TEXAS
WATER
DEVELOPMENT
BOARD

REPORT 46

OCCURRENCE AND QUALITY OF GROUND WATER IN BROWN COUNTY, TEXAS

MAY 1967

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OCCURRENCE AND QUALITY OF GROUND WATER IN BROWN COUNTY, TEXAS

By

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Texas Water Development Board

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Texas Water Pollution Control Board

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FOREWORD

On September 1, 1965 the Texas Water Commission (formerly, before February 1962, the State Board of Water Engineers) experienced a far-reaching realignment of functions and personnel, directed toward the increased emphasis needed for planning and developing Texas' water resources and for administering water rights.

Realigned and concentrated in the Texas Water Development Board were the investigative, planning, development, research, financing, and supporting functions, including the reports review and publication functions. The name Texas Water Commission was changed to Texas Water Rights Commission, and responsibility for functions relating to water-rights administration was vested therein.

For the reader's convenience, references in this report have been altered, where necessary, to reflect the current (post September 1, 1965) assignment of responsibility for the function mentioned. In other words credit for a function performed by the Texas Water Commission before the September 1, 1965 realignment generally will be given in this report either to the Water Development Board or to the Water Rights Commission, depending on which agency now has responsibility for that function.

Ground-water studies that are currently being conducted by the staff of the Texas Water Development Board in a block of counties in north-central Texas were undertaken by the Texas Water Commission beginning January 1962 to meet a growing need for more detailed and accurate ground-water information in this area.

In recognizing the significance of ground water in this area, the Water Development Board is aware of the vital need for obtaining information on the depth of occurrence of usable quality water as the basis for providing adequate and equitable protection for these water supplies.

As initially planned, the investigations will be conducted in the following counties: Archer, Brown, Callahan, Clay, Coleman, Eastland, Jack, Jones, Montague, Palo Pinto, Shackelford, Stephens, Taylor, Throckmorton, and Young Counties. In these counties, several towns with municipal water supplies are served by ground water or have water wells as a standby supply. In addition to meeting municipal needs for water, ground water is often the sole source supplying domestic, farm, and ranch needs.

The area under study is underlain by Pennsylvanian and Permian rocks which either crop out at the surface or underlie Cretaceous and alluvial sediments at shallow depths. Ground water occurs erratically in shallow discontinuous zones of low permeability in Pennsylvanian and Permian rocks, in sands and fractured limestones in the relatively thin Cretaceous sediments, and in Pleistocene to Recent alluvial sediments that are found at the surface in parts of most of the counties included in this study. Initially the objective of

these investigations was to provide additional data for use in making recommendations to the Railroad Commission and oil industry as to the depth to which usable quality water should be protected. It was recognized early in the course of the investigations, however, that the scope of the program should be enlarged to provide information for the use of landowners and others interested in water-resource development to facilitate development of the ground-water supplies available.

The present program of study has been under consideration for several years, although personnel had not been available to initiate such a long-range study. However, the scope, objectives, and methods of study to be employed had been part of the planning of the Texas Water Commission, and when funds became available to begin these investigations they were included in the ground-water program of the Commission.

In January 1962, funds allocated to the then Texas Water Commission by the Texas Water Pollution Control Board, for the purpose of investigation and prevention of ground-water pollution made possible the beginning of the present program. These funds were allocated to the Water Commission by the Pollution Control Board under the provision of the Act creating the Pollution Control Board which directs the Texas Water Commission to, "...investigate and ascertain those situations in which the underground waters of the State are being polluted or are threatened with pollution, and it shall report all findings to the Board together with its recommendations in regard thereto."[1]

It was determined that these studies could be most feasibly conducted on a county-by-county basis, and the initial investigations were begun in Stephens, Young, and Brown Counties. Reports from the results of the investigations in Stephens and Young Counties were published as Texas Water Commission Bulletins 6412 and 6415, respectively, whereas, on September 1, 1965 the ground-water programs became the responsibility of the Texas Water Development Board. Reports on each of the 13 remaining counties will be prepared and published by the Texas Water Development Board as the field studies are completed.

Texas Water Development Board

John J. Vandertulip

John J. Vandertulip
Chief Engineer

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[1] 57th Texas Legislature, 1961, Article 7621d, Vernon's Civil Statutes.

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OCCURRENCE AND QUALITY OF GROUND WATER IN BROWN COUNTY, TEXAS

ABSTRACT

Brown County is in the rolling plains and hill country near the geographical center of the State. Rocks of the Strawn, Canyon, and Cisco Groups of Pennsylvanian age and the Wichita Group of Permian age crop out in northeast-trending bands across Brown County and dip northwestward. Rocks of the Trinity and Fredericksburg Groups of Cretaceous age overlie the older Permian and Pennsylvanian rocks, principally in the eastern part of the county, and dip southeastward. Recent alluvial deposits overlie the bedrock along the major streams.

Ground water is produced in Brown County from each of these rock units, mainly in their outcrop areas, and principally for domestic and livestock uses. However, most of the wells produce water from sands of the Trinity Group, which are more continuous, have greater transmissibility, and generally contain better quality water than other producing strata. In addition, five deep wells produce water from the Ellenburger Group of Ordovician age, which occurs at depths of 1,400 to 3,000 feet, for waterflood, domestic, and livestock uses.

The native quality of ground water ranges widely in Brown County, from fresh to very saline. In parts of the county, however, the native quality seems to have been altered as a result of the disposal of brine produced with oil and gas, and vegetation has been killed in several areas by disposal of brine onto the land surface.

According to the Texas Railroad Commission's inventory, reported brine production for 1961 in Brown County was 1,079,697 barrels, of which 63 percent was disposed of through injection wells, 37 percent by surface pits, and less than 1 percent by other methods.

OCCURRENCE AND QUALITY OF GROUND WATER IN BROWN COUNTY, TEXAS

INTRODUCTION

Purpose and Scope

The purposes of the investigation in Brown County were two-fold: to collect and compile information regarding the occurrence and chemical quality of ground water for use by landowners and others interested in water-resources development, and to provide sufficient information for the Texas Water Development Board and other agencies responsible for protection of water quality so that protection programs can be both adequate and applied equitably.

Objectives of the study were to identify and delineate underground formations containing usable water; to determine the depth of this water, and its quality as indicated by chemical analyses; to supplement available data on brines produced with oil and gas and the location and method of their disposal; to review surface-casing recommendations of this agency to determine where revisions are needed; to pinpoint areas of contamination where it has occurred; and to prepare a report for the use of landowners, the Texas Water Development Board, other State and Federal agencies, and the general public.

This study was made under the general direction of John J. Vanderlutip, Chief Engineer, Richard C. Peckham, director, Ground Water Division, and Bernard B. Baker, assistant director in charge of Availability Programs; and under the direct supervision of Loyd E. Walker, coordinator, West Texas Field Investigations Program.

Method of Investigation

In conducting the ground-water investigation of Brown County, the following items of work were performed:

Records of 1,506 wells and springs were collected and compiled to determine well depths, well construction, and the source of water in wells throughout the county. Water levels were measured in wells where possible. Land-surface elevations at selected wells were established with the aid of topographic maps, electric log well data, and Paulin altimeter for use in determining water-level elevations.

Water samples were collected from about 900 wells to determine the characteristic ground-water quality in Brown County. Chemical analyses of these samples were performed in the laboratories of the U.S. Geological Survey and the Texas State Health Department under contract with the Texas Water Development Board.

Field observations were made of oil-field brine disposal methods, and available chemical analyses of brine were studied and tabulated.

A general geologic map of the county was prepared from existing maps and data, and a geologic section showing the altitude of subsurface formations was constructed from electric logs of oil and gas tests. Additional illustrations were prepared showing locations of water wells in Brown County, water quality, and areas of brine production and disposal.

Previous Investigations

Investigations made prior to this study have resulted in a number of reports pertaining to geology and ground water in Brown County. These include an early tabulation of water-well data and chemical analyses of water by Davis (1938), and a geologic map of the county by Cheney and Eargle (1951). Geology has been presented in more detail for the Cross Plains and Grosvenor Quadrangles, which include parts of Brown County, by Stafford (1960) and Terriere (1960), respectively. Stratigraphy of Pennsylvanian and lower Permian rocks is discussed by Eargle (1960).

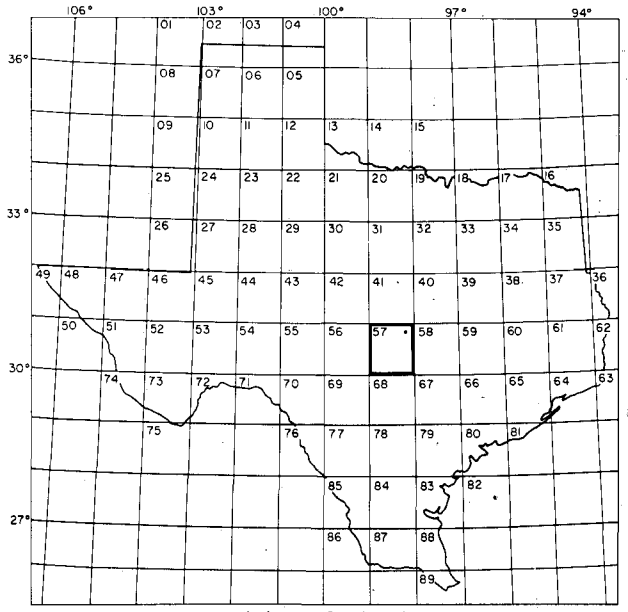
A recent reconnaissance investigation of ground-water resources of the entire Colorado River basin was made by Mount and others (1962), but coverage within Brown County was generalized as would be expected in a study of this type. Other reports relating to the geology of the area are listed at the end of this report in the References. These include Cheney (1948), Cordell and Zimmerman (1954), Eargle and Yenne (1951), and Nickell (1938).

Well-Numbering System

Wells and springs in this report are numbered using a statewide numbering system adopted by the Texas Water Development Board. Each well and spring is assigned a number to facilitate keeping records and locating the well within the State. This system is based on division of the State into quadrangles of degrees of latitude and longitude, and repeated division of these quadrangles into smaller ones as illustrated on Figure 1.

The largest quadrangle, a 1-degree quadrangle, is divided into sixty-four $7\frac{1}{2}$-minute quadrangles, each of which is further divided into nine $2\frac{1}{2}$-minute quadrangles. Each 1-degree quadrangle in the State has been assigned a number for identification. The $7\frac{1}{2}$-minute quadrangles are numbered consecutively from left to right beginning in the upper left hand corner of the 1-degree quadrangle. The $2\frac{1}{2}$-minute quadrangles within the $7\frac{1}{2}$-minute quadrangles are similarly numbered. The first two digits of a well number identify the 1-degree quadrangle; the third and fourth digits identify the $7\frac{1}{2}$-minute quadrangle; the fifth digit identifies the $2\frac{1}{2}$-minute quadrangle; and the last two digits designate the well within the $2\frac{1}{2}$-minute quadrangle.

Some of the wells for which data are given in this report (Tables 3 and 4) are the same wells for which data are given in an earlier Works Progress Administration report by Davis (1938). The corresponding numbers assigned to these wells in this and the earlier report are listed in Table 1.



1-degree Quadrangles

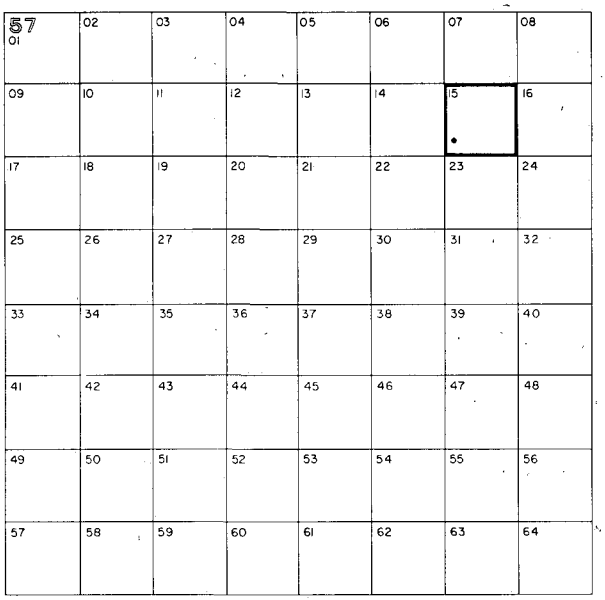
Location of Well 57-15-701

57 1-degree quadrangle

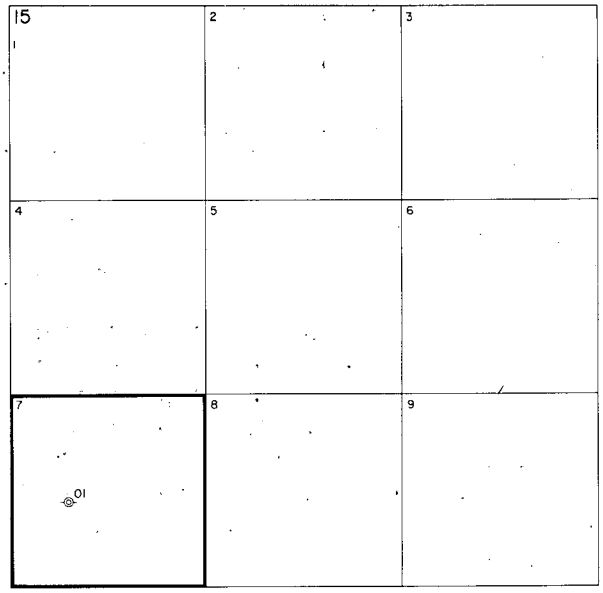
15 7 1/2-minute quadrangle

7 2 1/2-minute quadrangle

01 Well number within 2 1/2-minute quadrangle



7 1/2-minute Quadrangles



2 1/2-minute Quadrangles

Figure 1

Well-Numbering System

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

Table 1.--Well numbers used in this report and corresponding numbers previously used in Brown County by Davis (1938)

New number	Old number	New number	Old number	New number	Old number
30-63-601	1	41-09-310	28	42-15-501	71
64-601	9	10-109	31	23-202	73
910	5	201	40	207	74
918	6	412	46	212	75
31-57-512	12	628	126	308	79
527	13	18-313	121	505	93
713	8	802	114	509	94
830	15	19-102	131	624	95
41-01-323	18	42-07-506	66	24-114	60
02-105	17	806	68	121	82
810	36	809	69	32-701	105
09-209	27	903	65		

Acknowledgements

Acknowledgement is given to the many landowners, drillers, well servicemen, pump salesmen, and interested persons in Brown County who provided information for this report. Appreciation is also expressed for cooperation given the writer by the various governmental agencies, particularly Mr. J. Q. Galloway, County Agent, Brown County; Mr. W. Groce, Jr., U.S. Soil Conservation Service; and personnel of the Texas Highway Department, the U.S. Geological Survey, and the Texas State Health Department.

GEOGRAPHY

Location

Brown County is in north-central Texas, near the geographical center of the State (Figure 2). The area of the county is 949 square miles. The city of Brownwood, the county seat, is near the center of the county on U.S. Highways 67, 84, and 377, about 130 miles southwest of Fort Worth and 100 miles east of San Angelo, Texas.

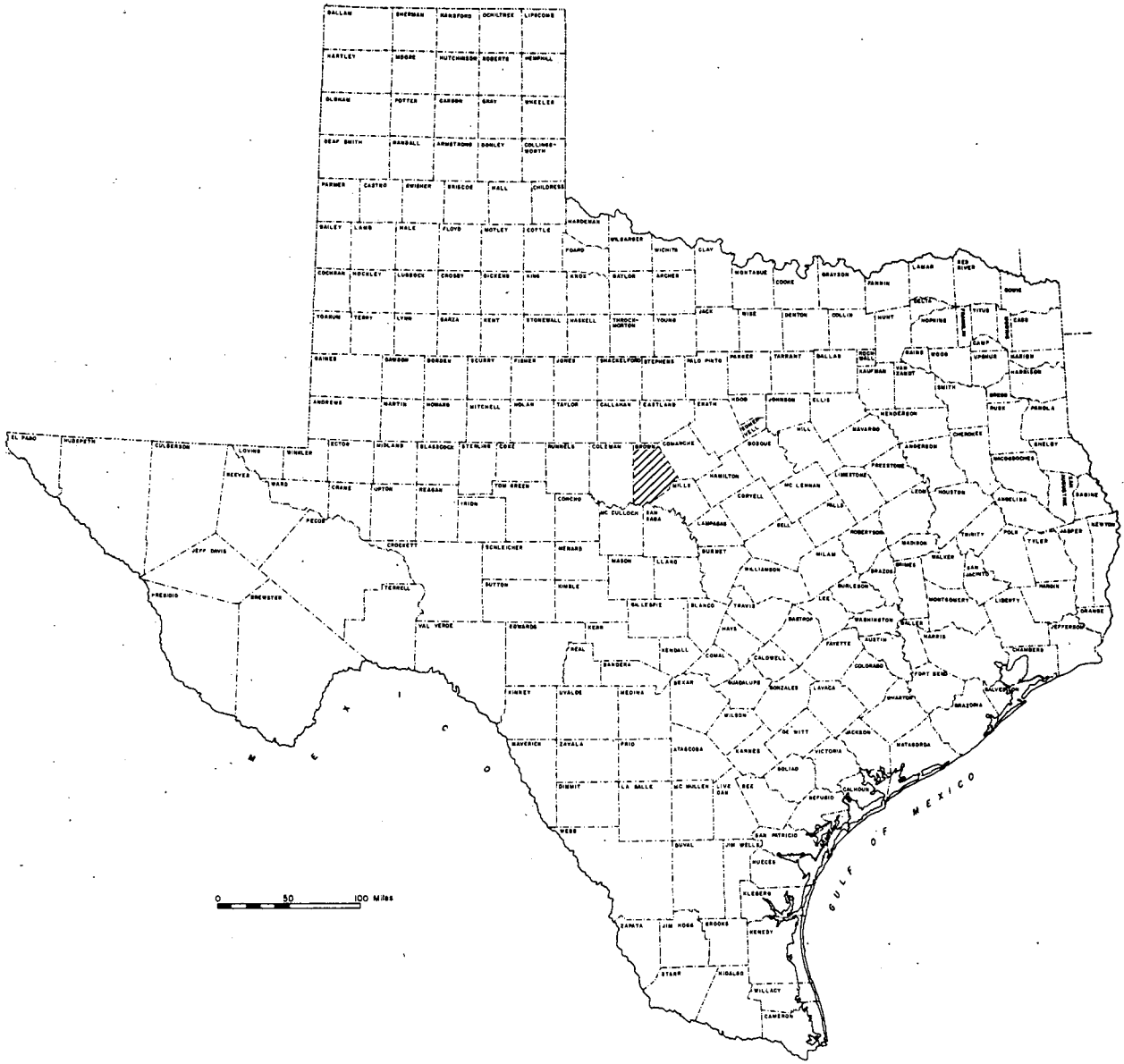


Figure 2

Map of Texas Showing Location of Brown County

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

Climate

The average annual rainfall of Brown County is about 27.5 inches, based on U.S. Weather Bureau records at Brownwood for the 30-year period 1931-60. The greatest officially recorded rainfall depth in the county during a single calendar year of record was 46 inches at Brownwood in 1919, and the least amount was 10.86 inches at Brownwood in 1921. The climate is subhumid.

The mean temperature for the month of January is 46°F, while the mean temperature for July is 84°F. The mean annual temperature is about 65°F, based on isothermal charts for the 50-year period 1910-59.

The average annual gross lake-surface evaporation depth is about 80 inches, based on the period 1940-57 (Lowry, 1960).

Topography and Drainage

Topography of Brown County is marked by rolling plains and hill country. Some of the land supports vegetation such as pecan, oak, and mesquite trees, and the remainder is covered by prairie grassland. Altitude ranges from 1,250 to over 1,900 feet. Lower elevations are along Pecan Bayou and the Colorado River, and higher elevations are found on the ridges in the eastern part of the county.

Brown County lies almost entirely within the Colorado River basin. Consequently, drainage is generally to the southwest toward the Colorado River which borders the county on the south. The major streams draining the county are Pecan Bayou and its tributaries, and Indian, Clear, and Sand Creeks. Two small intermittent streams in the northeastern part of the county drain into Copperas Creek, tributary of the Brazos River.

Lakes and dams are varied in size and importance. Brownwood Reservoir, the largest surface reservoir in the county, impounds approximately 143,400 acre-feet of water covering 7,300 acres. This project was completed in 1933 for a municipal and industrial water supply and for irrigation. This lake supplies water to the cities of Brownwood, Bangs, Early, and Santa Anna. Numerous smaller reservoirs have been constructed as part of the U.S. Department of Agriculture's upstream flood prevention program, and small stock tanks are common throughout the county.

Population and Economy

The population of Brown County in 1960 was 24,728 according to the U.S. Bureau of the Census. The 1962 estimate of population was 25,750. The urban population comprised slightly less than three-fourths of the total in 1960.

The county supports a balanced urban-rural economy. The chief source of agricultural income is sheep, goat, and cattle ranching. Other agricultural enterprises include peanuts, pecans, dairy farming, and poultry raising. In 1961 the number of acres used for grazing was 403,350, and 173,631 acres of dry and irrigated land was under cultivation.

Industrial income is derived from a number of small industries, commercial establishments, and some oil production. Total oil production for the county for 1917-60 according to the Texas Almanac was 39,017,817 barrels. Production in 1960 was 516,078 barrels.

OCCURRENCE AND QUALITY OF GROUND WATER

Ground water in Brown County occurs principally in rocks of the Ellenburger Group of Ordovician age, the Strawn, Canyon, and Cisco Groups of Pennsylvanian age, the Wichita Group of Permian age, the Trinity Group of Cretaceous age, and alluvium of Pleistocene to Recent age. The lithology, thickness, and water-bearing properties of these rock groups are summarized in Table 2.

Ordovician System

Ellenburger Group

The Ellenburger Group crops out on the flanks of the Llano uplift in southeastern McCulloch and southern San Saba Counties, and dips north and northwest. The group occurs only in the subsurface in Brown County, at depths ranging from 1,400 feet in the southwest part to 3,000 feet in the northwest. These are the oldest and deepest rocks in the county from which water of usable quality is produced. Rocks of the Ellenburger Group are principally limestone and dolomite, which contain water in vugular or cavernous zones and in joints and fractures that are commonly enlarged by solution.

Only five water wells are known to be completed in the Ellenburger Group in Brown County. The wells range in depth from 1,436 to 4,522 feet. Wells 30-64-701 and 30-64-703 supply very saline water for secondary recovery programs of the petroleum industry (for well locations see Figure 5). Well 42-39-303 is used for domestic and livestock supply, and well 41-25-405 is used for livestock supply. Well 41-17-502 is presently unused but was formerly used to supply water for a swimming pool. Water in the Ellenburger rocks in Brown County is under artesian pressure, and in three wells, 41-17-502, 42-39-303, and 41-25-405, the pressure is sufficient to cause the well to flow from 12 to 16 gpm (gallons per minute). The two industrial wells (30-64-701 and 30-64-703) do not flow but are equipped with turbine pumps. Yields from these wells are not reported. All of the Ellenburger wells in Brown County were drilled originally as oil tests.

Chemical analyses of water from four of the wells (Table 4) indicate that the Ellenburger Group in Brown County contains slightly saline to very saline water. The mineral content of water from wells 41-17-502, 41-25-405, 42-39-303, and 30-64-703 was respectively 13,178, 4,810, 1,271, and 41,414 ppm (parts per million) dissolved solids. Differences in water quality among these wells are probably related to well depth, well location with respect to recharge or outcrop area, and possibly well location with respect to the Bend flexure (Figure A1 in the Appendix).

Chemical constituents of samples from the four wells ranged as follows: calcium, 15 to 960 ppm; magnesium, 7 to 226 ppm; sodium, 472 to 14,300 ppm; bicarbonate, 384 to 431 ppm; Sulfate, 3 to 242 ppm; and chloride, 523 to

Table 2.--Geologic units and their water-bearing properties, Brown County

System	Group	Approximate maximum thickness (ft)	Lithology	Water-bearing properties
Quaternary		40	Alluvium along major streams: silt, sand, clay, and gravel.	Yields small quantities of water to 8 wells.
Cretaceous	Fredericksburg	240	Hard thick limestone, with thin clay and shale beds.	Generally not saturated. Not known to yield water to wells in Brown County.
	Trinity	200+	Silt, sand, clay, and gravel.	Principal source of ground water in Brown County yielding small to large quantities of water to about 895 wells and springs.
Permian	Wichita	190	Shale, limestone, and lenticular sandstone, with channel-fill sandstone and conglomerate.	Yields small quantities of water to about 31 wells and springs.
Pennsylvanian	Cisco	325	Sandstone, thin limestone, and shale, with channel-fill sands.	Yields small quantities of water to about 182 wells and springs.
	Canyon	560	Limestone, shale, and lenticular sandstone, with channel-fill deposits of gravel, sand, and clay.	Yields small quantities of water to about 219 wells and springs.
	Strawn	1,200	Shale, limestone, and sandstone, with channel-fill sands.	Yields small quantities of water to about 160 wells.
	Bend	500	Shale and limestone	Not known to yield water to wells in Brown County.
Ordovician	Ellenburger	--	Predominantly limestone and dolomite.	Artesian; yields small quantities of slightly saline to very saline water to 5 wells.

25,000 ppm. The samples contained relatively high concentrations of fluoride, and ranged in hardness from moderately hard to very hard.

Pennsylvanian System

Rocks of the Pennsylvanian System are at the surface or in the subsurface throughout Brown County. They strike generally northeast and dip northwest (Figures 3 and 6). Pennsylvanian rocks are overlain by younger rocks of the Permian System (Wichita Group) in the northwest part of the county, and subcrop beneath still younger rocks of the Cretaceous System (Trinity Group) in the eastern, west-central, and southern parts of the county (Figure 3).

The Pennsylvanian rocks are divided into four groups, which are, in ascending order, the Bend, Strawn, Canyon, and Cisco Groups. The Bend Group is at considerable depth as shown on the geologic section, Figure 6, and is not known to yield water to wells in Brown County; it is not discussed further in this report.

Strawn Group

Rocks of the Strawn Group are the oldest rocks occurring at the surface in Brown County. The Strawn Group crops out along the Colorado River and in areas generally coinciding with the drainage basins of Indian Creek and lower part of Pecan Bayou (Figure 3), where exposed by erosion of the overlying Canyon and Trinity Groups. The Strawn Group consists of nonmarine sandstone and shale and marine limestone. Locally the limestone beds have been eroded and replaced by channel sands.

Thickness of the Strawn Group ranges from about 250 feet near the Colorado River to about 1,200 feet in the northern part of the county. Owing to changes in the lithologic character of Pennsylvanian strata from one area to another in north-central Texas, exact correlation is difficult, and various investigators have placed the top of the Strawn Group at different stratigraphic horizons. This report follows Eargle (1960) in considering the top of the Strawn Group to be the top of the Capps Limestone (Figure 6).

Water-well data available indicate that usable ground water in the Strawn Group is contained in the lenticular channel sands. A known total of 160 wells produce water from Strawn Group in Brown County. The greatest concentration of these wells is in the southeast part of the county near the Indian Creek community. Depths of the wells range from 6 to 490 feet, and about one-half of the wells exceed 200 feet in depth. The wells generally yield less than 20 gpm but furnish an adequate supply of water for domestic and livestock purposes. Well 41-09-812 was formerly used as a supply for the community of Early.

Shallow, dug wells are often lined with brick, stone, or concrete. Drilled wells are generally lined with galvanized or steel casing. Windmills or electric-powered cylinder pumps are used to lift the water.

The quality of ground water from rocks of the Strawn Group in Brown County ranges within relatively wide limits, reflecting differences in the lithologic character of the Strawn rocks and the well depth. Due to the lack

of adequate data the base of usable water in the Strawn rocks can be referenced only to the deepest well in a given locality.

Water samples collected during this investigation contained dissolved solids ranging from 104 to 5,592 ppm. However, the bulk of the chemical analyses fell in a much narrower range. Over 85 percent of the samples contained less than 2,000 ppm dissolved solids, and 58 percent contained less than 1,000 ppm (Table 4).

Concentrations of the various chemical constituents also varied widely, as follows:

Calcium.....2 to 366 ppm	Bicarbonate.....100 to 722 ppm
Magnesium.....2 to 190 ppm	Sulphate..... 5 to 597 ppm
Sodium.....1 to 2,053 ppm	Chloride..... 2 to 3,122 ppm

Hardness of the Strawn water ranges from soft to very hard but is typically very hard (Table 4).

Canyon Group

Rocks of the Canyon Group crop out in a belt approximately 6½ to 9½ miles wide and about 34 miles long, extending from the southwest corner across the central part of the county (Figure 3). The Canyon Group overlies the Strawn Group and underlies rocks of the Cisco Group, all of Pennsylvanian age. In northeast Brown County, and in several small isolated areas, the Canyon is overlain by younger rocks of the Trinity Group of Cretaceous age.

The Canyon Group ranges in thickness from a featheredge at the Canyon-Strawn contact to about 560 feet, and is composed of relatively thick limestone layers interbedded with less resistant shale and lenticular sandstone. These strata are interrupted in places by channel-fill deposits. Ground water occurs both in the sandstones, which are generally fine to medium grained, and in the channel sediments, which are gravel, sand, and clay.

A number of tests that have been drilled to obtain water from the Canyon Group have been unsuccessful due to the difficulty of finding water-bearing strata and the marginal quality of the water. However, about 219 wells and springs produce water from the Canyon Group in Brown County, and most of these are used for domestic or livestock supplies. The greatest concentration of wells is in grid 42-24, east of the community of Bangs (Figure 5).

Canyon wells in Brown County range in depth from less than 10 to 365 feet. Yields are estimated to be 5 to 20 gpm. Windmills and electric-powered cylinder and jet pumps are used to lift the water. Most of the wells are lined with galvanized casing, a few with steel casing. Some wells reportedly are gravel packed. The shallow, dug wells are cased or lined with brick, stone, or concrete.

Water from Canyon rocks varies widely in quality, but as a rule is highly mineralized and commonly is unfit for domestic and livestock uses. Chemical analyses show a range in dissolved-solids content from 64 to 14,078 ppm. Most of the samples (67 percent) were slightly saline to very saline, exceeding 1,000 ppm dissolved solids.

Chemical constituents in the water samples also varied widely, as follows:

Calcium..... 5 to 835 ppm	Bicarbonate.....0 to 840 ppm
Magnesium.....11 to 700 ppm	Sulphate .....1 to 2,805 ppm
Sodium..... 1 to 3,833 ppm	Chloride.....2 to 7,388 ppm

The hardness content ranged from 24 to 3,560 ppm and may be classified as soft to very hard; however, most samples were hard to very hard.

Cisco Group

The Cisco Group crops out in a band 5 to 8 miles wide extending from the western county line across the north-central part of the county (Figure 3), and like other Pennsylvanian and Permian rocks dips northwest. The Cisco Group is overlain by the Wichita Group of Permian age except in the northeast part of the county where it is overlain by the Trinity Group of Cretaceous age. Also, an outlier of Trinity rocks overlies the Cisco in the western part of the county in the vicinity of Bangs (Figure 3).

Water-bearing characteristics of the Cisco Group are somewhat similar to those of the Canyon Group. However, the limestone and shale beds are thinner than those of the Canyon, and the sandstone beds are more numerous and thicker. Channel-fill deposits commonly interrupt the continuity of the limestone and shale beds. Water wells are commonly completed in the sandstone beds and the numerous channel-fill deposits.

A total of 182 wells and springs, ranging in depth from 6 to 342 feet, are known to produce water from the Cisco Group in Brown County. These wells are used primarily for livestock and domestic supplies.

Wells in the Cisco Group are estimated to yield 2 to 20 gpm. Windmills and jet pumps are used to lift the water. Most of the wells are lined with galvanized casing, and a few are gravel packed. The shallow, dug wells are generally lined with brick, stone, or concrete. Wells that produce water from the Cisco are concentrated in two areas, one in quadrangle 30-64, the other northwest of Bangs in quadrangles 42-15 and 42-23 (Figure 5).

The base of fresh water could not be determined regionally due to the irregular occurrence of channel-fill deposits and lenticular sandstones, the lateral gradation of sandstone to shale, and erratic porosity and fractured zones in the thin-bedded limestones; it can best be referenced to the deepest well in a given locality.

Quality of water from wells in the Cisco Group, as in other Pennsylvanian rocks, varies within wide limits. Concentrations of dissolved solids in water samples ranged from 115 to 11,134 ppm. Most, however, were between 500 and 3,000 ppm (Table 4).

The various chemical constituents also varied within wide limits, as follows:

Calcium ..... 5 to 1,560 ppm	Bicarbonate.....0 to 1,085 ppm
Magnesium.... 3 to 622 ppm	Sulphate.....5 to 1,720 ppm
Sodium.....2 to 2,116 ppm	Chloride.....8 to 6,980 ppm

Hardness ranges from soft to very hard (29 to 4,230 ppm); however, it is typically hard to very hard.

Permian System

Wichita Group

The Wichita Group of the Permian System crops out in a limited area in the northwestern part of Brown County (Figure 3). The group, like the underlying Pennsylvanian rocks, strikes northeast and dips northwest. Some outliers of Cretaceous age overlie the Wichita locally but are of little significance.

Ground water occurs in the Wichita Group in beds of lenticular sandstone, thin limestone, and sandy shale, and in channel-fill deposits which replace the limestone and shale beds locally. These channel deposits, similar to those in the Canyon and Cisco Groups, are generally medium- to coarse-grained sandstone and conglomerate.

Thirty-one wells and springs produced water from the Wichita Group for domestic and livestock purposes at the time of this study. The depth of wells ranges from 11 to 110 feet. Factors which hender well development are marginal chemical quality of the water and erratic occurrence of the water-bearing channel deposits.

Water wells completed in the Wichita Group produce from 2 to 20 gpm. Windmills and jet pumps are used to lift the water. Hand-dug wells are lined with field stone, brick, or concrete, whereas drilled wells are lined with galvanized or steel casing, commonly bonded to the bore hole near the surface with concrete. The base of usable water could not be determined because of the lack of adequate subsurface information, and can only be referenced to the depth of wells yielding usable water.

Chemical analyses of samples from 21 wells completed in the Wichita Group indicate that the water is generally high in mineral content. Concentrations of dissolved solids ranged from 86 to 4,520 ppm; however, only three samples contained less than 500 ppm dissolved solids, and only eight samples less than 1,000 ppm.

Ranges of the chemical constituents are as follows:

Calcium	16 to 690 ppm	Bicarbonate	54 to 1,113 ppm
Magnesium	3 to 221 ppm	Sulfates	4 to 1,180 ppm
Sodium	3 to 746 ppm	Chlorides	4 to 2,090 ppm

The water hardness is soft to very hard (58 to 2,330 ppm), but typically very hard.

Cretaceous System

Rocks of the Cretaceous System, consisting of the Trinity and Fredericksburg Groups, unconformably overlie older Pennsylvanian and Permian rocks in much of the eastern one-third of Brown County. Numerous erosional remnants, or

outliers, of Cretaceous rocks also occur in various parts of the county; the most extensive ones are in the vicinity of Bangs and on the topographic divide between Pecan Bayou and Indian Creek (Figure 3). The Cretaceous rocks strike generally north and dip east and northeast, opposite to the dip of the underlying Pennsylvanian and Permian strata.

Cretaceous rocks in Brown County are principally those of the Trinity Group. The Fredericksburg Group overlies the Trinity Group in only two small areas near the eastern county line (Figure 3). The Fredericksburg rocks generally are not saturated, owing to high topographic position, and thus are not a source of ground water.

Trinity Group

The Trinity Group is the most productive water-bearing unit in Brown County. More wells are completed in the Trinity than in the other groups, and the water is of better quality.

The water-bearing portions of the Trinity Group consist of fine- to coarse-grained sand, gravel, and shaley limestone. Porosity and permeability are apparently greater here than in Permian or Pennsylvanian strata as indicated by larger well yields and more consistently productive wells. The maximum thickness of the Trinity in Brown County was not determined but is believed to be more than 200 feet.

About 895 wells and springs produce water from the Trinity Group in the county, representing development of ground water throughout the extent of this group. Numerous springs near the base of the Trinity Group supply ponds and stock tanks, and contribute to the flow of streams such as Pecan Bayou and its tributaries, and Elm, Salt, Blanket, and Steppe Creeks. Water wells are developed principally for domestic and livestock uses. However, the town of Blanket obtains its municipal water supply from this group, and three wells, 31-57-405, 31-57-406, and 31-57-520, produce water for irrigation.

Wells in the Trinity Group range in depth from 6 to 330 feet. Yields vary within wide limits depending on the lifting equipment; livestock and domestic wells generally yield from 20 to 30 gpm, while the irrigation wells are reported to yield from 70 to 100 gpm. Cable-tool equipment is generally used in drilling although a few wells are hand dug. Many old wells were cased with galvanized casing, but recently steel and plastic casing have been used with a gravel pack to prevent silting.

Water from wells completed in the Trinity Group is, as a rule, of better quality than from other strata in Brown County. More than 425 chemical analyses of water samples show that the water is relatively low in dissolved solids and is typically a calcium bicarbonate type water (Table 4). The dissolved-solids content ranged from 151 to 7,687 ppm, but most of the samples (75 percent) contained less than 1,000 ppm dissolved solids. Only nine samples exceeded 3,000 ppm dissolved solids, and all of these contained relatively high amounts of sodium and chloride.

Concentrations of the chemical constituents ranged as follows:

Calcium.....22 to 704 ppm	Bicarbonate.....2 to 1,080 ppm
Magnesium..... 3 to 706 ppm	Sulphate.....5 to 1,410 ppm
Sodium..... 1 to 1,440 ppm	Chloride.....2 to 3,130 ppm

Water from the Trinity Group is typically very hard.

Quaternary System

Alluvium

Alluvium is the soil, clay, sand, gravel, rocks, or detritus transported from regions of higher elevations to streams. Because of stream sorting and little compaction, these deposits may serve as good ground-water reservoirs if of sufficient extent.

Principal occurrences of alluvium in Brown County of significance as a water supply are along Pecan Bayou from Lake Brownwood to the Colorado River, and along Blanket Creek. The lateral extent of these sediments is variable but generally coincides with the width of the flood plain. The thickness also is quite variable, ranging from a thin mantle up to about 50 feet.

Eight wells are complete in the alluvium in Brown County, all used for domestic and livestock supply. A chemical analysis of water from well 41-18-703 indicates that the water is of usable quality (Table 4).

Wells completed in the alluvium range in depth from 13 to 41 feet, and yield from 5 to 20 gpm. Most wells were drilled by cable tool and the remaining wells were hand dug. Galvanized or steel casing was used to line the drilled wells, and stone was used to line the hand-dug wells. Cylinder and jet pumps are used to lift the water.

SURFACE CASING

The functions of the Surface Casing Program of the Ground Water Division of the Texas Water Development Board is to recommend to members of the oil and gas industry and the Texas Railroad Commission the depth to which ground water should be protected in drilling tests for oil and gas. The authority for participation by the Texas Water Development Board in the surface casing program is derived from rules promulgated by the Railroad Commission under authority given that agency by the statutes dealing with regulation of drilling and production activities of the oil industry.

Statewide Rule 13 (formerly Rule 12a) of the Railroad Commission requires that operators obtain a letter from the Texas Water Development Board recommending the depth to which fresh-water strata should be protected when drilling a new lease or area if the lease or area is not covered by field rules or lease recommendations. Rule 8 (formerly Rule 20) of the Railroad Commission requires that all fresh-water strata be protected in drilling or production activities.

In carrying out its duties under Rule 13, the Texas Water Development Board created the Surface Casing Program in the Ground Water Division. The staff of the Surface Casing Program is responsible for maintaining technical data files upon which to base fresh water protection recommendations in all areas of the State, and for preparing these recommendations on application by operators contemplating drilling test wells. The depth to which ground water of usable quality should be protected which is recommended in a given area is based on all pertinent information available to the Surface Casing Program staff at the time the recommendation is given. Recommended depths in any one area may therefore be revised as additional subsurface information becomes available. Known depths of water wells being used or known to contain water of usable quality, such as domestic, municipal, industrial, livestock, or irrigation wells, are of primary value. Electric or gamma-ray neutron logs of oil and gas tests are used in many areas of the State as an aid in determining the depth to the base of usable quality ground water. Surface elevation is considered when a recommendation is given in an area that has moderate to high surface relief, as is common in the north-central Texas counties. This consideration of surface elevation is imperative when the area is dissected by streams, because of the danger that poor quality water will cause contamination of surface and ground water by moving along the dip of the beds to emerge at lower elevations. All of this information is interpreted in the light of the best knowledge of the geology and ground-water hydrology available on the area involved.

Because of the erratic occurrence of ground water in Brown County, which was described in the preceding sections of this report, known depths of water wells are given special weight in preparing surface-casing recommendations in the county. Usefulness of electric logs in this geologic environment is limited because of the lack of continuous zones in the shallow subsurface which can be correlated over the area, and the difficulty in interpreting water quality from such logs where the aquifer materials range so widely from sand to gravel to limestone over relatively short distances. In Brown County, the Surface Casing staff gives particularly close attention to surface elevations in addition to information on water wells because of the dissection of the surface rocks in this area by the tributaries of the Colorado River.

A county-wide depth recommendation is not feasible in Brown County because the depth of protection that would be required in areas of deep water wells would be an excessive requirement in many other parts of the county. The preceding section of this report describes the occurrence of ground water of usable quality in a number of formations at depths ranging from the surface to over 1,400 feet. Thus, the results of this study confirm that surface-casing recommendations in this county should be made on a well-to-well or lease-to-lease basis in order to provide adequately for water protection without imposing unnecessary burdens of excessive protection in those areas where deep protection is not needed.

During the 5-year period from 1958 through 1962, the Surface Casing staff prepared 413 recommendations for protection of usable quality ground water for oil and gas tests in Brown County. Thirty-eight recommendations were prepared during 1963. The depths of these recommendations range from 60 to 450 feet.

OIL-FIELD BRINE PRODUCTION AND DISPOSAL

Quantity and Distribution of Produced Brine

A 1962 inventory of salt-water production throughout the State, conducted and compiled by the Railroad Commission of Texas and the Texas Water Development Board as reported by members of the oil industry, shows that 1,079,697 barrels of oil-field brine was produced in Brown County in 1961 (Table 5). Of this total, 677,090 barrels or 63 percent was reported disposed of into injection wells, and 398,647 barrels or 37 percent was reported disposed of into surface pits. An additional 3,960 barrels, less than 1 percent, was reported disposed of by other methods.

Reported production of brine by designated fields was as follows: Brown County Regular field, 1,077,749 barrels; Blake-Caddo field, 1,825 barrels; and Thrifty field, 123 barrels. Other fields in Brown County reported no brine production with oil and gas.

Figure 7 shows the amount of brine production for various areas without regard to the producing horizon, as compiled from the 1961 salt-water inventory. Area totals are subdivided into surface-pit disposal, injection-well disposal, and miscellaneous disposal.

Chemical Quality of Produced Brine

Brine is produced with oil or gas from Cambrian, Ordovician, and Pennsylvanian rocks in Brown County. Chemical analyses of these brines are shown in Table 6. A comparison of these chemical analyses with those of water-well samples (Table 4) shows that the brines in Brown County contain the same chemical constituents as the usable quality ground water, but contain sodium, chloride, magnesium, and calcium in greater abundance. In the brines, sodium and chloride comprise about 90 percent of the total mineral content of the samples analyzed. Calcium and magnesium are the remaining significant constituents. The two brine samples from the Ellenburger Group (Table 6) are less concentrated than the Pennsylvanian brines. The brine sample from the Cambrian is similar to Pennsylvanian brines except for a lower bicarbonate content.

Sodium concentration in the brine samples ranges from 14,250 to 31,890 ppm. The concentration of chloride ranges from 24,300 to 67,500 ppm, and averages 48,975 ppm. Magnesium ranges from 285 to 3,140 ppm, and calcium from 1,000 to 8,030 ppm (Table 6).

ALTERATION OF WATER QUALITY

Chemical analyses of water from wells in Brown County indicate that the quality of water in each of the rock groups varies within wide limits. However, at some localities the quality appears to have been altered, some to a considerable extent. For a general discussion of ground-water quality and quality standards the reader is referred to the Appendix.

