150 gal/min. when drilled.[2]
510	B.E. Hanson	Hester Drilling Co.	1967	35	8	35	Kctp	1,255	25	Mar. 19, 67	S,E	Irr	Slotted 12 to 25 feet. Reported yield 25 gal/min. Gravel packed.
511	N.L. Box	N.L. Box Drilling Contractor	1968	107	5	107	Kctp	1,303	--	--	N	Irr	Perforated from 52 to 105 feet. Reported yield 45 gal/min. Gravel packed.[1]
512	do	do	1968	117	5	94	Kctp	1,300	--	--	N	Irr	Perforated from 55 to 90 feet. Reported yield 36 gal/min. Gravel packed.[1]
513	Billy Gray	Kimmell Irrigation	1969	70	8	70	Kctp	1,250	--	--	S,E 5	Irr	Slotted 27 to 60 feet. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-60-514	Billy Gray	Kimmell Irrigation	1971	71	8	71	Kctp	1,253	21	Feb. 6, 1969	S,E 7½	Irr	Slotted from 27 to 63 feet. Pumping level 53 feet at 320 gal/min. when drilled. Gravel packed.[2]
515	Tommy Lawless	Lightfoot and McCrum	1969	62	8	62	Kctp	1,275	17	May 11, 1969	S,E 5	Irr	Slotted from 23 to 52 feet. Pumping level 55 feet at 275 gal/min. when drilled. Gravel packed.[2]
* 516	W.M. Morris	N.L. Box Drilling Contractor	1967	106	8	106	Kcho	1,315	60	July 17, 1967	S,E 1½	Irr	Slotted from 63 to 103 feet. Pumping level 95 feet at 80 gal/min. when drilled. Gravel packed.[2]
517	V.L. Gilbert	Lightfoot and McCrum	1968	70	8	70	Kctp	1,258	22	Nov. 28, 1968	S,E 10	Irr	Slotted from 25 to 60 feet. Pumping level 55 feet at 320 gal/min. when drilled. Gravel packed.[2]
518	do	do	1970	80	8	80	Kctp	1,265	30	Dec. 29, 1970	S,E 5	Irr	Slotted from 50 to 70 feet. Reported yield 150 gal/min. Gravel packed.
601	Elmon Kerby	Ardean Kimmell Irrigation Service	1966	124	8	83	Kctp	1,230	40	Feb. 18, 1966	S,E 1½	Irr	Perforated from 0 to 74 feet. Pumping level 70 feet at 70 gal/min. when drilled. Gravel packed.[2]
602	do	do	1966	75	8	75	Kctp	1,230	40	Feb. 21, 1966	S,E 3	Irr	Slotted. Pumping level 70 feet at 90 gal/min. when drilled. Gravel packed.[2]
603	do	do	1966	78	8	78	Kctp	1,230	37	Apr. 8, 1966	S,E 2	Irr	Slotted. Pumping level 70 feet at 80 gal/min. when drilled. Gravel packed.[2]
604	Fred Williams	Edwin Davis and Iredell Drilling	1967	120	--	--	Kctp	1,280	--	--	N	N	Drilled as test hole.
605	Tommie Taylor	Smith and Wolf Drilling Co.	1967	80	8	80	Kctp	1,260	--	--	S,E 3	Irr	Perforated. Pumping level 61.6 feet at 36.1 gal/min. on Aug. 15, 1967. Gravel packed.[4]
606	do	do	1967	90	8	90	Kctp	1,270	--	--	N	N	Perforated. Gravel packed. Abandoned irrigation well.
607	do	do	1967	98	8	98	Kctp	1,270	--	--	S,E 3	Irr	Perforated for 35 feet. Pumping level 84.5 feet at 48.7 gal/min. on Aug. 15, 1967. Gravel packed.[4]
608	do	do	1967	85	8	85	Kctp	1,265	--	--	S,E 3	Irr	Perforated for 35 feet. Pumping level 68.4 feet at 66.5 gal/min. on Aug. 15, 1967. Gravel packed.[4]
609	Whit Sides	Ardean Kimmell Irrigation Service	1967	73	5	73	Kctp	1,260	--	--	N	N	Perforated from 30 to 52 feet. Reported yield 20 gal/min. Gravel packed. Abandoned irrigation well.[1]
610	do	do	1967	85	5	70	Kctp	1,260	30	Feb. 2, 1967	N	N	Perforated from 30 to 60 feet. Reported yield 30 gal/min. Abandoned irrigation well. Gravel packed.
611	R.H. Sides	do	1966	85	8	85	Kctp	1,260	53.3	Oct. 1, 1970	S,E 3	Irr	Slotted from 50 to 85 feet. Pump set at 76 feet. Pumping level 75 feet at 55 gal/min. when drilled. Gravel packed.[2]
612	do	do	1966	81	8	81	Kctp	1,255	50	May 4, 1966	S,E 3	Irr	Perforated from 33 to 81 feet. Pump set at 76 feet. Pumping level 75 feet at 50 gal/min. when drilled. Gravel packed.
613	do	do	1966	87	8	87	Kctp	1,250	42	Aug. 1, 1966	S,E 3	Irr	Perforated from 35 to 74 feet. Pump set at 70 feet. Pumping level 70 feet at 59 gal/min. when drilled. Gravel packed.[2]
614	do	do	1967	76	8	67	Kctp	1,240	56	Feb. 13, 1967	S,E 3	Irr	Slotted from 37 to 56, 67 to 76 feet. Pump set at 66 feet. Pumping level 58 feet at 85 gal/min. when drilled. Gravel packed.
* 615	do	do	1967	59	8	60	Kctp	1,235	32.1	Oct. 1, 1970	S,E 3	Irr	Perforated from 30 to 50 feet. Reported yield 30 gal/min. Pump set at 49 feet. Gravel packed. Temp. 68°F.
* 616	Jack Johnson	do	1967	80	8	80	Kcho	1,238	40.8	Oct. 2, 1970	S,E 5	Irr	Slotted from 30 to 60 feet. Pump set at 64 feet. Pumping level 62 feet at 110 gal/min when drilled. Reported yield 93 gal/min. Gravel packed. Temp. 67°F. Observation well.[1,2,3]
* 617	Mrs. Vera Easley	F&F Drilling Co.	1970	49	6	49	Kctp	1,212	--	--	S,E 3	Irr	Slotted from 35 to 49 feet. Pump set at 45 feet. Pumping level 37.0 feet at 102.5 gal/min. on Aug. 20, 1970. Temp. 69°F. Gravel packed.[4]
618	Mrs. Vera Easley	F&F Drilling Co.	1970	49	6	49	Kctp	1,212	--	--	S,E 3	Irr	Slotted from 35 to 49 feet. Measured yield 89.6 gal/min. Gravel packed.[4]
619	Jack Johnson	Lightfoot and McCrum	1970	64	8	64	Kctp	1,238	30	Apr. 8, 1970	S,E 5	Irr	Slotted from 38 to 54 feet. Pump set at 60 feet. Pumping level 50 feet at 60 gal/min. when drilled.[2]
620	J.V. Skaggs	F&F Drilling Co.	1970	80	4	70	Kctp	1,265	37.9	Apr. 9, 1971	S,E ¾	Irr	Perforated from 40 to 70 feet. Gravel packed.
