Report 273

GROUND-WATER AVAILABILITY OF THE LOWER CRETACEOUS FORMATIONS IN THE HILL COUNTRY OF SOUTH-CENTRAL TEXAS

TEXAS DEPARTMENT OF WATER RESOURCES

January 1983

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By

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CONCLUSIONS

The Trinity Group aquifer is essentially the only ground-water source for all but the extreme updip, northern portion of the study region and is divided, in ascending order, into the lower, middle, and upper aquifer units.

The lower Trinity aquifer, which includes the Hosston Sand and Sligo Limestone Members of the Travis Peak Formation, yields small to large quantities of ground water. The quality is good in the Kerrville to Bandera area but becomes slightly more saline throughout the remainder of the study area. The water is utilized for municipal purposes in Kerrville and Bandera and for irrigation in a few other localities. Because of its depth and poor quality, overall development of the lower Trinity aquifer has been minimal. The lower Trinity is not present in Gillespie and portions of Blanco and Kerr Counties.

The middle Trinity aquifer is comprised of the Cow Creek Limestone, Hensell Sand, the lower member of the Glen Rose Limestone, and is the most widely utilized of the three aquifer units. The middle Trinity aquifer yields small to moderate quantities of fresh to slightly saline water throughout the study region.

The upper Trinity aquifer produces water from the upper member of the Glen Rose Limestone. Yields are generally very small due to the low porosity and permeability of the limestone, and the chemical quality is normally poor because of the presence of evaporite beds. This unit is utilized only for limited domestic and livestock purposes.

Chemical quality of water in the Trinity Group aquifer is variable. Water acceptable for human consumption, although very hard, is available over most of the study region. Poor quality of water in the Trinity is usually due to excessive concentrations of sulfate and chloride. High concentrations of iron, nitrate, and fluoride are also common problems. The dissolved-solids content generally increases downdip toward the south and southeast. There had been no widespread pollution of the aquifer in the study region although local problems do exist. The chemical quality of the water produced from a well can often be improved by properly casing off zones of undesirable water. The yield and life expectancy of a well can likewise be improved by utilizing proper well completion and development procedures.

Although approximately 200,000 acre-feet (247 hm^3) of rainfall is estimated to be available as recharge to the aquifer annually, much of this recharge is lost by natural rejection, principally to springs. During dry periods, recharge is limited and water levels decline. Also, continuous heavy pumpage results in rapid water-level declines due to the aquifer's rather low capability to transmit water. Therefore, moderate to severe water-level declines can be expected over a major part of the study region where both drought and heavy concentrated pumpage occur.

INTRODUCTION

Purpose and Scope

The ground-water study of the Lower Cretaceous formations in south-central Texas, commonly referred to as the Hill Country, was conducted during the period from December 1974 to October 1978. The primary purpose of the study was to describe the hydrologic characteristics of the Trinity Group, which includes the Glen Rose Formation and the Hensell Sand, Bexar Shale, Cow Creek Limestone, Hammett Shale, Sligo Limestone, and Hosston Sand Members of the Travis Peak Formation.

Principal objectives of the investigation included: (a) collection and evaluation of previously compiled geologic and hydrologic data; (b) determination of the quantity and quality of the available ground waters on a regional basis; (c) determination of the hydrological characteristics of the various formations; (d) determination of hydrologic connections between formations; (e) determination of the annual amount of recharge and discharge of the aquifers; and (f) the initiation of a continuing ground-water quality monitoring program.

For the purpose of this report, hydrologic data were gathered primarily from high-capacity wells which include public supply, industrial, and irrigation wells. Also an attempt was made to inventory all perennial springs.

Location and Extent

The area of investigation includes the southern edge of the Edwards Plateau and extends southeastward into the Balcones fault zone. It includes all or parts of the following 11 counties: Bandera, Bexar, Blanco, Comal, Gillespie, Hays, Kendall, Kerr, Medina, Real, and Uvalde. The study area is within the drainage basins of the Guadalupe, San Antonio, Nueces, and Colorado Rivers and covers approximately 5,800 square miles (15,000 km^2). The study region is shown on Figure 1.

Geography

Topography and Drainage

The land surface in the study region is characterized by a rough and rolling terrain. The nearly flat-lying, erosion-resistive limestone rocks forming the surface of the Edwards Plateau have been deeply incised into the less resistive, marly limestone rocks of the Glen Rose Formation. Wermund (1974) describes three different terrains in the study region:

> "Along the West Nueces and Nueces Rivers, most of the terrain consists of broad divides. Along the Dry Frio, Frio, and Sabinal Rivers, the terrain comprises both highly dissected divides and incised stream valleys. About the Medina and Guadalupe Rivers, most terrain lies in broad valleys and less occupies narrow divides."

Elevations range from a maximum of 2,400 feet (730 m) above mean sea level in the northwest Plateau region to a minimum of 780 feet (240 m) in the drainage basins in the east.

Four major drainage basins occupy the study region. Drainage in the Nueces River basin is to the south. In the San Antonio River basin, drainage is to the southeast. And in the Guadalupe and Colorado River basins the drainage is to the east. The larger rivers are dominantly effluent and form wide valleys. The smaller creeks and streams are characterized by two dominant types: the perennial spring-fed streams, and the intermittent creeks that only transport precipitation runoff. Many of the streams revert underground when encountering cavernous zones or areas of gravel accumulation and later resurface as gravity springs. Most of these streams that are perennial in their lower reaches are diverted underground where they cross the Balcones fault zone. Most of this water is probably captured in the down-faulted Edwards Formation.

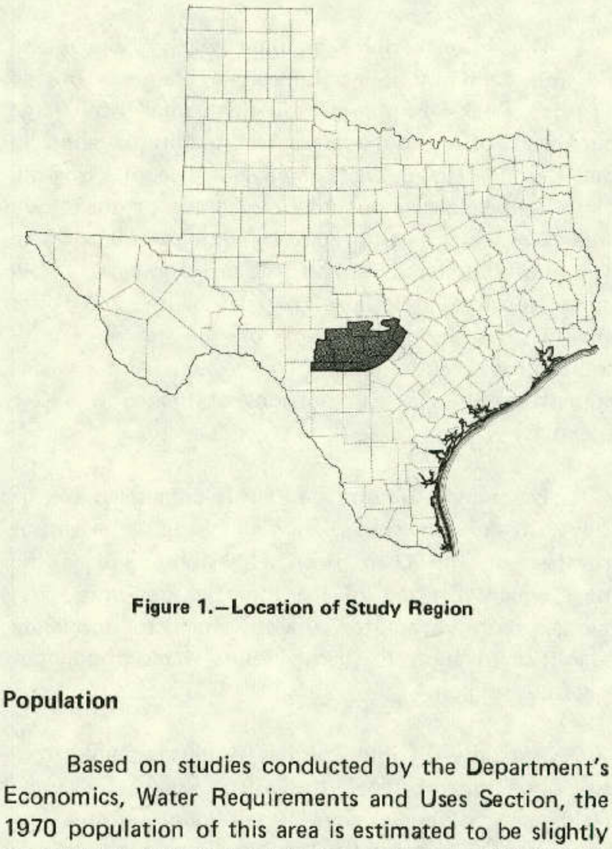


Figure 1.—Location of Study Region

Population

Based on studies conducted by the Department's Economics, Water Requirements and Uses Section, the 1970 population of this area is estimated to be slightly over 67,000 and it is projected to be over 100,000 by the year 2020. Most of the population resides on rural farms and ranches although several towns and residential developments are showing rapid growth. Some of the larger population centers are the cities of Bandera, Blanco, Boerne, Comfort, Fredericksburg, Kerrville, Leakey, Wimberly, and the area surrounding Canyon Lake.