The locations of some wells that show evidence of contamination are shown on Figure 7. Figure 4 shows for these wells a series of water-quality diagrams

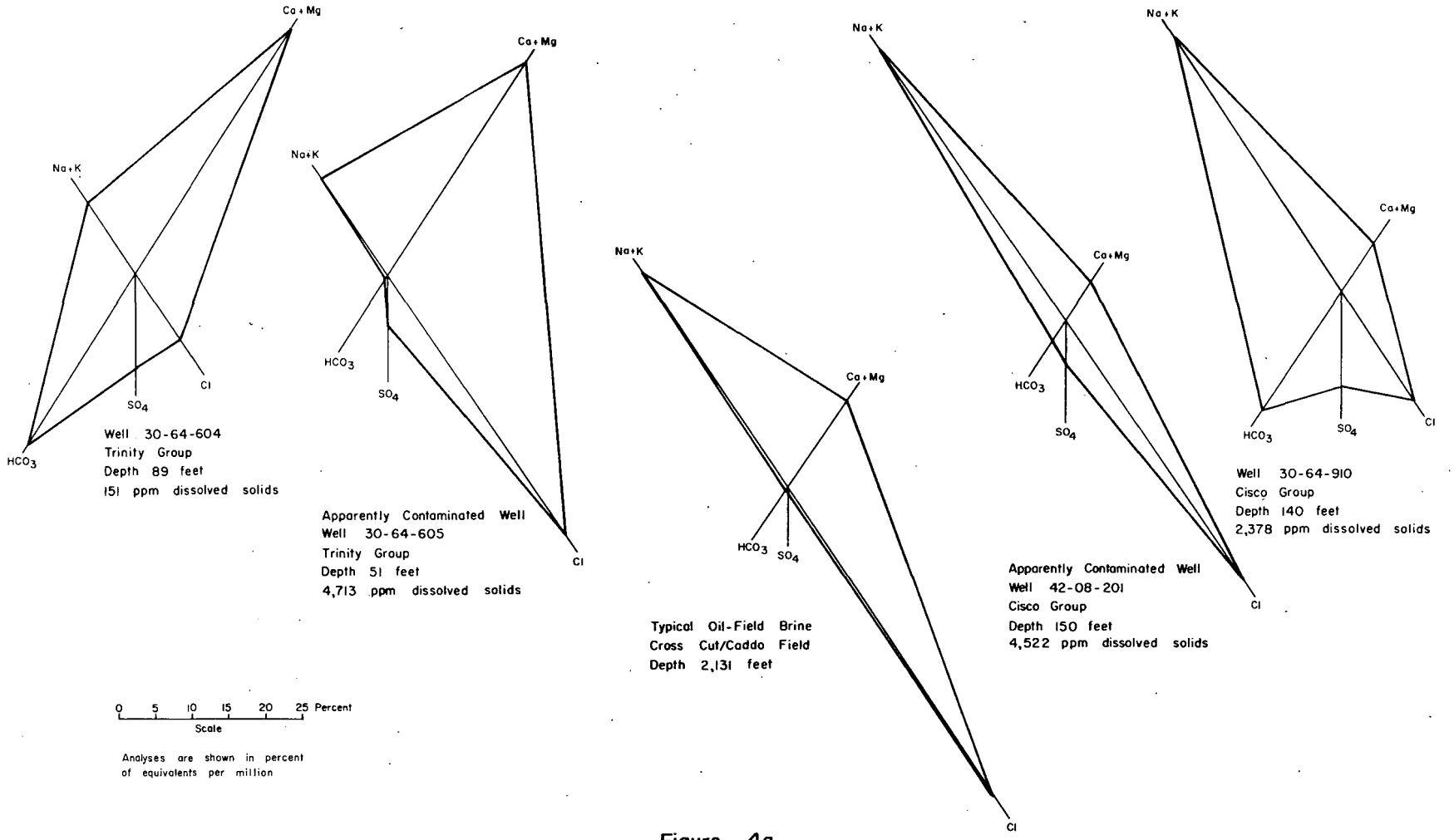
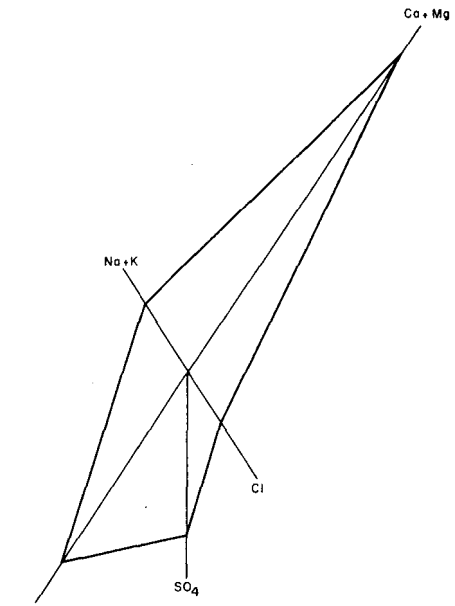


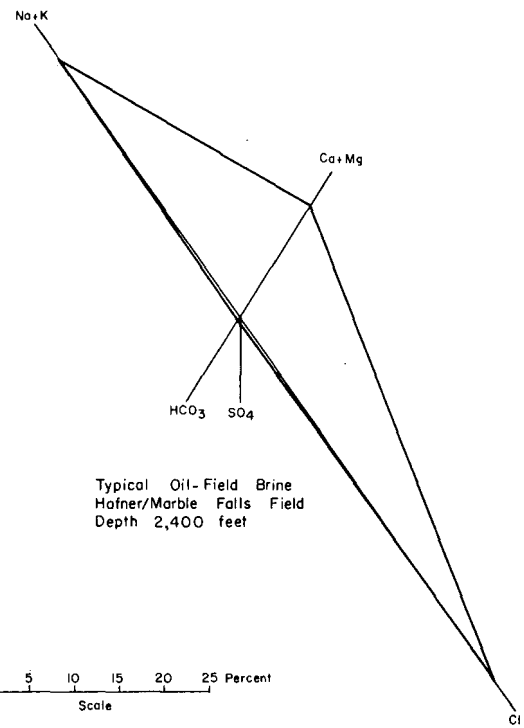
Figure 4a

Diagrams of Chemical Analyses of Ground Water and a Typical Oil-Field Brine

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

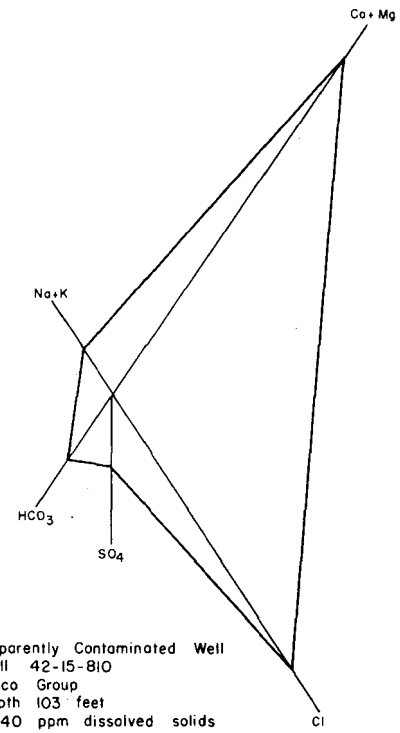


Well 42-15-808
Cisco Group
Depth 180 feet
870 ppm dissolved solids



Typical Oil-Field Brine
Hafner/Marble Falls Field
Depth 2,400 feet

Analyses are shown in percent
of equivalents per million



Apparently Contaminated Well
Well 42-15-810
Cisco Group
Depth 103 feet
6,140 ppm dissolved solids

Figure 4b

Diagrams of Chemical Analyses of Ground Water
and a Typical Oil-Field Brine

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

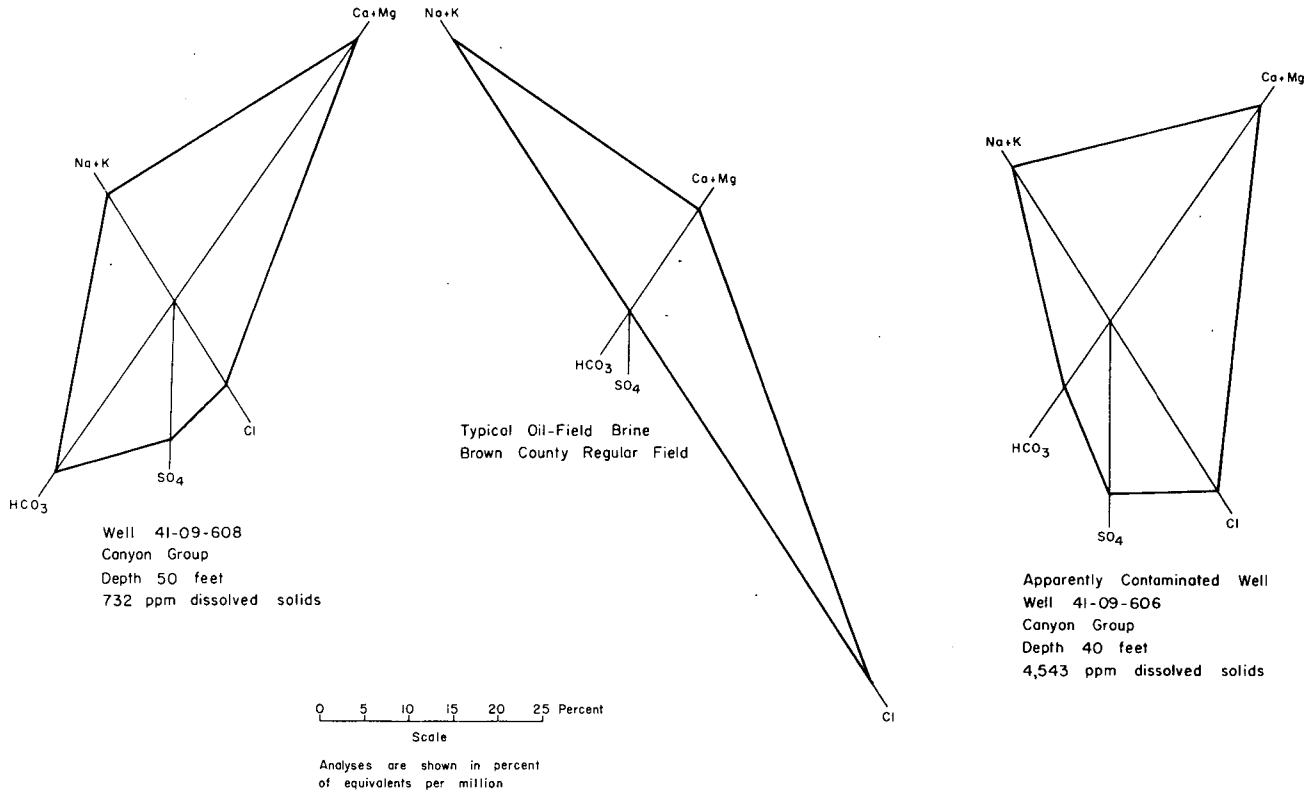


Figure 4c

Diagrams of Chemical Analyses of Ground Water and a Typical Oil-Field Brine

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

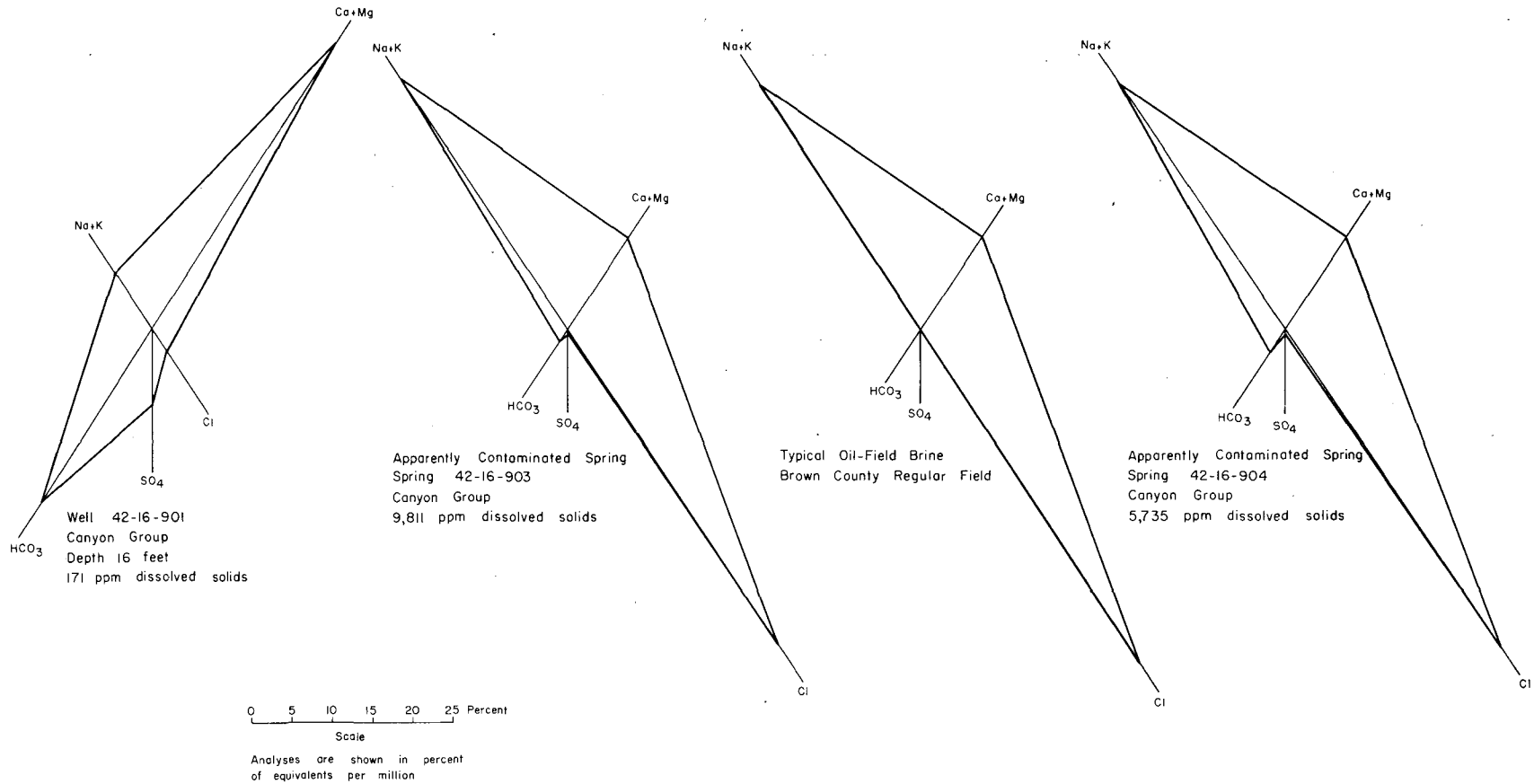


Figure 4d

Diagrams of Chemical Analyses of Ground Water and a Typical Oil-Field Brine

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

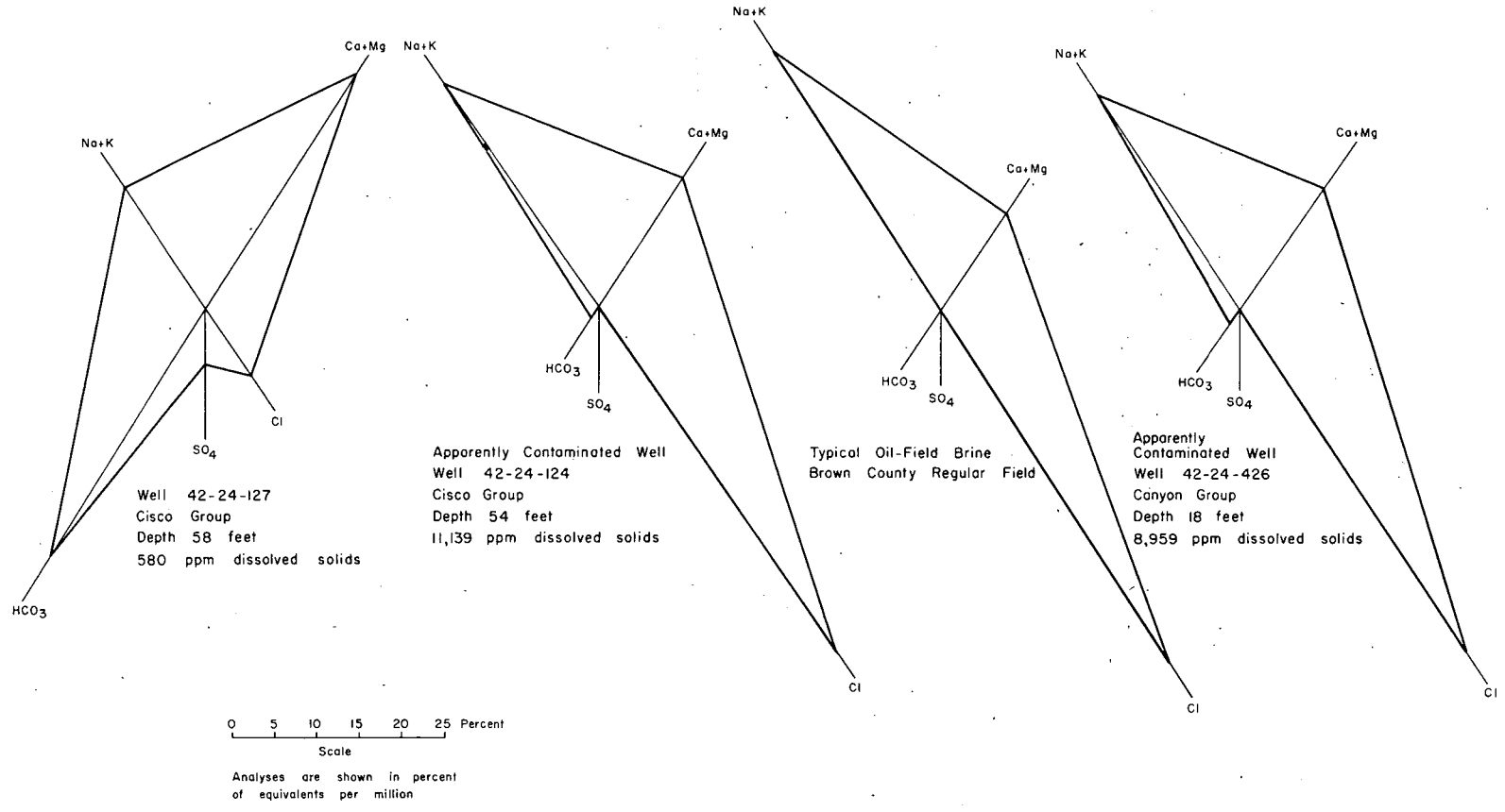


Figure 4e

Diagrams of Chemical Analyses of Ground Water and a Typical Oil-Field Brine

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

upon which the various chemical constituents have been plotted on radial coordinates, thus graphically illustrating differences and similarities between selected chemical analyses. These diagrams compare waters from an apparently contaminated well, from another well of similar depth completed in the same geologic unit and in the same general locality, and a typical oil-field brine.

Wells 30-64-605 and 42-08-201 in northwest Brown County (Figure 7, area 1) are apparently contaminated. Well 30-64-605, completed in the Trinity Group, produces water with a high content of calcium, magnesium, and chloride. Figure 4a shows the distinct difference in the plotted pattern of water from this well and that of well 30-64-604, another Trinity Group well in the same vicinity and of similar depth. Water from well 42-08-201 is rich in sodium and chloride; on Figure 4a, note the difference in the shape of the radial coordinate plots for this well and for well 30-64-910. Both wells screen rocks of the Cisco Group and are of similar depth. Also notice the striking similarity between the quality diagram of water from well 42-08-201 and the quality diagram of a typical oil-field brine.

Quality of water from well 42-15-810, an apparently contaminated well, in area 3 (Figure 7), and from well 42-15-808 in the same general locality is illustrated on Figure 4b. Water from well 42-15-808 appears to be unaltered ground water in which the predominant mineral constituents are calcium and bicarbonate, whereas water from well 42-15-810 contains high concentrations of calcium and chloride. A diagram illustrating the chemical character of a typical oil-field brine from area 3 is also shown on Figure 4b.

About 7 miles west of Blanket, two water wells, 41-09-606 and 41-09-608, about 1.5 miles apart, are drilled in rocks of the Canyon Group to about the same depth. The quality of water from these two wells is compared graphically in Figure 4c. Water from well 41-09-608 contains predominantly calcium and bicarbonate, whereas water from well 41-09-606 shows a comparatively greater content of sodium and chloride. This suggests alteration of the original or native ground water in the vicinity of well 41-09-606, although no brine was reported disposed of in this area in the 1961 inventory. A typical oil-field brine is also shown on Figure 4c for comparison.

Figure 4d shows quality diagrams for water from two adjacent springs in the Canyon Group in area 4 (Figure 7), and compares these with the quality of water from a shallow, dug well, 42-16-901, in the same general area. Waters from the springs contain largely sodium and chloride as mineral constituents, but water from well 42-16-901 contains mostly calcium and bicarbonate. Note the similarity of the spring waters and the brine produced in the Brown County Regular field (Figure 4d).

Radial pattern diagrams on Figure 4e illustrate water quality from three wells in area 5 (Figure 7). Note the dissimilarity between the apparently unaltered water from well 42-24-127 and the apparently contaminated water from wells 42-24-124 and 42-24-426. Also note the distinct similarity between the diagrams illustrating the apparently contaminated wells and a typical oil-field brine.

Areas of Vegetative Kill

Vegetative-kill areas can result from brine discharge onto the ground surface, overflow of disposal pits, and less obvious sources of brine such as leaking pipelines or improperly plugged wells. Several such areas were noted during this investigation and are shown on Figure 7. Other vegetative-kill areas may exist in Brown County, as these were noted only through a spot field survey. The significance of the areas is that the salt contained in the rocks and soils of these areas contributes to the contamination of both ground and surface water. This is also a cause of some unproductive soils within the county.

One of the largest areas of vegetative kill is in area 1 (Figure 7). Possible sources are seepage of brines from surface pits and leakage from oilfield waste lines. Some bar ditches show evidence of salt-water disposal, which local residents claim is direct flow from wells and salt water that has been transported from other areas and drained into the ditches.

Another area of extensive vegetative kill is west of Bangs in area 3 (Figure 7). A view of this area can be seen from U.S. Highway 67. Surface pits have been constructed on a slope en echelon, so that overflow from the upper pit enters the next lower, and so on into succeeding lower pits. The surface of this area is covered by a very porous, sandy soil.

A third area of vegetative kill is near the town of Brooksmith in the southwest part of the county (area 6, Figure 7). Although oil production has declined in this area, effects of previous brine disposal are still evident.

Well 41-17-502 near Brownwood was drilled in 1917 as an oil test and completed as a flowing water well tapping the Ellenburger Group. The well reportedly discharges highly mineralized water (Table 4) into Willis Creek, a tributary of Pecan Bayou, and is the subject of a contamination complaint by people using water from Pecan Bayou for irrigation.

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Table 3.--Records of Wells and Springs, Brown County

Centrifugal

Water Level : Reported water levels given in feet; measured water levels giving in feet and tenths.
Method of lift and type of Power: B, bucket or bailer; C, Cylinder; Cf, Centrigulal; E, electric; G, natural gas, butane or gasoline; H, hand; J, jet; N, none; S, Submersible; T, turbine; W, windmill.
Use of water : D, domestic; Ind, industrial; Irr, irrigation; P, Public supply; S, stock; N, none.

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*30-63-601	O. S. Smith	--	--	92	5	--	Wichita Group	1,690	68.0 46.1	Nov. 4, 1960 Apr. 16, 1962	C,W	N	
* 602	J. H. Balkum	--	--	20	60	--	do	1,701	16.5	Apr. 19, 1962	J,E	D	
* 603	O. S. Smith	--	--	Spring	--	--	do	1,680	(+)	--	J,E	D,S	Water is pumped from spring to house.
* 604	D. Westerman	--	--	68	5	--	do	1,702	6.8	Apr. 18, 1962	--	N	
* 605	E. Ringhoffer	--	--	11	36	--	do	1,713	6.7	do	C,W	D	Reported weak supply.
* 606	J. H. Stacy	--	--	11	36	--	do	1,701	8.3	do	--	N	
* 64-401	S. L. Balkum	--	--	15	36	--	do	1,706	13.6	do	--	N	
* 402	do	--	--	22	6	--	do	1,704	16.9	do	J,E	D,S	
403	B. D. Montgomery	--	1956	58	6	--	do	1,689	19.3	do	--	N	
* 501	J. C. Hodnett	--	--	27	36	--	Trinity Group	1,669	21.4	Apr. 20, 1962	H	S	
* 502	-- Butler estate	--	--	34	36	--	do	1,670	22.1	do	C,W	D,S	
* 503	R. Debusk	--	--	68	5	--	Cisco Group	1,666	59.8	do	--	N	
* 504	W. W. Allen	--	--	9	36	--	do	1,617	8.5	do	C,W	N	
* 601	R. Debusk	--	--	38	24	--	Trinity Group	1,702	21.6 29.2 28.9	Dec. 1, 1937 Feb. 15, 1961 Apr. 23, 1962	C,W	S	
* 602	H. H. Lawson	--	--	43	48	--	do	1,701	32.5 29.0	Oct. 25, 1960 Apr. 23, 1962	J,E	D,S	
* 603	J. T. Hodnett	--	--	20	36	--	do	1,644	8.0	Apr. 23, 1962	J,E	D,S	
* 604	C. Pitman	T. Johnson	1961	89	7	--	do	1,700	35	1961	J,E	S	Sand reported at 64 ft.
* 605	A. Harris	A. Turpin	1947	51	5	--	do	1,648	25.7	Apr. 24, 1962	--	N	Water reported at about 30 ft.
* 606	T. Busbee	--	--	15	36	--	do	1,620	4.0	Apr. 27, 1962	C,W	N	
* 607	L. Stewart	A. Turpin	--	227	5	--	Cisco Group	1,645	139	1962	C,W	D,S	Sand reported at 190 ft.
701	Ambassador Oil Co.	J. Gadbois	1956	4,522	7	--	Ellenburger Group	1,542	--	--	T,E	Ind	Used for water supply in secondary-recovery operations of petroleum industry.
* 702	J. Watkins	--	--	15	48	--	Wichita Group	1,685	14.7	Apr. 19, 1962	J,E	D	

