TEXAS WATER DEVELOPMENT BOARD

REPORT 158

GROUND WATER IN DICKENS AND KENT COUNTIES, TEXAS

By

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United States Geological Survey

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ABSTRACT

Dickens and Kent Counties are in the northwestern part of Texas, south of the Panhandle area. About 50 square miles in northwestern Dickens County is in the High Plains section of the Great Plains physiographic province. The remainder of the area is in the Osage Plains section of the Central Lowlands province.

Rocks of Permian, Triassic, Cretaceous, Tertiary, and Quaternary age are exposed in the two-county area. These rocks, except those of Cretaceous age, contain the aquifers that yield small to moderate quantities of water for irrigation, industrial use, public supply, domestic supply, and livestock use. The principal aquifer in most of the report area is the Quaternary alluvium. In the High Plains part of the area, the Ogallala Formation of Tertiary age is the major aquifer.

In 1964 an estimated 15,500 acre-feet of water was withdrawn from the Quaternary alluvium for public supply, irrigation, and industrial use, of which 437 acre-feet and 13,000 acre-feet were for public supply and irrigation, respectively. Since 1966, the water supply for the city of Spur has consisted entirely of surface water obtained from the White River Municipal Water District; consequently, the amount of water withdrawn from the Quaternary alluvium for public supply, which was 121 acre-feet in 1968, has been reduced. The Ogallala Formation supplied an estimated 800 acre-feet of water for irrigation in 1964 and probably less in 1968.

Water in the various aquifers ranges from fresh to very saline. Variations in the chemical quality of the water in some aquifers are minor. In others, the variations are of considerable magnitude.

The data collected during this investigation are inadequate for an accurate appraisal of the potential of the aquifers; however, the data available indicate that the aquifers are not capable of furnishing additional large quantities of water for future development.

GROUND WATER IN DICKENS AND KENT COUNTIES, TEXAS

INTRODUCTION

Location and Economy of the Area

Dickens and Kent Counties are in the northwestern part of Texas, south of the Panhandle area (Figure 1). Dickens County has an area of 930 square miles and a population of 4,963 (1960 census). The town of Dickens, the county seat, and Spur, the principal commercial center, had respective populations of 302 and 2,300 according to the 1960 census.

Figure 1.—Location of Dickens and Kent Counties

Kent County, which adjoins Dickens County on the south, has an area of 901 square miles and a population of 1,727 (1960 census). Jayton, the county seat and commercial center, had a population of 659 according to the 1960 census.

The economy of Dickens County is based on farming and ranching; the economy of Kent County is based on farming, ranching, and oil production. Much of the land in the two counties is rangeland or pasture used for raising beef cattle. However, the income from crops is probably greater than the income from livestock. The income from the production of oil is an important part of the economy in Kent County, but of minor importance in Dickens County where only a small quantity of oil is produced from a few wells. According to the Texas Almanac, about 146,000,000 barrels of oil have been produced in Kent County, since 1946 (Dallas Morning News, 1969, p. 302).

Purpose and Scope of the Investigation

In May 1967, the U.S. Geological Survey, in cooperation with the Texas Water Development Board, began a study to appraise the ground-water resources of Dickens and Kent Counties. The purpose of the study was to obtain basic data on the occurrence, location, and quality of ground water in the two-county area. Particular emphasis was placed on the evaluation of the aquifers providing water for municipal supply, irrigation, and industrial use and of other aquifers from which additional supplies of water for these uses might be obtained.

The major part of the basic data for this report was obtained from a field inventory of irrigation, municipal, and industrial wells; from an inventory of springs; from the analyses of water samples collected during the well inventory; and from field studies of the geology and topography as related to the occurrence of ground water.

Preliminary topographic maps on a scale of 1:24,000 with a contour interval of 10 feet were available for all of the report area except the southern half of Kent County. The altitudes of the wells were determined from these maps. In southern Kent County, the altitudes of the wells were estimated from topographic maps published by the U.S. Geological Survey on a scale of 1:250,000 with a contour interval of 50 feet.

Other information was compiled from the records and reports of the U.S. Geological Survey, the Texas Water Development Board, and other State and Federal agencies.

Records of wells and springs are given in Table 6, and the locations of wells are shown on Figure 6. Wells and springs from which water samples were collected for chemical analyses are identified on Figure 6 by a bar over the well number. The results of the chemical analyses of the water samples are given in Table 8.

Where relative well yields are discussed in this report, small yields are less than 100 gpm (gallons per minute), moderate yields are 100 to 500 gpm, and large yields are more than 500 gpm.

Detailed studies of the ground-water resources of Dickens and Kent Counties have not been made, but at various times information regarding ground water in these counties has been collected for special purposes or as part of a regional study (Cronin and others, 1963; Baker and others, 1963; Stevens and Hardt, 1965). Since 1959, the Texas Water Development Board has made water-level measurements annually in 21 observation wells in Dickens County. Several publications that contain some information about the ground water in Dickens and Kent Counties are included in the list of references given at the end of this report.

Climate, Physiography, and Drainage

The climate of Dickens and Kent Counties is mild and semiarid. Humidity is low and evaporation is high. According to records of the U.S. Weather Bureau, the normal annual temperature at Spur is 62.5°F., the normal annual precipitation is 20.24 inches, and the average annual evaporation is 63.45 inches. Annual precipitation at Jayton in east-central Kent County and at Polar in southwestern Kent County averages 17.97 and 19.19 inches, respectively.

The winter season is cool with occasional severe cold spells, usually of short duration. High winds accompanied by dust storms occur often in the spring. The summers are hot and temperatures often exceed 100°F.

Approximately 75 percent of the annual precipitation occurs during the growing season, which averages about 215 days.

The two-county area includes parts of two physiographic sections. In the northwestern part of Dickens County, an area of about 50 square miles is in the High Plains section of the Great Plains province. The rest of the report area is in the Osage Plains section of the Central Lowlands province.

The High Plains section is separated from the Osage Plains section by an escarpment which generally trends northeastward across the northwestern part of Dickens County. The escarpment is 300 or more feet high, is precipitous in places, but slopes gradually in other places. A band of rough broken country, referred to as the "breaks of the plains," extends along the base of the escarpment.

The Osage Plains section in Dickens and Kent Counties is a part of an essentially eastward sloping plain characterized by rough broken land along the entrenched streams and level to undulating land on the interstream divides. The altitude of the land surface ranges from about 2,500 feet above mean sea level in the vicinity of Afton in northern Dickens County to about 1,900 feet along Croton Creek in northeastern Kent County.

Approximately the northern third of Dickens County is drained by tributaries of the Red River system. The remainder of the two-county area is drained by the Salt Fork and Double Mountain Fork Brazos River and their tributaries.

Croton Creek, a deeply entrenched tributary of the Salt Fork Brazos River drains much of the eastern part of Dickens County and the northeastern part of Kent County. The area drained by this stream is heavily dissected and is referred to as the "Croton breaks." Salt flats, so named because they occur at places where salt water is discharged from the surrounding rocks, are present along two tributaries of Croton Creek in northeastern Kent County. Duck Creek originates in northwestern Dickens County and flows southward to join the Salt Fork Brazos River in Kent County. The area along Duck Creek, especially north of Spur, is the most heavily irrigated part of the report area.

Streamflow in the area is small, except after heavy rains. The larger streams, such as the Salt Fork and Double Mountain Fork Brazos River, have wide, flat, sandy beds. Ordinarily the water flows in a narrow channel or is ponded in pools scattered along the stream channels. Some of the creeks receive discharge from springs, part of which is lost to evaporation or percolates into the sandy streambeds.

Well-Numbering System

The well-numbering system used in this report is the one adopted by the Texas Water Development Board for use throughout the State. Under this system, each 1-degree quadrangle in the State is given a number consisting of two digits. These are the first two digits in the well number. Each 1-degree quadrangle is divided into 7½-minute quadrangles which are given two digit numbers from 01 to 64. These are the third and fourth digits of the well number. Each 7½-minute quadrangle is subdivided into 2½-minute quadrangles and given a single digit number from 1 to 9. This is the fifth digit of the well number. Finally, each well within a 2½-minute quadrangle is given a 2-digit number in the order in which it is inventoried, starting with 01. These are the last two digits of the well number. Only the last three digits of the well numbers are shown next to the well

symbols on the well-location maps (Figure 6); the 7½-minute quadrangles are numbered in the northwest corners, and 1-degree quadrangles are shown by large bold numbers. In addition to the 7-digit well number, a 2-letter prefix is used to identify the county. The prefix for Dickens County is HY; the prefix for Kent County is RH.

Acknowledgments

The author is indebted to the many well owners who supplied information about their wells and granted permission to make water-level measurements in the wells. The cooperation and assistance given by personnel of Federal, State, county, and municipal agencies and departments are gratefully acknowledged. Appreciation is extended to the well drillers who furnished data on wells they had drilled, and to the Dickens County Electric Cooperative, Inc. for data concerning the use of electric power by irrigation wells.

GEOLOGIC UNITS AND THEIR WATER-BEARING CHARACTERISTICS

The rocks that crop out in Dickens and Kent Counties range in age from Paleozoic to Cenozoic, and include rocks belonging to the Permian, Triassic, Cretaceous, Tertiary, and Quaternary Systems (Figure 2). Rocks ranging in age from Precambrian to Paleozoic are present in the subsurface. The geologic history of Dickens and Kent Counties that is pertinent to this report begins with the Permian; therefore, discussion of the older rocks in the subsurface is omitted. The geologic and water-bearing properties of the exposed formations are summarized in Table 1.

Permian System

Rocks of Permian age underlie all of Dickens and Kent Counties and are exposed over a large part of the two-county area. The Permian rocks that crop out in the report area belong to the Whitehorse Group and the Quartermaster Formation. The rocks of the Whitehorse Group overlie older Permian rocks in the subsurface and are overlain by rocks of the Quartermaster Formation. The exposed Permian rocks are about 1,000 feet thick and dip westward at an average rate of about 25 feet per mile.

The Quartermaster Formation consists of interbedded shale, sandstone, gypsum, and anhydrite, mostly in various shades of red. The Whitehorse Group consists of sand, sandstone, shale, gypsum, dolomite, and salt. The redbed strata that crop out in northeastern Kent County consist of poorly consolidated, very fine red sand and silt, and locally poorly cemented sandstone and siltstone interbedded with gypsum. Salt beds ranging in thickness from 4 to 75 feet are present in the subsurface (McMillion, 1958, p. 14). These give rise to salt springs which contaminate surface water supplies.

Ground water in the Permian rocks in Dickens and Kent Counties occurs under complex hydrologic conditions, involving both confined and unconfined aquifers. In general, ground water at shallow depths, about 200-250 feet, occurs under water table conditions.

Very little information is available concerning the hydrologic properties of the Permian rocks. The yields of wells tapping these rocks are usually small, suggesting that the permeabilities of the rocks are low. Some irrigation wells in Kent County are bottomed in a fine red sand of probable Permian age. The yields of these wells are small and operating difficulties have been experienced because of the amount of sand being pumped from the wells. Small yields are also obtained from wells pumping from zones in which solution channels or cavities have developed in the Permian rocks.

The amount of ground water being pumped from aquifers in the Permian rocks is not known, but probably is small. The limited amount of information available indicates that the aquifers in the Permian rocks do not have the potential to supply large quantities of water for irrigation or public supply. Furthermore, the quality of the water probably is undesirable for public supply, unsuitable for many industrial uses, and limited to irrigation of certain types of crops on land having good drainage.

Triassic System

Rocks of the Dockum Group of Late Triassic age underlie all of the High Plains in northwestern Dickens County and are continuous with those that underlie the Southern High Plains in Texas and New Mexico. The Triassic rocks are exposed along the escarpment of the High Plains, in the "breaks of the plains," and in outcrops of small areal extent in both Dickens and Kent Counties. The rocks of the Dockum Group unconformably overlie rocks of Permian age and dip to the southeast. The thickness of the Triassic rocks in the report area is estimated to be about 400 feet.

The Dockum Group in the report area consists mainly of shale, sandy shale, sandstone, and conglomerate. In places, the rocks consist chiefly of sandstone and conglomerate. Because the predominant color of the Triassic rocks is red, they are commonly referred to as "red beds."

Ground water is obtained from the Triassic rocks for rural domestic supply and livestock by wells and from springs along the escarpment of the High Plains and in the "breaks of the plains." The water supply for the town of Dickens was formerly obtained from wells in the Triassic rocks. The yields of these public-supply wells ranged from 10 to 50 gpm in 1946 (Broadhurst,

Table 1.—Geologic Units and Their Water-Bearing Properties

ERA	SYSTEM	SERIES OR GROUP	FORMATION OR UNIT	THICKNESS (FEET)	LITHOLOGY	WATER-BEARING PROPERTIES
Cenozoic	Quaternary	Holocene and Pleistocene Series undifferentiated	Alluvium (includes river alluvium, terraces, and sand dunes.)	0-140 ±	Windblown sand and silt, sand, clay, and gravel.	Yields small to moderate quantities of water for irrigation, public supply, industrial, and domestic and livestock supply.
	Tertiary	Pliocene Series	Ogallala Formation	0-400 ±	Fine to coarse sand and gravel, clay, silt, and caliche.	Yields small to moderate quantities of water in Dickens County for irrigation, public supply, and domestic and livestock supply.
Mesozoic	Cretaceous	Fredericksburg Group	Edwards Limestone Comanche Peak Limestone Walnut Clay	0-100	Sand, sandstone, conglomerate, limestone shale.	Occurs as small isolated remnants; not important as a source of water.
		Trinity Group	Antlers Sand of Hill (1894)			
	Triassic	Dockum Group	—	0-400±	Clay, shale, and sandy shale, cross-bedded sandstone, conglomerate.	Yields small quantities of water for domestic and livestock purposes. Formerly source of water supply for town of Dickens.
Paleozoic	Permian	—	Quartermaster Formation	1,000	Sand, sandstone shale, gypsum anhydrite, dolomite and salt.	Yields meager to small quantities of water, generally of poor chemical quality, for rural domestic, livestock watering, and a few irrigation wells.
		Whitehorse Group	—			

Sundstrom, and Weaver, 1951, p. 44-45), but the wells are unused or have been destroyed since the town developed a new source of water supply from wells drilled in the Quaternary alluvium. The amount of ground water presently obtained from the Triassic rocks is not known but probably is very small.

Very little information is available concerning the hydrologic properties of the Triassic rocks in the report area. The fact that the wells yield only small quantities of water suggests that permeabilities of rocks are low. Because of this and because of the limited area extent of the Triassic rocks in Dickens and Kent Counties, the Dockum Group is not considered as a source of large supplies of ground water for future development.

Cretaceous System

Rocks of Cretaceous age consisting of the Antlers Sand of Hill (1894) (Trinity Group), Edwards Limestone, Comanche Peak Limestone, and Walnut Clay crop out in several small areas on topographic high points in southwestern Kent County. The Cretaceous rocks overlie the Dockum Group and have a thickness of about 100 feet or less.

Although the amount of water, if any, produced from the rocks of Cretaceous age in the report area is unknown, they are not considered an important source of water supply. Moreover, because the areal extent of the Cretaceous rocks in the report area is very small (Figure 2), they should not be considered as a source of a large supply of water for the future.

The rocks of Cretaceous age are not considered to be important to the hydrology of the report area and will not be discussed further in this report.

Ogallala Formation

The Ogallala Formation of Pliocene age, which crops out along the face of the High Plains Escarpment, underlies all of the High Plains part of Dickens County. It is a part of and continuous with the Ogallala Formation that underlies the Southern High Plains of Texas and New Mexico.

The Ogallala Formation consists of red and yellow clay, silt, fine to coarse gray and buff sand, gravel, and caliche. The sand, gravel, and silt deposits are cemented in places, chiefly by calcium carbonate. The cementation occurs irregularly throughout the formation, and the degree of cementation ranges from well cemented to loosely cemented. Because it is resistant to erosion, the caliche forms the "caprock" of the High Plains Escarpment.

The individual beds or lenses of silt, sand, and gravel are not continuous over wide areas, but generally pinch out or grade both laterally and vertically into finer or coarser material.

The thickness of the Ogallala Formation, which reaches a maximum of 350 to 400 feet in Dickens County, varies greatly because of the irregularity of the surface on which it was deposited. Because of the contrast between the Ogallala and the underlying Triassic "redbeds" the contact is readily recognized in most places in the High Plains of Texas. However, in some of the drillers' logs for wells drilled in the Ogallala in Dickens County, the contact of the Ogallala and the underlying Triassic rocks cannot be readily identified. Some of the wells probably have been drilled into solution cavities, and some of the wells assumed to be drilled in the Ogallala may actually penetrate the Triassic rocks. The drillers' logs of three wells (HY-22-09-401, HY-23-16-915, and HY-23-24-603) in Dickens County are given in Table 7.

The Ogallala Formation in Dickens County furnishes water for irrigation, public supply, rural domestic supply, and livestock. Ground water in the formation generally occurs under water table conditions, but locally a slight artesian pressure may exist where the water is confined beneath lenticular bodies of clay.

The hydrologic properties of the Ogallala Formation in Dickens County have not been determined. Tests made of the Ogallala in other parts of the Southern High Plains of Texas indicate that the coefficient of storage is about 15 percent (Cronin, 1969, p. 7).

The yields of 44 wells in the Ogallala Formation in Dickens County range from small to moderate. The amount of water pumped for irrigation in 1959 by 26 wells tapping the Ogallala Formation in Dickens County was about 600 acre-feet. The estimated pumpage for irrigation in 1964 was 800 acre-feet. The quantity of water pumped in 1968 is not known, but it probably was considerably less than the 800 acre-feet pumped in 1964, because of the distribution of rainfall before and during the growing season. The estimated amount of water pumped from the Ogallala Formation for irrigation and public supply during various years is given in Table 2.

The quantity of water in storage that would be available to wells in the Ogallala Formation cannot be accurately determined with the information available. As indicated previously, some of the wells assumed to be completed in the Ogallala may penetrate the underlying Triassic rocks. In such wells, the saturated zone may be in either the Ogallala, the Triassic rocks, or both.

The thickness of the saturated zone in the Ogallala Formation ranges from zero to about 50 feet (Cronin, 1969, p. 7, sheet 4). An approximation of the quantity of water in storage that would be available to wells can be made on the basis of the following assumptions:

(1) That the average thickness of the saturated zone is 25 feet, the midpoint of the zero to 50 feet increment; (2) that the area in which the thickness of the saturated zone is 25 feet is about 32,000 acres; and (3) that the storage coefficient is 15 percent. The quantity of water in storage that would be available to wells would be equal to the product of the area (in acres) and the thickness of the saturated zone (in feet) multiplied by the storage coefficient; the estimated quantity, therefore, is about 120,000 acre-feet. This estimate is provisional, but is an indication of the order of magnitude of the amount of water in storage.

If the estimated amount of water in storage is of the proper order of magnitude and the quantity of water pumped does not increase greatly, water would be available from the Ogallala for a long period of time. However, the area occupied by the Ogallala is small when compared to the combined area of Dickens and Kent Counties. Therefore, the water in the Ogallala Formation, although important as a source of water supply for use on the High Plains of Dickens County, is relatively unimportant as a source of water supply for other parts of the two-county area.

Since 1959, the Texas Water Development Board has made water-level measurements annually in three observation wells in the Ogallala Formation in Dickens County. The results of these measurements are given in Table 3 and the hydrograph of well HY-23-16-601 is shown on Figure 3. The records show that the water level declined almost 23 feet in well HY-23-16-901 but only 4.8 feet and 6.30 feet in wells HY-23-16-601 and HY-23-24-301, respectively. Well HY-23-16-901 has been destroyed, probably because it was not an effective production well, and the declines in the other two observation wells probably are more representative of the decline of the water table in the Ogallala Formation in Dickens County during the period of 1959-68.

Quaternary Alluvium

The Quaternary alluvium in Dickens and Kent Counties occurs as terrace and flood-plain deposits along the principal streams and their tributaries and as accumulations of windblown sand. The alluvium is underlain by Permian and Triassic rocks, except in a small area in northern Dickens County where the sediments, mainly windblown sand, may be underlain by the Ogallala Formation.

The Quaternary alluvium consists of fine to coarse sand, clay, silt, and gravel. The composition of the sediments varies from place to place. The beds are not continuous over wide areas, but tend to grade laterally into beds of finer or coarser materials. The windblown deposits consist of sand and silt. The thickness of the alluvium ranges from zero to about 150 feet in the vicinity of Afton. The location and areal extent of the deposits is shown on Figure 2. The drillers' logs of 10 wells drilled in the alluvium are given in Table 7.

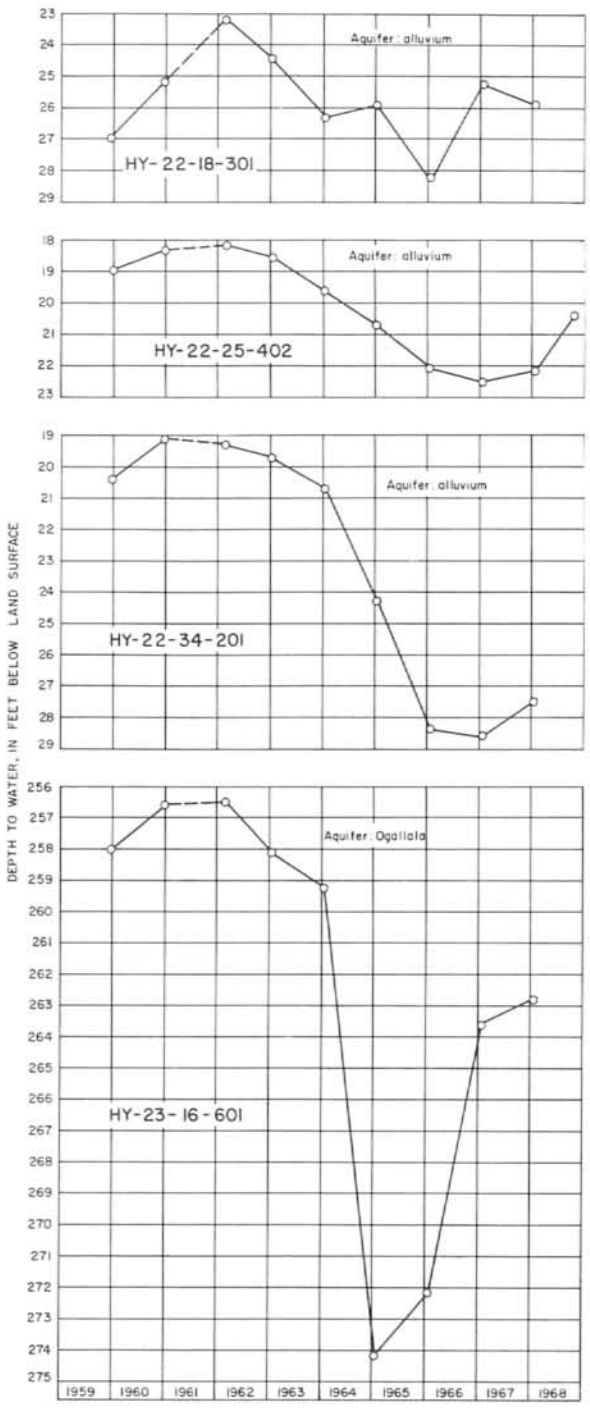

Figure 3.—Hydrographs of Three Wells in the Quaternary Alluvium and One Well in the Ogallala Formation

The Quaternary alluvium is the principal source of water for irrigation, public supply, and industrial use in Dickens and Kent Counties. The aquifer also supplies water for domestic supply and livestock.

Some of the deposits are unimportant hydrologically, except as a source of meager quantities of water for domestic supply and livestock. In other

Table 2.—Pumpage For Public Supply, Industry, Irrigation, and Acres Irrigated, From the Ogallala and Quaternary Alluvium Aquifers[1/]

	PUBLIC SUPPLY						IRRIGATION				INDUSTRY[7/]
YEAR	DICKENS	SPUR	JAYTON	McADOO	QUATERNARY ALLUVIUM	OGALLALA FORMATION	DICKENS	KENT	QUATERNARY ALLUVIUM	OGALLALA FORMATION	QUATERNARY ALLUVIUM
	ACRE-FEET				ACRE-FEET		ACRE-IRRIGATED		ACRE-FEET[3/]		ACRE-FEET
1953											300[8/]
1954							3,043[3/]	110			
1955	43	365	61		469						
1956	52	438	64		554						2,100
1957	61	346	64		471						
1958	44	353	132		529		10,504[4/]	1,800	11,704[5/]	600	
1959	50	389	132		571		9,886[3/]	1,466	9,820[6/]	600[6/]	2,600
1960	31	404	62		497				8,938[6/]		2,900
1961	28	360	63		451						
1962	20	313	65		398						
1963	22	337	70		429						
1964	27	340	70		437		11,994[4/]	1,400	13,061[5/]	800	2,000
1965	27	131[2/]	81		239						1,900
1966	27	2	95		124						
1967	21	0	92	16	113	16					
1968	18	0	103	18	121	18					

1/ Shown only for years for which data was available.
2/ Started using surface water from the White River Municipal Water District.
3/ Acres irrigated in 1954 and 1959 from 1959 Census of Agriculture, vol. 1, part 37, Bureau of the Census, U.S. Department of Commerce.
4/ Acres irrigated, and acre-feet of water pumped for irrigation in 1958 and 1964 from Gillett, P. T., and Janca, I. G., 1965, p. 109 and 182.
5/ Estimate from Gillett, P. T., and Janca, I. G., 1965, p. 109 and 182, apportioned to the Ogallala Formation and the Quaternary alluvium.
6/ Estimated by Paul Rettman (written communication) on basis of power consumption, operating time and yield of wells.
7/ Pumpage for industrial use in Kent County; no pumpage for industrial use in Dickens County. Amount of pumpage estimated from meager amount of data and therefore subject to error.
8/ Estimated to be first year that a significant amount of water was pumped for industrial use in Kent County.