Economy and Land Use

The economy of this area is based primarily on the raising of cattle, sheep, and goats. Because of the ruggedness and beauty of the area, much of the land is being used for recreational purposes such as hunting leases, public parks, private camps, weekend resorts, and retirement areas. Numerous large tracts of land in the more scenic areas are being subdivided for residential development.

Farming is predominantly limited to the growing of grass and feed crops in the stream valleys. Because of the limited supply of ground water and the rising cost of fuel, there is very little irrigation in the area although trickle irrigation systems are gaining popularity for watering orchards.

Minor incomes are derived from the cutting of cedar posts and the quarrying of building stone.

Vegetation

A variety of vegetation inhabits the study region. Prairie grasses and stands of Live and Spanish Oak grow on the karstic surface of the upper plateau. "Cedar" (scrub Juniper) and Live Oak are prominent in the marly dissected region. Lining the banks of the creeks and rivers are Cypress trees while the terraces support growths of Live and Post Oak, "Cedar", Elm, Hackberry, Cottonwood, Sycamore, and Willow. Varieties of natural grasses include Little Bluestem, Indian Grass, Sideoats Grama, and Texas Winter Grass. The most common introduced grasses include Coastal Bermuda, Plains Lovegrass, Klein Grass, and King Ranch Bluestem (Cuyler, 1931).

A number of studies have shown that grasses utilize one-third to one-half as much water as trees and shrubs. Trees, such as the "Cedar" or Juniper, are especially inefficient water users. Several residents of the Hill Country have indicated that creeks and springs on their property have increased in flow since they converted their land from tree growth to grass.

Climate

A subhumid to semiarid climate prevails throughout the study area. The average annual precipitation ranges from 35 inches (89 cm) in the east to 25 inches (64 cm) in the west. During the drought period from 1950 to 1956, the average annual precipitation was about 22 inches (56 cm). Measurements by the National Weather Service of average annual precipitation during the 30-year period 1931 to 1960 are illustrated on Figure 2 along with average monthly precipitation for periods of record at selected stations.

The average monthly temperature for the period 1905 to 1973 ranged from a minimum of 33°F (1°C) in January in the northwest to a maximum of 96°F (36°C) in July throughout most of the study region. The annual mean temperature for the period 1931 to 1960 ranged from 65°F (18°C) in the northwest to 68°F (20°C) in the south and east (Carr, 1967).

The average annual gross lake-surface evaporation for the period 1940 to 1965 ranged from 73 inches (185 cm) in the northwest to 65 inches (165 cm) in the southeast (Kane, 1967), or more than twice the average annual precipitation.

Previous Investigations

Ground-water investigations have been conducted in all but Gillespie County in the study region by personnel of the U.S. Geological Survey in cooperation with the Texas Department of Water Resources. A portion of Gillespie County around the city of Fredericksburg was discussed in a memorandum report by the Texas Department of Water Resources.

A number of local water-availability studies have been made by private consulting firms at the request of municipalities.

Principal regional stratigraphic studies include: (a) Hill (1901); (b) Imlay (1945); (c) Barnes (1948); (d) Lozo and Stricklin (1956); and (e) Stricklin, Smith, and Lozo (1971).

The geologic map was adapted from the San Antonio, Seguin, and Austin Geologic Atlas sheets; geologic quadrangle maps for parts of Gillespie and Blanco Counties; and the Geologic Map of Eastern Edwards Plateau (Rose, 1972). All were published by the University of Texas Bureau of Economic Geology.

Acknowledgements

The author appreciates the cooperation of the property owners within the study region for supplying information concerning their wells and allowing access to their property and use of their wells to measure water levels and sample for water quality. Appreciation is also

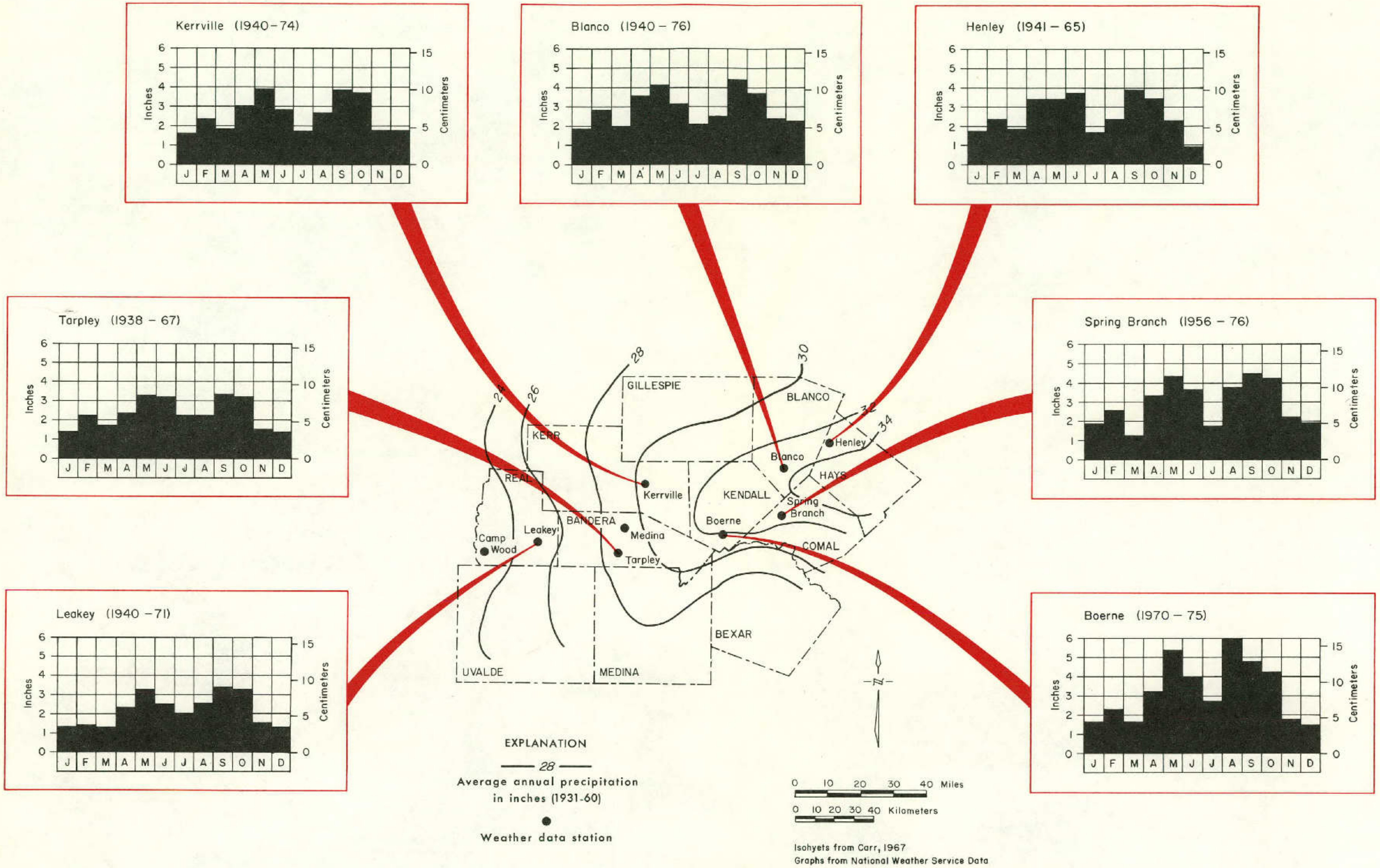


Figure 2

Average Annual Precipitation, 1931-60, and Average Monthly Precipitation for Period of Record at Selected Stations

extended to the water well drillers, city officials, water superintendents, and consultants for information, assistance, and cooperation rendered throughout this investigation. The cooperation of Federal and other State agencies, especially the State Department of Highways and Public Transportation, is also gratefully acknowledged.