See footnote at end of Table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*30-64-703	Harding Bros.	--	--	3,752	7	--	Ellenburger Group	1,560	430	Apr. 1962	T,E	Ind	Used for water supply in secondary-recovery operations of petroleum industry.
* 801	F. H. Madison	Coffinball	1940	342	6	--	Cisco Group	1,635	60	May 1962	C,E	D,S	
802	G. W. Williams	--	--	200	7	--	Cisco Group	1,597	60	May 1962	C,W	S	Water reportedly became saline about 2 years after well was drilled.
* 901	E. A. Allen	--	1890	23	36	--	do	1,594	7.3	Apr. 23, 1962	J,E	D,S	
* 902	W. Garmes	--	--	21	36	--	do	1,583	10.1	Apr. 24, 1962	C,W	S	
* 903	J. Allgood	A. Turpin	--	208	5	--	do	1,620	--	--	C,E	L,S	
904	B. Harris	--	--	160	--	--	do	1,630	--	--	C,E	N	
905	do	--	--	200	--	--	do	1,655	16.3	May 7, 1962	C,H	N	
* 906	C. Tyler	--	--	62	--	--	do	1,606	35.7	Apr. 27, 1962	C,W	S	
* 907	H. L. Jones	--	1946	9	36	--	Trinity Group	1,617	6.0	May 8, 1962	J,E	N	
* 908	G. T. Densman	--	1903	206	6	--	Cisco Group	1,608	150	May 1962	C,E	D	
909	H. L. Jones	A. Turpin	1943	180	6	--	do	1,606	58.6	May 1, 1962	C,H	N	
* 910	K. E. Murdock	--	--	140	--	--	do	1,598	--	--	C,W	D,S	
* 911	J. W. Moore	--	--	47	7	--	do	1,550	12.3	May 1, 1962	J,E	D,S	
* 912	do	--	--	12	42	--	do	1,532	5.2	do	C,W	N	
* 913	C. Woods	--	--	80	6	--	do	1,563	45.8	Jan. 8, 1938	J,E	N	
* 914	W. M. Palmore	--	1909	90	6	--	do	1,580	50	June 1962	J,E	D,S	
915	Williams School	--	--	30	7	--	do	1,557	10.0	May 7, 1962	J,E	N	
* 916	H. C. Williams	--	1900	15	36	--	do	1,554	9.7	May 8, 1962	J,E	D,S	
* 917	C. Woods	--	--	20	24	--	do	1,597	5.8	May 7, 1962	--	N	
* 918	J. J. Schults	--	--	14	36	--	do	1,590	8.4	May 8, 1962	J,E	D	
*31-57-401	Mrs. G. Greynolds	G. Greynolds	--	89	8.5	--	Trinity Group	1,672	58.4	May 2, 1963	C,W	D,S	
402	do	do	--	80	6	--	do	1,664	60	do	C,E	S	
* 403	do	do	--	75	8.5	--	do	1,634	27	do	C,W	S	
404	do	do	--	75	6	--	do	1,617	27	do	C,W	S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-57-405	Mrs. G. Greynolds	G. Greynolds	--	76	8.5	--	Trinity Group	1,635	24.8	May 2, 1963	C,W	S,Irr	
406	do	do	--	74	8.5	--	do	1,635	21.7	do	C,W	S,Irr	
407	J. C. Claborn	--	--	80	6	--	do	1,675	65.8	May 1, 1963	C,W	S	
408	do	--	--	80	6	--	do	1,675	66	do	C,W	S	
409	O. L. Crownover	O. L. Crownover	--	85	7	--	do	1,661	60	do	C,W	D,S	
410	-- Parker	--	--	76	5.5	--	do	1,664	25	do	C,E	D,S	
* 411	M. West	--	--	66	6	--	do	1,651	52	do	J,E	D,S	
* 412	do	--	--	93	5.5	--	do	1,684	84	do	C,W	D,S	Water sand reported at 89 ft.
413	-- Semenuik	--	--	35	36	35	do	1,673	25	do	C,W	D	
414	do	G. Greynolds	--	180	8.5	180	Cisco Group	1,673	100+	do	C,E	D,S	
* 415	D. C. Watson	C. Alford	--	100	6	--	Trinity Group	1,683	70	do	J,E	D	
* 416	E. O. Kizer	--	--	80	6	--	do	1,686	70.5	do	J,E	D	
417	do	--	--	80	5.5	--	do	1,688	70	do	C,E	S	
418	do	--	--	35	36	35	do	1,644	25	do	C,W	S	
419	do	--	--	30	36	30	do	1,643	25	do	C,W	D	
420	D. E. Ware	--	--	73	6	--	do	1,658	--	--	J,E	S	
* 421	W. C. Witt	--	--	50	48	35	do	1,658	35	May 1, 1963	J,E	D,S	
422	-- McCoy	--	--	110	4	--	do	1,769	60	do	C,W	D,S	
423	W. W. Ezzell	--	--	53	48	--	do	1,751	44.3	May 23, 1963	C,W	D,S	
424	-- Profitt	--	--	90	5.5	--	do	1,749	40	do	C,W	D,S	
* 425	R. T. Ezzell	--	--	40	36	--	do	1,756	35	do	J,E	D,S	
426	Wm. White	--	--	75	6	--	do	1,729	40	do	J,E	D,S	
* 427	B. Harris	C. Alford	1956	90	5.5	--	do	1,642	30	do	J,E	D,S	
* 501	S. L. Rankin	--	1893	165	5.5	--	do	1,675	100	do	C,W	D,S	
* 502	C. T. Goss	--	--	66	5.5	--	do	1,662	61	do	C,W	D,S	Water sand reported at 58 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-57-503	C. T. Goss	--	--	--	--	--	Trinity Group	1,651	--	--	N	N	Plugged and abandoned.
* 504	E. Kennedy	A. Turpin	1948	190	5.5	--	do	1,744	164	May 23, 1963	C,W	D,S	
505	W. E. Owens	--	--	130	5.5	--	do	1,702	95	do	C,W	D	
* 506	R. Welch	--	--	125	5.5	--	do	1,700	95	do	C,W	D	
507	C. Watkins	--	--	125	5.5	--	do	1,690	95	do	C,E	D,S	
508	R. Agnew	--	--	80	--	--	do	1,681	73	May 3, 1963	C,W	S	
509	-- Paterson	--	--	47	5.5	--	do	1,658	29	do	C,W	D,S	Original depth 65 ft.
510	E. Parker	--	--	44	48	--	do	1,664	29.9	do	C,W	S	
* 511	C. T. Parker, Sr.	C. Alford	--	105	6	--	do	1,673	75	do	J,E	D,S	Water sand reported at 90 ft.
512	O. R. Schults	--	--	105	5.5	--	do	1,657	75	do	C,W	S	
513	M. West	--	--	105	5.5	--	do	1,672	101	do	C,W	S	
514	L. Mayfield	C. Alford	1962	113	6	113	do	1,658	53	do	J,E	S	
* 515	E. Witt	do	--	200	5.5	--	Cisco Group	1,685	180	do	S,E	D,S	
516	Mrs. J. Angel	--	--	112	5.5	--	Trinity Group	1,675	--	do	C,W	S	
517	M. West	--	--	68	36	--	do	1,679	60	do	--	--	
518	do	--	--	74	5.5	--	do	1,669	57	do	C,W	--	
519	H. Griffin	--	--	85	36	20	do	1,665	75	do	J,E	D,S	
* 520	A. M. Goss	--	--	115	7	115	do	1,675	75	do	S,E	Irr	
* 521	do	--	--	75	5.5	75	do	1,670	65	do	C,W	D,S	
522	J. W. Gifford	--	--	60	36	60	do	1,639	30	do	C,W J,E	D,S	
523	A. M. Goss	--	--	116	6	--	do	1,661	68	May 8, 1963	C,W	S	
524	-- Jackson	--	--	75	6	--	do	1,651	20	do	J,E	D	
* 525	J. Jackson	--	--	87	5.5	--	do	1,655	57	do	C,E	D,S	
526	State of Texas	--	--	82	5.5	--	do	1,658	50	do	C,H	P	
* 527	M. J. Holleman	--	--	50	5.5	--	do	1,661	--	--	C,W	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing: Diameter (in.)	Casing: Depth (ft)	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
31-57-528	Mrs. -- Willet	--	1954	190	5.5	--	Trinity Group	1,754	164	May 8, 1963	C,E	D,S	
529	-- Hensen	--	1963	182	5.5	--	do	1,738	156	do	C,W	S	Water sands reported at 60 and 175 ft.
601	B. Richards	A. Turpin	--	100	5.5	--	do	1,662	--	--	C,W	D,S	
602	do	--	--	111	5.5	--	do	1,685	--	--	C,W	S	
* 603	L. White	--	--	100	5.5	--	do	1,652	85	May 8, 1963	C,W	D,S	
701	S. Nunnally	--	--	28	5.5	--	do	1,559	7.1	May 23, 1963	C,W	D,S	
* 702	T. Mitchell	T. Johnson	1959	60	6	--	do	1,596	--	--	J,E	D,S	
703	C. Compton	--	--	113	7	--	do	1,677	69.6	May 1, 1963	C,W	D,S	
* 704	D. N. Markham	A. Turpin	--	70	4.5	--	do	1,651	65	do	C,W	D,S	
* 705	D. Hardy	--	--	35	36	35	do	1,639	23	do	C,W J,E	D,S	
706	do	--	--	51	5.5	51	do	1,629	30	do	C,W	S	Reported drilled through 20 ft of water sand.
707	do	--	--	25	36	25	do	1,629	15	do	C,W,E	S	
708	T. W. Mitchell	--	--	21	5.5	--	do	1,619	7.1	do	C,W	D	
709	W. E. Murphee	--	1961	89	5.5	--	do	1,613	79	do	C,W	S	
* 710	do	--	1950	60	6 5.5	20 20-60	do	1,592	46	do	C,W	D,S	
* 711	W. H. Wheeler	--	1906	49	5.5	--	do	1,592	12	do	C,E	S	
* 712	F. P. Clark	--	1948	49	4.5	--	do	1,594	20.6	May 1, 1962	C,E	D,S	
713	W. E. Murphee	--	--	56	5.5	--	do	1,667	51	do	C,W	S	
* 714	J. Lancaster	--	--	20	5.5	--	do	1,622	15	do	C,W	S	Original depth 90 ft.
715	A. H. Lancaster	--	--	110	7 5.5	50 20-110	do	1,619	20	do	C,E	D,S	
716	C. Evatt	G. Boyd	--	45	5.5	--	do	1,605	6	do	C,W,H	S	
* 717	Mrs. B. Spence	C. Alford	1962	78	5.5	78	do	1,618	75	do	J,E	D,S	
718	W. R. Chambers	--	--	30	24	30	do	1,585	24	do	C,W	D,S	
719	Mrs. L. Taylor	--	--	65	5.5	65	Cisco Group	1,587	20	do	B,H	D,S	Water sand reported at 20 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*31-57-720	W. E. Chambers	--	--	Spring	--	--	Cisco Group	1,570	(±)	--	J,E	D	Water is pumped from spring to house.
* 721	C. Chambers	--	--	16	--	--	Trinity Group	1,594	8	May 1, 1962	Cf	D,S	
* 722	R. F. Drinkard	--	1943	100	--	--	Cisco Group	1,583	---	--	J,E	D	
801	W. H. Chambers	--	--	51	24	--	Trinity Group	1,626	34.9	Apr. 30, 1963	C,W J,E	D,S	
* 802	A. P. Spence	A. Turpin	--	80	7 5.5	25 25-80	do	1,618	60	do	J,E	D,S	Periodically water has odor and taste.
* 803	J. Stout	--	--	48	5.5	48	do	1,619	15	do	J,E	D,S	
804	P. Muhle	C. Alford	--	62	6	--	do	1,625	40	do	J,E	D,S	Water sand reported from 40 to 45 ft.
805	A. Lester	--	--	32	48	--	do	1,625	16.1	May 10, 1963	C,E	D,S	
806	R. M. Rankin	--	--	36	24	--	do	1,630	26.2	May 9, 1963	J,E	D,S	
* 807	G. B. Ingram	--	--	40	5.5	--	do	1,622	12	do	J,E	D,S	
* 808	J. W. Gifford	C. Alford	1962	60	5.5	60	do	1,630	15	do	C,E	S	
809	Wm. Medley	T. Johnson	1962	73	5.5	--	do	1,635	40	do	C,W	S	Water reported from 26-27, 36-37, and 65 ft.
810	-- Hudson	--	--	25	36	--	do	1,632	17.5	May 8, 1963	C,W	S	
811	H. L. Bishop	--	--	34	36	--	do	1,630	21.7	May 9, 1963	J,E	D,S	
812	T. Hart	--	--	100	5.5	--	do	1,662	80	do		D,S	
813	G. Wynnefried	--	--	95	6	--	do	1,659	72.3	May 14, 1963	J,E	D	
814	J. V. Touchstone	--	--	86	5.5	--	do	1,658	67	do	C,W	D,S	
* 815	C. B. Nichols	--	--	100	5.5	--	do	1,660	92	do	C,E	D	
816	E. Christian	--	--	100	5.5	--	do	1,669	90	do	C,W	S	
817	A. R. Burcham	A. Turpin	--	135	5.5	135	do	1,680	115	do	C,W	S	
818	do	--	--	95	5.5	95	do	1,664	80	do	C,W	D,S	
819	-- Bailey	--	1943	120	5.5	120	do	1,671	100	do	C,W	D,S	
820	W. T. Nichols	--	--	86	5.5	--	do	1,665	71.4	do	C,W	D,S	
821	T. Taylor estate	--	--	60+	5.5	--	do	1,650	30	do	C,E	S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-57-822	N. Lancaster	--	--	105	5.5	--	Trinity Group	1,680	80	May 14, 1963	C,E	S	
823	J. R. Bailey	--	--	150	5.5	--	do	1,708	125	do	C,W	D,S	
* 824	E. McBride	A. Turpin	--	165	5.5	--	do	1,715	125	do	C,W	D,S	
825	E. A. Grice	--	--	50	36	50	do	1,625	20	do	J,E	D,S	
826	J. Stout	--	--	43	36	--	do	1,631	30.8	May 10, 1963	--	S	
827	H. Taylor	--	--	90	5.5	--	do	1,653	50	do	C,W	S	Water sands at 60 and 90 ft.
* 828	I. Huddler	--	1942	60	5.5	--	do	1,649	38.5	do	C,W	S	
* 829	do	--	--	60	36	60	do	1,653	50	do	J,E	D	
830	W. Hardy	--	--	100	5.5	--	do	1,672	40	do	J,E	D,S	Reported strong well.
* 831	Mrs. B. Lancaster	--	--	147	5.5	--	do	1,715	100	do	C,E	D,S	
832	F. Bloxom	--	1900	87	5.5	--	do	1,673	69	do	C,W	D,S	Original depth 127 ft.
* 833	D. L. Underwood	A. Turpin	--	117	5.5	--	do	1,649	17	do	C,W	D,S	
834	H. R. Nichols	--	--	44	36	--	do	1,632	32.6	Apr. 30, 1963	C,W J,E	D	
835	J. T. Witt	--	--	40	36	40	do	1,629	30	do	C,W	D,S	
* 836	A. N. Lancaster	--	--	80	5.5	80	do	1,650	50	do	J,E	D,S	Reported strong well.
837	L. Hardy	--	--	68	36	--	do	1,641	30	do	C,W	D	
838	-- Turpin estate	--	--	72	5.5	--	do	1,629	21	do	C,W	D,S	
839	do	--	--	72	5.5	--	do	1,629	21	do	C,E	D	
840	R. R. Harms	--	--	72	5.5	--	do	1,632	21	do	J,E	D	
901	E. McBride	--	--	160	5.5	--	do	1,707	140	do	C,W	S	
902	B. Adkins	--	--	205	5.5	--	do	1,730	180	do	C,E	S	
903	Mrs. T. Willet	--	--	100	5.5	--	do	1,730	90	do	C,G	S	
904	J. W. Stewart	--	1900	185	5.5	--	do	1,727	160	do	C,E	D,S	
905	H. Henry	--	--	175	5.5	--	do	1,703	150	do	C,W	S	
* 906	do	C. Alford	--	200	5.5	200	do	1,715	170	do	S,E	D,S	40 ft of water sand reported at 160 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
31-57-907	H. Henry	--	--	54	36	--	Trinity Group	1,711	34.2	May 28, 1963	C,W	D	
908	B. Wright	C. Smith	1949	145	6	145	do	1,697	120	do	C,W	S	
* 909	do	C. Alford	1960	176	6	176	do	1,701	146	do	S,E	D	
910	P. Seider	--	--	140	5.5	140	do	1,677	110	do	C,E	D,S	
911	C. Hardwick	C. Alford	--	110	6	--	do	1,668	78	do	J,E	D,S	20 ft of water sand reported at 90 ft.
* 912	A. F. Michaels	A. Turpin	--	110	6	--	do	1,666	78	do	J,E	D,S	Do.
913	-- Cornelius	--	--	160	6 5.5	40 40-160	do	1,686	140	do	C,W	D,S	
914	B. H. Moore	--	--	169	6	169	do	1,707	139	do	C,W	S	
* 915	do	--	--	157	6 5.5	39 39-157	do	1,705	145	do	C,W	D,S	
916	do	--	--	52	5.5	52	do	1,731	32	do	C,W	S	
917	do	--	--	150	5.5	150	do	1,686	125	do	C,W	S	
918	H. W. King	--	--	118	5.5	118	do	1,668	110	do	J,E	D	
919	Wm. Vanderveer	--	--	100	5.5	--	do	1,663	80	do	C,W	D,S	
58-701	C. Evatt	--	--	215	5.5	--	do	1,739	140	do	C,W	S	
41-01-101	L. Stewart	--	--	40	8	40	Cisco Group	1,605	20	do	T,E	D,S	
102	M. Stewart	--	--	11	24	--	do	1,569	2.7	Apr. 23, 1963	J,E	D,S	
* 103	E. D. Pierce	--	--	36	5.5	36	do	1,555	16	do	C,G	D	
104	-- Martin	--	--	13	36	--	Trinity Group	1,574	5	do	J,E	D	
105	do	--	--	37	5.5	--	Canyon Group	1,584	18	do	B,H	N	
106	S. Alderman	--	--	20	36	--	do	1,593	10	do	B,H	D	
201	George Bean estate	A. Turpin	--	85	5	--	Trinity Group	1,651	71.1	Oct. 26, 1960	N	N	
202	C. H. Clardy	do	--	113	5	--	do	1,657	81	do	J,E	D	
* 203	-- McGregor	--	--	25	--	--	do	1,598	22	do	J,E	D	
* 204	W. M. Holt	--	--	71	6	71	do	1,589	30	do	J,E	D,S	Water sands reported at 13.5, 21, and 71 ft.
205	Mrs. I. Foster	--	--	50	5.5	50	do	1,598	30	do	C,W	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-01-206	I. T. Nelson	--	--	108	5.5	180	Trinity Group	1,633	60	Oct. 26, 1960	J,E	D	Water sands reported from 60 to 78 and 90 to 108 ft.
207	do	--	--	70	5.5	70	do	1,633	60	do	C,W	D	
208	do	--	--	65	36	--	do	1,638	60	do	C,W	S	
* 209	M. C. Wiggins	--	--	50	36	50	do	1,630	30	do	J,E	D,S	
210	Mrs. G. Plummer	--	--	90	5.5	90	do	1,662	50	do	C,W	D,S	
211	J. Chandler	--	--	85	5.5	85	do	1,659	--	--	C,E	D,S	
212	W. Smith	--	--	--	5.5	--	do	1,652	--	--	C,E	D,S	
213	T. Holland	--	--	60	6	--	do	1,644	--	Oct. 26, 1960	J,E	D	
* 214	W. G. Scott	--	1943	66	5.5	66	do	1,643	36	do	J,E	D	
* 215	C. Alexander	--	--	56	5.5	56	do	1,643	50	do	J,E	D,S	
216	Mrs. J. J. Harris	A. Turpin	--	70	5.5	70	do	1,649	--	--	C,E	D,S	
* 217	J. W. Gregory	--	--	80	5.5	80	do	1,645	--	--	J,E	D,S	
218	C. J. Richey	--	--	37	60	37	do	1,593	34	Oct. 26, 1960	J,E	D	
219	W. A. Fry	--	--	35	48	23	do	1,607	23	do	J,E	D,S	
220	W. R. Wendel	--	--	25	48	25	do	1,600	13	do	J,E	D	
* 221	J. W. Sutton	A. Turpin	--	63	5.5	63	Canyon Group	1,599	--	--	J,E	D	
222	J. Newberry	--	--	20	36	--	Trinity Group	1,604	16	Apr. 22, 1963	C,W	D,S	
223	H. B. Fisher	--	--	60	5.5	60	do	1,626	40	do	C,W	D	Water sand reported at about 50 ft.
224	-- Driscoll	--	--	33	5	--	do	1,648	24.9	Apr. 19, 1963	C,W	D,S	
225	R. Lancaster	--	--	70	5.5	70	do	1,633	30	do	C,W	D,S	
* 226	D. Morrow	--	--	100	5.5	100	do	1,669	60	do	C,E,W	D,S	
* 227	F. Fisher	--	--	60	14	60	do	1,628	50.2	May 1, 1963	C,E	D,S	
* 228	W. C. Wilson	--	--	87	5.5	--	do	1,651	67	do	J,E	D,S	
* 229	L. D. Madison	--	--	140	5	140	do	1,657	100	do	C,E	D,S	
* 230	D. Ford	--	--	107	5.5	107	do	1,657	101	do	C,E	D	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-01-231	Mrs. S. Wagnon	--	--	80	24	--	Trinity Group	1,643	30	May 1, 1963	C,W	D	
* 232	F. E. Underwood	--	--	133	5.5	130	do	1,643	40	do	J,E	D	
233	J. J. Prentice	--	--	106	5.5	106	do	1,658	98	do	C,E	D	
* 301	L. Deevers	--	--	70	5.5	70	do	1,627	35	do	J,E	D,S	
* 302	do	--	--	98	5.5	65	do	1,623	40	do	C,G	S	
* 303	H. F. McBride	A. Turpin	--	100	5.5	100	do	1,656	80	do	C,W	D,S	
304	G. Alford	--	--	190	5.5	190	do	1,691	100	do	C,W	D,S	
305	C. Evatt	--	--	107	5.5	107	do	1,640	77	do	S,E	D,S	Water sands reported at 27, 70, 90, and 100 ft.
306	D. L. Wagnon	--	--	175	5.5	175	do	1,701	90	do	C,W	D,S	Water sand reported from 80 to 90 ft.
307	do	--	--	190	5.5	190	do	1,696	100	do	C,W	S	
308	do	--	--	200	5.5	--	do	1,744	100	do	C,W	D,S	
309	Mrs. -- Glen	--	--	110	5.5	110	do	1,736	85	do	C,E,W	D,S	
310	B. Epley	--	--	88	5.5	--	do	1,812	84	Apr. 2, 1963	C,W	S	
311	E. H. Epley	--	--	110	5.5	110	do	1,752	49	do	C,W	D	
312	J. Gipson	--	--	70	36	--	do	1,736	50	do	J,E	S	
313	do	--	--	60	36	--	do	1,736	50	do	C,E	D	
314	do	--	--	25	36	26	do	1,698	10	Apr. 6, 1963	J,E	D	
* 315	C. R. Blaine	--	--	140+	5.5	--	do	1,685	120	do	C,E	D,S	
316	H. McCary	--	--	44	48	--	do	1,723	37	do	C,W	S	
* 317	L. O. Thompson	--	--	135	5.5	135	do	1,691	40	do	C,W	D,S	
* 318	C. Teague	--	--	56	48	--	do	1,720	49	do	C,W J,E	D,S	
* 319	J. W. Chambers	--	--	165	5.5	165	do	1,695	140	do	C,E	D,S	
* 320	W. Bailey	--	--	140	5.5	140	do	1,694	120	do	C,E	D,S	
* 321	E. A. Robeson	--	--	153	5.5	153	do	1,688	133	do	C,E	D,S	
* 322	E. Keegan	R. M. Virdell	--	150	5.5	150	do	1,688	125	do	S,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-01-323	L. Ford	--	--	110	5.5	110	Trinity Group	1,671	75	Apr. 6, 1963	C,E	D, S	
324	G. H. Michael, Jr.	--	--	90	5.5	90	do	1,660	75	do	J,E	D	
* 325	Mrs. F. Chael	--	--	96	5.5	96	do	1,672	82	Apr. 8, 1963	C,W	D	
326	W. H. Dickerson	--	--	110	5.5	110	do	1,667	100	do	C,E	D	
* 327	F. White	--	--	96	5	96	do	1,652	70	do	J,E	D	Water sand reported 37 ft thick.
* 401	E. Johnson	--	--	18	28	--	do	1,611	5	do	B,H	D,S	
* 402	M. Crume	--	--	33	5.5	--	do	1,615	23	do	C,W	D,S	
403	R. Boyd	--	--	25	36	25	do	1,564	10	do	N	S	
* 404	C. A. Cox	--	--	54	5.5	54	do	1,592	39	do	J,E	D,S	Water sand reported at 46 ft, and water with poor taste in sand at 30 ft.
405	R. Boyd	--	--	25	5.5	25	do	1,571	10	do	C,E	S	Water sand reported at 20 ft.
* 406	F. Mills	--	--	35	36	35	Canyon Group	1,584	30	do	C,W	D,S	
407	do	--	--	35	36	35	do	1,580	30	do	N	S	
* 408	G. W. Boyd	G. W. Boyd	--	29	6	29	do	1,550	21	do	J,E	D	Water sand reported at 17 ft.
409	do	--	--	20	36	20	Trinity Group	1,545	6	do	C,W	D	Water sand reported at 16 ft. Well flows during heavy rains.
* 410	R. Boyd	--	--	24	6	24	do	1,550	0	do	J,E	D	Water sand reported at 14 ft.
411	J. C. Dickerson	--	--	18	36	18	do	1,554	0	do	J,E	D,S	
* 412	A. D. Arnold	--	--	60	5.5	60	do	1,574	25	do	J,E	D,S	
* 413	J. H. Beck	A. Turpin	--	50	5.5	50	do	1,578	38	do	C,W	D	Water sand reported at 38 ft.
* 414	do	--	--	20	36	20	do	1,577	8	do	J,E	D,S	
* 415	J. S. Hart	--	1954	26	5.5	26	do	1,570	18	do	J, E	D,S	Water sand reported at 18 ft.
* 416	W. Emfinger	--	--	25 40	36 5.5	13 40	Trinity Group Canyon Group	1,573	11	do	S,E	D,S	
417	R. V. Sheppard	--	--	26	36	--	Trinity Group	1,603	22	do	C,W	S	
501	R. E. Hewgley	--	--	46	36	--	do	1,594	21	Apr. 11, 1963	C,W	D,S	
* 502	L. Lennington	--	--	64	5.5	64	do	1,594	20	do	J,E	D,S	Water sand reported at 62 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-01-503	R. V. Sheppard	--	--	26	36	--	Trinity Group	1,577	19	Apr. 18, 1963	C,W	D,S	
504	M. H. Miller	--	--	35	36	35	do	1,652	4	do	J,E	D	
505	R. W. Johnson	--	--	32	28	--	do	1,652	30	do	J,E	D,S	
506	-- Putham	--	--	80	48	--	do	1,683	50	do	C,W	D	
* 507	G. W. Crume	--	--	110	5.5	110	do	1,694	100	do	C,W	D,S	
508	do	--	--	30	36	30	do	1,648	25	do	C,W	S	
509	J. H. Gray	-- Anderson	--	138	5.5	138	do	1,720	126	do	C,E	D,S	
510	O. A. Burnett	--	--	138	5.5	138	do	1,707	108	do	C,W	S	
* 511	L. Alexander	--	--	160	8 5.5	55 160	do	1,722	140	do	C,W	D,S	
512	B. M. Bennett	--	--	80	5.5	80	do	1,670	60	do	C,E	D,S	
* 513	I. T. Nelson	--	--	60	5.5	60	do	1,663	35	do	C,G	D,S	
514	Mrs. A. L. Yoes	--	--	175	5.5	175	do	1,715	125	do	C,W	D,S	
* 515	L. T. Cobb	--	--	151	5.5	--	do	1,712	144	do	C,W	D,S	
516	E. McMurray	--	--	105	5.5	105	do	1,687	85	do	J,E	D,S	
517	H. M. Chambers	--	--	25	36	25	do	1,653	10	do	C,W	S	
* 518	-- Newberry	--	--	60	36	60	do	1,664	50	do	C,E	D,S	
* 519	H. M. Chambers	--	--	80	5.5	--	do	1,659	75	do	C,W	D,S	
* 520	H. W. Thomas	A. Turpin	1951	100	5.5	--	do	1,649	80	do	J,E	D,S	
* 521	R. C. Bowden	--	--	36	36	36	do	1,616	23	Apr. 10, 1963	C,W	S	
* 522	J. Kennedy	--	1930	159	5.5	159	do	1,706	134	do	C,W	D,S	
601	W. D. Henderson	--	--	200	5.5	200	do	1,777	60	do	C,W	S	
* 602	G. Dewbre	--	--	110	7 5.5	30 110	do	1,651	90	do	C,E	D,S	
603	do	--	--	36	5.5	--	do	1,651	14	Apr. 9, 1963	C,W	S	
604	-- Atherton	--	--	130	5.5	130	do	1,712	125	do	C,E	S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-01-605	C. Dennis	--	--	105	5.5	120	Trinity Group	1,703	100	Apr. 9, 1963	C,W	D,S	Original depth 120 ft.
606	C. R. Blaine	--	--	100	5.5	100	do	1,709	80	do	C,E	S	Used only in summer months.
* 607	E. Day	A. Turpin	--	199	5.5	189	do	1,737	60	do	C,W	S	Reported water sand at 56 ft cased off.
608	do	--	--	Spring	--	--	do	1,746	(+)	--	Flows	S	
609	A. McMurray	--	1954	175	5.5	175	do	1,706	140	Apr. 9, 1963	C,E	D,S	
* 610	D. Key	--	--	105	30	105	do	1,688	100	do	C,E	D,S	
* 611	R. Lewis	R. Michael	1960	180	5.5	180	do	1,727	170	do	C,W	D,S	
612	do	--	--	Spring	--	--	do	1,740	(+)	--	Flows	S	
613	B. U. Ross	--	--	150	5.5	150	do	1,688	140	Apr. 9, 1963	C,W	D	
* 614	do	--	--	150	5.5	150	do	1,695	125	do	C,E	D,S	
615	do	--	--	135	5.5	135	do	1,777	95	do	C,W	S	
616	do	--	--	318	5.5	--	do	1,926	298	do	C,W	S	
617	do	--	--	188	5.5	188	do	1,832	158	do	C,W	S	
* 618	J. E. Burleson	C. Alford	--	142	5.5	142	do	1,664	72	do	C,W C,E	D,S	Water sand reported at 82 ft.
* 701	J. R. Davis	--	--	200	5.5	200	Canyon Group	1,553	60	do	C,E	D,S	Reported weak well--pumps dry in 1½ hr.
* 702	W. H. Miller	--	--	300+	5.5	--	do	1,545	250	do	C,W	D,S	
* 703	G. Brown	A. Baker	--	243	5.5	243	do	1,555	60	do	C,E	D,S	
704	T. C. Boyd	G. Boyd	1963	185	5.5	185	do	1,532	--	Mar. - 1963	N	D	New well, not completed as of Mar. 1963.
* 705	do	do	1958	175	5.5	175	do	1,527	115	--	C,E	D,S	Water sand reported at 165 ft. Water taste reported became poor about 1962.
801	V. D. Pittman	--	--	300	5.5	300	do	1,553	75	Mar. - 1963	C,E	S	
* 802	do	--	--	175	5.5	175	do	1,553	75	do	C,E	D,S	
803	do	--	--	106	5.5	106	do	1,548	76	Mar. 21, 1963	C,W	D,S	
* 804	Mrs. D. A. Webb	--	--	20	36	--	Trinity Group	1,623	15	Mar. 22, 1963	C,W	D	Water has hydrogen sulphide odor.
* 805	do	G. Boyd	--	83	5.5	83	do	1,623	75	do	J,E	D,S	
* 806	J. W. Thomas	--	--	80	5.5	80	do	1,648	40	do	J,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-01-807	G. J. Bell	--	--	55	5.5	55	Trinity Group	1,646	40	Mar. 22, 1963	C,E	D,S	
* 808	J. C. Nance	--	--	100	60	--	do	1,649	80	Mar. 28, 1963	C,W	D,S	
* 809	R. C. Lentz	--	--	60	5.5	--	do	1,660	20	do	C,W	D,S	
* 810	W. D. Massey	--	--	40	6	40	do	1,632	20	do	J,E	D	
811	J. Kennedy	--	--	37	36	--	do	1,628	27	do	C,W	S	
812	Wright Brothers	--	--	35	36	--	do	1,621	32	Mar. 22, 1963	C,W	S	
* 813	B. Ribble	--	--	39	48	--	do	1,621	22	do	C,W J,E	D,S	
* 814	F. Ribble	--	--	96	6	96	do	1,599	10	do	J,E	D,S	Supplies water for dairy.
815	do	--	--	27	36	27	do	1,597	20	do	J,E	D,S	Do.
816	do	--	--	68	6	68	do	1,595	10	do	J,E	D,S	Do.
* 817	A. L. McDonald	--	--	45	5.5	45	do	1,601	29	do	C,W	D,S	
818	L. Boyd	--	--	36	48	--	do	1,605	24	Mar. 28, 1963	J,E	D	
* 819	A. R. Wheeler	A. Turpin	--	85	6 5.5	36 85	Canyon Group	1,585	78	do	J,E	D,S	Reported weak well.
* 820	J. W. Wheeler	--	--	65	5.5	--	do	1,578	30	do	C,E	D	
821	H. Wheeler	--	1956	140	5.5	120	do	1,569	55	do	C,E	N	Water sand reported at 85 ft.
* 822	H. C. McKinney	--	--	18	30	--	do	1,536	7	do	J,E	D,S	
* 823	D. Hamilton	G. Boyd	--	34	5.5	34	do	1,518	20	do	J,E	D,S	Water sand reported from 16 to 18 ft.
824	P. McCarthy	--	--	39	5.5	39	do	1,521	5	do	J,E	D	
* 901	J. A. Watson	--	--	80	36	80	Trinity Group	1,576	75	do	C,E	D,S	
902	J. Chamberlain	--	--	114	5.5	--	do	1,581	83	Mar. 20, 1963	C,W	D,S	
903	V. I. Gates	--	--	41	36	--	do	1,553	31	Mar. 28, 1963	J,E	D,S	
* 904	G. A. Stubblefield	--	--	28	24	--	do	1,539	23	Mar. 20, 1963	J,E	D,S	
* 905	J. B. Crabtree	--	--	85	5.5	--	Canyon Group	1,534	--	--	C,W	D,S	
* 906	J. A. Eoff	--	--	21	36	21	Trinity Group	1,544	15	Mar. 27, 1963	C,E	D,S	
907	A. C. Howard	--	--	28	36	28	do	1,549	26	do	C,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-01-908	D. Allison	--	--	17	48	--	Trinity Group	1,542	--	--	J,E	D	
* 909	R. O. Young	--	--	17	36	17	do	1,542	14	Mar. 27, 1963	J,E	D,S	
* 910	A. C. Howard	--	--	47	24	--	do	1,596	39	Mar. 28, 1963	J,E	D,S	
* 911	G. W. Shaffer	--	--	85	5.5	85	do	1,595	25	do	C,W	S	
* 912	do	--	--	65	5.5	65	do	1,620	30	do	J,E	D	
* 913	H. N. Johnson	--	--	108	5.5	--	do	1,651	98	do	C,W	D,S	
* 914	A. Lack	--	--	120	5.5	120	do	1,645	50	do	C,E	D,S	
* 915	H. N. Tipton	--	--	173	5.5	173	do	1,662	155	do	C,E	D,S	
916	D. Shipman	--	--	165	5.5	165	do	1,662	--	--	C,W	D,S	
917	B. U. Ross	--	--	Spring	--	--	do	--	(+)	--	Flows	N	
918	C. McInnis	--	--	135	5.5	135	do	1,628	45	Mar. 28, 1963	C,E	D,S	
919	do	--	--	130	5.5	130	do	1,650	45	do	C,W	S	
* 920	do	--	--	130	5.5	130	do	1,682	45	do	C,E	D,S	36 ft of water sand reported at 100 ft.
02-101	-- Daniels	--	--	110	5.5	110	do	1,647	100	do	C,W	D,S	
* 102	B. M. Davis	--	--	100	5.5	100	do	1,662	90	do	C,E	D,S	
* 103	H. M. Allen	--	--	205	5.5	205	do	1,730	170	do	C,E	D	
104	O. C. Allen	--	--	60	5.5	60	do	1,685	40	do	C,W	S	
* 105	J. Kisinger	--	--	110	5.5	110	do	1,661	80	do	C,W	D,S	
106	H. L. McBride	--	--	160	5.5	160	do	1,690	--	--	C,W	S	
* 107	do	--	--	80	5.5	80	do	1,686	8	Mar. 28, 1963	C,W	S	
* 108	W. O. Henderson	--	--	165	5.5	165	do	1,678	60	do	C,W	D,S	
109	do	--	--	210	5.5	210	do	1,787	100	do	C,W	S	
* 402	E. H. Epley	--	1958	350	5	300	do	1,918	150	do	C,W	D,S	Water sand reported from 267 to 277 ft.
* 403	H. W. Epley	--	--	265	5.5	265	do	1,929	235	Apr. 2, 1963	C,W	D,S	
404	W. O. Henderson	--	--	130	5.5	130	do	1,788	30	do	C,W	S	
405	P. Goodwin	--	--	265	5.5	265	do	1,906	153	do	C,W	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-02-406	B. U. Ross	--	--	130	5.5	--	Trinity Group	1,757	55	Apr. 2, 1963	C,W	S	
* 407	S. Morris	--	--	336	5.5	336	do	1,767	306	do	C,W	D,S	
701	H. B. McClendenin	--	1950	275	5.5	275	do	1,751	60	do	C,W	D,S	
* 702	O. L. Powell	--	--	160	5.5	160	do	1,671	140	do	C,W	S	
* 801	J. H. Porter	--	1949	127	5.5	127	do	1,721	60	do	C,E	D,S	
* 802	A. Porter	G. Bolton	1945	145	5.5	145	do	1,729	115	do	C,E	C,S	Water sands reported at 70 and 125 ft.
803	Hicks and Davis	--	--	130	5.5	--	do	1,724	95	do	C,W	S	
804	J. Hutchings	--	--	150	5.5	150	do	1,722	120	do	C,E	D,S	
805	do	--	--	135	5.5	--	do	1,732	120	Feb. 14, 1963	C,W	S	
806	W. C. Porter	--	--	200	5.5	200	do	1,678	175	do	C,E	D,S	
* 807	W. R. Reid	--	--	300	5.5	--	do	1,762	150	do	C,W	D,S	
808	J. L. Priddy	--	--	320	5.5	--	do	1,726	290	do	C,E	S	
809	do	--	--	120	5.5	120	do	1,719	80	do	C,W	S	
* 810	J. McFarlane	G. Bolton	--	300	5.5	300	do	1,763	260	do	C,W	D,S	
* 811	W. B. White	--	--	120	5.5	120	do	1,771	80	do	C,W	D,S	
* 812	S. B. Haddon	--	--	315	5.5	315	do	1,771	290	do	C,W	D,S	
813	R. C. Lyons	--	--	280	5.5	280	do	1,782	230	do	C,E	D,S	
* 814	S. Jenkins	Mrs. -- Busbee	--	330	5	330	do	1,782	290	do	S,E	D,S	Drilled as an oil test to 1,110 ft, plugged back to 330 ft. Water sands reported at 285 and 295 ft.
* 815	R. C. Lyons	--	--	100	5.5	100	do	1,790	80	do	C,W	S	
* 816	do	H. L. Box	--	326	--	326	do	1,788	290	do	S,E	D,S	
09-201	E. M. Renfro	--	--	135	5.5	135	Canyon Group	1,564	30	Mar. 21, 1963	C,W	S	
202	R. A. Dunsworth	--	--	80	--	--	do	1,466	80	Mar. 27, 1963	C,E	D,S	Water sand reported at 80 ft.
203	H. Dunsworth	--	--	135	5.5	127	do	1,486	100	do	C,E	D,S	
* 204	F. Burger	R. M. Virdell	--	100	5.5	98	do	1,497	30	do	C,E	D	Water sand reported at 90 ft.
205	L. M. Phillips	--	--	61	5.5	61	do	1,478	35	do	J,E	N	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-09-206	E. B. Clardy	--	--	60	5.5	60	Canyon Group	1,472	28	Mar. 27, 1963	C,W	N	
* 207	Mrs. E. Smith	--	--	63	5.5	63	do	1,472	35	do	C,E	D	
* 208	O. E. Lewis	--	--	25	42	10	do	1,468	15	do	J,E	D,S	
* 209	C. Whetstein	--	--	52	5.5	52	do	1,470	30	do	J,E	D,S	
* 210	D. H. Bagley, Sr.	--	--	23	36	23	do	1,465	13	Mar. 21, 1963	J,E	D,S	
* 211	L. Evans	--	--	56	5.5	--	do	1,472	32	Mar. 20, 1963	C,E	S	
41-09-301	J. L. Williams	--	--	15	36	--	Trinity Group	1,526	10	do	J,E	D	
* 302	C. B. Branum	--	--	20	48	--	do	1,523	8	do	J,E	D,S	
* 303	A. G. Wilkinson	--	--	102	5.5	102	do	1,568	75	Mar. 19, 1963	C,W	D	
304	A. N. Lobstein	--	--	73	5.5	--	do	1,542	27	do	C,E	D,S	
* 305	T. J. Newman	--	--	40	5.5	40	do	1,520	20	do	C,W,G	D,S	
* 306	Mrs. -- Michaelis	--	--	60	10	--	do	1,543	--	--	J,E	D,S	
* 307	R. V. Pittman	-- Rutledge	--	44	6	44	Canyon Group	1,471	35	Mar. 19, 1963	J,E	D,S	
* 308	G. Schaefer	--	--	20	72	--	do	1,472	9	do	C,E	D,S	
* 309	G. L. Jackson	--	--	135	5	120	do	1,475	90	do	C,E	D,S	Water sand reported from 120 to 130 ft.
* 310	do	--	--	21	36	21	do	1,469	16	do	Cf,E	D	
* 311	Mrs. W. C. Lynch	--	--	20	48	20	do	1,469	2	do	B,H	D	Combined with cistern.
* 312	I. Crawford	R. M. Virdell	--	125	--	--	do	1,461	80	do	C,E	D,S	
* 313	L. F. Vawter	--	--	147	5.5	147	do	1,451	40	do	J,E	D,S	Water sand reported at 100 ft.
* 314	J. Ehrke	--	--	38	6	38	Trinity Group	1,509	34	do	J,E	D	
* 315	Dr. John Ehrke	--	--	45	48	45	do	1,511	30	do	J,E	D,S	
* 501	L. D. Rouse	R. M. Virdell	1958	275	5	275	Strawn Group	1,429	6	do	C,W	D,S	
* 502	J. C. Tongate	--	--	30	48	30	Canyon Group	1,418	20	do	C,W	D,S	
* 601	L. Dunn	--	--	50	6	50	Trinity Group	1,519	49	Nov. 2, 1960	J,E	D,S	
* 602	J. C. Swan	G. Bolton	1962	135	5.5	145	do	1,548	90	May 17, 1963	C,W	S	Water sand reported at 110 ft, red shale at 115 ft.
603	do	--	1956	95	--	--	do	1,565	--	--	C,W	S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-09-604	L. G. Cooper	--	--	36	36	36	Strawn Group	1,441	28	May 17, 1963	Cf,E	D,S	
* 605	do	R. M. Virdell	1956	45	6	32	do	1,441	15	do	C,W	D,S	Water sand reported from 35 to 42 ft.
* 606	R. Steel	do	--	40	5.5	40	Canyon Group	1,441	25	do	J,E	D,S	
* 607	Mrs. E. E. Hester	do	1950	110	5.5	110	do	1,440	100	do	C,E	D	Reported very weak well.
* 608	L. D. Rouse	do	1958	50	5.5	50	do	1,409	30	do	C,H	D	
609	W. M. Nichols	do	--	45	6	45	do	1,423	25	do	J,E	D,Irr	Irrigates small garden.
* 610	do	R. M. Virdell	--	100+	5.5	--	do	1,422	55	do	C,E	D	Water sand reported at 90 ft.
611	-- Tongate	--	--	45	6	45	do	1,422	25	do	J,E	D,S	
* 612	R. L. Doss	--	--	65	5.5	65	Trinity Group	1,481	20	do	J,E	D,S	
613	Salt Creek Baptist Church	R. M. Virdell	--	80	6	--	do	1,470	70	do	J,E	D	Water sand reported at 70 ft.
* 614	L. L. White	--	--	96	4	96	do	1,481	36	do	C,E	D	
* 615	W. G. Ward	--	--	120	5.5	120	do	1,509	54	Mar. 11, 1963	C,E	S	
616	D. Newsom	--	--	--	36	--	do	1,519	19	Mar. 8, 1963	C,W	S	
* 617	W. A. Price	--	--	90	5.5	90	do	1,552	84	do	C,E C,W	D,S	
* 618	A. M. Jones	--	--	110	5.5	110	Canyon Group	1,476	30	do	C,E	D	
619	-- Doss	--	--	35	36	35	Trinity Group	1,499	20	do	J,E	D,S	
* 620	A. Lehman	--	--	28	28	28	do	1,493	23	do	J,E	D,S	
801	Mrs. -- Smith	--	--	100+	5.5	--	Canyon Group	1,435	30	do	C,W	S	Reported very weak well.
802	J. B. McColl	--	--	30	6	30	Trinity Group	1,438	23	do	J,E	S	
803	G. W. Staley	--	--	16	36	16	do	1,412	12	do	C,W	D	
* 804	do	--	--	Spring	--	--	do	1,409	(+)	--	Flows	D	
* 805	Mrs. Y. King	--	--	25	36	25	do	1,414	14	Mar. 8, 1963	C,W	D,S	
* 806	L. N. Moore	--	--	35	48	35	do	1,410	20	do	C,W C,E	D,S	
807	do	--	--	35	48	35	do	1,410	15	do	C,W	N	
* 808	R. C. Beck	--	--	32	42	32	do	1,410	29	do	C,W	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-09-809	-- Zagovski	--	--	100	5.5	--	Strawn Group	1,407	25	Mar. 8, 1963	C,E	D	
810	H. Hickman	--	--	18	48	18	Trinity Group	1,407	14	do	C,W	S	
* 811	W. N. Moore	--	--	18	48	18	do	1,410	8	do	C,W	D	
* 812	E. L. Stewart	C. C. Massey	1927	408	10	--	Strawn Group	1,404	18	do	Cf,E	D	Well previously used by town of Early. Water sands reported at 18-28 and 408-418 ft.
* 813	T. Thompson	--	--	20	--	--	do	1,402	15	do	J,E	D	
* 901	R. L. Davis	--	--	100	4	--	Canyon Group	1,459	40	do	C,E	D	
902	do	L. B. Busbee	1955	2,009?	9	--	?	1,452	--	--	N	N	Water sand reported from 56 to 92 ft.
* 903	L. McHan	--	--	65	5.5	65	Trinity Group	1,462	40	Mar. 8, 1963	C,W	D	
904	R. D. Matlock	--	--	96	5.5	--	do	1,460	77	Mar. 4, 1963	C,W	D,S	
905	C. A. Thomason	--	--	100	5.5	100	Strawn Group	1,458	35	do	J,E	D,S	
906	D. H. Bagley	--	--	125	5.5	--	do	1,471	61	do	C,W	S	
* 907	B. R. Johnson	--	--	6	72	6	do	1,473	4	Mar. 8, 1963	C,E	D,S	
* 908	H. P. Hampton	-- Mitchell	--	50	5.5	50	do	1,420	18	do	J,E	D	Water sand reported at 30 ft.
* 909	T. A. Staggs	--	--	25	36	--	do	1,441	17	Mar. 4, 1963	C,W	D,S	
* 910	H. E. Lobstein	--	--	87	5.5	87	Trinity Group	1,473	30	do	C,W	D,S	
* 911	J. A. Hallum	--	--	90	6	90	do	1,510	60	do	J,E	D,S	
912	-- Bullard	--	--	54	36	--	do	1,553	36	Jan. 16, 1963	C,W	S	
913	J. Wagner	--	--	400	12	124	Strawn Group	1,443	280	do	N	N	Drilled as oil test to 1,704 ft, plugged back to 400 ft.
914	do	--	--	65	5.5	65	do	1,442	60	do	N	N	
915	R. H. Burton	--	--	400	5.5	400	do	1,448	60	do	C,E	D	
* 916	H. A. Campbell	C. Whittenberg	--	175	5.5	175	do	1,522	100	do	C,W	D,S	Water sand reported at 100 ft.
* 917	J. Scott	--	--	19	24	19	Trinity Group	1,520	15	Jan. 15, 1963	C,E	D,S	
918	D. D. Smith	G. Bolton	--	200	5.5	200	Strawn Group	1,538	--	--	C,E	D,S	
* 919	G. Lindly	--	--	120	5.5	120	do	1,495	--	--	C,E	D,S	
920	W. M. Mashburn	--	--	Spring	--	--	Trinity Group	1,488	(+)	--	Flows	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-10-101	G. Burns	--	--	155	5.5	--	Trinity Group	1,640	137	Feb. 7, 1963	C,W	S	
102	Mrs. W. P. Williams	--	--	120	5.5	120	do	1,648	80	do	C,E	S	
* 103	V. Lee	--	--	140	5.5	140	do	1,625	115	do	C,W	D,S	
104	G. Burns	--	--	90	5.5	--	do	1,565	46	Mar. 19, 1963	C,W	S	
* 105	H. Rodgers	--	--	80	5.5	80	do	1,567	60	do	C,W	S	
* 106	W. D. Pierce, Jr.	--	1889	37	36	37	do	1,528	26	do	C,W	D,S	
* 107	R. Hughes	--	--	125	5	--	do	1,523	100	do	C,E	D,S	
* 108	N. and G. Stewart	--	--	160	5.5	160	Strawn Group	1,529	130	do	C,W	D,S	
* 109	Mrs. L. Faulkner	--	--	50	36	50	Trinity Group	1,538	30	Mar. 12, 1963	C,W	S	
* 110	W. D. Baker	--	--	75	6	75	do	1,538	55	do	J,E	D,S	
* 111	J. Kelsey	--	--	100	5.5	100	do	1,553	60	do	C,W	D,S	
112	W. E. Williams	--	--	169	5.5	169	do	1,634	109	do	C,W	D,S	
113	-- Chapman	--	--	125	5.5	125	do	1,586	100	do	C,W	S	
114	D. T. Bond	--	--	95	5.5	--	do	1,581	70	do	C,W	S	
115	C. Hanson	--	--	47	6	47	do	1,512	20	do	C,W	S	
116	Mrs. -- Journer	--	--	39	36	--	do	1,498	33	do	C,W	D,S	
117	do	--	--	29	36	--	do	1,492	22	do	C,W	S	
118	W. Lambert	--	--	42	36	--	do	1,489	28	do	C,W	S	
201	W. Hepinstall	--	--	126	6	--	do	1,731	7	Feb. 15, 1961	--	N	
202	do	--	--	255	5.5	--	do	1,727	60	do	C,E	D,S	
203	W. J. Richmond	--	--	128	5.5	128	do	1,727	18	Feb. 14, 1963	C,W	S	
204	W. J. Richmond estate	--	--	150	5.5	150	do	1,739	40	do	C,W	S	Water sand reported at 130 ft.
* 205	S. J. Porter	G. Bolton	1956	185	5.5	185	do	1,739	75	do	C,W	D,S	
* 206	A. Richmond	--	--	150	5.5	150	do	1,736	40	do	C,E	D,S	
* 207	F. O. Benson	--	--	140	5.5	--	do	1,634	125	do	C,W	D,S	
208	J. D. Rogers	--	--	170	5.5	170	do	1,635	150	do	C,E	S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-10-209	C. A. Killingsworth	--	--	70	5.5	70	Trinity Group	1,660	50	Feb. 14, 1963	C,W	S	
210	do	--	1953	125	5.5	125	do	1,713	89	Feb. 7, 1963	C,W	S	
* 211	W. Hepinstall	--	--	150	5.5	150	do	1,730	125	do	C,W	S	
212	P. Hepinstall	--	--	150	5.5	150	do	1,735	125	do	C,W	D,S	
213	J. W. Switzer	--	--	125	5.5	--	do	1,723	75	do	C,W	S	
214	C. A. Killingworth	--	--	100	5.5	--	do	1,714	85	do	C,W	S	
215	do	--	--	100	5.5	--	do	1,714	78	do	C,W	S	
216	T. D. Levisay	--	--	100	5.5	100	do	1,706	80	do	C,E	S	
217	do	--	--	39	36	--	do	1,681	24	Feb. 19, 1963	C,W	D,S	
218	J. W. Switzer	--	--	24	5.5	24	do	1,666	19	do	C,W	S	
219	H. E. Parsons, Sr.	--	--	90	5.5	90	do	1,678	72	do	C,E	D,S	
* 301	H. Foster	--	--	96	5.5	--	do	1,711	70	Feb. 4, 1963	C,W	D,S	
* 302	B. Smith	--	--	140	5.5	140	do	1,701	25	do	C,E	D,S	
303	W. P. Stallings	--	--	130	5.5	130	do	1,699	115	do	C,E	D,S	
* 304	D. Bailey	--	--	262	5.5	257	do	1,708	120	do	C,E	D,S	
305	do	--	--	107	5.5	107	do	1,689	70	do	C,W	S	
306	F. Haynes	--	1945	80	5.5	--	do	1,681	40	do	C,W	S	
307	G. Willis	--	--	52	5.5	--	do	1,703	40	Feb. 14, 1963	C,W	D,S	
* 308	Mrs. W. J. West	--	--	240	5.5	240	do	1,715	205	do	C,W	D,S	
309	K. Blackmon	--	--	220	5.5	220	do	1,709	200	do	C,E	D,S	
* 310	E. Eoff	G. Bolton	1960	195	5.5	195	do	1,635	155	do	C,E	D,S	
* 311	R. R. McDonald	do	--	290	5.5	290	do	1,702	100	do	C,E	D,S	Reported weak well.
312	do	W. Stewart	--	296	10	--	do	1,645	176	Feb. 4, 1963	N	N	Drilled by Texas Highway Dept. Owner plans to use as irrigation well.
313	L. F. Bird	--	--	130	5.5	--	do	1,659	70	do	C,W	S	
* 314	C. Thompson	--	--	160	5.5	160	do	1,687	87	do	C,E	D,S	
315	N. Dabney	--	--	33	36	33	do	1,647	18	Jan. 22, 1963	C,W	S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-10-316	N. Dabney	G. Bolton	1960	250	5.5	250	Trinity Group	1,682	200	Jan. 22, 1963	C,E	D,S	Water sand reported at 200 ft.
317	R. Bilbrey	--	--	40	24	40	do	1,652	26	do	C,W	D,S	
* 318	H. R. Johnson	--	1955	40	5.5	--	do	1,667	18	do	C,W	D,S	
319	do	--	--	Spring	--	--	do	1,660	(+)	--	Flows	S	
* 401	M. Brannan	--	--	27	48	27	do	1,501	23	Jan. 22, 1963	C,W	D	
402	J. Townsend	--	--	22	5.5	--	do	1,546	18	do	C,W	S	
403	L. Rumsey	--	--	39	36	--	do	1,496	32	Jan. 27, 1963	C,W	S	
404	J. Townsend	--	--	86	5.5	--	do	1,526	50	Mar. 7, 1963	C,W	S	
* 405	F. Switzer	--	--	120	5.5	120	do	1,544	30	do	C,W	S	
406	L. Rumsey	--	--	140	5.5	--	do	1,520	120	do	C,E	D,S	
407	F. Eoff	--	--	140	5.5	140	do	1,586	120	do	C,W	S	
408	F. Switzer	--	--	140	5.5	--	do	1,586	120	do	C,W	S	
409	O. Stanley	--	--	140	5.5	--	do	1,566	120	do	C,E	D,S	
410	R. Ramoz	G. Bolton	1945	155	--	--	do	1,622	136	do	C,E	D,S	
411	C. L. Petross	--	--	115	5.5	115	do	1,612	60	do	C,W	S	
* 412	L. Reagan	Simpson Bros.	1935	143	5.5	143	do	1,571	123	do	C,W	D,S	
* 413	J. B. Eastman	--	--	100	5.5	--	do	1,550	94	do	C,W	D,S	
* 414	J. McHan	--	--	80	5.5	80	do	1,527	40	do	C,W	D,S	
* 415	C. L. Lewis	--	--	84	5.5	84	do	1,554	14	do	C,E	D,S	
416	Mrs. L. Reagan	--	--	118	5.5	--	do	1,609	110	Feb. 22, 1963	C,W	S	
* 417	C. Petross	--	1900	100	5.5	--	do	1,588	95	do	C,W	D	Reported weak well.
418	A. A. Rose	--	--	90	5.5	90	do	1,582	40	do	C,E	D	
419	M. Winn	--	--	93	5.5	93	do	1,573	64	Mar. 1, 1963	C,W	S	
501	O. Rodgers	--	--	130	5.5	130	do	1,673	110	do	C,E	D,S	
502	do	--	--	100	6	100	do	1,661	85	do	J,E	S	
* 503	A. McLaughlin	--	--	69	5.5	--	do	1,723	58	Feb. 27, 1963	C,W	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-10-504	-- Dunlap	--	--	100	5.5	100	Trinity Group	1,692	30	Feb. 27, 1963	C,W	D,S	Caved to about 50 ft.
505	H. L. Fisher	--	--	80	5.5	80	do	1,684	50	do	C,W	D,S	
* 506	R. J. Pound	--	1955	150	5.5	--	do	1,692	100	do	C,W	D,S	
507	J. W. Switzer	--	--	70	--	70	do	1,645	12	do	J,E	S	
508	McLaughlin and Stickland	--	--	240	5.5	240	do	1,682	210	do	C,W	S	
509	G. S. Simpson	--	--	150	5.5	150	do	1,667	120	do	C,W	S	
510	M. Mackey	--	--	190	5.5	190	do	1,651	170	do	C,E	D,S	
* 511	J. Dick	--	--	220	5.5	220	do	1,650	190	do	C,E	D,S	
512	A. McLaughlin	--	--	20	5.5	20	do	1,642	15	do	C,W	S	
* 513	Mrs. L. Isom	--	--	200	5.5	200	do	1,661	190	do	C,W	D,S	
514	C. W. Isom	--	--	250	5.5	250	do	1,665	240	do	C,W	D,S	
* 515	W. L. Lamkin	--	--	80	5.5	--	do	1,673	62	do	C,W	S	
* 516	T. L. Beal	--	--	110	5.5	110	do	1,684	60	do	C,W,E	D,S	
517	L. Reagan	--	--	102	5.5	102	do	1,702	76	do	C,W	S	
* 518	C. L. Petross	--	--	245	5.5	245	do	1,669	205	do	C,E	D	
519	do	--	--	60	5.5	--	do	1,662	30	do	C,W	S	
* 520	N. McClain	--	--	155	5.5	155	do	1,624	136	do	C,W	S	
521	do	G. Bolton	--	155	5.5	--	do	1,648	146	do	C,E	D	
* 522	S. Lanford	--	--	163	5.5	163	do	1,645	123	do	C,G	D,S	
523	-- Wagner	--	--	227	5.5	--	do	1,688	220	Feb. 20, 1963	C,W	D,S	
524	R. Carruth	--	--	100	5.5	100	do	1,608	80	do	C,W	D,S	
525	do	--	--	145	5.5	145	do	1,628	125	do	C,W	D,S	
* 526	F. S. Eoff	--	--	140	5.5	--	do	1,618	125	do	C,W	D,S	
527	K. Nabor	--	--	225	5.5	225	do	1,652	185	do	C,E	D,S	
* 528	F. Nabor	--	--	170	5.5	170	do	1,602	165	do	C,W	D	Reported weak well.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-10-529	-- Gross	--	--	176	6	--	Trinity Group	1,639	169	Jan. 22, 1963	C,W	D,S	
* 601	G. Bolton	G. Bolton	1948	200	6 --	180 200	do	1,624	60	do	C,E	D,S	
* 602	Blanket City	do	--	250	6	250	do	1,627	200	do	C,E	P	
* 603	do	E. Simpson	--	180	6	180	do	1,625	160	do	C,E	P	
604	do	-- Tatum	--	196	6	196	do	1,639	176	do	C,E	P	
* 605	Raymond Seeds	--	--	180	5.5	180	do	1,614	160	do	C,E	P	
* 606	I. Strickland	--	--	200	5.5	200	do	1,674	185	do	C,E	D	
* 607	A. W. Jones	B. McLaughlin	--	205	5.5	--	do	1,674	75	do	C,W	D	
* 608	Mrs. M. Bramlet	--	--	90	5.5	90	do	1,653	70	do	C,W,E	D,S	
609	G. S. Simpson	--	--	150	5.5	150	do	1,641	120	do	C,W	D,S	
610	F. Evans	--	--	200	5.5	200	do	1,640	180	do	C,W	D,S	
611	F. S. Lanford	--	--	190	5.5	190	do	1,619	60	do	C,E	D	
612	do	--	--	160	5.5	160	do	1,602	--	--	C,W	S	
613	J. A. Deen	--	--	175	5.5	--	do	1,602	51	Jan. 22, 1963	C,W	D,S	
614	J. Bettis	--	--	220	5.5	220	do	1,685	190	do	C,W	D,S	
615	do	--	--	220	5.5	220	do	1,678	190	do	C,E	D,S	
616	F. Switzer	--	--	224	5.5	224	do	1,706	30	do	C,E	D,S	
617	do	--	--	276	5.5	276	do	1,706	60	do	C,E	S	
* 618	do	--	--	99	5.5	--	do	1,728	75	do	C,W	D	
* 619	Mrs. R. Turner	--	--	120	5.5	--	do	1,721	90	do	C,E	D,S	
620	S. S. George	--	--	140	5.5	--	do	1,668	120	do	C,W	S	
621	J. Bettis	--	--	164	5.5	--	do	1,632	146	Jan. 25, 1963	C,W	S	
622	F. S. Lansford	--	--	180	5.5	180	do	1,637	160	do	C,W	S	
* 623	C. Crouch	--	1902	120	5.5	--	do	1,579	90	do	J,E	D,S	
624	do	--	--	217	5.5	217	do	1,623	200	do	C,W	S	
625	R. O. Dawson	G. Bolton	1958	260	6	--	do	1,685	230	do	C,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-10-626	D. Ryan	G. Bolton	1960	175	5.5	175	Trinity Group	1,670	125	Jan. 25, 1963	C,E	D,S	
* 627	C. Haddon	B. McLaughlin	--	100	5.5	100	do	1,678	70	do	C,W	D,S	
628	C. A. Stewart	--	--	142	5.5	--	do	1,609	134	Jan. 29, 1964	C,W	S	
629	G. Andrews	--	--	120	5.5	120	do	1,590	100	do	C,E	D,S	
630	do	--	--	120	5.5	120	do	1,587	50	do	C,W	S	
631	do	--	--	140	5.5	140	do	1,622	115	do	C,W	S	
* 632	J. L. Priddy	--	--	117	5.5	117	do	1,584	111	do	J,E	D,S	
* 701	H. Maner	L. Chambers	--	90	8	90	do	1,579	60	do	C,W	D,S	
702	J. B. Cason	--	--	100	5.5	100	do	1,579	70	do	C,E	D,S	
* 703	F. Irwin	--	--	80	5.5	80	do	1,561	40	do	J,E	D,S	
704	--	--	--	105	5.5	105	do	1,563	30	do	C,E	S	
* 705	E. M. Boone	--	--	100	5.5	100	do	1,565	60	do	C,E	D,S	
* 706	do	G. Bolton	--	84	6	84	do	1,563	60	do	J,E	D,S	
707	do	do	--	110	6	110	do	1,567	60	do	J,E	D,S	
* 708	J. H. Bechtold	G. Boyd	1958	60	5.5	60	do	1,550	40	do	C,E	D	
* 709	do	E. Oliver	1953	290	5.5	260	Strawn Group	1,542	240	do	C,E	N	Water sand reported at 262 ft.
* 710	W. A. Shielock	--	--	10	24	10	Trinity Group	1,526	4	Jan. 16, 1963	C,E	D,S	Reported strong well with water entering in multiple streams.
711	L. R. Whitesides	--	--	35	5.5	35	do	1,532	29	do	C,E	N	Water sand reported at 29 ft.
712	W. M. Bowden	--	--	75	6	75	do	1,537	30	do	J,E	D,S	
* 713	P. R. Wood	--	--	100	6	100	do	1,548	30	do	J,E	D,S	
* 714	R. E. Cunningham	--	--	96	5.5	96	do	1,542	30	do	J,E	D,S	
715	R. E. Jackson	--	--	80	--	--	do	1,552	20	do	C,W	D,S	
716	Mrs. H. Mackey	--	--	160	5.5	160	do	1,605	140	do	C,E	D,S	
* 717	J. T. Reagan	--	--	160	5.5	160	do	1,617	140	do	C,W	D,S	
* 718	H. C. Williams	--	1957	363	6	363	Strawn Group	1,565	68	do	J,E	D,S	
* 719	A. D. Hester	--	--	106	5.5	--	Trinity Group	1,565	76	do	C,E	D	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-10-720	E. A. Teague	--	--	37	5.5	37	Trinity Group	1,542	27	Jan. 16, 1963	J,E	D	
721	M. Winn	--	--	62	5.5	--	do	1,548	50	Mar. 7, 1963	C,W	S	
* 722	R. Weidner	--	--	30	6	30	do	1,542	20	do	J,E	D,S	
* 723	W. S. Byrd	--	--	140	5.5	140	do	1,556	40	do	C,W	S	
724	do	--	--	119	5.5	119	do	1,514	76	Jan. 16, 1963	C,W	S	
* 725	do	--	--	139	5.5	139	do	1,495	96	do	C,W	S	Originally drilled as oil test.
* 726	J. Bollinger	--	--	100	5.5	--	Strawn Group	1,479	25	do	C,E	D,S	Reported weak well.
* 727	H. E. Templeton	--	--	200	5.5	200	do	1,473	60	do	C,E	D	Another water well nearby is 140 ft deep.
* 728	H. T. Coleman	--	--	75	6	--	do	1,489	45	Jan. 15, 1963	J,E	D,S	
801	O. V. Shaw	--	--	170	5.5	170	Trinity Group	1,623	100	Jan. 18, 1963	C,W	S	
802	M. J. Green	--	--	250	5.5	250	do	1,598	200	do	C,W	D,S	
803	L. E. Day	--	--	80	5.5	80	do	1,543	25	do	C,W	N	
804	E. Nabors	--	--	202	5.5	--	do	1,653	190	Jan. 17, 1963	C,W	S	
* 805	L. E. Day	--	--	120	5.5	120	do	1,602	100	do	C,W	S	
* 806	do	G. Bolton	1950	185	5.5	185	do	1,610	130	do	C,E	D	Water sand reported at 125 ft.
901	C. Stewart	--	--	220	5.5	220	do	1,568	200	do	C,W	D,S	
* 902	W. Hill	--	--	55	5.5	55	do	1,569	40	do	C,W	S	
* 903	W. J. Bettis	--	--	124	5.5	--	do	1,562	77	Jan. 18, 1963	C,W	D,S	
* 904	J. Hawkins	--	--	165	5.5	165	do	1,567	115	do	C,W	S	
* 905	B. B. Shoemake	--	--	190	5.5	190	do	1,594	110	do	C,E	D,S	
* 906	J. Hawkins	--	1913	160	5.5	160	do	1,597	75	do	C,W	D,S	
907	A. P. Townsend	--	--	151	5.5	--	do	1,565	102	Feb. 1, 1963	C,W	S	Used only during summer.
* 908	do	--	--	105	6	105	do	1,543	80	do	J,E	D,S	
* 909	R. D. Moseley	--	--	80	5.5	80	do	1,541	60	do	C,W	D,S	Reported weak well.
* 910	J. Hawkins	J. Hawkins	1936	125	6	125	do	1,505	60	do	C,W	S	
* 911	R. A. Thomas	A. J. Baker	--	200	5.5	200	do	1,520	60	do	C,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-10-912	O. V. Shaw	--	--	266	5.5	--	Trinity Group	1,596	209	Jan. 18, 1963	C,E,W	D,S	Water not used for human consumption.
913	do	--	--	107	5.5	--	do	1,581	101	do	C,W	S	
* 11-401	D. M. Alley	G. Bolton	1957	300	6	300	do	1,734	60	do	S,E	D,S	
402	T. R. Dameren	--	--	300	7	300	do	1,736	60	do	S,E	D,S	
403	do	--	--	180	5.5	180	do	1,735	60	do	S,E	D,S	
404	do	--	--	90	7	90	do	1,733	75	Feb. 1, 1963	C,W	S	
405	J. B. Simpson	--	--	80	5.5	80	do	1,698	65	do	C,E	D,S	Reported weak well.
* 406	do	--	--	270	5.5	270	do	1,698	180	do	C,E	D,S	
407	C. Godfrey	--	--	221	6	221	do	1,662	195	do	C,E	D,S	
408	T. F. Townsend	--	--	200	5.5	200	do	1,643	180	do	C,W	S	
* 409	E. F. Blackwell	E. Simpson	--	190	5.5	190	do	1,636	75	do	C,E,W	D,S	
410	C. Godfrey	--	--	70	5.5	--	do	1,662	13	Jan. 31, 1963	C,W	D,S	
701	A. M. Morales	--	--	100	5.5	--	do	1,691	90	do	C,W	N	
702	do	--	--	110	5.5	110	do	1,676	100	do	C,W	D,S	
* 703	do	--	--	250	6	250	do	1,676	210	do	C,E	D,S	
* 704	G. B. Hughes	J. Hull	--	240	5.5	240	do	1,636	60	do	C,E	D,S	
705	A. J. Cockeral	--	--	42	5.5	42	do	1,661	27	do	C,E	S	
* 706	Mrs. J. D. Dameron	--	--	100	5.5	100	do	1,685	75	do	C,E	D,S	
707	V. F. Townsend	--	--	80	5.5	60	do	1,650	10	do	C,W	D,S	
708	E. Floyd	--	--	200	5.5	--	do	1,609	175	do	C,W	D,S	
709	do	G. Bolton	--	140	5.5	140	do	1,569	60	do	C,W	S	
* 710	J. W. Tunnell	Deen and Switzer	--	250	5.5	250	do	1,655	230	do	C,W	D	
711	D. Rushing	--	--	210	5.5	210	do	1,646	190	do	C,E	D,S	
* 712	W. Murick	--	--	80	5.5	80	do	1,641	40	do	C,W	D,S	
* 713	C. Dameron	--	--	200	5.5	200	do	1,630	180	do	C,E,W	D,S	Reported weak well.
714	M. Moseley	B. McLaughlin	--	240	5.5	240	do	1,617	215	do	C,W	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-11-715	E. T. Perkinson	--	--	150	5.5	150	Trinity Group	1,570	50	Jan. 31, 1963	C,E	D	
* 716	O. L. McCullough	--	--	180	5.5	180	do	1,575	150	do	C,W	S	
* 717	do	--	--	100	5.5	100	do	1,545	70	do	C,W	S	
718	C. Dameron	--	--	220	5.5	220	do	1,598	200	do	C,E	D,S	
719	R. C. Caldwell	--	--	19	24	--	do	1,559	9	Feb. 4, 1963	C,E	S	
* 720	G. W. Wade	--	--	126	5.5	--	do	1,562	106	do	C,E	D,S	
* 721	E. Stewart	--	--	120	5.5	120	do	1,556	22	Feb. 9, 1963	C,W	D,S	
* 722	do	--	--	26	24	26	do	1,556	23	do	B,H	N	
801	do	--	--	125	5.5	125	do	1,568	25	do	C,W	S	
* 17-201	J. Shannon	--	--	23	36	23	Strawn Group	1,335	20	do	J,E	D,S	
202	Mrs. M. Benson	G. Bolton	--	125	5.5	125	do	1,330	95	do	C,E	N	
203	O. E. Walls	--	--	28	5.5	--	do	1,320	15	do	J,E	D	
204	B. Milam	-- Griffin	--	75	5.5	75	do	1,333	--	--	J,E	D,S	
205	D. Merchant	--	--	65	36	65	do	1,322	30	Feb. 9, 1963	J,E	D,S	
206	C. Griffin	--	--	19	60	19	do	1,325	6	do	J,E	D	Water sand reported at 11 ft.
* 207	P. Bishop	--	--	30	6	30	do	1,330	18	do	J,E	D,S	Water not used for human consumption.
208	R. L. Parker	--	--	30	36	30	do	1,345	20	do	Cf,E	D,S	
209	H. L. Rowe	--	--	100	5.5	100	do	1,350	5	do	C,E	D	
210	-- Cason	--	--	105	5.5	105	do	1,370	45	do	C,E	N	Water sand reported at 60 ft.
211	H. F. Miller	--	--	325	8	35	do	1,345	35	do	J,E	S	Well reported to have flowed until casing developed leak.
212	G. S. Sanders	--	--	121	36	--	do	1,339	11	June 3, 1963	J,E	D	
213	do	--	--	18	36	--	do	1,339	16	do	J,E	S	
214	Thigpen estate	--	--	80	5.5	80	do	1,342	--	--	J,E	S	
* 215	C. Wheeler	--	--	75+	12 5.5	0-? 0-75+	do	1,340	22	June 3, 1963	J,E	D,S	
* 216	J. M. VanHuss	R. M. Virdell	1961	43	5.5	43	do	1,360	15	do	J,E	D	Water sand reported at 25 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-17-217	G. Edgar	--	--	28	48	10	Strawn Group	1,343	26	June 3, 1963	J,E	D,S	
* 218	F. Pierce	--	1936	21	24	21	do	1,361	18	do	J,E	D	
* 301	C. A. Gotcher	J. H. Price	--	119	5.5	119	do	1,470	39	do	C,E	D,S	
* 302	W. S. Jenkins	C. Price	--	120	5.5	120	do	1,465	40	do	C,E	D,S	
303	Mrs. M. J. Flowers	--	--	25	36	25	do	1,395	15	do	C,W	D,S	
304	-- Snider	--	--	325	7	0-80	do	1,460	40	do	N	N	Water sand reported from 65 to 75 ft.
* 305	F. Pierce	--	1902	24	24	24	do	1,370	21	do	B,H	S	
* 306	B. F. Hunt	--	1948	225	5.5	--	do	1,420	180	do	C,E	D,S	Water sand reported at 200 ft.
307	S. Jones	--	1952	92	5.5	92	do	1,402	--	--	C,E	N	Water sand reported 8 ft thick.
308	W. O. Sweet	--	1937	200+	5.5	--	do	1,425	180	June 3, 1963	C,W	N	
309	S. Jones	--	1957	235	10	235	do	1,390	70	do	N	N	Water reported in sandy gray shale from 70 to 80 ft. Drilled as oil test to 1,000 ft, plugged back to 235 ft. Salt water reported encountered at 395 ft during drilling.
310	do	--	1962	258	4.5	258	do	1,375	70	do	N	N	Water sand reported at 70 to 80 ft.
311	-- Ezell	--	1944	60	5.5	60	do	1,361	38	do	J,E	S	Reported weaker well now than earlier.
* 312	do	R. M. Virdell	1962	62	5.5	62	do	1,360	40	do	J,E	D	
* 313	H. S. Brandstetter	--	1946	86	5.5	--	do	1,370	60	do	C,E	D	
314	M. E. Wells	R. M. Virdell	1961	100	5.5	100	do	1,368	80	do	C,E	D	
* 315	E. F. Massey	-- Jackson	1952	125	5.5	125	do	1,370	--	--	C,E	D,S	
* 316	J. M. Wood	C. Word	1950	96	5.5	0-90	do	1,375	56	June 3, 1963	C,E	D	
* 317	F. White	--	1942	55	5.5	55	do	1,385	30	do	J,E	D,S	
* 318	E. Mercer	--	--	130	5.5	--	do	1,415	55	do	C,E	D	
319	H. Reeves	R. M. Virdell	1939	50	--	--	do	1,405	--	--	N	N	
320	do	--	1922	150	5.5	150	do	1,342	110	June 3, 1963	C,H	N	
321	-- Lehnis	--	--	15	24	--	do	1,410	10	Nov. 7, 1962	B,H	S	
* 322	D. C. Snider	A. J. Baker	1945	125	5.5	125	do	1,440	4	do	J,E	D	Water sand reported at 96 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-17-323	-- Carlisle	--	1932	125	5.5	125	Strawn Group	1,455	--	--	C,E	S	Reported weak well.
* 324	W. J. Shank	R. M. Virdell	1962	116	5.5	116	do	1,418	75	Nov. 7, 1962	C,W	D,S	
325	C. Spain	--	--	34	6	--	do	1,422	21	do	N	N	
* 326	L. R. Ellett	R. M. Virdell	--	130	5.5	120	do	1,380	30	do	C,E	D,S	
327	S. D. Ham	--	--	100	6	--	do	1,390	80	do	J,E	D,S	
* 328	C. A. Earp	--	--	32	5.5	32	do	1,395	17	do	B,H	D	Water sand reported at 32 ft.
* 329	Mrs. J. McLaughlin	--	--	126	5.5	126	do	1,365	--	--	C,W	D,S	Water sand reported at 60 ft.
* 330	do	--	--	22	36	22	do	1,370	18	Nov. 7, 1962	J,E	D	Reported dry in summer 1962.
* 331	H. L. Martin	--	--	18	36	18	do	1,370	3	do	C,E,Cf	D	
* 332	V. Moseley	A. J. Baker	1945	100	5.5	100	do	1,361	60	do	W	D,S	Water sand reported at 80 ft.
333	do	--	--	18	48	18	do	1,350	11	do	--	D,S	
* 334	R. Malone	--	--	36	24	36	do	1,364	21	do	J,E	D	
335	do	--	--	24	36	24	do	1,360	16	do	J,E	D	
* 336	H. McMullen	--	--	80	5.5	--	do	1,345	75	do	C,E	D	Reported weak well.
337	-- Stephens	--	--	33	5.5	--	do	1,350	19	Nov. 8, 1962	C,E	D,S	
* 338	C. N. Coleman	--	--	425	5.5	--	do	1,350	17	Nov. 29, 1962	J,E	D,S	
339	E. Bilton	--	--	25	6	25	do	1,340	8	do	C,E	N	
* 340	do	R. M. Virdell	1961	38	8	38	do	1,343	15	do	N	N	Water sand reported at 25 ft.
* 501	J. D. Stewart	--	--	45	5.5	45	do	1,341	33	do	J,E	S	Reported weak well.
* 502	J. L. Johnson	Kirkpatrick	1916	2,402	8.25	--	Ellenburger Group	1,320	(+)	--	Flows	N	Originally drilled as oil test. Used for several years to supply swimming pool.
* 601	H. Reeves	R. M. Virdell	--	55	6	55	Strawn Group	1,345	37	Nov. 29, 1962	J,E	D	
602	do	do	1939	50	6	50	do	1,340	40	do	N	N	
603	M. Redd	--	1947	60	5.5	--	do	1,315	--	--	C,E	D	
604	C. Mitchell	--	1952	38	5.5	38	do	1,320	25	Nov. 12, 1962	N	N	
* 605	do	--	1952	48	5.5	48	do	1,323	27	do	N	N	
606	do	G. Bolton	1957	38	6	38	do	1,305	24	do	J,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-17-607	R. Crossman	A. J. Baker	1951	40	6	40	Strawn Group	1,305	30	Nov. 12, 1962	J,E	D,S	
608	E. W. Faires	--	1951	160	5.5	160	do	1,355	80	do	C,E	D,S	
609	M. Redd	--	--	40	5.5	40	Trinity Group	1,350	20	do	C,E	N	Water sand reported at 25 ft.
* 702	C. Bell	--	--	88	5.5	--	do	1,525	--	--	C,W	S	
703	Y. C. Paschell	--	--	Spring	--	--	do	1,560	(+)	--	Flows	S	
704	do	--	--	150	5.5	150	do	1,510	70	Nov. 12, 1962	C,W	S	
705	do	Smith & Whittenburg	1954	125	5.5	125	do	1,590	70	do	C,W	S	
* 801	Y. C. Paschell	G. Bolton	1957	150	5.5	150	do	1,585	70	do	C,E,W	D,S	Reported strong well.
802	Mrs. T. E. Stevens	--	--	250	5.5	--	Strawn Group	1,582	175	do	C,W	N	
902	J. Yantis	--	1947	51	5.5	51	do	1,296	30	Oct. 16, 1962	C,W	D,S	
903	do	--	--	55	5.5	--	do	1,290	29	do	C,W	D,S	
904	Mrs. T. E. Stevens	--	--	55	5.5	55	do	1,290	--	--	C,H	N	
905	do	--	--	41	7	--	Alluvium	1,290	30	Oct. 16, 1962	C,?	N	
906	C. D. Walker	--	--	60	--	--	Strawn Group	1,305	40	do	C,W	N	
907	do	--	--	33	36	33	Alluvium	1,305	--	--	B,H	N	
* 18-101	S. J. Eaton	--	--	120	5.5	120	Strawn Group	1,459	--	--	C,W	D	
102	do	--	--	120	5.5	120	do	1,430	20	Oct. 16, 1962	C,W	S	
* 103	R. N. Wyatt	A. J. Baker	1947	100	5.5	100	do	1,345	23	do	J,E	D,S	Water sand reported at 23 ft.
* 104	J. P. Graham	--	1890	96	5.5	--	do	1,382	19	do	C,E	D,S	
* 105	Mrs. O. Page	A. J. Baker	1941	98	5.5	98	do	1,380	18	do	J,E	D	Water sand reported at 89 ft.
* 106	Mrs. A. J. Yarborough	--	1902	75	5.5	75	do	1,363	25	do	C,E	D	
107	H. L. Craven	--	--	60	5.5	60	do	1,382	18	do	J,E	S	
* 108	do	--	--	60	5.5	60	do	1,385	18	do	J,E	D	
* 109	J. Cox	--	--	160	5.5	160	do	1,430	100	do	C,W	D,S	
* 110	A. Vernon	--	--	60	48	60	do	1,430	50	do	C,H	D	
* 111	G. Wyatt	A. J. Baker	1949	125	5.5	125	do	1,461	100	do	C,E	D	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-17-112	V. Shannon	--	--	250	5.5	--	Strawn Group	1,480	90	Oct. 16, 1962	C,W	N	Well has caved.
113	J. B. Page	--	--	Spring	--	--	Trinity Group	1,430	(+)	--	Flows	S	
* 114	do	--	--	112	5.5	--	do	1,522	65	Oct. 16, 1962	C,E	D,S	Reported weak well.
* 115	V. Shannon	--	1959	150	5.5	150	Strawn Group	1,455	40	do	J,E	D	
* 116	B. A. Webb	--	--	125+	5.5	--	do	1,470	7	do	J,E	D,S	
* 18-117	L. R. Ellett	G. Bolton	1959	125	5.5	125	do	1,470	--	--	C,E	D,S	
* 118	R. R. Ellett	--	--	60	5.5	--	do	1,440	15	Oct. 16, 1962	J,E	D	
119	H. L.Craven	--	--	51	6	60	do	1,442	14	Nov. 1, 1962	J,E	D,S	
* 120	do	--	1954	96	5.5	96	do	1,445	46	do	N	N	
* 121	W. V. Cunningham	E. Kirksey	1912	82	5.5	82	do	1,390	32	do	J,E	D,S	
* 201	L. Miller	--	--	80	5.5	80	Trinity Group	1,540	60	do	C,E	D,S	
* 202	C. B. Powell	--	--	160	5.5	160	do	1,580	110	do	C,E,W	D,S	
* 203	R. N. Green	A. J. Baker	1930	280	5.5	280	Strawn Group	1,610	100	do	C,E	D,S	
204	P. Thurber	--	--	156	5.5	--	Trinity Group	1,581	139	Jan. 5, 1963	C,W	N	
205	J. Foster	--	--	181	5.5	--	do	1,610	138	Jan. 3, 1963	C,W	N	
206	J. E. Bury	--	--	60	8 5.5	20 20-60	do	1,522	40	do	C,W	S	
* 207	R. G. Harding	--	--	105	5.5	105	do	1,545	80	Jan. 5, 1963	C,E,W	D,S	
208	do	--	--	100	5.5	100	do	1,538	75	do	C,W	S	
* 209	W. L. Stafford	--	--	160	5.5	160	do	1,564	110	do	C,E	D,S	
210	W. L. Stewart	B. McLaughlin	--	148	5.5	148	do	1,515	50	do	C,W	D,S	
* 211	A. Probst	G. Bolton	--	275	5.5	--	Strawn Group	1,523	60	do	C,E	D,S	
212	L. B. Orton	--	--	--	5.5	--	?	1,503	--	--	C,E	D,S	
* 213	O. Kirksey	G. Bolton	--	180	5.5	180	Strawn Group	1,535	55	Jan. 5, 1963	J,E	D	
* 214	T. E. Parson	do	--	206	5.5	196	do	1,505	70	do	C,E	D,S	
* 215	do	--	--	80	5.5	80	Trinity Group	1,501	60	do	C,H	D	
* 216	C. C. Thomas	--	--	50	5.5	50	do	1,515	35	do	C,W	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-18-217	J. Speich	R. M. Virdell	--	225	5.5	225	Strawn Group	1,588	--	--	C,E	S	
* 218	do	--	1923	180	5.5	180	Trinity Group	1,586	60	Jan. 5, 1963	C,E	D	
* 219	Mrs. A. Green	--	--	150	5.5	150	do	1,590	120	do	C,W	D,S	
* 220	M. Rodriguez	--	--	240	5.5	240	Strawn Group	1,621	225	do	C,E	D,S	
221	J. F. Powell	--	--	144	5.5	--	Trinity Group	1,575	110	Jan. 3, 1963	C,W	N	
301	R. O. Mauldin	R. M. Virdell	1949	100	5	--	do	1,483	--	--	C,E	D,S	
302	C. Taylor	--	--	79	5.5	79	do	1,485	42 49	Nov. 1, 1960 Aug. 5, 1963	C,W	S	
* 303	do	--	--	120	5.5	120	do	1,530	50	do	C,W	D,S	
304	W. C. Clayton	--	--	125	5.5	125	do	1,520	75	do	C,W	S	
* 305	Mrs. -- Timmins	--	--	170	5.5	170	do	1,478	100	do	C,E	S	
* 306	C. R. Boase	--	--	100	5.5	100	do	1,498	10	do	C,W	D,S	
* 307	J. F. Powell	--	--	160	5.5	160	do	1,559	60	do	C,E	D,S	
308	T. W. Bynum	--	--	146	5.5	146	do	1,530	98	Jan. 2, 1963	C,W	S	
* 309	R. J. Locke	--	--	107	5.5	107	do	1,555	60	do	C,W,E	D,S	
310	R. E. Cornelius	--	--	100	5.5	100	do	1,485	24	do	C,W	D,S	
311	Mrs. L. Q. Reese	--	--	105	5.5	105	do	1,538	75	do	C,W	S	
* 312	T. A. Sears	--	1902	80	5.5	80	do	1,535	40	do	C,E	D,S	
* 313	Mrs. G. Douglas	B. McLaughlin	1917	121	5.5	121	do	1,541	74	Jan. 5, 1963	C,W	D,S	
* 314	Mrs. O. J. Huggins	--	--	150	5.5	150	do	1,505	100	do	C,W, J,E	D,S	
315	C. W. Jones	--	--	44	48	--	do	1,470	21	Dec. 31, 1962	B,H	N	
* 316	do	--	--	80	5.5	80	do	1,462	35	do	C,W	D,S	
* 317	D. Towery	--	--	130	5.5	130	do	1,518	50	do	C,E	D,S	
* 318	J. O. Dewbre	G. Bolton	1948	121	5.5	121	do	1,542	91	Dec. 10, 1962	C,W	D,S	
* 319	C. E. Jones	--	--	120	5.5	120	do	1,500	40	do	C,W	D,S	
320	V. O. Burton	R. M. Virdell	--	116	5.5	116	do	1,488	71	do	J,E	D	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-18-321	V. O. Burton	R. M. Virdell	--	116	5.5	116	Trinity Group	1,490	71	Dec. 10, 1962	J,E	D	
* 322	do	--	--	35	5.5	35	do	1,470	20	do	N	N	
* 323	R. L. Douglas	--	--	28	36	28	do	1,470	25	do	C,E	D,S	
324	E. Duvall	--	--	204	5.5	--	Strawn Group	1,490	30	Jan. 5, 1963	N	N	
325	do	--	--	46	5.5	46	Trinity Group	1,485	15	do	N	D	
* 326	do	--	--	100	5.5	100	do	1,485	60	do	C,E	D,S	
* 327	B. Wright	--	--	200	5.5	--	do	1,600	100	do	C,W	D,S	
328	G. Oehler	--	--	100	5.5	--	do	1,585	--	--	C,W	D,S	
329	E. Duvall	--	--	120	5.5	120	do	1,490	40	Jan. 5, 1963	N	N	
330	J. Hawkins	--	--	141	5.5	141	do	1,495	75	do	C,W	S	
* 401	G. A. Black	J. McCall	1929	147	5.5	--	do	1,500	100	do	C,W	D,S	
* 402	W. L. Minyard	--	1902	65	5.5	65	do	1,425	50	do	J,E	D	
* 403	do	A. J. Baker	1944	54	5.5	54	do	1,395	7	do	C,G	S	
* 404	W. M. Frambrough	--	--	100	5.5	100	do	1,440	30	do	C,W	D,S	
* 405	S. M. Black	A. J. Baker	1936	60	5.5	60	do	1,455	15	do	J,E	D	
* 406	do	do	1941	80	5.5	80	do	1,470	30	do	J,E	D	
407	W. L. Lamkin	--	1952	70	6	--	do	1,485	45	Nov. 15, 1962	C,W	N	
408	do	--	--	48	5.5	48	do	1,490	28	do	C,W	S	
* 409	L. H. Locker	R. M. Virdell	1959	151	5.5	120	do	1,485	70	do	C,E	D	Water sand reported at 70 ft.
410	do	do	1960	145	5.5	120	do	1,487	70	do	J,E	D,S	
* 411	do	--	1949	75	5.5	75	do	1,485	60	do	J,E	D,S	
412	do	--	1952	124	5.5	120	do	1,485	50	do	C,E	S	
413	do	--	--	75	5.5	--	do	1,485	60	do	C,W	N	
414	do	--	--	Spring	--	--	do	1,470	(+)	--	Flows	S	
415	do	--	--	Spring	--	--	do	1,475	(+)	--	Flows	S	
416	do	--	--	Spring	--	--	do	1,445	(+)	--	Flows	S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-18-417	L. H. Locker	--	--	Spring	--	--	Trinity Group	1,420	(+)	--	Flows	S	
418	Mrs. -- Spink	--	--	Spring	--	--	do	1,420	(+)	--	Flows	S	
419	E. O. Gilbert	--	1945	65	5.5	65	Strawn Group	1,420	--	--	C,G	D	Yields 2 bbl/day.
* 420	do	--	--	Spring	--	--	do	1,395	(+)	--	Flows	S	
421	S. L. Mahan	--	--	165	5.5	165	do	1,510	75	Nov. 15, 1962	C,W	N	
422	do	A. J. Baker	--	165	5.5	165	do	1,518	75	do	C,W	D,S	
* 423	L. Parker	--	--	36	24	--	Trinity Group	1,518	25	do	B,H	N	
* 424	do	A. J. Baker	1952	137	5.5	--	do	1,518	80	do	C,E	D,S	
425	G. C. Cunningham	--	--	115	5.5	--	do	1,521	38	do	C,E	D,S	
* 426	G. C. Cunningham, Sr.	--	1906	115	5.5	--	do	1,529	38	do	C,W	D,S	
* 427	D. B. McClelland	R. M. Virdell	1962	100	5.5	100	do	1,540	50	do	C,E	D	Water sand reported at 75 ft.
428	G. C. Cunningham, Sr.	A. J. Baker	1942	150	5.5	150	do	1,530	60	do	C,W	D,S	
502	J. Yantis	--	--	217	5.5	217	Strawn Group	1,570	108	Jan. 3, 1963	C,W	N	
503	W. Perkins	--	--	142	5.5	142	Trinity Group	1,520	75	do	C,W	D,S	
504	do	--	--	142	5.5	142	do	1,525	75	do	C,W	S	
505	J. E. Bury	--	--	100	5.5	100	do	1,523	40	do	C,E	D,S	
* 506	B. Carpenter	--	--	80	8 5.5	20 20-80	do	1,530	40	do	C,E	D,S	
507	do	--	--	80	8 5.5	20 20-80	do	1,530	40	do	C,W	S	
508	Mrs. H. I. Holmes	--	--	100	5.5	--	do	1,524	40	do	C,E	D,S	
509	do	--	--	103	5.5	--	do	1,524	30	do	N	N	Abondoned.
510	G. Davis	--	--	130	5.5	--	do	1,530	18	Oct. 31, 1962	C,W	S	
511	F. R. Bode	--	--	120	5.5	120	do	1,508	60	do	C,E	N	
* 512	do	--	--	120	5.5	120	do	1,518	60	do	C,W	D,S	
* 513	P. Matson	--	1951	120	5.5	120	do	1,516	60	do	C,E	D,S	
514	-- Pittman	--	--	118	5.5	--	do	1,503	13	do	C,W	S	