Table 3.—Water Levels in Wells (In Feet Below Land Surface)

WELL NUMBER	DATE OF MEASURE-MENT	DEPTH TO WATER
HY-22-10-501	12-18-59	9.10
	12-27-60	4.84
	2-27-62	8.05
	1-05-63	4.41
	1-08-65	12.30
	1-17-66	13.75
	1-22-67	13.60
	1-18-68	12.70
HY-22-10-701	12-18-59	63.30
	12-27-60	62.82
	2-27-62	61.78
	1-05-63	62.76
	1-08-64	65.96
	1-08-65	64.13
	1-17-66	65.53
	1-22-67	66.02
	1-18-68	65.60
HY-22-10-702	12-15-59	36.20
	12-27-60	35.10
	2-27-62	34.58
	1-05-63	35.26
	1-08-64	36.21
	1-08-65	37.06
	1-17-66	38.45
	1-22-67	42.17
	9-28-67	41.85
	1-18-68	38.54
	5-23-68	38.40
HY-22-11-701	12-18-59	66.10
	12-27-60	64.40
	2-27-62	61.45
	1-05-63	62.98
	1-08-64	62.87
	1-08-65	63.61
	1-17-66	65.12
	1-23-67	66.31
	1-17-68	67.37
	9-05-68	60.30
HY-22-11-702	12-18-59	42.60
	12-27-60	39.02
	2-27-62	36.54
	1-05-63	38.43
	1-08-64	40.50
	1-08-65	41.48
	1-17-66	45.62
	1-23-67	45.54
	1-17-68	45.90
	9-09-68	39.84
HY-22-18-301	12-14-59	26.90
	12-27-60	25.19
	2-27-62	23.18
	1-05-63	24.43
	1-08-64	26.31
	1-08-65	25.92
	1-17-66	28.19
	1-23-67	25.20
	1-17-68	25.90
HY-22-25-304	12-23-59	28.20
	12-28-60	30.46
	2-25-62	30.21
	1-05-63	32.26
	1-08-64	32.97
	1-18-66	37.20
	1-22-67	37.39
	1-17-68	36.9
HY-22-25-402	12-10-59	19.0
	12-27-60	18.32
	2-25-62	18.19
	1-05-63	18.58
	1-08-64	19.62
	1-08-65	20.71
	1-18-66	22.06
	1-22-67	22.51
	1-17-68	22.18
	10-22-68	20.4
HY-22-25-602	12-24-59	23.10
HY-22-25-602 Continued	12-27-60	23.41
	2-25-62	24.28
	1-05-63	23.27
	1-08-64	23.11
	1-08-65	23.32
	1-18-66	25.22
	1-22-67	26.33
	1-17-68	25.78
	1-25-68	25.40
HY-22-26-401	12-23-59	20.60
	12-28-60	18.06
	2-25-62	13.08
	1-05-63	12.99
	1-08-64	12.42
	1-08-65	12.83
	1-18-66	15.96
	1-22-67	23.15
	1-17-68	16.80
HY-22-26-702	12-24-59	23.50
	12-28-60	22.41
	1-05-63	22.11
	1-08-64	22.07
	1-08-65	24.02
	1-18-66	26.73
	1-22-67	24.33
	1-17-68	24.90
	1-25-68	25.0
HY-22-27-201[a]/	12-16-59	28.80
	12-27-60	26.79
	1-05-63	25.31
	1-08-64	27.32
	1-08-65	29.63
	1-18-66	31.15
	1-23-67	28.83
	1-17-68	27.70
HY-22-33-501	1-10-58	75.00
	1-10-59	75.50
	12-23-59	76.08

Table 3.—Water Levels in Wells (In Feet Below Land Surface)—Continued

WELL NUMBER	DATE OF MEASURE-MENT	DEPTH TO WATER
HY-22-33-501 Continued	12-29-60	77.27
	2-25-62	79.98
	1-05-63	77.49
	1-08-64	79.13
	1-18-66	81.35
	1-22-67	81.40
	1-17-68	81.29
	4-06-68	80.50
HY-22-34-201	12-23-59	20.40
	12-28-60	19.07
	2-25-62	19.29
	1-05-63	19.72
	1-08-64	20.68
	1-08-65	24.28
	1-17-66	28.42
	1-22-67	28.64
	1-17-68	27.50
HY-22-34-203	12-23-59	10.90
	12-28-60	10.46
	1-05-63	11.21
	1-08-64	12.82
	1-08-65	15.33
	1-18-66	18.82
	1-22-67	19.18
	1-17-68	17.80
HY-22-34-601	12-23-59	23.10
	12-28-60	22.70
	2-25-62	22.35
	1-05-63	22.29
HY-22-34-601 Continued	1-08-64	22.81
	1-08-65	23.00
	1-18-66	24.76
	1-23-67	23.19
	1-17-68	22.81
	3-04-68	23.80
HY-22-34-901	2-27-57	43.70
	1-25-58	43.30
	4-09-59	43.70
	12-23-59	40.36
	12-28-60	39.56
	2-25-62	38.17
	1-05-63	38.07
	1-08-64	37.20
	1-08-65	36.52
	1-18-66	37.71
	1-23-67	37.12
	1-17-68	36.66
	3-04-68	35.20
HY-22-35-701	4-28-57	37.20
	1-22-58	52.30
	4-09-59	54.70
	12-23-59	33.86
	12-28-60	32.22
	2-25-62	31.17
	1-05-63	31.27
	1-08-64	30.09
	1-08-65	31.11
	1-18-66	35.72
HY-22-35-701 Continued	1-23-67	35.12
	1-17-68	34.79
	3-05-68	31.20
HY-23-16-601	12-22-59	258.0
	12-27-60	256.59
	2-27-62	256.53
	1-05-63	258.16
	1-08-64	259.23
	1-08-65	274.19
	1-18-66	272.17
	1-22-67	263.60
	1-18-68	262.80
HY-23-16-901	12-22-59	252.60
	12-27-60	256.43
	1-05-63	254.08
	1-08-64	255.06
	1-08-65	271.67
	1-18-66	263.65
	1-22-67	276.25
	1-18-68	275.40
HY-23-24-301	12-22-59	275.50
	12-27-60	282.90
	2-27-62	274.08
	1-05-63	275.12
	1-08-64	290.25
	1-08-65	272.82
	1-22-67	284.19
	1-18-68	281.80

places where the deposits are thick and cover large areas, they are capable of storing and yielding small to moderate quantities of water.

The main deposits of Quaternary alluvium, from which small to moderate quantities of water for irrigation and public supply are obtained, are in the vicinity of Afton in northern Dickens County and along Duck Creek in Dickens and Kent Counties. The locations of other areas where a few wells in the alluvium supply water for irrigation are shown on Figure 6.

Water for industrial use is obtained from the Quaternary alluvium along the Salt Fork of the Brazos River and its tributary the White River, and along the Double Mountain Fork of the Brazos River (Figure 6).

Ground water in the Quaternary alluvium in the report area generally occurs under water table conditions, but locally, a slight artesian pressure may exist where the water is confined under lenticular bodies of clay.

Very few irrigation wells were in operation during 1968, and it was not possible to arrange for pumping tests to determine the hydrologic properties of the Quaternary alluvium. The coefficient of storage of the Quaternary alluvium in Haskell and Knox Counties was estimated by Ogilbee and Osborne (1962, p. 31) to be about 14 percent. The coefficient of storage of the alluvium in Dickens and Kent Counties is probably of the same order of magnitude.

The amount of ground water pumped from the Quaternary alluvium for public supply, irrigation, and industrial use in Dickens and Kent Counties in 1964 was about 15,500 acre-feet. The amount of water pumped for these purposes during various years is shown in Table 2. The amount of water pumped for public supply was obtained from the records of the Texas Water Development Board. Other sources of information are given in the footnotes at the end of the table.

Information shown in Table 2, taken from Gillett and Janca (1965, p. 109 and 182), indicates that the duty of water and therefore, in general, the amount of water pumped, is about one acre-foot of water per acre irrigated. A general indication of the amount of water pumped for irrigation also can be obtained from records of the amount of electrical power used to operate the irrigation wells.

Information furnished by the Dickens County Electric Cooperative, Inc., shows that 3,550,041 kwh (kilowatt-hours) were used to operate 364 wells in 1965; 2,806,803 kwh for 399 wells in 1966; 2,538,947 kwh for 395 wells in 1967; and 1,095,709 kwh for 391 wells in 1968. A comparison of the number of kilowatt hours used in 1965 and 1968 suggests that the pumpage during 1968 was about one-third of the pumpage in 1965, which was probably about the same as in 1964. Because of favorable soil moisture conditions, many irrigation wells were not operated during the 1968 irrigation season, and many were operated for only short periods of time.

Ground water withdrawn from the Quaternary alluvium in the report area for industrial purposes is used mainly for oilfield repressuring in Kent County. No water is known to be pumped for industrial use in Dickens County. Because the estimates of water pumped for industrial use (Table 2) are based on very meager information, they should be used with caution.

Since 1959 the Texas Water Development Board has made water-level measurements annually in 17 observation wells drilled in the Quaternary alluvium in Dickens County. The results of these measurements are given in Table 3 and the hydrographs of three wells in the alluvium are shown on Figure 3. The hydrographs show that from 1959 to 1968 there was a general decline in water levels. From 1959 to 1962 the water level rose in the wells. The water level in all of the wells declined during 1962 to 1966 or 1967, at which time the water level in the wells started to rise. At the beginning of 1968, the water levels in the three wells were still below the levels of 1962.

The deposits of Quaternary alluvium in Dickens and Kent Counties are scattered (Figure 2), and the thickness of the saturated zone in these deposits varies. An accurate estimate of the amount of ground water in storage would require detailed geologic mapping and the collection of a considerable amount of hydrologic data.

The principal areas from which ground water is withdrawn from the Quaternary alluvium, including the sand dune areas, in the two counties are along Cottonwood Creek in the vicinity of Afton in the northern part of Dickens County and along Duck Creek in both Dickens and Kent Counties (Figure 2). An approximation of the amount of ground water in storage in each of these areas can be made by assuming that the storage coefficient is 14 percent and that the saturated zone has a uniform thickness equal to the average thickness of the saturated zone in each of the areas.

Based on these assumptions, the amount of ground water in storage was estimated for an area which, in general, coincides with the area in which irrigation wells have been drilled in the vicinity of Cottonwood Creek (Figure 6). The thickness of the saturated zone in this area of about 21,000 acres ranges from about 15 feet to slightly more than 90 feet and averages about 50 feet. The quantity of water theoretically available to wells is about 147,000 acre-feet.

The same method was used to estimate the amount of ground water in storage in the Quaternary alluvium in the area of Duck Creek in Dickens and Kent Counties. The area included in this estimate extends from about the headwaters of Duck Creek in Dickens County to the junction of Duck Creek with the Salt Fork of the Brazos River in Kent County, and in general coincides with the area in which irrigation wells have been drilled (Figure 6). Separate estimates have been made for each of the two counties, and in Dickens County the estimate includes the area along Dockum Creek, a tributary of Duck Creek.

The thickness of the saturated zone in an area of about 32,000 acres along Duck Creek in Dickens County averages about 30 feet. The quantity of water in storage in the Quaternary alluvium in this area that theoretically would be available to wells is estimated to be about 134,000 acre-feet. In Kent County the average thickness of the saturated zone is about 50 feet in an area of about 7,500 acres along Duck Creek. About 53,000 acre-feet of water that theoretically would be available to wells is estimated to be in storage in the Quaternary alluvium in this area.

These estimates of the quantity of water in storage in the Quaternary alluvium that would be available to wells should be considered only as an

indication of the order of magnitude of the water in storage.

The Quaternary alluvium in some places could supply some additional water but in general should not be considered as a source of additional quantities of water for future development.

RECHARGE, MOVEMENT, AND DISCHARGE OF GROUND WATER

The principal source of recharge to the aquifers in Dickens and Kent Counties is precipitation within the two-county area. Additional recharge is derived from streamflow and ground-water underflow.

The Triassic rocks and the Ogallala Formation receive recharge from precipitation and from ground-water underflow from the west. The major part of the recharge to the Quaternary alluvium is from precipitation on the outcrop. The flood plains and terraces receive some recharge from streamflow, especially after heavy rainfall when the streams are in flood. Data are not available to estimate the amount of recharge received annually by each of the aquifers.

The approximate altitude of the water level in the various aquifers is shown on Figure 4. The movement of water is in the direction of decreasing altitude and at right angles to the contours.

Ground water in the Ogallala Formation, in the High Plains part of Dickens County, moves to the east, northeast, and southeast towards the High Plains Escarpment. Ground water in the Triassic rocks moves in the same direction as in the Ogallala Formation. In the vicinity of Afton in northern Dickens County, ground water in the Quaternary alluvium moves to the northeast. Along Duck Creek in Dickens and Kent Counties, ground water in the alluvium moves to the southeast, generally parallel to the drainageway.

In the vicinity of the Dickens-Kent County line, the contours on the water table in the Permian rocks and the Quaternary alluvium indicate the presence of a ground-water divide. From the divide, ground water moves to the east towards Croton Creek and to the west towards Duck Creek. West of the ground-water divide, along Duck Creek, the upgradient flexure of the contours indicates that ground water is being discharged into the stream.

Ground water in Dickens and Kent Counties is discharged both naturally and artificially. Natural discharge is by springs and seeps and by evapotranspiration. Artificial discharge is by pumping from wells.

STREAMFLOW

The U.S. Geological Survey in cooperation with the Texas Water Development Board has operated a stream-gaging station on Duck Creek near Girard in Kent County (Figure 6) since September 1964. Runoff from an area of 294 square miles, of which 17.3 square miles is noncontributing, is recorded at this station.

Records of the U.S. Geological Survey (1967a) show that during the 1967 water year (Oct. 1966 through Sept. 1967), the mean daily discharge was 2.38 cfs (cubic feet per second) or 1,720 acre-feet. The uniformity of the daily-discharge records, except during periods of heavy precipitation, indicates that the streamflow is maintained by ground water being discharged into the stream. The decrease in the daily discharge during the months of May through September, except during periods of heavy precipitation, is probably due to withdrawals of ground water for irrigation.

Croton Creek drains a large part of eastern Dickens County and northeastern Kent County. Records of streamflow have been collected at a stream-gaging station 8.6 miles northwest of Jayton in Stonewall County since August 1959. The drainage area above the gaging station is 302 square miles. Records of the U.S. Geological Survey (1967a) show that for the 8-year (water year) period of 1959 through 1967, the average discharge was 19.0 cfs or 13,760 acre-feet per year. Except during periods of heavy precipitation, ground water discharged from springs and seeps is the principal source of streamflow.

The chemical quality of the water in Croton Creek has been determined from samples collected at the gaging station. The results of the analyses (U.S. Geological Survey, 1967b), show that during the 1967 water year, the concentrations of dissolved solids ranged from a maximum of 33,900 mg/l (milligrams per liter) during the period January 1-31, to a minimum of 4,280 mg/l during the period April 13-14. The hardness ranged from a maximum of 5,370 mg/l during the period March 1-9, 20, to a minimum of 1,760 mg/l during the period June 26-30.

CHEMICAL QUALITY OF GROUND WATER

The results of the chemical analyses of 175 samples of water collected during the present and previous investigations in Dickens and Kent Counties are given in Table 8.

The results of the chemical analyses show that the quality of water varies between the aquifers and from place to place within the aquifers. In some aquifers, the variations are minor; in others the variations are of considerable magnitude.

Relationship of Water Quality to Use

The standards used for measuring the suitability of a water supply depend upon the proposed use. Various water-quality criteria, including bacterial content, physical characteristics, and chemical constituents, have been developed. This report is concerned only with the chemical quality of the water.

The source and significance of dissolved-mineral constituents (adapted after Doll and others, 1963) are summarized in Table 4. A general classification of water based on dissolved-solids content is as follows (Winslow and Kister, 1956, p. 5).

DESCRIPTION	DISSOLVED-SOLIDS CONTENT (MG/L)
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

The only nationwide standards pertaining to potable water are those prescribed by the U.S. Public Health Service (1962). These standards, which apply specifically to water used for culinary and drinking purposes on common carriers engaged in interstate commerce, have been endorsed by the American Water Works Association as minimum standards for all public water supplies.

The standards are rather conservative for an area such as Dickens and Kent Counties where much of the ground water is mineralized. Recognition of the fact that the quality of the water available may not always meet the standards is given by the U.S. Public Health Service (1962, p. 7) as follows: "The following chemical substances should not be present in a water supply in excess of the listed concentrations where, in the judgment of the reporting agency and the certifying authority, other more suitable supplies are or can be made available." The standards pertaining to chemical constituents are, in part, as follows:

CONSTITUENT	SUGGESTED MAXIMUM CONCENTRATION (MG/L)
Chloride	250
Fluoride	* 0.8 to 1.0
Iron	0.3
Manganese	0.05
Nitrate	45
Sulfate	250
Dissolved solids	500

* Based on the average of maximum daily air temperature of 78.9°F at Spur, Texas.

According to the U.S. Public Health Service (1962, p. 41) the optimum fluoride concentration in water depends upon climatic conditions because the amount of water (and consequently the amount of fluoride) ingested is influenced primarily by air temperature. The optimum value of 0.8 mg/l and the upper limit of 1.0 mg/l is based on the assumption that the annual average of maximum daily air temperature of 78.9°F at Spur (U.S. Weather Bureau, 1951-60) is representative of the entire area of Dickens and Kent Counties.

The suitability of water for irrigation depends primarily on its chemical quality and to a lesser degree on such factors as soil texture and composition, types of crops, irrigation practices, climate, and economics.

The most important chemical characteristics pertinent to the evaluation of water for irrigation are the proportion of sodium to total cations, an index of the sodium hazard; total concentration of soluble salts, an index of the salinity hazard; residual sodium carbonate (RSC); and boron content.

The U.S. Salinity Laboratory Staff (1954, p. 79-81) has developed a rating diagram (Figure 5) for classifying irrigation waters in terms of salinity and sodium (alkali) hazards. The sodium adsorption ratio (SAR) is used to indicate the sodium or alkali hazard. A high percentage of sodium commonly causes clay particles in soil to disperse and thereby reduces the permeability of the soil. The specific conductance is used to indicate the salinity hazard. In this classification of irrigation waters, it is assumed that the water will be used under average conditions with respect to soil texture, infiltration rate, drainage, quantity of water used, climate, and salt tolerance of crops.

Bicarbonate concentrations greatly in excess of calcium and magnesium concentrations in irrigation water may result in residual sodium carbonate in the soil, thereby causing the soil to obtain a high pH and to become gray or black due to the solution of organic matter. Such a soil condition is known as "black alkali." Wilcox (1955, p. 11) states that, according to laboratory and field studies, water containing more than 2.5 me/l (milliequivalents per liter) RSC is not suitable for irrigation. Water containing 1.25 to 2.5 me/l is marginal, while water containing less than 1.25 me/l RSC probably is safe. However, good irrigation practices and the use of proper soil amendments may permit the use of marginal water for irrigation. Furthermore, the degree of leaching will modify the permissible limits to some extent (Wilcox, Blair, and Bower, 1954, p. 265).

Boron, one of the most critical elements in irrigation water, is essential for proper plant growth in small amounts, but may be toxic to some plants in concentrations only slightly above the needed amounts. Because of this sensitivity, the boron-tolerance of the crop to which water is applied is considered in evaluating the suitability of water for irrigation. Scofield (1936,

Table 4.—Source and Significance of Dissolved-Mineral Constituents and Properties of Water

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. More than 1 or 2 mg/l of iron in surface waters generally indicates acid wastes from mine drainage or other sources.	On exposure to air, iron in ground water oxidizes to reddish-brown precipitate. More than about 0.3 mg/l stains laundry and utensils reddish-brown. Objectionable for food processing, textile processing, beverages, ice manufacture, brewing, and other processes. U.S. Public Health Service (1962) 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 ancient 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 mine waters and 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. Some calcium sulfate is considered beneficial in the brewing process. U.S. Public Health Service (1962) drinking-water standards recommend that the sulfate content should not exceed 250 mg/l.
Chloride (Cl)	Dissolved from rocks and soils. Present in sewage and found in large amounts in ancient 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. U.S. Public Health Service (1962) drinking-water standards recommend that the chloride content should not exceed 250 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 susceptbility of the individual. (Maier, 1950)
Nitrate (NO_3)	Decaying organic matter, sewage, fertilizers, and nitrates in soil.	Concentration much greater than the local average may suggest pollution. U.S. Public Health Service (1962) drinking-water standards suggest a limit of 45 mg/l. 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. Nitrate has been 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.
Dissolved solids	Chiefly mineral constituents dissolved from rocks and soils. Includes some water of crystallization.	U.S. Public Health Service (1962) drinking-water standards recommend that waters containing more than 500 mg/l dissolved solids not be used if other less mineralized supplies are available. Waters containing more than 1000 mg/l dissolved solids are unsuitable for many purposes.
Hardness as $CaCO_3$	In most waters nearly all the hardness is due to calcium and magnesium. All 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 as much as 60 ppm are considered soft; 61 to 120 mg/l, moderately hard; 121 to 180 mg/l, hard; more than 180 mg/l, very hard.
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, and 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.

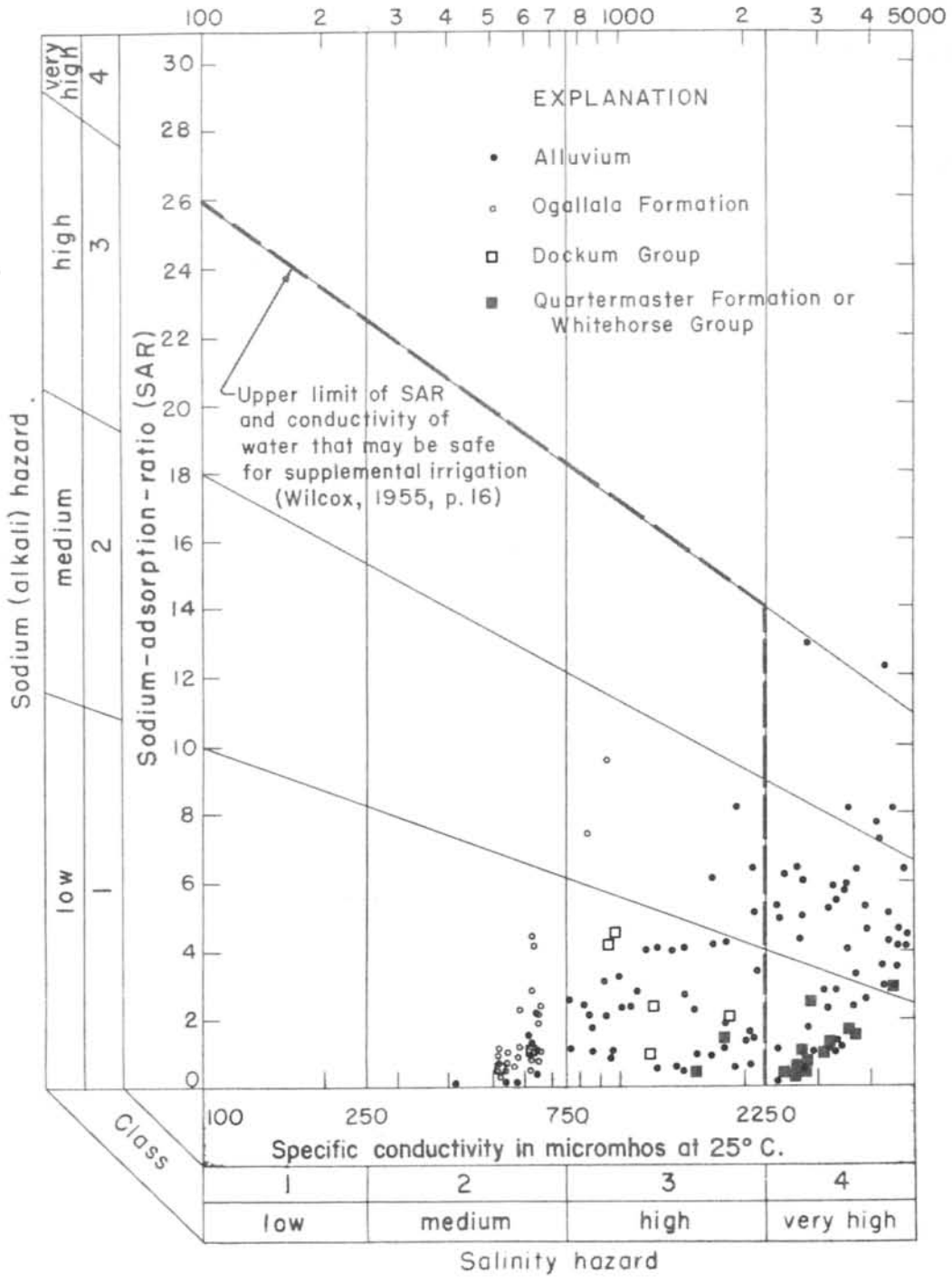

Figure 5
Classification of Water Used For Irrigation

p. 286) indicated that boron concentrations of as much as 1 mg/l are usually permissible for irrigating boron-sensitive crops, and concentrations of as much as 3 mg/l are permissible for the more boron-tolerant crops.