This report was prepared under the general direction of C. R. Baskin, director of the Department's Data and Engineering Services Division, and Tommy R. Knowles, Chief of the Data Collection and Evaluation Section.

Well-Numbering System

The well-numbering system in this report, illustrated on Figure 3, was adopted by the Texas Department of Water Resources for statewide use. It was designed to identify, facilitate the location of, and avoid duplication of well numbers in present and future studies. The system is based upon the division of the State into quadrangles of latitude and longitude and the repeated division of these quadrangles into smaller ones.

The State is first divided into one-degree quadrangles which are numbered 01 through 89. Each

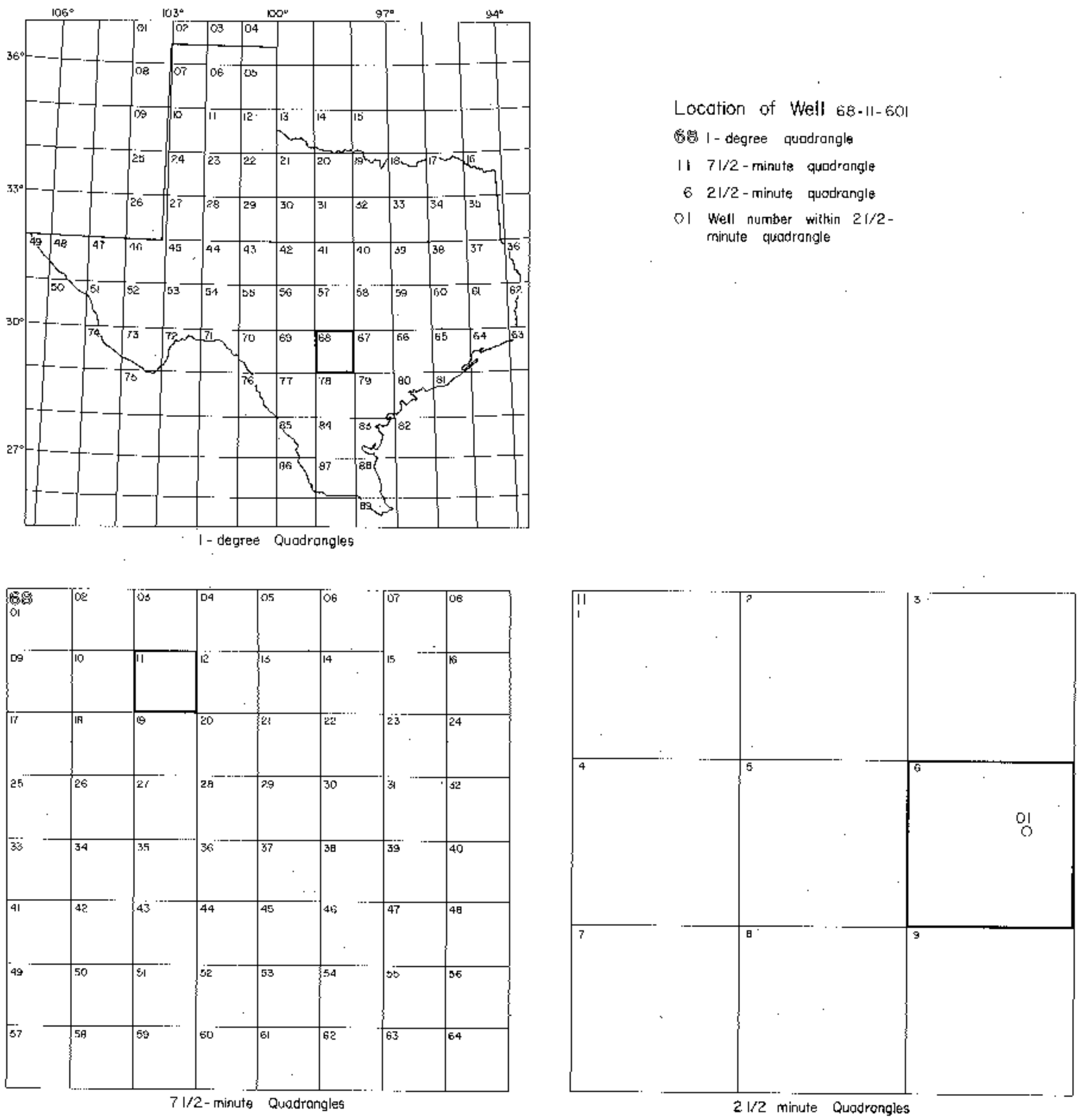


Figure 3.—Well-Numbering System

one-degree quadrangle is then subdivided into sixty-four 7½-minute quadrangles. And lastly, each 7½-minute quadrangle is subdivided into nine 2½-minute quadrangles. Within each 2½-minute quadrangle, each well is assigned a two-digit number in the sequence inventoried, beginning with 01; these are the last two digits of the well number.

Each well or spring is assigned a seven-digit number. The first two digits of a well number identify the one-degree quadrangle in which the well or spring is located. The second two digits identify the 7½-minute quadrangle. The fifth digit identifies the 2½-minute quadrangle and the sixth and seventh digits identify the particular well within the 2½-minute quadrangle.

In addition to the seven-digit number, a two-letter prefix is used to identify the county. The prefixes for the 11 counties covered by this report are:

Prefix	County
AS	Bandera
AY	Bexar
AZ	Blanco
DX	Comal
KK	Gillespie
LR	Hays
RB	Kendall
RJ	Kerr
TD	Medina
WA	Real
YP	Uvalde

Definition of Terms

This section is intended to acquaint the reader with some of the terms used in this report. Many of these definitions were selected from previous reports and from the "Glossary of Geology and Related Sciences" prepared by the American Geological Institute (1957).

Aquifer—A formation, group of formations, or part of a formation that is water bearing.

Aquifer test, pumping test—The test consists of the measurement at specific intervals of the discharge and water level of the well being pumped and the water levels in nearby observation wells. Formulas have been developed to show the relationship among the yield of a well, the shape and the extent of the cone of depression, and the properties of the aquifer such as the specific yield, porosity, and the coefficients of permeability, transmissibility, and storage.

Artesian aquifer, confined aquifer—Artesian (confined) water occurs where an aquifer is overlain by rock of lower permeability (such as clay) that confines the water under pressure greater than atmospheric. The water level in an artesian well will rise above the top of the aquifer even without pumping.

Coefficient of storage—The volume of water an aquifer releases from or takes into storage per unit of surface area of the aquifer per unit change in the component of head normal to that surface.

Coefficient of transmissibility—The number of gallons of water that will move in 1 day through a vertical strip of the aquifer 1 foot wide extending the vertical thickness of the aquifer when the hydraulic gradient is 1 foot per foot. It is the product of the field coefficient of permeability and the saturated thickness of the aquifer.

Cone of depression—Depression of the water table or potentiometric surface surrounding a discharging well, more or less in the shape of an inverted cone.

Electric log—A graph log showing the relation of the electrical properties of the rocks and their fluid contents penetrated in a well. The electrical properties are natural potentials and resistivities to induced electrical currents, some of which are modified by the presence of the drilling mud.

Fault—A fracture or fracture zone along which there has been displacement of the two sides relative to one another parallel to the fracture.

Hydraulic gradient—The slope of the water table or potentiometric surface, usually given in feet per mile.

Outcrop—That part of a rock layer which appears at the land surface.