See footnote at end of table.

Pages are mixed up after p. 56 thru p. 67

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-18-515	J. A. Glass	--	--	60	5.5	--	Trinity Group	1,510	34	Jan. 3, 1963	C,W	S	
* 516	do	--	--	120	5.5	--	do	1,493	40	do	C,E	S	
517	M. L. Cobb	--	--	100	5.5	100	do	1,518	--	--	C,W	S	
* 518	do	A. J. Baker	1950	135	5.5	135	do	1,545	--	--	C,E	D,S	
519	C. R. Boase	--	--	150	5.5	--	do	1,530	70	Jan. 3, 1963	C,W	S	
520	-- Egger	--	--	119	5.5	--	do	1,518	58	Nov. 29, 1962	C,W	S	
* 521	Mrs. L. Smith	--	--	90	5.5	90	do	1,510	40	do	C,W	D	
* 522	H. S. Locks	--	--	165	5.5	165	do	1,530	60	do	C,E	D,S	
523	do	--	--	200	5.5	200	Strawn Group	1,565	60	do	C,W	D,S	
524	H. Locks	--	--	150	5.5	--	Trinity Group	1,535	--	--	C,W	D,S	
525	J. Williams	--	--	135	5.5	135	do	1,525	50	Nov. 29, 1962	C,W	D,S	
* 526	E. O. Herring	--	--	92	5.5	--	do	1,460	50	Dec. 14, 1962	C,W	S	
527	do	--	--	73	--	--	do	1,465	69	Jan. 11, 1963	N	N	
* 528	do	--	--	Spring	--	--	do	1,430	(+)	--	Flows	S	Flows into stock tank.
529	do	--	--	Spring	--	--	do	1,420	(+)	--	Flows	S	
* 530	do	--	--	79	5.5	--	do	1,430	17	Dec. 14, 1962	C,W	S	Well appears to have caved.
* 531	Mrs. B. G. Stuart	A. J. Baker	--	146	5.5	146	do	1,505	20	do	C,W	D,S	
* 532	E. O. Herring	--	--	146	5.5	--	do	1,495	20	do	C,E	D,S	
* 601	R. E. Cornelius	--	--	150	5.5	150	do	1,560	110	do	C,W	D,S	
* 602	J. Boyd	--	--	140	5.5	140	do	1,565	130	do	C,W	D,S	
* 603	E. B. Tongate	--	--	100+	5.5	--	do	1,558	40	do	C,W	D,S	
604	G. G. Reigers	--	--	90	5.5	87	do	1,490	70	do	C,W	D,S	
605	F. Greer	--	1912	100	5.5	100	do	1,500	50	do	N	N	
* 606	do	G. Bolton	1962	234	5.5	234	do	1,500	50	do	C,E	D,S	
* 607	H. Huckleby	--	--	140	5.5	140	do	1,467	80	do	C,W	D,S	
* 608	R. Greer	A. J. Baker	1947	185	5.5	185	do	1,445	60	do	C,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-18-609	Mrs. E. Hale	A. J. Baker	1918	100	5.5	100	Trinity Group	1,480	40	Dec. 14, 1962	C,E	D,S	
610	W. L. Coffey	--	--	70	5.5	--	do	1,470	41	Nov. 29, 1962	C,W	S	
* 611	J. M. Hobaugh	--	1962	70	5.5	70	do	1,470	30	do	J,E	D,S	
* 612	W. L. Coffey	--	1905	95	5.5	--	do	1,483	49	do	C,W	S	
613	L. R. Kovar	--	--	240	5.5	240	Strawn Group	1,555	20	do	C,E	N	
614	H. Allcorn	--	--	165	5.5	165	Trinity Group	1,560	--	--	C,E	N	Well went dry.
* 615	do	G. Bolton	--	200	5.5	200	do	1,561	80	Nov. 29, 1962	C,E	D,S	
616	H. L. Roach	--	--	128	5.5	128	do	1,543	70	do	C,E	N	Reported weak well.
* 617	H. Gist	A. J. Baker	1950	240	5.5	240	Strawn Group	1,545	140	do	C,E	D,S	
618	do	--	--	200	5.5	200	Trinity Group	1,545	100	do	C,W	D,S	Reported weak well.
* 619	V. F. Quirl	--	1863	180	5.5	180	do	1,525	140	do	C,E	D,S	Do.
* 620	A. R. Sikes	--	--	144	5.5	--	do	1,470	42	do	C,W	D,S	
* 621	C. Claber	--	--	140	5.5	--	do	1,483	60	do	C,W	D,S	
622	D. Smith	--	--	48	5.5	--	do	1,485	21	do	C,W	D,S	Shallow water sand reported.
* 623	L. F. Holaman	--	--	180	6	180	do	1,481	--	--	C,E	D,S	
* 624	D. Smith	--	1950	175	5.5	--	do	1,462	30	Nov. 29, 1962	C,E	D,S	
625	do	--	--	53	5.5	--	do	1,390	25	do	N	N	
* 626	J. A. McBee	G. Bolton	1960	100	6	100	do	1,400	10	do	J,E	D	Water sands reported at 20, 60 and 80 ft.
627	H. E. Baker	--	--	131	5.5	131	do	1,465	27	do	C,E	D,S	
* 628	D. A. Young	--	1912	118	5.5	--	do	1,490	48	Oct. 23, 1962	C,W,E	D,S	
* 629	J. Dick	--	--	135	5.5	135	do	1,485	--	--	C,E	D,S	Reported weak well.
* 630	T. D. Royall	--	1900	99	5.5	99	do	1,483	39	Oct. 23, 1962	J,E	D,S	
* 631	F. Glass	--	1947	165	6 5.5	65 65-165	do	1,498	75	do	C,E	D,S	
632	R. Rankin	--	1930's	120	8 5.5	20-60 60-120	do	1,501	--	--	C,W	N	
633	R. Stepp	A. J. Baker	1945	160	5.5	145	do	1,515	80	Oct. 23, 1962	C,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-18-634	R. Stepp	A. J. Baker	1945	113	5.5	--	Trinity Group	1,505	26	Oct. 18, 1962	C,W	S	
* 635	Mrs. G. W. Finney	Braddock and Baker	1942	175	5.5	175	do	1,505	35	do	C,W	D	
636	L. E. Carter	--	1900	107	5.5	--	do	1,506	40	do	N	N	
637	do	-- Cavanaugh	1951	164	6 --	57 57-164	do	1,506	37	do	C,E	D	Water sand reported from 38 to 46 ft.
* 638	N. B. Nesmith	A. J. Baker	1951	100	5.5	100	do	1,490	30	do	C,E	D	Water sand reported from 84 to 85 ft.
639	Mrs. N. R. Reasnor	do	1935	80	5.5	80	do	1,510	40	do	C,W	D	
* 640	F. Matson	--	--	140	5.5	--	do	1,522	80	do	C,E	D,S	
* 641	W. L. Henry	--	--	100	5.5	100	do	1,505	65	do	C,W	D,S	
* 642	L. W. Coffey	A. J. Baker	1954	184	8 5.5	62 62-184	do	1,495	50	do	N	N	Water sands reported at 125 and 155 ft.
* 643	do	-- Gifford	1892	82	5.5	82	do	1,495	70	do	C,E	D,S	
* 644	do	--	1906	165	5.5	165	do	1,495	50	do	C,E	D,S	
* 645	E. Bilton	A. J. Baker	--	200	5.5	200	do	1,520	--	--	C,E		
646	-- Foreman	--	--	70	5.5	70	do	1,500	40	Oct. 18, 1962	C,E	D,S	
701	H. R. Stasney	--	1912	38	24	--	Alluvium	1,301	21	Oct. 16, 1962	C,E	D	
702	V. Lockett	--	--	60	5.5	60	Strawn Group	1,319	--	--	C,W	D,S	
* 703	H. R. Stasney	B. Martin	1962	41	7	41	Alluvium	1,310	21	Oct. 16, 1962	J,E	D,S	Water sand and gravel reported at 32 ft.
704	do	do	1962	41	8	41	do	1,305	21	do	J,E	S	Do.
705	do	do	1962	41	7	41	do	1,305	21	do	J,E	S	Do.
706	do	do	1962	41	5	41	do	1,305	21	do	J,E	S	Do.
* 707	V. Lockett	--	--	79	36 5.5	-- --	Strawn Group	1,305	36	Oct. 17, 1962	C,E	D,S	Originally a dug well; deepened to 79 ft.
802	B. Lewis	--	--	54	36	--	do	1,308	48	do	J,E	S	
* 803	C. R. Robertson	C. Word	1952	205	5.5	200	do	1,322	--	--	C,E	D	Water reported at 65 ft.
* 804	O. F. Martin	--	--	30	48	8-30	do	1,305	20	Oct. 17, 1962	C,W	D,S	
* 805	H. M. Stone	--	--	Spring	--	--	Trinity Group	1,400	(+)	--	Flows	S	
* 806	O. F. Martin	J. Kilgore	1940	190	5.5	190	Strawn Group	1,465	30	Oct. 17, 1962	C,W	S	

See footnote at end of table.

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-18-807	Mrs. -- Harris	--	--	200	5.5	200	Strawn Group	1,485	75	Oct. 17, 1962	C,E	S	
808	B. Carpenter	--	--	140	5.5	140	Trinity Group	1,520	100	do	C,W C,E	S	
* 809	T. T. Triplett	--	--	140	5.5	140	do	1,490	--	--	C,W	D,S	
810	P. Locks	--	1905	110	5.5	110	do	1,495	60	Oct. 17, 1962	C,W	D,S	
901	-- Blunt	--	1953	180	5.5	--	do	1,511	85	do	J,E	D	
902	do	--	1912	120	6	--	do	1,510	85	do	C,E	N	
903	-- Burton	--	1960	135	5.5	135	do	1,479	30	do	C,W	S	
* 904	J. Traweek	A. J. Baker	1938	120	5.5	84	do	1,470	20	do	C,W	D,S	
905	do	--	--	Spring	--	--	do	1,450	(+)	--	Flows	S	
* 906	M. N. McBurney	A. J. Baker	1937	102	5.5	30	do	1,400	40	Oct. 17, 1962	C,E	D	Water sand reported at 40 ft.
* 907	J. C. Darroch	--	1942	75	5.5	75	do	1,396	45	do	C,W	D,S	Reported weak well.
908	do	--	--	Spring	--	--	do	1,430	(+)	--	Flows	S	
909	do	--	--	Spring	--	--	do	1,440	(+)	--	Flows	S	
* 910	Mrs. E. King	--	1942	250	5.5	--	Strawn Group	1,480	--	--	C,E	D,S	
911	Mrs. L. Petty	--	1952	150	5.5	150	Trinity Group	1,460	--	--	C,E	N	
912	R. Stepp	--	1930's	160	5.5	--	do	1,485	100	Oct. 17, 1962	C,W C,E	D,S	
913	do	--	1951	70	5.5	70	do	1,475	30	do	C,W	S	
* 914	J. Zant, Jr., and R. Stepp	--	--	Spring	--	--	do	1,420	(+)	--	Flows	S	
915	J. Zant, Jr.	--	--	42	5.5	--	do	1,420	32	Oct. 23, 1962	N	N	
* 916	do	--	--	100	5.5	100	do	1,418	43	do	C,W	N	Drilled as oil test to 948 ft, plugged back to 100 ft. Water sand reported at 75 ft.
* 917	do	--	--	Spring	--	--	do	1,398	(+)	--	Flows	S	
918	do	--	--	43	5.5	--	do	1,448	42	Oct. 23, 1962	N	N	
* 919	do	--	--	125	5.5	125	do	1,450	43	do	C,W,E	D,S	Water sand reported at about 80 ft.
* 920	W. M. Hancock	--	1912	110	5.5	--	do	1,422	60	do	C,W,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-18-921	R. D. Kirkpatrick	A. J. Baker	--	180	5.5	180	Trinity Group	1,420	--	--	C,E	D,S	
922	I. G. Rice	R. M. Virdell	1961	78	5.5	78	do	1,418	12	Oct. 23, 1962	C,E	S	
923	do	--	1936's	125	5.5	125	do	1,430	--	--	C,E	D,S	
924	W. Perkins	--	--	100	5.5	100	do	1,495	40	Oct. 23, 1962	C,W	S	
* 925	H. M. Stone	--	1935	65	10	65	do	1,494	18	Oct. 18, 1962	C,W	D,S	
926	J. P. Triplett	--	--	160	5.5	160	do	1,485	84	do	C,W	S	
927	H. M. Stone	--	1928	120	5.5	--	do	1,463	30	do	C,W	S	
* 928	Atlantic Refining Co.	--	1928	172	5.5	172	do	1,455	102	do	S,E	D	
929	P. Sanchez	--	1912	20	30	20	do	1,410	4	do	C,W	D,S	
* 930	do	--	1953	143	5.5	143	do	1,419	69	do	C,W	D,S	
* 931	W. A. Simmons	--	--	161	5.5	--	do	1,400	49	Oct. 19, 1962	C,E	D,S	
* 19-102	do	--	--	170	5.5	--	do	1,550	130	do	C,W	S	
103	J. J. Deens	--	--	80	5.5	--	do	1,490	40	do	C,W	S	
104	A. H. Simpson	--	--	240	5.5	240	do	1,535	160	do	N	N	
105	B. M. Murphee	--	--	180	5.5	180	do	1,570	--	--	C,W	D,S	
* 106	A. H. Simpson	A. J. Baker	--	180	5.5	180	do	1,590	160	Oct. 19, 1962	C,W	S	
107	W. H. Murphee	--	--	225	5.5	225	do	1,585	160	do	J,E	D,S	
108	C. R. Boase	--	--	180	5.5	--	do	1,540	100	do	C,W	N	
109	Mrs. T. E. Stevens	--	--	180	5.5	180	do	1,600	30	do	C,W	S	
110	C. R. Boase	--	--	189	5.5	--	do	1,590	156	Dec. 21, 1962	C,W	N	
111	T. W. Bynum	--	--	160	5.5	--	do	1,570	--	--	C,E	N	
* 112	O. L. McCullough	--	--	130	5.5	130	do	1,530	110	Dec. 21, 1962	C,W	S	
* 113	G. V. Golden	--	--	142+	5.5	--	do	1,559	50	do	C,E	D	
* 114	H. Painter	--	--	118	6	118	do	1,530	50	do	C,E	D	
115	-- Taylor	--	--	132	5.5	132	do	1,564	--	--	C,W	N	
116	do	--	--	170	5.5	--	do	1,530	--	--	N,E	N	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
41-19-117	W. L. Lockridge	--	1902	80	5.5	80	Trinity Group	1,505	50	Dec. 21, 1962	C,W	S	
118	O. L. McCullough	--	--	135	5.5	135	do	1,520	110	do	C,W	S	
119	S. Baker	--	--	60	5.5	60	do	1,505	30	do	C,W	N	
* 120	B. Stuart	A. J. Baker	1939	171	5.5	171	do	1,535	110	do	C,E	D,S	
121	W. L. Lockridge	--	--	105	5.5	--	do	1,510	11	Dec. 11, 1962	N	N	
122	do	--	--	180	5.5	180	do	1,568	50	do	C,W	S	
* 123	do	--	1902	84	5.5	84	do	1,490	60	do	C,E	D	
* 124	do	G. Bolton	1962	200	5.5	200	do	1,490	40	do	C,W	D,S	
125	L. E. Horner	--	--	75	5.5	75	do	1,490	51	Dec. 18, 1962	C,W	N	
* 126	do	M. Beatty	1956	70	5.5	70	do	1,465	30	do	C,E	D,S	
127	do	--	--	20	24	20	do	1,463	15	do	B,H	N	
* 128	A. M. Denson	--	--	32	5.5	--	do	1,460	15	do	C,E	D,S	
201	J. Horavak	--	--	174	5.5	--	do	1,721	101	Dec. 21, 1962	C,W	N	
202	do	--	--	250	5.5	250	do	1,803	70	do	C,W,E	S	
* 203	J. Sanchez	--	--	145	5.5	145	do	1,695	70	do	C,W,E	D,S	
204	C. R. Boase	--	--	170	5.5	--	do	1,698	100	do	C,H	N	
205	do	--	--	171	5.5	--	do	1,735	99	do	C,W	N	
206	do	--	--	196	5.5	--	do	1,705	--	--	C,W	N	
207	do	--	--	163	5.5	163	do	1,640	50	Dec. 21, 1962	C,W	S	Reported weak well.
* 208	do	--	--	13	60	--	do	1,575	1	Dec. 29, 1962	C,W	S	
209	do	--	--	72	5.5	--	do	1,595	25	do	N	N	
210	Mrs. T. E. Stevens	--	--	100	5.5	100	do	1,723	65	do	C,E	S	
211	do	--	--	100	5.5	100	do	1,723	65	do	C,W	N	
212	F. Johnson	A. J. Baker	--	196	5.5	196	do	1,730	145	Dec. 21, 1962	C,W	S	
* 213	do	G. Bolton	1960	190	5.5	190	do	1,704	150	do	C,W	D,S	
214	do	A. J. Baker	--	150	5.5	150	do	1,718	110	do	C,W	S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-19-401	O. B. Horner	A. J. Baker	1922	80+	5.5	--	Trinity Group	1,482	70	Dec. 21, 1962	C,E	D,S	Reported weak well.
402	J. J. Deens	--	--	113	5.5	--	do	1,510	55	do	C,W	S	
403	O. B. Horner	A. J. Baker	1936	140	5.5	--	do	1,550	--	--	C,W	N	Reported strong well.
404	J. Blackstock	do	--	45	5.5	--	do	1,484	34	Dec. 4, 1962	C,W	D,S	
* 405	G. Reiger	--	--	147	5.5	147	do	1,450	110	do	C,W,E	D,S	
406	D. Smith	--	--	Spring	--	--	do	1,440	(+)	--	Flows	S	
* 407	A. M. Scevers	A. J. Baker	1927	184	5.5	--	do	1,470	144	Dec. 4, 1962	C,E	D,S	
408	-- Schroeter	--	--	73	5.5	--	do	1,465	36	do	C,W	D,S	
409	A. F. Whitely	--	--	180	5.5	180	do	1,550	140	do	C,E	N	
* 410	C. R. Boase	--	--	134	5.5	--	do	1,550	6	Dec. 27, 1962	N	N	
411	do	--	--	160	5.5	--	do	1,565	134	do	C,W	N	
501	do	--	--	139	5.5	139	do	1,705	108	Dec. 29, 1962	C,W	S	
502	do	--	--	122	5.5	--	do	1,690	103	do	C,W	N	
503	S. Stevens	--	--	153	5.5	--	do	1,697	118	do	C,W	S	
504	do	--	--	129	5.5	--	do	1,690	41	do	C,W	S	
505	F. Johnson	--	--	140	5.5	--	do	1,677	100	do	C,W	S	
25-101	W. A. Crow	--	--	13	36	--	Canyon Group	1,510	10	Oct. 16, 1962	B,H	N	
201	J. L. Jackson	--	--	88	--	--	Trinity Group	1,570	64	Nov. 2, 1960	C,W	D	
* 202	D. Harlow	--	--	Spring	--	--	do	1,470	(+)	--	Flows	S	
203	do	--	--	Spring	--	--	do	1,465	(+)	--	Flows	S	
204	H. R. Stasney	--	--	85	5.5	--	do	1,510	65	Sept. 9, 1963	C,W	S	
* 205	T. Cutbirth	--	1949	117	4	117	do	1,550	60	do	C,E	D,S	Water sand reported at 105 ft.
206	R. Mahan	--	--	150	5.5	150	do	1,560	20	do	C,W	S	Reported weak well.
* 207	do	--	1959	150	5.5	150	do	1,565	20	do	C,E	D,S	Water sand reported at 100 ft.
301	D. Harlow	--	1952	114	5.5	--	Strawn Group	1,465	47	Oct. 12, 1962	C,W	S	
302	do	--	--	100	6	100	Trinity Group	1,475	--	--	C,W	S	Water sand reported at 100 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-25-303	D. Harlow	--	1952	90	5.5	90	Trinity Group	1,445	--	--	C,E	D,S	
* 401	B. Barr	--	--	82	5.5	--	Strawn Group	1,410	--	--	C,E	D,S	
* 402	do	--	--	128	5.5	--	do	1,390	4	Oct. 4, 1962	J,E	D,S	
403	C. R. McBee	--	--	32	7	--	do	--	--	--	--	N	
* 404	do	--	--	35	24	--	do	--	--	--	--	N	
* 405	do	--	1926	1,436	10	--	Ellenburger Group	1,479	(+)	--	Flows	S	Originally drilled as oil test.
501	K. Vardeman	--	--	100	5.5	100	Trinity Group	1,530	69	Nov. 3, 1960	C,W	S	
502	P. McNurlen	--	--	98	5.5	--	do	1,525	78	Oct. 5, 1962	C,W	S	
* 503	K. Boyd	C. Whittenburg	1950	100	5.5	--	do	1,545	--	--	C,E	D,S	
504	do	--	--	100	5.5	100	do	1,530	--	--	C,W	S	
505	P. Barker	--	--	76	36	--	do	1,510	--	--	C,W	S	Water sand reported 12 ft thick.
506	K. Vardeman	--	--	100	--	--	do	1,545	90	Oct. 5, 1962	C,W	S	
* 507	E. Cadenhead, Jr.	--	--	120	5.5	120	do	1,530	100	do	C,W	S	
508	R. Mahan	--	--	150	5.5	150	do	1,542	20	do	C,E	D	
509	do	--	--	150	5.5	150	do	1,545	20	do	N	N	
601	H. R. Stasney	--	--	200+	5.5	--	Strawn Group	1,510	29	Oct. 17, 1962	N	N	
602	P. Barker	--	--	90	5.5	90	Trinity Group	1,510	40	do	C,W	S	Water sand reported 8 ft thick.
701	H. L. Moore	C. Whittenburg	1950	446	5.5	--	Strawn Group	1,321	60	do	C,W	D,S	Reported to sometimes flow.
702	-- Duffer	--	1937	446	5.5	--	do	1,301	--	--	C,N	N	
* 703	Mrs. C. B. McBride	J. Williams	1946	315	7 5.5	32 32-315	Strawn Group	1,343	--	--	C,W	D,S	Reported has flowed in past.
704	V. J. McAdams	--	--	20	48	20	do	1,310	5	Oct. 17, 1962	C,E	S	
* 705	do	J. Whittenberg	1960	490	5.5	490	do	1,323	--	--	S,E	D,S	Water sands reported at 30 and 490 ft.
706	Mrs. T. Snow	--	1951	484	5.5	480	do	1,365	25	Oct. 17, 1962	C,W	N	Reported strong well.
801	K. Boyd	--	--	219	5.5	--	do	1,370	22	Oct. 12, 1962	N	N	
802	do	L. Boenicke	--	190	5.5	190	do	1,390	35	do	C,W	N	
901	P. Barker	--	--	130	5.5	130	Trinity Group	1,460	40	do	C,W	S	Water sand reported 7 ft thick.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*41-26-201	H. M. Stone	--	--	Spring	--	--	Trinity Group	1,390	(+)	--	Flows	S	
202	-- Watkins	--	--	39	5.5	--	Strawn Group	1,360	21	Oct. 18, 1962	N	N	
203	do	--	--	23	24	--	do	1,355	17	Dec. 18, 1962	C,W	N	
* 204	H. M. Stone	--	--	Spring	--	--	Trinity Group	1,362	(+)	--	Flows	S	
301	J. Burrus	--	--	91	5.5	--	do	1,450	42	Oct. 18, 1962	C,E	N	
302	do	--	--	134	5.5	--	do	1,470	56	do	C,E	N	
303	H. M. Stone	G. Bolton	1951	110	5.5	110	do	1,425	65	do	C,E	S	Water sand reported from 95 to 97 ft.
304	do	do	1961	110	6	110	do	1,425	65	do	C,E	D,S	Do.
* 305	do	do	1961	110	6	110	do	1,425	65	do	C,W	D	Do.
* 306	J. B. Bettis	--	--	99	8 ?	5 5-99	do	1,310	25	Oct. 27, 1962	N	N	
* 307	do	R. M. Virdell	1961	104	5.5	104	do	1,401	59	do	N	N	
308	do	do	1961	290	--	--	Strawn Group	1,404	--	do	N	N	Water sand reported at 90 ft. Well plugged back to 135 ft.
* 309	do	--	--	135	5.5	135	Trinity Group	1,402	--	do	C,E	D,S	Water sand reported at 110 ft.
310	do	R. M. Virdell	1961	95	6	90	do	1,380	59	do	J,E	S	
311	do	--	--	Spring	--	--	do	1,360	(+)	--	Flows	S	
* 312	H. Stockton	R. M. Virdell	1961	296	6	296	Strawn Group	1,370	80	Oct. 27, 1962	C,E	D,S	Reported weak well.
* 313	do	--	1912	21	36	21	do	1,339	10	do	B,H	D,S	
314	"Toss" Coffey	--	--	13	5.5	--	Alluvium	1,325	--	--	C,E	S	
* 33-101	E. Posey	--	1937	430	5.5	--	Strawn Group	1,370	--	--	C,W	S	
42-07-501	H. Stalcup	--	--	Spring	--	--	Wichita Group	1,590	(+)	--	Flows	S	
502	do	--	--	67	--	--	do	1,610	--	--	--	N	
* 503	do	--	--	Spring	--	--	do	1,530	(+)	--	Flows	S	
* 504	W. B. Morgan	--	--	84	10	--	do	1,600	57	Apr. 10, 1962	C,W	N	
* 505	do	--	--	110	--	--	do	1,615	50	do	J,E	D,S	
506	H. A. Jolley	--	--	159	6	--	do	1,680	135 133	Nov. 29, 1937 Apr. 9, 1962	C,W	N	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*42-07-507	C. Bunnell	--	--	60	--	--	Wichita Group	1,685	--	--	C,W	D,S	
* 508	H. A. Jolley	--	--	66	--	--	do	1,670	53	Apr. 9, 1962	C,W	S	
* 601	L. C. Sawyer	--	--	62	--	--	do	1,665	38	Apr. 10, 1962	C,W	D,S	
* 602	B. D. Carr	--	--	--	--	--	?	1,655	--	--	C,W	S	
* 603	do	--	--	63	6	--	Trinity Group	1,655	46	Apr. 13, 1962	J,E	D,S	
* 604	P. Barnes	--	--	60	8	--	do	1,660	--	--	J,E	D,S	
* 605	A. H. Conner	--	--	65	6	--	do	1,650	--	--	C,E	D,S	
801	A. K. Wallace	--	--	90	8	--	Wichita Group	1,550	77 72	Nov. 3, 1960 Apr. 11, 1962	C,W	S	Water sand reported from 65 to 80 ft.
* 802	Lamkin Bros.	--	--	Spring	--	--	do	1,690	(+)	--	Flows	--	
803	A. A. Martin	--	--	Spring	--	--	do	1,545	(+)	--	Flows	--	
804	W. D. O'Brien	--	--	100	--	--	do	1,584	--	--	C,H	N	
* 805	M. A. Strawn	--	--	16	36	--	do	1,543	--	--	--	N	
806	W. M. Riley estate	--	--	80	6	--	do	1,570	--	--	C,W	N	
807	Lamkin Bros.	R. M. Virdell	--	185	--	--	Cisco Group	1,602	--	--	C,W	N	
* 808	A. K. Wallace	do	1960	90	6	90	Wichita Group	1,555	--	--	C,W	S	
* 809	do	--	--	94	6	--	do	1,570	72	Dec. 10, 1937	C,W	D,S	
* 901	V. C. Hill	--	--	40	36	--	do	1,550	33	Apr. 13, 1962	C,W	N	
* 902	H. A. Jolley	--	--	13	36	--	do	1,545	12	Apr. 10, 1962	J,E	D	
* 903	Mrs. J. Shelton	--	--	14	72	--	do	1,520	7	do	B,H	N	
* 08-101	S. Willis	--	--	34	42	--	Cisco Group	1,590	13	May 8, 1962	B,H	S	
* 201	R. O. Kellar	R. O. Kellar	--	150	--	--	do	1,510	30	do	J,E	D,S	
* 301	Mary Kent	--	--	90	5	--	do	1,485	18	May 10, 1962	B,H	S	
601	O. T. Houston	--	--	17	8	--	Canyon Group	1,525	6	Apr. 18, 1963	B,H	D	
* 602	C. C. Hardwick	--	--	140	5.5	140	do	1,540	--	--	C,W	D,S	Depth reduced to 140 ft. Pumps dry in 2 hours.
* 701	H. H. Chastain	R. M. Virdell	--	121	5	--	do	1,560	40	May 11, 1962	C,E	D	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*42-08-702	B. Carmichael	R. M. Virdell	--	146	5	--	Canyon Group	1,563	66	May 11, 1962	C,E	D,S	
* 703	T. W. Palmer	do	--	130	5	--	do	1,555	--	--	C,W	D,S	
* 801	W. W. Roberts	J. Tabor	--	52	8	--	Cisco Group	1,430	15	May 11, 1962	J,E	D	Water reported at 19 and 35 ft.
* 802	P. J. Digernes	J. Dallas	--	60	5	--	do	1,440	--	--	J,E	D	
* 803	T. W. Palmer	--	--	9	--	--	do	1,601	2 5	Jan. 11, 1937 May 11, 1962	N	N	
* 15-201	J. J. Edington	--	1927	82	6	82	Wichita Group	1,530	--	--	C,E	D,S	
501	W. Lucas	--	--	54	--	--	Cisco Group	1,470	45	June 19, 1962	C,W	N	
* 502	L. E. George	--	1910	125	6	125	do	1,537	--	--	C,E	D,S	
* 601	do	--	--	110	5.5	110	do	1,522	55	June 19, 1962	C,W	N	
* 602	do	--	1890	20	60	6	do	1,500	12	June 20, 1962	--	N	
603	do	--	--	20	--	--	do	1,510	19	do	C,W	N	
* 801	W. J. Byler	--	--	130	--	--	do	1,542	85	do	C,E	D,S	
* 802	Mrs. I. Hickman	--	1910	142	--	--	do	1,517	30	do	C,W	S	
* 803	Mrs. N. Byler	--	--	127	--	--	do	1,550	62	June 18, 1962	C,W	S	
* 804	G. Teeters	--	1925	110	7	--	do	1,630	40	do	C,W	D,S	
* 805	J. V. Pierce	--	--	100	--	--	do	1,610	60	do	C,W	D,S	
806	Mrs. M. W. Bull	--	--	104	5.5	104	do	1,622	69	do	N	N	
* 807	H. H. Vessel	--	--	--	--	--	?	1,630	--	--	--	D,S	
* 808	J. S. Ragsdale	--	1928	180	6 5	110 110-180	Cisco Group	1,630	100	June 18, 1962	C,W	D,S	Water sand reported at 160 ft.
* 809	-- York	--	--	80	--	--	do	1,625	25	June 15, 1962	C,W	D,S	
* 810	M. W. Davis	--	--	103	5.5	--	do	1,645	24	do	N	N	
* 811	M. A. Richmond	--	--	48	6	--	do	1,621	27	June 19, 1962	C,W	D,S	
812	do	--	--	152	--	--	do	1,619	33	do	C,W	N	
* 813	W. W. Roser	--	--	171	6	171	do	1,570	80	do	C,W	D,S	
* 814	G. W. Benny	--	1920	50	6	50	do	1,640	26	June 15, 1962	C,W	D,S	Water sand reported at about 35 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-15-901	E. Burnett	--	--	70	5	70	Cisco Group	1,560	68	June 20, 1962	C,E	N	
* 902	A. Oliver	--	--	100+	6	--	do	1,544	--	--	J,E	D	
* 903	J. B. Rice, Jr.	--	--	40	6	40	do	1,520	18	June 20, 1962	C,E	S	
* 904	J. B. Snider	--	--	150	--	--	do	1,512	--	--	J,E	D,S	
* 905	R. H. Owens	--	--	90	--	--	do	1,510	--	--	J,E	D,S	Originally drilled as oil test.
* 906	N. A. Parsons	--	--	20	6	20	do	1,544	13	June 20, 1962	C,H	D	
* 907	A. V. Dodds	--	--	35	5	35	do	1,548	25	June 21, 1962	B,H	D,S	
* 908	Mrs. R. Ganns	--	--	50	5	--	do	1,560	34	do	C,H	N	
* 909	H. T. Melton	--	1959	95	9	--	do	1,568	26	June 25, 1962	N	N	
* 910	Mrs. J. G. Leath	--	--	76	7	--	do	1,570	67	June 21, 1962	C,W	D,S	Water not used for human consumption.
911	do	--	--	Spring	--	--	do	1,538	(+)	--	Flows	S	
912	H. T. Melton	--	--	60	5	60	do	1,580	37	June 21, 1962	C,W	D,S	Water not used for human consumption.
* 913	J. R. Shell	--	1958	86	8	86	do	1,590	26	do	C,E	D,S	
914	H. Wilson	--	--	31	5.5	31	Trinity Group	1,590	21	June 14, 1962	C,W	N	
* 915	Z. Harris	--	1955	308	--	308	Canyon Group	1,565	200	do	C,E	D	
* 916	T. J. Hall	--	1922	150	--	150	Cisco Group	1,547	68	June 5, 1962	C,W	D,S	Water sand reported at 120 to 140 ft.
917	W. D. Coppic	--	1920's	250	--	--	Canyon Group	1,590	--	--	N	N	Reported weak well when drilled to 200 ft, stronger well when deepened to 250 ft.
* 918	J. A. Nelson	--	--	260	--	--	do	1,590	--	--	C,W	D,S	
* 16-402	O. Lehman	W. Lehman	1943	40	5.5	--	Cisco Group	1,507	29	May 14, 1962	B,H	D,S	Reported weak well.
* 403	G. Reed	R. M. Virdell	1962	236	6	--	Canyon Group	--	90	July 9, 1962	C,W	--	Water sand reported from 220 to 236 ft.
* 404	J. N. Wilson	J. Tabor	1952	245	5.5	245	do	1,510	90	do	C,E	D,S	Water sand reported at 234 ft.
* 405	C. Harris	--	1947	213	6	213	do	1,525	93	do	C,E	D,S	Reported strong well with water sand from 187 to 213 ft.
* 406	W. Lehman	W. Lehman	1925	229	5.5	229	do	1,585	65	do	C,W	D,S	Water sand reported at 224 ft.
* 407	do	do	1946	121	5.5	121	Cisco Group	1,585	86	do	C,H	S	Water sand reported at 86 ft.
* 408	O. Lehman	do	1943	166	5.5	218	Canyon Group	1,505	72	May 14, 1962	C,W	N	Water sand reported at 215 ft. Well caved.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-16-409	G. Reed	R. M. Virdell	1962	260	5.5	260	Canyon Group	1,505	245	May 14, 1962	N	N	
501	S. Gentry	--	1947	200+	5	--	do	1,561	--	--	C,E	N	Reported weak well. Abandoned.
* 701	J. Tilton	--	--	108	--	--	Cisco Group	1,565	63	May 14, 1962	C,E	N	
* 702	Reflex Glass Bead Co.	R. M. Virdell	1960	120	--	--	do	1,610	--	--	C,E	D	
703	R. F. Hatcock	--	--	120	5.5	--	do	1,615	--	--	C,E	N	Water reported unfit for human consumption.
* 704	W. Z. Ferguson	R. M. Virdell	1952	185	6	--	Canyon Group	1,601	85	May 14, 1962	C,E	D,S	Reported weak well.
* 705	V. D. Cavel	--	1932	260	5.5	260	do	1,603	75	do	C,W	D,S	Water sands reported at 115, 200, and 235 to 260 ft. Not used for human consumption.
706	S. Bowen	--	--	132	5.5	--	Cisco Group	1,590	84	1963	C,E	N	
* 707	F. Blair	--	1930	340	3	340	Canyon Group	1,590	40	do	C,W	D	
708	do	--	1930	340	--	--	do	1,605	40	do	C,W	N	
* 709	J. A. Bailey	--	--	19	--	--	Trinity Group	1,610	16	do	J,E	D,S	Reported weak well.
* 710	B. R. Cason	--	1917	19	42	--	do	1,590	14	May 15, 1962	C,W	D,S	
711	F. Blair	--	1932	275	--	--	Canyon Group	1,605	60	do	C,W	N	
* 712	J. E. Priddy	J. Lattimore	1950	25	6	25	Trinity Group	1,600	12	May 18, 1962	J,E	D,S	
* 713	T. Duncan	--	1940	260	6	--	Canyon Group	1,560	80	do	C,E	D,S	Water sand reported at 225 ft.
* 714	J. Everett	--	--	320	--	--	do	1,610	60	do	C,E	D	
715	J. T. Evans	--	--	150	5.5	--	Cisco Group	1,610	--	--	C,W	N	
* 716	C. M. Penn	--	--	160	--	--	do	1,608	--	--	C,E	D	
* 717	O. Koch	--	--	25	48	--	Trinity Group	1,610	17	May 21, 1962	C,W	D,S	
* 718	C. A. Burger	--	1946	40	--	--	do	1,605	--	--	J,E	D	
* 719	F. Baker	--	--	18	36	--	do	1,608	11	May 22, 1962	C,W	N	
* 720	Mrs. M. Blair	--	--	14	36	--	do	1,605	10	do	C,W	S	Reported dry for 10 years but recently showed water.
721	J. Tilton	R. M. Virdell	1962	204	5.5	204	Canyon Group	1,545	104	do	E	N	
* 722	W. D. Coppic	--	--	365	5.5	365	do	1,588	86	do	C,W	D,S	
* 723	do	--	--	8	48	8	Cisco Group	1,585	5	May 18, 1962	Cf,E	D	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*42-16-724	J. T. Evans	--	--	290	5.5	--	Canyon Group	1,590	210	May 18, 1962	C,W	S	
* 801	J. Harper	--	--	118	--	--	do	1,555	50	June 12, 1962	N	N	
* 802	J. Tilton	--	--	60	6	60	do	1,565	58	do	N	N	
803	R. B. Cason	R. M. Virdell	1962	129	5	129	do	1,585	67	May 22, 1962	C,W	D	Water sands reported at 100 and 128 ft.
804	R. Perry	--	--	127	7	--	do	1,586	49	May 28, 1962	C,W	N	
* 901	W. Thomason	--	--	16	48	--	do	1,487	3	Sept. 14, 1962	B,H	N	
* 902	Wade Thomason	--	1922	21	24	--	do	1,561	10	do	B,H	N	
* 903	L. Q. Miller	--	--	Spring	--	--	do	1,518	(+)	--	Flows	S	
* 904	M. Polk	--	--	Spring	--	--	do	1,520	(+)	--	Flows	S	
* 23-201	G. Woolridge	--	1955	144	5	--	Cisco Group	1,595	43	June 19, 1962	N	N	
202	do	--	1932	180	6	--	do	1,620	72	Nov. 27, 1937	C,W	N	Water sand reported from 181 to 185 ft.
203	--	--	--	106	6	--	do	1,595	44	June 28, 1962	N	N	
204	J. J. Starkey	--	--	60	--	--	do	1,568	--	--	J,E	N	
* 205	T. B. Mosier	--	1962	98	5	98	do	1,567	29	June 28, 1962	J,E	D,S	Water has very strong odor of hydrogen sulfide.
* 206	F. C. Mosier	--	1959	60	5	60	do	1,550	--	--	J,E	D,S	Water reported at 38 ft.
* 207	O. Stephens	--	1893	27	40	--	do	1,545	9 7	Nov. 25, 1937 June 19, 1962	C,W	N	
* 208	F. L. Anderson	--	1954	37	4	--	do	1,558	15	July 1962	J,E	D,S	
* 209	W. B. Seymore	--	--	54	5	--	do	1,583	27	July 2, 1962	C,E	D,S	
210	V. K. Brooks	--	--	50	6	--	do	1,580	--	--	N	N	
* 211	C. Ryan	--	--	43	--	--	do	1,570	28	July 2, 1962	C,W	N	
* 212	S. Stevens	--	--	44	7	--	do	1,570	30 42	Feb. 26, 1938 July 2, 1962	C,W	S	
213	O. B. Strange	--	1909	70	6	--	do	1,560	50	June 1962	C,W	N	
* 214	R. A. Perry	--	--	30	6	--	do	1,555	16	July 1962	J,E	D,S	
* 215	do	--	1961	83	9	30	do	1,560	16	July 2, 1962	N	N	Water sand reported at 25 ft.
* 301	J. Brown	--	1950	68	5	--	do	1,623	61	June 15, 1962	C,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*42-23-302	E. Glenn	--	--	52	5	--	Cisco Group	1,608	33	June 15, 1962	N	N	
* 303	J. S. Ragsdale	--	--	30	72	--	do	1,628	22	do	C,W	D	
304	O. Welch	--	1928	295	6	--	do	1,623	--	--	C,W	S	
* 305	G. Stewart	--	--	51	5	--	do	1,615	33	June 14, 1962	N	N	
* 306	do	--	--	29	44	--	Trinity Group	1,623	19	do	J,E	D,S	
* 307	F. E. Strange	--	--	69	5	--	Cisco Group	1,603	26	do	C,W	D	
308	A. Brewer	--	--	340	--	--	Canyon Group	1,612	--	--	C,W	N	
* 309	T. J. Hall	--	1928	200	--	--	do	1,585	--	--	C,W	S	
* 310	L. E. Wickson	--	--	266	5	--	do	1,595	125	June 14, 1962	S,E	D,S	
* 311	J. C. Hester	--	--	65	--	--	Cisco Group	1,630	--	--	C,W	D,S	
* 312	H. O. Inglet	--	--	200	--	--	do	1,643	--	--	C,W	D,S	
* 313	W. M. Homer	--	1958	145	5	--	do	1,640	120	June 1962	C,E	D	
* 314	R. Gable	--	--	--	--	--	?	1,637	--	--	J,E	D,S	
* 315	J. A. Swenson	--	1935	20	6	--	Cisco Group	1,632	--	--	C,E	D,S	
* 316	do	--	1914	29	13	--	do	--	17	June 28, 1962	N	N	
* 317	E. Davenport	--	1914	21	36	--	Trinity Group	1,621	19	July 12, 1962	J,E	D,S	
* 318	F. Morgan	--	--	24	36	--	do	1,639	19	July 23, 1962	S,E	D	
319	H. S. Self	--	1952	86	--	--	Cisco Group	1,632	22	July 1962	C,W	S	
320	do	--	--	26	36	--	Trinity Group	1,625	22	do	J,E	D	
321	R. Martin	--	--	20	36	--	do	1,625	16	July 23, 1962	H	S	
322	B. D. Barnett	B. Martin	--	60	5	--	Cisco Group	1,643	--	--	J,E	N	
* 323	L. Walker	--	--	20	36	--	Trinity Group	1,613	14	July 24, 1962	H	D	Well reported 16-ft diameter at bottom.
* 324	E. Davenport	--	--	70	6	--	Cisco Group	1,552	--	--	C,W	D	
* 325	C. C. Hanley	--	--	165	5	--	do	1,615	--	--	C,W	D,S	
326	J. L. Parnell	B. Martin	1951	50	5	45	do	1,605	18	Aug. 1962	C,E	N	Water reported at 18 and 34 ft.
327	C. Ford	--	--	17	36	--	Trinity Group	1,605	8	July 24, 1962	S,E	N	