The following table shows a classification of water according to boron content.

CLASSES OF WATER RATING	GRADE	SENSITIVE CROPS (MG/L)	SEMITOLERANT CROPS (MG/L)	TOLERANT CROPS (MG/L)
1	Excellent	Less than 0.33	Less than 0.67	Less than 1.00
2	Good	0.33 to 0.67	0.67 to 1.33	1.00 to 2.00
3	Permissible	.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	More than 1.25	More than 2.50	More than 3.75

Water-quality limits for livestock depends principally on the kind of animal. 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. Heller also suggests that as a safe rule, 15,000 mg/l dissolved-solids should be considered the upper limit for most of the more common stock animals.

Chemical Quality of Water in the Geologic Units

The results of the chemical analyses of 17 samples of water from aquifers in the Permian rocks (Table 8) show that the water ranges from slightly saline to very saline and is very hard. The concentrations of dissolved solids were above the 500 mg/l limit recommended for public supply by the U.S. Public Health Service in all of the samples. The sulfate content was below the 250 mg/l recommended limit in only one of the samples, and the chloride content was below the 250 mg/l limit in eight of the samples. The nitrate content was above 45 mg/l in three samples, and the fluoride content was above the recommended limit of 1.0 mg/l in three samples.

The results of chemical analyses of 17 samples of water from the Triassic rocks are given in Table 8. The concentrations of dissolved solids in samples collected from springs and wells in the Triassic rocks in Dickens County ranged from less than 300 mg/l to more than 1,000 mg/l. More than half the samples contained less than 500 mg/l. Calcium was the principal cation in most of the samples, but in a few samples, sodium exceeded calcium. Bicarbonate, the principal anion, averaged about 300 mg/l. The concentrations of sulphate and chloride were generally low; only two samples contained more than 250 mg/l. The nitrate content was less than 45 mg/l in all of the samples; however, three samples contained 30 mg/l or more of nitrate. The water is very hard, and in four samples the fluoride content exceeded the 1.0 mg/l limit recommended by the U.S. Public Health Service.

The results of the chemical analyses of 27 samples of water from the Ogallala Formation (Table 8) indicate that the water has a fairly low mineral content. The concentration of dissolved solids ranged from 312 mg/l to 979 mg/l; only three samples contained more than 500 mg/l. None of the samples contained more than 250 mg/l chloride, 250 mg/l sulfate, or 45 mg/l nitrate. The fluoride content of all except one sample was above the 1.0 mg/l limit recommended by the U.S. Public Health Service. Ground water from the Ogallala Formation in most areas is characteristically very hard; however, the hardness in all samples from the report area ranged from moderately hard to very hard.

Calcium is commonly the principal cation in ground water in the Ogallala Formation; however, in 10 of the samples collected from wells supposedly tapping the Ogallala Formation in Dickens County, the sodium content exceeded the calcium. The wells from which these samples were collected are generally south of the town of McAdoo and are drilled to depths of about 400 feet or more. The analyses of water samples from these wells show that the hardness of the water ranged from moderately hard to very hard and that the values for RSC were high. On the drillers' logs, the contact between the Ogallala Formation and the underlying Triassic rocks could not be identified readily, so some of these wells may be withdrawing water from aquifers in the Triassic rocks.

Ground water from the Ogallala Formation has been used successfully for irrigation for many years throughout the Southern High Plains of Texas. The values for SAR and specific conductance shown in Table 8 for wells pumping from the Ogallala Formation were plotted on the diagram (Figure 5) used for classifying irrigation water. One sample plotted in the division indicating that the water has a high salinity hazard and a medium sodium hazard. The remainder of the samples plotted in the division indicating a medium salinity hazard and low sodium hazard.

The boron content was less than 1.0 mg/l in all of the samples from the Ogallala Formation. The value for

RSC was below 1.25 me/l in 13 of the samples, between 1.25 and 2.5 me/l in five of the samples, and more than 2.5 me/l in four samples. The samples having the higher values for RSC were those collected from wells south of McAdoo.

The chemical quality of the ground water in the Quaternary alluvium in Dickens and Kent Counties varies (Table 8), probably because the alluvium is derived from the weathering and subsequent deposition of several types of rocks.

The ground water in the Quaternary alluvium is highly mineralized in some places. The dissolved-solids content was less than 500 mg/l in about 11 percent of the samples analyzed, between 500 and 1,000 mg/l in about 16 percent of the samples, and more than 1,000 mg/l in about 73 percent of the samples. The analyses also show other variations in the chemical characteristics of the water. Calcium was the principal cation in about half of the samples; in the other samples the sodium content exceeded the calcium content. Sulfate was the principal anion in about half of the samples; in the other samples, either the bicarbonate or chloride content was greater than the sulfate.

About 72 percent of the samples of water from the Quaternary alluvium contained more than 250 mg/l chloride; about 44 percent contained more than 250 mg/l sulfate. The nitrate content exceeded 45 mg/l in about 36 percent of the samples, and about one-third of the samples had a fluoride content in excess of 1.0 mg/l. The water is uniformly very hard. These data indicate that in some places the water in the Quaternary alluvium is not suitable for public supply or domestic use. However, in some places the water meets the chemical-quality standards for public supply or is acceptable for such use where water of a better quality is not available.

The town of Dickens obtains its water supply from two wells drilled in the Quaternary alluvium on the bank of Duck Creek, near the headwaters area of Duck Creek. Water from these wells, HY-22-25-301 and 302, meets the standards recommended by the U.S. Public Health Service for water used for public supply, except that the dissolved-solids content is slightly more than 500 mg/l (Table 8). Water of good quality is also available from other wells in the alluvium near the town of Dickens.

Samples of water were collected in 1960 and 1969 from well RH-22-52-104, a public supply well owned by the city of Jayton in Kent County. The results of the analyses of these samples (Table 8) show that the concentrations of dissolved solids increased from 356 mg/l in 1960 to 929 mg/l in 1969; the sulfate and chloride content increased from 86 to 357 mg/l and from 5.2 to 112 mg/l, respectively. The hardness increased from 276 to 620, and the concentration of other constituents such as calcium, magnesium, and sodium also increased. The change in the chemical quality of the water may have resulted from the movement of more highly mineralized water from the surrounding Permian rocks into the Quaternary alluvium. If this assumption is correct, continued withdrawal of large quantities of water from the well may result in further changes in the chemical quality of the water in the Quaternary alluvium in this area.

The concentrations of sulfate and chloride are also high in samples collected from wells RH-22-50-201 and RH-22-50-203, both of which produce water from the Quaternary alluvium in Kent County. Stevens (1970) has reported that the high concentration of chlorides and other minerals in the Quaternary alluvium in this area is due to the discharge of highly mineralized water from the surrounding Permian rocks into the Quaternary alluvium.

In general, the water from the Quaternary alluvium in the report area has a high or very high salinity hazard (Table 8); however, the sodium hazard is low in more than 50 percent of the samples.

Of the samples of water from the Quaternary alluvium that were analyzed for boron, five had concentrations in excess of 1.0 mg/l; in four of these samples, boron ranged from 1.2 to 1.9 mg/l. One sample contained 6.3 mg/l.

The RSC value was determined for six of the samples of water collected from the Quaternary alluvium. In three of the samples, the RSC was less than 1.25 me/l, and the other three samples had values ranging from 1.42 to 1.96 me/l.

Analyses for Pesticides

As a part of this investigation of the ground water in Dickens and Kent Counties, three samples of ground water were collected from wells and analyzed for nine insecticides and three herbicides.

One sample was collected from well HY-23-24-305, an irrigation well drilled to a depth of about 400 feet in the Ogallala Formation in Dickens County. The depth to water below land surface in this well was estimated to be about 250 feet. Another sample was collected from well HY-22-25-301, a public supply well owned by the town of Dickens. This well, drilled to a depth of 73 feet in the Quaternary alluvium, is on the east bank of Duck Creek in Dickens County. The depth to water below land surface in this well was estimated to be about 40 feet. The third sample was collected from well RH-22-52-106, a public supply well owned by the city of Jayton. This well was drilled to a depth of about 65 feet in the Quaternary alluvium and is located near Little Duck Creek in Kent County. The depth to water below land surface was estimated to be between 30 and 40 feet.

All of these wells are on or near cultivated land on which some insecticides or herbicides are probably used, but the analyses indicated that no insecticides or herbicides were present in the water samples collected from these three wells.

PRODUCTION AND DISPOSAL OF OIL-FIELD BRINE

Brine is a common by-product in the production of oil. The method of disposing of the brine is important because if improperly disposed of, it may contaminate both surface-water and ground-water supplies.

One method of disposing of the brine is to discharge it into evaporation pits at or near the well sites. These pits are usually unlined; consequently, the brine can move downward to contaminate the ground water. The Texas Railroad Commission, which has supervision over the production of oil and associated activities, issued a Statewide order effective January 1, 1969, banning the use of evaporation pits to dispose of oil-field brines. In 1961, of the 3.3 million barrels of produced brine, slightly less than 8 percent was disposed of through pits. Oil-field brine is also disposed of by injection under pressure, into permeable zones in the subsurface. The amount of brine produced in Dickens and Kent Counties, and the methods of disposal are shown in Table 5 (Texas Water Commission and Texas Water Pollution Control Board, 1963).

Table 5.—Production and Disposal of Oil-Field Brine, 1961[1/]

FIELD NAME	TOTAL BRINE PRODUCTION BBLS.	TYPE OF DISPOSAL			
		OPEN PITS BBLS.	PERCENT	INJECTION WELLS	PERCENT
		DICKENS COUNTY			
Croton Creek (Tannehill)	13,870			13,870	100
Duck Creek (Tannehill)	18,632	18,632	100		
Girard (Tannehill)	11,315	2,190	19.4	9,125	80.6
County total	43,817	20,822	47.5	22,995	52.5
		KENT COUNTY			
Boomerang (Pennsylvanian reef)	90,180	7,944	8.8	82,236	91.2
Chaparral (lower Pennsylvanian)	35,161			35,161	100
Clairemont, East (Strawn)	4,790	4,790	100		
Clairemont, North (Strawn)	5,530	5,530	100		
Clairemont (Lower Pennsylvanian)	716,740	20,320	2.8	696,420	97.2
Clairemont (Strawn)	0				
Cogdell, East (Canyon)	136,205	114,670	84.2	21,535	15.8
Cogdell, East (Cogdell sand)	1,825	1,825	100		
Cogdell (Fuller sand)	105,725	9,000	8.5	96,725	91.5
Cogdell (San Andres)	39,785			39,785	100
Cogdell (Strawn)	91,250			91,250	100
Cogdell (4,900)	150,745			150,745	100
Cogdell area	1,142,173			1,142,173	100
Jayton (Lower Pennsylvanian)	270	270	100		
Jayton, West (Strawn)	1,217	1,217	100		
Polar, East (Pennsylvanian)	169,160	12,575	7.4	156,585	92.6
Polar, North (Ellenburger)	3,000	3,000	100		
Polar, NE (Strawn)	0				
S-M-S (Canyon sand)	415,968			415,968	100
Salt Creek	84,376	38,554	45.7	45,822	54.3
Salt Creek, South (Lower Pennsylvanian)	102,534	31,673	30.9	70,861	69.1
Spires	3,989	3,989	100		
County total	3,300,623	255,357	7.7	3,045,266	92.3

1/ From Texas Water Commission and Texas Water Pollution Control Board, 1963.

Because of the presence of highly mineralized water in some of the aquifers in the report area, it is difficult to determine whether a particular sample shows the effect of brine contamination, or if the chemical characteristics are due to natural actions within the hydrologic system. The chemical characteristics of the water may suggest the possibility of brine pollution, but are not necessarily conclusive evidence.

NEED FOR ADDITIONAL STUDIES

The basic data collected in Dickens and Kent Counties during this investigation provide current information on the occurrence, development, use, and chemical quality of the ground water in the two-county area. The data, while insufficient for an accurate appraisal of the ground-water resources, will provide a

foundation for a future detailed study which is necessary for an adequate appraisal of the ground-water resources of the area.

A detailed study should include: (1) Detailed geologic mapping with particular emphasis on the lithology, thickness, and configuration of the base of the water-bearing units; (2) determination of the hydrologic properties of the aquifers by field and laboratory tests; (3) determination of the source and rate of natural recharge and discharge; (4) determination of the hydrologic relationship between aquifers; (5) determination of the quantity of water in storage that would be available to wells; (6) determination of changes in chemical quality which may be the result of pumping or of natural functions.

Detailed studies of the availability of ground water from aquifers in the Permian rocks should be planned after careful consideration is given to information collected during studies made to determine the source of salt water in the Brazos River. (See list of references). The effect, if any, on the ground water in the Quaternary alluvium or other aquifers due to the construction of dams at the headwaters of Duck Creek and several of its tributaries should be considered in both detailed studies and long-term observation programs.

The collection of basic data such as the observation of water levels, inventory of pumpage, and the collection of water samples for chemical analyses would be essential parts of a detailed investigation of the ground-water resources of Dickens and Kent Counties. The collection of such basic data should be continued after the investigation is completed.

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Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas

All wells drilled unless otherwise noted in remarks column.
Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of pump: C, cylinder; Cf, centrifugal; E, electric; G, butane gasoline, or diesel engine; J, jet; N, none; N.G., natural gas; P, piston; S, submergible; T, turbine; W, wind; number indicates horsepower.
Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply;;S, livestock.
Water-bearing unit : P, Permian (Quartermaster Formation and Whitehorse Group); To, Ogallala; Trd, Triassic; Qal, Alluvium.