Perched ground water—Ground water separated from an underlying body of ground water by unsaturated rock. Its water table is a perched water table.

Permeability of an aquifer—The capacity of an aquifer for transmitting water under pressure.

Porosity—The ratio of the aggregate volume of interstices (openings) in a rock or soil to its total volume, usually stated as a percentage.

Potentiometric surface—An imaginary surface that everywhere coincides with the static level of the water in the aquifer. The surface to which the water from a given aquifer will rise under its full head.

Recharge of ground water—The process by which water is absorbed and is added to the zone of saturation. Also used to designate the quantity of water that is added to the zone of saturation, usually given in acre-feet per year or in million gallons per day.

Secondary porosity—Porosity developed after the formation of a rock deposit and resulting from subsequent fracturing, replacement, solution, or weathering.

Water level—Depth to water, in feet below the land surface, where the water occurs under water-table conditions (or depth to the top of the zone of saturation). Under artesian conditions the water level is a measure of the pressure in the aquifer, and the water level may be at, below, or above the land surface.

Water-table aquifer (unconfined aquifer)—An aquifer in which the water is unconfined; the upper surface of the zone of saturation is under atmospheric pressure only and the water is free to rise or fall in response to the changes in the volume of water in storage. A well penetrating an aquifer under water-table conditions becomes filled with water to the level of the water table.

Yield of a well—The rate of discharge, commonly expressed as gallons per minute, gallons per day, or gallons per hour.

Metric Conversions

For those readers interested in using the metric system, metric equivalents of English units of measurement are given in parentheses. The English units used in this report may be converted to metric units by the following conversion factors:

From	Multiply by	To obtain
inches (in)	2.54	centimeters (cm)
feet (ft)	.3048	meters (m)
miles (mi)	1.609	kilometers (km)
feet per mile (ft/mi)	.189	meters per kilometer (m/km)
square miles (mi^2)	2.590	square kilometers (km^2)
acre-feet (acre-ft)	.001233	cubic hectometers (hm^3)
gallons (gal)	3.785	liters (l)
cubic feet per second (ft^3/s)	.02832	cubic meters per second (m^3/s)
gallons per minute (gal/min)	.06309	liters per second (l/s)
gallons per day (gal/d)	3.785	liters per day (l/d)
gallons per day per foot [(gal/d)/ft]	12.418	liters per day per meter [(l/d)/m]
gallons per day per square foot [$(gal/d)/ft^2$]	40.74	liters per day per square meter [$(l/d)/m^2$]

To convert from degrees Fahrenheit to degrees Celsius use the following formula:

$$°C = (°F-32)(0.556)$$

GEOLOGY AS RELATED TO THE OCCURRENCE OF GROUND WATER

Depositional History

At the beginning of the Cretaceous Period, the topography in the study region was characterized by an eroded, uneven, faulted surface known as the Comanche Shelf that sloped to the south and southeast away from the uplifted Llano area. The sea transgressed inland from the southeast during Cretaceous time, with occasional interruptions by short regressive periods. During deposition of the Trinity Group, the earliest set of Cretaceous rocks present, the Llano uplift remained the primary contributor of land-derived sediments. The resulting Trinity Group sediments form a wedge-like, overlapping sequence that thickens seaward and pinches out against the slope of the Llano uplift. Subsequently, during depositions of lower Glen Rose sediments, a laterally extensive reef complex known as the Stuart City Trend formed on the edge of the shelf south and east of the study area (Bebout and Loucks, 1974). This reef trend existed until late Cretaceous time and formed an energy barrier and sediment catchment basin with water depths remaining relatively shallow in the back reef zone.

Stratigraphy

The Trinity Group of Cretaceous age is the most important water-bearing unit in the study region. It overlies rocks of Paleozoic age and is overlain in a portion of the study region by younger rocks of the Fredericksburg Group of Cretaceous age. The Trinity Group is divided into the following formations in order from the oldest to youngest: Travis Peak and the Glen Rose. The Travis Peak Formation is subdivided into the following members in order from oldest to youngest: Hosston Sand, Sligo Limestone, Hammett Shale, Cow Creek Limestone, and Bexar Shale and Hensell Sand. These strata within the Trinity Group will be discussed in detail in the section covering the stratigraphy of the water-bearing units. The stratigraphic units and their water-bearing properties are summarized in Table 1.

Structure

The study region, locally known as the South-Central Texas Hill Country, is bounded on the north by the Llano uplift, on the south and east by the Balcones fault zone, and on the northwest by the Edwards Plateau. Geologic structures affecting ground water within the study area include the regional dip, the Balcones fault system, the Llano uplift, the San Marcos arch, and the uneven pre-Cretaceous surface. The regional structural trends are shown in Figure 4.

The dip of the formations in the western half of the study region is to the south and increases from about 10 to 15 feet per mile (1.9 to 2.8 m/km) in updip areas to about 100 feet per mile (19 m/km) or more downdip near the Balcones fault zone. The regional dip in the eastern half of the study area is to the east and southeast at the same approximate rate of dip. Although the general subsurface water flow will be in the direction of the regional dip, the direction of flow in any local area may be determined by local anomalies and heavy pumpage.

The Balcones fault zone forms the southern and eastern boundary of the study region (Figure 4). The zone is comprised of numerous, more or less parallel, mostly normal faults, some having individually as much as 600 feet (180 m) of displacement although 200 to 300 feet (60 to 90 m) of displacement is more common among the major faults. Some faults act as ground-water barriers and thus deflect the flow in the direction of the fault strike. George (1952) observed in one fault that the level of water in the Glen Rose Formation on the northwest, upthrown side of the fault was higher than the level of the water in the Edwards Formation on the opposite, downthrown side of the fault. Also, water qualities often differ on opposing sides of the major faults. Other observations indicate that at least the upper portion of the faults may transmit water. This is indicated by the observation of some streams that are diverted underground when crossing the fault plane, particularly where the Glen Rose Formation is in contact with the Edwards Formation. The fault planes are possible passageways for surface contamination as well as recharge water to enter an aquifer. Contamination may also occur from subsurface sources if undesirable saline water enters the fault plane. In addition to major faulting along the Balcones fault zone, numerous northeast-trending faults occur throughout the study area. These faults are laterally discontinuous with small displacement and have only small local effect on ground water.

The Llano uplift is a structural dome of igneous and metamorphic rocks located north of the study region. This dome was a source area for the terrigenous sediments of the Hosston and Hensell Sands.

The San Marcos arch or platform as described by Adkins (1933) is a broad anticlinal extension of the Llano uplift whose axis plunges southeastward through the city of San Marcos in Hays County. The anticline is evidenced by an increased altitude of the tops of the formations and a thinning of the formations across the axis (Figure 7). Other, less substantial folded trends can be delineated in the study area. The presence of a subsurface high would generally cause a restriction of ground water movement.

The uneven surface upon which the Hosston Sand Member of the Travis Peak Formation was deposited was a result of the faulting and erosion of pre-Cretaceous marine sediments. The Hosston sediments filled the valleys and covered the ridges producing a geologic unit of variable thickness which influences the occurrence and movement of ground water in the unit. The approximate altitude of and depth to the base of the Cretaceous rocks are shown on Figure 8.

Caverns formed by the solution of limestone and evaporites by ground water are common in the Trinity formations, particularly in the Glen Rose Limestone. These caverns are characteristically influenced by the jointing structure of the limestone and may extend both vertically and laterally for great distances and provide major conduits for the flow of ground water. When caverns grow to such a size as to no longer support their overburden, they collapse thus forming sinkholes that are visible from the surface as circular depressions that may transmit large quantities of surface water to a passage below ground. Sinkholes are a common occurrence in streambeds flowing over the Glen Rose Limestone and provide a passageway for a substantial amount of recharge to the aquifer.