621	do	do	1970	60	4	60	Kctp	1,265	35	do	S,E 1½	Irr	Perforated from 35 to 60 feet. Gravel packed.
622	do	do	1970	50	4	50	Kctp	1,255	20	do	S,E 1	Irr	Perforated from 20 to 50 feet. Pump set at 45 feet. Reported yield 25 gal/min. Gravel packed.
623	do	do	1970	54	6	54	Kctp	1,255	21	do	S,E 2	Irr	Perforated from 20 to 54 feet. Pump set at 52 feet. Reported yield 50 gal/min. Gravel packed.
624	Lloyd Armstrong	Lightfoot and McCrum	1968	110	7	79	Kctp	1,245	45	Jan. 31, 1968	S,E 5	Irr	Slotted from 20 to 65 feet. Pumping level 65 feet at 80 gal/min. when drilled. Plugged back to 79 from 110 feet. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-60-625	A.A. Pressley	F&F Drilling Co.	1971	80	6	80	Kctp	1,249	48.4	May 3, 1972	S,E 2	Irr	Perforated from 50 to 80 feet. Gravel packed.
626	do	do	1971	80	5	80	Kctp	1,253	40	Feb. 10, 1971	N	Irr	Perforated from 40 to 80 feet. Gravel packed.
* 627	do	do	1971	80	5	80	Kctp	1,246	40	Feb. 11, 1971	S,E 2	Irr	Perforated from 40 to 80 feet. Estimated yield 60 gal/min. Gravel packed. Temp. 70°F.
628	do	do	1971	80	5	80	Kctp	1,256	45	Feb. 12, 1971	S,E 2	Irr	Perforated from 45 to 80 feet. Gravel packed.
629	Elmon Kirby	F&F Drilling Co.	1971	60	6	60	Kctp	1,220	30	Feb. 17, 1971	S,E 2	Irr	Perforated from 30 to 60 feet. Gravel packed.
* 701	Ray McGinnis	Smith and Wolf Drilling Co.	1966	78	7	78	Kctp	1,260	17	Nov. 17, 1970	S,E 1½	Irr	Completed from 50 to 78 feet. Pumping level 32.5 feet at 34.7 gal/min. on July 25, 1967. Gravel packed. Temp. 68°F.[1,2,4]
702	Bobby Wilson	Ardean Kimmell Irrigation Service	1967	38	8	38	Kctp	1,260	14	June 22, 1967	N	N	Perforated from 10 to 28 feet. Pumping level 38 feet at 40 gal/min. when drilled. Abandoned irrigation well. Gravel packed.[1,2]
703	do	do	1967	38	8	86	Kctp	1,255	6.2	Oct. 2, 1970	N	N	Perforated from 15 to 30 feet. Pumping level 38 feet at 40 gal/min. when drilled. Abandoned irrigation well. Gravel packed.[1,2]
704	do	do	1967	41	8	41	Kctp	1,260	15	June 13, 1967	N	N	Perforated from 10 to 22 feet. Pumping level 41 feet 37 gal/min. wehn drilled. Gravel packed.[2]
705	do	do	1967	86	8	86	Kctp	1,260	3.7	Oct. 2, 1970	N	N	Perforated from 10 to 70 feet. Abandoned irrigation well. Gravel packed.
801	Gayle McGinnis	N.L. Box Drilling Contractor	1953	38	10	38	Kctp	1,245	13	Oct. 22, 1959	N	N	Reported yield 90 gal/min.
802	do	do	1953	25	6	25	Kctp	1,239	10.1 12.8 14.7	July 12, 1965 Mar. 24, 1966 Nov. 17, 1970	P,E ½	D	Perforated from 8 to 25 feet. Reported yield 50 gal/min. Temp. 66°F.
803	do	Mac Bradford	1953	40	6	--	Kctp	1,250	13	Oct. 22, 1959	N	N	Perforated from 8 to 25 feet. Well plugged and abandoned.
804	do	--	--	35	8	35	Kctp	1,250	10.6 11.8	do Nov. 17, 1970	N	Irr	Perforated from 13 to 35 feet. Dug well with brick wall, with 8 inch casing set. Gravel packed. Abandoned.
805	do	N.L. Box Drillling Contractor	1953	39	8	38	Kctp	1,250	9.1 14.9	July 12, 1965 Nov. 17, 1970	T,E 1	Irr	Perforated from 13 to 38 feet.
806	Rex McGinnis	N.L. Box Drilling Contractor	1955	65	6	65	Kctp	1,260	--	--	N	N	Perforated from 43 to 65 feet. Reported yield 60 gal/min. Well plugged and abandoned.
807	Gayle McGinnis	L.L. Spears Water Well Drilling	1966	58	8	58	Kctp	1,251	20.6	June 30, 1966	S,E 5	Irr	Perforated from 33 to 58 feet. Gravel packed.
* 808	do	M and L Drilling Co.	1964	110	12	110	Kctp	1,245	11.3 16.0	July 12, 1965 Nov. 17, 1970	P,E	Irr	Gravel packed. Temp. 68°F.
809	Rex McGinnis	Holdridge Drilling Co.	1967	80	8	80	Kctp	1,285	--	--	S,E 3	Irr	Slotted from 50 to 80 feet. Pumping level 55.0 feet at 64.76 gal/min. on July 25, 1967. Gravel packed.[4]
* 810	do	Ardean Kimmell Irrigation Service	1966	61	8	61	Kctp	1,280	38.5 37.7	Oct. 15, 1970 Nov. 17, 1970	S,E 1½	Irr	Slotted from 12 to 51 feet. Pump set at 59 feet. Pumping level 55 feet at 75 gal/min when drilled and 53.3 feet at 35.9 gal/min. on July 25, 1967 and 54.34 on July 8, 1971. Gravel packed. Temp. 66°F. and 68°F.[2,4]
* 811	do	do	1966	60	8	60	Kctp	1,270	38.2 38.1	Oct. 15, 1970 Nov. 17, 1970	S,E 10	Irr	Slotted from 10 to 62 feet. Pump set at 55 feet. Pumping level level 48 feet at 175 gal/min. when drilled and 54.9 feet on July 15, 1971. Reported yield 100 gal/min. Gravel packed. Temp. 67°F. and 68°F. Observation well.[1,3,4,6]
812	do	Holdridge Drilling Co.	1967	60	8	60	Kctp	1,275	32.1	Nov. 17, 1970	S,E 5	Irr	Slotted. Power and yield test. Gravel packed.
* 813	Jim Wilkerson	Ardean Kimmell Irrigation Service	1967	39	5	39	Kctp	1,225	28	Aug. 16, 1967	S,E ½	D,S	Perforated from 19 to 39 feet. Pumping level 39 feet at 5 gal/min. when drilled. Gravel packed. Temp. 69°F.
814	Rex McGinnis	do	1966	71	8	71	Kctp	1,280	--	--	N	N	Slotted from 12 to 64 feet. Well destroyed.
815	Rex McGinnis	Ardean Kimmell Irrigation Service	1966	73	6	73	Kctp	1,280	37.9 38	Nov. 17, 1970 Feb. 9, 1971	S,E 1½	Irr	Perforated from 14 to 51 feet. Gravel packed.