See footnote at end of table.

Table 3.--Records of Wells and Springs. Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-23-328	J. B. Howard	--	1950	50	7	--	Cisco Group	1,618	18	July 24, 1962	N	N	
329	D. D. Tabor	--	--	20	20	--	Trinity Group	1,626	18	Sept. 5, 1962	C,E	N	
* 330	J. O. Howell	B. Martin	1962	44	5	44	Cisco Group	1,628	15	do	N	D,S	Water sand reported at 35 ft.
* 331	W. P. Fletcher	--	--	44	24	44	do	1,626	25	do	S,E	S	
* 332	R. A. Price	--	1910	38	24	--	do	1,636	18	do	H	D,S	Original depth 50 ft.
* 333	O. A. Flynn	--	1912	32	22	32	do	1,629	19	do	J,E	D	
* 334	W. W. Pate	--	1943	38	5.5	--	do	1,643	27	Sept. 6, 1962	N	N	Reported drilled as oil test to 1,196 ft, plugged back to 38 ft.
* 335	W. C. King	J. Latimer	1945	32	5.5	--	do	1,652	27	do	N	N	
* 336	C. D. Parnell	--	1930's	62	5.5	--	do	1,654	55	do	C,E	D,S	
* 337	E. B. Elliott	--	1927	37	6	--	do	1,604	11	Sept. 12, 1962	J,E	D	
* 338	A. L. Klein	--	1912	26	36	--	Trinity Group	1,608	20	Sept. 13, 1962	J,E	D	
* 339	G. Stewart	--	1963	52	6	52	do	--	37	do	J,E	D,S	
* 501	O. Strange	--	--	11	36	--	Cisco Group	1,540	6	July 10, 1962	N	N	
* 502	F. Strange	--	1935	600	8	100	do	1,548	40	July 1962	C,W	S	
* 503	O. Strange	--	1938	600	8	100	do	1,538	25	do	C,W	D,S	Water sand reported from 30 to 60 ft.
* 504	do	--	1935	60	5	60	do	1,544	22	do	C,W	D,S	
* 505	C. Hunter	--	1932	65	5	--	do	1,538	18 25	Mar. 1, 1938 July 1962	C,W	D,S	
506	A. E. Richmond	--	--	13	5	--	do	1,513	11	July 3, 1962	N	N	
* 507	J. Browder	--	--	11	48	--	do	1,501	7	July 10, 1962	C,W	D,S	
* 508	A. E. Conklin	--	--	16	42	--	do	1,510	7	do	S,E	D,S	
509	J. Yantis	--	--	14	48	--	do	1,501	7 9	Feb. 7, 1938 July 10, 1962	C,W	N	
* 601	J. A. Cates	--	--	40	36	--	do	1,554	28	July 12, 1962	S,E	D,S	
* 602	Mrs. L. A. Pate	--	--	28	--	--	Trinity Group	1,605	--	--	S,E	D,S	
603	J. Early	--	--	15	36	--	Cisco Group	1,534	4	July 1962	N	N	
604	do	C. Word	1953	350	4	350	Canyon Group	1,545	30	July 14, 1962	C,E	N	Water sand reported at 340 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-23-605	C. C. Hanley	B. Martin	--	165	5	--	Cisco Group	1,595	83	July 13, 1962	C,W	N	
* 606	J. A. Kennedy	--	--	14	36	--	Trinity Group	1,591	10	Aug. 14, 1962	H	D,S	
* 607	do	--	--	13	36	--	do	1,598	6	do	C,W	D,S	
* 608	A. H. Dean	--	--	15	19	--	do	1,607	11	do	N	N	
* 609	do	--	--	260	5	260	Canyon Group	1,613	--	--	C,E	D,S	
* 610	P. Jarratt	--	--	36	8	--	Cisco Group	1,610	15	Aug. 14, 1962	J,E	D	
* 611	do	--	--	18	36	--	Trinity Group	1,609	14	do	C,H	S	
* 612	J. Shultz	--	1945	18	--	--	Cisco Group	1,605	--	--	C,W	D	
* 613	do	--	--	10	36	--	Trinity Group	1,604	7	Aug. 13, 1962	H	S	
* 614	N. McGaughey	N. McGaughey	--	15	36	--	do	1,598	11	do	H	N	
615	L. W. Boyd	--	--	20	36	--	do	1,614	11	Aug. 14, 1962	C,W	N	
* 616	W. J. Strickland	--	--	16	5	--	do	1,595	--	--	C,W	D	
617	J. C. Traweek	--	--	200	5.5	--	Canyon Group	1,613	100	Aug. 14, 1962	C,W	N	
* 618	do	B. Martin	1932	210	5	--	do	1,600	--	--	C,W	D,S	
* 619	G. Barnes estate	do	1934	122	5	--	do	1,565	69	Aug. 12, 1962	C,W	D	
620	W. McGahee	--	--	212	--	--	do	1,573	--	--	C,W	N	
* 621	P. Geron	--	--	300	--	--	do	1,548	--	--	C,W	S	
* 622	H. Harlowe	--	--	300	--	--	do	1,570	--	--	C,W	D,S	
* 623	L. Sikes	--	--	315	4	--	do	1,569	120	July 1962	C,E	D	
* 624	R. N. Greer	--	--	160	8	--	do	1,594	108	Feb. 7, 1938	C,W	S	
625	W. B. Price	G. Nistle	1916	320	5	--	do	1,590	--	--	C,W	N	
* 626	J. L. Morris	--	--	--	5	--	?	1,554	96	Aug. 10, 1962	C,W	D,S	
627	P. E. Fletcher	--	1946	68	5	--	Cisco Group	1,537	36	Sept. 5, 1962	C,E	N	
* 801	C. F. McCormick	--	1906	13	66	--	do	1,510	3	July 11, 1962	C,W	D	
802	J. Arnold	--	--	8	42	--	do	1,462	6	do	N	N	
* 803	M. E. French	--	--	14	36	--	do	1,537	13	do	C,E	D	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-23-804	F. Anderson	--	1922	245	--	--	Canyon Group	1,538	90	July 1962	C,W	N	
901	L. Sikes	--	--	82	5	--	Cisco Group	1,575	69	July 11, 1962	C,W	S	
* 902	R. Pierce	--	--	300	5	--	Canyon Group	1,575	--	--	C,W	D,S	
903	T. Huggins	--	1926	34	5	34	Cisco Group	1,590	--	--	N	N	Abandoned.
904	do	--	--	180	5.5	180	Canyon Group	1,593	40	July 11, 1962	N	N	Abandoned. Water reported salty.
905	do	--	1924	18	36	5	Cisco Group	1,590	13	do	N	N	
* 906	do	--	1902	48	5	90	do	1,595	12	do	C,G	D	
907	do	--	1926	322	5	322	Canyon Group	1,563	77	do	C,W	N	Water sand reported from 285 to 322 ft.
908	J. W. Young	--	--	250	5.5	--	do	1,580	--	--	C,W	S	
909	B. Stephens	--	--	213	5.5	213	do	1,575	74	Aug. 10, 1962	N	N	
910	G. McClathey	--	1931	72	5.5	--	do	1,471	24	Sept. 20, 1962	C,H	N	
911	J. W. Coffman	--	1890	50	5.5	50	do	1,475	22	do	C,H	N	
24-101	J. M. Bishop	--	1923	145	7	--	Cisco Group	1,653	70	do	C,W	D,S	
102	T. Ford	C. L. Mathis	1960	265	5	265	Canyon Group	1,625	136	do	C,E	D,S	
* 103	Bangs School District	--	--	16	54	--	Trinity Group	1,605	10	May 22, 1962	C,W	N	
104	--	--	--	158	7	--	Cisco Group	1,612	120	May 23, 1962	C,W	N	
105	C. C. Gamblin (W. A. Priddy)	--	1903	16	48	--	Trinity Group	1,610	10	May 22, 1962	J,E	S	
106	W. A. Hood (J. W. Johnson)	J. Latimer	1945	153	4	153	Cisco Group	1,613	133	May 31, 1962	C,W	D	Produces about 2 bbl/day.
107	J. R. Brush	--	--	40	5	40	do	1,618	14	do	C,W	D,S	
* 108	do	--	--	110	5	110	do	1,620	16	do	--	N	New well, not used as of May 1962.
109	W. A. Priddy	--	1952	16	54	--	Trinity Group	1,611	11	May 22, 1962	J,E	D,S	
* 110	T. C. Dodd	--	--	46	5	46	Cisco Group	1,645	39	May 31, 1962	--	N	
111	do	--	--	200	--	--	Canyon Group	1,675	--	--	C,E	D,S	
112	M. Humphrey	--	1927	100	10	40	Cisco Group	1,628	20	May 31, 1962	C,W	D,S	Water sand reported at about 26 ft.
113	T. Moore	--	1949	55	4	55	do	1,638	32	do	--	N	Water sand reported at 34 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-24-114	A. G. Norton	--	1933	26	54	--	Trinity Group	1,635	23	May 23, 1962	J,E	D	
* 115	J. A. Bell	S. Moser	1903	22	36	--	do	1,613	16	Sept. 14, 1962	C,E	D	
* 116	H. O. Wilson	R. M. Virdell	1962	39	5	39	Cisco Group	1,625	19	do	J,E	D	
* 117	M. Hereford	--	--	21	36	--	Trinity Group	1,617	17	Sept. 13, 1962	B,H	D,S	
* 118	H. Wilson	--	--	230	--	--	Canyon Group	1,560	--	--	C,W	S	
* 119	L. E. Wickson	--	--	6	36	--	Trinity Group	1,595	2	June 6, 1962	C,W	N	
120	W. Lewis	--	--	14	5	--	do	1,624	11	do	--	N	
121	-- Stephens	--	--	228	--	--	Canyon Group	1,620	13	May 31, 1962	C,W	S	
122	A. M. Hall	--	--	9	36	--	Trinity Group	1,615	6	do	N	N	
* 123	D. Jennings	S. Power	1961	284	5.5	280	Canyon Group	1,624	--	--	C,E	D	Water sand reported at about 254 ft.
* 124	F. Day	E. Bleeker	1954	54	5.5	54	Cisco Group	1,638	29	May 31, 1962	J,E	D,S	Water sand reported from 30 to 35 ft, and weak water sand at 50 ft.
* 125	-- Garms estate	-- Harris	1927	18	48	--	Trinity Group	1,621	15	Sept. 8, 1962	C,H	N	
126	O. C. Koch	-- Kellogg	1924	40	5.5	40	Cisco Group	1,642	34	do	C,W	D	
* 127	T. M. Young	L. McDonald	1954	58	7	58	do	1,641	25	do	J,E	D,S	Water sands reported at 19 and 38 ft.
* 128	C. Horseman	--	--	25	54	25	Trinity Group	1,630	7	do	J,E	D,S	
* 129	D. S. Smith and Mrs. E. L. Nelson	--	--	17	115	17	do	1,625	15	do	J,E	D	Previously used to supply city of Bangs.
* 130	G. W. Williams	--	--	20	36	20	do	1,623	7	do	C,E	D	
* 131	C. Berry	--	1912	16	36	--	do	1,621	11	do	E	D	
* 132	Mrs. M. Morton	--	1912	16	54	--	do	1,617	11	do	C,H	N	
* 133	J. D. Eason	--	1952	19	48	--	do	1,613	9	do	C,E	D	
134	A. B. Cullins	--	--	13	36	--	do	1,601	5	Sept. 13, 1962	B,H	N	
135	H. O. Wilson	B. Martin	1962	40	6	40	Cisco Group	1,647	18	do	J,E	S	
* 136	R. D. Sanderson	J. Latimer	1947	260	5	218	Canyon Group	1,642	--	--	C,W	D,S	
* 137	L. R. Guyer	--	1928	235	8	--	do	1,650	20	Sept. 13, 1962	C,W	D	Reported strong well with water sand at 235 ft. Originally as oil test.
138	Mrs. B. Garms	--	1932	34	--	--	Cisco Group	1,653	--	--	C,W	N	Water sand reported at 27 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-24-139	Mrs. B. Garms	--	--	34	--	--	Cisco Group	1,655	--	--	N	N	
140	W. L. Young	--	--	140	5.5	--	do	1,645	70	Sept. 13, 1962	C,W	--	
141	H. Sikes	--	1912	19	36	--	Trinity Group	1,629	12	Aug. 31, 1962	N	N	
* 142	B. Allen	B. Martin	1962	203	5.5	203	Canyon Group	1,635	100	do	S,E	D,S	Water sand at 187 ft.
* 143	H. C. Mathews	--	1907	125	5.5	125	do	1,612	30	do	C,E	D	Produces about 2 bbl/day.
144	L. R. Graves	--	1952	160	5.5	160	do	1,650	80	do	C,E	N	
201	L. A. Horton	--	--	105	--	--	do	1,565	80	do	C,E	N	
* 202	do	--	--	23	54	--	Trinity Group	1,565	4	May 29, 1962	--	N	
* 203	R. M. Perry	--	--	22	60	--	Canyon Group	1,563	14	May 28, 1962	--	N	
* 204	E. R. Haynes	--	--	25	60	--	do	1,560	13	do	--	N	
* 205	A. B. Culberson	--	--	27	48	--	Trinity Group	1,565	22	do	S,E	S	
* 206	B. O. Boler	--	--	23	36	--	do	1,615	17	May 29, 1962	--	D,S	
207	do	--	1957	46	--	--	do	1,627	--	--	J,E	D	
208	V. P. Pruett	--	--	40	5.5	--	do	1,615	--	--	J,E	D,S	
209	J. H. Sanderson	--	--	76	5	--	Canyon Group	1,575	52	May 29, 1962	--	N	
210	-- Cheatham estate	-- Hellums	1903	77	5.5	--	do	1,583	--	--	H	D,N	Water sands reported at 16 and 43 ft.
* 211	do	--	1883	28	48	--	do	1,582	25	Sept. 3, 1962	C,W	D	
* 212	Mrs. L. A. Spain	--	1903	16	48	--	Trinity Group	1,590	14	do	H	S,N	
301	C. L. Mathews	--	--	17	36	--	Canyon Group	1,590	13	Sept. 17, 1962	C,W	N	
* 302	H. E. Bell	--	--	26	36	--	do	1,598	20	Sept. 19, 1962	C,W	N	
303	do	--	--	18	48	--	do	1,596	17	Sept. 26, 1962	H	N	
* 401	D. Jennings	--	1918	157	5.5	--	do	1,615	88	Aug. 14, 1962	N	N	
402	C. Carr	-- Kellogg	1927	150	5.5	--	do	1,603	--	--	C,W	N	
403	do	-- Black	1909	123	5.5	--	do	1,598	84	Aug. 14, 1962	C,W	N	
* 404	C. Mathews	B. Martin	1930's	125	5.5	--	do	1,601	--	--	C,W	D,S	
405	Mrs. R. Childress	J. Latimer	--	123	5.5	--	do	1,624	73	Aug. 14, 1962	C,W	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-24-406	-- Gwathmey	--	--	250	5.5	--	Canyon Group	1,630	110	Aug. 14, 1962	C,W	N	Plugged and abandoned.
* 407	M. H. Hill	--	1887	65	24	--	do	1,566	11	Aug. 15, 1962	H	N	
* 408	do	--	1887	20	24	--	Cisco Group	1,565	14	do	H	N	
409	do	--	--	85	5.5	--	Canyon Group	1,551	12	do	N	N	
410	do	B. Martin	1932	94	5.5	--	do	1,555	15	do	C,W	N	
411	do	--	1931	60	5.5	--	do	1,562	15	do	C,W	N	Water sand reported 10 ft thick.
412	do	--	1948	65	6	--	do	1,565	50	do	J,E	S	Water sand reported 12 ft thick.
* 413	do	--	1943	50	6	--	do	1,575	15	do	J,E	D,S	Do.
414	-- Gwathmey	--	1900	15	36	--	do	1,635	5	do	H	N	
* 415	R. Y. Starkey	-- Tongate	1903	100	5.5	--	do	1,598	--	--	C,W	D,S	
416	W. B. Seymore	--	--	147	5.5	--	do	1,555	58	Aug. 15, 1962	C,W	S	
* 417	J. J. Stanley	J. Latimer	1942	60	5.5	--	do	1,565	--	--	C,W	D,S	
* 418	M. Boysen	B. Martin	1948±	60	5.5	--	do	1,585	30	Aug. 15, 1962	C,W	S	Water-bearing limestone reported at 40 ft.
* 419	do	do	1903	130	5.5	--	do	1,629	--	--	C,W	S	Yields about 2 bbl/day.
* 420	W. B. Seymore	do	1928	118	5.5	--	do	1,562	66	Aug. 16, 1962	J,E	D	Originally drilled as gas test.
* 421	P. Barnes	-- Nestle	1930's	141	5.5	141	do	1,532	23	do	C,W	N	
* 422	S. Stephens	--	--	140	5.5	140	do	1,581	40	Aug. 23, 1962	C,W	S	
* 423	H. E. Wilson	R. M. Virdell	1959	145	6	145	do	1,589	50	do	J,E	D,S	Water sand reported at 120 ft.
424	M. H. Hill	Van Bevers	1932	50	11	--	do	1,590	13	Aug. 15, 1962	C,E	N	Water sand reported from 15 to 20 ft.
* 425	B. E. Harper	--	1937	110	6	110	do	1,574	40	do	C,W	S	
* 426	J. E. Whitesides	--	1924	18	5.5	18	do	1,615	12	do	C,W	S	
* 501	Mrs. G. M. Grooms	R. M. Virdell	1959	125	5.5	--	do	1,597	--	--	C,W	D,S	
502	do	--	1924	130	5.5	130	do	1,585	--	--	N	N	Water has hydrogen sulfide odor.
503	C. Grooms	--	--	156	10	--	do	1,595	97	Sept. 18, 1962	N	N	
* 504	do	--	--	130	5.5	--	do	1,605	--	--	C,W	S	
505	do	--	--	130	5.5	--	do	1,608	--	--	C,W	N	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*42-24-506	C. Grooms	--	--	84	5.5	84	Canyon Group	1,595	--	--	C,W	S	
* 507	Mrs. -- Humphreys	--	1887	50	4	--	do	1,598	--	--	C,E	D	
* 508	J. E. Whitesides	--	1885	19	36	--	do	1,612	14	Aug. 31, 1962	C,W	S	
* 509	do	--	--	16	36	--	Trinity Group	1,555	13	do	C,E	D,S	
* 510	do	R. Michael	1961	165	5.5	165	Canyon Group	1,566	50	do	C,W	S	Water sand reported at 155 ft.
511	-- Thomas estate	--	1900	90	5.5	--	do	1,554	12	do	C,E	N	
* 512	H. Sikes	B. Martin	1938	20	3	20	Trinity Group	1,528	13	Aug. 30, 1962	C,W	S	
* 513	J. Harper	--	1957	20	24	20	do	1,529	13	do	C,E	D	
* 514	do	T. Nestle	1930	55	5.5	20	Canyon Group	1,530	13	do	C,W	D,S	
601	J. Shelton	--	1862	20	36	20	do	1,582	--	--	H	S	
* 701	B. Stephens	--	1912	--	5.5 7	-- --	?	1,543	--	--	C,W	D,S	
* 702	do	--	1959	Spring	--	--	Cisco Group	1,535	(+)	--	Flows	S	Excavated 18 ft to limestone aquifer.
703	F. Howard	--	--	109	24	--	Canyon Group	1,512	24	Sept. 19, 1962	C,W	N	
* 704	R. A. Wigington	--	--	135	5.5	--	do	1,495	--	--	C,W	D,S	
* 705	O. J. Holleman	--	1922	140	4	140	do	1,500	70	Sept. 19, 1962	C,W	D	Water sand reported at 130 ft.
706	do	--	--	Spring	--	--	Cisco Group	1,485	(+)	--	Flows	S	
* 707	J. C. Horton	W. C. Whittenberg	1962	150	6	--	Canyon Group	1,565	16-18	Sept. 19, 1962	C,W	S	
708	W. W. Wilson	J. Joiner	1954	150	8	--	do	1,562	50	do	C,W	N	Water sand reported at 120 ft.
709	O. Welch	--	--	25	36	--	Cisco Group	1,564	7	do	J,E	S	
* 710	J. Horton	B. Martin	1950	118	5.5	--	Canyon Group	1,560	60	do	C,G	S	
* 711	do	--	1912	120	5.5	120	do	1,558	60	do	C,W	D	
712	W. Thomason	--	1922	161	5.5	--	do	1,541	22	Aug. 22, 1962	C,W	N	
713	-- McLeish	--	1942	30	5.5	--	Cisco Group	1,528	--	--	S,E	N	
* 714	D. Early	--	--	Spring	--	--	do	1,525	(+)	--	Flows	S	Excavated 10 ft.
715	do	--	--	--	5.5	--	?	1,525	--	--	N	S	
* 716	do	--	--	53	5.5	--	Canyon Group	1,535	14	1954	J,E	D,S	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-24-717	Y. Robnett	--	--	11	60	--	Canyon Group	1,515	7	Aug. 23, 1962	H	N	
* 718	H. Jones	J. Latimer	1940's	160	5	160	do	1,544	50	do	C,E	D,S	Water sand reported from 135 to 145 ft.
719	Y. Robnett	--	--	150	5.5	150	do	1,533	--	--	C,W	N	
720	H. Jones	J. Latimer	1951	160	5	160	do	1,521	50	Aug. 23, 1962	C,W	S	Water sand reported at 135 ft.
* 721	V. W. Wallace	--	1959	Spring	--	--	do	1,515	(+)	--	Flows	S	Excavated 10 ft.
* 722	B. Thomas	B. Martin	1951	160	3	--	do	1,585	80	Aug. 23, 1962	C,W	D,S	
* 723	do	--	1939	200	3	--	do	1,585	--	--	C,W	D,S	
* 724	Mrs. G. W. Guyer	-- Price	1902	145	5.5	--	do	1,576	--	--	C,W	D	
725	D. T. Sikes	L. McDonald	1942	60	3	--	do	1,550	45	Aug. 27, 1962	C,W	D,S	
726	W. Oden	--	1912	126	5.5	--	do	1,551	81	Aug. 24, 1962	C,W	N	
* 727	do	B. Martin	1958	157	3	--	do	1,498	130	do	C,E	D,S	Sand reported 16 ft thick.
728	-- Boenicke	do	1934	120	6	--	do	1,565	80	Aug. 27, 1962	C,W	N	
801	P. Gold	--	--	60	6	--	do	1,596	34	Aug. 29, 1962	C,W	N	
* 802	V. W. Wallace	J. Williams	1939	172	3	--	do	1,570	100	do	C,E	D,S	Water sand reported at 122 ft.
* 803	W. Frye	do	1942	100	6	--	do	1,515	60	do	C,W	S	Water sand reported at 80 ft.
804	W. Thompson	--	--	130	5.5	--	do	1,520	--	--	C,W	N	
901	F. H. Nicholson	--	1950	110	--	--	do	1,528	--	--	N	N	
902	E. L. Carter	--	1940's	94	5.5	--	do	1,565	31	Sept. 19, 1962	C,W	N	
* 903	D. C. Brown	State of Texas	1934	21	36	30	do	1,590	8	do	C,W	D	Original depth 30 ft.
* 31-201	Mrs. A. Forman	--	--	17	24	17	Cisco Group	1,460	13	Sept. 25, 1962	C,W	N	
* 202	A. F. Stewart	--	--	30	36	--	do	1,491	22	do	C,E	D,S	
203	-- Gutherie	--	--	33	24	--	do	1,495	19	do	C,W	N	
204	-- Woodridge	--	1917	33	36	--	do	1,480	17	Sept. 21, 1962	C,W	S	
* 205	do	B. Sharp and A. F. Miller	1942	38	48	--	do	1,527	18	do	C,E	D	
206	A. L. Cole	--	1937	23	36	23	do	1,487	12	Sept. 25, 1962	B,H	N	
* 207	W. G. McMurray	--	1930	28	24	--	do	1,502	20	do	J,E	N	

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
*42-31-208	A. L. Cole	--	1905	31	24	31	Cisco Group	1,479	14	Sept. 25, 1962	J,E	N	
209	do	--	1912	14	24	14	do	1,485	11	do	B,H	N	
* 210	R. Windham	--	--	Spring	--	--	do	1,460	(+)	--	Flows	D,S	
* 211	Mrs. S. R. Storm	-- McMurray	--	21	36	--	do	1,478	12	Sept. 25, 1962	J,E	D	
212	-- Reeves	--	1905	22	24	--	do	1,480	9	do	J,E	D	
* 213	C. B. Seymore	--	1922	30	24	--	do	1,497	16	Sept. 27, 1962	C,W	D,S	
* 214	do	--	1912	35	30	--	do	1,503	11	do	B,H	D	
301	C. Harris	--	1922	75	5.5	75	Canyon Group	1,470	22	Sept. 21, 1962	C,W	S	
* 302	do	--	1938	150	5.5	150	do	1,479	30	do	C,E	D	Water sand reported at 126 ft.
* 303	do	Jackson and Connally	1951	250	10	250	do	1,423	.5	do	N	N	Water sand reported at 12 ft, gas in sand at 250 ft.
304	G. L. Martin, Jr.	--	1912	18	10	--	do	1,463	13	Sept. 20, 1962	N	N	
305	L. Krause	--	--	13	24	--	Cisco Group	1,452	9	Sept. 25, 1962	J,E	D	
306	R. Windham	--	--	36	5.5	36	do	1,469	15	do	C,E	D,S	
* 307	A. F. Miller	-- Kellogg	1922	210	5.5	210	Canyon Group	1,470	--	--	C,E	D,S	Water sand reported at 190 ft.
* 308	L. A. Boenicke	--	1927	185	6	185	do	1,530	--	--	C,W	N	
* 309	A. W. Boenicke	--	1930	31	5.5	--	Cisco Group	1,497	17	Sept. 21, 1962	C,W	D,S	
* 501	B. W. McIver	--	1922	32	36	32	do	1,491	10	do	J,E	D,S	Water sand reported at 30 ft.
* 502	C. Sheffield	--	1943	9	48	--	Canyon Group	1,480	5	Sept. 27, 1962	B,H	N	
503	H. E. Hannigan	--	1912	15	36	15	do	1,485	9	Sept. 29, 1962	N	N	
802	-- Ruggles	R. M. Virdell	1962	18	5.5	--	do	1,483	--	--	N	N	
* 803	do	--	1937	8	24	8	do	1,483	3	Sept. 29, 1962	C,W	N	
* 804	do	-- Gutherie	--	343	10	--	do	1,485	32	do	N	N	Originally drilled as an oil test.
* 805	J. F. Rice	--	1890	18	24	18	do	1,495	13	do	C,E	N	Water reported to enter well 9 ft below surface.
* 901	V. Carr, Jr.	--	--	8	36	--	do	1,405	4	Oct. 1, 1962	B,H	N	
* 902	J. D. Clark	--	--	117	5.5	117	do	1,470	72	Oct. 2, 1962	N	N	Water sand reported at 95 ft.

See footnote at end of table.

Table 3.--Records of Wells and Springs, Brown County--Continued

Well	Owner	Driller	Date completed	Depth of well (ft)	Casing		Water-bearing unit	Altitude of land surface (ft)	Water level		Method of lift	Use of water	Remarks
					Diameter (in.)	Depth (ft)			Below land-surface datum (ft)	Date of measurement			
42-32-301	F. D. Jones	--	--	240	5.5	--	Canyon Group	1,528	140	Oct. 2, 1962	C,E	D	
302	W. Y. Garner	--	--	147	36	--	do	1,532	131	do	J,E	D,S	
303	S. C. Fallis	--	1947	43	7	43	do	1,495	16	Oct. 5, 1962	C,W	N	Water sand reported from 20 to 30 ft.
* 304	Mrs. E. J. Ball	--	--	80	4	80	do	1,496	60	do	C,W	N	
305	do	--	--	40	5.5	40	do	1,491	30	do	C,W	D,S	
306	do	--	--	100	5.5	100	do	1,489	20	do	C,W	N	Reported good well.
701	O. H. Coldeway	--	--	17	20	--	do	--	15	Nov. 3, 1960	C,W	D	
39-302	Mrs. Mary Jones	J. H. Harris	1917	8	18	8	do	1,370	5	Oct. 4, 1962	B,H	N	
* 303	J. D. Clark	G. Beakley	1962	1,470	10	1,406	Ellenburger Group	1,355	(+)	--	Flows	D,S	Drilled 20 ft into Ellenburger Group. Well flows 12 gpm.
* 305	L. C. Keegans	L. Byrd	1941	13	48	--	do	1,320	7	Oct. 2, 1962	B,H	N	
* 306	J. H. Bond	--	1887	85	5.5	85	do	1,315	20	do	C,W, J,E	D,S	
307	J. D. Clark	--	1932	9	18	--	do	1,370	6	Oct. 4, 1962	B,H	N	
40-101	J. H. Bond	--	1958	60	5.5	60	do	1,303	20	do	J,E	D,S	
* 102	L. H. and B. S. Locker	R. M. Virdell	1947	150	5.5	150	Strawn Group	1,321	--	--	C,E	D	
103	do	do	--	150	5.5	150	do	1,318	--	--	C,W	S	
104	Mrs. -- Spence	--	--	52	5.5	52	Canyon Group	1,305	5	Oct. 4, 1962	C,W	D,S	Water gravel reported at 43 ft.
* 105	Mrs. E. Newsom	E. & M. Newsom	1944	156	6	136	Strawn Group	1,310	3	do	C,W	D,S	
106	do	E. Newsom	1932	82	6	82	Canyon Group	1,320	33	Oct. 3, 1962	B,H	N	Reported weak well.
* 201	C. A. Bourn	--	1950	300	--	--	Strawn Group	1,365	--	--	C,E	D,S	

* See Table 4 for Chemical analyses of water.