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
						Dickens County					
HY-22-09-401	Matador Cattle Co.	1966	185	6	Trd	2,785	112	July 9, 1966	P,W	S	Casing perforated from 168 to 182 ft. Pump set at 168 ft. 1/
* 501	do.	Spring	--	--	Qal-To	2,630.7	+	--	Spring	S	Spring No. 2. Estimated yield 15 gpm on Sept. 20, 1938 from the Ogallala Formation and Quaternary alluvium. 2/
601	H. Hughes	1963	140	12	Qal	2,693	-	--	T,E, 20	Irr	
602	do.	1969	100?	10	do.	2,693	61.1	Mar. 21, 1969	--	Irr	Red bed reported at about 105 ft. at well site - about 101 ft. in test hole west of well site.
* 603	Elmer Frazier	1964	100?	6	Qal	--	--	--	S,E 3/4	D,S	
701	Matador Cattle Co.	1966	245	6	Trd	--	126	June 31, 1966	P,W	S	Casing perforated from 204-219 ft. Pump set at 180 ft.
* 801	do.	1967	278?	6	Trd	2,847	170.6	Sept. 28, 1967	S,E 1	D	
10-401	do.	Spring	--	Spring	Trd	2,513	+	--	Spring	S	Discharge of 16 gpm on Jan. 31, 1969 from cross-bedded conglomerate.
501	Wade Roberts	1959	30	12	Qal	2,480	9.1 12.7	Dec. 18, 1959 Jan. 18, 1968	S,E 3	Irr	Red bed reported at 30 ft. 2/
* 502	R. L. Hutchings	1955	52	6	do.	2,587	48.2 42.0	Sept. 29, 1967 Sept. 5, 1968	P,W	S	Estimated yield 2 gpm.
* 503	J. C. Forbis	1960?	110	12	do.	2,606	70.8 68.5	Sept. 29, 1967 Sept. 5, 1968	T,E 15	Irr	
504	F. Ragland	1960	95	14	Qal	2,566	16.8	June 9, 1968	T,E 15	Irr	Pump set at 90 ft.
505	Robert Forbis	--	--	12	do.	2,554	23.0	Sept. 5, 1968	T,E 15	Irr	
506	C. Morris	1959	20?	--	do.	2,459	9.6	Mar. 13, 1969	Cf,G	Irr	Manifold system consisting of 4 wells. Reported yield from system 75-100 gpm.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
Dickens County											
HY-22-10-701	Dumont Bridge	1958	93	8	Qal	2,624	63.3 65.6	Dec. 18, 1959 Jan. 18, 1968	T,E 10	Irr	Red bed reported at 93 ft. Reported yield of 139 gpm on Aug. 15, 1960 with pumping level at 79.6 ft. 2/
* 702	Byron Haney	1959	100	12	do.	2,612	36.2 38.4	Dec. 15, 1959 May 23, 1968	T,E	Irr	Red bed reported at 100 ft. Reported yield 288 gpm on Aug. 15, 1960 with pumping level at 53.8 ft. 2/
703	M. Kelly	1963	125	14	do.	2,650	--	--	T,E 20	Irr	
704	Mrs. L. Clements	1958	132	12	do.	2,635	--	--	T,E 10	Irr	
705	do.	1958	140	12	do.	2,632	64.8	June 5, 1968	T,E 10	Irr	
706	Tom Yates	1957	25	14	do.	2,612	10.4	June 4, 1968	T,G	Irr	
707	do.	1956	25	12	do.	2,612	--	--	cf,-	Irr	
708	do.	1956	25	12	do.	2,612	--	--	cf,-	Irr	
709	do.	1956	25	12	do.	2,612	--	--	cf,-	Irr	
710	Byron Haney	1957	100	14	do.	2,618	41.6	May 23, 1968	T,E 20	Irr	
711	do.	1956	85	16	do.	2,632	--	--	T,E 20	Irr	
712	do.	1956	75	16	do.	2,635	--	--	T,E 15	Irr	
713	V. Ford	--	109?	10	do.	2,644	--	--	T,E 30	Irr	
714	Miss Eva Collier	--	--	12	do.	2,560	18.6	Mar. 5, 1969	T,E 7 1/2	N	Well apparently unused.
801	A. Brawley	--	Spring	--	--	--	+	--	Spring	Irr	Springs No. 6 and 7 combined yield 20-25 gpm on Sept. 19, 1938. Springs are now covered by water in man made lake from which water is pumped for irrigation. Not used in past two years. a/
802	F. McCarty	1957	58	12	do.	2,571	24.4 23.5 27.5	Dec. 15, 1959 Dec. 27, 1960 Sept. 5, 1968	T,G	Irr	Reported yield 53 gpm. Red bed reported at 56 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Dickens County											
HY-22-10-803	Dumont Bridge	1957	87	--	--	2,578	--	--	N	N	Test hole approximately 50 ft. south of well 22-10-811. Red bed reported at 84 ft. 1/
804	do.	1962	80	14	Qal	2,592	--	--	T,E	Irr	
805	do.	1962	80	14	do.	2,598	44.9	June 8, 1968	T,E 20	Irr	
806	do.	1965	80	14	do.	2,578	--	--	T,G	Irr	
807	F. Ragland	1960	100	--	do.	2,587	40.9	June 9, 1968	T,E 25	Irr	Pump set at 95 ft.
808	do.	1962	95	12	do.	2,595	--	--	T,E 15	Irr	Pump set at 90 ft.
809	do.	1961	95	14	do.	2,578	--	--	T,E 15	Irr	Do.
810	do.	1961	95	14	do.	2,577	--	--	T,E 15	Irr	Do.
811	Dumont Bridge	1959	72	14	do.	2,578	44.2	Sept. 4, 1968	T,E 15	Irr	Pump set at 70 ft.
812	do.	1960	70	12	do.	2,569	--	--	T,E	Irr	Pump set at 65 ft.
813	do.	1960	62	12	do.	2,574	43.3	Sept. 4, 1968	T,E 7 1/2	Irr	Pump set at 60 ft.
814	do.	1959	50	12	do.	2,568	24.3	do.	T,E 10	Irr	Pump set at 47 ft.
815	J. Perryman	1966	35	14	do.	2,509	--	--	Cf,E 1 1/2	Irr	
816	do.	1963	35	12	do.	2,488	--	--	T,E 7 1/2	Irr	
817	do.	1958	30	--	do.	2,506	9.7	Sept. 6, 1968	Cf,E	Irr	Manifold system consisting of 4 wells connected with 3 inch pipe. Wells are in circular pit approximately 3 ft. below the general land surface.
818	do.	1958	44	14	do.	2,485	25.2	do.	T,E 15	Irr	Pump set at 44 ft.
819	P. Hext	1962	45	14	do.	2,520	14.8	do.	T,E 15	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-10-820	P. Hext	1962	45	10	Qal	2,510	--	--	S,E 3	Irr	
821	Dumont Bridge	--	100	14	do.	2,598	--	--	T,E 20	Irr	Pump set at 95 ft.
822	B. Bridge	1959	70	14	do.	2,480	38.5	Sept. 6, 1968	N	N	
823	John Stokes	1962	25?	6	do.	2,539	5	Mar. 5, 1969	Cf,G	Irr	Manifold system consisting of 3 wells about 75 ft. apart and connected with 4 inch pipe. Reported wells drilled to red bed and that formation consisted principally of gravel with very little sand. Wells are adjacent to Cottonwood Creek.
824	Miss Eva Collier	1962?	--	--	do.	2,539	--	--	Cf,E	Irr	Manifold system consisting of 3 wells about 100 ft. apart. Depth of wells reported to be about the same as HY-22-10-823.
825	W. J. Bridge	1962 & 1965	30	7	do.	2,531	--	--	Cf,E 15	Irr	Manifold system consisting of 5 wells connected with 4 inch pipe. Reported yield of system is approximately 200 gpm. Wells are adjacent to Cottonwood Creek.
826	Dumont Bridge	--	--	--	do.	2,551	11.7	Mar. 5, 1969	Cf,N	N	
827	Faris McCarty	--	62?	--	do.	2,555	--	--	T,E	Irr	
* 828	--Collier	Spring	--	--	do.	--	+	--	Spring	N	Spring No. 5. Estimated discharge of 25 gpm from many seeps on Sept. 19, 1938. Springs flowing in 1969. a/
901	Jack Lawson	1957	55	12	do.	2,417	9.6 8.7 8.5	Dec. 18, 1959 Dec. 27, 1960 June 6, 1968	T,E 25	Irr	Reported yield of 252 gpm on Aug. 15, 1960 with pumping level at 38.7 ft.
902	--Baker	--	91	12	do.	2,508	--	--	T,E 7 1/2	Irr	Red bed reported at 90 ft.
903	B. Bridge	1960	95	12	do.	2,475	45.2	Sept. 6, 1968	T,E 30	Irr	Pump set at 95 ft.
904	Paul Braddock	--	40?	--	do.	2,405	--	--	T,E 10	Irr	Depth of well reported between 40-60 ft.
905	do.	--	40?	--	do.	2,399	--	--	T,E 10	Irr	Do.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-10-906	Paul Braddock	--	40?	--	Qal	2,391	--	--	T,E 5	Irr	Depth of well reported between 40 and 60 ft. Well adjacent to pond on Cottonwood Creek.
907	do.	1940	40?	14	do.	2,388	5.1	Sept. 9, 1968	T,E 20	Irr	Depth of well reported between 40-60 ft. Well adjacent to pond on Cottonwood Creek.
908	do.	1940	40?	14	do.	2,398	--	--	T,E 10	Irr	Depth of well reported between 40-60 ft.
909	--Jones	1965?	--	12	do.	--	--	--	T,E 20	Irr	Land surface caved around casing.
910	D. Blasingame	1967	120	14	do.	2,451	25.8	June 7, 1968	T,G	Irr	
911	P. Braddock	--	165	12	do.	2,445	--	--	T,G	Irr	
* 912	H. H. Bland	1965	105	8	do.	2,459	--	--	S,E 1 1/2	S	Water supply for chicken hatchery. Red bed reported at 105 ft.
913	R. F. Varnell	--	92	--	do.	2,503	53.1	Mar. 19, 1969	T,E 20	Irr	Pump set at 87 ft.
914	do.	1960	62	12	do.	2,483	--	--	T,G	Irr	Pump set at 58 ft.
915	do.	1963	53?	12	do.	2,477	--	--	T,G	Irr	Pump intake set 4 ft. above bottom of well.
* 916	D. R. Hale	1954?	50	--	do.	2,435	--	--	S,E 4	D,S	Formerly used for irrigation. Pump set at 20 ft. Supplies water for domestic use and chicken hatchery.
917	do.	1958	50	12	do.	2,435	9.4	Mar. 22, 1969	T,E 20	Irr	
918	do.	1958	50	--	do.	2,435	--	--	T,E 15	Irr	
919	G. Jackson	1955	110	14	do.	2,455	28.3	Mar. 20, 1969	T,G	Irr	
920	do.	1956	110	14	do.	2,460	34.2	Mar. 20, 1969	T,G	Irr	
921	G. Slaton	1963?	80	12	do.	2,448	15	1963?	T,G	Irr	Red bed reported at 80 ft. Pump set at 75 ft.
922	--Thompson	--	50?	12	do.	2,431	--	--	T,E 15	Irr	
923	G. Slaton	1969	146	6	do.	--	30	1969	S,E	D	Reported drilled 1 or 2 ft. into red bed.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-10-924	L. C. Roberts	1960	100	14	Qal	2,455	25.8	Sept. 9, 1968	T,G	Irr	Pump set at 95 ft.
925	do.	1951	50	--	do.	2,448	--	--	T,E 10	Irr	
926	--Middleton	--	--	12	--	2,426	21.2	Mar. 25, 1969	T,N	Irr	
11-401	E. E. Moss & Sons	1960	57	12	Qal	2,274	2.6 2.9	Feb. 26, 1969 Mar. 24, 1969	T,G	Irr	Combined yield of this well and another well to the north in Motley County reported to be 105-120 gpm. Reported well not used since 1964. Springs discharging along Cottonwood Creek which is adjacent to this well.
701	Paul Braddock	1959	135	18	do.	2,436	66.1 60.3	Dec. 18, 1959 Sept. 5, 1968	T,E 50	Irr	Red bed reported at 135 ft. Reported yield of 183 gpm on May 24, 1960. 2/
* 702	Dempsey Sims	1955	119	14	do.	2,431	42.6 39.8	Dec. 18, 1959 Sept. 9, 1968	T,E 15	Irr	Reported yield 100 gpm on May 24, 1960 with pumping level at 68.3 ft. 2/
703	Paul Braddock	1950	135	6	do.	2,420	--	--	T,E	Irr	
704	do.	1963	65	12	do.	2,413	--	--	T,E	Irr	
705	do.	1963	90	12	do.	2,385	4.0	Sept. 9, 1968	T,G 30	Irr	
706	Dempsey Sims	1967	120	14	do.	2,428	--	--	T,G 30	Irr	
707	T. Martin	1952	100	12	do.	2,426	39.3	Sept. 10, 1968	T,E 20	Irr	Pump set at 95 ft.
708	do.	1961	110	12	do.	2,417	33.7	do.	T,G 30	Irr	Pump set at 105 ft.
709	L. Sharp	1964	123	12	do.	2,416	41.1	do.	T,G 30	Irr	Pump set at 119 ft.
710	do.	1958	123	12	do.	2,423	--	--	T,E 30	Irr	Do.
711	do.	1952	135	14	do.	2,428	--	--	T,G 50	Irr	Pump set at 130 ft.
712	T. Roberts	1953	110	12	do.	2,422	36.9	Sept. 10, 1968	T,G 55	Irr	Pump set at 105 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
					Dickens County						
HY-22-10-713	T. Roberts	1966	125	12	Qal	2,420	41.6	Sept. 10, 1968	T,G 56	Irr	
714	do.	1962	110	12	do.	2,425	--	--	T,E 10	Irr	Pump set at 105 ft.
* 12-501	S. M. Swenson	--	120	6	P	--	76.6	Feb. 21, 1967	P,W	S	
* 701	--	--	55	6	Qal	2,377	47.8	Sept. 19, 1967	P,W	S	
904	Floyd Forrest	1959	180	6	P	2,132	101.1 92.0	Dec. 18, 1959 Dec. 27, 1960	P,W	S	
* 17-101	Weldon Cypert	1964	409	10	To	2,990	245.2	Feb. 27, 1969	T,E 25	Irr	Pump set at 390 ft.
* 401	R. Eldredge	1957	476	16	To	2,968	--	--	S,E 15	Irr	Pump set at 450 ft.
402	do.	1964	450	12	To	2,969	--	--	S,E 15	Irr	Pump set at 450 ft.
* 403	do.	1957	500	16	To	2,963	--	--	S,E 10	Irr	Pump set at 450 ft.
* 404	Earl Van Meter	1965	450	14	To?	2,973	--	--	S,E 15	Irr	Pump set at 420 ft.
405	do.	1953	438	16	To	2,971	--	--	S,E 20	Irr	Pump set at 420 ft.
* 406	do.	1965	430?	--	To?	--	--	--	P,W	D,S	Pump set at about 350 ft.
* 501	--Goen	--	Spring	--	Trd	2,660?	+	--	Spring	S	Spring No. 14. Estimated yield 1/4 gpm on Sept. 22, 1938 from fracture in conglomerate (Triassic).a/
901	M. Booth	1955	50	12	Qal	2,488	30.6 31.6 36.0	Dec. 23, 1959 Dec. 27, 1960 Dec. 13, 1968	T,E 3	Irr	
902	Edith Blackwell	old	49	20	Trd	2,572	45.0 47.6	Feb. 20, 1946 Sept. 16, 1967	P,W	N	Water-level measurement in 1946 from well at this location, possibly same well.
903	City of Dickens	1967	64	12	Qal	2,500	44.6 40.4	Sept. 16, 1967 Dec. 13, 1968	N	N	Drilled for future use as public supply well.
904	M. Booth	--	--	12	do.	2,486	35.0	Dec. 13, 1968	T,E 5	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
						Dickens County					
HY-22-17-905	M. Booth	1960?	--	12	Qal	2,491	39.6	Dec. 13, 1968	T,E 5	Irr	
906	C. D. Cash	1966	60	10	do.	2,485	--	--	T,E 10	Irr	
907	do.	--	60	12	do.	2,491	--	--	T,E 10	Irr	
* 908	S. M. Swenson & Sons	--	Spring	--	Trd	2,538	+	--	Spring	--	Spring No. 16. Estimated yield of 10-20 gpm on Sept. 22, 1938 from many seeps at contact of red clay and sandstone and conglomerate. a/
18-101	--	--	--	9	Qal?	2,631	33.3	Mar. 19, 1969	T,E 5	N	Elec. meter removed. Unused 10" casing approximately 500 ft. east of this well.
* 102	J. W. McSpaddon	1969	81	6	Qal?	2,655	--	--	S,E 1/2	D	Another well drilled in 1969 about 1,000 ft. east of this well is not in use yet.
201	E. G. McInroe	1957	74	12	Qal	2,530	24.1 22.4	Dec. 15, 1959 Dec. 27, 1960	T,E 5	Irr	
* 202	R. W. Howard	1957?	28	--	do.	2,540	--	--	J,E --	D,S	Red bed reported at 28 ft. For domestic use and supplying water for chicken hatchery.
203	W. J. Bridge	--	--	14	do.	2,480	--	--	T,E 10	Irr	
204	R. Bennett	--	40?	--	do.	2,558	--	--	T-	Irr	
205	P. A. Willmon	1969	60	6	do.	2,558	23	Jan. 1969	N	N	Drilled for domestic use. Pump not installed.
* 301	J. W. Vickrey	1953	92	16	do.	2,441	26.9 25.9	Dec. 14, 1959 Jan. 17, 1968	T,E 7 1/2	Irr	Red bed reported at 91 ft. Reported yield 132 gpm on Aug. 15, 1960 with pumping level at 52.3 ft. 2/
302	J. H. McAllister	--	66	12	do.	2,485	--	--	N	N	
303	J. W. Vickrey	--	90	14	do.	2,442	--	--	T,E 7 1/2	Irr	Red bed reported at 90 ft.
304	do.	--	90	14	do.	2,440	--	--	T,G	Irr	Do.
305	G. Jackson	1958?	85	14	do.	2,442	24.9	Mar. 21, 1969	T,E 10	Irr	Red bed reported at 85 ft.
306	do.	do.	120	14	do.	2,440	23.5	do.	T,G	Irr	Red bed reported at 120 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
						Dickens County					
HY-22-18-307	C. Morris	--	--	--	--	2,454	--	--	--	Irr	Not used in 1968.
308	Mrs. --McAlister	1960?	55?	14	Qal	2,484	--	--	T,E 2	Irr	Approximately 700 ft. west of unused well 302.
309	Mrs. A. McCarty	1963?	100?	--	do.	2,464	--	--	T,E 15	Irr	Land surface caved around well.
310	C. B. Roberts	1960	86	12	do.	2,435	--	--	T,E 15	Irr	
311	--Ragland	--	--	--	do?	2,433	--	--	T,E	Irr	Depth not known.
312	--Ragland	--	--	--	do?	2,433	--	--	T,E	Irr	Do.
501	--	--	--	12	Qal?	2,590	--	--	T,E 5	N	Elec. meter removed.
* 502	--Edwards	--	Spring	--	To?	2,560?	+	--	Spring	--	Spring No. 8. Estimated yield of 1 to 2 gpm on Sept. 22, 1938 from several seeps. Contact of red beds (Permian?) just below on either side of canyon. a/
601	Mrs. Mary Dunn	1958	--	5	P	2,317	10.4 8.8	Dec. 18, 1959 Dec. 27, 1960	P,W	S	
* 602	H. D. Edwards	1962	87	6	do.	2,458	67	Nov. 1962	P,W	S	Casing perforated from 67 to 87 ft. 1/
* 701	J. W. Craig	--	78	4	Trd	2,695	69.2	Sept. 29, 1967	P,W	S	
* 702	M. Blackwell	--	60	--	do.	2,752	--	--	J,E	D	
* 801	City of Dickens	--	Spring	--	do.	2,490?	+	--	Spring	N	Spring No. 17. Estimated yield of 15 gpm on Sept. 21, 1938 and Sept. 11, 1967 from fractures and holes in Triassic sandstone and conglomerate. Permian shale crops out downstream. a/
* 802	--	--	Spring	--	do.	2,440?	+	--	Spring	P	Spring No. 18. Estimated yield of 3 gpm on Sept. 21, 1938 (8 gpm on Sept. 11, 1967) from fractures in Triassic sandstone and conglomerate. Adjacent to contact of Permian and Triassic rocks. Supplies water for public park. a/
19-101	C. B. Roberts	1957	106	14	Qal	2,425	45.2	Dec. 15, 1959	T,E 15	Irr	
102	do.	1953	112	12	do.	2,424	--	--	T,G	Irr	Pump set at about 108 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-19-103	C. B. Roberts	1962	123	16	Qal	2,427	--	--	T,G	Irr	Pump set at about 119 ft.
104	Mrs. L. Goodwin	--	50?	14	do.	2,430	--	--	T,E 7 1/2	Irr	Not used for 3 years.
105	--Harvey	1953?	101	12	do.	2,431	23.3	Mar. 25, 1969	T,E 5	Irr	Red bed reported at 101 ft.
106	do.	1953?	90	12	do.	2,431	23.9	Mar. 25, 1969	T,E 5	Irr	Red bed reported at 90 ft.
107	W. B. Carothers	1957	85	14	do.	2,419	28.4	Mar. 26, 1969	T,G	Irr	1/
108	Mrs. L. Goodwin	--	80?	--	do.	2,421	27.0	May 23, 1968	T,G	Irr	
109	do.	--	70?	--	do.	2,422	30.5	May 23, 1968	T,G	Irr	
110	--	--	--	12	Qal?	2,448	56.1	June 6, 1968	T,E 10	Irr	
* 111	C. B. Roberts	1969	112	6	Qal	2,451	52	Jan. 1969	P,W	S	
112	do.	1966	104?	--	do.	2,441?	--	--	T,G	Irr	
* 113	F. Byars	1969	96	6	do.	--	--	--	S,E 1/2	D	Pump set at 84 ft.
114	do.	1958?	110?	12	do.	2,440	--	--	T,E 20	Irr	
115	do.	1960?	100?	12	do.	2,426	34.0	Mar. 26, 1969	T,E 15	Irr	Unused well about 200 ft. east of this well.
116	do.	1959?	90?	--	do.	2,425	--	--	T,E 10	Irr	
117	--Lawson	--	--	--	Qal?	2,421	28.7	Mar. 25, 1969	T,G	Irr	
* 118	C. B. Roberts	1969	101	6	Qal	2,424	40	Jan. 24, 1969	S,E 1/2	D	Casing perforated from 85-100 ft. Pump set at 84 ft. Cased to 101 ft.
119	Ira Sullivan	1966	155	12	do.	2,430	56	July 1, 1966	T,E	Irr	Cased to 152 ft. Casing perforated from 117 to 150 ft. Pump set at 140 ft. 1/
120	F. Ragland	1964	100?	10	do.	2,442	--	--	T,E 10	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-19-121	F. Ragland	--	--	12	Qal?	2,436	27.2	Mar. 27, 1969	T,E 15	Irr	
301	H. Edwards	1959	206	6	?	2,494	173.6 173.1	Dec. 18, 1959 Dec. 27, 1960	P,W	S	
302	Red River Authority of Texas	1967	260	8	P?	2,510	190	1967	--	P	Supplies water for towns of Guthrie and Dumont in King County.
901	T. L. Conoway	1956	70	12	Qal	2,159	30.8 27.2 34.6	Dec. 16, 1959 Dec. 27, 1960 Apr. 3, 1969	N	N	Pump removed. New well (909) about 25 ft. southwest of this well.
* 902	do.	--	75	12	Qal?	2,154	--	--	T,G	Irr	Reported well drilled into cavity.
* 903	J. Koonsman	--	60	12	do.	2,125	--	--	T,G	Irr	
904	R. Murchison	1955	55	14	P	2,141	--	--	T,G	Irr	Reported drilled into cavity. 1/
* 905	C. C. Sanders	--	45	12	Qal	2,140	--	--	T,G	Irr	Red bed reported at 45 ft.
906	do.	--	50	--	Qal?	2,165	--	--	T,G	Irr	Reported low-yielding well and probably will not be used in the future.
907	--Drennan	--	84	--	Qal	2,162	--	--	T,G	Irr	
* 908	T. L. Conoway	1965	90	12	Qal?	2,155	--	--	T,G	Irr	
909	do.	--	90	12	Qal	2,161	34.0	Apr. 3, 1969	T,E 5	Irr	
* 910	T. M. Lewis	1963?	92	--	Qal?	2,202	--	--	T,E 10	Irr	
911	do.	1968	95	--	Qal	2,202	--	--	T,G	Irr	
912	R. Murchison	--	67	12	P	2,146	--	--	T,G	Irr	Reported found water at 65 ft. and cavity from 65 to 67 ft.
* 913	do.	1948	67	8	P	2,146	--	--	S,E	Irr	Do.
914	J. Koonsman	1956?	55	12	Qal?	2,135	--	--	T,G	Irr	
915	do.	--	60	12	do.	2,150?	--	--	T,G	Irr	
916	do.	--	70	12	do.	2,145?	--	--	T,G	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Dickens County											
HY-22-19-917	T. L. Conoway	--	--	--	Qal?	2,154	--	--	T,E 10	Irr	
* 20-701	Pitchfork Land and Cattle Co.	--	189	6	P	--	168.4	Feb. 25, 1967	P,W	S	
* 25-201	S. M. Swenson	--	Spring	--	Trd	2,485	+	--	Spring	D,S	Estimated yield of 2-3 gpm on Mar. 7, 1969 from opening in Triassic sandstone and conglomerate. Supplies water for domestic and stock use at Spur Headquarters ranch.
* 202	do.	--	Spring	--	do.	2,485	+	--	Spring	S	Spring No. 19. Estimated yield of 4-5 gpm on Oct. 7, 1938 (Est. 3-4 gpm on Mar. 7, 1969) from fractures in Triassic sandstone and conglomerate. a/
* 301	City of Dickens	1950	73	16	Qal	2,460	--	--	T,E 10	P	Supplies water for city of Dickens.
* 302	do.	1954	83	16	do.	2,460	--	--	T,E 10	P	Do.
303	Harold Karr	--	80	12	do.	2,454	37.3 36.9	Dec. 23, 1959 Dec. 28, 1960	T,E 5	Irr	Red bed reported at 80 ft.
304	V. Arrington	1954	78	16	do.	2,417	28.2 36.9	Dec. 23, 1959 Jan. 17, 1968	T,E 10	Irr	Red bed reported at 78 ft. Reported yield 190 gpm on Aug. 16, 1960 with pumping level at 63 ft. 2/
305	D. Dopson	1956	85	--	do.	--	--	--	T,E	D	Red bed reported at 74 ft.
306	--	--	32	8	do.	2,423	21.4	Sept. 16, 1967	P,W	N	
307	V. Arrington	--	68?	14	do.	2,421	33.9	May 2, 1968	T,E 10	Irr	
* 308	R. Waddell	1957	106	--	do?	2,420	33.9	do.	T,E 15	Irr	
* 309	--Crabtree	--	72	12	do.	2,422	--	--	T,E 10	Irr	Reported drilled to red bed.
* 310	V. Arrington	--	--	14	do.	2,427	38.5	May 2, 1968	T,E 15	Irr	
311	do.	--	--	14	do.	2,428	38.8	do.	T-	N	
312	do.	--	--	--	do.	2,432	--	--	T,E 15	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
* HY-22-25-313	--Crabtree	--	68	--	Qal	2,438	--	--	T,E 15	Irr	
314	--Sharp	1955	75	--	do.	2,420	37.3	May 2, 1968	T,G	Irr	
315	do.	1957	55?	12	do.	2,418	34.6	do.	T,E 10	Irr	
316	do.	1957?	55?	12	do.	2,418	34.7	do.	T,E 10	Irr	Irrigates about 80 acres with wells 314, 315, and 316.
317	do.	--	50?	--	Qal?	2,424	--	--	--	N	Reported to be a low-yielding well.
318	O. Haile	--	50?	--	Qal	2,414	32.2	Apr. 30, 1968	T,E 15	Irr	
319	do.	--	57	16	do.	2,414	33.1	do.	T,G	Irr	
320	C. D. Cash	--	70	16	do.	2,489	36.9	Dec. 11, 1968	T,E 10	Irr	
321	do.	1966	85	12	do.	2,484	--	--	T,E 3	Irr	
322	C. F. Holloway	--	60	10	do.	2,481	33.0	Dec. 12, 1968	T,G	Irr	Reported drilled to hard material at 60 ft. which was not considered to be red bed.
323	do.	--	80	--	do.	2,471	--	--	T,G	Irr	Reported drilled to red bed.
324	do.	--	80	14	do.	2,475	36.0	Dec. 12, 1968	T,E 7 1/2	Irr	
325	Don Ramsey	--	33?	10	do.	2,446	29.7	Dec. 13, 1968	T,E 2	N	Not used for 4-5 years.
326	do.	--	33?	8	do.	2,446	--	--	T,E 3	N	Do.
327	C. Dopson	1958	80	12	do.	2,452	--	--	T,E 15	Irr	
328	do.	1961	65	12	do.	2,445	--	--	T,G	Irr	
329	do.	1957	70	12	do.	2,445	--	--	T,G	Irr	
330	do.	1956	60	14	do.	2,438	33.8	Dec. 12, 1968	T,E 5	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Dickens County											
HY-22-25-331	--Crabtree	--	74	--	Qal	2,430?	--	--	T,E 7 1/2	Irr	Reported drilled to red bed.
332	--Redding	--	60?	12	do.	2,438	--	--	T,E 3	Irr	
333	do.	--	60?	12	do.	2,432	--	--	S,E	Irr	
334	Harold Karr	1968	55	--	do.	2,450	--	--	S,E	Irr	Reported drilled to red bed.
335	do.	1960?	64	--	do.	2,454	--	--	T,E	Irr	
336	do.	--	77	--	do.	2,450	--	--	T,G	Irr	
337	R. Waddell	--	60?	12	do.	--	--	--	--	Irr	
401	R. Powell	1957	75	12	do.	2,493	19.8 19.9 24.7	Dec. 24, 1959 Dec. 27, 1960 Oct. 24, 1968	T,E 10	Irr	Reported yield of 92 gpm on Aug. 16, 1960 with pumping level at 35 ft.
402	J. R. Hunter	1954	58	12	do.	2,442	19.0 20.4	Dec. 10, 1959 Oct. 22, 1968	N	N	Red bed reported at 58 ft. Reported yield 68 gpm with pumping level at 34.5 ft. 2/
* 403	W. E. Armstrong	--	76	10	do.	2,412	--	--	T,E 3	Irr	
405	--	1967	63	6	Trd	2,514	38.7	Sept. 16, 1967	J,E 1	S	
406	R. Powell	--	--	12	Qal	2,488	20.9	Oct. 24, 1968	T,E 10	Irr	
407	do.	1967	75	12	do.	2,496	26.9	do.	T,E 5	Irr	
408	Martin Garcia	1964	120	--	do. Trd?	2,501	25.3	Oct. 25, 1968	T,E 60	Irr	
409	V. Harris	--	--	12	Qal?	2,501	24.8	do.	T,E 30	Irr	
410	do.	--	--	14	do.	2,455	17.5	Oct. 23, 1968	T,E 5	Irr	
411	do.	--	--	12	do.	2,462	16.2	do.	T,E 5	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-25-412	V. Harris	--	--	10	Qal?	2,475	22.7	Oct. 23, 1968	S,E	Irr	
413	do.	--	--	12	do.	2,479	23.8	do.	T,E 5	Irr	
414	do.	--	--	10	do.	2,488	16.6	do.	T,E 25	Irr	
415	R. Powell	1966	87	--	do.	2,508	--	--	T,E 40	Irr	Reported good yielding well. Not pumped in 1968.
416	J. R. Hunter	--	57?	12	Qal	2,443	22.4	Oct. 22, 1968	T,E 5	Irr	Not used for several years.
417	do.	--	--	10	do.	2,430	15.8	do.	N	N	Do.
418	W. E. Armstrong	--	40?	12	do.	2,426	26.4	Apr. 8, 1968	T,E 7 1/2	Irr	
419	do.	--	40?	10	do.	2,425	--	--	S,E	Irr	
* 420	do.	--	40?	10	do.	2,422	--	--	S,E	Irr	
501	--Draper	--	60	12	do.	2,401	24.4	Apr. 5, 1968	S,E	Irr	Reported drilled to red bed at 60 ft. with 4 ft. of gravel on bottom. Cased to 56 ft.
502	Bruce Tyler	1961?	49	12	do.	2,410	24.9	Oct. 28, 1968	T,E 5	Irr	Pump set at 46 ft.
* 503	do.	1961?	49	10	do.	2,408	24.9	do.	S,E	Irr	
504	W. E. Armstrong	--	40?	10	do.	2,411	--	--	S,E	Irr	
505	do.	--	56	10	do.	2,412	28.0	Apr. 11, 1968	S,E	Irr	
506	do.	--	40?	10	do.	2,412	--	--	S,E	Irr	
507	do.	--	40?	8	do.	2,416	--	--	S,E	Irr	
508	do.	--	54	10	do.	2,410	24.0	Apr. 8, 1968	S,E	Irr	
509	do.	--	37	12	do.	2,405	22.3	do.	S,E	Irr	
510	do.	--	40?	10	do.	2,403	--	--	S,E	Irr	
* 511	do.	--	40?	10	do.	2,402	--	--	S,E	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-25-512	W. E. Armstrong	--	59	12	Qal	2,410	33.2	Apr. 5, 1968	S,E	Irr	
513	do.	--	40?	12	do.	2,408	--	--	S,E	Irr	
514	do.	--	40?	12	do.	2,402	--	--	S,N	N	
515	do.	--	40?	12	do.	2,402	--	--	N	N	
516	do.	--	40?	12	do.	2,402	--	--	S,N	N	
517	do.	1962?	40?	12	do.	2,395	--	--	S,N	N	
518	do.	1962?	40?	12	do.	2,396	--	--	N	N	
519	do.	1962?	33	12	do.	2,396	19.5	Apr. 3, 1968	S,N	N	
520	do.	1962?	38	12	do.	2,396	19.2	do.	S,N	N	
521	do.	1962?	40?	12	do.	2,396	--	--	N	N	Water from wells 512-521 was conveyed through underground pipe to an earthen tank from which water for irrigation was pumped.
601	W. A. Harris	1956	75	14	do.	2,395	22.8 22.3 28.0	Dec. 23, 1959 Dec. 28, 1960 Apr. 27, 1968	T,E	Irr	Reported yield of 94 gpm on Aug. 16, 1960 with pumping level at 39 ft.
602	L. Foreman	1957	47	12	--	2,400	23.1 25.4	Dec. 24, 1959 Jan. 25, 1968	T,E 5	Irr	Red bed reported at 147 ft. Reported yield of 110 gpm on Aug. 16, 1960. 2/
* 603	W. E. Armstrong	1967	60?	12	do.	2,415	29.0	Apr. 4, 1968	T,E 5	Irr	
* 604	do.	1967	60?	12	do.	2,420	27.3	do.	T,E 5	Irr	
605	do.	1967	60?	12	do.	2,423	26.5	do.	T,E 5	Irr	
* 606	H. Lemley	--	--	12	Qal?	2,403	--	--	T,E 5	Irr	
* 607	do.	1965?	54	12	Qal	2,403	28.1	Apr. 8, 1968	T,E 3	Irr	Reported drilled to red bed.
608	do.	1965?	49	12	do.	2,403	--	--	T,E 3	Irr	Do.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Dickens County											
* HY-22-25-609	R. B. Walsworth	--	100?	--	Qal	2,394	--	--	T,E 10	Irr	
* 610	do.	--	100?	--	do.	2,395	24.2	May 23, 1968	T,E 10	Irr	
611	--	--	--	6	Qal?	2,407	27.0	Apr. 25, 1968	T,E 2	S	
612	V. Harris	--	69?	12	Qal	2,406	--	--	T	Irr	
613	do.	--	60?	12	do.	2,407	26.0	Apr. 25, 1968	T,E 10	Irr	
614	do.	--	53	12	do.	2,398	29.3	do.	S	N	Depth to red bed reported to be 45 ft. in unused well about 500 ft. north of well 614.
615	do.	--	62?	12	do.	2,397	28.0	do.	T,E 10	Irr	
616	R. Waddell	--	105	12	do.	2,386	--	--	T,G	Irr	
* 617	do.	--	96	12	do.	2,384	--	--	T,E 10	Irr	
618	--	--	--	12	Qal?	2,366	20.2	Apr. 29, 1968	T,E 7	N	Electric power disconnected. Appears to have been unused for sometime.
619	O. Haile	--	50?	14	Qal	2,405	27.8	May 1, 1968	T,E 5	N	Electric power disconnected. Reported unused for 1 year.
620	--Morgan	1957	60?	12	do.	2,407	29.4	do.	T,E 10	Irr	
621	--Shugart	1957	93	--	do.	2,401	--	--	T,E 15	Irr	Pump set at 85 ft.
622	do.	1957	55	12	do.	2,403	25.3	Apr. 26, 1968	T,E 5	Irr	Pump set at 47 ft.
623	do.	1960	85	12	do.	2,396	25.8	do.	T,E 10	Irr	Pump set at 77 ft.
624	do.	1957	85	12	do.	2,396	26.4	do.	T,E 10	Irr	Do.
625	W. A. Harris	--	--	14	Qal?	2,390	--	--	T,E 15	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
						Dickens County					
HY-22-25-626	W. A. Harris	--	--	14	Qal?	2,381	23.3	Apr. 27, 1968	T,E 5	Irr	
627	do.	--	36	12	Qal	2,393	28.2	Apr. 29, 1968	T,G	N	Not used for several years.
628	Hubert Karr	--	44	16	do.	2,401	31.2	do.	T,E 2	Irr	
629	Harold Karr	1955?	40?	14	do.	2,391	--	--	T,E 5	Irr	
630	do.	1955?	40?	12	do.	2,386	--	--	T,E 5	Irr	
* 631	J. Aston	1954	42	14	do.	2,354	18.3 17.9 18.4	Dec. 23, 1959 Dec. 28, 1960 Apr. 11, 1968	T,E 7 1/2	Irr	Reported yield of 84 gpm on Aug. 16, 1960 with pumping level at 40 ft.
632	R. Waddell	--	62?	12	do.	2,391	22.5	Dec. 10, 1968	T,E 5	Irr	
633	L. Foreman	--	47	12	do.	2,388	18.7	May 22, 1968	T,E 5	Irr	
634	do.	--	44	14	do.	2,392	23.8	do.	T,E 3	Irr	
* 635	V. Wilson	1957?	90	12	do.	2,382	--	--	T,E 15	Irr	
801	A. L. Powell	--	26	12	do.	2,375	--	--	Cf,G	Irr	Red bed reported at 24 ft.
802	H. M. Costolow	--	50	14	do.	2,364	25.3	Apr. 2, 1968	T,E 5	Irr	1/
803	B. L. Pickens	--	28	--	do.	--	--	--	T,E	N	Red bed reported at 27.5 ft. Unable to locate this well in 1968.
804	G. H. Snider	--	--	10	Qal?	2,328	20.5	Mar. 5, 1968	T,E 7 1/2	Irr	
805	D. Wright	1960?	68	14	Qal	2,336	--	--	T,E 5	Irr	Well furnishes water to irrigate about 15 acres.
806	do.	1962?	48?	--	do.	2,331	24.9	Mar. 25, 1968	T,E 3	Irr	Do.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-25-807	D. Wright	1962?	48?	14	Qal	2,333	--	--	T,E 3	Irr	Well furnishes water to irrigate about 15 acres.
808	L. Hindman	--	--	10	do?	2,333	--	--	T,E 5	Irr	
809	--Wade	--	--	--	do?	2,338	24.7	Mar. 26, 1968	T,E 3	Irr	
810	do.	--	--	12	do?	2,337	--	--	T,E 5	Irr	
* 811	--Bilberry	1956	46	14	do.	2,349	23.0	Mar. 26, 1968	T,E 5	Irr	Pump set at 45 ft. tries to irrigate 30 acres but has to be very economical in applying water.
812	L. Hindman	1965?	--	12	do?	2,352	--	--	T,E 7 1/2	Irr	
813	do.	--	--	14	do.	2,353	15.2	Mar. 27, 1968	T,E 7 1/2	Irr	
814	H. M. Costolow	--	--	14	do.	2,362	24.7	Apr. 2, 1968	T,E 5	Irr	
815	B. Ballard	--	--	12	do.	2,348	16.4	Oct. 29, 1968	T,E 3	Irr	
816	do.	--	--	12	do.	2,348	18.3	do.	T,E 7 1/2	Irr	
817	G. H. Snider	1959	37	16	do.	2,323	--	--	T,E 3	Irr	Red bed reported at 35 ft.
* 902	L. Hindman	1958	63	16	do.	2,353	28.8 29.9 31.7	Dec. 23, 1959 Dec. 28, 1960 Jan. 25, 1968	T,E	Irr	Red bed reported at 63 ft. Estimated yield of 65 gpm on Aug. 16, 1960 with pumping level at 48 ft.
903	do.	1955	36	12	do.	2,330	20.5 19.3 19.7	Dec. 24, 1959 Dec. 28, 1960 Jan. 24, 1968	N	N	Reported unused for several years. Red bed reported at 36 ft. Estimated yield of 16 gpm on Aug. 16, 1960 with pumping level at 30.5 ft.
904	F. Albin	1958	45	12	do.	2,325	22.3 22.4 28.4	Dec. 23, 1959 Dec. 28, 1960 Feb. 9, 1968	T,E 3	Irr	Reported yield of 39 gpm on Aug. 16, 1960 with pumping level at 35.6 ft.
906	B. Bingham	--	42	12	do.	2,318	26.1	Jan. 24, 1968	T,E 3	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
* HY-22-25-907	P. Hale	--	50?	12	Qal	2,326	26.9	Feb. 9, 1968	T,E 5	Irr	
908	do.	--	50?	12	do.	2,324	26.7	Mar. 4, 1968	T,E	Irr	
909	do.	--	50?	12	do.	2,325	25.9	do.	T,E 5	Irr	
910	do.	--	50?	12	do.	2,327	27.4	Feb. 9, 1968	T,E 3	Irr	
911	do.	--	50?	12	do.	2,325	26.4	do.	T,E	Irr	
912	do.	--	50?	8	do.	2,324	--	--	T,E 5	Irr	
913	--	--	--	14	Qal?	2,338	16.0	Mar. 28, 1968	N	N	Water-level observation only.
914	Hubert Karr	--	70?	14	Qal	2,353	33.0	do.	T,E 7 1/2	Irr	
915	L. Hindman	--	--	--	Qal?	2,351	28.9	do.	T,E 10	Irr	
916	do.	--	--	7	do.	--	--	--	T,E 1 1/2	S	
917	--	--	--	14	do.	2,336	18.3	Mar. 28, 1968	T,E 5	Irr S	
* 918	John Aston	--	--	--	do.	2,350	--	--	T,G	Irr	
919	--	--	--	12	do.	2,322	--	--	T,E 5	Irr	
* 920	--Garcia & Sons	--	--	12	do.	--	--	--	T,E 5	Irr	
921	do.	--	60?	12	Qal	2,308	--	--	T	N	Not used in 1968. Electric power disconnected.
922	V. Harris	--	--	12	do.	2,302	21.3	May 20, 1968	T,E 5	Irr	
* 923	D. Young	1957	56	12	do.	2,305	--	--	T,E 7 1/2	Irr	Unused well about 200 ft. east and about 50 ft. south of this well.
* 26-101	City of Dickens	1935	110	10"-8"	Trd	2,560?	88.3	Sept. 16, 1947	T,E 3	N	Reported yield of 50 gpm in 1946. Unused. Well No. 4 in USGS WSP 1106.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
						Dickens County					
* HY-22-26-102	City of Dickens	1936	90	6	Trd	2,550?	77	1936	N	N	Reported yield of 10 gpm in 1946. Destroyed. Well No. 1 in USGS WSP 1106.
103	do.	1960?	66?	12	Qal?	2,528	--	--	T,E 5	Irr	Owner reported well drilled into cavity in bed rock. After pumping 7-9 hours on Dec. 5, 1967, water level was 61 ft. below land surface in open casing 10 ft. from well 103.
* 104	Double "L" Motel	1962	90?	8	Trd	2,561	61.1	Sept. 20, 1967	S,E 1/2	Irr P	Pump set at 80 ft.
105	R. G. Long	--	85?	12	Trd?	2,534	56.9	Dec. 6, 1967	S,E 3	Irr	
106	J. Kidd	1967	52	10	Qal	2,528	--	--	T,E	Irr	Red bed reported at 52 ft.
107	O. Haile	1953?	53	16	do.	2,410	28.9	Apr. 30, 1968	T,E 3	N	Not used for 2-3 years.
108	do.	1953?	50?	12	do.	2,410	--	--	T,E 5	N	Do.
* 201	City of Dickens	1936	156	6	Trd	2,575?	76	1936	T,E 3	N	Reported yield of 18 gpm in 1946. Unused. Well No. 2 in USGS WSP 1106.
* 202	do.	1945	150	6	do.	2,575?	--	--	N	N	Reported yield of 30 gpm in 1946. Destroyed. Well No. 3 in USGS WSP 1106.
401	A. J. Harvey	1958	56	12	Qal	2,376	20.6 16.8	Dec. 23, 1959 Jan. 17, 1968	T,E 3	Irr	Red bed reported at 56 ft. Reported yield of 37 gpm on Aug. 16, 1960. 2/
402	O. Holly	--	27	14	do.	2,353	11.9 11.5	Dec. 15, 1959 Dec. 28, 1960	Cf,E	N	Electrical connection removed.
403	L. Garner	--	47	--	do.	2,362	--	--	T,E	Irr	
404	--Shugart	1957?	65	12	do.	2,397	23.4	Apr. 26, 1968	T,E 10	Irr	Pump set at 57 ft. Reported well not used much because of poor quality of water.
405	W. Key	1965	60	12	do.	2,378	--	--	T,G 40	Irr	Pump set at 55 ft.
406	do.	1965	60	10	do.	2,378	--	--	T,G 40	Irr	Do.
407	do.	1966	55	12	do.	2,378	--	--	T,G 20	Irr	Pump set at 50 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Dickens County											
HY-22-26-408	A. Harvey	1962	64	13	Qal	2,376	--	--	N	N	
409	do.	1966	28	13	do.	2,376	15.2	May 21, 1968	T,E 7 1/2	Irr	Pump set at 25 ft.
410	Lem Parsons	1956	50	14	do.	2,373	23.3	May 22, 1968	T,E 7 1/2	Irr	Pump set at 45 ft.
411	do.	1956	50	14	do.	2,366	--	--	T,E 15	Irr	Do.
412	do.	1956	50	14	do.	2,366	--	--	T,E 5	Irr	Do.
413	R. Bostic	1955	53	14	do.	2,364	29.9	May 22, 1968	T,E	Irr	
414	do.	1956	56	14	do.	2,362	--	--	T,E	Irr	
501	D. Lehew	1966	56	10	do.	2,402	--	--	T,E 7 1/2	Irr	Pump set at 54 ft.
502	do.	1965	54	10	do.	2,402	28.1	May 21, 1968	T,E 3	Irr	Pump set at 52 ft.
701	E. McGee	1953	50	12	do.	2,305	13.6 12.2 13.3	Dec. 22, 1959 Dec. 28, 1960 May 20, 1968	T,E 10	Irr	Red bed reported at 50 ft. Reported yield of 111 gpm on Aug. 16, 1960 with pumping level at 33 ft.
* 702	J. C. Hindman	1958	48	12	do.	2,294	23.5 25.0	Dec. 24, 1959 Jan. 25, 1968	T,E 10	Irr	Reported yield of 163 gpm on Aug. 16, 1960. 2/
* 703	B. Ballard	1956	50	12	do.	2,288	27.4 27.1 23.0	Dec. 22, 1959 Dec. 28, 1960 May 17, 1968	T,E 7 1/2	Irr	Reported yield 103 gpm on Aug. 16, 1960 with pumping level at 41 ft.
704	--	--	--	--	Qal?	2,293	24.3	Jan. 24, 1968	T,E 7 1/2	Irr	
* 705	J. McDaniel	1962?	26	6	Qal	2,298	11.2	May 20, 1968	S,E 1 1/2	Irr	East well of three. (Well adjacent to small pond.)
706	do.	1962?	23	12	do.	2,298	10.5	do.	S,E 1 1/2	Irr	Middle well of three. (Well adjacent to small pond.)
707	do.	1962?	26	6	do.	2,298	9.9	do.	S,E 1 1/2	Irr	West well of three. (Well adjacent to small pond.)