* 816	Paul Kimmell	J.W. Singleton	1970	105	6	101	Kcho	1,290	70.3	Jan. 22, 1970	N	N	Reported yield 80 gal/min. Unused irrigation well. Gravel packed.
817	Henry T. Scott	F&F Drilling Co.	1969	45	6	45	Kctp	1,240	30	Nov. 31, 1969	S,E 3	Irr	Perforated from 25 to 45 feet. Gravel packed.
818	do	do	1969	52	6	52	Kctp	1,240	30	Nov. 22, 1969	S,E 3	Irr	Perforated from 30 to 52 feet. Gravel packed.
819	L.D. Wilkerson	Billy Harris	1969	87	7	87	Kcho	1,285	61	Jan. 26, 1969	J,E 1	S	Slotted from 60 to 87 feet. Reported yield 70 gal/min. Originally drilled for irrigation. Gravel packed.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-60-820	Gayle McGinnis	Lightfoot and McCrum	1970	40	6	40	Kctp	1,260	8	Aug. 8, 1970	S,E	Irr	Slotted from 30 to 40 feet. Reported yield 30 gal/min. Gravel packed.
821	do	do	1970	57	5	57	Kcho	1,280	30	Aug. 10, 1970	S,E	Irr	Perforated from 37 to 45 feet. Reported yield 25 gal/min. Gravel packed.
822	Leo Page	do	1971	52	5	52	Kctp	1,272	22	June 20, 1971	S,E 1	Irr	Perforated from 25 to 42 feet. Reported yield 60 gal/min. Gravel packed.
* 823	do	do	1971	60	5	60	Kctp	1,278	32.7	May 2, 1972	S,E 1	Irr	Perforated from 27 to 50 feet. Reported yield 40 gal/min. Gravel packed. Temp. 68°F.
824	Rex McGinnis	do	1971	79	5	79	Kctp	1,280	38	June 24, 1971	S,E 3	Irr	Perforated from 40 to 69 feet. Reported yield 50 gal/min. Gravel packed.
825	A.A. Lucke	do	1971	50	8	50	Kctp	1,257	20.3	May 2, 1972	S,E 1½	Irr	Slotted from 22 to 45 feet. Reported yield 70 gal/min. Gravel packed.
* 901	I.N. Grissom	--Scott	--	76	4	--	Kctp	1,213	33 29.1	Jan. 20, 1960 Mar. 27, 1969	S,E	D,S	Temp. 69°F. Observation well.[3]
902	Bobby Schuman	--	--	45	5	--	Kctp	1,197	20.5	Jan. 20, 1960	C,W	N	
903	John D. Scott	F&F Drilling Co.	1969	40	5	40	Kctp	1,225	18	Dec. 1, 1969	S,E 3	Irr	Perforated from 18 to 40 feet. Pump set at 37 feet. Reported yield 40 gal/min. Gravel packed.
904	do	do	1969	40	5	40	Kctp	1,228	18	Dec. 2, 1969	S,E 3	Irr	Perforated from 18 to 40 feet. Pump set at 37 feet. Reported yield 60 gal/min. Gravel packed.
905	do	do	1969	40	5	40	Kctp	1,230	18	Dec. 5, 1969	S,E 2	Irr	Perforated from 18 to 40 feet. Pump set at 37 feet. Reported yield 40 gal/min. Gravel packed.
* 906	do	do	1969	40	5	40	Kctp	1,230	20.1	Aug. 20, 1971	S,E 3	Irr	Perforated from 18 to 40 feet. Pump set at 37 feet. Reported yield 50 gal/min. Gravel packed. Temp. 69°F.
907	do	do	1969	40	5	40	Kctp	1,226	18	Dec. 2, 1969	N	Irr	Perforated from 18 to 40 feet.
61-103	Robert Hodges	N.L. Box Drilling Contractor	1965	116	--	--	Kctp	1,250	45	Jan. 21, 1965	N	N	Reported yield 35 gal/min. Well plugged and abandoned.
104	do	do	1965	86	5	86	Kcho	1,252	66.1	July 19, 1965	S,E 3	Irr	Completed from 58 to 80 feet. Gravel packed.
105	do	do	1965	187	7	83	Kctp	1,255	69.9	do	S,E 3	Irr	Slotted from 28 to 80 feet. Reported yield 60 gal/min. Gravel packed.
106	do	do	1965	92	5	91	Kcho	1,257	72.7	do	S,E 3	Irr	Completed from 48 to 88 feet. Reported yield 50 gal/min. Gravel packed.
* 107	do	do	--	95	7	95	Kcho	1,258	69.3	do	S,E 3	Irr	Completed from 45 to 90 feet. Reported yield 52 gal/min. Gravel packed. Temp. 60°F. and 67°F.
108	do	do	1966	83	5	83	Kctp	1,247	--	--	S,E 3	Irr	Slotted from 40 to 78 feet. Pump set at 70 feet. Reported yield 50 ga l/min. Gravel packed.
109	Robert Holdges	N.L. Box Drilling Contractor	1966	97	7	97	Kcho	1,250	--	--	S,E 3	Irr	Slotted from 40 to 89 feet. Pump set at 85 feet. Reported yield 60 gal/min. Gravel packed. Temp. 66°F.[2,4]
110	do	do	1966	100	7	100	Kctp	1,255	--	--	S,E 3	Irr	Slotted from 45 to 95 feet. Pump set at 85 feet. Reported yield 100 gal/min. Gravel packed.[2,4]
111	do	do	1966	105	7	105	Kctp	1,248	--	--	S,E 5	Irr	Slotted from 66 to 100 feet. Pump set at 90 feet. Reported yield 60 gal/min. Gravel packed.[2,4]
112	Bill Wood	Lightfoot and McCrum	1966	65	7	65	Kcho	1,240	42.8 43.9	Mar. 29, 1971 Feb. 27, 1973	S,E 1	Irr	Slotted from 40 to 57 feet. Pump set at 60 feet. Pumping level 45 feet at 80 gal/min. on June 29, 1966 and 57.0 feet at 21.2 gal/min on Aug. 16, 1967. Gravel packed. Observation well.[2,4]
113	do	do	1966	66	7	66	Kcho	1,235	35	June 30, 1966	S,E 2	Irr	Slotted from 40 to 57 feet. Pump set at 60 feet. Pumping level 40 feet at 75 gal/min. on July 1, 1966 and 55.2 feet at 41.1 gal/min. on Aug. 17, 1967. Gravel packed.[2,4]
114	do	do	1966	63	7	63	Kcho	1,230	35	July 2, 1966	S,E 2	Irr	Completed from 38 to 54 feet. Pump set at 60 feet. Pumping level 40 feet at 75 gal/min. on July 2, 1966 and 54.7 feet at 33.4 gal/min. on Aug. 16, 1967. Gravel packed.[2,4]
115	do	do	1967	67	5	67	Kcho	1,230	40	Mar. 15, 1967	S,E 2	Irr	Perforated from 45 to 55 feet. Pump set at 62 feet. Pumping level 60 feet at 30 gal/min. on Mar. 15, 1967 and 56.3 feet at 17.2 gal/min. on Aug. 16, 1967. Gravel packed.[2,4]
116	Bill Wood	Lightfoot and McCrum	1967	69	7	69	Kcho	1,230	30	Mar. 17, 1967	S,E 2	Irr	Slotted from 43 to 55 feet. Pump set at 64 feet. Reported yield 84 gal/min. Pumping level 49.1 feet at 42.9 gal/min. on Aug. 16, 1972. Gravel packed.[2,4]
117	do	do	1967	61	7	61	Kcho	1,220	20	June 6, 1967	S,E 7½	Irr	Slotted from 31 to 50 feet. Pump set at 55 feet. Pumping level 50 feet at 134 gal/min. on June 7, 1967 and 49.3 feet on Aug. 16, 1967. Gravel packed.[2,4]

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-61-18	Bill Wood	N.L. Box Drilling Contractor	--	57	5	57	Kcho	1,230	--	--	J,E ½	D	Pump set at 55 feet. Reported yield 5 gal/min.