Table 4.--Chemical analyses of water from wells and springs, Brown County

(Analyses are in parts per million except specific conductance, pH, percent sodium, and SAR)

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
30-63-601c/	O. S. Smith	92	Nov. 29, 1937	--	--	--	--	268	228	1,490	--	>20	2,741	--	--	--	--	--
602a/	J. H. Balkum	20	June 11, 1962	20	156	49	380	429	213	545	1.9	>1	1,583	590	--	2,800	7.7	--
603b/	O. S. Smith	Spring	Apr. 26, 1962	92	165	122	471	440	356	850	2.3	2.2	2,220	914	53	3,720	7.5	6.8
604a/	D. Westerman	68	June 11, 1962	20	90	33	98	415	39	128	.8	>1	613	360	--	1,120	7.6	--
605b/	E. Ringhoffer	11	Apr. 18, 1962	28	42	5.2	16	166	15	4	.2	3	195	126	21	319	6.7	.6
606a/	J. H. Stacey	11	June 11, 1962	10	28	3	3	95	8	5	.1	--	104	84	--	195	6.7	--
64-401a/	S. L. Balkum	15	do	58	520	119	498	547	260	1,484	.8	--	3,209	1,790	--	5,350	7.4	--
402b/	do	22	Mar. 18, 1962	50	690	148	746	584	504	2,090	--	--	4,520	2,330	41	7,170	6.5	6.7
501b/	J. C. Hodnett	27	Apr. 20, 1962	25	109	18	148	296	94	175	2.1	93	810	346	48	1,330	7.4	3.5
502b/	-- Butler estate	34	do	18	118	11	37	284	28	45	.6	115	513	340	19	837	6.9	.9
503a/	R. Debusk	68	June 8, 1962	--	81	21	25	0	5	263	.1	>1	395	288	--	895	4.4	--
601c/	do	38	Dec. 1, 1937	--	147	11	180	433	61	245	--	49	686	412	--	--	--	--
602c/	H. H. Lawson	43	Apr. 23, 1962	17	318	17	20	262	43	130	--	576	1,117	864	5	864	6.8	.3
603b/	J. T. Hodnett	20	do	48	63	35	101	470	38	59	2.5	7	584	301	42	925	7.2	2.5
604b/	C. Pitman	89	do	26	24	5.8	11	62	22	14	.2	18	151	84	23	242	5.7	.5
605a/	A. Harris	51	June 8, 1962	--	704	336	522	2	550	2,600	.1	>1	4,713	3,140	--	7,700	4.7	--
606b/	T. Busbee	15	June 11, 1962	21	63	52	265	637	140	186	2.6	>1	1,367	370	--	1,700	7.6	--
607b/	L. Stewart	227	Apr. 30, 1962	9.9	15	8.2	408	420	50	395	1.9	1.0	1,100	71	93	1,930	7.6	21
702b/	J. Watkins	15	Apr. 19, 1962	22	50	21	115	474	32	24	1.5	>1	499	212	54	821	7.4	3.4
703b/	Harding Bros.	3,752	Jan. 25, 1964	19	960	226	14,300	366	242	25,000	4.5	< .4	41,414	3,320	--	>12,000	6.7	--
801b/	F. H. Madison	342	May 1, 1962	10	26	13	1,340	534	6	1,830	2.5	4	3,490	118	96	6,160	7.4	54
901b/	E. A. Allen	23	Apr. 23, 1962	42	295	176	783	578	848	1,190	--	159	3,780	1,460	54	5,590	7.0	8.9
902b/	W. Garmes	21	Apr. 24, 1962	30	147	19	91	482	50	138	.4	1.2	714	445	31	1,220	7.0	1.9
903b/	J. Allgood	208	May 1, 1962	9.4	7	4.2	402	614	17	242	3.4	4.7	992	35	96	1,690	7.9	30
906b/	C. Tyler	62	Apr. 27, 1962	16	171	43	243	380	536	185	.5	>1	1,380	604	47	2,000	7.5	4.3
907a/	H. L. Jones	9	June 11, 1962	21	101	15	15	310	32	30	.1	7.3	374	315	--	670	7.3	--
908b/	G. T. Densman	206	May 1, 1962	10	7	2.9	540	572	5	508	3.1	4.8	1,360	29	98	2,420	7.8	44

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
30-64-910[c]	K. E. Murdock	140	Jan. 8, 1938	--	198	26	629	299	565	590	--	375	2,378	601	--	--	--	--
911[b]	J. W. Moore	47	May 1, 1962	9.1	205	87	245	476	366	445	0.4	3	1,590	870	38	2,560	6.7	3.6
912[a]	do	12	June 11, 1962	25	252	209	411	510	390	1,075	.1	>1	2,613	1,490	--	4,200	7.4	--
913[c]	C. Woods	80	Jan. 8, 1938	--	9	5	372	708	38	152	--	--	573	43	--	--	--	--
914[a]	W. M. Palmore	90	June 11, 1962	20	70	58	81	395	80	118	1.2	>1	622	415	--	1,105	7.5	--
916[b]	H. C. Williams	15	May 8, 1962	45	270	614	1,670	912	1,950	2,880	--	--	7,880	3,200	53	10,800	7.0	13
917[a]	C. Woods	20	June 11, 1962	24	548	219	432	756	1,090	1,085	.1	>1	3,770	2,270	--	5,200	7.3	--
918[b]	J. J. Shults	14	May 8, 1962	16	565	76	421	212	376	1,010	--	804	3,370	1,720	35	5,050	7.0	4.4
31-57-401[a]	Mrs. G. Greynolds	89	May 2, 1963	18	108	28	64	383	27	123	.3	< .4	555	383	--	1,002	7.3	--
403[a]	do	75	do	35	178	59	125	510	49	270	.7	55	1,091	690	--	1,760	7.4	--
411[a]	M. West	66	do	15	155	43	114	420	90	227	.7	32	887	564	--	1,560	7.4	--
412[a]	do	93	May 3, 1963	17	101	26	75	320	43	140	.3	9	567	360	--	1,018	7.4	--
415[a]	D. C. Watson	100	May 2, 1963	16	121	36	71	418	45	150	.4	8	658	450	--	1,176	7.4	--
416[a]	E. O. Kizer	80	do	14	146	45	65	327	72	256	.3	3	764	550	--	1,360	7.2	--
421[a]	W. C. Witt	50	May 3, 1963	18	115	25	73	303	53	146	.6	56	636	388	--	1,110	7.4	--
425[a]	R. T. Ezzell	40	May 23, 1963	20	78	28	28	398	15	13	1.0	7	388	310	--	652	7.6	--
427[b]	B. Harris	90	May 2, 1962	21	132	63	132	462	96	275	2.4	3.8	717	588	33	1,670	6.9	2.4
501[a]	S. L. Rankin	165	May 7, 1963	16	204	100	109	394	132	500	.5	21	1,280	920	--	2,310	7.5	--
502[a]	C. T. Goss	66	do	17	100	18	135	444	58	118	.9	40	704	930	--	1,180	7.8	--
504[a]	E. Kennedy	190	May 8, 1963	16	121	40	44	382	37	150	.4	5	606	466	--	1,108	7.3	--
506[a]	R. Welch	125	May 3, 1963	12	139	46	57	417	47	141	.4	75	718	530	--	1,200	7.5	--
511[a]	C. T. Parker, Sr.	105	May 7, 1963	16	98	45	39	372	29	127	.4	4	541	428	--	995	7.3	--
515[a]	E. Witt	200	May 9, 1963	17	94	72	38	343	49	195	.5	4.5	636	530	--	1,190	7.4	--
520[a]	A. M. Goss	115	May 31, 1963	14	155	66	96	425	63	296	.3	18	914	660	--	1,690	7.2	--
521[a]	do	75	May 8, 1963	14	150	60	99	439	66	260	.3	17	887	620	--	1,600	7.5	--
525[a]	J. Jackson	87	do	15	119	31	108	426	60	154	.5	19	714	424	--	1,200	7.6	--
527[a]	M. J. Holleman	50	May 28, 1963	14	100	24	72	362	51	100	.3	15	556	346	--	950	7.3	--
603[a]	L. White	100	May 7, 1963	18	95	24	38	332	21	72	.9	19	451	338	--	810	7.6	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
31-57-702a/	T. Mitchell	60	May 23, 1963	40	183	44	490	640	263	620	3.0	< 0.4	1,955	640	--	3,200	7.2	--
704a/	D. N. Markham	70	May 2, 1963	18	45	6	22	145	14	39	.1	< .4	215	137	--	389	7.0	--
705a/	D. Hardy	35	do	26	190	40	154	404	115	266	.9	149	1,145	640	--	1,890	7.4	--
710a/	W. E. Murphee	60	May 23, 1963	22	119	8	118	473	91	67	.5	9	670	332	--	1,071	7.3	--
711a/	W. H. Wheeler	49	do	16	145	56	152	436	108	311	.2	1	1,009	590	--	1,750	7.5	--
712b/	F. P. Clark	49	May 1, 1962	16	180	99	131	464	65	488	.8	2.5	974	856	25	2,220	7.0	2.0
714a/	J. Lancaster	20	May 2, 1963	25	416	91	345	590	307	520	.6	777	2,770	1,410	--	4,000	7.4	--
717a/	Mrs. B. Spence	78	Apr. 30, 1963	29	121	21	86	307	93	176	.5	4.5	684	392	--	1,132	7.3	--
720a/	W. E. Chambers	Spring	do	11	316	64	107	254	94	710	.5	< .4	1,431	1,050	--	2,650	7.3	--
721a/	C. Chambers	16	do	19	86	13	47	342	40	32	1.2	9	416	271	--	703	7.2	--
722b/	F. P. Drinkard	100	May 14, 1962	13	120	19	118	462	91	112	.8	2.5	703	378	41	1,200	7.0	2.6
802a/	A. P. Spence	80	May 10, 1963	15	106	49	66	379	67	165	.6	2	657	462	--	1,100	7.6	--
803a/	J. Stout	48	do	20	109	33	70	448	36	106	.8	2.5	602	410	--	1,053	7.4	--
807a/	G. B. Ingram	40	May 9, 1963	30	101	45	160	362	104	272	.9	15	906	439	--	1,600	7.4	--
808a/	J. W. Gifford	60	May 8, 1963	25	73	15	11	273	33	7	.7	10	309	246	--	524	7.4	--
815a/	C. B. Nichols	100	May 31, 1963	34	133	175	294	710	278	550	1.4	28	1,839	1,050	--	3,000	7.9	--
824a/	E. McBride	165	do	14	103	31	51	421	26	76	.2	8	516	384	--	906	7.4	--
828a/	I. Huddler	60	May 10, 1963	15	96	37	51	431	16	85	.7	2	511	1,389	--	910	7.5	--
829a/	do	60	do	15	110	39	60	420	37	124	.6	4.5	597	432	--	1,046	7.8	--
831a/	Mrs. B. Lancaster	147	May 14, 1963	15	104	32	54	409	27	65	.5	44	542	391	--	934	7.4	--
833a/	D. L. Underwood	117	do	15	85	26	33	321	29	62	.5	< .4	407	318	--	743	7.2	--
836a/	A. N. Lancaster	80	Apr. 30, 1963	15	124	36	90	459	52	156	.7	2	707	458	--	1,240	7.4	--
906a/	H. Henry	200	May 28, 1963	14	77	35	29	345	20	75	.3	< .4	425	336	--	754	7.6	--
909a/	B. Wright	176	May 29, 1963	15	70	33	22	325	19	52	.3	< .4	375	312	--	675	7.4	--
912a/	A. F. Michaels	110	May 28, 1963	15	87	42	37	395	17	97	.5	2	489	391	--	887	7.5	--
915a/	B. H. Moore	157	May 29, 1963	14	222	154	228	510	491	520	.7	< .4	1,881	1,190	--	2,900	7.4	--
41-01-103a/	E. D. Pierce	36	Apr. 23, 1963	18	70	110	316	710	204	349	3.7	< .4	1,419	630	--	2,420	7.6	--
203a/	McGregor	25	do	33	61	7	29	148	30	55	.3	17	305	182	--	521	6.8	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-01-204a/	W. M. Holt	71	Apr. 23, 1963	30	112	63	132	432	83	258	1.1	6	901	540	--	1,600	7.4	--
206a/	I. T. Nelson	108	do	14	134	27	99	372	53	178	.7	40	731	447	--	1,300	7.3	--
209a/	M. C. Wiggins	50	do	20	90	20	17	327	17	15	.8	39	384	308	--	646	7.6	--
214a/	W. G. Scott	66	Apr. 19, 1963	20	58	6	24	217	12	12	.4	16	255	168	--	436	7.2	--
215a/	C. Alexander	56	Apr. 22, 1963	18	96	12	6	344	5	4	.2	11	321	291	--	565	7.2	--
217a/	J. W. Gregory	80	do	18	50	3	13	131	10	23	.2	13	194	139	--	346	7.2	--
221a/	J. W. Sutton	63	do	18	86	40	106	370	55	168	1.5	1	662	378	--	1,190	7.4	--
226a/	D. Morrow	100	Apr. 10, 1963	15	92	25	21	390	17	26	.3	1	392	334	--	683	7.3	--
227a/	F. Fisher	60	June 6, 1963	14	91	24	57	343	43	58	.6	32	486	326	--	840	7.4	--
228a/	W. C. Wilson	87	Apr. 22, 1963	18	116	117	170	458	243	274	1.0	110	1,277	770	--	2,100	7.4	--
229a/	L. D. Madison	140	Apr. 8, 1963	25	80	126	208	390	264	281	2.5	36	1,310	720	--	2,050	8.0	--
230a/	D. Ford	107	do	14	92	23	12	386	6	18	.2	< .4	354	326	--	635	7.5	--
231a/	Mrs. S. Wagnon	80	do	14	101	29	33	342	19	78	.3	28	466	371	--	840	7.5	--
232a/	F. E. Underwood	133	do	15	91	33	35	345	22	61	.4	44	475	361	--	830	7.4	--
301a/	L. Deevers	70	Apr. 30, 1963	17	89	20	104	449	48	68	1.1	17	582	307	--	992	7.4	--
302a/	do	98	do	14	115	35	85	387	44	126	.7	77	683	428	--	1,176	7.3	--
303a/	H. F. McBride	100	May 29, 1963	14	95	32	47	415	17	68	.5	16	499	368	--	870	7.7	--
315a/	C. R. Blaine	140+	Apr. 6, 1963	15	72	44	29	388	47	35	.3	7	443	363	--	770	7.6	--
317a/	L. O. Thompson	135	do	18	80	25	20	348	22	28	.3	1.5	363	305	--	637	7.5	--
318a/	C. Teague	56	do	18	77	48	20	397	29	49	.3	< .4	438	388	--	768	7.4	--
319a/	J. W. Chambers	165	Apr. 8, 1963	14	73	31	58	399	27	50	.7	< .4	447	308	--	797	7.5	--
320a/	W. Bailey	140	Apr. 6, 1963	12	86	28	22	373	27	32	.4	1.5	391	332	--	688	7.6	--
321a/	E. A. Robenson	153	do	14	86	21	15	350	20	20	.3	< .4	352	301	--	605	7.7	--
322a/	E. D. Keegan	150	Apr. 8, 1963	18	81	23	15	343	30	19	.3	1	356	296	--	595	7.5	--
325a/	Mrs. F. Chael	96	do	14	92	34	22	342	15	84	.2	< .4	426	371	--	790	7.7	--
327a/	F. White	96	do	15	112	46	26	384	24	103	.3	32	545	467	--	990	7.3	--
401a/	E. Johnson	18	Apr. 18, 1963	58	72	35	63	471	33	26	1.7	2.5	521	323	--	833	7.9	--
402a/	M. Crume	33	Apr. 19, 1963	42	200	51	260	530	211	409	1.0	9	1,441	710	--	2,390	7.3	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-01-404a/	C. A. Cox	54	Apr. 18, 1963	16	278	38	89	514	60	402	0.2	5	1,139	850	--	2,050	7.1	--
406a/	F. Mills	35	Apr. 19, 1963	26	510	52	430	530	227	1,170	1.0	94	2,771	1,490	--	4,640	7.1	--
408a/	G. W. Boyd	29	Apr. 11, 1963	16	105	74	52	479	138	85	.7	11	717	570	--	1,230	7.5	--
410a/	R. Boyd	24	do	20	89	17	26	381	12	12	.6	9	376	292	--	640	7.7	--
412a/	A. D. Arnold	60	do	34	205	59	335	340	238	670	1.4	< .4	1,707	750	--	2,830	7.8	--
413a/	J. H. Beck	50	do	14	244	182	158	415	177	820	.7	< .4	1,799	1,350	--	3,270	7.4	--
414a/	do	20	do	40	380	123	328	473	272	720	1.1	546	2,640	1,460	--	4,030	7.4	--
415a/	J. S. Hart	26	Apr. 10, 1963	34	55	63	77	495	81	55	2.2	3	619	394	--	1,004	7.7	--
416a/	W. Emfinger	40	do	20	70	40	10	368	23	23	.7	7	373	340	--	663	7.7	--
502a/	L. Lennington	64	Apr. 11, 1963	16	81	64	37	409	23	132	.6	< .4	552	465	--	1,040	7.5	--
503a/	R. V. Sheppard	26	Apr. 18, 1963	26	206	142	191	510	161	600	1.1	33	1,611	1,100	--	2,840	7.3	--
507a/	G. W. Crume	110	do	14	96	75	34	570	20	94	.5	< .4	610	550	--	1,120	7.4	--
511a/	L. Alexander	160	Apr. 9, 1963	14	70	51	25	392	20	61	.7	1	441	385	--	800	7.4	--
513a/	I. T. Nelson	60	Apr. 19, 1963	16	84	93	29	650	12	75	.7	2.5	630	590	--	1,100	7.3	--
515a/	L. T. Cobb	151	Apr. 9, 1963	14	80	60	35	415	38	107	.9	1	539	447	--	970	7.6	--
518a/	-- Newberry	60	Apr. 11, 1963	13	119	207	291	232	384	730	1.0	136	1,992	1,150	--	3,290	7.5	--
519a/	H. M. Chambers	80	Apr. 10, 1963	10	53	40	46	317	30	74	.6	5.5	419	296	--	757	7.4	--
520a/	H. W. Thomas	100	do	14	81	37	33	394	16	55	.6	2.5	430	352	--	775	7.3	--
521a/	R. C. Bowden	36	do	18	296	195	353	500	207	1,160	.7	< .4	2,476	1,540	--	4,350	7.0	--
522a/	J. Kennedy	159	May 8, 1963	13	102	78	54	425	148	150	.7	3	754	580	--	1,320	7.5	--
602a/	G. Dewbre	110	Apr. 9, 1963	18	97	99	52	487	127	145	.5	9	793	650	--	1,450	7.4	--
605a/	C. Dennis	105	do	14	123	68	45	484	98	144	.7	2	734	590	--	1,210	7.6	--
607a/	E. Day	199	Apr. 19, 1963	12	76	45	26	393	20	63	.7	< .4	440	375	--	810	7.5	--
610a/	D. Key	105	Apr. 10, 1963	18	197	214	173	520	520	500	1.2	28	1,906	1,370	--	2,900	7.5	--
611a/	R. Lewis	180	do	12	72	58	46	473	60	47	.8	2.5	530	417	--	912	7.5	--
614a/	B. U. Ross	150	do	14	138	104	43	422	288	135	.8	10	946	770	--	1,500	7.7	--
618a/	J. E. Burleson	142	Apr. 11, 1963	15	113	109	119	611	180	194	1.1	23	1,060	730	--	1,750	7.5	--
701a/	J. R. Davis	200	Mar. 22, 1963	10	8	8	458	510	38	408	1.1	< .4	1,171	20	--	2,070	8.2	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-01-702[a]	W. H. Miller	300+	Mar. 22, 1963	18	291	123	333	590	212	870	0.6	88	2,230	1,230	--	3,730	7.1	--
703[a]	G. Brown	243	do	15	201	100	152	530	137	451	.7	< .4	1,321	920	--	2,350	7.2	--
705[a]	T. C. Boyd	175	do	16	570	70	328	494	302	1,210	.8	< .4	2,739	1,720	--	4,550	7.0	--
802[a]	V. D. Pittman	175	Mar. 21, 1963	17	20	4	402	650	48	235	2.9	49	1,100	65	--	1,850	8.2	--
804[a]	Mrs. D. A. Webb	20	Mar. 22, 1963	43	322	236	1,170	1,010	650	1,920	2.3	4.2	4,887	1,770	--	7,200	7.3	--
805[a]	do	83	do	39	399	302	1,220	1,080	730	2,390	2.1	< .4	5,651	2,240	--	8,500	7.2	--
806[a]	Mrs. J. W. Thomas	80	do	14	76	47	34	434	22	54	.7	< .4	460	385	--	837	7.3	--
808[a]	J. C. Nance	100	Mar. 28, 1963	12	84	45	98	426	46	123	1.0	42	664	395	--	1,120	7.9	--
809[a]	R. C. Lentz	60	Mar. 22, 1963	12	57	96	125	510	88	204	.8	16	851	530	--	1,520	7.2	--
810[a]	W. D. Massey	40	Mar. 28, 1963	12	88	98	180	600	100	288	1.2	18	1,085	620	--	1,860	7.5	--
813[a]	B. Ribble	39	Mar. 22, 1963	27	69	29	71	379	34	60	.9	17	497	292	--	848	7.6	--
814[a]	F. Ribble	96	do	21	111	73	190	710	94	217	2.4	< .4	1,059	580	--	1,800	7.4	--
817[a]	A. L. McDonald	45	do	22	143	85	159	600	68	203	1.8	258	1,235	710	--	1,950	7.5	--
819[a]	A. R. Wheeler	85	Mar. 27, 1963	12	7	7	213	412	32	101	1.0	< .4	581	45	--	1,000	8.2	--
820[a]	J. W. Wheeler	65	do	14	187	134	459	410	262	1,030	.9	< .4	2,292	1,020	--	3,910	7.7	--
822[a]	H. C. McKinney	18	do	15	111	29	177	450	104	218	.6	< .4	881	395	--	1,520	7.3	--
823[a]	D. Hamilton	34	do	30	43	75	124	630	46	80	1.9	< .4	710	414	--	1,220	8.2	--
901[a]	J. A. Watson	80	Mar. 20, 1963	12	89	68	49	392	98	115	.7	15	641	500	--	1,115	7.6	--
904[a]	G. A. Stubblefield	28	do	26	103	131	339	640	269	510	4.5	46	1,745	800	--	2,840	7.8	--
905[a]	J. B. Crabtree	85	Mar. 27, 1963	15	371	51	258	610	288	640	.7	6	1,930	1,140	--	3,140	7.2	--
906[a]	J. A. Eoff	21	do	15	100	68	117	530	84	179	1.1	18	841	530	--	1,450	7.6	--
909[a]	R. O. Young	17	do	18	84	58	148	530	86	163	1.3	22	841	447	--	1,410	7.5	--
910[a]	A. C. Howard	47	Mar. 28, 1963	14	154	75	72	453	104	233	.5	43	920	690	--	1,580	7.3	--
911[a]	G. W. Shaffer	85	do	12	179	59	86	487	84	250	.4	40	953	690	--	1,650	7.3	--
912[a]	do	65	do	14	91	18	38	344	25	36	1.1	24	415	300	--	714	7.5	--
913[a]	H. N. Johnson	108	do	14	83	48	40	411	49	70	.5	< .4	511	405	--	888	7.4	--
914[a]	A. Lack	120	do	12	109	83	83	392	187	191	.8	< .4	861	620	--	1,440	7.7	--
915[a]	H. N. Tipton	173	Mar. 29, 1963	14	65	46	25	399	36	33	.5	2.5	417	352	--	730	7.7	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-09-306[a]	Mrs. -- Michaelis	60	Apr. 18, 1963	20	84	56	58	467	103	57	0.6	< 0.4	613	441	--	1,015	7.7	--
307[a]	R. V. Pittman	44	Mar. 20, 1963	18	197	242	540	720	790	870	2.5	4.4	3,014	1,480	--	4,565	7.2	--
308[a]	G. Schaefer	20	Mar. 19, 1963	16	103	223	610	670	790	820	4.5	8	2,910	1,180	--	4,450	7.8	--
309[a]	G. L. Jackson	135	do	10	125	100	980	143	780	1,430	1.0	3.1	3,497	730	--	5,620	7.4	--
310[a]	do	21	do	19	156	176	425	720	520	660	1.5	< .4	2,314	1,120	--	3,650	7.6	--
311[a]	Mrs. W. C. Lynch	20	do	5	22	22	< 1	65	1	2	.2	2.4	64	56	--	123	7.3	--
312[a]	I. Crawford	125	Mar. 12, 1963	22	101	89	126	426	272	194	.8	7	1,024	620	--	1,480	7.5	--
313[a]	L. F. Vawter	147	do	23	124	235	610	780	560	1,000	2.9	< .4	2,944	1,280	--	4,150	7.5	--
314[a]	J. Ehrke	38	do	16	99	54	35	439	111	52	.6	11	597	471	--	874	7.5	--
315[a]	John Ehrke	45	Mar. 19, 1963	16	94	60	39	467	101	47	.5	3.5	593	480	--	1,000	7.4	--
501[a]	L. D. Rouse	275	Mar. 12, 1963	12	9	5	520	427	148	496	2.0	2.9	1,403	42	--	2,200	8.0	--
502[a]	J. C. Tongate	30	Mar. 11, 1963	16	116	118	156	464	436	207	.8	6	1,334	777	--	1,750	7.6	--
601[a]	L. Dunn	50	Mar. 8, 1963	14	177	85	162	510	99	388	.6	73	1,251	790	--	1,980	7.2	--
602[a]	J. C. Swan	135	May 17, 1963	13	98	47	33	367	67	96	.5	9	544	436	--	950	7.5	--
604[a]	L. G. Cooper	36	Mar. 12, 1963	18	79	96	94	478	259	93	1.0	10	887	590	--	1,230	7.5	--
605[a]	do	45	do	19	81	92	92	473	240	91	1.1	9	860	580	--	1,200	7.6	--
606[a]	R. Steel	40	Mar. 28, 1963	25	172	453	770	840	1,430	1,260	2.2	15	4,543	2,290	--	6,180	7.7	--
607[a]	Mrs. E. E. Hester	110	Mar. 12, 1963	8	119	80	510	181	1,290	210	.9	< .4	2,308	626	--	2,780	7.3	--
608[a]	L. D. Rouse	50	do	14	111	45	84	370	196	103	.6	< .4	732	463	--	1,100	7.4	--
610[a]	W. M. Nichols	100+	Mar. 11, 1963	10	81	81	700	327	620	540	1.1	2	2,114	203	--	3,130	7.9	--
612[a]	R. L. Doss	65	Apr. 2, 1963	12	38	33	110	445	26	52	.9	< .4	494	232	--	865	7.7	--
614[a]	L. L. White	96	Mar. 8, 1963	24	51	72	271	550	168	289	1.1	3.1	1,151	423	--	1,925	7.9	--
615[a]	W. G. Ward	120	June 3, 1963	9	124	63	109	427	118	227	.4	< .4	863	570	--	1,550	7.3	--
617[a]	W. A. Price	90	Feb. 2, 1963	12	96	55	38	409	42	114	.3	12	570	467	--	1,030	7.3	--
618[a]	A. M. Jones	110	June 4, 1963	11	28	87	309	302	207	404	.9	< .4	1,241	426	--	2,050	7.9	--
620[a]	A. Lehman	28	Mar. 8, 1963	25	180	146	265	620	131	610	.9	112	1,775	1,050	--	3,050	7.5	--
804[a]	G. W. Staley	Spring	Mar. 5, 1963	19	80	10	7	279	20	9	.5	< .4	283	241	--	430	7.5	--
805[a]	Mrs. Y. King	25	do	26	84	15	28	331	24	26	.7	4.9	372	270	--	562	7.5	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-09-806a/	L. N. Moore	35	Mar. 5, 1963	23	262	80	478	379	261	640	0.9	736	2,667	980	--	3,560	7.3	--
808a/	R. C. Beck	32	do	21	135	18	92	276	57	115	.4	195	770	410	--	1,100	7.5	--
811a/	W. N. Moore	18	do	22	92	11	27	318	32	29	.3	4.9	378	275	--	638	7.6	--
812a/	E. L. Stewart	408	Mar. 7, 1963	30	101	19	193	406	91	213	.9	32	884	330	--	1,350	7.4	--
813a/	T. Thompson	20	do	29	96	23	73	399	61	74	.9	3.5	557	335	--	831	7.4	--
901a/	R. L. Davis	100	Mar. 4, 1963	12	26	29	344	388	184	323	.9	< .4	1,113	185	--	1,700	7.7	--
903a/	L. McHan	65	do	14	102	116	70	750	98	115	1.1	7	889	730	--	1,310	7.8	--
907a/	B. R. Johnson	6	Mar. 8, 1963	27	85	25	44	384	38	40	.7	10	455	318	--	680	7.8	--
908a/	H. P. Hampton	50	Mar. 7, 1963	22	73	160	390	1,010	261	435	3.3	< .4	1,837	840	--	2,975	7.7	--
909a/	T. A. Staggs	25	Mar. 4, 1963	20	89	122	405	720	256	530	1.0	46	1,824	720	--	2,975	7.5	--
910a/	H. E. Lobstein	87	Feb. 28, 1963	18	32	38	102	407	44	62	1.5	< .4	503	237	--	853	7.9	--
911a/	J. A. Hallum	90	Mar. 7, 1963	14	54	54	39	466	17	16	2.8	15	443	347	--	780	7.5	--
916a/	H. A. Campbell	175	Jan. 15, 1963	13	46	50	273	288	144	413	1.0	< .4	1,102	320	--	1,990	8.1	--
917a/	J. Scott	19	do	10	70	48	4	411	26	9	.1	2.4	371	371	--	670	7.7	--
919a/	G. Lindly	120	do	14	49	52	22	437	14	9	.4	< .4	375	336	--	680	7.4	--
10-103a/	V. Lee	140	Feb. 7, 1963	14	84	57	35	465	110	31	.8	< .4	561	446	--	915	7.9	--
105a/	H. Rodgers	80	Mar. 19, 1963	12	66	41	25	428	22	15	1.4	< .4	393	333	--	705	7.3	--
106a/	W. D. Pierce, Jr.	37	do	16	155	87	85	472	233	216	.7	4.9	1,030	750	--	1,700	7.4	--
107a/	R. Hughes	125	Apr. 18, 1963	19	161	108	120	461	445	189	.8	23	1,296	840	--	1,920	7.4	--
108a/	N. and G. Stewart	160	Mar. 19, 1963	12	92	56	32	415	110	54	.7	< .4	559	461	--	960	7.5	--
109a/	Mrs. L. Faulkner	50	Mar. 12, 1963	18	204	146	109	432	417	300	.9	121	1,531	1,110	--	2,360	7.7	--
110a/	W. D. Baker	75	Feb. 7, 1963	16	148	142	132	468	486	216	.9	15	1,382	950	--	2,110	8.0	--
111a/	J. Kelsey	100	do	12	86	64	39	417	149	57	.6	28	616	477	--	1,005	7.6	--
205a/	S. J. Porter	185	Feb. 14, 1963	10	65	41	7	337	55	14	1.0	< .4	359	332	--	630	7.6	--
206a/	A. Richmond	150	do	9	68	52	30	404	95	21	1.2	< .4	475	382	--	811	7.6	--
207a/	F. O. Benson	140	Feb. 7, 1963	14	96	53	36	404	120	68	.6	< .4	587	456	--	965	7.6	--
301a/	H. Foster	96	Feb. 4, 1963	14	88	23	31	250	74	47	.8	51	452	314	--	752	7.6	--
302a/	B. Smith	140	do	14	198	17	35	323	76	110	.1	199	808	563	--	1,250	7.4	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-10-304[a]	D. Bailey	262	Feb. 4, 1963	13	80	54	30	355	171	117	1.0	2.9	544	420	--	856	8.1	--
308[a]	Mrs. W. J. West	240	do	14	72	54	21	370	120	14	.7	< .4	478	401	--	792	7.6	--
310[a]	E. Eoff	195	Feb. 20, 1963	14	80	60	59	394	146	78	.5	< .4	632	447	--	1,037	7.7	--
311[a]	R. R. McDonald	290	Feb. 2, 1963	14	75	56	22	365	145	19	.6	< .4	512	419	--	825	7.8	--
314[a]	C. Thompson	160	Feb. 4, 1963	18	174	90	54	411	70	223	.2	269	1,100	805	--	1,770	7.5	--
316[a]	N. Dabney	250	Jan. 22, 1963	18	69	57	22	364	123	19	.5	2.4	490	406	--	815	7.5	--
318[a]	H. R. Johnson	40	do	5	143	22	54	272	120	159	.1	4	641	446	--	1,134	7.4	--
401[a]	M. Brannan	27	Feb. 27, 1963	28	125	46	42	224	25	96	.3	277	749	502	--	1,060	7.4	--
405[a]	F. Switzer	120	Feb. 25, 1963	15	119	50	23	433	99	37	.8	51	610	500	--	985	7.3	--
412[a]	L. Reagan	143	do	12	59	55	51	429	66	44	.6	4	503	374	--	855	7.5	--
413[a]	J. B. Eastman	100	Feb. 27, 1963	12	87	56	42	415	72	88	.6	6	568	447	--	1,000	7.2	--
414[a]	J. McHan	80	Feb. 28, 1963	14	102	58	47	440	55	120	.7	2.9	616	494	--	1,110	8.0	--
415[a]	C. L. Lewis	84	Mar. 7, 1963	14	82	90	71	510	57	181	.8	< .4	751	570	--	1,350	7.5	--
417[a]	C. Petross	100	Feb. 25, 1963	12	96	47	75	451	58	74	.8	79	664	432	--	1,083	7.6	--
503[a]	A. McLaughlin	69	Feb. 27, 1963	16	207	12	24	348	47	72	.1	245	794	566	--	1,360	7.2	--
506[a]	R. J. Pound	150	Feb. 20, 1963	14	68	36	7	370	17	10	.3	< .4	334	316	--	597	7.5	--
511[a]	J. Dick	220	Feb. 21, 1963	15	80	65	53	402	98	112	.6	8.4	630	465	--	1,095	7.6	--
513[a]	Mrs. L. Isom	200	Feb. 22, 1963	15	126	93	81	482	115	266	.5	18	952	695	--	1,690	7.7	--
515[a]	W. L. Lamkin	80	Feb. 20, 1963	10	102	83	47	433	94	174	.4	< .4	720	600	--	1,310	7.7	--
516[a]	T. L. Beal	110	do	14	109	103	27	418	72	238	.6	28	798	700	--	1,450	7.8	--
518[a]	C. L. Petross	245	Feb. 27, 1963	14	153	137	152	448	190	510	.7	2.9	1,382	940	--	2,400	7.8	--
520[a]	N. McClain	155	Feb. 25, 1963	16	67	56	75	449	98	77	.7	2.9	614	397	--	1,025	7.8	--
522[a]	S. Lanford	163	Feb. 27, 1963	20	150	361	980	680	590	2,030	5.5	< .4	4,475	1,850	--	7,025	7.9	--
526[a]	F. S. Eoff	140	Feb. 22, 1963	12	71	43	24	427	24	24	.4	< .4	408	353	--	732	7.5	--
528[a]	F. Nabor	170	Jan. 17, 1963	15	55	57	34	414	40	43	.6	4.0	453	372	--	811	7.4	--
601[a]	G. Bolton	200	Mar. 7, 1963	15	143	105	124	411	242	296	.7	78	1,211	790	--	1,925	7.3	--
602[a]	Blanket City	250	Feb. 20, 1963	14	58	82	41	397	130	71	.5	2.0	594	484	--	1,030	7.6	--
603[a]	do	180	do	14	98	73	59	398	147	119	.4	17	723	544	--	1,250	7.5	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-10-605[a]	Raymond Seeds	180	Sept. 27, 1963	22	146	288	670	770	600	1,160	0.9	160	3,429	1,550	--	5,210	7.8	--
606[a]	I. Strickland	200	Feb. 20, 1963	15	82	65	63	443	92	84	.7	51	675	470	--	1,100	8.0	--
607[a]	A. W. Jones	205	Feb. 19, 1963	32	81	67	45	427	82	106	.6	< .4	624	476	--	1,050	7.5	--
608[a]	Mrs. M. Bramlet	90	do	18	82	73	41	448	84	110	.6	< .4	629	506	--	1,085	7.5	--
618[a]	F. Switzer	99	Jan. 22, 1963	13	77	32	11	349	45	14	.4	< .4	364	325	--	640	7.9	--
619[a]	Mrs. R. Turner	120	Jan. 25, 1963	14	83	36	9	329	75	18	1.0	< .4	398	353	--	675	7.4	--
623[a]	C. Crouch	120	Jan. 18, 1963	13	81	67	51	414	94	94	.6	5.3	609	479	--	1,080	7.7	--
626[a]	D. Ryan	175	Jan. 29, 1963	15	101	17	12	357	27	21	1.0	4.2	374	323	--	645	7.4	--
627[a]	C. Haddon	100	Jan. 31, 1963	16	92	23	9	376	9	18	.2	4.9	357	324	--	628	7.3	--
632[a]	J. L. Priddy	117	Jan. 18, 1963	13	61	56	51	425	63	56	.8	4.3	513	381	--	905	7.5	--
701[a]	H. Maner	90	Feb. 28, 1963	14	109	67	63	398	62	205	.7	9	726	550	--	1,320	7.9	--
703[a]	F. Irwin	80	do	14	127	57	64	403	39	200	.5	53	753	552	--	1,340	7.3	--
705[a]	E. M. Boone	100	Mar. 1, 1963	18	96	38	47	433	34	58	1.2	37	430	395	--	910	7.4	--
706[a]	do	84	do	20	103	41	40	448	35	65	1.1	35	562	425	--	945	7.9	--
708[a]	J. H. Bechtold	60	Feb. 28, 1963	16	75	56	109	550	62	102	2.2	< .4	691	417	--	1,175	7.5	--
709[a]	do	290	do	12	57	48	610	234	276	850	1.6	< .4	1,971	339	--	3,400	7.5	--
710[a]	W. A. Shielock	10	Jan. 22, 1963	23	34	44	95	464	48	29	3.5	< .4	504	266	--	864	7.8	--
713[a]	P. R. Wood	100	Jan. 16, 1963	17	76	48	75	373	78	90	1.8	39.5	608	385	--	1,040	7.5	--
714[a]	R. E. Cunningham	96	do	17	77	33	29	338	23	40	.4	4.8	433	329	--	745	7.4	--
717[a]	J. T. Reagan	160	Feb. 25, 1963	13	57	59	59	429	50	77	1.0	< .4	532	386	--	954	7.7	--
718[a]	H. C. Williams	363	do	14	72	68	50	433	39	119	.6	3.8	580	461	--	1,055	7.3	--
719[a]	A. D. Hester	106	Jan. 16, 1963	15	56	62	74	437	92	112	.4	< .4	647	394	--	1,125	7.5	--
720[a]	E. A. Teague	37	Jan. 28, 1963	14	79	51	38	403	14	95	.5	7	497	407	--	925	7.5	--
722[a]	R. Weidner	30	Jan. 16, 1963	16	113	31	32	432	19	60	.1	31.5	516	410	--	902	7.4	--
723[a]	W. S. Byrd	140	do	15	85	39	15	445	14	15	.4	< .4	402	372	--	726	7.4	--
725[a]	do	139	do	14	70	45	286	301	158	405	.5	20	1,128	362	--	2,000	7.7	--
726[a]	J. Bollinger	100	Feb. 5, 1963	15	97	126	89	504	69	174	.8	291	1,110	762	--	1,820	7.5	--
727[a]	H. E. Templeton	200	Jan. 28, 1963	11	46	36	691	227	262	948	1.0	< .4	2,107	264	--	3,650	7.5	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-10-728[a]	H. T. Coleman	75	Feb. 25, 1963	12	86	70	11	344	28	45	0.1	195	616	503	--	1,000	7.5	--
805[a]	L. E. Day	120	Jan. 17, 1963	12	78	51	21	451	31	31	.4	4.2	450	404	--	805	7.7	--
806[a]	do	185	do	14	79	37	16	414	14	8	.4	4.4	376	348	--	700	7.6	--
902[a]	W. Hill	55	Feb. 15, 1963	14	63	60	121	486	135	104	1.0	< .4	737	403	--	1,210	7.6	--
903[a]	W. J. Bettis	124	Jan. 18, 1963	12	68	58	202	447	257	157	1.0	2.9	978	410	--	1,600	7.6	--
904[a]	J. Hawkins	165	Feb. 1, 1963	5	62	83	365	156	131	710	.9	< .4	1,431	495	--	2,700	7.6	--
905[a]	B. B. Shoemake	190	do	12	67	59	91	450	130	69	.6	< .4	650	408	--	1,096	7.5	--
906[a]	J. Hawkins	160	Jan. 31, 1963	12	77	67	81	464	151	76	.7	< .4	693	469	--	1,155	7.4	--
908[a]	A. P. Townsend	105	Feb. 1, 1963	12	80	67	52	434	173	43	.7	< .4	641	475	--	1,070	7.4	--
909[a]	R. D. Moseley	80	do	14	139	115	46	456	488	37	.6	< .4	1,064	818	--	1,610	7.8	--
910[a]	J. Hawkins	125	do	12	80	72	110	483	199	89	.7	< .4	801	496	--	1,320	7.4	--
911[a]	R. A. Thomas	200	Jan. 18, 1963	12	138	100	97	499	373	135	.8	< .4	1,101	758	--	1,740	7.4	--
912[a]	O. V. Shaw	266	Jan. 29, 1963	10	76	64	552	233	207	889	1.0	5.3	1,919	453	--	3,380	7.3	--
11-401[a]	D. M. Alley	300	Jan. 22, 1963	13	79	40	18	342	84	21	.5	< .4	424	361	--	733	7.6	--
406[a]	J. B. Simpson	270	Jan. 25, 1963	13	80	43	22	325	135	15	1.0	< .4	469	377	--	774	7.4	--
409[a]	E. F. Blackwell	190	Jan. 31, 1963	12	95	60	52	421	91	104	.5	13	635	484	--	1,120	7.5	--
703[a]	A. M. Morales	250	do	12	81	59	47	390	120	75	.5	< .4	587	442	--	1,070	7.7	--
704[a]	G. B. Hughes	240	do	12	73	59	46	423	94	65	.6	< .4	558	425	--	977	7.6	--
706[a]	Mrs. J. D. Dameron	100	Feb. 2, 1963	12	93	33	12	329	95	12	.7	< .4	420	368	--	725	7.4	--
710[a]	J. W. Tunnell	250	do	13	116	40	31	333	106	48	.2	70	588	455	--	984	7.4	--
712[a]	W. Murick	80	do	14	125	10	10	315	13	38	.2	61	426	352	--	725	7.5	--
713[a]	C. Dameron	200	do	12	81	45	190	425	188	166	.7	10	902	388	--	1,530	7.4	--
716[a]	O. L. McCullough	180	Dec. 17, 1963	14	85	51	184	393	192	195	1.0	5.5	920	423	--	1,560	7.9	--
717[a]	do	100	Dec. 18, 1963	14	60	49	168	445	196	100	1.0	4.3	811	353	--	1,350	7.7	--
720[a]	G. W. Wade	126	Feb. 2, 1963	13	68	64	61	461	84	73	.6	< .4	591	431	--	1,050	7.6	--
721[a]	E. Stewart	120	do	18	95	43	58	346	98	106	.7	3	592	414	--	1,033	7.6	--
722[a]	do	26	Feb. 9, 1963	19	93	42	52	351	98	92	.6	5	575	403	--	995	7.5	--
17-201[a]	J. Shannon	23	June 4, 1963	18	152	15	59	321	87	142	.3	12	647	440	--	1,192	7.2	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-11-207[a]	P. Bishop	30	June 4, 1963	24	130	18	240	421	156	249	0.7	30	1,056	397	--	1,750	7.3	--
17-215[a]	C. Wheeler	75+	June 1, 1963	18	218	45	245	344	407	365	.5	13	1,485	730	--	2,345	7.3	--
216[a]	J. M. VanHuss	43	Nov. 9, 1962	15	284	73	364	511	597	565	.2	4.2	2,153	1,007	--	2,460	7.2	--
218[a]	F. Pierce	21	Nov. 8, 1962	17	42	49	17	375	15	11	2.4	4.2	342	304	--	545	8.0	--
301[a]	C. A. Gotcher	119	Jan. 16, 1963	15	64	87	49	522	17	110	.3	11.5	611	518	--	1,153	7.5	--
302[a]	W. S. Jenkins	120	Jan. 22, 1963	13	22	34	169	403	55	112	1.1	25	606	193	--	1,050	7.9	--
305[a]	F. Pierce	24	Nov. 8, 1962	15	86	20	40	390	33	22	.2	< .4	408	295	--	649	7.4	--
306[a]	B. F. Hunt	225	do	8	90	54	1,655	208	365	2,470	.5	5.3	4,749	445	--	5,210	7.4	--
312[a]	-- Ezell	62	do	19	82	26	148	365	164	125	.2	< .4	744	312	--	1,056	7.6	--
313[a]	H. S. Brandstetter	86	Nov. 9, 1962	18	101	25	142	377	216	110	.3	4.2	801	356	--	1,105	7.4	--
315[a]	E. F. Massey	125	do	13	242	39	220	466	402	315	.1	40.5	1,500	763	--	1,850	7.2	--
316[a]	J. M. Wood	96	do	9	300	64	149	442	211	310	.1	409	1,669	1,011	--	2,000	7.2	--
317[a]	F. White	55	Nov. 16, 1962	16	111	12	93	340	134	73	.2	23	629	326	--	1,000	7.4	--
318[a]	E. Mercer	130	Nov. 9, 1962	14	123	28	113	569	90	82	.1	< .4	730	421	--	1,050	7.3	--
322[a]	D. C. Snider	125	Nov. 7, 1962	22	70	48	56	426	30	72	.6	20	528	374	--	810	7.7	--
324[a]	W. J. Shank	116	do	15	41	36	228	403	219	138	.4	< .4	875	250	--	1,220	7.9	--
326[a]	L. R. Ellett	130	Nov. 8, 1962	14	291	155	454	453	555	940	.2	13	2,645	1,363	--	4,250	7.4	--
328[a]	C. A. Earp	32	Jan. 10, 1963	7	52	50	97	476	31	84	.1	<	555	333	--	1,025	7.5	--
329[a]	Mrs. J. McLaughlin	126	do	7	134	120	1,370	178	256	2,410	.4	3.1	4,388	825	--	7,550	7.6	--
330[a]	do	22	do	26	58	74	102	602	51	76	2.8	< .4	686	452	--	1,170	7.6	--
331[a]	H. L. Martin	18	Jan. 31, 1963	22	61	34	59	392	33	44	1.0	3.5	457	291	--	775	7.6	--
332[a]	V. Moseley	100	Jan. 10, 1963	7	132	113	1,178	161	291	2,080	.4	4.7	3,885	793	--	6,640	7.5	--
334[a]	R. Malone	36	Nov. 7, 1962	17	81	105	127	671	158	123	.5	37	978	631	--	1,340	7.6	--
336[a]	H. McMullen	80	do	10	71	43	1,062	215	262	1,560	.7	3.3	3,118	353	--	5,070	7.1	--
338[a]	C. N. Coleman	425	do	21	180	155	473	543	595	703	1.0	57	2,452	1,084	--	3,660	7.6	--
340[a]	E. Bilton	38	Nov. 8, 1962	22	52	96	214	655	153	194	2.5	6	1,061	526	--	1,500	7.7	--
501[a]	J. D. Stewart	45	June 6, 1963	22	366	70	469	520	373	990	.4	4.5	2,556	1,200	--	4,100	6.9	--
502[a]	J. L. Johnson	2,402	--	--	196	49	4,905	384	14	7,820	--	--	13,178	690	--	--	--	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-17-601[a]	H. Reeves	55	Nov. 9, 1962	18	106	73	163	527	95	262	0.5	26	1,002	567	--	1,450	7.4	--
605[a]	C. Mitchell	48	Nov. 12, 1962	11	26	5	4	161	5	14	.2	< .4	144	86	--	336	7.2	--
607[a]	R. Crossman	40	do	19	162	142	233	543	444	420	.2	11.5	1,700	989	--	2,110	7.2	--
702[a]	C. Bell	88	Nov. 16, 1962	12	80	77	29	402	30	65	.1	181.5	672	515	--	1,094	7.6	--
801[a]	Y. C. Paschell	150	Oct. 12, 1962	14	83	62	54	428	49	108	.3	27	608	459	--	1,019	7.7	--
18-101[a]	S. J. Eaton	120	Jan. 10, 1963	12	67	70	147	417	88	205	.8	78	873	456	--	1,520	7.8	--
103[a]	R. N. Wyatt	100	Nov. 7, 1962	13	101	21	468	444	259	497	.7	< .4	1,578	340	--	2,120	7.3	--
104[a]	J. P. Graham	96	do	17	48	55	150	502	49	155	.4	2.2	723	345	--	1,111	7.6	--
105[a]	Mrs. O. Page	98	Nov. 1, 1962	15	35	47	168	478	43	156	.4	< .4	699	278	--	1,143	7.7	--
106[a]	Mrs. A. J. Yarborough	75	do	23	62	102	254	600	277	230	2.4	10	1,255	574	--	1,660	7.6	--
108[a]	H. L. Craven	60	Nov. 12, 1962	16	94	64	260	465	106	394	.8	10	1,174	497	--	2,110	7.6	--
109[a]	J. Cox	160	Nov. 1, 1962	15	70	80	89	553	75	118	.2	2.7	722	502	--	1,106	7.4	--
110[a]	A. Vernon	60	Jan. 10, 1963	8	81	116	147	474	127	317	.3	49	1,078	680	--	1,860	8.0	--
111[a]	G. Wyatt	125	Jan. 15, 1963	11	56	65	189	491	127	205	.8	< .4	896	407	--	1,560	7.7	--
114[a]	J. B. Page	112	Oct. 31, 1962	11	39	43	103	384	38	79	1.5	66	569	276	--	915	7.6	--
115[a]	V. Shannon	150	Nov. 1, 1962	19	74	110	341	588	301	393	1.7	32	1,560	638	--	2,250	7.5	--
116[a]	B. A. Webb	125+	do	13	13	49	214	427	84	230	.9	29	880	328	--	1,400	7.5	--
117[a]	L. R. Ellett	125	do	15	65	87	77	492	55	170	.5	< .4	711	519	--	1,145	7.8	--
118[a]	R. R. Ellett	60	do	16	75	109	204	609	144	276	.2	36	1,160	637	--	1,660	7.4	--
120[a]	H. L. Craven	96	do	10	39	53	95	386	28	123	1.2	< .4	539	316	--	900	7.4	--
121[a]	W. V. Cunningham	82	Nov. 12, 1962	13	26	30	251	373	95	230	1.1	< .4	830	188	--	1,250	7.9	--
201[a]	L. Miller	80	Jan. 5, 1963	13	75	174	177	546	185	405	1.0	90	1,389	905	--	2,410	7.3	--
202[a]	C. B. Powell	160	do	13	68	68	230	466	158	283	1.0	< .4	1,050	449	--	1,850	7.5	--
203[a]	R. N. Green	280	do	16	81	68	178	420	173	245	1.3	10	979	482	--	1,680	7.4	--
207[a]	R. G. Harding	105	do	13	131	135	101	558	301	245	1.0	< .4	1,202	882	--	2,000	7.3	--
209[a]	W. L. Stafford	160	do	12	108	86	195	539	333	163	1.0	5.3	1,168	628	--	1,900	7.3	--
211[a]	A. Probst	275	Jan. 10, 1963	8	95	75	933	227	297	1,500	.5	< .4	3,020	545	--	5,200	7.6	--
213[a]	O. Kirksey	180	Jan. 8, 1963	14	44	48	84	460	24	60	.8	8.5	510	307	--	930	7.5	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-18-214a/	T. E. Parson	206	Jan. 8, 1963	8	86	88	349	322	284	563	1.0	< 0.4	1,537	575	--	2,650	7.5	--
215a/	do	80	do	12	82	119	115	502	81	210	1.0	226	1,093	695	--	1,870	7.5	--
216a/	C. C. Thomas	50	Jan. 5, 1963	19	180	211	78	522	44	680	.8	< .4	1,469	1,318	--	2,800	6.8	--
217a/	J. Speich	255	Jan. 10, 1963	12	92	74	533	334	392	700	1.0	4.7	1,973	531	--	3,300	7.4	--
218a/	do	180	do	12	70	61	253	443	386	153	1.4	2.0	1,156	425	--	1,850	7.5	--
219a/	Mrs. A. Green	150	Jan. 17, 1963	11	63	54	257	480	265	194	1.2	< .4	1,081	380	--	1,760	7.5	--
220a/	M. Rodriguez	250	do	10	109	84	515	273	307	840	.8	< .4	2,000	618	--	3,450	7.4	--
303a/	C. Taylor	120	Dec. 14, 1962	17	58	57	51	434	52	44	1.0	7	501	379	--	872	7.7	--
305a/	Mrs. -- Timmins	170	Dec. 17, 1962	11	59	61	66	369	79	91	.5	< .4	549	347	--	1,035	7.5	--
306a/	C. R. Boase	100	Nov. 30, 1962	16	106	109	74	500	104	243	.2	9	907	712	--	1,680	7.3	--
307a/	J. F. Powell	160	Jan. 2, 1963	10	90	81	191	500	273	163	1.5	43	1,099	557	--	1,800	7.6	--
309a/	R. J. Locke	107	Jan. 3, 1963	13	90	77	253	495	528	114	--	< .4	1,319	542	--	1,760	8.0	--
312a/	T. A. Sears	80	Jan. 2, 1963	11	84	80	191	487	288	178	1.3	< .4	1,073	538	--	1,750	7.5	--
313a/	Mrs. G. Douglas	121	Dec. 31, 1962	13	77	93	228	513	275	230	--	41	1,209	575	--	1,960	7.7	--
314a/	Mrs. O. J. Huggins	150	do	14	86	92	129	520	207	177	--	< .4	961	592	--	1,650	7.5	--
316a/	C. W. Jones	80	do	15	136	129	159	400	195	390	--	226	1,447	867	--	2,350	7.4	--
317a/	D. Towery	130	Dec. 18, 1962	14	60	54	90	408	107	90	.6	< .4	617	370	--	1,050	7.6	--
318a/	J. O. Dewbre	121	Dec. 10, 1962	13	68	53	109	422	156	71	1.0	< .4	679	387	--	1,178	7.6	--
319a/	C. E. Jones	120	Dec. 31, 1962	27	89	84	86	563	82	138	--	62	845	570	--	1,440	7.5	--
321a/	V. O. Burton	116	do	11	59	54	142	421	153	124	--	< .4	750	370	--	1,300	7.5	--
322a/	do	35	do	11	80	48	52	455	77	55	--	< .4	547	398	--	955	7.5	--
323a/	R. L. Douglas	28	do	17	79	89	113	340	96	90	--	422	1,103	563	--	1,550	7.8	--
326a/	E. Duvall	100	Jan. 3, 1963	16	136	104	180	406	238	270	--	284	1,428	767	--	2,178	7.4	--
327a/	B. Wright	200	Jan. 18, 1963	13	69	55	159	467	210	113	1.0	< .4	850	401	--	1,400	7.6	--
401a/	G. A. Black	147	Nov. 1, 1962	13	47	37	34	348	8	30	.6	10	447	260	--	570	7.7	--
402a/	W. L. Minyard	65	Nov. 12, 1962	22	49	47	57	426	24	48	.6	< .4	458	313	--	724	7.5	--
403a/	do	54	do	7	41	209	425	361	132	1,086	.1	< .4	2,078	959	--	2,910	7.5	--
404a/	W. M. Frambrough	100	do	13	69	60	62	465	58	88	.2	11	590	418	--	1,032	7.6	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-18-405[a]	S. M. Black	60	Nov. 12, 1962	11	84	201	154	422	696	229	0.2	< 0.4	1,583	1,037	--	1,890	7.2	--
406[a]	do	80	do	14	90	116	62	603	259	76	.3	< .4	914	702	--	1,450	7.6	--
409[a]	L. H. Locker	151	Nov. 15, 1962	10	34	28	193	359	66	179	1.5	< .4	689	201	--	1,210	7.8	--
411[a]	do	75	do	14	64	77	83	465	89	78	.4	130	764	477	--	1,230	7.5	--
420[a]	E. O. Gilbert	Spring	do	8	25	8	1	110	6	2	.1	< .4	104	95	--	189	7.5	--
423[a]	L. Parker	36	do	17	51	59	138	412	81	124	1.5	86	760	370	--	1,230	7.5	--
424[a]	do	137	do	17	92	78	73	459	63	158	.5	90	797	551	--	1,360	7.4	--
426[a]	G. C. Cunningham	115	Nov. 1, 1962	14	78	124	97	342	75	338	.1	118	1,012	704	--	1,620	8.2	--
427[a]	D. B. McClelland	100	Oct. 31, 1962	15	146	142	205	560	127	555	.5	39.5	1,506	949	--	2,320	7.4	--
506[a]	B. Carpenter	80	Jan. 3, 1963	15	86	82	58	533	95	98	.4	< .4	696	553	--	1,200	7.3	--
512[a]	F. R. Bode	120	Oct. 31, 1962	19	92	101	58	455	66	210	.4	79	849	646	--	1,370	7.3	--
513[a]	P. Matson	120	do	14	137	121	110	448	121	385	.3	49	1,157	841	--	1,850	7.2	--
515[a]	J. A. Glass	60	Jan. 3, 1963	14	99	109	58	475	150	170	.8	< .4	835	693	--	1,475	7.4	--
516[a]	do	120	Nov. 29, 1962	13	90	75	65	419	78	183	.2	4.9	715	533	--	1,300	7.4	--
518[a]	M. L. Cobb	135	Oct. 31, 1962	14	72	96	72	498	61	184	1.7	8	753	574	--	1,250	7.4	--
521[a]	Mrs. L. Smith	90	Nov. 29, 1962	13	78	98	58	445	95	193	1.5	11	766	597	--	1,400	7.9	--
522[a]	H. S. Locks	165	do	11	68	94	73	432	84	192	1.5	9	746	555	--	1,380	7.8	--
526[a]	E. O. Herring	92	Dec. 14, 1962	12	57	54	31	421	20	45	.4	< .4	426	363	--	776	7.7	--
528[a]	do	Spring	do	14	48	62	6	423	20	13	.2	3.1	374	374	--	670	8.1	--
530[a]	do	79	do	13	61	46	9	398	10	15	.1	11.5	362	342	--	650	7.6	--
531[a]	Mrs. B. G. Stuart	146	Mar. 11, 1963	13	74	70	24	339	12	72	.4	172	608	473	--	1,000	7.7	--
532[a]	E. O. Herring	146	Dec. 14, 1963	13	56	51	23	414	14	32	.4	< .4	393	352	--	727	7.6	--
601[a]	R. E. Cornelius	150	Jan. 2, 1962	11	75	75	132	480	158	175	1.5	2.2	865	495	--	1,500	7.4	--
602[a]	J. Boyd	140	Mar. 11, 1963	12	77	81	107	484	138	163	1.8	< .4	814	520	--	1,400	7.9	--
603[a]	E. B. Tongate	100	Jan. 2, 1963	11	67	61	167	524	81	168	--	2.7	816	418	--	1,552	7.6	--
606[a]	F. Greer	234	Nov. 30, 1962	17	91	81	69	489	153	127	.2	< .4	779	562	--	1,330	7.3	--
607[a]	H. Huckleby	140	do	19	103	89	379	348	253	648	1.0	2.4	1,665	623	--	2,820	7.4	--
608[a]	R. Greer	185	do	12	83	66	455	358	222	652	.2	< .4	672	479	--	2,930	7.5	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-18-609a/	Mrs. E. Hale	100	Nov. 29, 1962	14	72	70	73	461	104	112	0.7	< 0.4	672	465	--	1,190	7.5	--
611a/	J. M. Hobaugh	70	Feb. 6, 1963	18	65	51	18	406	17	34	.3	27	430	373	--	765	7.5	--
612a/	W. L. Coffey	95	Nov. 29, 1962	15	228	158	173	359	246	737	.3	67	1,801	1,217	--	3,080	7.4	--
615a/	H. Allcorn	200	Jan. 3, 1963	11	65	76	93	505	89	120	1.8	3.4	707	476	--	1,250	7.5	--
617a/	H. Gist	240	do	14	85	109	65	469	100	230	1.8	4.7	840	661	--	1,525	7.4	--
619a/	V. F. Quirl	180	do	13	54	68	94	436	64	130	2.0	2.2	640	414	--	1,100	7.5	--
620a/	A. R. Sikes	144	Nov. 29, 1962	11	28	23	345	580	133	190	1.8	2.9	1,019	166	--	1,750	7.2	--
621a/	C. Claber	140	do	12	60	67	168	480	107	200	1.5	2.9	854	424	--	1,500	7.6	--
623a/	L. F. Holaman	180	Nov. 16, 1962	11	71	82	69	444	81	164	1.1	< .4	697	514	--	1,280	7.7	--
624a/	D. Smith	175	do	17	99	93	54	404	53	128	.5	207	848	629	--	1,470	7.4	--
626a/	J. A. McBee	100	Nov. 29, 1962	11	52	29	179	503	84	104	2.0	< .4	908	251	--	1,190	7.5	--
628a/	D. A. Young	118	Oct. 23, 1962	10	30	58	33	365	19	45	1.1	< .4	375	312	--	670	7.7	--
629a/	J. Dick	135	Mar. 11, 1963	13	78	50	15	332	9	94	.5	6	431	401	--	833	7.6	--
630a/	T. D. Royall	99	Oct. 23, 1963	17	178	142	72	397	58	451	.1	188	1,301	1,028	--	2,040	7.2	--
631a/	F. Glass	165	Oct. 25, 1963	11	131	87	156	412	86	441	.4	33	1,148	637	--	1,950	7.7	--
634a/	R. Stepp	113	Oct. 18, 1962	8	579	151	241	185	414	600	.4	1,489	3,573	2,065	--	4,200	6.9	--
635a/	Mrs. G. W. Finney	175	Oct. 25, 1962	15	172	127	273	649	256	507	2.0	90	1,761	950	--	2,900	7.5	--
638a/	N. B. Nesmith	100	Nov. 7, 1962	17	117	98	144	627	110	248	.9	72.5	1,114	692	--	1,560	7.3	--
640a/	F. Matson	140	Oct. 31, 1962	16	81	89	73	481	43	102	1.9	204.5	846	568	--	1,250	7.3	--
641a/	W. L. Henry	100	do	12	276	218	207	461	259	984	.6	5.3	2,189	1,585	--	3,200	7.2	--
642a/	L. W. Coffey	184	Oct. 25, 1962	16	320	239	241	403	252	1,250	.5	22.5	2,746	1,782	--	3,650	7.1	--
643a/	do	82	do	16	279	209	205	415	158	1,007	.5	11.5	2,090	1,555	--	3,300	7.0	--
644a/	do	165	do	17	128	113	83	444	72	378	.8	3.6	1,013	785	--	1,700	7.3	--
645a/	E. Bilton	200	Jan. 3, 1963	19	126	83	77	425	73	143	2.5	244	976	654	--	1,550	7.5	--
703a/	H. R. Stasney	41	Oct. 16, 1962	17	65	70	88	309	58	126	.3	20	596	452	--	1,137	7.4	--
707a/	V. Lockett	79	Oct. 17, 1962	15	73	90	20	622	23	32	.2	15	574	551	--	942	7.5	--
803a/	C. R. Robertson	205	do	14	83	100	20	722	20	28	.1	7	627	617	--	1,036	7.3	--
804a/	O. F. Martin	30	do	11	34	61	11	382	15	20	.1	6	346	338	--	609	8.2	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-18-805[a]	H. M. Stone	Spring	Oct. 19, 1962	14	68	90	49	480	58	128	0.3	8	651	540	--	1,008	7.5	--
806[a]	O. F. Martin	190	Oct. 17, 1962	10	64	55	11	442	10	29	.1	< .4	396	388	--	700	7.5	--
809[a]	T. T. Triplett	140	Nov. 16, 1962	17	126	128	119	482	74	274	.4	331	1,306	841	--	2,090	7.4	--
904[a]	J. Traweek	120	Oct. 23, 1962	14	74	68	33	389	25	88	.3	101	594	465	--	953	7.4	--
906[a]	M. N. McBurney	102	do	10	36	38	78	366	31	56	.8	20	449	247	--	750	7.6	--
907[a]	J. C. Darroch	75	Oct. 25, 1962	19	62	53	92	381	64	125	.6	54	656	373	--	1,045	7.5	--
910[a]	Mrs. E. King	250	Oct. 23, 1962	16	53	43	18	364	11	24	.3	6	350	309	--	600	7.4	--
914[a]	J. Zant, Jr., and R. Stepp	Spring	do	13	47	37	9	253	32	40	.1	< .4	302	269	--	520	7.5	--
916[a]	J. Zant, Jr.	100	do	13	68	63	10	493	15	18	.1	7	437	428	--	742	7.4	--
917[a]	do	Spring	do	15	84	91	22	615	65	37	.3	< .4	617	583	--	995	7.8	--
919[a]	do	125	do	13	30	57	27	393	12	26	.5	2.0	360	309	--	637	7.5	--
920[a]	W. M. Hancock	110	Oct. 19, 1962	12	46	51	59	388	10	74	.8	15	458	326	--	810	7.8	--
921[a]	R. D. Kirkpatrick	180	do	11	39	45	57	406	20	41	.5	< .4	413	283	--	701	7.8	--
925[a]	H. M. Stone	65	Oct. 18, 1962	15	87	107	37	483	46	90	2	235	855	656	--	1,250	7.4	--
928[a]	Atlantic Refining Co.	172	do	15	51	49	38	395	22	43	.3	2.1	414	327	--	700	7.5	--
930[a]	P. Sanchez	143	Oct. 19, 1962	14	62	57	11	455	11	15	.1	6	400	388	--	680	7.6	--
931[a]	W. A. Simmons	161	do	14	63	51	17	441	11	19	.1	2.9	395	365	--	670	7.6	--
19-102[a]	C. R. Boase	170	Dec. 29, 1962	5	183	466	1,183	246	1,319	2,267	1.5	309	5,855	2,368	--	8,300	7.7	--
106[a]	A. H. Simpson	180	Dec. 11, 1962	13	30	74	146	377	147	67	1.5	< .4	664	226	--	1,065	7.6	--
112[a]	O. L. McCullough	130	Dec. 17, 1962	13	39	35	164	356	189	74	1.0	< .4	690	239	--	1,158	7.3	--
113[a]	G. V. Golden	142+	Feb. 1, 1963	12	105	42	146	376	135	139	.7	98	863	435	--	1,450	7.6	--
114[a]	H. Painter	118	do	12	53	33	211	431	204	102	.8	< .4	828	267	--	1,360	7.5	--
120[a]	B. Stuart	171	Dec. 11, 1962	13	42	38	109	380	110	54	1.0	3.1	557	261	--	954	7.6	--
123[a]	W. L. Lockridge	84	do	16	113	109	124	465	112	301	1	123	1,128	732	--	1,920	7.4	--
124[a]	do	200	do	12	52	49	64	453	63	32	.5	< .4	495	332	--	895	7.8	--
126[a]	L. E. Horner	70	Dec. 4, 1962	19	60	67	74	469	72	58	1.0	21.5	604	424	--	1,063	7.7	--
128[a]	A. M. Denson	32	do	16	85	81	32	480	63	41	.8	6	561	547	--	930	7.6	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
41-19-203a/	J. Sanchez	145	Dec. 21, 1962	10	54	37	21	344	20	26	--	< 0.4	337	285	--	622	7.6	--
208a/	C. R. Boase	13	Dec. 29, 1962	13	111	18	16	372	40	25	0.1	4.2	410	352	--	710	7.5	--
213a/	F. Johnson	190	Dec. 28, 1962	11	77	35	46	351	71	52	--	26	491	338	--	843	7.6	--
401a/	O. B. Horner	80+	Dec. 4, 1962	14	67	54	69	475	89	59	.8	< .4	587	389	--	1,000	7.5	--
405a/	G. Reiger	147	do	12	114	93	392	292	259	672	.5	< .4	1,686	669	--	3,000	7.8	--
407a/	A. M. Scevers	184	Nov. 16, 1962	19	185	65	134	348	106	375	.2	124.5	1,180	729	--	2,050	7.6	--
410a/	C. R. Boase	134	Dec. 27, 1962	23	194	222	502	419	454	1,180	3.0	8	2,792	1,396	--	4,600	7.5	--
25-202a/	D. Harlow	Spring	Oct. 12, 1962	14	62	77	21	507	36	35	.3	11	505	472	--	850	7.9	--
205a/	T. Cutbirth	117	do	11	64	62	18	467	19	36	.3	< .4	440	415	--	760	7.6	--
207a/	R. Mahan	150	Oct. 11, 1962	14	47	49	33	402	17	33	.3	2.2	393	319	--	670	7.7	--
303a/	D. Harlow	90	Oct. 12, 1962	12	52	65	29	433	26	47	.3	13	457	397	--	784	7.6	--
401a/	B. Barr	82	July 10, 1964	13	17	12	308	468	76	202	2.2	< .4	860	90	--	1,520	7.9	--
402a/	do	128	Oct. 4, 1962	16	11	11	193	395	42	87	.8	< .4	555	73	--	930	7.9	--
404a/	C. R. McBee	35	July 4, 1964	24	150	74	267	479	165	461	1.9	42	1,420	393	--	2,450	7.6	--
405a/	do	1,436	July 15, 1964	15	43	15	1,840	378	< 3	2,700	8.4	< .4	4,810	171	--	8,150	7.5	--
503a/	K. Boyd	100	Oct. 12, 1962	15	54	49	49	416	22	40	.1	25	459	336	--	750	7.5	--
507a/	E. Cadenhead, Jr.	120	Oct. 11, 1962	14	60	59	28	481	13	26	.1	8.5	455	390	--	755	7.7	--
703a/	Mrs. C. B. McBride	315	Oct. 5, 1962	11	2	5	255	574	40	46	.9	.4	652	26	--	986	8.1	--
705a/	V. J. McAdams	490	Oct. 11, 1962	16	2	2	310	682	46	68	1.1	< .4	780	12	--	1,230	8.3	--
26-201a/	H. M. Stone	Spring	Oct. 19, 1962	14	52	54	33	432	16	34	.5	2.2	415	349	--	729	7.8	--
204a/	do	Spring	do	14	52	53	33	430	17	33	.6	3.1	417	345	--	703	7.9	--
305a/	do	110	Oct. 18, 1962	10	68	66	62	437	49	100	.5	< .4	570	441	--	1,002	7.2	--
306a/	J. B. Bettis	99	Oct. 27, 1962	17	67	58	10	411	23	26	.1	58.5	461	405	--	718	7.4	--
307a/	do	104	do	22	62	55	24	455	20	32	.1	4.3	444	380	--	725	7.5	--
309a/	do	135	Oct. 18, 1962	10	60	64	98	355	92	117	.7	125	742	413	--	1,133	8.0	--
312a/	H. Stockton	296	Oct. 17, 1962	11	33	37	110	533	13	19	.3	< .4	495	234	--	790	7.8	--
313a/	do	21	do	15	78	177	186	687	243	318	.3	117	1,472	922	--	2,350	7.6	--
33-101a/	E. Posey	430	Oct. 5, 1962	11	29	22	708	661	122	765	.8	< .4	1,983	162	--	3,190	7.7	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-07-503[b]	H. Stalcup	Spring	Apr. 10, 1962	17	274	62	104	448	500	195	0.3	0	1,370	938	19	1,960	7.2	1.5
504[a]	W. B. Morgan	84	June 11, 1962	31	464	221	99	1,113	1,180	169	.1	< 4	2,707	2,280	--	3,950	7.5	--
505[b]	do	110	Apr. 10, 1962	19	180	22	49	392	181	96	.4	0	740	218	16	1,290	6.9	.9
507[b]	C. Bunnell	60	Apr. 13, 1962	17	171	20	96	362	99	225	.4	.8	807	509	29	1,390	7.5	1.9
508[a]	H. A. Jolley	66	July 9, 1962	17	166	36	50	420	138	110	.3	< .4	724	567	--	1,260	7.4	--
601[b]	L. C. Sawyer	62	Apr. 10, 1962	20	164	35	183	338	78	410	.3	17	1,070	553	42	1,940	6.8	3.4
602[b]	B. D. Carr	--	Apr. 13, 1962	49	80	16	43	296	39	51	.6	2.8	427	266	26	681	7.5	1.1
603[b]	do	63	do	15	183	25	160	432	184	255	.3	.8	1,040	560	38	1,700	6.7	2.9
604[b]	P. Barnes	60	do	15	97	8	78	372	36	62	.2	15	494	273	38	841	7.0	2.1
605[b]	A. H. Conner	65	do	18	97	10	97	362	33	109	.4	11	553	283	43	964	7.0	2.5
802[b]	Lamkin Bros.	Spring	Apr. 19, 1962	2	16	4	11	64	4	17	.3	0	86	58	29	174	6.5	.6
805[a]	M. A. Strawn	16	June 11, 1962	24	596	195	500	161	975	1,360	.4	219	3,948	2,280	--	5,910	7.3	--
808[b]	A. K. Wallace	90	Apr. 11, 1962	11	322	75	914	272	65	1,990	0	2.8	3,510	1,110	64	6,250	6.7	12
809[b]	do	94	do	10	235	77	155	520	544	174	.3	.8	1,450	903	27	2,050	7.0	2.2
901[a]	V. C. Hill	40	June 11, 1962	21	112	23	49	200	89	90	.2	104	586	380	--	1,007	7.4	--
902[b]	H. A. Jolley	13	Apr. 9, 1962	14	300	53	440	356	798	565	.9	3.2	2,350	960	50	3,400	6.9	6.2
903[b]	Mrs. J. Shelton	14	Apr. 10, 1962	27	112	41	144	290	212	125	3.6	144	952	448	41	1,430	7.8	3.0
08-101[b]	S. Willis	34	May 8, 1962	13	120	22	157	364	139	200	.2	7.7	838	390	47	1,420	7.5	3.5
201[b]	R. O. Kellar	150	do	9	84	48	1,460	240	388	2,120	--	--	4,230	407	89	6,720	7.0	32
301[b]	Mary Kent	90	May 10, 1962	15	92	19	72	402	78	31	.3	11	516	308	34	828	7.1	1.8
602[a]	C. C. Hardwick	140	Apr. 11, 1963	9	43	29	1,700	468	15	2,490	2.5	< .4	4,522	226	--	7,750	7.9	--
701[b]	H. H. Chastain	121	May 11, 1962	10	24	9	962	496	388	970	2.3	2.2	2,610	96	96	4,360	7.3	43
702[b]	B. Carmichael	146	do	10	22	9	658	440	556	410	1.4	.8	1,880	92	94	2,990	7.4	30
703[b]	T. W. Palmer	130	do	12	85	41	465	348	454	445	1.1	3.5	1,680	380	73	2,680	7.0	10
801[b]	W. W. Roberts	52	do	22	295	60	112	404	648	141	.4	25	1,500	983	20	2,020	6.6	1.6
802[b]	P. J. Digernes	60	May 14, 1962	20	302	39	60	426	578	67	.2	0	1,280	914	13	1,680	6.7	.9
803[a]	T. W. Palmer	9	June 11, 1962	30	90	21	20	342	32	17	.4	< .4	378	280	--	625	7.3	--
15-201[a]	J. J. Edington	82	June 25, 1962	9	77	79	235	327	316	345	.4	< .4	1,222	522	--	2,210	7.7	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-15-502[b]	L. E. George	125	June 19, 1962	12	48	29	165	390	154	82	0.7	0	683	240	60	1,120	6.8	4.6
601[b]	do	110	June 20, 1962	9	18	6	132	358	3	42	.8	.2	388	72	80	689	6.5	6.8
602[b]	do	20	do	25	690	446	826	386	1,720	1,180	--	1,960	1,040	3,560	34	8,600	6.8	6.0
801[b]	W. J. Byler	130	June 19, 1962	12	37	37	205	404	150	141	1.3	1.0	783	244	65	1,290	7.0	5.7
802[b]	Mrs. I. Hickman	142	do	20	320	116	582	344	894	940	--	2.2	3,040	1,280	50	4,520	6.9	7.1
803[b]	Mrs. N. Byler	127	June 18, 1962	8	57	16	120	296	106	81	.5	0	534	208	56	907	6.4	3.6
804[b]	G. Teeters	110	do	10	15	8	287	502	93	129	1.3	0	790	70	90	1,290	7.4	15
805[b]	J. V. Pierce	100	do	11	66	43	120	386	178	70	.6	1.5	680	342	43	1,090	6.9	2.8
807[b]	H. H. Vessel	--	June 15, 1962	11	163	12	18	452	24	41	.3	50	541	456	8	925	6.6	.4
808[b]	J. S. Ragsdale	180	do	14	153	64	61	482	268	73	.4	0	870	644	17	1,330	6.8	1.0
809[b]	-- York	80	do	11	285	96	218	560	333	542	.4	11	1,770	1,110	30	2,950	6.6	2.8
810[b]	M. W. Davis	103	do	17	670	622	273	572	240	1,400	--	2,640	6,140	4,230	12	8,660	6.6	1.8
811[b]	M. A. Richmond	48	June 19, 1962	14	150	13	67	426	97	63	.4	40	653	428	25	1,060	6.9	1.4
813[b]	W. W. Roser	171	do	11	91	53	105	424	218	69	.5	--	756	445	34	1,190	6.8	2.2
814[b]	G. W. Benny	50	June 15, 1962	16	91	91	129	488	91	266	.5	13	938	602	32	1,670	7.0	2.3
902[b]	A. Oliver	100+	June 20, 1962	10	355	100	299	416	1,010	372	--	38	2,390	1,300	33	3,290	6.3	3.6
903[b]	J. B. Rice, Jr.	40	June 21, 1962	10	480	80	97	390	946	305	--	2.2	2,110	1,530	12	2,750	7.0	1.1
904[b]	J. B. Snider	150	June 20, 1962	11	172	20	77	288	279	107	.3	.5	809	512	25	1,220	6.4	1.5
905[b]	R. H. Owens	90	June 21, 1962	14	152	21	115	364	79	228	.3	14	802	466	35	1,410	7.0	2.3
906[b]	N. A. Parsons	20	June 20, 1962	10	220	20	90	240	291	225	.2	11	985	632	24	1,550	6.4	1.6
907[b]	A. V. Dodds	35	June 21, 1962	11	151	23	157	390	131	242	.3	18	727	471	42	1,580	6.6	3.1
908[b]	Mrs. R. Ganns	50	do	9	338	51	242	418	484	518	.3	2.2	1,850	1,050	33	2,870	6.4	3.2
909[a]	H. T. Melton	95	June 25, 1962	7	26	4	38	37	14	89	.4	< .4	196	82	--	435	7.0	--
910[b]	J. G. Leath	76	June 21, 1962	11	518	37	63	418	832	262	.5	1.5	1,930	1,440	9	2,540	6.4	.7
912[b]	H. T. Melton	60	do	10	382	36	55	402	522	245	.4	0	1,450	1,100	10	2,080	6.5	.7
913[b]	J. R. Shell	86	do	14	458	116	334	406	392	640	--	870	3,020	1,620	31	4,310	6.6	3.6
915[b]	Z. Harris	308	May 31, 1962	10	9	4	723	676	166	620	3.1	0	1,870	38	98	3,170	7.4	51
916[b]	T. J. Hall	150	June 5, 1962	8	42	24	824	714	58	950	3.7	.2	2,260	204	90	3,950	7.3	25