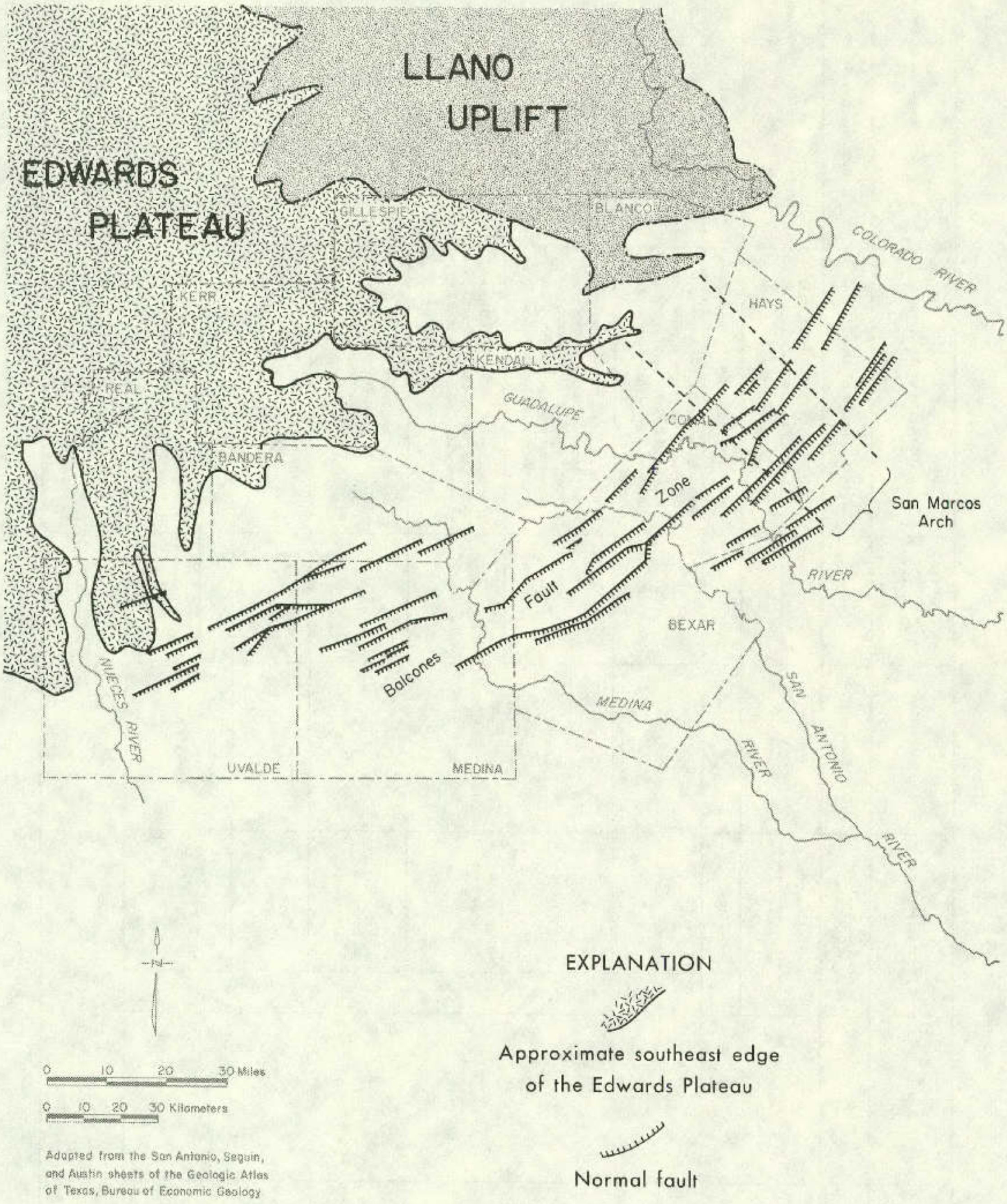


Figure 4
Regional Structural Trends

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

System	Series	Group	Stratigraphic Unit	Hydrologic Unit	Approximate Maximum Thickness (feet)	Character of Rocks	Water-Bearing Properties
Quaternary	Recent and Pleistocene		Flood plain, terrace, and fan alluvium	Alluvium	50	Gravel, sand, silt, clay, caliche.	Yields small quantities of fresh water.
Cretaceous	Comanche	Fredericksburg	Edwards Limestone	Edwards and associated limestones	500	Hard, massive, cherty limestone.	Yields small to moderate quantities of fresh water in the northwestern portion of the study area.
			Comanche Peak Limestone		60	Marly, nodular limestone.	
			Walnut Clay		15	Marly clay and shale aggregate.	Not known to yield water.
		Trinity	Glen Rose Limestone: upper member	Upper Trinity	500	Alternating resistant and nonresistant beds of blue shale, nodular marl, and impure, fossiliferous limestone. Also contains two distinct evaporite zones.	Yields very small to small quantities of relatively highly mineralized water.
			Glen Rose Limestone: lower member	Middle Trinity	320	Massive, fossiliferous limestone grading upward into thin beds of limestone, dolomite, marl, and shale. Numerous caves and reefs occur in the lower portion of the member.	Yields small to moderate quantities of fresh to slightly saline water.
			Travis Peak Formation: Hensell Sand Member / Bexar Shale Member		300	Red to gray clay, silt, sand, conglomerate, and thin limestone beds grading downdip into silty dolomite, marl, calcareous shale, and shaley limestone.	
			Travis Peak Formation: Cow Creek Limestone Member		90	Massive, fossiliferous, white to gray, argillaceous to dolomitic limestone with local thinly bedded layers of sand, shale, and lignite.	
			Travis Peak Formation: Hammett Shale Member		80	Dark blue to gray, fossiliferous, calcareous and dolomitic shale with thinly interbedded layers of limestone and sand.	Not known to yield water.
			Travis Peak Formation: Sligo Limestone Member	Lower Trinity	120	Sandy dolomitic limestone.	Yields small to large quantities of fresh to slightly saline water.
			Travis Peak Formation: Hosston Sand Member		350	Red and white conglomerate, sandstone, claystone, shale, dolomite, and limestone.	
Pre-Cretaceous rocks						Black, red, and green, folded shale, hard massive dolomite, limestone, sandstone, and slate.	Yield moderate quantities of fresh water in the northern portion of the study area.