* 119	do	Comeo Drilling Co.	1967	60	4	60	Kctp	1,235	--	--	J,E ½	D,S	Reported yield 20 gal/min.
121	Herman S. Baker	--	--	77	3	77	Kctp	1,243	45.3	July 22, 1968	J,E ¾	D	Slotted from 50 to 56 feet.
122	-- Dicky	--	1959	98	6	98	Kcho	1,275	53.0	July 22, 1968	T,E	D,S	Slotted from 88 to 98 feet. Pump set at 92 feet.
123	Howard Boswell	N.L. Box Drilling Contractor	1953	40	5	40	Kcho	1,215	14.7	July 22, 1968	C,W	S	Perforated from 23 to 36 feet. Reported yield 27 gal/min.
124	C.M. Caraway	J.T. Brown Water Well Driller	1966	105	5	105	Kcho	1,245	40	May 24, 1966	S,E 3	Irr	Slotted from 80 to 103 feet. Pump set at 90 feet. Gravel packed.
125	do	do	1966	95	5	95	Kcho	1,235	35	May 26, 1966	S,E 3	Irr	Slotted from 75 to 95 feet. Pump set at 80 feet. Gravel packed.
126	do	do	1966	108	5	108	Kcho	1,250	40	May 31, 1966	S,E 3	Irr	Slotted from 88 to 108 feet. Pump set at 72 feet. Gravel packed.
127	Robert M. Hodges	N.L. Box Drilling Contractor	1967	93	8	93	Kcho	1,245	46	Apr. 24, 1967	S,E 5	Irr	Slotted from 63 to 91 feet. Pump set at 90 feet. Reported yield 95 gal/min. Gravel packed.
128	Robert M. Holdges	N.L. Box Drilling Contractor	1967	78	6	78	Kcho	1,232	40	Apr. 11, 1967	S,E 7½	Irr	Slotted from 52 to 75 feet. Pump set at 75 feet. Reported yield 162 gal/min. Gravel packed.
129	do	do	1967	84	6	84	Kcho	1,232	36	Apr. 13, 1967	S,E 5	Irr	Slotted from 60 to 80 feet. Pump set at 80 feet. Reported yield 100 gal/min. Gravel packed.
130	do	do	1967	91	6	91	Kcho	1,250	55	Apr. 18, 1967	S,E 5	Irr	Slotted from 61 to 86 feet. Pump set at 87 feet. Reported yield 108 gal/min. Gravel packed.
131	do	do	1967	77	6	77	Kcho	1,232	39	Apr. 21, 1967	S,E 3	Irr	Slotted from 48 to 74 feet. Pump set at 73 feet. Reported yield 65 gal/min. Gravel packed.
132	Herman Baker	Johnny Weir	1968	90	8	90	Kctp	1,220	40	Dec. 1, 1968	S,E 3	S	Slotted from 25 to 85 feet. Pump set at 80 feet. Pumping level 80 feet at 120 gal/min. when drilled. Gravel packed.[2]
* 133	Jerry L. Clark	F&F Drlg. Co.	1968	120	5	120	Kcho	1,253	60	Dec. 4, 1968	S,E	Irr	Perforated from 80 to 120 feet. Pump set at 115 feet. Gravel packed.
134	Bill Wood	Lightfoot and McCrum	1969	62	6	62	Kcho	1,220	35	Jan. 2, 1969	S,E	Irr	Slotted from 40 to 55 feet. Pumping level 45 feet at 60 gal/min. when drilled. Gravel packed.[2]
135	do	do	1969	60	6	60	Kcho	1,225	35	Jan. 3, 1969	S,E	Irr	Slotted from 37 to 53 feet. Pumping level 45 feet at 55 gal/min. when drilled. Gravel packed.[2]
136	Robert M. Holdges	do	1971	80	8	80	Kctp	1,240	35	Nov. 24, 1971	S,E	Irr	Slotted from 40 to 70 feet. Reported yield 50 gal/min. Gravel packed.
* 201	George Caraway	N.L. Box Drilling Contractor	1956	61	5	61	Kche	1,265	37 34.2	Jan. 20, 1960 Mar. 27, 1969	J,E	D	Perforated from 43 to 57 feet. Observation well.[3]
203	Dillard Lee	Lightfoot and McCrum	1965	150	8	150	Kctp	1,278	52	Dec. 24, 1965	S,E 15	Irr	Slotted from 55 to 82 feet, 95 to 140 feet. Pump set at 140 feet. Gravel packed.
208	Charles Lee	Lightfoot and McCrum	1969	160	8	160	Kctp	1,280	65	Jan. 14, 1969	S,E 15	Irr	Slotted from 62 to 85 feet and 120 to 141 feet. Pump set at 155 feet. Pumping level 140 feet at 190 gal/min. when drilled. Gravel packed.[24]
209	do	do	1969	160	8	160	Kctp	1,280	65	Jan. 17, 1969	S,E 7½	Irr	Slotted from 60 to 85 feet and 105 to 121 feet. Pump set at 155 feet. Pumping level 130 feet at 110 gal/min. when drilled and 137.2 feet on July 16, 1970. Gravel packed.[24]
210	do	do	1969	160	8	160	Kctp	1,295	71 72.5	Mar. 29, 1971 Mar. 8, 1972	N	N	Slotted from 80 to 90 feet and 120 to 145 feet. Pumping level 140 feet at 50 gal/min. when drilled. Unused irrigation well. Gravel packed. Observation well.[24]
* 211	John Caraway	F&F Drilling Co.	1969	120	8	120	Kcho	1,268	53	Apr. 8, 1971	S,E 7½	Irr	Perforated from 80 to 115 feet. Pump set at 115 feet. Reported yield 100 gal/min. Gravel packed. Temp. 67°F.
* 401	C.A. Tucker	--	--	89	36	--	Kche	1,330	84.9	Jan. 21, 1960	C,W	S	Dug.