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-15-918[b]	J. A. Nelson	260	June 5, 1962	10	16	8	980	560	416	920	3.0	4.4	2,630	71	97	4,320	7.8	51
16-402[b]	O. Lehman	40	May 14, 1962	10	1,560	153	251	84	264	1,940	.9	2,460	6,680	4,520	11	9,880	6.2	1.6
403[b]	G. Reed	236	Aug. 12, 1963	9	24	10	1,290	510	570	1,340	60	< .4	3,501	102	--	5,540	7.9	--
404[b]	J. N. Wilson	245	May 14, 1962	8	20	9	1,270	500	518	1,340	--	1.5	3,410	87	97	5,240	7.5	59
405[b]	C. Harris	213	May 15, 1962	8	22	10	1,100	502	600	1,030	--	3.0	3,020	96	96	4,860	7.5	49
406[b]	W. Lehman	229	May 16, 1962	12	21	10	1,200	492	490	1,260	--	3.5	3,240	92	97	5,280	7.5	54
407[b]	do	121	do	7	175	31	576	364	276	485	--	648	2,380	564	69	3,520	6.9	11
408[b]	O. Lehman	166	June 11, 1963	8	442	86	1,000	444	730	1,190	.4	1,107	4,781	1,460	--	6,610	7.5	--
701[b]	J. Tilton	108	May 23, 1962	11	20	10	363	630	162	138	--	0	1,010	91	90	1,670	7.2	17
702[b]	Reflex Glass Bead Co.	120	May 15, 1962	8	66	44	1,030	338	782	1,060	--	8.0	3,160	346	87	5,040	7.4	24
704[b]	W. Z. Ferguson	185	do	10	17	9	842	338	794	570	--	5.2	2,410	80	96	3,740	7.5	41
705[b]	V. D. Cavel	260	May 18, 1962	9	16	8	812	376	628	620	--	2.5	2,280	74	96	3,630	7.5	41
707[b]	F. Blair	340	do	9	11	6	877	664	242	820	--	5.1	2,300	51	97	3,830	7.5	53
709[b]	J. A. Bailey	19	May 15, 1962	41	383	95	453	336	344	1,130	--	94	2,710	1,350	42	4,380	6.8	27
710[b]	B. R. Cason	19	do	30	94	15	12	330	16	22	.7	3.8	356	296	8	588	7.0	.3
712[b]	J. E. Priddy	25	May 18, 1962	37	95	23	32	318	40	39	.9	51	474	332	17	760	7.0	.8
713[b]	T. Duncan	260	May 21, 1962	14	46	33	467	340	558	286	.9	0	1,570	250	80	2,420	7.3	13
714[b]	J. Everett	320	May 18, 1962	10	26	13	751	312	766	490	.7	5.6	2,220	118	93	3,250	7.2	30
716[b]	C. M. Penn	160	May 21, 1962	36	68	27	175	540	106	74	1.6	0	754	280	58	1,190	7.2	4.6
717[b]	O. Koch	25	do	38	128	22	20	500	25	9	.8	4.5	493	410	10	787	7.0	.4
718[b]	C. A. Burger	40	May 22, 1962	24	108	73	72	524	68	87	0	127	817	507	22	1,300	7.2	1.3
719[a]	F. Baker	18	June 12, 1962	20	86	35	50	364	12	81	.1	3.0	466	298	--	825	7.2	--
720[b]	Mrs. M. Blair	14	May 22, 1962	41	95	78	113	584	105	140	1.8	16	877	558	31	1,440	7.2	2.1
722[b]	W. D. Coppic	365	May 18, 1962	10	18	8	1,130	474	696	1,010	--	8.0	3,110	79	97	4,960	7.5	55
723[b]	do	8	do	11	76	11	359	434	205	305	1.5	15	1,200	234	77	1,980	7.5	10
724[b]	J. T. Evans	290	May 31, 1962	8	30	7	700	678	226	585	3.1	0	1,890	102	94	3,160	7.2	30
801[a]	J. Harper	118	June 12, 1962	12	17	7	500	834	270	145	.7	5.8	1,367	72	--	2,200	7.5	--
802[a]	J. Tilton	60	July 9, 1962	14	31	21	1,100	425	680	990	2.1	< .4	3,047	163	--	5,210	8.0	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-16-901[a]	W. Thomason	16	Sept. 14, 1962	17	40	5	10	123	24	7	0.6	0.7	171	122	--	267	7.4	--
902[a]	Wade Thomason	21	do	14	179	39	238	231	137	520	.6	53.5	1,295	607	--	2,300	7.5	--
903[a]	L. Q. Miller	Spring	Oct. 16, 1962	15	625	155	2,805	436	16	5,980	.1	< .4	9,811	2,199	--	>12,000	7.4	--
904[a]	M. Polk	Spring	do	16	381	101	1,697	367	15	3,340	.1	4.9	5,735	1,366	--	9,500	7.4	--
23-201[b]	G. Woolridge	144	June 19, 1962	10	114	40	105	408	142	130	3.0	4.8	749	449	34	1,270	6.7	2.2
205[a]	T. B. Mosier	98	June 28, 1962	18	150	55	70	359	330	67	.4	< .4	867	604	--	1,450	7.5	--
206[a]	F. C. Mosier	60	do	15	206	49	76	425	354	96	.4	< .4	1,005	719	--	1,660	7.5	--
207[b]	O. Stephens	27	June 19, 1962	13	510	127	274	480	1,460	338	--	2.0	2,960	1,800	25	3,640	6.6	2.8
208[a]	F. L. Anderson	37	July 2, 1962	17	210	44	128	403	127	340	.2	14	1,078	707	--	2,050	7.4	--
209[a]	W. B. Seymore	54	July 9, 1962	14	156	31	75	354	86	220	.2	3	759	519	--	1,400	7.8	--
211[a]	C. Ryan	43	do	14	228	31	175	375	323	345	.3	6	1,307	700	--	2,320	7.7	--
212[a]	S. Stevens	44	do	17	139	14	50	390	34	85	.1	31	562	405	--	1,100	7.6	--
214[a]	R. A. Perry	30	do	19	268	66	138	366	204	303	.6	328	1,506	945	--	2,500	7.6	--
215[a]	do	83	do	19	438	90	425	447	438	1,100	.5	16	2,746	1,470	--	4,800	7.5	--
301[b]	J. Brown	68	June 15, 1962	9	296	45	58	492	494	93	.2	0	1,240	924	12	1,720	6.6	.8
302[b]	E. Glenn	52	do	7	304	58	194	382	696	270	.4	0	1,720	997	30	2,400	6.8	2.7
303[b]	J. S. Ragsdale	30	do	19	119	9	9	294	92	7	.5	4.2	405	334	5	640	7.1	.2
305[b]	G. Stewart	51	June 14, 1962	9	85	49	63	448	12	121	.2	0	560	414	25	1,030	7.1	1.3
306[b]	do	29	do	17	238	153	476	470	102	1,240	--	22	2,480	1,220	46	4,520	6.8	5.9
307[b]	F. E. Strange	69	do	10	198	52	179	564	197	292	.4	21	1,230	708	35	2,030	6.7	29
309[b]	T. J. Hall	200	June 5, 1962	9	9	4	536	656	158	350	2.6	2.1	1,390	39	97	2,330	7.5	37
310[a]	L. E. Wickson	266	June 14, 1962	14	5	4	447	595	128	265	2.0	< .4	1,158	30	--	1,950	8.0	--
311[a]	J. C. Hester	65	June 22, 1962	27	114	139	132	561	116	318	1.9	126	1,248	865	--	2,290	7.9	--
312[a]	H. O. Inglet	200	do	13	110	91	340	527	109	590	.7	14	1,526	657	--	2,950	7.7	--
313[b]	W. M. Homer	145	June 21, 1962	16	162	92	135	588	71	325	.4	76	1,170	782	27	1,990	6.8	2.1
314[b]	R. Gable	--	June 22, 1962	21	124	17	15	418	17	28	.4	15	443	380	8	736	6.5	.3
315[a]	J. A. Swenson	20	June 28, 1962	24	174	15	38	427	74	76	.2	40	648	500	--	1,190	7.5	--
316[a]	do	29	do	15	119	49	275	285	99	532	.2	< .4	1,229	504	--	2,430	7.2	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-23-317[a]	E. Davenport	21	July 12, 1962	31	112	51	66	441	50	83	1.0	102	713	489	--	1,140	7.9	--
318[a]	F. Morgan	24	July 23, 1962	26	128	18	14	365	73	32	.2	15	485	392	--	767	7.9	--
323[a]	L. Walker	20	July 24, 1962	23	95	15	16	361	31	8	.3	< .4	366	298	--	602	7.7	--
324[a]	E. Davenport	70	July 12, 1962	14	89	141	261	531	434	340	.5	< .4	1,540	804	--	2,400	8.0	--
325[a]	C. C. Hanley	165	Aug. 23, 1962	12	11	5	671	708	124	570	3.3	2.9	1,746	50	--	2,800	8.2	--
330[a]	J. O. Howell	44	Sept. 5, 1962	16	628	221	483	566	1,393	1,090	.3	< .4	4,109	2,476	--	5,180	7.2	--
331[a]	W. P. Fletcher	44	do	42	363	199	295	410	343	579	23	1,148	3,173	1,724	--	4,100	7.4	--
332[a]	R. A. Price	38	do	18	614	192	159	538	1,402	560	.2	10	3,220	2,328	--	3,920	7.2	--
333[a]	O. A. Flynn	32	do	58	210	83	276	509	201	490	.1	111	1,679	865	--	2,560	7.4	--
334[a]	W. W. Pate	38	Sept. 6, 1962	12	522	265	494	323	696	1,690	.3	16	3,854	2,393	--	5,620	7.3	--
335[a]	W. C. King	32	do	26	88	59	148	539	66	185	.3	< .4	838	462	--	1,360	7.5	--
336[a]	C. D. Parnell	62	do	14	237	146	76	561	476	290	.4	< .4	1,515	1,190	--	2,180	7.3	--
337[a]	E. B. Elliott	37	Sept. 13, 1962	22	192	428	1,062	663	1,029	2,136	.7	130	5,326	--	--	7,400	7.8	--
338[a]	A. L. Klein	26	do	23	84	48	59	503	42	64	.5	3.8	571	406	--	955	7.7	--
339[a]	G. Stewart	52	Sept. 27, 1963	14	152	37	83	520	142	104	.9	34	826	530	--	1,300	7.6	--
501[a]	O. Strange	11	July 10, 1962	23	296	92	330	317	507	706	2.4	< .4	2,110	1,125	--	3,700	7.5	--
502[a]	F. Strange	600	July 9, 1962	13	24	11	320	386	83	292	1.6	< .4	933	105	--	1,790	7.8	--
503[a]	O. Strange	600	do	13	149	55	580	349	628	610	.6	< .4	2,207	602	--	3,700	7.5	--
504[a]	do	60	do	19	556	118	650	486	895	1,274	.1	16	3,767	1,880	--	6,000	7.2	--
505[a]	C. Hunter	65	--	14	86	35	693	403	513	682	1.6	< .4	2,223	360	--	3,820	7.7	--
507[a]	J. Browder	11	July 10, 1962	24	48	166	270	547	273	383	7	49	1,489	810	--	2,650	7.7	--
508[a]	A. E. Conklin	16	do	14	126	13	105	315	107	141	.4	15	676	370	--	1,240	7.2	--
601[a]	J. A. Cates	40	July 12, 1962	16	123	133	251	449	425	415	.8	75	1,659	855	--	2,500	7.8	--
602[a]	Mrs. L. A. Pate	28	July 24, 1962	21	133	55	91	412	90	210	.4	68	871	559	--	1,430	7.5	--
606[a]	J. A. Kennedy	14	Aug. 12, 1962	24	93	60	86	376	69	115	1.5	182	815	478	--	1,250	7.6	--
607[a]	do	13	do	27	80	23	150	478	91	115	2.0	< .4	723	294	--	1,190	7.7	--
608[a]	A. H. Dean	15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
609[a]	do	260	Aug. 14, 1962	10	36	15	1,150	543	564	1,235	3.0	< .4	3,280	152	--	5,120	7.7	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-23-610[a]	P. Jarratt	36	Aug. 12, 1962	27	42	81	316	1,085	68	128	3.0	< 0.4	1,199	435	--	1,900	8.0	--
611[a]	do	18	do	41	56	125	116	872	48	101	3.0	< .4	919	652	--	1,530	7.7	--
612[a]	J. Shultz	18	Aug. 13, 1962	23	76	34	18	407	28	11	.6	8	398	330	--	660	7.2	--
613[a]	do	10	do	29	94	32	24	466	34	9	.8	< .4	451	366	--	730	7.3	--
614[a]	N. McGaughey	15	do	30	98	45	65	537	36	70	.6	< .4	608	429	--	1,015	7.5	--
616[a]	W. J. Strickland	16	Aug. 12, 1962	24	77	20	28	271	60	29	.6	33	404	275	--	592	7.8	--
618[a]	J. C. Traweek	210	do	12	11	6	850	564	125	881	3.0	< .4	2,165	53	--	3,600	7.8	--
619[a]	G. Barnes estate	122	do	11	39	30	868	412	127	1,093	1.8	< .4	2,373	221	--	4,150	7.9	--
621[a]	P. Geron	300	July 11, 1962	13	56	34	2,300	447	5	3,330	3.0	< .4	5,961	283	--	10,350	8.0	--
622[a]	H. Marlowe	300	do	13	50	8	1,650	590	322	1,950	3.0	< .4	4,286	153	--	7,400	8.0	--
623[a]	L. Sikes	315	do	10	70	29	1,460	698	380	1,706	3.0	14	4,014	295	--	7,040	7.9	--
624[a]	R. N. Greer	160	Aug. 9, 1962	12	20	11	1,243	564	5	1,692	3.0	< .4	3,263	94	--	5,530	8.0	--
626[a]	J. L. Morris	--	Aug. 10, 1962	10	8	7	541	627	69	424	4.0	< .4	1,371	49	--	2,450	8.0	--
801[a]	C. F. McCormick	13	July 11, 1962	14	92	4	75	232	84	65	.4	29	475	245	--	921	7.4	--
803[a]	M. E. French	14	do	13	102	11	100	203	77	88	.4	213	704	300	--	1,200	7.3	--
902[a]	R. Pierce	300	do	14	14	8	1,000	208	220	1,040	6	< .4	2,904	68	--	4,825	8.1	--
906[a]	T. Huggins	48	do	21	104	17	30	327	50	42	.4	17	442	330	--	782	7.3	--
24-103[a]	Bangs School District	16	June 12, 1962	43	70	136	339	634	315	485	2.3	4.2	1,707	735	--	2,650	8.0	--
108[a]	J. R. Brush	110	June 14, 1962	35	116	180	300	651	224	500	.8	257	1,932	1,030	--	3,050	7.5	--
110[a]	T. C. Dodd	46	do	16	23	7	2	93	5	8	.1	< .4	115	84	--	190	6.4	--
115[a]	J. A. Bell	22	Sept. 14, 1962	55	73	86	53	432	95	102	1.7	102	781	535	--	1,175	8.0	--
116[a]	H. O. Wilson	39	do	22	75	66	114	407	72	175	1.7	88	813	458	--	1,320	7.6	--
117[a]	M. Hereford	21	Sept. 13, 1962	23	176	188	170	404	161	448	.8	628	1,994	1,212	--	3,000	7.7	--
118[a]	H. Wilson	230	June 6, 1962	14	13	3	615	669	200	429	2.6	< .4	1,606	45	--	2,700	7.7	--
119[a]	L. E. Wickson	6	June 14, 1962	21	284	270	306	415	274	1,264	2.5	< .4	2,626	1,820	--	4,550	7.4	--
123[a]	D. Jennings	284	Aug. 14, 1962	16	30	37	269	537	140	135	1.6	< .4	893	227	--	1,370	7.6	--
124[a]	F. Day	54	Sept. 6, 1962	23	1,344	522	2,116	389	35	6,908	.1	< .4	11,139	55	--	>12,000	7.2	--
125[a]	-- Garms estate	18	Sept. 8, 1962	43	76	81	206	620	133	220	1.7	5.5	1,071	520	--	1,690	7.7	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-24-127[a]	T. M. Young	58	Sept. 8, 1962	27	84	33	82	432	63	65	1.3	12	580	346	--	945	7.5	--
128[a]	C. Horseman	25	do	48	161	31	65	334	118	66	.3	237	890	528	--	1,260	7.6	--
129[a]	D. S. Smith and Mrs. E. L. Nelson	17	do	32	84	12	15	266	39	23	.3	13	349	259	--	530	7.6	--
130[a]	G. W. Williams	20	do	44	116	29	59	437	49	58	.5	36	606	410	--	945	7.6	--
131[a]	C. Berry	16	do	35	110	32	38	364	35	61	.5	74	564	406	--	882	7.7	--
132[a]	Mrs. M. Morton	16	do	46	173	47	131	413	101	171	1.7	247	1,126	626	--	1,650	7.6	--
133[a]	J. D. Eason	19	do	38	59	29	80	383	50	42	.8	18	505	268	--	806	7.7	--
136[a]	R. D. Sanderson	260	Sept. 14, 1962	17	32	39	222	476	101	160	2.3	< .4	807	240	--	1,350	7.7	--
137[a]	L. R. Guyer	235	do	15	29	32	207	452	82	153	2.1	4.0	746	202	--	1,300	7.9	--
142[a]	B. Allen	203	Sept. 3, 1962	15	36	35	250	540	133	130	1.4	< .4	866	232	--	1,390	7.8	--
143[a]	H. C. Mathews	125	Aug. 31, 1962	10	50	41	121	393	95	70	2.5	35	618	293	--	995	7.9	--
202[a]	L. A. Horton	23	June 12, 1962	27	388	54	91	434	334	320	.1	217	1,645	1,190	--	2,550	7.6	--
203[a]	R. M. Perry	22	do	24	120	24	7	461	28	12	.1	2.4	444	400	--	760	7.4	--
204[a]	E. R. Haynes	25	do	22	240	203	400	503	365	1,080	.7	5	2,563	1,440	--	4,350	7.6	--
205[a]	A. B. Culberson	27	do	14	60	114	233	860	153	171	1.8	< .4	1,170	620	--	1,900	7.8	--
206[a]	B. O. Boler	23	--	27	79	49	72	490	105	41	2.8	4.3	631	440	--	1,030	7.4	--
211[a]	-- Cheatham estate	28	Sept. 3, 1962	24	315	270	871	434	1,250	1,425	3.2	< .4	4,372	1,900	--	5,900	7.4	--
212[a]	Mrs. L. A. Spain	16	do	28	39	50	237	677	107	95	3.3	7	899	303	--	1,400	7.6	--
302[a]	H. E. Bell	26	Sept. 19, 1962	15	99	11	20	315	35	32	1.0	4.9	373	293	--	625	7.5	--
401[a]	D. Jennings	157	Aug. 14, 1962	7	25	15	64	210	48	34	.6	< .4	296	122	--	513	7.4	--
404[a]	C. Mathews	125	Aug. 31, 1962	13	50	62	152	550	141	68	1.8	< .4	759	381	--	1,200	7.5	--
407[a]	M. H. Hill	65	Aug. 15, 1962	20	608	498	3,833	440	1,512	7,388	2.5	< .4	14,078	3,560	--	>12,000	7.3	--
408[a]	do	20	do	23	95	105	328	610	382	390	2.0	< .4	1,625	668	--	2,450	7.4	--
413[a]	do	50	do	11	65	42	27	356	37	46	1.0	< .4	404	336	--	711	7.8	--
415[a]	R. Y. Starkey	100	Aug. 31, 1962	14	117	13	149	500	28	112	.2	90	769	348	--	1,220	7.6	--
417[a]	J. J. Stanley	60	Aug. 21, 1962	15	80	53	30	381	52	85	.8	< .4	502	417	--	875	7.6	--
418[a]	M. Boysen	60	Aug. 22, 1962	10	73	50	26	414	30	60	.5	< .4	453	391	--	797	7.8	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-24-419a/	M. Boysen	130	Aug. 31, 1962	11	29	7	496	604	13	445	2.2	< 0.4	1,300	100	--	2,200	7.8	--
420a/	W. B. Seymore	118	Aug. 16, 1962	6	3	4	768	600	40	801	2.8	< .4	1,933	24	--	3,280	8.6	--
421a/	P. Barnes	141	Aug. 22, 1962	7	29	15	377	393	127	325	1.3	37	1,111	132	--	1,850	7.8	--
422a/	S. Stephens	140	Aug. 21, 1962	20	46	24	95	369	55	55	.7	< .4	477	212	--	787	7.9	--
423a/	H. E. Wilson	145	do	14	106	61	90	399	95	154	.3	69	785	518	--	1,380	7.6	--
425a/	B. E. Harper	110	Aug. 22, 1962	23	72	25	57	411	26	30	.5	< .4	435	284	--	718	7.6	--
426a/	J. E. Whitesides	18	Aug. 31, 1962	16	835	167	2,390	332	19	5,200	.1	< .4	8,790	2,775	--	>12,000	7.2	--
501a/	Mrs. G. M. Grooms	125	Sept. 18, 1962	7	54	35	2,251	458	17	3,306	1.1	< .4	5,896	--	--	9,050	7.5	--
504a/	C. Grooms	130	do	10	26	22	1,062	527	928	610	1.2	< .4	2,918	154	--	4,710	7.8	--
506a/	do	84	do	14	20	14	306	530	62	210	1.7	3.1	892	108	--	1,550	7.8	--
507a/	Mrs. -- Humphreys	50	Sept. 3, 1962	21	100	14	8	382	15	3	.4	< .4	349	306	--	578	7.9	--
508a/	J. E. Whitesides	19	Aug. 31, 1962	19	264	47	366	353	72	894	.9	4.2	1,841	851	--	3,150	7.5	--
509a/	do	16	Sept. 18, 1962	22	33	77	308	624	236	205	9.6	17	1,215	401	--	1,900	7.9	--
510a/	do	165	do	11	35	28	1,912	641	43	2,825	1.5	< .4	5,161	202	--	8,150	7.8	--
512a/	H. Sikes	20	Aug. 30, 1962	18	488	65	509	343	343	1,315	.6	5.3	2,913	1,487	--	4,570	7.3	--
513a/	J. Harper	20	do	23	565	78	565	403	413	1,490	.4	17	3,349	1,730	--	5,080	7.4	--
514a/	do	55	do	22	360	57	386	349	323	906	.6	60	2,286	1,137	--	3,540	7.3	--
701a/	B. Stephens	--	Aug. 23, 1962	10	5	2	308	503	63	152	2.2	< .4	789	19	--	1,280	8.1	--
702a/	do	Spring	do	13	59	7	78	93	79	109	1.3	2.7	419	176	--	717	7.0	--
704a/	R. A. Wigington	135	Aug. 24, 1962	10	48	9	355	503	158	275	1.5	< .4	1,102	156	--	1,800	7.7	--
705a/	O. J. Holleman	140	do	11	9	3	580	655	107	432	4.8	< .4	1,469	35	--	2,420	7.7	--
707a/	J. C. Horton	150	Aug. 22, 1962	18	142	18	64	392	44	116	.4	36	631	426	--	1,042	7.4	--
710a/	J. Horton	118	do	14	13	6	210	402	49	88	1.5	2.4	582	57	--	950	8.0	--
711a/	do	120	do	16	16	10	165	359	36	85	1.0	< .4	506	83	--	862	8.2	--
714a/	D. Early	Spring	Aug. 23, 1962	3	487	100	915	37	686	1,992	2.0	< .4	4,203	1,625	--	6,220	7.0	--
716a/	do	53	Aug. 22, 1962	15	311	51	285	294	242	704	.4	93	1,846	987	--	2,920	7.4	--
718a/	H. Jones	160	Aug. 24, 1962	9	48	15	251	477	107	150	.7	< .4	816	--	--	1,350	8.0	--
721a/	V. W. Wallace	Spring	Aug. 29, 1962	9	38	5	14	115	22	20	.6	< .4	166	115	--	292	7.3	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-24-722[a]	B. Thomas	160	Aug. 27, 1962	16	31	30	94	359	37	55	0.9	< 0.4	441	201	--	740	7.9	--
723[a]	do	200	do	10	92	37	267	386	153	328	1.3	2.6	1,081	384	--	1,800	7.8	--
724[a]	Mrs. G. W. Guyer	145	Aug. 24, 1962	10	7	4	368	509	84	238	2.4	2.6	966	33	--	1,600	8.1	--
727[a]	W. Oden	157	Aug. 27, 1962	11	9	5	349	554	86	190	2.8	< .4	926	42	--	1,540	8.0	--
802[a]	V. W. Wallace	172	do	11	5	4	241	445	47	34	1.1	< .4	562	28	--	995	8.1	--
803[a]	W. Frye	100	Sept. 20, 1962	15	67	33	276	377	352	164	1.3	1.6	1,095	305	--	1,700	7.5	--
903[a]	D. C. Brown	21	Sept. 19, 1962	13	41	44	11	225	25	44	.2	46	345	284	--	575	8.1	--
31-201[a]	Mrs. A. Forman	17	Sept. 25, 1962	17	128	11	34	328	36	51	.4	80	518	367	--	823	7.5	--
202[a]	A. F. Stewart	30	do	13	110	9	26	288	14	59	.1	52	425	312	--	710	7.5	--
205[a]	-- Woolridge	38	Sept. 21, 1962	17	85	21	23	336	20	13	.3	42	386	300	--	682	7.6	--
207[a]	W. G. McMurray	28	Sept. 25, 1962	18	203	26	74	382	153	125	.9	151	939	614	--	1,500	7.7	--
208[a]	A. L. Cole	31	do	23	88	14	235	265	147	241	4.3	79	961	277	--	1,520	7.5	--
210[a]	R. Windham	Spring	Sept. 26, 1962	21	113	12	132	340	86	138	.7	60	730	330	--	1,145	7.6	--
211[a]	Mrs. S. R. Storm	21	Sept. 25, 1962	31	234	52	545	428	459	528	2.5	296	2,459	797	--	3,270	7.2	--
213[a]	C. B. Seymore	30	Sept. 27, 1962	15	258	21	177	183	109	556	.9	48	1,275	731	--	2,150	7.8	--
214[a]	do	35	do	20	317	45	101	220	132	305	1.5	554	1,583	974	--	2,440	7.4	--
302[a]	C. Harris	150	Sept. 21, 1962	10	8	3	503	586	107	355	4.3	1.6	1,280	32	--	2,080	8.1	--
303[a]	do	250	do	50	22	< 1	1,436	0	111	2,010	1.2	< .4	3,767	57	--	7,812	11.4	--
307[a]	A. F. Miller	210	do	19	109	14	276	386	46	383	.5	34	1,071	329	--	1,850	7.4	--
308[a]	L. A. Boenicke	185	do	4	8	3	1,014	637	23	1,180	2.5	< .4	--	32	--	4,350	7.8	--
309[a]	A. W. Boenicke	31	do	18	122	7	50	290	39	83	.3	66	528	331	--	842	7.7	--
501[a]	B. W. McIver	32	Sept. 27, 1962	15	112	9	42	276	47	47	.7	82	491	315	--	770	7.5	--
502[a]	C. Sheffield	9	do	18	276	35	444	227	272	925	1.3	4.4	2,088	830	--	3,600	7.6	--
803[a]	-- Ruggles	8	Sept. 29, 1962	15	326	43	407	224	84	1,066	.1	107	2,158	991	--	3,500	7.6	--
804[a]	do	343	do	3	97	38	240	60	5	610	.6	2.7	--	399	--	2,100	7.1	--
805[a]	J. F. Rice	18	do	18	120	19	138	268	109	118	2.0	237	893	375	--	1,280	7.8	--
901[a]	V. Carr, Jr.	8	Oct. 1, 1962	18	321	37	435	262	109	1,155	.1	.8	2,205	955	--	3,900	7.7	--
902[a]	J. D. Clark	117	Oct. 2, 1962	3	17	17	584	367	253	561	1.0	<.4	1,167	111	--	2,600	8.0	--