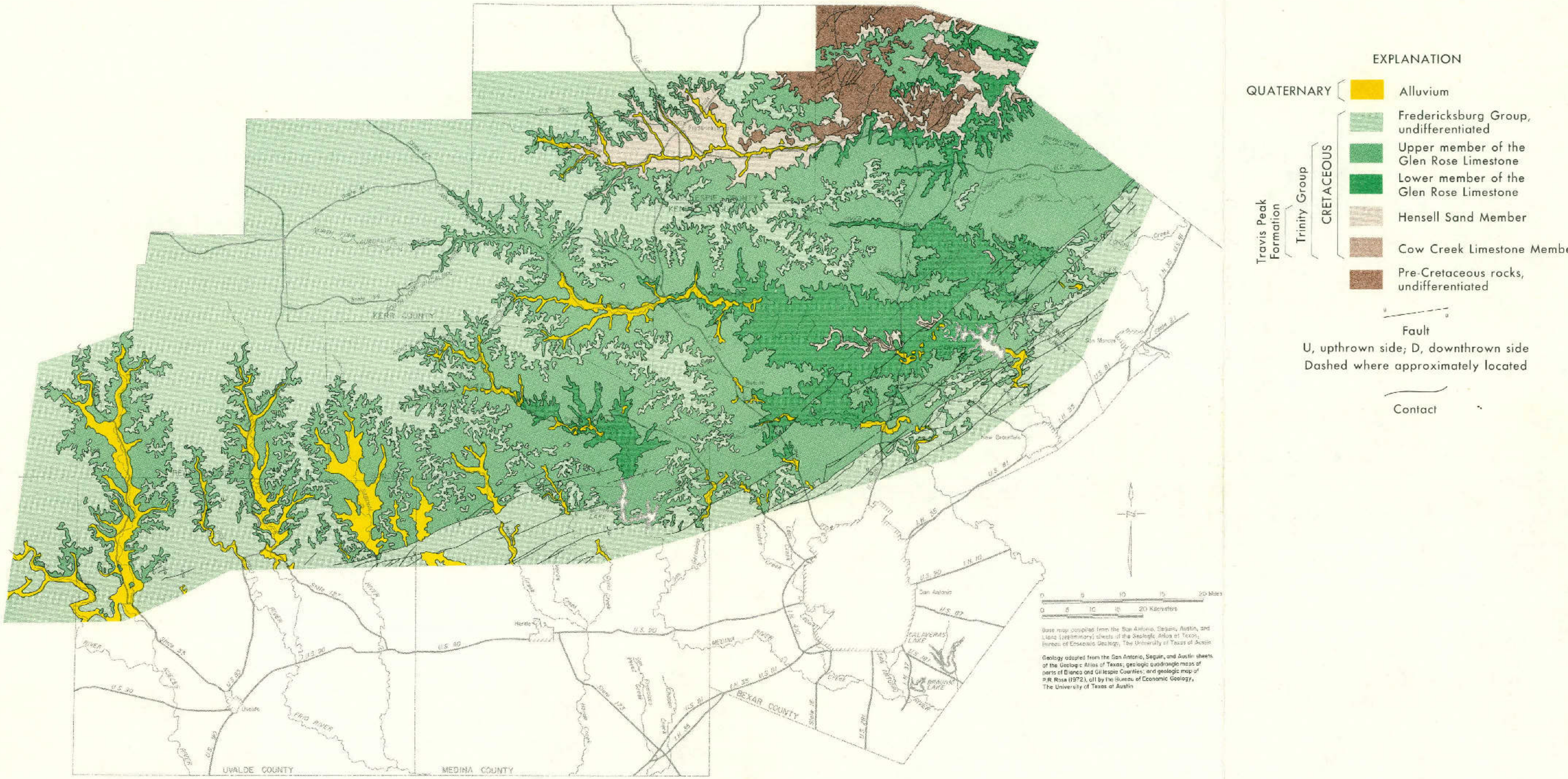


Figure 5
Geologic Map

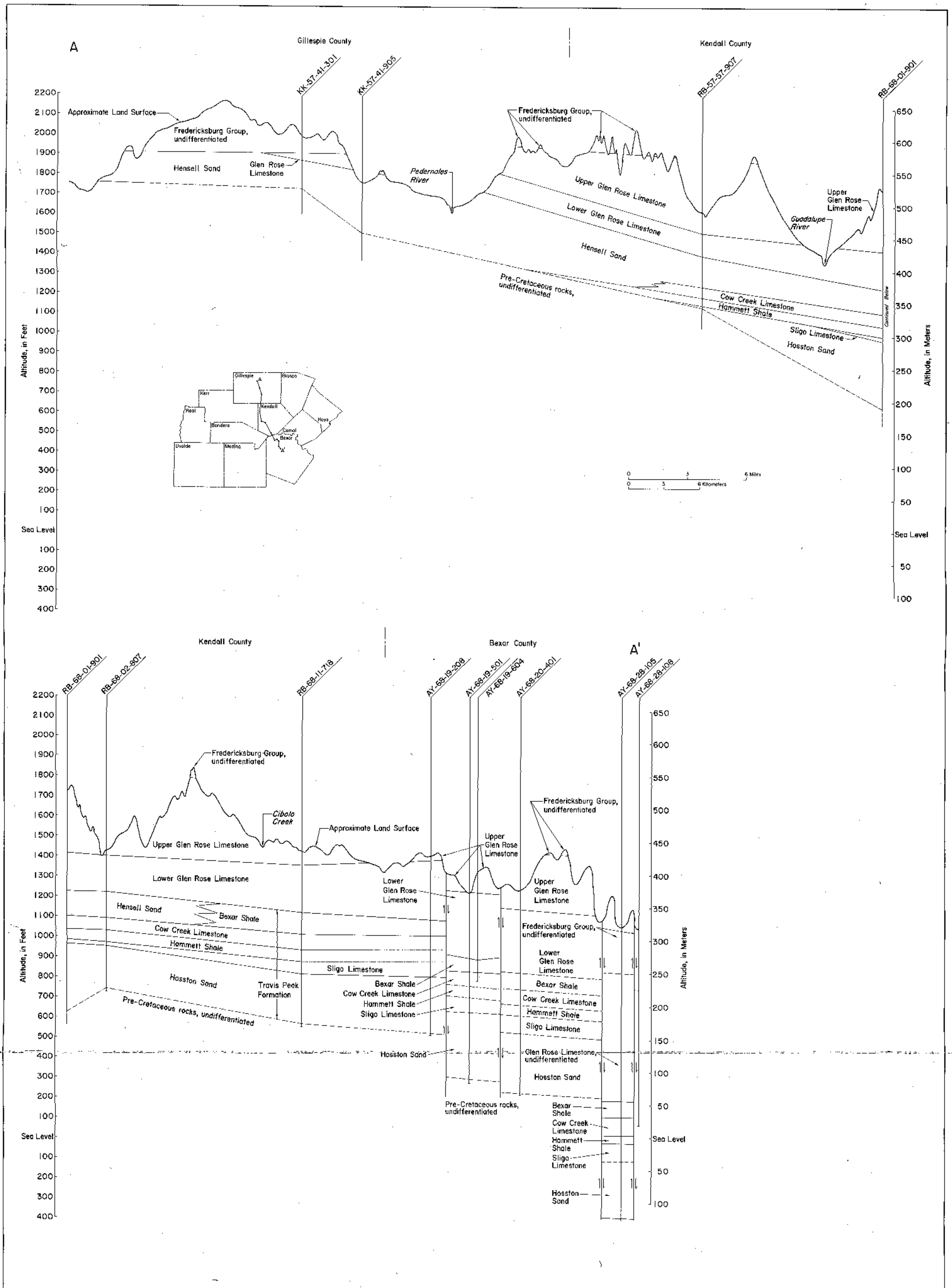


Figure 6

Geologic Section A-A'