402	J.C. Barnes	Steward Drilling Co.	1964	117	7	117	Kctp	1,258	--	--	S,E 3	Irr	Pump set at 105 feet. Reported yield 90 gal/min. Pumping level 100.2 fet at 57 gal/min. on June 29, 1966. Gravel packed.[4]
403	do	J.A. Lyons	1958	103	6	103	Kctp	1,258	40	July 20, 1965	S,E 1½	Irr	Reported yield 48 gal/min. Measured yield 29 gal/min. Gravel packed.[4]
* 404	do	– Smith	1966	135	6	135	Kctp	1,255	58.3 54.8	Apr. 15, 1966 Mar. 27, 1969	S,E	D	Observation well.[3]
405	Humble Pipeline Co.	N.L. Box Drilling Contractor	1963	109	5	109	Kcho	1,252	50	Feb. 19, 1963	S,E ¾	Ind.	Slotted from 80 to 102 feet. Pump set at 101 feet. Reported yield 60 gal/min. Gravel packed from 73 to 109 feet.
406	J.J. Montague	J. Brown	1967	86	4	86	Kcho	1,250	62.8	Nov. 25, 1970	C,W	D	Slotted from 70 to 86 feet.

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-61-407	C.M. Caraway & Son, Inc.	J. Weir Water Well Drilling and Service	1969	120	8	120	Kcho	1,260	--	--	S,E	Irr	Slotted. Gravel packed.
408	do	do	1969	102	8	102	Kcho	1,247	--	--	S,E	Irr	Slotted from 80 to 102 feet. Gravel packed.
409	Elmon Kirby	F&F Drilling	1971	50	6	50	Kctp	1,220	24.4	May 1, 1972	S,E 2	Irr	Perforated from 20 to 50 feet. Gravel packed.
410	do	do	1971	50	6	50	Kctp	1,220	20	Feb. 14, 1971	S,E 2	Irr	Perforated from 20 to 50 feet. Gravel packed.
411	do	do	1971	50	6	50	Kctp	1,220	20	Feb. 15, 1971	S,E 2	Irr	Perforated from 20 to 50 feet. Gravel packed.
412	do	do	1971	50	6	50	Kctp	1,220	20	Feb. 16, 1971	S,E 2	Irr	Perforated from 20 to 50 feet. Gravel packed.
* 501	J.L. Ellis	Lightfoot and McCrum	1967	173	8	173	Kctp	1,291	90 83.5	May 30, 1967 May 14, 1970	S,E 15	Irr	Slotted from 45 to 60 and 110 to 166 feet. Pump set at 160 feet. Pumping level 160 feet at 225 gal/min. when drilled. Gravel packed. Temp. 69°F.[2]
603	Floy Walker	J. Brown	1967	247	5	247	Kche	1,370	180	-- -- 1967	S,E ¾	S	Slotted from 226 to 247 feet. Pump set at 220 feet.
* 701	E.G. McKinnon	Steward Drilling Company	1959	135	8	135	Kctp	1,260	57.4	Apr. 15, 1966	T,E 10	Irr	Pump set at 134 feet. Reported yield 160 gal/min. Pumping level 129.8 feet at 90 gal/min. on Aug. 3, 1966. Temp. 70°F.[4]
702	C.R. Butler	O.C. Johnson	--	57	3	--	Kctp	1,215	43	Jan. 21, 1960	N	D,S	
703	E.G. McKinnon	Steward Drilling Company	1964	130	7	130	Kctp	1,255	60.1 57 59.3	July 20, 1965 Mar. 22, 1968 Mar. 8, 1972	S,E 5	Irr	Completed from 40 to 60 and 90 to 130 feet. Pumping level 124.18 feet at 80 gal/min. on Aug. 3, 1966. Gravel packed. Observation well.[2,3,4]
* 704	C.B. Garner	Steward Drilling Company	1963	130	7	130	Kctp	1,255	70	July 30, 1965	S,E 5	Irr	Completed from 60 to 130 feet. Pump set at 123 feet. Reported yield 150 gal/min. Pumping level 105.58 on July 30, 1965. Gravel packed. Temp. 68°F.
705	Henry Van Terrell	Lightfoot and McCrum	1966	110	8	110	Kcho	1,250	65	Feb. 25, 1966	S,E 10	Irr	Slotted from 68 to 100 feet. Pumping level 100 feet at 120 gal/min. on Feb. 25, 1966.-Pump set at 100 feet. Gravel packed.[3]
706	John H. Foley	Petit and Kight Drilling Co.	1966	140	--	140	Kcho	1,265	66	Apr. 8, 1966	N	N	Slotted from 118 to 137 feet. Pumping level 137 feet at 90 gal/min. when drilled. Gravel packed. Unused irrigation well.[1,2]
707	J.O. Campbell	Bill Harris	1969	120	8	120	Kctp	1,235	47	July 12, 1969	S,E 5	Irr	Slotted from 50 to 120 feet. Cemented from 25 to 35 feet. Pump set at 110 feet. Reported yield 180 gal/min. Gravel packed.
708	Gayle Garner	Harris Drilling Company	1969	119	5	119	Kctp	1,250	30	June 18, 1969	S,E 3	Irr	Perforated from 30 to 45 feet and 60 to 80 feet and 100 to 119 feet. Cemented from 20 to 30 feet. Pump set at 108 feet. Reported yield 70 gal/min. Gravel packed.
709	Henry Van Terrill	Lightfoot and McCrum	1967	112	8	112	Kcho	1,250	71	Oct. 16, 1967	S,E 10	Irr	Slotted from 80 to 120 feet. Pumping level 100 feet at 150 gal/min. when drilled. Gravel packed.[2]
710	do	do	1969	128	8	128	Kctp	1,255	65	Oct. 19, 1967	S,E 10	Irr	Slotted from 67 to 70 and 86 to 118 feet. Pumping level 115 feet at 80 gal/min. when drilled. Gravel packed.[2]
* 711	do	F&F Drilling Company	1969	100	6	100	Kctp	1,230	57.6	Apr. 8, 1971	S,E 10	Irr	Perforated from 50 to 95 feet. Reported yield 80 gal/min. Gravel packed. Temp. 68°F.
* 712	do	do	1969	111	6	111	Kctp	1,250	67.7	do	S,E 10	Irr	Perforated from 55 to 110 feet. Pump set at 108 feet. Measured yield 108 gal/min. on July 18, 1972. Gravel packed. Temp. 70°F.
801	E.G. McKinnon	N.L. Box Drilling Contractor	1955	127	8	127	Kctp	1,245	48 47	Oct. 28, 1959 Jan. 21, 1960	T,E 7½	Irr	Completed from 47 to 83 feet. Pump set at 125 feet. Reported yield 100 gal/min.
* 802	Dave C. Sears	Steward Drilling Co.	1961	160	8	160	Kctp	1,258	--	--	S,E 7½	Irr	Pump set at 150 feet. Reported yield 150 gal/min. Measured yield 114.3 gal/min. on Aug. 3, 1966. Gravel packed. Temp. 70°F.[4]
803	do	--	1963	130	8	130	Kctp	1,258	52.2	July 29, 1965	S,E 5	Irr	Completed from 70 to 130 feet. Pump set at 130 feet. Reported yield 100 gal/min. Gravel packed.
804	do	--	1963	130	7	130	Kctp	1,251	71.4	July 29, 1965	S,E 5	Irr	Completed from 70 to 130 feet. Pump set at 120 feet. Reported yield 150 gal/min. Gravel packed.
805	do	Jones Drilling Co.	1964	130	8	130	Kctp	1,251	--	--	S,E 5	Irr	Completed from 70 to 130 feet. Pump set at 130 feet. Reported yield 100 gal/min. Pumping level 127.0 feet on July 29,1965. Gravel packed.