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-26-708	Ollie Hindman	--	30?	8	Qal	2,321	15.7	May 21, 1968	Cf,E 3	Irr	Pump set at bottom of dug pit about 7.5 ft. below land surface. Drilled well from bottom of pit.
709	do.	--	30?	14	do.	2,321	--	--	Cf,E	Irr	Do.
710	do.	--	30?	8	do.	2,321	--	--	Cf,E	Irr	Do.
711	do.	--	30?	14	do.	2,321	--	--	Cf,E	Irr	Do.
712	do.	--	45?	12	do.	2,321	--	--	T,G	Irr	
713	do.	--	45?	10	do.	2,321	16.0	Apr. 4, 1969	T,E 3	Irr	
714	do.	--	45?	--	do.	2,322	--	--	Cf,E 1	Irr	
715	B. Stephens	--	40?	16	do.	2,317	16.2	Oct. 30, 1968	T,E 3	Irr	
716	do.	--	40?	14	do.	2,316	17.9	do.	T,E 7 1/2	Irr	
717	do.	--	40?	14	do.	2,314	15.6	do.	T,E 15	Irr	
718	do.	--	40?	12	do.	2,311	--	--	T,E 5	Irr	
719	do.	--	40?	12	do.	2,312	--	--	T,E 7 1/2	Irr	
720	E. McGee	1959	60	12	do.	2,311	--	--	T,E 15	Irr	
721	do.	1959	40	12	do.	2,300	13.1	May 20, 1968	T,E 7 1/2	Irr	
722	do.	1959	40	24	do.	2,300	--	--	T,E 15	Irr	
723	G. Goen	1951	50	14	do.	2,301	15.6	May 16, 1968	N	N	
724	do.	1951	50	14	do.	2,296	--	--	T,E 7 1/2	Irr	Pump set at 48 ft.
725	do.	1951	50	14	do.	2,295	--	--	T,E 10	Irr	Do.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
						Dickens County					
HY-22-26-726	G. Goen	1951	50	14	Qal	2,294	--	--	T,E	Irr	Pump set at 48 ft.
727	John Green	1964	36	12	do.	2,294	17.7	May 16, 1968	T,E 5	Irr	
728	do.	1953	32	13	do.	2,293	--	--	T,E 10	Irr	
729	do.	1965	39	12	do.	2,291	--	--	T,G 30	Irr	
730	do.	1965	40	6	do.	2,290?	--	--	N	N	
731	B. Pickens	1960	45	14	do.	2,295	23.9	May 20, 1968	T,E 7 1/2	Irr	
732	B. Ballard	1954	48	13	do.	2,288	--	--	T,E 7 1/2	Irr	Pump set at 46 ft.
733	W. Williams	1956	47	12	do.	2,292	--	--	T,E 20	Irr	
734	do.	1954	47	14	do.	2,292	24.3	May 16, 1968	T,E 10	Irr	
735	do.	1956	47	13	do.	2,288	--	--	T,E 5	Irr	
736	D. W. Pritchett	1957	55	--	do.	2,335	--	--	T,E 10	Irr	Red bed reported at 55 ft.
737	do.	1955	50	--	do.	2,334	--	--	T,E 7 1/2	Irr	Red bed reported at 50 ft.
27-201	--Pierce	1958	50	12	do.	2,201	28.8 27.7	Dec. 16, 1959 Jan. 17, 1968	T,E	Irr	Red bed reported at 50 ft. Reported yield of 54 gpm on Aug. 15, 1960 with pumping level at 40.5 ft. Previously numbered HY-22-19-801. 2/
* 28-302	Pitchfork Land and Cattle Co.	--	70	--	P	--	44	1967	P,E	S	
* 501	do.	--	165	4	do.	--	160	1967	P,W	S	
33-301	--	--	--	--	P	2,337	95.5 87.2	Feb. 22, 1965 Apr. 6, 1968	P,W	S	
302	Martin Pope	1958?	30?	--	Qal	2,285	--	--	T,E	Irr	Well drilled to red bed.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
Dickens County											
HY-22-33-303	Dale Young	1966?	--	10	Qal	2,295	17.6	Oct. 29, 1968	T,E	Irr	
304	do.	1966?	--	10	do.	2,293	16.1	do.	T,E 3	Irr	
305	B. Swaringen	1968	38	8	do.	2,285	19.4	Apr. 8, 1969	T	Irr	Well adjacent to Dockum Creek. Well HY-22-23-306 pumping about one week prior to water-level measurement.
* 306	do.	--	42	12	do.	2,285	--	--	T,E 7 1/2	Irr	Well adjacent to Dockum Creek.
401	--	--	--	5	?	2,279	51.0 52.0	Feb. 22, 1965 Apr. 6, 1968	P,W	S	
501	T. Moore	1956	96	14	Trd? P?	2,343	75.0 80.5	Jan. 10, 1958 Apr. 6, 1968	T,E 7 1/2	Irr	Pump set at 96 ft. Reported yield of 81 gpm on Aug. 18, 1960 with pumping level at 80 ft. 2/
601	W. V. Harris	1955	47	12	Qal?	2,284	40.2 39.9	Dec. 23, 1959 Dec. 29, 1960	N	N	Well destroyed. Measured yield 48 gpm on Aug. 18, 1960.
602	--	--	--	5 1/2	P	2,296	55.6 66.5	Feb. 22, 1965 Apr. 6, 1968	P,W	N	
603	--	--	120?	8-10	do.	2,365	104.0	Feb. 22, 1965	P,W	S	Dry at 120 ft. on April 6, 1968.
701	--	--	--	--	?	2,231	--	--	T,E 2	Irr	
* 34-101	J. C. Reese	1954	41	14	Qal	2,279	20.7 21.0 24.4	Dec. 23, 1959 Dec. 28, 1960 Mar. 5, 1968	T,E	Irr	Red bed reported at 41 ft. Measured yield 140 gpm on Aug. 16, 1960 with pumping level at 39 ft.
102	City of Spur	1947	51	16	do.	2,279	--	--	T,E 7 1/2	P	City well No. 9. (City now obtains water supply from the White River Reservoir. Wells maintained for emergency use, if needed.)
103	do.	1948	48	18	do.	2,275	--	--	T,E 7 1/2	P	City well No. 10. Gravel reported in bottom 14 ft.
104	do.	1959	53	12	do.	2,275	--	--	T,E 5	P	City well No. 13.
* 105	do.	1949	46	20	do.	2,273	--	--	N	N	City well no. 11. Pump removed and well sealed.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-34-106	City of Spur	1959	54	12	Qal	2,268	18.9	Feb. 12, 1960	N	N	City well No. 12. Well may have been pumped prior to water-level measurement on Feb. 12, 1960. Reported yield 137 gpm. Bottom 26 ft. of casing slotted. Gravel wall around casing. Pump removed and well sealed.
107	do.	1945	49	18	do.	2,267	15.3 16.9	Feb. 18, 1946 Feb. 12, 1960	T,E	P	City well No. 3. Well No. 3 in USGS WSP 1106, p. 46. Reported 200 gpm yield in 1946.
108	Vernon Harris	--	40	12	do.	2,279	--	--	N	N	Red bed reported at 38 ft.
* 109	W. Williams	--	55	12	do.	2,287	26.5	May 16, 1968	T,E 5	Irr	Red bed reported at 47 ft.
110	T. B. Watson	--	48?	12	do.	2,284	--	--	T,E 5	Irr	
111	do.	--	48?	12	do.	2,284	26.3	Jan. 25, 1968	T,E 5	Irr	
112	--	--	--	12	Qal?	2,284	--	--	T,E 10	Irr	
113	Martin Pope	1958?	30?	--	Qal	2,287	--	--	Cf,E	Irr	Manifold system - 3 wells reported to yield about 150 gpm. Not used much in recent years.
114	City of Spur	--	--	--	do.	2,275	--	--	T,E 15	P	See remarks for well 102.
115	do.	--	--	--	do.	2,275	26.1	Jan. 25, 1968	T,E	P	Do.
* 116	J. C. Reese	1967	53	10	do.	2,279	24.0	Mar. 5, 1968	T,E 10	Irr	
117	T. B. Watson	1955?	64?	14	do.	2,284	28.9	May 17, 1968	T,E 10	Irr	Pump set at bottom. Reported drilled to red bed.
118	do.	1953	52?	12	do.	2,283	29.2	do.	T,E 5	Irr	Do.
* 119	R. G. Beadle	--	57?	12	do.	2,284	27.0	do.	T,E 7 1/2	Irr	Reported drilled to red bed.
* 120	L. D. Gannon	--	45?	--	do.	2,285	--	--	Cf,E	Irr	Reported yield 45-50 gpm. Pump set at bottom of dug pit about 25 ft. below land surface. About 20 ft. of suction pipe inside casing set in hole drilled from bottom of pit.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Dickens County											
* HY-22-34-121	Lester Ball	1962	45	14	Qal	2,275	21.6	May 15, 1968	T,E	Irr	
* 122	do.	1964	45	12	do.	2,276	--	--	T,E 5	Irr	
123	do.	1964	45	12	do.	2,276	--	--	T,E 5	Irr	
* 124	do.	1956	45	11	do.	2,278	26.0	May 15, 1968	T,E 10	Irr	
125	D. Lehew	--	54	13	do.	2,276	--	--	T,E 30	Irr	Pump set at 52 ft.
126	--Condron	--	--	--	Qal?	2,276	21.6	May 15, 1968	T,E 7 1/2	Irr	
* 127	F. Barnett	1955	55	14	Qal	2,287	--	--	T,E 7 1/2	Irr	
* 128	G. Erath	1953?	50	12	do.	2,277	--	--	T,E 10	Irr	
* 129	F. Barnett	1955	55	13	do.	2,278	--	--	T,E 7 1/2	Irr	
* 130	do.	1964	60	12	do.	2,278	--	--	T,E 10	Irr	
131	do.	1954	50	12	do.	2,281	--	--	T,E 7 1/2	Irr	
132	G. Simmons	--	--	14	Qal?	2,284	--	--	T,E 10	Irr	
201	J. H. Walker	1956	70	14	do.	2,262	20.4 27.5	Dec. 23, 1959 Jan. 17, 1968	T,E 7 1/2	Irr	Reported yield of 99 gpm on Aug. 16, 1960. 2/
202	Lee Parker	1955	42	12	Qal	2,256	15.7 13.9	Dec. 22, 1959 Dec. 28, 1960	T,G	Irr	Red bed reported at 42 ft.
203	F. Neaves	1954	44	14	do.	2,232	10.9 17.8	Dec. 23, 1959 Jan. 17, 1968	T,E 5	Irr	Rock reported at 44 ft. Pump set at 38 ft. Reported yield of 143 gpm on Aug. 17, 1960 with pumping level at 28 ft. 2/
204	H. Bostic	--	56	12	do.	2,262	--	--	T,E 15	Irr	1/