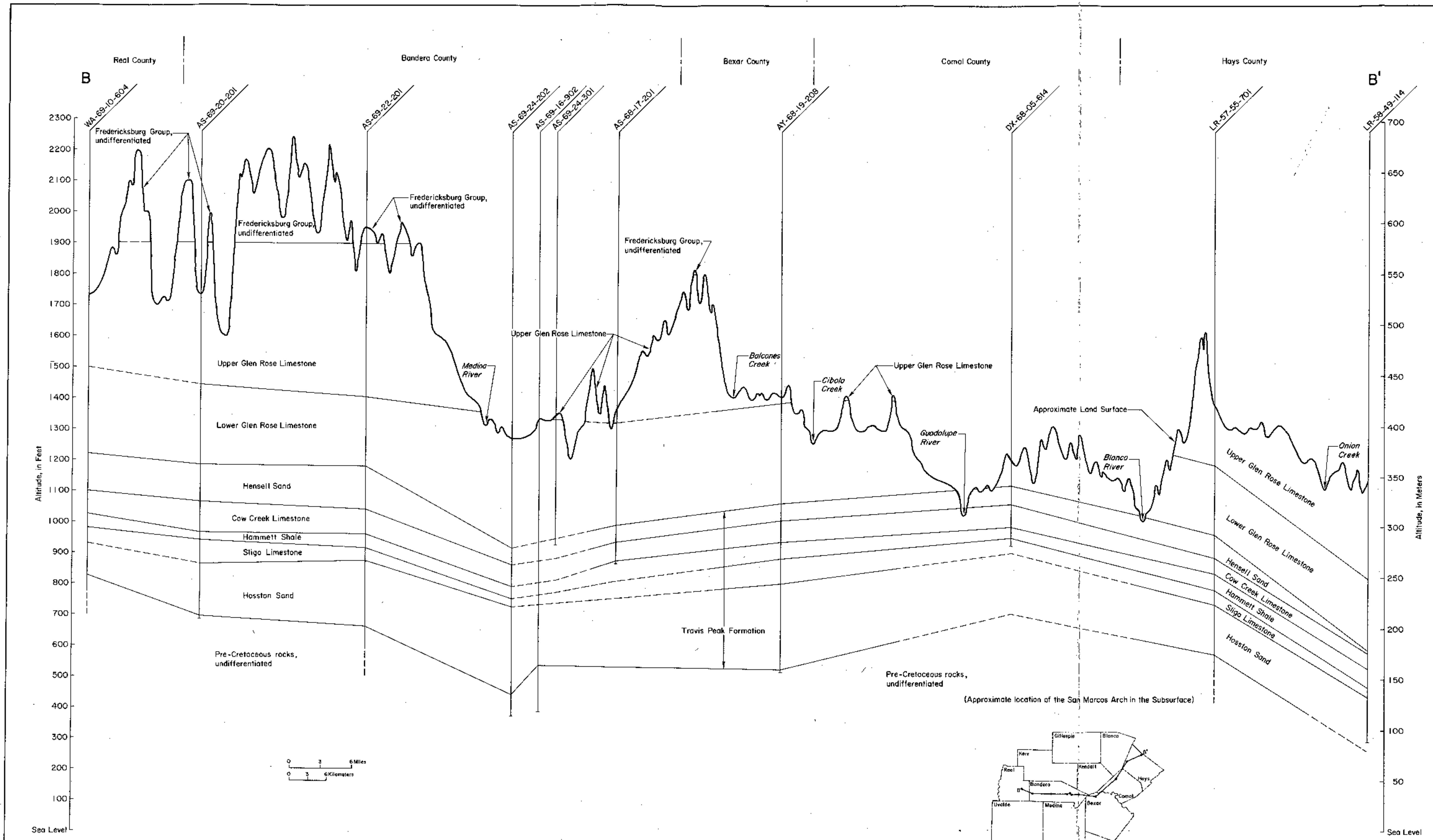


Figure 7

Geologic Section B-B'

STRATIGRAPHY OF THE WATER-BEARING UNITS

In the description of the water-bearing properties of the geologic units, yields of wells are described according to the following ratings:

Description	Yield (gallons per minute)
Very Small	0– 5
Small	5– 20
Moderate	20–100
Large	More than 100

Pre-Cretaceous Rocks

Pre-Cretaceous rocks are exposed in the study area only along or north of the Pedernales River in Gillespie and Blanco Counties (Figure 5). These formations provide usable water in the vicinity of the outcrop area. It is possible that fresh to slightly saline water might be obtained from these formations in the northern one-third of the study area.

The Ellenburger, San Saba, and Hickory aquifers are the primary Paleozoic water-producing units. The aquifers include the San Saba Limestone Member of the Wilberns Formation and the Hickory Sandstone Member of the Riley Formation, both of Cambrian age, and the Ellenburger Group of Ordovician age. These aquifers yield small to large quantities of fresh to slightly saline water to wells in the Fredericksburg and Johnson City area.

Trinity Group

Based on their hydrologic relationships, the water-bearing rocks of the Trinity Group are organized into the following aquifer units: (a) the lower Trinity aquifer consisting of the Hosston Sand and Sligo Limestone Members of the Travis Peak Formation; (b) the middle Trinity aquifer consisting of the lower member of the Glen Rose Limestone, and the Hensell Sand and Cow Creek Limestone Members of the Travis Peak Formation; and (c) the upper Trinity aquifer consisting of the upper Glen Rose Limestone. Collectively these are referred to as the Trinity Group aquifer.

Lower Trinity Aquifers

The Hosston Sand Member of the Travis Peak Formation is the oldest Cretaceous rock unit in the study area and overlies Paleozoic rocks. Imlay (1945) correlates the Hosston Sand and the overlying Sligo Limestone with the Durango and Nuevo Leon Groups of the Coahuila Series of Mexico. Local drillers often refer to the Hosston as the "lower Trinity" or "second sand".

The Hosston and its surface equivalent, the Sycamore Sand, form a wedge of alluvial sediments deposited by aggrading streams on an uneven surface. Updip the unit consists predominantly of terrigenous clastics comprised of red and white conglomerate, sandstone, and claystone with the main constituent being a quartz sand. Downdip it becomes increasingly more dolomitic and shaly. Thin conglomeritic zones, near the base, persist through the downdip limit of the study area.

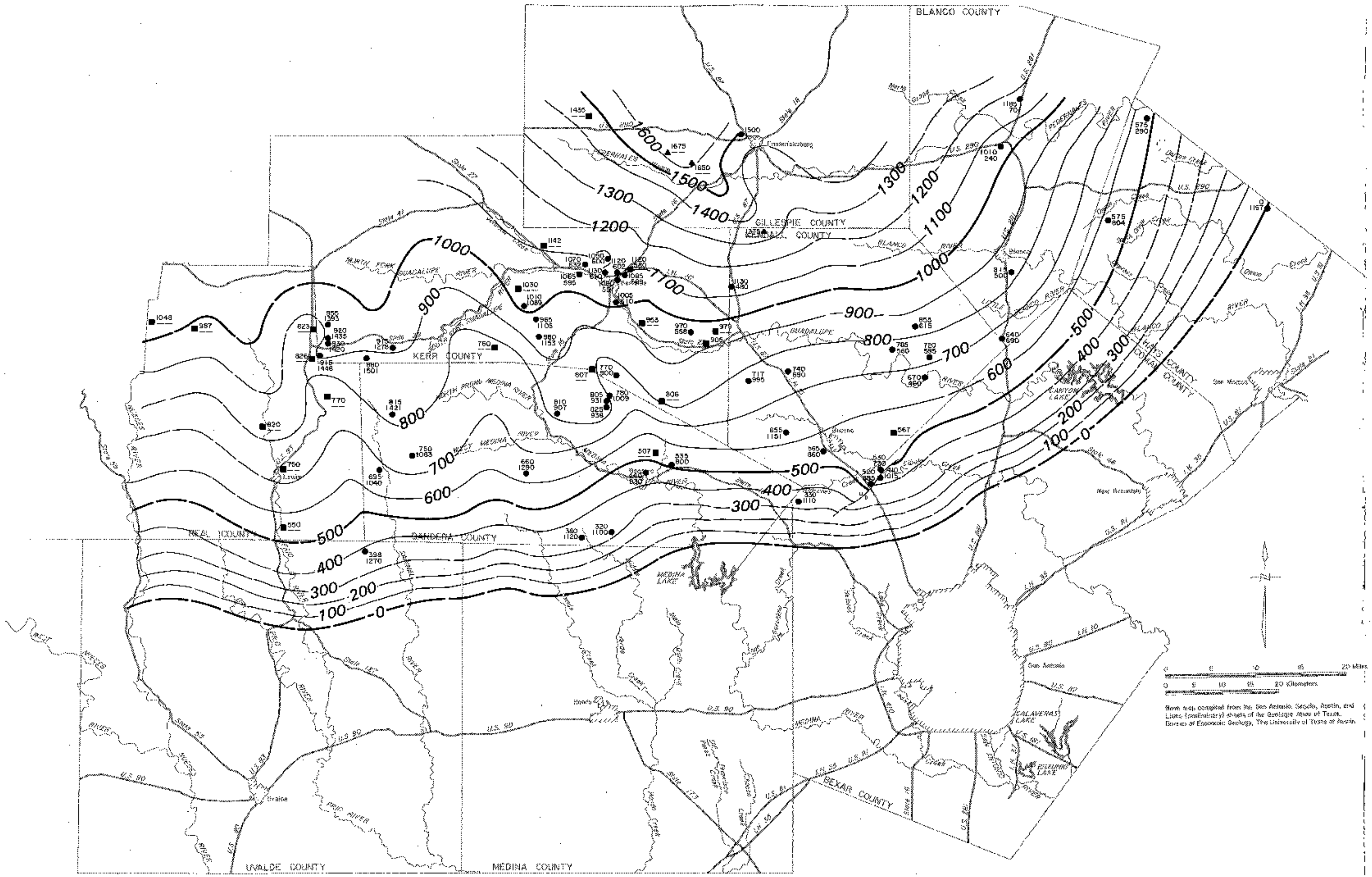
The thickness of the Hosston varies because of the uneven surface upon which it was deposited. At its updip limit, a portion of the Hosston or Sycamore has been eroded to form a disconformable surface upon which the Hammett Shale was deposited. Downdip the Hosston grades upward into the Sligo Limestone.