806	Dave. C. Sears	-- Ray	1966	205	10	--	Kctp	1,255	46.5	July 5, 1965	N	Irr	Gravel packed.
807	J.W. Pond	Lightfoot and McCrum	1967	88	7	88	Kche	1,282	37.5	May 14, 1970	S,E 3	Irr	Slotted from 40 to 80 feet. Reported yield 70 gal/min. Gravel packed.
* 808	H.L. Cox	Hester Drilling	1966	171	8-5/8	171	Kctp	1,270	71	May 8, 1970	S,E 15	Irr	Slotted from 85 to 155 feet. Pump set at 160 feet. Reported yield 230 gal/min. Pumping level 132.20 feet at 107.7 gal/min. on June 15, 1970 and 124.50 on June 16, 1971. Gravel packed. Temp. 69°F.[2&6]

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31-61-809	Floyd Stokes	Lightfoot and McCrum	1967	144	8-5/8	144	Kctp	1,260	56.7	do	S,E	Irr	Slotted from 45 to 50 feet, 62 to 70 feet and 113 to 135 feet. Pumping level 130 feet at 66 gal/min. when drilled. Gravel packed. Temp. 69°F.
* 810	Dave Sears	Wilmer Ocie Davis	1966	181	8-5/8	181	Kctp	1,255	50	May 21, 1970	S,E 15	Irr	Perforated from 54 to 180 feet. Pump set at 160 feet. Reported yield 180 gal/min. Pumping level 130 fet at 225 gal/min. when drilled. Gravel packed. Temp. 70°F.[2]
811	Dave Sears	W.O. Davis Drlg. and Pump Service	1969	164	10-3/4	164	Kctp	1,250	55	Jan. -- 1969	S,E 15	Irr	Slotted from 55 to 164 feet. Pumping level 110 feet at 325 gal/min. when drilled. Gravel packed.[2]
812	Bob Branum	do	1967	167	8-5/8	167	Kctp	1,238	53	Apr. 7, 1967	T,E	Irr	Slotted. Pump set at 160 feet. Pumping level 143 feet at 300 gal/min. when drilled. Gravel packed.[2]
813	Dick Gray	do	1967	138	12	138	Kctp	1,252	49	July -- 1970	S,E	Irr	Slotted from 49 to 138 feet. Pumping level 92 feet at 240 gal/min. when drilled. Gravel packed.[2]
814	Hollis Cox	Hester Drilling Co.	1969	135	8-5/8	135	Kctp	1,270	40.6	May 14, 1970	S,E 15	Irr	Slotted from 60 to 128 feet. Pumping level 50 feet at 175 gal/min. when drilled. Gravel packed.[2]
* 815	Joe Howell	Lightfoot and McCrum	1971	199	8-5/8	199	Kctp	1,290	71	May 2, 1972	S,E 15	Irr	Slotted from 72 to 97 feet and 135 to 192 feet. Pump set at 195 feet. Reported yield 275 gal/min. Estimated yield 180 gal/min. Gravel packed. Temp. 70°F.
901	Joe Howell	George Bolton	1963	180	7	180	Kctp	1,260	50	July 29, 1965	S,E 3	Irr	Completed from 110 to 180 feet. Pump set at 110 feet. Reported yield 120 gal/min. Pumping level 103.15 feet at 58.5 gal/min. on June 27, 1966. Gravel packed.[4]
902	Lee Campbell	J.T. Brown Water Well Driller	1965	180	7	180	Kche	1,318	--	--	S,E 3	D,S	Slotted. Pump set at 168 feet. Reported yield 12 gal/min. Gravel packed. Cemented 28 to 40 feet.
*41-02-110	O.C. Allen (Centex Rept.)	A. Turpin	1927	106	6	106	Kche	1,622	--	--	C,W	D,S	
111	Charles Skaggs	Harris Drilling Co.	1968	105	5	90	Kctp	1,590	36.3	Mar. 29, 1971	N	Irr	Perforated from 30 to 50 feet and 55 to 90 feet. Cemented from 20 to 30 feet. Reported yield 35 gal/min. Gravel packed. Observation well.[1]
112	do	do	1968	73	5	73	Kctp	1,580	34	Dec. 26, 1968	S,E	Irr	Perforated from 30 to 73 feet. Cemented from 10 to 20 feet. Pumping level 57 feet at 40 gal/min. when drilled. Gravel packed.[2]
113	Charles Skaggs	Harris Drilling Co.	1968	71	5	71	Kctp	1,585	37	Dec. 28, 1968	S,E	Irr	Perforated from 30 to 71 feet. Cemented from 10 to 20 feet. Pumping level 54 feet at 75 gal/min. when drilled. Gravel packed.[2]
114	do	do	1970	75	5	75	Kctp	1,580	30	June 11, 1970	S,E	Irr	Perforated from 30 to 75 feet. Reported yield 60 gal/min. Gravel packed.
115	Joe Gregory	do	1971	75	5	75	Kctp	1,563	30	Feb. 26, 1971	S,E 1	Irr	Perforated from 30 to 75 feet. Reported yield 24 gal/min. Gravel packed.
* 116	do	do	1971	75	5	75	Kctp	1,592	28.1	May 3, 1972	S,E 1½	Irr	Perforated from 35 to 75 feet. Reported yield 45 gal/min. Gravel packed. Temp. 69°F.
117	Reno McGreggar	do	1971	51	5	51	Kctp	1,554	25	Mar. 2, 1971	S,E 1	Irr	Perforated from 25 to 51 feet. Reported yield 30 gal/min. Gravel packed.
118	do	do	1971	74	5	74	Kctp	1,560	23.8	May 3, 1972	N	Irr	Perforated from 25 to 74 feet. Reported yield 35 gal/min. Gravel packed.
119	do	do	1971	72	5	72	Kctp	1,560	22.7	do	N	Irr	Perforated from 25 to 72 feet. Reported yield 30 gal/min. Gravel packed.
* 201	G.D. Cagle	--	1966	60	7	50	Kctp	1,505	14.1	July 20, 1971	S,E 1	Irr	Slotted from 30 to 50 feet. Pump set at 45 feet. Pumping level 21.4 feet at 10.5 gal/min. on Sept. 4, 1970. Gravel packed. Temp. 69°F. and 66°F.[2,4,6]
202	do	-- Flowers	1967	60	7	50	Kctp	1,512	--	--	S,E 1	Irr	Slotted from 30 to 50 feet.Pump set at 45 feet. Measured yield 20.7 gal/min. on Sept. 4, 1970. Gravel packed.[4]
203	do	do	1967	60	7	50	Kctp	1,506	--	--	S,E 1	Irr	Slotted from 30 to 50 feet. Pump set at 45 feet. Measured yield 15.5 gal/min. on Sept. 4, 1970. Gravel packed.[4]
204	do	do	1967	60	7	50	Kctp	1,510	--	--	S,E 3	Irr	Slotted from 30 to 50 feet. Pump set at 45 feet. Measured yield 25.1 gal/min. on Sept. 4, 1970. Gravel packed.[4]
205	R.J. Reed	Harris Drilling Co	1971	70	5	70	Kctp	1,540	26	July 27, 1971	S,E 3	Irr	Perforated from 21 to 70 feet. Pumping level 70 feet at 70 gal/min. when drilled. Gravel packed.[2]
206	do	do	1971	78	5	78	Kctp	1,540	26	July 28, 1971	S,E 3	Irr	Perforated from 21 to 78 feet. Pumping level 71 feet at 70 gal/min. when drilled. Gravel packed.