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-34-205	Penn Shugart	1957	45	14	Qal	2,231	--	--	T,E 10	Irr	Pump set at 45 ft.
206	do.	1958	55	14	do.	2,232	19.7	Apr. 4, 1968	T,E 15	Irr	Pump set at 50 ft.
207	do.	1958	35	14	do.	2,232	18.3	Apr. 4, 1968	T	Irr	Pump set at 35 ft.
208	do.	1958	55	14	do.	2,243	--	--	T,E 15	Irr	Pump set at 55 ft.
209	do.	1958	65	14	do.	2,243	17.9	Apr. 4, 1968	T,E 10	Irr	Pump set at 65 ft.
210	do.	1958	75	14	do.	2,242	--	--	T,E 10	Irr	Pump set at 75 ft.
211	--White	--	--	--	Qal?	2,237	18.0	Apr. 5, 1968	T,G	Irr	
212	--Hurst	--	47	14	Qal	2,235	17.3	do.	N	N	
213	do.	1963	58	14	do.	2,232	--	--	T,E 7 1/2	Irr	Pump set at 58 ft.
214	F. Bostick	1959	40	14	do.	2,262	23.3	May 6, 1968	T,E 7 1/2	Irr	Pump set at 35 ft.
215	do.	1959	40	14	do.	2,262	--	--	T,E 7 1/2	Irr	Do.
216	do.	1950	40	14	do.	2,266	--	--	T,E 5	Irr	Do.
217	Lee Parker	1963	50	14	do.	2,251	--	--	T,G	Irr	Pump set at 45 ft.
218	J. Walker	--	40	12	do.	2,258	--	--	T,E 5	Irr	Pump set at 35 ft.
219	do.	1963	55	14	do.	2,253	--	--	T,-20	Irr	Pump set at 50 ft.
220	Lee Parker	1963	50	14	do.	2,252	19.8	May 7, 1968	T,G	Irr	Pump set at 45 ft.
221	W. Pickens	1958	59	14	do.	2,269	27.1	May 6, 1968	T,E	Irr	Pump set at 55 ft.
222	do.	1962	48	14	do.	2,266	--	--	T,E	Irr	Pump set at 45 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Dickens County											
HY-22-34-223	W. Pickens	1963	61	14	Qal	2,267	--	--	T,E	Irr	Pump set at 55 ft.
* 224	A. Hoover	1954	57	14	do.	2,227	--	--	T,E 15	Irr	Do.
225	Garner Bros.	1964	60	12	do.	2,250	--	--	S,E 7 1/2	Irr	Do.
226	do.	1955	48	14	do.	2,251	--	--	T,E 15	Irr	Pump set at 45 ft.
227	do.	1965	50	12	do.	2,247	19.4	May 7, 1968	S,E 3	Irr	
228	do.	1964	65	14	do.	2,247	--	--	S,E 7 1/2	Irr	Pump set at 60 ft.
* 229	A. Carlisle	1966	--	14	Qal?	2,262	22.5	May 7, 1968	T,E 7 1/2	Irr	
230	do.	1960	--	14	do.	2,263	--	--	T,E	Irr	
501	A. Blair	1958	50	14	Qal	2,217	9.6	Mar. 27, 1968	T,E 2	Irr	Red bed reported at 50 ft.
* 502	do.	1963	50	14	do.	2,217	11.8	do.	T,E 5	Irr	Do.
503	H. Taylor	1962	49	12	do.	2,205	13.9	Mar. 25, 1968	T,E 5	Irr	Red bed reported at 49 ft.
504	do.	1957	36	12	do.	2,211	22.7	Mar. 7, 1968	T,E 3	Irr	Red bed reported at 36 ft.
505	R. Powell	--	--	12	Qal?	2,209	16.6	Mar. 25, 1968	T,E 3	Irr	
506	do.	--	--	13	do.	2,211	--	--	T,E 3	Irr	
507	do.	--	--	14	do.	2,212	--	--	T,E 3	Irr	
508	Elmer Cross	1955	30	13	Qal	2,202	12.4	Mar. 26, 1968	T,E 3	Irr	Red bed reported at 30 ft.
509	do.	1959	29	12	do.	2,201	--	--	T,E 5	Irr	Red bed reported at 29 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
HY-22-34-510	Elmer Cross	1964	35	12	Qal	2,196	11.8	Mar. 26, 1968	T,E 10	Irr	Red bed reported at 35 ft.
511	E. C. McGee	1964	65	14	do.	2,226	--	--	T,E 10	Irr	Pump set at 65 ft.
512	do.	1964	70	14	do.	2,226	--	--	T,E 10	Irr	
* 513	do.	1964	57	14	do.	2,224	13.0	Apr. 5, 1968	--	Irr	
514	do.	1964	50	14	do.	2,224	11.0	do.	T,E 5	Irr	
* 515	G. E. Austin	1959	50	--	do.	2,227	--	--	T,E	Irr	
516	do.	1959	50	--	do.	2,227	--	--	T,E	Irr	
517	do.	1960	42	--	do.	2,222	--	--	T,E	Irr	
518	do.	1965	60	--	do.	2,222	--	--	T,E	Irr	
* 601	Mrs. Alvis Wilson	1956	52	12	do.	2,205	23.1 23.8	Dec. 23, 1959 Mar. 4, 1968	T,E 3	Irr	Reported yield 96 gpm on Aug. 17, 1960. 2/
602	J. T. Powell	--	58	12	do.	2,204?	--	--	T,E 5	Irr	Red bed reported at 57 ft. (Inventoried in 1959, not visited in 1968.)
604	Floyd Faubus	1955	35	12	do.	2,186	10.1	Mar. 7, 1968	T,E	Irr	Red bed reported at 35 ft.
605	do.	1960	40	12	do.	2,192	--	--	T,E 5	Irr	Red bed reported at 40 ft.
606	D. Dillashaw	--	60	12	do.	2,178	7.8	Apr. 8, 1968	T,E 5	Irr	Red bed reported at 64 ft.
607	A. Carlisle	1960	52	14	do.	2,202	22.2	do.	T,E 5	Irr	Pump set at 48 ft.
608	do.	1962	42	14	do.	2,199	12.1	do.	T,E 5	Irr	Pump set at 42 ft.
609	Floyd Faubus	1954	35	12	do.	2,187	11.0	Mar. 7, 1968	N	N	Red bed reported at 35 ft.
701	--	--	--	6	do.	2,267	36.3 34.8	Feb. 22, 1965 Mar. 4, 1968	P,W	S	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
						Dickens County					
HY-22-34-702	--	--	--	7	P	2,254	114.6 108.9	Feb. 22, 1965 Mar. 4, 1968	N	N	
* 901	H. V. Thomas	--	90	16	Qal	2,188	43.7 35.2	Feb. 27, 1957 Mar. 4, 1968	T,E	Irr	Red bed reported below 93 ft. 2/
902	J. Taylor	1957	72	12	do.	2,145	24.0 20.2 20.9	Dec. 23, 1959 Dec. 28, 1960 Mar. 4, 1968	T,G	Irr	Red bed reported at 72 ft. Reported yield 264 gpm on Aug. 29, 1960 with pumping level at 40.3 ft.
* 909	Mrs. L. L. Arnold	1958	65	11	do.	2,151	24.5	Mar. 4, 1968	T,G	Irr	Red bed reported at 65 ft. Irrigates 30 acres.
910	do.	1961	58	12	do.	2,158	23.8	do.	T,E	Irr	Red bed reported at 58 ft. Irrigates 30 acres.
* 35-101	L. C. Horn	1962	28	30	do.	2,196	22.0	Nov. 15, 1963	S,E	Irr & S	No casing. Irrigated 5 acres in 1963.
102	Bill Hale	--	28	30	do.	2,195	22.0 13.0	Nov. 15, 1963 Apr. 8, 1968	N	N	No casing.
109	L. C. Horn	1967	48	12	do.	2,197	13.4	Apr. 8, 1968	T,E 10	Irr	
* 202	Austin Watson	--	75	7	P?	2,217	16.8	Jan. 21, 1965	P,W	S	
403	--	--	43	--	Qal?	2,192	22.8	do.	P,W	S	
504	--	--	102	6	P	2,183	78.5	do.	P,W	S	
604	--	--	189	5	P	2,092	152.6	Jan. 2, 1965	N	N	
701	W. A. Stephens	1956	90	14	Qal	2,104	37.2 31.2	Apr. 28, 1957 Mar. 5, 1968	T,E 7 1/2	Irr	Reported drawdown 17.5 ft. after pumping 3 hours at 130 to 140 gpm. Red bed reported at 90 ft. 2/
805	O. M. Beadle	--	150	5	P	2,170	116.7	Jan. 21, 1965	P,W	S	Reported cistern water used for domestic purposes.
* 36-302	Beggs Ranch	--	145	7	do.	1,981	94.2	Jan. 18, 1965	P,W	S	
* 401	do.	--	245	6	do.	2,030	146.3	Jan. 19, 1965	P,W	S	
* 404	Pitchfork Cattle Co.	--	60	7	Qal?	1,895	34.7	Jan. 20, 1965	P,W	S	Well on creek flood plain. Reported cattle hardly drink this water.
503	Beggs Ranch	--	144	7	P	1,950	116.1	do.	P,W	S	
801	do.	--	130	7	do.	1,910	39.9	Jan. 19, 1965	P,W	S	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
						Dickens County					
* HY-23-16-601	W. F. Gardner	1956	402	16	To	3,019	258.0 262.8	Dec. 22, 1959 Jan. 18, 1968	T,Ng	Irr	Red bed reported at 402 ft. Reported yield of 225 gpm on May 24, 1960. 2/
602	Great Plains Construction Co.	--	420	--	do.	3,020	--	--	T,Ng	Irr	
603	do.	--	420	12	do.	3,023	--	--	T,Ng	Irr	Reported well drilled to red bed.
604	do.	1968	355	12	do.	3,017	--	--	T,Ng	Irr	Reported well drilled into cavity.
605	W. F. Gardner	1962	400	--	do.	3,019	--	--	T,Ng	Irr	Reported yield 150 gpm. Pump set at 390 ft.
606	do.	1954	360	--	do.	3,020	--	--	T,Ng	Irr	Reported pilot hole drilled to 390 ft., then reamed and cased to 360 ft. Pump set at 359 ft. Reported yield 150 gpm.
* 607	Henry Harris	1950?	400?	--	do.	3,037	--	--	S,E 15	Irr	Pump set at about 396 ft.
608	J. A. Allen	1963?	370	12	do.	3,019	252.6	Feb. 25, 1969	S,E 25	Irr	Well drilled to about 400 ft, cased to 370 ft. Pump set at 340 ft. Reported yield 200 gpm.
* 901	do.	1952	395	16	do.	3,020	252.6 275.4	Dec. 22, 1959 Jan. 18, 1968	N	N	Well destroyed. Reported yield of 212 gpm on Aug. 15, 1960. 2/
902	W. A. Brantley	1955	330	16	To	3,011	254.2 262.0 263.4	Dec. 22, 1959 Dec. 27, 1960 Feb. 27, 1969	T,Ng	Irr	Reported not drilled to red bed. Pump set at 287 ft.
903	Great Plains Construction Co.	--	375	12	do.	3,012	--	--	T,Ng	Irr	
* 904	E. W. Edinburgh	1957	400?	14	do.	3,014	--	--	T,Ng	Irr	
905	do.	1962	400?	14	do.	3,011	--	--	T,Ng	Irr	
* 906	do.	1965	395	16-14	do.	3,003	257.1	Jan. 30, 1969	T,Ng	Irr	Pump set at or near bottom 16" casing to 320 ft., then 14" to 395 ft.
907	H. French	1957	360	16	do.	3,002	--	--	T,Ng	Irr	Reported drilled to 380 ft., casing setting on rock at 360 ft. Pump set at 320 ft.
* 908	W. R. Harris	1961	420	--	do.	2,996	250	--	T,Ng	Irr	Casing perforated from 250 to 420 ft. Pump set at 410 ft.
909	do.	1962	430	--	do.	2,998	250	--	T,Ng	Irr	Casing perforated from 250-430 ft. Pump set at 410 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

	WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
							Dickens County					
	HY-23-16-910	W. R. Harris	1959	436	--	To	2,999	250	--	T,Ng	Irr	Casing perforated from 250-436 ft. Pump set at 410 ft.
	911	do.	1964	410	--	do.	2,997	250	--	T,Ng	Irr	Casing perforated from 250-410 ft. Pump set at 400 ft.
	912	Jack Hodges	1957?	415	16	do.	3,003	--	--	T,Ng	Irr	Pump set at about 365 ft.
*	913	Harris Bros.	1955	400?	--	do.	3,006	--	--	T,Ng	Irr	Pump set at about 390 ft.
	914	do.	1962	400?	--	do.	3,006	--	--	T,Ng	Irr	Do.
*	915	do.	1966	416	14	do.	3,004	--	--	T,Ng	Irr	Casing perforated from 276-416 ft. Pump set at about 400 ft. 1/
	916	do.	--	400?	--	do.	3,009	--	--	T,Ng	Irr	Pump set at about 390 ft.
	917	do.	--	400?	--	do.	3,014	--	--	T,Ng	Irr	Do.
*	918	M. A. Graham	1955	460?	16	do.	3,018	--	--	T,Ng	Irr	Pump set at about 400 ft. Reported yield 400 gpm.
	919	John Woolley	1956	420	16	do.	3,014	--	--	T,Ng	Irr	Pump set at 405 ft.
	920	Hickman Bros.	1956	420?	--	do.	3,017	--	--	T,Ng	Irr	Pump set at 390 ft. Reported yield 200 gpm.
	921	do.	1961	420?	--	do.	3,018	--	--	T,Ng	Irr	Pump set at 390 ft. Reported yield 180 gpm.
	922	J. A. Allen	1956	400?	12	do.	3,021	--	--	T,Ng	Irr	Pump set at 340 ft. Reported yield 135 gpm.
	923	Hickman Bros.	1957	420?	--	do.	3,017	--	--	T,Ng	Irr	Pump set at 390 ft. Reported yield 200 gpm.
*	924	M. W. Tidwell	1956	425	14	do.	3,017	--	--	T,Ng	Irr	Pump set at about 400 ft.
	925	E. B. Buckner	1957	404	--	do.	3,019	--	--	T,Ng	Irr	Reported well pumped lots of sand and well sanded up to about 324 ft. where pump is now set. Reported yield of well is now 100 gpm or less.
	926	Harris Bros.	1955?	400?	14	do.	3,006	256.7	Feb. 27, 1969	N	N	
*	24-301	W. R. Harris	--	450	18	do.	2,985	275.5 281.8	Dec. 22, 1969 Jan. 18, 1968	S,E	Irr	Reported yield 77 gpm on Aug. 25, 1960. Previously numbered HY-23-24-601. 2/
	302	do.	1966	450	--	do.	2,985	--	--	S,E	Irr	Pump set at 440 ft. Reported yield 225 gpm.
*	303	Eldon Williams	1967	450	--	do.	2,981	--	--	S,E 20	Irr	Pump set at 425 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Dickens County						
* HY-23-24-304	Norman Hardy	1966	465	--	To	2,995	--	--	S,E 30	Irr	Pump set at 458 ft.
* 305	Clyde Crausbay	1961?	400?	--	To?	2,995	--	--	T,Ng	Irr	Reported yield 75 gpm.
* 306	do.	1966?	450?	--	do.	2,999	--	--	T,Ng	Irr	Reported drilled into cavity. Reported yield 400-500 gpm.
* 307	McAdoo Water Supply Corp.	1961?	360?	8?	To	2,984	--	--	S,E	P	Pump set at about 320 ft.
* 308	do.	1962?	480?	8	To?	2,984	--	--	S,E	P	Do.
* 602	S. Brown	1967	450	12	To	2,988	--	--	S,E	Irr	Pump set at 440 ft. Reported yield 120 gpm.
603	C. K. Simmons	1966	416	16	do.	2,981	--	--	T,G	Irr	Reported lost circulation when drilling well. 1/
* 604	Clyde Crausbay	--	400?	--	do.	2,975	--	--	S,E	Irr	Reported yield 75-80 gpm.
* 605	do.	--	460	--	do.	2,973	--	--	S,E	Irr	Reported yield 135 gpm.
901	D. E. Allen	1968	400	14	do.	2,952	--	--	S,E 15	Irr	Reported drilled to red bed. Reported yield 70 gpm on 36 hour test.
* 902	J. B. Steadham	1925?	130?	6	do.	--	--	--	S,E	D,S	Well near Playa Lake. Pump set at 104 ft.
* 32-601	A. Ramage	1958	40?	6-10	Qal	2,514	22.2 19.4	Dec. 23, 1959 Dec. 27, 1960	S,J,E 1	Irr	Two wells, 15 ft. apart, operated as single unit with combined yield of 28 gpm reported. Original depth of wells reported to be 70 ft.
602	do.	1966	50?	8	do.	--	--	--	S,E 3/4	Irr	Pump set at about 47 ft.
603	do.	1964	50?	8	do.	--	21.8	Oct. 25, 1968	S,E 1 1/2	Irr	Do.
604	do.	1964	50?	8	do.	--	--	--	S,E 3/4	Irr	Do.
605	do.	1966	50?	--	do.	--	21.2	Oct. 26, 1968	S,E 1 1/2	Irr	Do.
606	do.	1963	50?	6	do.	--	18.7	do.	S,E 3	Irr	Do.
* 607	do.	1964	50?	6	do.	--	--	--	S,E 1 1/2	S Irr	Do.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Dickens County											
HY-23-32-608	A. Ramage	1966	50?	8	Qal	--	18.7	Oct. 26, 1968	T,E 5	Irr	Pump set at about 47 ft.
609	do.	1966	50?	--	do.	--	--	--	S,E 1 1/2	Irr	Do.
Kent County											
RH-22-34-903	Jessie Arnold	1958	68	--	Qal	2,143	23.13 23.90	Feb. 10, 1960 Feb. 27, 1961	T,E 7 1/2	Irr	Reported yield of 275 gpm on Aug. 17, 1960 with pumping level at 45.6 ft. Red bed reported at 68 ft.
* 904	do.	1952	40	14	do.	--	23.6	Mar. 4, 1968	S,E	Irr	Red bed reported at 40 ft.
* 905	do.	1952	40	14	do.	--	--	--	T,E 3	Irr	Red bed reported at 40 ft. Measured yield of 36 gpm on Aug. 17, 1960.
906	do.	1952	40	8	do.	--	22.6 22.7 23.1	Feb. 10, 1960 Feb. 27, 1961 Mar. 4, 1968	T,E 2	Irr	Red bed reported at 40 ft. Measured yield of 23 gpm on Aug. 17, 1960 with pumping level at 29.6 ft.
907	C. A. Browning	1957	36	12	do.	--	19.0	Feb. 10, 1960	T,E 1 1/2	Irr	Measured yield of 35 gpm on Aug. 17, 1960.
* 908	Jessie Arnold	1966	50	12	do.	2,136	28.9	Mar. 4, 1968	T,E	Irr	
* 911	do.	--	--	--	Qal?	--	--	--	S,E	Irr	
912	C. A. Browning	--	--	10	do.	--	--	--	T,E 30	Irr	
35-702	Ben Loe	1956	165	16	Qal P	2,114	26.3 25.8 26.6	Feb. 10, 1960 Feb. 27, 1961 Mar. 5, 1968	T,G	Irr	Reported drawdown 56 ft. after pumping 91 gpm. Reported red sand from 40 ft. to bottom. Rock at 165 feet. Reported flow of creek ceases when well is pumped.
704	do.	1964	40	12	Qal	--	12.7	Mar. 5, 1968	S,E	Irr	Irrigates 12 acres of feed crop. Red bed reported at 40 ft.
705	do.	1963	45	12	do.	--	--	--	S,E	Irr	Irrigated 20 acres of feed crop. Red bed reported at 48 ft.
706	do.	1962	60	12	do.	--	25.3	Mar. 5, 1968	T,E	Irr	Irrigates 12 acres of feed crop. Red bed reported at 63 ft.
801	T. D. Wilson	1956	82	14	do.	--	28.4 28.1 30.6 28.0	Feb. 10, 1960 Feb. 27, 1961 Nov. 11, 1963 Mar. 4, 1968	T,G 70	Irr	Reported drawdown 29 ft. after pumping 30 hours at 130 gpm. 1/

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
						Kent County					
RH-22-35-804	W. P. Peak	--	59	5	P	2,105	50.9 48.2 39.9	Mar. 26, 1957 Mar. 18, 1960 Jan. 21, 1965	C,W	S	
36-802	Beggs Ranch	--	65	7	do.	1,822	56.0	Jan. 19, 1965	P,W	S	Well on creek plain.
901	do.	--	250	7	do.	2,060	224.3	do.	N	N	Well on hilltop.
902	do.	--	230	7	do.	2,030	209.8	do.	P,W	S	Well on hillside.
41-201	R. L. Morrison	1958	27	14	Qal	2,111	11.1	Mar. 23, 1960	Cf,E 15	Irr	Reported yield 67 gpm on Aug. 29, 1960. Manifold system.
701	Pan American Petroleum Co.	1959	49	10	do.	--	34	1959	N	N	Reported drilled 10 ft. in red bed.
702	do.	1959	51	10	do.	--	21	do.	T,E 15	Ind	Reported drilled 10 ft. in red bed. Reported yield on test 390 gpm.
703	do.	1959	49	10	do.	--	28	do.	T,E 10	Ind	Reported yield on test 350 gpm. Reported drilled 5 ft. in red bed. Reported well unused for about 1 1/2 years.
* 801	H. L. Casey	1957	72	16	do.	2,080	7.6 7.1	Feb. 11, 1960 Feb. 27, 1961	T,E 15	Irr	Red bed reported at 72 ft. Reported yield 260 gpm on May 16, 1961.
802	do.	1954	54	14	do.	2,080	4.4 4.2	Feb. 11, 1960 Feb. 27, 1961	T,E 25	Irr	Red bed reported at 54 ft. Reported yield 70 gpm on Aug. 18, 1960 with pumping level at 44 ft.
* 803	J. Stewart	1957	75	14	do.	2,075	5.9 6.7	Feb. 11, 1960 Feb. 27, 1961	T,E 30	Irr	Red bed reported at 70 ft. Reported yield 193 gpm on Jan. 19, 1960 with pumping level at 36 ft.
901	Bill Wyatt	1956	67	16	do.	--	13.8 13.4	Mar. 16, 1960 Feb. 27, 1961	T,G	Irr	Reported yield 300 gpm.
902	H. B. Wood	1956	82	14	do.	2,055	7.9 9.4 9.6	Mar. 16, 1960 Feb. 27, 1961 Apr. 2, 1969	T,G	Irr	Red bed reported at 80 ft. Reported yield 397 gpm on Jan. 18, 1960 with pumping level at 24.7 ft.
* 903	General Crude Oil Co.	--	62	20-12	do.	2,032	--	--	T,G	Ind	Supplies water for oil field water flooding.
42-301	V. A. Carr	1946	100	6	P	2,186	51.6 50.9	Feb. 10, 1960 Feb. 27, 1961	P,W	D	
* 303	Jim Wyatt	1945	220	6	do.	2,140	43.7	Feb. 8, 1958	J,E 2	D	Tested for irrigation well. Drilled to 202 ft, casing sunk bottom of sand at 220 ft. Reported yield 130 gpm with pumping level at 176 ft. after pumping 24 hours.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
						Kent County					
RH-22-42-901	R. L. Harrison	1956	133	16	P	2,051	86 87.4 87.3	1956 Feb. 11, 1960 Feb. 27, 1961	T,G	Irr	Reported water under gypsum rock. Reported yield 175 gpm on Aug. 19, 1960 with pumping level at 113.3 ft.
43-101	Floyd Willis	1957	104	16	Qal	--	16.6 14.6	Feb. 10, 1960 Feb. 27, 1961	T,G	Irr	Rock reported at 104 ft. Pump set at 98 ft. Reported drawdown 55 ft. after pumping 80 hours at 102 gpm.
102	R. L. Bingham	1957	65	16	do.	--	34.8 34.4	Feb. 10, 1960 Feb. 27, 1961	T,G	D, Irr	Reported drawdown 7 ft. after pumping 62 hours at 93 gpm.
* 103	W. A. Perry	--	160	--	P	--	100	1963	J,E	D,S	Old well.
104	--	--	188	6	do.	2,201	130.8	Jan. 13, 1965	P,W	S	
105	George Smith	1940?	200	4	do.	2,176	118.7	do.	P,W	D	
201	T. A. Bailey	1956	83	14	Qal	2,075	33.6 32.4 29.6	Feb. 10, 1960 Feb. 27, 1961 Mar. 4, 1968	T,	Irr	Unused for several years. Reported drawdown 33 ft. Pumping at 42 gpm.
202	C. C. Kimbell	1956	90	16	do.	2,063	27.3 26.2 27.3	Feb. 10, 1960 Feb. 27, 1961 Mar. 1, 1968	N	N	Reported yield 122 gpm. 1/
* 203	do.	1956	102	16	do.	2,065	30.7	Mar. 1, 1968	T,G	Irr	Reported yield 585 gpm. Pump set at 90 ft.
* 205	W. W. Hodges	1927	100	--	do.	2,079	--	--	--	D	
* 206	do.	--	100	--	do.	2,073	30	--	P,W	S	
210	Clifford Scott	1966	90	7	do.	2,069	30.7	Mar. 1, 1968	S,E	Irr	Irrigates 7-8 acres of alfalfa.
307	Hastings Estate	--	150?	6	P	2,171	148.5 133.8	Apr. 4, 1957 Jan. 14, 1965	P,W	S	
401	Raymond Hooper	1956	70	12	Qal	1,994	20.9 19.9 21.3	Feb. 10, 1960 Feb. 27, 1961 Jan. 13, 1965	S,E 3	Irr	Red bed reported at 70 ft. Reported yield 17 gpm.
* 501	D. D. Thompson	1956	64	14	do.	2,005	21.5 20.7	Feb. 10, 1960 Apr. 9, 1969	T,E 5	Irr	Reported drawdown 29 ft. pumping 154 gpm on Aug. 17, 1960. 1/
* 502	do.	1956	62	14	do.	--	22.5 21.4	Feb. 10, 1960 Feb. 27, 1961	T,E 7 1/2	Irr	Reported drawdown 27 ft. pumping 169 gpm on Aug. 17, 1960.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Kent County											
* RH-22-43-503	L. C. Johnson	1957	98	16	Qal	2,051	45.2 43.8 43.1	Apr. 27, 1957 Jan. 11, 1960 Feb. 27, 1961	T,G	Irr	Reported drawdown 18 ft. after pumping 2 days at 275 gpm.
* 504	Fletcher Rich	1959	136	16	do.	2,069	57.3 57.4 57.3	Feb. 10, 1960 Feb. 27, 1961 Apr. 9, 1969	T,E 20	Irr	Red clay reported at bottom.
* 505	do.	1959	126	16	do.	2,059	55.6	Feb. 10, 1960 Feb. 27, 1961	T,E 20	Irr	Red clay reported at bottom.
506	Mrs. Hagans	1960	130	14	do.	2,045	73.1 73.1 75.3 68.5	Feb. 10, 1960 Feb. 27, 1961 Nov. 11, 1963 Jan. 12, 1965	S,E	S	Reported drawdown 14 ft. pumping 40 gpm on Aug. 30, 1960. Formerly used for irrigation.
507	Fletcher Rich	1956	132	16	do.	2,037	66.0 63.7	Apr. 27, 1957 Apr. 9, 1969	T,G	Irr	
* 508	do.	1960	110	12	do.	2,032	65.6	Feb. 27, 1961	T,E 7 1/2	Irr	
* 509	do.	1961	101	12	do.	2,035	--	--	T,E	Irr	Red sand reported at 101 ft.
602	C. Parks	1963	115	12	Qal?	2,124	79.5 79.8	Jan. 14, 1965 Apr. 9, 1969	T,E 5	N	Casing slotted from 75-115 ft. Unused for several years.
603	do.	1963	115	10	do.	2,119	--	--	T,E 20	N	Do.
706	W. McLaury	1963?	120	6	P?	--	--	--	S,E	Irr	
* 708	R. Chisum	--	15?	--	Qal?	--	--	--	S,E	D	Reported water hauled from this well for domestic use. Well in valley of Dry Duck Creek.
709	W. McLaury	1967	60	8	Qal	--	--	--	S,E	Irr	Well in valley of Dry Duck Creek.
* 802	Hobart Lewis	--	120	--	P?	2,055	111.0	Oct. 26, 1964	P,W	S	
806	L. M. Johnson	1962	28	10	Qal	1,911	7.1 6.6	Oct. 26, 1964 Apr. 5, 1969	T,E 10	Irr	
807	do.	1962	38	10	do.	1,920	15.7 15.6	Oct. 26, 1964 Apr. 8, 1969	T,E 10	Irr	
809	do.	1962	26?	10	do.	1,910	--	--	S,E	Irr	