See footnotes at end of table.

Table 4.--Chemical analyses of water from wells and springs, Brown County--Continued

Well	Owner	Depth of well (ft)	Date of collection	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium and Potassium (Na + K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Dissolved solids	Total hardness as $CaCO_3$	Percent sodium	Specific conductance (Micromhos at 25°C.)	pH	SAR
42-32-304[a]	Mrs. E. J. Ball	80	Oct. 5, 1962	15	132	50	161	421	84	338	2.0	3.8	993	534	--	1,760	7.8	--
39-303[a]	J. D. Clark	1,470	Oct. 2, 1962	16	15	7	472	431	21	523	4.5	< .4	1,271	65	--	2,240	7.8	--
305[a]	L. C. Keegans	13	do	12	91	7	15	299	22	15	.3	3.8	313	257	--	520	7.6	--
306[a]	J. H. Bond	85	Oct. 3, 1962	23	98	24	97	397	121	55	.2	27	640	345	--	983	7.4	--
40-102[a]	L. H. and B. S. Locker	150	do	12	19	4	366	613	4	242	1.2	< .4	950	62	--	1,550	8.0	--
105[a]	Mrs. E. Newsom	156	do	13	16	9	396	536	5	331	1.0	< .4	1,035	77	--	1,740	8.1	--
201[a]	C. A. Bourn	300	do	12	114	52	2,053	417	12	3,122	.4	< .4	5,592	500	--	8,300	7.3	--

[a] Analysis by Texas State Department of Health.
[b] Analysis by U.S. Geological Survey.
[c] Analysis by The University of Texas.

Table 5.--Reported brine production and disposal in 1961, Brown County

Area shown on Figure 7	Field	Disposal in pits (bbl)	Disposal in injection wells (bbl)	Other disposal (bbl)	Total brine production (bbl)
1	Blake-Caddo.	1,825	0	0	1,825
	County Regular.	215,414	111,705	3,238	330,357
	Total	217,239	111,705	3,238	332,182
2	County Regular.	10,116	0	0	10,116
	Total	10,116	0	0	10,116
3	Thrifty.	123	0	0	123
	County Regular.	106,412	306,680	362	413,454
	Total	106,535	306,680	362	413,577
4	Brownwood.	0	0	0	0
	County Regular.	9,473	37,595	0	47,068
	Total	9,473	37,595	0	47,068
5	Janellen.	0	0	0	0
	County Regular.	43,667	188,260	360	232,287
	Total	43,667	188,260	360	232,287
6	County Regular.	11,617	32,850	0	44,467
	Total Brown County	398,647	677,090	3,960	1,079,697

Table 6.--Chemical anaylses of oil-field brines, Brown County
(Constituents are given in parts per million)

After Laxson and others, 1960, Resistivities and chemical analyses of formation waters from the west central Texas area: West Central Texas Section of the Society of Petroleum Engineers of A.I.M.E.; and BJ Service, Inc., 1960, The chemical analyses of brines from some fields in north and west Texas.

Producing zone	Field	Average depth (feet)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Bicarbonate (HCO_3)	Sulphate (SO_4)	Chloride (Cl)	Dissolved solids	Specific gravity	pH
Pennsylvanian System											
Cross Cut Sand	Caruth No. 2	1,200	2,350	793	18,800	297	4	35,300	--	1.043	6.9
Do.	County Regular	--	3,120	1,680	20,720	605	90	42,500	68,000	1.048	6.5
Do.	Do.	--	4,800	1,824	23,710	149	10	50,500	80,830	1.057	6.7
Do.	Do.	--	6,370	1,520	27,500	155	--	58,000	105,500	1.069	6.4
Blake Sand	Blake No. 1	1,100	4,300	1,455	18,500	558	427	40,000	--	1.054	6.0
Caddo	Cross Cut	2,131	5,940	3,140	31,800	132	49	67,500	--	1.086	7.1
Marble Falls	Hafner	2,400	8,030	1,855	30,250	150	229	66,100	--	1.073	6.3
Fry Sand	County Regular	--	7,330	1,890	30,000	150	100	64,000	95,000	1.073	6.7
Do.	Smith-Ellis	--	7,440	830	26,400	207	380	56,000	91,260	1.06	6.1
Ordovician System											
Ellenburger	County Regular	--	1,000	336	16,350	378	40	28,000	45,690	1.028	7.3
Do.	Do.	--	1,055	285	14,250	495	125	24,300	42,300	1.028	6.8
Cambrian System											
Cambrian	County Regular	--	2,600	672	31,890	44	250	55,500	90,410	1.066	6.1

APPENDIX

SUPPLEMENTARY DISCUSSIONS OF QUALITY OF WATER, GEOLOGY, AND HYDROLOGY

Geology of North-Central Texas

Regional Structure

The counties included by the Texas Water Development Board in the study of ground-water resources in north-central Texas are in the Grand Prairie and Osage Plains geographic provinces of Texas. The Grand Prairie region is defined as a belt of counties west of the Balcones fault zone and north of the Llano uplift, and has been described as a modified northeastward continuation of the Edwards Plateau. At the surface in the Grand Prairie region are Cretaceous rocks of the Comanche Series dipping gently to the east and southeast. Some faulting is exhibited in the Cretaceous formations near the Balcones zone, but in general no major structural feature are reflected by these beds other than the regional eastward dip. To the west of the Grand Prairie region is the Osage Plains province extending from the Edwards Plateau and Llano uplift northward to the Red River. Surface formations in the Osage Plains of north-central Texas are of Pennsylvanian and Permian age except where these rocks are overlain locally by remnants of Cretaceous sediments or Recent alluvial deposits. Pennsylvanian and Permian beds of the region form a westward dipping homocline with an average dip of 50 feet per mile. Formations significant to the occurrence of ground water under study in the Osage Plains have not been affected by major structural deformation. The principal, large, buried structural features, illustrated in Figure A1, include the Bend flexure, the Red River uplift, eastern Midland shelf, and the Concho arch and developing Concho foreland.

Depositional History

The geologic environment in which the rock units underlying north-central Texas were laid down and the stratigraphic relationship of these units one to another determine the character of the water-bearing formations, which are the sources of ground water. Structural movement and crustal settling and shifting, which followed the deposition of the rocks in the area, influenced the mode of occurrence of ground water. An understanding of these complex historical events is important to a comprehension of how ground water occurs and how it can best be developed.

The sequence of geologic events significant to the occurence of ground water in north-central Texas began in Ordovician time.

The massive epicontinental seas in which the Ellenburger sediments were deposited ranged in depth from about 600 feet to shallow banks and mud flats with a subsidence of the sea floor necessary for accumulation of sediments. This is evidenced by the calcitic and dolomitic facies which range from sublithographic to pelleted and ripple-marked limestones, and fine- to coarse-grained, commonly vugular dolomite that contains probable wind-borne sands. As a result of probable non-deposition and post-Ellenburger erosion, the Ellenburger sediments vary in thickness from a few feet to about 800 feet in north-central Texas.

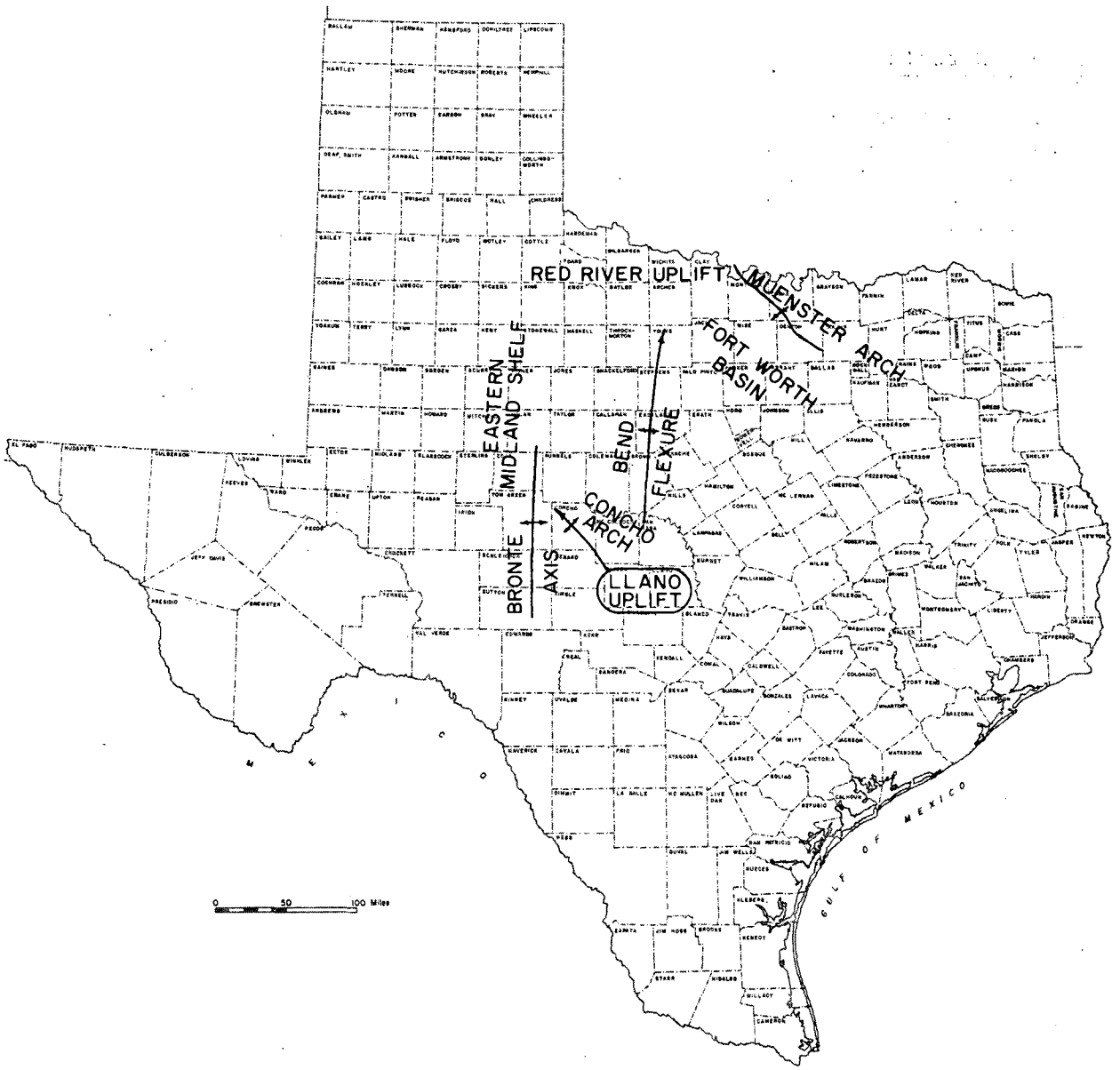

Figure A1

Major Structural Features in North-Central Texas

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

The Pennsylvanian and Permian seas that deposited sediments in the north-central Texas area were shallow, probably less than 100 feet deep. This is evidenced by the large amounts of sandstone, the repetition and extent of coal deposits, and the presence of frequent local unconformities. Present also are conglomerates, mud cracks, ripple marks, cross-bedding, and fossils that are found in shallow-water environments. Thus, ground water occurs in this area in formations of sediments deposited very nearly horizonally in shallow seas that were alternately advancing and retreating. Such a depositional environment resulted in a complex system of lateral and vertical changes in the character of the materials deposited. Few widespread continuous mantles of sediments such as those that characterize the Gulf Coast region of Texas are found. However, in contrast to the local, discontinuous, highly variable, shallow-water, clastic deposits characteristic of these periods, certain limestone units are relatively widespread. These limestones were deposited in extensive shallow seas advancing from the north and east, and are traceable as continuous units throughout much of the area under study. Thus, these limestone beds, while only locally significant as water-bearing units, are extremely important as horizon markers in identifying the age and character of the intervening sediments.

Ordovician Deposition

The lower Ordovician rocks of north-central Texas include the Ellenburger Group. In the Colorado River basin northwest of the Llano uplift, the Ellenburger Group is composed of the Tanyard and Gorman Formations. The Ellenburger Group is characterized by thick beds of limestone and dolomite with varying amounts of chert and scattered sand grains. It appears that the bulk of these sediments were formed as chemical precipitates. This is evidenced by the scarcity of terrigenous material, and limestones which are almost wholly calcitic.

From the number of springs along the outcrop, and the limited subsurface information concerning the occurrence of usable water in the Ellenburger Group, it is apparent that the water would most likely occur in joints, fractures, and solution openings in the dolomitic facies of the Tanyard and Gorman Formations.

Pennsylvanian Deposition

The upper Pennsylvanian rocks of north-central Texas include the Strawn, Canyon, and Cisco Groups, each of which has been subdivided into several formations and members. In the Colorado River basin the Strawn Group is composed principally of alternating beds of sandstone and shale, probably representing near-shore deposits with the source area for the sediments being a land mass to the east and northeast, which is now concealed under younger strata. Beds of the Strawn Group overlap to the west so that the total thickness of the Group is probably not greater than 1,200 feet at any one point. Cretaceous rocks overlying these older beds in the area of the Bend flexure prevent tracing individual units of the Strawn on the surface from the Colorado River basin into the Brazos River basin. In general, the Strawn of the Colorado River basin contains coarser sediments than in the Brazos River basin, although beneath Cretaceous sediments to the north in Wise County the Strawn again assumes a near-shore facies marked by coal beds and lenses of sand and sandy shale.

The Canyon Group in north-central Texas is characterized by thick limestone beds alternating with shales, and contains relatively little sandstone. The source of the sediments in the Canyon was from the east, and was lower than during Strawn deposition as shown by the decrease of terrigenous clastic material, which marked much of the Strawn deposition. Sandstone lenses occurring in the Canyon Group, of extreme importance to the occurrence of ground water in local areas, probably were deposited in channels formed during periods of nonmarine occurrence. In Jack and Wise Counties the character of Canyon sediments--conglomerates, irregular sands, and several coal beds--indicates an approach to the shoreline. Also in the southern region of the Colorado River basin some conglomerates are found in the basal Canyon. The surface expression of the Canyon Group in the Brazos River basin is separated by Cretaceous rocks from Canyon beds in the Colorado River basin, and no definitive stratigraphic correlation of individual formations has been made from one basin into the other.

There was no widespread erosion of Canyon deposits except perhaps in the western Llano area. Tectonic activity to the north included the gradual uplift of the Red River arch, possible folding in the Wichita system, and other disturbances in the mid-continent area. Canyon sedimentation was also affected by the continued development of the eastern Midland shelf and the subdued, but still prominent, Concho arch and the Bronte axis.

Sedimentation continued into Cisco time, as evidenced by the lack of a marked unconformity between the Canyon and Cisco strata. Local disconformities and channeling are apparent in both the outcrop areas of these beds and in the subsurface, indicating that the shelf environment of late Canyon time became more and more deltaic locally during Cisco time. The Cisco Group in the north-central Texas region is comprised chiefly of shale, sandstone, conglomerate, and limestone, with local coal beds. Eastward the sand and conglomerate deposits increases in thickness while to the west the conglomerate and the coal disappear. In the northern part of the area the limestone disappears from the Cisco Group as deposition occurred in a nonmarine or partially marine facies.

Deposition in the late Pennsylvanian was affected by uplift in the Llano area as the initial westward tilting of the Concho foreland began toward the Midland basin. This westward tilting was to continue throughout Permian time. The Bend flexure, previously called the Bend arch, which extends from the Llano area to the Red River uplift, came into existence during late Pennsylvanian and early Permian times as a result of the differential subsidence of the Midland basin and the eastern Midland shelf, and the consequent westward tilting of the Concho foreland.

Permian Deposition

No major unconformity marks the contact between Pennsylvanian and Permian rocks, indicating relatively continuous deposition from the Cisco of the upper Pennsylvanian into the Wichita of the lower Permian. Local disconformities and channeling are apparent both in the surface and the subsurface, however, with the shoreline of the Permian sea having oscillated back and forth while it continued its slow migration toward the west as the tilting of the Concho foreland into the Midland basin progressed. The extensive Permian sea was shallow over the north-central Texas area, resulting in deposition of sediments under widely varying conditions.

Rocks of the Wichita Group have been mapped at the surface from the Red River to the Llano uplift. In the Colorado River basin, the Wichita Group, representing the oldest Permian deposition, is characterized by a marine shale and limestone facies, whereas northward the marine beds decrease in importance and red beds are more prominent. Near the Red River, deposition of the Wichita Group was in a marginal marine environment marked chiefly by a red-bed facies of shale and sandstone. Deposition was apparently continuous in Wichita time, and no pronounced unconformities have been found in the group.

Mesozoic (Cretaceous) Deposition

The close of Wichita deposition marked the end of the Permian Period and the Paleozoic Era in north-central Texas, and great changes in the position of the land masses in Texas were to characterize the beginning of the Mesozoic Era in the State. The early Mesozoic was a period of continental elevation, and no Triassic or Jurassic deposition is known to have occurred in the area included in this study. The first marine deposition that occurred in north-central Texas after the close of the Permian was in early Cretaceous time. As a result of the massive change in land-surface elevation in the first half of the Mesozoic, however, drainage in the Texas area had been reversed by the time Cretaceous deposition began. Instead of northwesterly drainage into inland Paleozoic seas, drainage from the earliest Cretaceous period onward was toward the southeast in the direction of what is now the Gulf of Mexico. Thus the regional dip of Cretaceous rocks overlying the Pennsylvanian and Permian sediments of north-central Texas is toward the southeast.

West of an irregular, northeast-trending line through Brown, Eastland, Jack, Wise, and Montague Counties, the only Cretaceous rocks remaining after extensive periods of erosion are remnants and outliners which, although not extensive, are locally significant as sources of ground water and as recharge areas for underlying older rocks. East of this irregular line Cretaceous beds are found at the surface in a continuous band eastward to the outcrop of Eocene sediments.

All of the known Cretaceous deposition in the area of study belongs to the Comanche Series. The Comanche has been divided in ascending order into the Trinity, Fredericksburg, and Washita Groups, and both the Trinity and the Fredericksburg are found in this area. Generally, all of the Comanche sediment belong to a near-shore or shallow-water environment.

Quality of Ground Water

All ground water contains dissolved mineral constituents. The type and concentration depends upon the source, movement, and the environment of the ground water. Water derived from precipitation is relatively free of mineral matter, but because water has considerable solvent power, it dissolves minerals from the soil and rocks through which it passes. Therefore, the differences in chemical character of ground water reflect in a general way the nature of the geologic formations and the soils that have been in contact with the water. The concentration of dissolved solids generally increases with depth, especiall where the movement of the water is restricted. Rocks deposited under marine conditions will contain brackish or highly mineralized water unless flushing

by fresh water has been accomplished. This flushing action will occur in the outcrop area and to a limited distance downdip, depending upon the permeability of the rocks.

The chemical quality of ground water which has not been artificially altered is relatively constant, as is the temperature of ground water, which makes it highly desirable for many uses.

In addition to the natural mineralization of water which occurs in its environment, the quality of ground water can also be affected by man. Municipal and domestic sewage systems (including septic tanks), industrial waste, and oil-field brine which is improperly disposed of can enter into ground-water bodies and render them unfit for most uses.

Included among the factors determining the suitability of ground water as a supply are the limitations imposed by the contemplated use of the water. Criteria have been developed covering most categories of water quality, including bacterial content, physical characteristics, and chemical constituents. Water-quality problems associated with the first two categories can usually be alleviated economically, but the removal of undesirable chemical constituents can be difficult and expensive. For many purposes the dissolved-solids content constitutes a major limitation on the use of water. One general classification of water based on dissolved-solids content (Winslow and Kister, 1956, p. 5) is as follows:

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

The United States Public Health Service has established standards of drinking water to be used on common carriers engaged in interstate commerce. The standards are designed primarily to protect the traveling public, and are often used to evaluate public water supplies. According to these standards, chemical constituents should not be present in the water supply in excess of the listed concentration shown in the following table, except where other more suitable supplies are not available. Some of the standards adopted by the U.S. Public Health Service (1962, p. 2152-2155) are as follows.

Substance	Concentration (ppm)
Chloride (Cl)	250
Fluoride (F)	(*)
Iron (Fe)	0.3
Manganese (Mn)	0.05
Nitrate (NO_3)	45
Sulfate (SO_4)	250
Total dissolved solids	500

* When fluoride is present naturally in drinking water, the concentration should not average more than the appropriate upper limit shown in the following table.

Annual average of maximum daily air temperatures (°F)	Recommended control limits of fluoride concentrations (ppm)		
	Lower	Optimum	Upper
50.0 - 53.7	0.9	1.2	1.7
53.8 - 58.3	.8	1.1	1.5
58.4 - 63.8	.8	1.0	1.3
63.9 - 70.6	.7	.9	1.2
70.7 - 79.2	.7	.8	1.0
79.3 - 90.5	.6	.7	.8

Water having concentration of chemical constituents in excess of the recommended limits may be objectionable for many reasons. Water containing an excess of 45 ppm of nitrate has been related (Maxcy, 1950, p. 271) to the incidence of infant cyanosis (methemoglobinemia or "blue baby" disease). The high concentrations of nitrate may be an indication of pollution from organic matter, commonly sewage. Iron and manganese in excessive concentrations cause reddish-brown or dark gray precipitates, which stain clothing and plumbing fixtures. Sulfate in water in excess of 250 ppm may produce a laxative effect, and water containing chloride exceeding 250 ppm may have a salty taste. Fluoride in concentrations of about 1 ppm may reduce the incidence of tooth decay but excessive concentration may cause teeth to become mottled (Dean, Arnold, and Elvove, 1942, p. 1155-1159).

Hardness in water is caused principally by calcium and magnesium. Excessive hardness causes increased consumption of soap and induces the formation of scale in hot water heaters and water pipes. The following table shows the commonly accepted standards and classifications of water hardness:

Hardness range (ppm)	Classification
60 or less	Soft
61 to 120	Moderately hard
121 to 180	Hard
More than 180	Very hard

Water that is suitable for industrial use may not be acceptable for human consumption, and different standards may apply. Ground water used for industry may be classified into four principal categories: cooling water, boiler water, process water, and water used for secondary recovery of oil by water injection.

Although cooling water is usually selected on the basis of its temperature and source of supply, its chemical quality is also significant. Any characteristic that may adversely affect the heat-exchange surfaces is undesirable. Substances such as magnesium, calcium, iron, and silica may cause the formation of scale. Another objectionable feature that may be found in cooling water is corrosiveness caused by calcium and magnesium chloride, sodium chloride in the presence of magnesium, acids, and the gases oxygen and carbon dioxide.

The production of steam requires high quality-of-water standards. Under the extreme temperature and pressure conditions the problems of corrosion and incrustation are intensified. Under these conditions the presence of silica becomes undesirable as it forms a hard scale or incrustation.

Water coming in contact with, or incorporated into, manufactured products is termed "process water" and is subject to a wide range of quality requirements. These requirements involve physical, biological, and chemical factors. Water used in the manufacture of textiles must be low in dissolved-solids content and free of iron and manganese, which could cause staining. The beverage industry normally requires water free of iron, manganese, and organic substances.

Water used for injection in the secondary recovery of oil is generally that water taken from the oil reservoir. However, this water--usually brine--must generally be supplemented in order to meet the requirements of volume. Careful control must be exercised over the injected water with regard to suspended solids, dissolved gases, microbiological growths, and mineral constituents. Suspended solids in water, of course, can cause plugging of the reservoir. Hydrogen sulfide, carbon dioxide, and oxygen all have corrosive effects on the well equipment, and oxygen reacting with the metallic ions, primarily iron (Fe^{+++}), will cause plugging of the reservoir. Organisms, iron bacteria, algae, and fungi have an effect of plugging the reservoir or pumping equipment, and the sulfate reducers have a corrosive effect.

Insofar as the mineral constituents are concerned, iron and manganese are undesirable as they cause plugging in injection wells. Sulfates are of interest from a standpoint of deposition. Water that is high in sulfate should not be mixed with water containing appreciable amounts of barium for this would result in formation of barium sulfate with a very low solubility. The pH value is also significant when corrosion control and the solubilities of calcium carbonate and iron are considered. The higher the pH, the more difficult it is to hold iron in solution and to keep calcium scale from forming.

Both the concentration and the composition of the dissolved constituents should be considered in appraising quality of water for irrigation. The chemical characteristics which appear to be most important in evaluating the quality of water for irrigation are: (1) relative proportion of sodium to the other cations, (2) total concentration of soluble salt, (3) amount of residual sodium carbonate, and (4) concentration of boron.

The U.S. Salinity Laboratory staff (1954, p. 69-82) proposed a system of classification commonly used for checking the quality of water for irrigation. The classification is based on the salinity hazard as measured by the electrical conductivity of the water and the sodium hazard as measured by the sodium-adsorption ratio (SAR). Figure A2 illustrates this classification system.

The importance of the dissolved constituents of water to be used for irrigation depends upon the degree to which the constituents accumulate in the soil. Kelly (1951, p. 95-99) cited areas having an average annual precipitation of about 18 inches in which the salts did not accumulate in the irrigated soil. It has been suggested (Wilcox, 1955, p. 15) that the system of classification of irrigation water proposed by the salinity laboratory staff is not directly applicable to the supplemental waters used in areas of relatively high rainfall.

Boron in excess will also make water unsuitable for irrigation. Scofield (1936, p. 286) has indicated that a boron concentration of as much as 1 ppm is permissible for irrigating sensitive crops, and as much as 3 ppm is permissible for tolerant crops. His suggested permissible limits of boron for irrigation waters are shown on the following table.

Classes of water		Sensitive crops (ppm)	Semitolerant crops (ppm)	Tolerant crops (ppm)
Rating	Grade			
1	Excellent	<0.33	<0.67	<1.00
2	Good	0.33 to .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	>1.25	>2.50	>3.75

Ground-Water Hydrology

In north-central Texas, the occurrence of ground water is erratic, and there are no large, continuous, prolific ground-water aquifers such as those

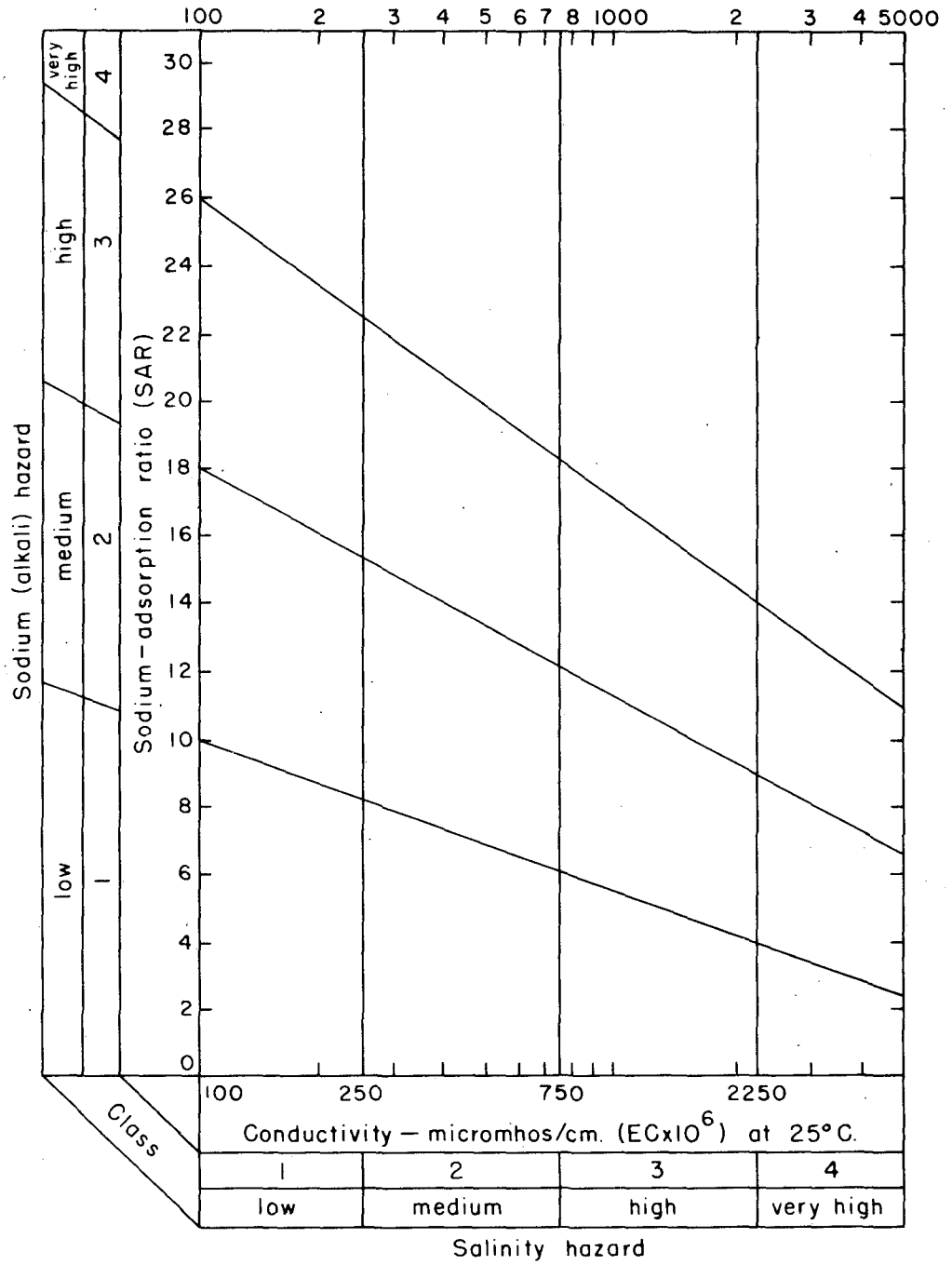

Figure A2

Diagram for the Classification of Irrigation Waters

(After United States Salinity Laboratory Staff, 1954, p. 80)

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

in the High Plains region of Texas and in the Gulf Coast. However, ground-water occurrences in north-central Texas conform to the same fundamental principles as those in other areas of the State.

Hydrologic Cycle

The movement of water from the oceans through the clouds to precipitation on the earth surface and through streams or underground back again to the ocean is called the hydrologic cycle. This circulatory system for the earth's water is illustrated graphically in Figure A3. Probably more than half of the water precipitated on the land surface as rain or snow is lost directly back to the atmosphere through evaporation or the transpiration of vegetation. A large proportion of the water remaining is lost through surface runoff. The small proportion of the water not lost through evaporation, transpiration, and surface runoff moves downward through the surface soils under the force of gravity into the zone of saturation where it is called ground water.

Ground-Water Occurrence and Movement

The water beneath the surface of the land may occur in two zones: the zone of saturation in which the pores and other openings in the rock material are completely filled with water, and above this the zone of aeration in which the voids are filled partly with water and partly with air. Water in the zone of saturation is commonly called ground water, and the top of the zone of saturation is termed the water table.

In uncemented clastic rocks, such as sand, gravel, and clay, the water occurs in the interstices between individual particles that make up the rock. In well cemented or compacted sedimentary rocks such as sandstone, shale, and limestone, it occurs chiefly in cracks and fissures produced by earth movement or contraction, and in openings formed by solution of soluble rocks. Interstices and voids range in size from microscopic pores to large caverns. The openings may be isolated so that movement of ground water is restricted, but generally are interconnected and permit ground water to move through them. The volume of water which can be stored within a rock material is determined by its porosity, the total amount of void space in the rock. Porosity varies with the nature of the material making up the rock. In unconsolidated or pervious sedimentary rocks, porosity is a function of the shape, sorting, and degree of cementation of the grains. In limestone, gypsum, and other soluble rocks, porosity is determined by the size and distribution of cavities or channels which have been dissolved, or by the size and distribution of fractures.

The rate at which a rock transmits water is dependent not only on its total porosity, but also on the size and number of interconnections between the voids. The capacity of water-bearing materials for transmitting water is called permeability. A water-bearing formation that yields water in usable quantities is called an aquifer, whereas a nearly impermeable formation which is incapable of transmitting water in usable quantities is called an aquiclude. It is possible, as in clay, to have high porosity, and yet have low permeability because of the small size of the void spaces and interconnections. Permeable formations serve as conduits to transmit water from areas of recharge to areas of discharge.

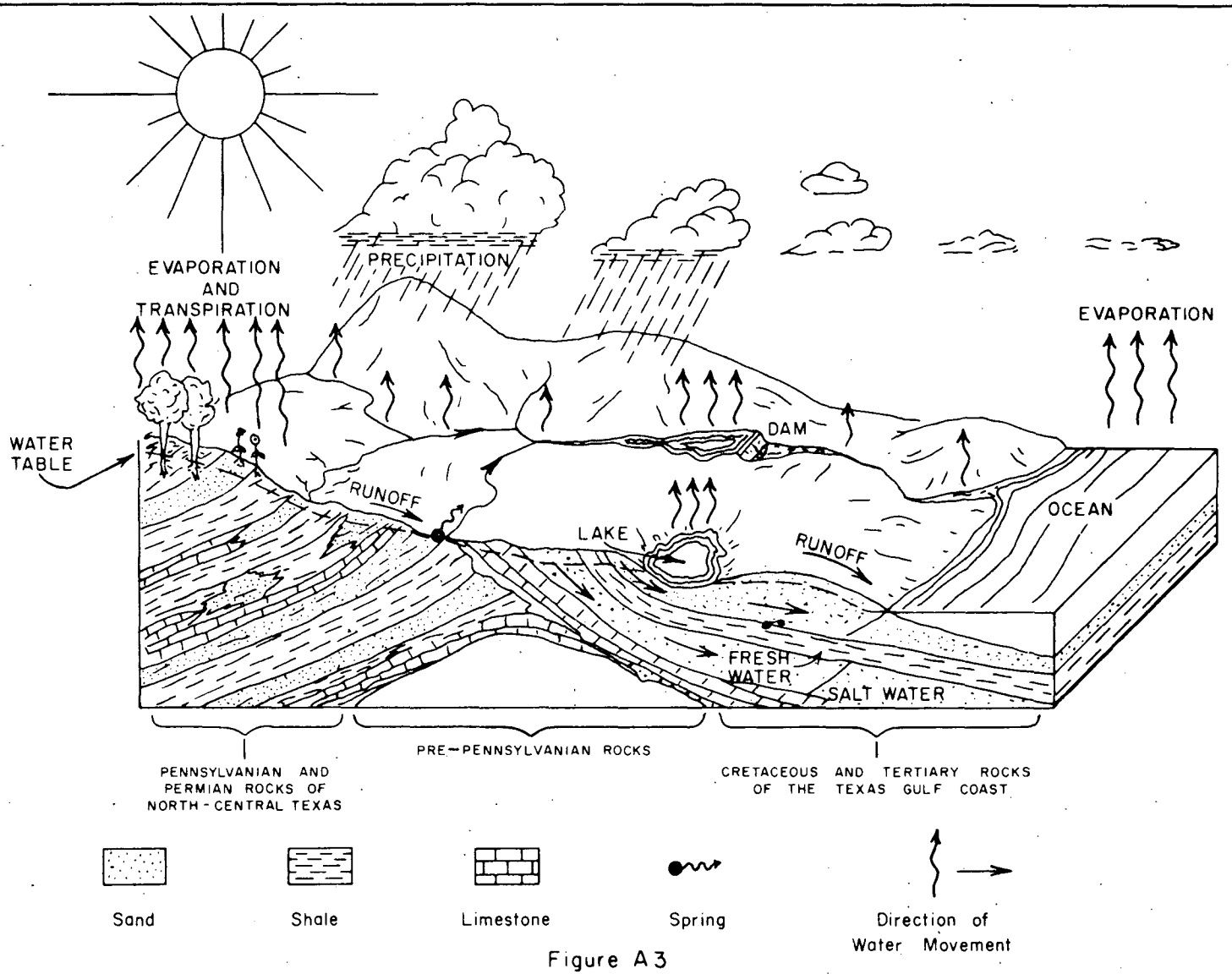

Figure A3

Hydrologic Cycle

Texas Water Development Board in cooperation with the Texas Water Pollution Control Board

Recharge is the process by which water is added to an aquifer, such as by precipitation on the outcrop of the aquifer, by seepage from surface streams or lakes on the outcrop, by interformational leakage, and occasionally by artificial means devised by man. Factors which limit the amount or recharge received by an aquifer are the amount and frequency of precipitation, the area and extent of the outcrop, the topography, the type and amount of vegetation, the condition of the soil in the outcrop, and the capacity of the formation to accept recharge. Discharge is the process by which water is removed from the aquifer, either by natural or artificial means. Natural discharge occurs through springs, effluent seepage, evapotranspiration, and interformational leakage. Artificial discharge is through wells, or other holes or excavations which intersect the water table.

Water contained in the zone of saturation under water-table conditions is unconfined, and the water surface is at atmospheric pressure. In artesian aquifers, where the water is confined by relatively impermeable layers above and below, the water is under hydrostatic pressure which will cause the water to rise in wells above the depth at which the aquifer is encountered.

The direction and rate of movement of water through a porous medium, such as an underground geologic formation, is influenced by a variety of factors, which include the nature of the formation itself and the external pressures applied on it as well as the fundamental physical laws of gravity and momentum. These factors include surface tension, friction, atmospheric pressure where the formation encounters the earth's surface, paths of differential permeability, effects of heavy local withdrawals or injection of water, and climatic changes affecting rates of recharge. In north-central Texas, ground-water movement is not constant in either direction or rate. The environment through which it moves is a heterogeneous complex of sedimentary deposits varying in porosity, permeability, and angle of repose. Thus it is not easy, and frequently not even possible in the light of present knowledge, to determine precisely the route water will take from the point of recharge to the points at which it is once again discharged at the ground surface. In the area of this study, however, this route generally is circuitous and probably of relatively short geographic extent. Consequently, a landowner whether private or public has a particular need for understanding the hydrologic factors affecting the occurrence of ground water. Only by a carefully discriminating study of the geological environment of his immediate locality can he determine the availability of ground water for beneficial use, or the means required to protect available ground water from pollution.