207	do	do	1971	70	5	70	Kctp	1,540	26	July 29, 1971	S,E	Irr	Perforated from 21 to 70 feet. Pumping level 60 feet at 60 gal/min. when drilled. Gravel packed.[2]

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-02-301	H.A. Jones	do	1968	67	7	67	Kctp	1,509	20.9	Feb. 23, 1970	J,G 2	Irr	Slotted from 24 to 40 feet and 48 to 67 feet. Pump set at 66 feet. Reported yield 45 gal/min. Cemented from 10 to 20 feet. Gravel packed.
302	do	do	1968	67	7	67	Kctp	1,509	20.1	do	J,G 2	Irr	Slotted from 24 to 40 feet and 48 to 67 feet. Reported yield 50 gal/min. Cemented from 10 to 20 feet. Gravel packed.
303	L.D. Clark	do	1967	50	7	50	Kctp	1,468	20	Mar. 24, 1967	S,E 3	Irr	Slotted from 20 to 50 feet. Reported yield 50 gal/min. Gravel packed.
304	do	do	1967	50	7	50	Kctp	1,470	20	do	S,E 3	Irr	Slotted from 20 to 50 feet. Reported yield 50 gal/min. Gravel packed.
305	do	do	1968	60	7	60	Kctp	1,478	20	Nov. 25, 1968	S,E 3	Irr	Slotted from 23 to 60 feet. Pump set at 55 feet. Pumping level 30 feet at 50 gal/min. when drilled. Cemented from 10 to 20 feet. Gravel packed.[2]
306	do	do	1968	60	7	60	Kctp	1,476	20	do	S,E 3	Irr	Slotted from 23 to 60 feet. Pump set at 55 feet. Cemented from 10 to 20 feet. Reported yield 50 gal/min. Gravel packed.
307	do	do	1968	60	7	60	Kctp	1,473	20	do	S,E 3	Irr	Slotted from 23 to 60 feet. Pump set at 55 feet. Cemented from 10 to 20 feet. Reported yield 50 gal/min. Gravel packed.
* 309	Jackie Clark	Harris Drilling Co.	1971	71	7	71	Kctp	1,475	35	Mar. 14, 1971	S,E 3	Irr	Slotted from 35 to 71 feet. Reported yield 70 gal/min. Gravel packed. Temp. 68°F.
310	do	do	1971	70	7	70	Kctp	1,478	20	Mar. 9, 1971	S,E 3	Irr	Slotted from 35 to 70 feet. Reported yield 40 gal/min. Gravel packed.
* 311	L.D. Clark	do	1971	74	7	74	Kctp	1,478	25	Apr. 4, 1971	S,E	Irr	Slotted from 25 to 74 feet. Cemented from 10 to 15 feet. Reported yield 70 gal/min. Gravel packed. Temp. 68°F.
312	do	do	1971	66	7	66	Kctp	1,478	25	Apr. 6, 1971	S,E	Irr	Slotted from 25 to 66 feet. Reported yield 70 gal/min. Gravel packed.
603	Mrs. H.T. Redwine	-- Coffee	1906	90	--	--	Kche	1,570	78.4 78.5	Mar. 24, 1966 Mar. 26, 1969	C,W	S	Observation well.[3]
605	Dale Steele	Harris Drilling Co.	1968	72	7	72	Kctp	1,480	35	Dec. 27, 1968	S,E	Irr	Slotted from 32 to 72 feet. Reported yield 50 gal/min. Gravel packed.
606	do	do	1968	55	7	55	Kctp	1,455	20	Dec. 26, 1968	N	Irr	Slotted from 22 to 55 feet. Pumping level 40 feet at 50 gal/min. when drilled. Gravel packed.[2]
* 607	do	do	1968	66	5	66	Kctp	1,460	30	Dec. 28, 1968	S,E	Irr	Perforated from 30 to 66 feet. Reported yield 18 gal/min. Gravel packed. Temp. 69°F.
* 901	D.C. Fry	Harris Drilling Co.	1969	111	5	111	Kctp	1,565	71.5	Mar. 6, 1969	N	D	Perforated from 80 to 111 feet. Gravel packed. Temp. 68°F.
* 03-101	Roland Collins	Steward Drilling Co.	1957	80	8	80	Kctp	1,466	30 28	Oct. 28, 1959 Mar. 6, 1967	T,E 5	Irr	Measured yield 41.1 gal/min. on Aug. 7, 1967. Temp. 69°F. and 70°F. Observation well.[3,4,6]
102	Jackie Clark	Harris Drilling Co.	1971	80	7	80	Kctp	1,480	21.7	May 3, 1972	S,E 3	Irr	Slotted from 40 to 80 feet. Cemented from 20 to 30 feet. Reported yield 60 gal/min. Gravel packed.
103	Jackie Clark	Harris Drilling Co.	1971	85	7	85	Kctp	1,483	24.1	May 3, 1972	S,E 3	Irr	Slotted from 45 to 85 feet. Cemented from 20 to 30 feet. Reported yield 80 gal/min. Gravel packed.
201	B.E. Hanson	Comco Drilling Co.	1967	101	6	101	Kctp	1,428	--	--	S,E 5	Irr	Perforated from 35 to 50 feet and 70 to 90 feet. Pump set at 90 feet. Reported yield 65 gal/min. Gravel packed.
* 202	do	do	1967	121	6	121	Kctp	1,414	--	--	S,E 5	Irr	Perforated from 40 to 50 feet and 90 to 110 feet. Pump set at 110 feet. Gravel packed. Temp. 68°F.
* 203	do	L.L. Spears Water Well Drilling	1966	40	7	40	Kctp	1,410	--	--	S,E 1½	Irr	Slotted. Pump set at 40 feet. Pumping level 34 fet at 29.7 gal/min. on June 26, 1967. Gravel packed. Temp. 68°F.[4]
204	do	--	1964	51	7	51	Kctp	1,421	--	--	N	Irr	
205	F.I. Rogers	Harris Drilling Co.	1966	118	6	--	Kctp	1,421	--	--	N	Irr	
206	Cordell Reed	do	1968	95	5	95	Kctp	1,415	35	Nov. 20, 1968	J,E ¾	D	Perforated from 35 to 95 feet. Reported yield 10 gal/min. Gravel packed.
301	Don P. Chester	--	--	99	--	--	Kctp, Pn	1,350	--	--	N	N	
* 302	Q.E. Gressett	Wylie Drilling Co.	1969	140	5	140	Pn	1,356	--	--	S,E 1½	Irr	Perforated from 80 to 140 feet. Reported yield 25 gal/min. Gravel packed. Temp. 69°F.
303	do	do	1971	160	5	160	Pn	1,348	--	--	S,E 1½	Irr	Perforated from 100 to 160 feet. Reported yield 10 gal/min. Gravel packed.