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Kent County											
RH-22-43-810	L. M. Johnson	1962	26?	10	Qal	1,910	--	--	T,E 7 1/2	Irr	
* 44-404	W. L. Jones	--	15	48	Qal?	1,815	7.7	May 7, 1964	P,W	S	
* 406	Z. L. McAteer	old	30	36	do.	2,047	23.1	Nov. 14, 1963	S,E	S	
* 501	E. E. York	--	14	36	P	1,800	10	1963	N	N	
504	B. Jones	--	114	--	do.	1,902	94.0 86.8	Mar. 25, 1957 Jan. 18, 1965	P,W	D,S	
* 603	E. E. York	--	10	36	Qal?	1,780	8.0	Nov. 12, 1963	P,W	S	
701	John Montgomery	1956	160	14	Qal P	1,982	53.1 52.7 45.8 46.0	Mar. 17, 1960 Feb. 27, 1961 Jan. 12, 1965 Jan. 18, 1965	P,W	S	Reported drilled for irrigation well, but pumps too much sand.
* 702	G. H. Hoggard	old	58	6	Qal	1,970	47.8	Nov. 13, 1963	P,E	D,S	
* 703	D. Hall	old	170	6	P	2,025	148.2	Jan. 18, 1965	P,W	D,S	
* 802	E. E. York	--	254	6	do.	2,075	231.2	do.	P,W	S	Probably well 277 in USGS Wsp 1669 cc.
* 903	H. J. Goswick	--	150	6	do.	1,980	142.9	Nov. 13, 1963	P,W	S	
49-101	C. Arrington	1957	53	16	Qal	2,100	7.1 6.1	Feb. 11, 1960 Feb. 27, 1961	T,G	Irr	Red bed reported at 53 ft. Reported yield 170 gpm.
201	J. R. George	--	50	14	do.	2,070	4.6 4.4	Feb. 11, 1960 Feb. 27, 1961	T,G	Irr	Red bed reported at 50 ft. Reported drawdown 14 ft. after pumping 142 gpm for 17 hours.
202	do.	--	80	14	do.	2,070	6.0	Feb. 11, 1960	T,G	Irr	Red bed reported at 80 ft.
203	C. Arrington	1955	70	14	do.	2,070	8.8 9.3 10.3	Feb. 11, 1960 Feb. 27, 1961 Apr. 2, 1969	T,G	Irr	Red bed reported at 67 ft.
204	J. Stewart	1956	59	14	do.	2,110	19.3	Apr. 27, 1957	T,G	Irr	1/
206	do.	1967	69	14	do.	2,110	--	--	T,G	Irr	
901	M. Davis	--	185	6	P	2,300	127.4	Feb. 24, 1965	P,W	D,S	
* 50-201	General Crude Oil Co.	1952	44	13	Qal	1,954	--	--	T,G	Ind	Red shale at 39 ft, fine red sand at 44 ft.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

	WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
							Kent County					
	RH-22-50-202	General Crude Oil Co.	1953	47	12	Qal	1,955	--	--	--	Ind	Fine red sand at 47 ft.
*	203	do.	1953	45	12	do.	1,963	--	--	T,G	Ind	Red clay and sand at 42 ft.
	301	W. McLaury	1962	130	7	P	2,010	72.7	Jan. 12, 1965	P,W	S	
	51-101	R. R. Chisum	1958	130	16	Qal	1,930	52.1 52.0 51.2	Feb. 11, 1960 Feb. 27, 1961 Apr. 8, 1969	S,E	Irr	Reported drawdown 36 ft. after pumping 95 gpm for 30 days. Reported seldom used. Red bed reported at 130 ft.
*	102	John Phillips	1957	140	16	do.	1,950	70.2 69.9 68.6	Feb. 11, 1960 Feb. 27, 1961 Apr. 8, 1969	T,G	Irr	Reported yield 296 gpm.
	103	L. Johnson	1956	50	16	do.	1,910	34.7 34.6 35.7	Feb. 11, 1960 Feb. 27, 1961 Apr. 7, 1969	N	N	1/
*	104	G. W. Rodgers	1956	44	16	do.	1,910	15.1 15.5	Feb. 11, 1960 Feb. 27, 1961	T,E 2	Irr	Red bed reported at 43 ft. Reported yield 183 gpm.
	105	L. Johnson	1958	40	14	do.	1,890	18.6 19.9 20.1	Feb. 11, 1960 Feb. 27, 1961 Apr. 7, 1969	T,E 3	Irr	Reported yield 128 gpm.
	108	W. McLaury	--	24	7	do.	1,930	--	--	J,E 1/2	S,Irr	Estimated yield 59 gpm on Jan. 12, 1965. Pumping level 21.9 ft. below land surface Jan. 12, 1965.
	109	do.	--	25	7	do.	1,930	--	--	J,E 3/4	S,Irr	Estimated yield 5 gpm. Pumping level 22.1 ft. below land surface on Jan. 12, 1965.
	110	do.	--	--	7	do.	1,930	16.0	Jan. 12, 1965	N	N	Wells 108 and 109 pumping when water level measured.
*	111	do.	--	24	7	do.	1,930	16.6	do.	J,E 1/2	D,S Irr	Do. Used for household except cooking and drinking to which water from cistern is used.
	601	Dallas Kenady	--	50?	10	do.	--	21.1	Apr. 5, 1969	T,E 5	Irr	
	802	Bilby Wallace	--	150	6	P	1,960	103.8	Jan. 16, 1965	P,W	S	
*	52-101	City of Jayton	1945	45	10	Qal	1,950	28.5	Feb. 16, 1960	T,E 7 1/2	P	Well No. 2 in USGS WSP 1106. City well No. 1.
*	102	do.	1949	52	10	do.	1,950	27.5	do.	T,E 10	P	City well No. 2.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
					Kent County						
* RH-22-52-103	City of Jayton	1953	52	10	Qal	1,950	--	--	T,E 10	P	City well No. 3
* 104	do.	1959	62	10	do.	1,950	--	--	T,E 10	P	City well No. 4
* 106	do.	1966	65?	--	do.	1,950	--	--	T,E 10	P	City well No. 5
* 107	do.	1968	65?	12	Qal?	1,950	--	--	T,E 10	P	City well No. 6. Reported drilled to over 100 ft, but casing collapsed and gravel from gravel pack filled casing to depth of about 65 ft.
108	Dallas Kenady	--	--	12	do.	--	--	--	T,E 15	Irr	
109	do.	1966	70	12	Qal	--	33	Sept. 13, 1966	S,E 10	Irr	Reported yield on test 225 gpm. Pump set at 61 ft. 1/
110	do.	1965	75	12	do.	--	--	--	S,E 7 1/2	Irr	Reported yield on test 130 gpm. Pump set at 51 ft.
111	C. W. Dibrell	--	140	12	P?	2,005	85.4	Apr. 5, 1969	T,E 10	Irr	Well pumped considerable amount of fine red sand. Pump raised from 140 ft. to 119 ft. to avoid pumping so much sand.
112	do.	--	140	12	do.	--	--	--	T,E 7 1/2	Irr	Do.
113	do.	--	140	12	do.	--	--	--	T,E	Irr	Do.
114	Ben Boland	--	70?	6	Qal?	--	--	--	T,E	Irr	Reported weak well.
115	do.	--	70?	--	do.	--	--	--	T,E 20	Irr	
201	--Hamlin	--	178	--	P	--	--	--	S,E	S	Pump set at 175 ft. Reported yield 20 gpm. Reported water conveyed through several miles of 1 1/2 inch pipe to supply water for livestock.
401	Dallas Kenady	1946	59	12	Qal	1,920	21.0 20.7 21.8	Feb. 11, 1960 Feb. 27, 1961 Apr. 5, 1969	T,E S	Irr	
* 901	H. Shipp	old	86	--	do.	--	--	--	P,W	S	Water from cistern used for domestic purposes.
57-302	M. Davis	1964	61	--	do.	--	--	--	T,G	Irr	Reported drilled to red bed.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL: BELOW LAND-SURFACE DATUM (FT)	WATER LEVEL: DATE OF MEASUREMENT	METHOD OF LIFT	USE OF WATER	REMARKS
Kent County											
RH-22-57-303	M. Davis	1964	65	--	Qal	--	--	--	T,G	Irr	Reported drilled to red bed.
701	--	--	126	--	P	2,405	107.5	Feb. 23, 1965	P,W	S	
* 58-101	L. Spires	--	60	--	Qal	--	--	--	T,G	Irr	
102	do.	--	52	--	do.	--	--	--	T,G	Irr	
401	--	--	199	--	P	2,205	184.7	Feb. 24, 1965	N	N	
501	J. Gilbert	1955	60	16	Qal	2,000	17.6 17.9	Mar. 16, 1960 Feb. 27, 1961	T,G	Irr	Reported drilled in gravel; did not go to red bed. Reported yield 611 gpm with drawdown of 20 ft.
502	do.	1940	42	36	do.	--	24.0 24.5	Mar. 16, 1960 Feb. 27, 1961	Cf,E 7 1/2	Irr	Reported yield 50 gpm. Reported well seldom used.
503	R. Furr	--	--	--	do.	2,050?	23.6	Apr. 1, 1969	T,G	Irr	
59-101	Bilby Wallace	1957	318	6	P	2,225	278	1957	P,W	S	
104	do.	--	388	6	do.	2,225	272	1965	P,W	S	Pump set at 352 ft.
* 303	do.	1951	434	7	do.	2,150	320	do.	P,W	S	
401	do.	1952	325	7	do.	2,165	293.3	Jan. 15, 1965	P,W	S	
701	do.	1953	48	16	Qal	2,000?	22.6 24.5	Feb. 11, 1960 Feb. 27, 1961	T,E 75	Irr	Red bed reported at 48 ft. Reported drawdown 8.5 ft. after pumping 725 gpm for 24 hours.
* 702	The Texas Co.	1958	55	12	do.	1,945	--	--	S,E 20	Ind	Reported not in use now - 1969.
60-101	--	--	200	6	P	2,020	183.5	Jan. 16, 1965	P,W	S	
23-56-901	Weldon Johnson	--	60?	10	Qal	--	17.3	Feb. 23, 1965	T,G	Irr	
64-301	do.	--	65	--	do.	--	--	--	--	Irr	
29-03-101	The Texas Co.	1954	55	12	do.	1,940	--	--	N	N	Well equipped with water-stage recorder.
102	do.	1958	55	12	do.	--	--	--	S,E 40	Ind	Reported not in use now - 1969.
103	do.	1958	55	12	do.	--	--	--	S,E 40	Ind	Do.

See footnotes at end of table.

Table 6.--Records of Wells and Springs in Dickens and Kent Counties, Texas--Continued

WELL	OWNER	DATE COMPLETED	DEPTH OF WELL (FT)	DIAMETER OF WELL (IN)	WATER BEARING UNIT	ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL		METHOD OF LIFT	USE OF WATER	REMARKS
							BELOW LAND-SURFACE DATUM (FT)	DATE OF MEASUREMENT			
Kent County											
RH-29-03-201	The Texas Co.	1958	55	12	Qal	--	--	--	S,E 60	Ind	

1/ For drillers logs of wells in Dickens and Kent Counties, see Table 7.
2/ For record of water level measurements, see Table 3.
a/ White, W. N., Broadhurst, W. L., and Lang, J. W., 1940, Ground water in the High Plains of Texas: Texas State Board of Water Engineers, fig. 12, p. 56.
* For chemical analyses of water from wells and springs in Dickens and Kent Counties, see Table 8.

Table 7.—Drillers' Logs of Selected Wells in the Alluvium

Dickens County

	THICKNESS (FEET)	DEPTH (FEET)
Well HY-22-09-401		
Owner: Matador Cattle Co. Driller: Bill Jameson		
Soil	2	2
Caliche	13	15
Sand, brown	30	45
Sand and gravel, yellow	16	61
Clay, gray sandy	15	76
Sand and gravel	9	85
Clay, white	85	100
Sand and gravel	15	100
Gravel rock	10	175
Clay, red	10	185
Well HY-22-18-602		
Owner: H. D. Edwards Driller: Bill Corder		
Topsoil	7	7
Shale, red	80	87
Well HY-22-19-107		
Owner: W. B. Carothers		
Topsoil	10	10
Sand	5	15
Clay, soft	10	25
Sand	20	45
Clay, soft	15	60
Sand and gravel	25	85
Well HY-22-19-119		
Owner: Ira Sullivan Driller: Jameson Machinery Co.		
Soil	15	15
Sand, brown	5	20
Clay, brown sandy	3	23
Sand, brown	27	50
Sand, yellow	10	60
Sand rock	2	62

	THICKNESS (FEET)	DEPTH (FEET)
Well HY-22-19-119—Continued		
Sand, yellow	48	110
Sand and gravel rock	33	143
Gravel rock	3	146
Clay, red	9	155
Well HY-22-19-904		
Owner: R. Murchison Driller: Bill Corder		
Shale, red (no sand)	50	50
Gyp rock	2	52
Void	3	55
Well HY-22-25-802		
Owner: H. M. Costolow Driller: Garner Bros.		
Sandy clay	7	7
Sand and gravel	8	15
Sandy clay	18	33
Sand and gravel	4	37
Clay	4	41
Sandy clay	3	44
Sand and gravel	5	49
Red bed	1	50
Well HY-22-34-204		
Owner: H. Bostick Driller: Garner Bros.		
Sandy clay, soft	28	28
Sand and gravel	7	35
Sandy clay, soft	8	43
Sand and gravel	6	49
Red bed	7	56
Well HY-23-16-915		
Owner: Harris Bros. Driller: Green Machinery Co., Inc.		
Topsoil	3	3
Caliche	28	31
Clay and rock ledges	69	100

Table 7.—Drillers' Logs of Selected Wells in the Alluvium—Continued

Dickens County

	THICKNESS (FEET)	DEPTH (FEET)
Well HY-23-16-915—Continued		
Gummy clay	75	175
Fine tight sand and broken sandstone	43	218
Stone gravel, medium loose, medium coarse and sandrock ledges	17	235
Sandy clay, white	17	252
Gravel, medium coarse	19	271
Sandy clay, white	29	300
Hard rock, rock bit	5	305
Clay	2	307
Hard rock	28	335
Blue clay and rock ledges	20	355
Fine tight sand and 2 and 3 ft. strips of clay	17	372
Sand, medium loose, coarse, and gravel	36	408
Rock	2	410
Red beds	6	416
Well HY-23-24-603		
Owner: C. K. Simmons Driller: Green Machinery Co., Inc.		
Topsoil	5	5
Caliche	20	25
Caprock	18	43
Clay	37	80
Sandy clay and layers of fine sand	85	165
Fine sand and small gravel	20	185
Sandy clay, white, and rock ledges	11	196
Sand, medium coarse, medium loose, and gravel	18	214
Clay, white sandy	19	233
Clay, blue and boulders	7	240
Clay, yellow and strips cemented gravel	19	259
Sandy clay	10	269
Coarse sand and gravel with cemented strips	49	318
Clay, blue and rock ledges	46	264
Fine tight sand and broken sandstone	42	406
Hard rock	5	411
Cavity	2	413
Rock	1	414
Cavity	2	416

Table 7.—Drillers' Logs of Selected Wells in the Alluvium—Continued

Kent County

	THICKNESS (FEET)	DEPTH (FEET)
Well RH-22-35-801		
Owner: T. D. Wilson		
Topsoil	5	5
Sand gravel	33	38
Clay	3	41
Sand and gravel	17	58
Clay with red sand	22	80
Red bed	1.5	81.5
Well RH-22-43-202		
Owner: C. C. Kimbell		
Topsoil	6	6
Sand and gravel	22	28
Clay, soft	2	30
Sand, red	54	84
Sand rock, soft	3	87
Red bed	3	90
Well RH-22-43-501		
Owner: D. D. Thompson		
Topsoil	4	4
Gravel, sandy	13	17
Clay, soft	4	21
Sand and gravel	30	51
Rocks	2	53
Sand and gravel	5	58
Clay	1.5	59.5

	THICKNESS (FEET)	DEPTH (FEET)
Well RH-22-43-501—Continued		
Sand, red	3.5	63
Red bed	1	64
Well RH-22-49-204		
Owner: J. Stewart		
Sand, dry	13	13
Sand and gravel, fine	36	49
Rock, red	10	59
Well RH-22-51-103		
Owner: Luther Johnson Driller: Rio Garner		
Clay, sandy	4	4
Sand and gravel	7	11
Clay, blue	8	19
Clay, sandy	4	23
Sand and gravel	16	39
Clay	2	41
Sand	7	48
Red bed	2	50
Well RH-22-52-109		
Owner: Dallas Kenady Driller: Wylie Drilling Co.		
Soil	4	4
Clay, sandy	26	30
Sand, gravel and water	30	60
Sand, red	10	70

Table 8.--Chemical Analyses of Water From Wells and Springs in Dickens and Kent Counties

(Analyses given are in milligrams per liter except specific conductance, pH, SAR, RSC, temperature, and percent sodium.)

WELL	PRODUCING INTERVAL OR WELL DEPTH (FT)	WATER-BEARING UNIT	DATE OF COLLECTION	SILICA (SiO_2)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM * AND POTASSIUM		BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE	
								Na	K														°F	°C
Dickens County																								
1/ HY-22-09-501	Spring	Qal-To	Sept. 20, 1938	--	--	--	--	--	--	256	28	19	--	< 20	--	279	--	--	--	--	--	--	--	--
603	100±	Qal	Mar. 24, 1969	28	--	76	19	32		248	39	57	0.8	15	--	389	268	21	0.9	--	663	7.5	--	--
801	278±	Trd	Sept. 28, 1967	27	--	53	21	22	5.2	242	29	30	1.2	1.2	--	309	218	18	.6	--	511	7.5	64	18
10-502	52	Qal	Sept. 29, 1967	31	--	188	26	315	3.4	548	280	312	.3	77	--	1,500	576	54	5.7	--	2,310	7.2	70	21
503	110	do.	do.	30	--	142	34	142	5.0	344	147	215	.7	75	.32	960	494	38	2.8	--	1,540	7.4	64	19
702	100	do.	Apr. 14, 1961	38	--	91	28	111	6.7	344	107	120	1.5	43	.28	715	342	41	2.6	--	1,160	7.5	65	18
828	Spring	do.	Sept. 19, 1938	--	--	128	93	266		195	395	500	1.2	< 20	--	1,482	702	--	--	--	--	--	--	--
912	105	do.	Sept. 16, 1968	30	--	191	56	224	3.9	412	304	360	.3	40	--	1,410	707	41	3.7	--	2,240	7.2	--	--
916	50	do.	Mar. 22, 1969	37	--	57	18	84		350	42	29	2.0	28	--	459	216	46	2.5	1.42	750	7.5	59	15
923	146	do.	do.	33	0.12	251	56	302		410	464	460	.6	54	--	1,820	856	43	4.5	--	2,770	7.6	--	--
11-702	119	do.	Apr. 17, 1961	28	--	187	29	121	3.8	274	274	216	.4	63	.24	1,060	586	31	2.2	--	1,660	7.2	65	18
12-501	120	P	Feb. 22, 1967	20	--	555	126	35	3.4	39	1,810	28	.5	4.0	--	2,600	1,900	4	.3	--	2,730	7.0	70	21
701	55	Qal	Sept. 19, 1967	51	.06	120	14	44	1.6	260	83	97	.3	15	--	554	357	21	1.0	--	897	7.4	68	20
17-101	409	To	Aug. 10, 1968	25	--	45	26	31	7.0	286	25	17	2.2	2.6	.20	322	220	23	.9	.30	528	7.8	64	19
2/ 401	476	do.	do.	14	--	32	21	88	7.1	354	42	23	2.3	1.4	--	405	166	52	3.0	2.47	667	7.8	64	19
403	500	do.	do.	13	.02	16	16	110	6.1	326	43	24	2.2	.2	.36	391	106	68	4.6	3.22	636	8.2	64	19
3/ 404	450	To?	Feb. 28, 1969	12	--	16	7.8	192	4.1	380	94	44	3.2	.6	.56	569	72	84	9.8	5.06	908	8.3	65	18
406	430?	do.	Jan. 24, 1969	15	--	22	12	100	4.6	306	30	25	1.9	4.8	--	365	104	66	4.3	2.93	614	8.1	--	--
1/ 501	Spring	Trd	Sept. 22, 1938	--	--	78	12	42		281	44	41	1.0	< 20	--	355	242	--	--	--	--	--	--	--
908	Spring	do.	do.	--	--	52	14	40		262	24	25	.8	< 20	--	284	189	--	--	--	--	--	--	--
1/ 18-102	81	Qal?	Mar. 29, 1969	25	3.1	231	50	114		328	190	388	.7	17	--	1,180	782	24	1.8	--	2,050	7.8	--	--
202	28	Qal	Sept. 16, 1968	34	--	93	27	60	5.4	410	65	39	1.3	20	--	547	343	27	1.4	--	869	7.2	70	21
301	92	do.	Sept. 13, 1968	26	--	115	17	180	2.0	390	217	105	.5	72	.22	927	357	52	4.1	--	1,410	7.2	64	18
502	Spring	To?	Sept. 22, 1938	--	--	113	38	191		329	202	250	1.4	22	--	979	438	--	--	--	--	--	--	--
602	87	P	Sept. 19, 1967	19	--	156	78	95	3.3	316	187	295	.5	68	--	1,060	710	22	1.5	--	1,770	7.8	67	19
701	78	Trd	Sept. 29, 1967	--	--	--	--	--	--	380	700	1,150	--	--	--	--	1,740	--	--	--	4,800	7.2	68	20
702	60	do.	Mar. 26, 1969	25	--	202	38	118		260	260	285	1.5	35	--	1,090	660	28	2.0	--	1,800	7.1	--	--
1/ 801	Spring	do.	Sept. 21, 1938	--	--	67	15	35		268	40	30	.7	< 20	--	319	229	--	--	--	--	--	--	--
801	Spring	do.	Sept. 11, 1967	20	--	70	17	38	2.7	314	36	24	.7	3.2	--	366	244	25	1.1	.26	605	7.7	66	19
1/ 802	Spring	do.	Sept. 21, 1938	--	--	57	12	14		220	28	10	--	< 20	--	229	193	--	--	--	--	--	66	--
802	Spring	do.	Sept. 11, 1967	21	--	137	36	74	3.0	280	142	186	.7	9.5	--	747	490	25	1.5	--	1,270	7.5	69	21
19-111	112	Qal	Mar. 24, 1969	29	--	418	60	189		336	548	575	--	54	--	2,040	1,290	24	2.3	--	3,080	7.3	--	--
113	96	do.	Mar. 26, 1969	26	--	412	55	235		386	576	570	--	57	--	2,120	1,250	29	2.9	--	3,170	7.0	--	--
118	101	do.	Mar. 24, 1969	25	--	84	17	50		220	66	70	.5	49	--	470	280	28	1.3	--	765	7.4	--	--

See footnotes at end of table.