401	P.D. Hall	--	1915	110	8	110	Kctp	1,430	--	--	J,E 1	P	

See footnotes at end of county.

Table 16. - Records of Wells
COMANCHE COUNTY - Continued

Well	Owner	Driller	Date Completed	Depth of Well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-03-402	Delbert Scott	Harris Drilling Co.	1967	50	5	50	Kctp	1,425	19	July 22, 1967	J,E ½	D	Perforated from 19 to 50 feet. Cemented from 10 to 15 feet. Reported yield 6 gal/min. Gravel packed.
502	Duane Lackey	Harris Drilling Co.	1969	98	5	98	Kctp	1,412	34	Aug. 1, 1969	J,E	D	Perforated from 38 to 58 feet and 78 to 98 feet. Cemented from 15 to 25 feet. Pumping level 56 feet at 30 gal/min when drilled. Gravel packed.
601	L.L. Hart	Watt Foster	1959	464	7	114	Kcho	1,390	50	June 23, 1966	C,W	D,S	Drilled as oil test. Plugged back from 464 to 150 feet.
602	Keith Johnson	Harris Drilling Co.	1966	80	8	80	Kctp	1,340	8	Jan 27, 1971	N	N	Slotted from 60 to 80 feet. Reported yield 60 gal/min. Abandoned irrigation well. Gravel packed.
603	do	do	1967	105	6	105	Kctp	1,375	40.4	do	N	Irr	Perforated from 40 to 107 feet. Cemented from 20 to 30 feet. Pumping level 85 feet at 50 gal/min. when drilled. Gravel packed.[1,2]
604	do	do	1967	106	5	103	Kctp	1,373	35	-- -- 1967	S,E 2	Irr	Perforated from 40 to 106 feet. Pump set at 100 feet. Measured yield 60 gal/min. on Sept. 27, 1972. Gravel packed. Temp. 68°F.
605	do	do	1967	100	5	100	Kctp	1,378	35	-- -- 1967	S,E 2	Irr	Perforated from 35 to 100 feet. Cemented from 20 to 30 feet. Reported yield 53 gal/min. Gravel packed.
606	James Slider	do	1969	110	5	110	Kctp	1,367	20	Aug. 26, 1969	S,E 1½	S Irr	Perforated from 20 to 40 feet and 65 to 110 feet. Cemented from 10 to 20 feet. Reported yield 75 gal/min. Gravel packed.
901	Walter Durham, Jr.	Hoff Irr. Co	1950	136	6	90	Kctp	1,418	--	--	C,W	D,S	Plugged back from 136 to 90 feet.
902	Floyd Prather	--	--	58	5	58	Kctp	1,395	--	--	J,E	D	
903	W.C. Chilton	Hoff Irr. Co.	1952	113	5	113	Kche	1,425	50.5 50.9 48.7	Oct. 8, 1965 Mar. 26, 1969 Oct. 10, 1971	N	N	Completed from 45 to 93 feet. Abandoned irrigation well. Gravel packed. Observation well.[1,3]
04-101	C.E. Irby	Holdridge Drilling Co.	1964	119	6	119	Kctp	1,360	--	--	T,E 1½	D	Slotted from 50 to 60 feet, 85 to 95 feet and 105 to 115 feet. Reported yield 30 gal/min. Gravel packed.
* 102	do	do	1966	81	5	81	Kctp	1,370	36.8	May 7, 1970	C,W	S	Slotted from 42 to 72 feet. Reported yield 18 gal/min. Gravel packed. Temp. 70°F.
* 103	Fred Curry	Harris Drilling Co.	1967	115	7	115	Kctp	1,358	30	June 3, 1967	S,E 5	Irr	Slotted from 55 to 115 feet. Gravel packed. Temp. 69°F.
104	do	do	1969	120	7	120	Kctp	1,363	50	June 23, 1969	S,E 5	Irr	Slotted from 45 to 55 feet and 100 to 120 feet. Reported yield 75 gal/min. Gravel packed.
105	C.B. Williams Dairy	do	1968	58	5	58	Kctp	1,293	20	Aug. 30, 1968	S,E 1	Ind	Perforated from 22 to 58 feet. Reported yield 25 gal/min. Gravel packed.
201	A.L. Hendrix	J.W. Reeves	1967	40	7	17.5	Kctp	1,238	--	--	S,E 1½	Irr	Open hole completion from 17.5 to 40 feet. Measured yield 51.6 gal/min.[4]
* 202	do	do	1967	40	7	40	Kctp	1,232	--	--	S,E 1	Irr	Slotted from 20 to 40 feet. Measured yield 12.2 gal/min. Gravel packed. Temp 68°F.[4]
203	do	do	1967	40	6	40	Kctp	1,232	--	--	S,E 1	Irr	Slotted from 20 to 40 feet. Pump set at 39 feet. Measured yield 30 gal/min. Gravel packed.[4]
* 204	do	do	1967	50	6	50	Kctp	1,266	21.6 25	Mar. 26, 1969 Oct. 7, 1971	S,E 2	Irr	Slotted from 35 to 50 feet. Powre and yield test. Gravel packed. Temp 68°F. Observation well.[3,4]
205	do	Comco Drilling Co.	1967	50	8	50	Kctp	1,268	--	--	S,E 2	Irr	Slotted from 35 to 50 feet. Gravel packed.[4]
206	do	do	1967	50	8	50	Kctp	1,266	--	--	S,E 2	Irr	Slotted from 35 to 50 feet. Gravel packed.[4]
* 302	U.S. Army Corps of Engineers	Jones Drilling Co.	1964	66	--	--	Kctp	1,190	--	--	--	P	
* 303	do	do	1964	63	--	--	Kctp	1,200	--	--	--	P	
* 401	Comanche Concrete Co.	Harris Drilling Co.	1968	80	5	80	Kche	1,350	--	--	S,E 1	Ind	Perforated from 37 to 80 feet. Cemented from 16 to 20 feet. Pump set at 80 feet. Reported yield 20 gal/min. Pumping level 34 feet a40 gal/min. when drilled. Gravel packed.[2]
501	Elton McDonald	Hoff Irr. Co.	1964	64	6	64	Kctp	1,240	27	July 14, 1965	T,E 5	Irr	Estimated yield 60 gal/min.
502	do	Jack Leonard Drilling Co.	1965	116	8	116	Kcho	1,287	81.4 67.4	July 29, 1965 Mar. 27, 1969	S,E 5	Irr S	Completed from 95 to 116 feet. Pump set at 114 feet. Reported yield 120 gal/min. Pump set at 92.3 feet at 67 gal/min. on June 29, 1966. Gravel packed. Observation well.[2,3,4]
* 503	Brooks Kerley	Steward Drilling Co.	1964	125	8	89	Kctp	1,280	83.5	July 15, 1965	S,E 5	Irr	Pump set at 118 feet. Reported yield 115 gal/min. Temp 70°F.
504	Lloyd Biggs	Pickett Drilling Co.	1964	126	7	126	Kctp	1,291	61.3	Sept. 29, 1965	S,E 7½	Irr	Completed from 60 to 78 feet and 94 to 120 feet. Pump set at 118 feet. Reported yield 180 gal/min. Gravel packed.

See footnotes at end of county.