Table 8.--Chemical Analyses of Water From Wells and Springs in Dickens and Kent Counties--Continued

WELL	PRODUCING INTERVAL OR WELL DEPTH (FT)	WATER-BEARING UNIT	DATE OF COLLECTION	SILICA (SiO_2)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM * AND POTASSIUM Na	SODIUM * AND POTASSIUM K	BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °F	TEMPERATURE °C
Dickens County																								
HY-22-19-902	75	Qal?	Aug. 9, 1968	--	--	568	160	--	--	236	1,930	62	--	--	--	--	2,080	--	--	--	3,250	7.7	67	19
903	60	do.	Aug. 8, 1961	51	--	560	181	108		230	1,960	72	--	56	--	3,100	2,140	10	1.0	--	3,290	6.9	68	20
905	45	Qal	Aug. 9, 1968	54	0.04	580	108	55	2.2	148	1,670	95	0.4	40	--	2,680	1,890	6	.6	--	2,770	7.6	67	19
908	90	Qal?	do.	27	.05	555	154	113	3.0	204	1,940	59	--	43	0.68	3,000	2,020	11	1.1	--	3,080	7.6	67	19
910	92	do.	Mar. 27, 1969	47	--	350	72	62	1.8	208	914	110	.5	47	.40	1,710	1,170	10	.8	--	2,060	7.3	67	19
913	67	F	Apr. 3, 1969	42	--	598	138	107		246	1,880	64	.3	53	.61	3,000	2,060	10	1.0	--	3,120	7.6	64	18
20-701	189	do.	Feb. 27, 1967	19	--	565	118	58	3.4	41	1,880	24	.3	5.1	--	2,690	1,900	6	.6	--	2,820	6.9	--	--
25-201	Spring	Trd	Mar. 7, 1969	21	--	52	18	136		372	68	81	2.1	2.9	--	564	204	59	4.1	2.03	929	7.6	--	--
1/ 202	Spring	do.	Oct. 7, 1938	--	--	55	18	129		366	65	88	--	< 20	--	535	211	--	--	--	--	--	--	--
202	Spring	do.	Mar. 7, 1969	21	--	50	20	147		374	73	96	2.2	2.8	--	596	208	61	4.4	1.98	988	7.5	62	--
301	73	Qal	Apr. 9, 1969	25	--	87	21	76	2.1	326	84	67	.8	32	.22	555	304	35	1.9	--	892	7.5	64	18
302	83	do.	June 4, 1960	27	.03	74	22	81	1.7	312	86	68	1.0	17	.20	531	275	39	2.1	--	866	7.3	66	19
302	83	do.	Apr. 9, 1969	24	--	85	23	88	1.9	328	98	74	.9	26	.20	582	306	38	2.2	--	957	7.4	--	--
308	106	Qal?	Aug. 5, 1968	24	--	42	21	69	2.4	250	63	43	1.3	15	--	404	192	44	2.2	.27	654	7.6	66	19
309	72	Qal	do.	29	--	44	21	54	2.0	220	53	38	1.1	36	.15	386	196	37	1.7	--	615	7.8	65	18
310	--	do.	July 18, 1968	26	--	68	18	44	1.7	264	41	38	1.1	30	.14	398	244	28	1.2	--	643	7.8	65	18
313	68	do.	Aug. 5, 1968	25	--	54	17	32	1.7	238	56	37	1.2	6.2	--	367	204	35	1.6	--	615	7.6	66	19
403	76	do.	Apr. 11, 1968	21	--	56	38	159	2.4	400	136	116	5.2	6.3	.31	737	296	54	4.0	.64	1,220	7.4	65	18
420	407	do.	do.	20	--	68	39	171	2.0	384	172	148	4.6	2.5	.35	816	330	53	4.1	--	1,340	7.5	65	18
503	49	do.	Oct. 28, 1968	19	.07	49	25	117	1.8	334	101	68	5.0	2.1	.26	552	226	53	3.4	1.96	913	8.1	65	18
511	40±	do.	Apr. 11, 1968	27	--	100	89	373	2.6	636	501	255	8.4	11	--	1,680	616	57	6.5	--	2,540	7.3	65	18
603	60±	do.	Aug. 5, 1968	26	--	104	85	354	2.8	164	135	780	2.8	32	.35	1,600	609	56	6.2	--	2,830	7.6	65	18
604	60±	do.	do.	24	--	76	42	177	3.0	238	154	268	2.8	27	--	891	362	51	4.1	--	1,500	7.6	65	18
606	--	Qal?	do.	24	--	75	46	296	3.1	204	232	425	2.5	33	.38	1,241	376	63	6.6	--	2,060	7.6	65	18
607	54	Qal	do.	25	--	98	53	274	3.1	196	242	443	2.4	38	--	1,280	462	56	5.5	--	2,120	7.6	65	18
609	100±	do.	July 18, 1968	26	--	116	44	220	2.4	398	256	235	1.6	31	.35	1,130	470	50	4.4	--	1,790	7.5	65	18
610	100±	do.	do.	20	--	83	30	104	2.6	358	120	92	1.1	13	.24	642	330	40	2.5	--	1,050	7.2	65	18
617	96	do.	Aug. 5, 1968	24	--	43	34	123	2.2	262	123	117	1.6	19	.26	616	248	52	3.4	--	1,000	7.8	65	18
631	42	do.	Aug. 7, 1968	21	--	312	152	622	10	360	928	1,090	--	6.4	.59	3,320	1,400	49	7.2	--	5,060	7.3	68	20
635	90	do.	do.	23	--	99	41	198	4.4	260	210	277	1.8	33	.28	1,020	416	51	4.2	--	1,680	7.3	65	18
811	46	do.	Aug. 8, 1968	21	--	46	53	340	1.8	474	398	135	5.2	71	.63	1,320	333	69	8.1	1.64	1,940	8.4	66	19
902	63	do.	May 16, 1961	19	--	80	125	712	5.5	566	932	560	--	84	1.9	2,800	714	68	12	--	4,190	7.4	65	18
2/ 907	50±	do.	Aug. 8, 1968	18	--	80	88	372	4.6	388	496	372	2.5	48	--	1,670	562	59	6.8	--	2,600	7.9	65	18
918	--	Qal?	Aug. 7, 1968	22	--	318	173	573	10	230	852	1,210	--	36	--	3,310	1,500	45	6.4	--	4,890	7.4	--	--

See footnotes at end of table.

Table 8.--Chemical Analyses of Water From Wells and Springs in Dickens and Kent Counties--Continued

WELL	PRODUCING INTERVAL OR WELL DEPTH (FT)	WATER-BEARING UNIT	DATE OF COLLECTION	SILICA (SiO_2)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM * AND POTASSIUM		BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE	
								Na	K														°F	°C
Dickens County																								
HY-22-25-920	--	Qal?	Aug. 8, 1968	18	--	104	118	518	4.9	296	656	662	--	34	--	2,260	745	60	8.2	--	3,530	7.6	65	18
923	56	Qal	Aug. 5, 1968	19	--	178	185	648	5.2	336	1,060	850	--	52	0.92	3,160	1,200	54	8.2	--	4,530	7.6	65	18
26-101	110	Trd	Sept. 16, 1947	16	0.06	86	25	23	3.8	246	55	60	0.8	30	--	450	318	--	--	--	720	7.4	67	19
102	90	do.	Feb. 25, 1946	16	2.2	68	17	39	3.1	258	47	44	1.0	4.7	--	373	240	--	--	--	649	7.6	66	19
104	90?	do.	Sept. 20, 1967	17	--	112	30	113	3.7	332	139	143	.7	35	.23	757	403	38	2.5	--	1,230	7.6	--	--
201	156	do.	Feb. 25, 1946	14	.03	74	20	38	4.6	303	49	30	.4	4.5	--	399	266	--	--	--	691	7.4	--	--
202	150	do.	do.	18	.39	76	20	41	3.5	282	61	47	.6	3.8	--	414	272	--	--	--	710	7.5	67	19
702	48	Qal	Aug. 6, 1968	29	--	482	208	428	3.8	308	1,820	548	--	69	--	3,740	2,060	31	4.1	--	4,660	7.3	67	19
703	50	do.	do.	27	--	325	120	338	4.1	266	1,030	488	--	70	.54	2,530	1,300	36	4.1	--	3,490	7.4	67	19
5/ 705	26	do.	do.	22	--	598	126	152	6.6	244	1,790	158	--	58	--	3,030	2,010	14	1.5	--	3,380	7.6	67	19
28-302	70	P	Feb. 27, 1967	20	--	635	92	186	2.6	102	1,780	302	--	8.1	--	3,080	1,960	17	1.8	--	3,570	7.1	50	10
501	165	do.	do.	18	--	575	118	39	3.3	51	1,820	41	.2	5.7	--	2,650	1,920	4	.4	--	2,770	7.1	--	--
33-306	42	Qal	Apr. 8, 1969	21	--	190	130	464	4.4	464	744	598	1.2	21	.65	2,400	1,010	50	6.4	--	3,630	7.3	--	--
34-101	41	do.	Aug. 6, 1968	27	.03	465	188	470	3.6	224	1,780	660	--	64	.63	3,770	1,930	35	4.7	--	4,570	7.6	65	18
105	46	do.	June 9, 1961	27	.02	80	45	270	1.1	300	366	218	3.6	56	.95	1,220	384	60	6.1	--	1,880	7.3	65	18
109	55	do.	July 17, 1968	26	--	131	102	320	2.8	262	440	525	2.8	42	.54	1,720	746	48	5.1	--	2,770	7.6	65	18
116	53	do.	Aug. 6, 1968	25	--	485	210	483	3.8	170	1,850	770	--	44	--	3,950	2,070	34	4.6	--	4,850	7.4	65	18
119	57±	do.	do.	28	--	164	109	374	2.9	298	514	608	--	60	.54	2,010	858	49	5.5	--	3,190	7.8	67	19
120	45±	do.	Aug. 5, 1968	22	--	352	287	430	4.7	220	1,760	632	--	114	--	3,710	2,060	31	4.1	--	4,760	7.3	65	18
121	45	do.	July 17, 1968	28	--	212	109	430	2.4	288	776	532	--	107	.65	2,340	978	49	6.0	--	3,470	7.6	65	18
6/ 122	45	do.	do.	27	--	248	132	580	2.9	274	1,180	610	--	96	--	3,010	1,160	52	7.4	--	4,260	7.7	69	21
124	45	do.	do.	22	--	137	69	298	2.3	238	414	432	2.6	51	.41	1,540	626	51	5.2	--	2,450	7.5	69	21
127	55	do.	do.	26	--	163	110	384	3.0	288	500	605	--	66	.55	2,000	859	49	5.7	--	3,200	8.0	69	21
128	50	do.	Aug. 6, 1968	28	--	220	103	422	2.8	280	848	515	--	72	.61	2,350	972	48	5.9	--	3,390	7.5	67	19
129	55	do.	do.	27	--	209	85	408	2.8	186	772	532	--	71	--	2,200	871	50	6.0	--	3,260	7.4	65	18
130	60	do.	do.	--	--	98	68	--	--	272	336	425	--	--	--	--	524	--	--	--	2,390	7.7	68	20
224	57	do.	Aug. 14, 1968	24	--	622	142	407	6.3	272	2,150	372	--	54	--	3,910	2,140	29	3.8	--	4,520	7.2	65	18
229	--	Qal?	Aug. 13, 1968	25	--	638	150	346	3.3	184	1,990	480	--	83	.41	3,810	2,210	25	3.2	--	4,500	7.1	--	--
502	50	Qal	do.	28	--	392	122	168	2.2	228	1,410	123	1.5	21	--	2,380	1,480	20	1.9	--	2,790	7.4	65	18
513	57	do.	Aug. 14, 1968	23	--	490	206	788	3.5	252	2,160	970	--	25	.81	4,790	2,070	45	7.5	--	6,120	7.3	--	--
515	50	do.	do.	24	--	548	133	456	6.8	238	2,040	402	--	78	.54	3,810	1,910	34	4.5	--	4,290	7.5	65	18
601	52	do.	Aug. 15, 1968	30	--	552	162	326	2.7	184	1,900	395	--	63	.51	3,520	2,040	26	3.1	--	4,200	7.3	66	19
901	90	do.	Aug. 3, 1968	31	--	189	77	129	5.0	236	620	137	1.1	49	.41	1,350	788	26	2.0	--	1,860	7.4	66	19
7/ 909	65	do.	Aug. 15, 1968	26	--	430	156	244	4.9	214	1,540	318	--	49	--	2,870	1,710	24	2.6	--	3,510	7.4	66	19

See footnotes at end of table.

Table 8.--Chemical Analyses of Water From Wells and Springs in Dickens and Kent Counties--Continued

WELL	PRODUCING INTERVAL OR WELL DEPTH (FT)	WATER-BEARING UNIT	DATE OF COLLECTION	SILICA (SiO_2)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM * AND POTASSIUM Na	SODIUM * AND POTASSIUM K	BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °F	TEMPERATURE °C
Dickens County																								
MY-22-35-202	75	Pl?	Jan. 13, 1964	25	0.45	600	237	342	3.6	159	2,420	345	2.0	81	0.85	4,130	2,470	23	3.0	--	4,590	7.1	52	11
36-302	145	P	Jan. 18, 1965	14	--	565	129	38		69	1,810	50	--	15	--	2,660	1,940	4	.4	--	2,840	7.1	66	19
401	245	do.	Jan. 19, 1965	9.0	--	690	165	1,870		35	2,790	2,500	--	--	--	8,040	2,400	63	17	--	10,100	6.8	66	19
404	60	Qal?	Jan. 20, 1965	19	--	1,110	214	2,720		80	2,100	5,180	--	--	--	11,400	3,650	62	--	--	15,500	7.0	66	19
8/ 23-16-601	402	To	Mar. 28, 1969	34	--	47	32	32	7.9	318	28	20	2.0	2.9	.20	362	249	21	.9	0.23	601	7.4	65	18
607	400±	do.	Feb. 19, 1969	36	--	46	28	28	6.6	300	22	16	1.9	2.7	.16	335	230	20	.8	.32	540	7.7	60	16
901	395	do.	Apr. 14, 1961	36	--	44	31	41	8.0	326	31	22	2.1	3.0	.42	379	238	26	1.2	--	643	7.5	67	19
9/ 904	400+	do.	Mar. 28, 1969	32	--	48	29	29	7.0	302	27	18	2.1	3.2	.18	344	240	20	.8	.16	576	7.4	67	19
906	395	do.	do.	29	--	50	35	41		352	29	23	2.0	2.4	.20	385	269	25	1.1	.39	656	7.5	67	19
10/ 908	420	do.	Mar. 29, 1969	23	--	50	32	37	7.9	336	26	22	2.2	2.8	.22	368	256	23	1.0	.38	627	7.4	65	18
913	400?	do.	Mar. 28, 1969	23	--	48	32	35	8.3	332	26	20	2.2	3.1	.22	361	252	22	1.0	.41	616	7.5	65	18
915	416	do.	do.	31	--	51	30	18	6.7	280	16	25	2.4	5.1	.15	323	250	13	.5	--	555	7.4	67	19
918	460±	do.	Feb. 26, 1969	36	--	46	30	24	6.7	286	26	18	3.1	4.2	.16	325	238	17	.7	--	537	7.7	65	18
924	425	do.	Mar. 29, 1969	33	--	50	34	28	8.2	328	28	23	2.3	2.6	.20	370	265	18	.7	.08	620	7.5	65	18
11/ 24-301	450	do.	Aug. 10, 1968	16	--	31	21	67	7.4	306	36	21	2.0	.3	.27	352	164	46	2.3	1.74	597	8.1	67	19
303	450	do.	Aug. 9, 1968	21	--	39	24	42	7.7	298	17	17	1.7	5.8	--	322	196	31	1.3	.96	536	8.1	--	--
304	465	do.	Feb. 25, 1969	22	--	45	30	42	7.9	340	27	14	3.1	4.9	.24	363	236	27	1.2	.85	596	7.6	65	18
305	400±	To?	Feb. 28, 1969	27	--	44	30	37	7.3	304	22	25	4.4	5.8	.20	352	234	25	1.1	.31	583	7.5	70	21
306	450±	do.	do.	15	--	39	26	69	7.8	360	30	21	2.7	3.6	.32	391	204	41	2.1	1.81	658	7.7	65	18
307	360±	To	Feb. 22, 1969	28	.05	45	27	24	6.7	286	19	14	2.0	5.6	.16	312	224	18	.7	.22	511	7.7	65	18
308	480±	To?	do.	26	--	43	28	34	7.4	310	22	14	1.9	5.4	.22	334	222	24	1.0	.63	544	7.9	--	--
602	450	To	Aug. 9, 1968	14	.42	18	10	159	4.6	350	61	62	2.5	1.7	.42	505	86	79	7.5	4.02	837	8.0	68	20
604	400±	do.	Mar. 1, 1969	21	--	45	23	66	6.8	344	27	26	3.2	5.0	.22	392	207	40	2.0	1.50	650	7.6	65	18
605	460	do.	do.	22	--	44	22	76	6.6	348	31	31	2.8	4.7	.24	411	200	44	2.3	1.69	673	7.6	65	18
902	130±	do.	Feb. 27, 1969	32	--	83	12	23		306	35	86	.8	2.8	--	348	256	16	.6	--	557	7.2	--	--
32-601	40±	Qal	Oct. 25, 1968	16	--	58	30	474	5.2	342	496	358	1.9	15	--	1,620	268	79	13	.25	2,600	7.8	65	18
607	50±	do.	Oct. 26, 1968	29	--	56	52	126	2.6	312	234	78	5.6	20	--	756	354	43	2.9	--	1,190	7.7	--	--
Kent County																								
22-34-904	40	do.	Aug. 15, 1968	30	.21	495	182	350	7.2	160	1,790	540	--	57	--	3,530	1,980	28	3.4	--	4,180	7.5	65	18
905	40	do.	do.	--	--	--	--	--	--	260	1,870	492	--	--	--	--	2,080	--	--	--	4,430	7.6	67	19
908	50	do.	do.	21	--	420	146	316	5.8	300	1,480	365	--	35	.48	2,940	1,650	29	3.4	--	3,680	7.5	65	18
911	--	Qal?	do.	--	--	--	--	--	--	226	1,940	465	--	--	--	--	2,100	--	--	--	4,440	7.6	--	--
41-801	72	Qal	May 16, 1961	23	--	525	162	530	7.9	234	2,390	345	--	2.5	1.8	4,100	1,980	37	5.2	--	4,720	7.2	67	19
803	75	do.	Apr. 2, 1969	24	2.5	430	74	258	5.0	218	1,460	178	2.3	.5	.63	2,540	1,380	29	3.0	--	3,010	7.5	--	--
903	62	do.	Oct. 27, 1964	24	--	266	71	559	7.7	241	876	790	2.2	.9	.50	2,720	960	56	7.8	--	4,000	7.5	66	19

See footnotes at end of table.

Table 8.--Chemical Analyses of Water From Wells and Springs in Dickens and Kent Counties--Continued

WELL	PRODUCING INTERVAL OR WELL DEPTH (FT)	WATER-BEARING UNIT	DATE OF COLLECTION	SILICA (SiO_2)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM AND POTASSIUM Na	SODIUM AND POTASSIUM K	BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE °F	TEMPERATURE °C
Kent County																								
RH-22-42-303	220	P	June 1, 1961	26	--	592	136	135		80	1,820	260	1.1	--	--	3,010	2,040	13	1.3	--	3,290	6.9	69	21
43-103	160	do.	Jan. 13, 1964	14	0.85	650	325	1,800	9.2	55	3,270	2,420	.2	--	5.5	8,520	2,960	57	14	--	10,900	7.0	45	7
203	102	Qal	June 1, 1960	45	--	358	60	44		194	898	88	.8	19	--	1,610	1,140	78	.6	--	1,920	7.0	69	21
205	100	do.	Apr. 20, 1961	44	--	240	61	84		201	480	229	.7	54	--	1,290	850	18	1.3	--	1,860	6.8	--	--
206	100	do.	do.	41	--	535	104	13	2.7	147	1,540	30	--	4.0	--	2,340	1,760	2	.1	--	2,500	6.6	--	--
501	62	do.	Aug. 16, 1968	27	--	475	131	94	6.1	170	1,570	124	.6	16	--	2,530	1,720	11	--	--	2,750	7.7	66	19
502	62	do.	do.	26	--	500	137	99	6.4	160	1,620	156	.6	19	.29	2,640	1,810	11	1.0	--	2,990	7.2	66	19
503	98	do.	June 21, 1960	47	--	301	53	132		344	590	225	.7	51	--	1,570	970	23	1.8	--	2,150	7.0	69	21
504	136	do.	June 22, 1960	--	--	--	--	--		--	344	88	--	40	--	--	--	--	--	--	1,510	--	68	20
505	126	do.	June 21, 1960	52	--	288	44	121		308	610	168	.5	47	--	1,480	900	23	1.8	--	1,970	7.0	68	20
508	110	do.	do.	24	--	203	45	85		236	514	88	.7	26	--	1,100	692	21	1.4	--	1,500	7.2	--	--
509	101	do.	Aug. 3, 1968	34	--	110	33	51	4.2	109	306	68	.5	26	.13	687	410	21	1.1	--	997	7.3	--	--
708	157	Qal?	Apr. 10, 1969	18	--	107	6.2	3.2		198	60	43	.1	17	--	352	292	2	.1	--	597	7.6	66	19
802	120	P?	Oct. 26, 1964	38	--	398	86	87	6.5	172	660	462	.2	65	.29	1,890	1,350	12	1.0	--	2,750	7.3	68	20
44-404	15	Qal?	May 12, 1964	18	--	790	168	1,000	7.7	159	2,000	1,910	--	8.9	.5	6,000	2,660	45	8.4	--	8,010	7.0	70	21
406	30	Qal	Jan. 16, 1964	12	.06	76	.3	2.2	1.9	78	122	3.1	.1	6.2	--	262	191	2	.1	--	407	7.3	55	13
501	14	P	Jan. 15, 1964	22	.17	588	130	184	75	216	1,910	242	1.0	20	1.5	3,280	2,000	16	1.8	--	3,680	7.6	55	13
603	10	Qal?	do.	16	.17	485	51	94		180	1,320	71	.4	3.2	--	2,130	1,420	13	1.1	--	2,400	7.7	56	13
702	58	Qal	Jan. 14, 1964	14	.57	620	122	108		32	1,870	218	.3	2.8	--	2,970	2,050	10	1.0	--	3,280	7.0	64	18
703	170	P	do.	16	.36	418	82	200	5.5	74	1,200	368	1.3	4.2	.5	2,330	1,380	24	2.3	--	2,990	7.2	65	18
802	254	do.	do.	14	.31	755	160	1,130		37	2,120	1,950	1.0	5.0	--	6,150	2,540	49	9.8	--	8,300	7.0	64	18
903	150	do.	Jan. 15, 1964	22	1.9	278	56	27		136	768	47	.8	3.8	--	1,270	924	6	.4	--	1,570	7.2	65	18
50-201	44	Qal	Oct. 27, 1964	19	--	814	298	13,700	64	202	2,760	21,700	1.4	.4	1.5	39,500	3,270	90	--	--	49,200	7.3	68	20
203	45	do.	do.	21	--	515	174	6,560	32	193	1,840	10,200	1.6	1.8	1.2	19,400	2,010	87	--	--	26,900	7.4	69	21
51-102	140	do.	Apr. 8, 1969	29	.36	275	32	41	5.3	146	637	69	.4	40	.45	1,200	818	10	.6	--	1,520	7.3	--	--
104	44	do.	May 16, 1961	21	--	655	217	1,280	11	158	2,760	1,680	40	--	6.3	6,750	2,530	52	11	--	8,680	7.0	67	19
104	44	do.	Aug. 3, 1968	--	--	--	--	--	--	126	820	--	--	--	--	--	2,240	--	--	--	6,600	7.4	68	20
111	24	do.	Apr. 8, 1969	31	--	660	200	451		180	2,100	780	.9	49	--	4,370	2,490	28	3.9	--	5,370	7.3	63	17
52-101	45	do.	Sept. 15, 1947	23	.4	117	11	9.4	3.8	282	104	10	.4	9.8	--	454	337	--	--	--	641	7.6	--	--
102	52	do.	June 21, 1960	25	--	252	42	85		249	578	112	.6	25	--	1,240	800	19	1.3	--	1,680	7.0	69	21
103	52	do.	do.	20	--	104	12	21		229	113	20	.5	25	--	428	309	13	.5	--	649	7.5	--	--
104	62	do.	do.	21	--	96	8.9	3.0	5.9	214	86	5.2	.5	24	--	356	276	2	.1	--	550	7.3	68	20
104	62	do.	Apr. 5, 1969	22	--	212	22	48	10	242	357	112	.2	27	--	929	620	14	.8	--	1,350	7.2	68	20
106	65±	do.	do.	23	.01	255	36	72	8.5	232	480	169	.3	18	.30	1,180	784	16	1.1	--	1,700	7.5	--	--

See footnotes at end of table.

Table 8.--Chemical Analyses of Water From Wells and Springs in Dickens and Kent Counties--Continued

WELL	PRODUCING INTERVAL OR WELL DEPTH (FT)	WATER-BEARING UNIT	DATE OF COLLECTION	SILICA (SiO_2)	IRON (Fe)	CALCIUM (Ca)	MAGNESIUM (Mg)	SODIUM * AND POTASSIUM		BICARBONATE (HCO_3)	SULFATE (SO_4)	CHLORIDE (Cl)	FLUORIDE (F)	NITRATE (NO_3)	BORON (B)	DISSOLVED SOLIDS	HARDNESS AS $CaCO_3$	PERCENT SODIUM	SODIUM ADSORPTION RATIO (SAR)	RESIDUAL SODIUM CARBONATE (RSC)	SPECIFIC CONDUCTANCE (MICROMHOS AT 25° C)	pH	TEMPERATURE	
								Na	K														°F	°C
Kent County																								
RH-22-52-107	65	Qal?	Apr. 5, 1969	26	0.74	128	12	44	5.1	248	163	55	0.2	21	0.27	577	369	20	1.0	--	892	7.6	--	--
901	86	Qal	Apr. 4, 1969	18	--	600	178	259		110	2,300	190	.3	47	--	3,650	2,230	20	2.4	--	3,850	7.1	65	18
58-101	60	do.	Aug. 2, 1968	17	--	340	95	457	5.8	132	1,300	570	--	3.9	.58	2,850	1,240	44	5.6	--	3,780	7.4	70	21
59-303	434	P	Jan. 15, 1965	15	--	575	99	28		32	1,760	32	--	--	--	2,520	1,840	3	.3	--	2,620	6.9	69	21
702	55	Qal	June 1, 1961	17	--	432	--	423		181	1,430	520	.8	--	--	3,000	1,450	39	4.8	--	3,880	6.9	69	21

1/ Analysis by bureau of industrial chemistry, University of Texas, Austin, Texas.
2/ Composite sample with well no. HY-22-17-402 and -403.
3/ Composite sample with well no. HY-22-17-405.
4/ Composite sample with wells nos. HY-22-25-909, -911, -912.
5/ Composite sample with wells nos. HY-22-26-706 and -707.
6/ Composite sample with well no. HY-22-34-123.
7/ Composite sample with well no. HY-22-34-910.
8/ Composite sample with wells nos. HY-23-16-605 and -606.
9/ Composite sample with well no. HY-23-16-905.
10/ Composite sample with wells nos. HY-23-16-909, -910, -911.
11/ Composite sample with well no. HY-23-24-302.