While the Hosston Sand Member of the Travis Peak Formation represents continental deposition, the Sligo Limestone Member was contemporaneously laid down in transgressive shallow marine waters.

The Sligo exists downdip where the Hosston grades upward into a sandy dolomitic limestone. The Sligo pinches out in the subsurface approximately along a line as shown in Figure 9. The Hosston and Sligo thicken south and southeast (Figure 10) to as much as 500 feet (150 m) near the Balcones fault zone. The approximate altitude of and depth to the top of the lower Trinity aquifer is shown on Figure 9.

Middle Trinity Aquifer

The Hammett Shale or its outcrop equivalent, the Pine Island Shale, is the result of the second transgressive marine phase which covered the Sligo and the updip eroded surface of the Hosston with



EXPLANATION

• 700/1150

Well used for control

Top number indicates altitude of base of the Cretaceous System, in feet above mean sea level

Bottom number indicates depth to base of the Cretaceous System, in feet below land surface

•

Data from geophysical logs

▲

Data from drillers' logs

■

Data from other sources

—700—

Line showing approximate altitude of base of the Cretaceous System

Dashed where control is absent or limited

Interval 100 feet

Datum is mean sea level

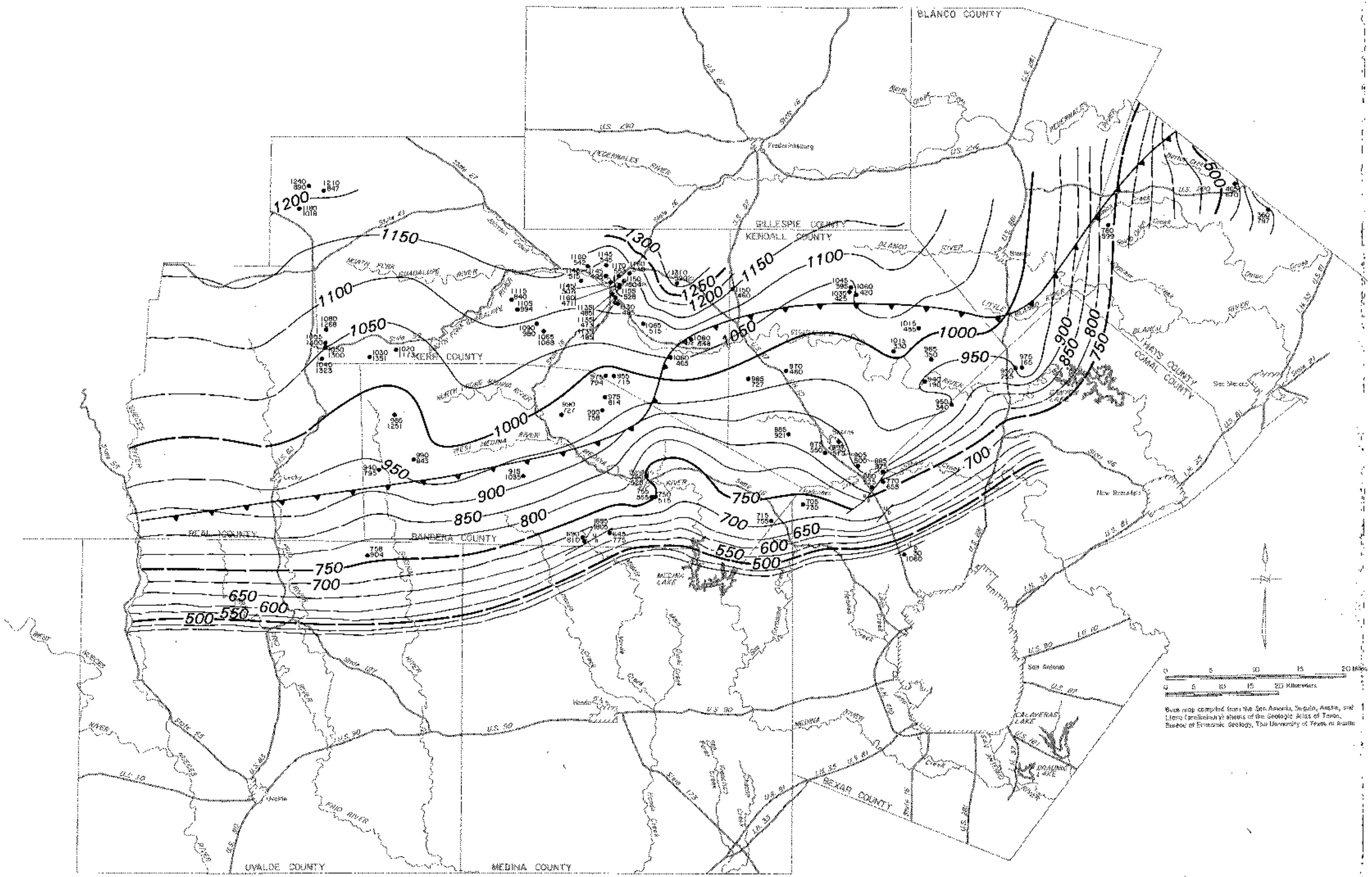
Fault

U, upthrown side; D, downthrown side

Dashed where approximately located

Figure 8

Approximate Altitude of and Depth to the Base of the Cretaceous System



EXPLANATION

Well used for control

Top number indicates altitude of top of the Sligo Limestone (or Hosston Sand where Sligo is absent), in feet above mean sea level

Bottom number indicates depth to top of the Sligo Limestone (or Hosston Sand where Sligo is absent), in feet below land surface

—800—

Line showing approximate altitude of top of the Sligo Limestone (or Hosston Sand where Sligo is absent)

Dashed where control is absent or limited

Interval 50 feet

Datum is mean sea level

Fault

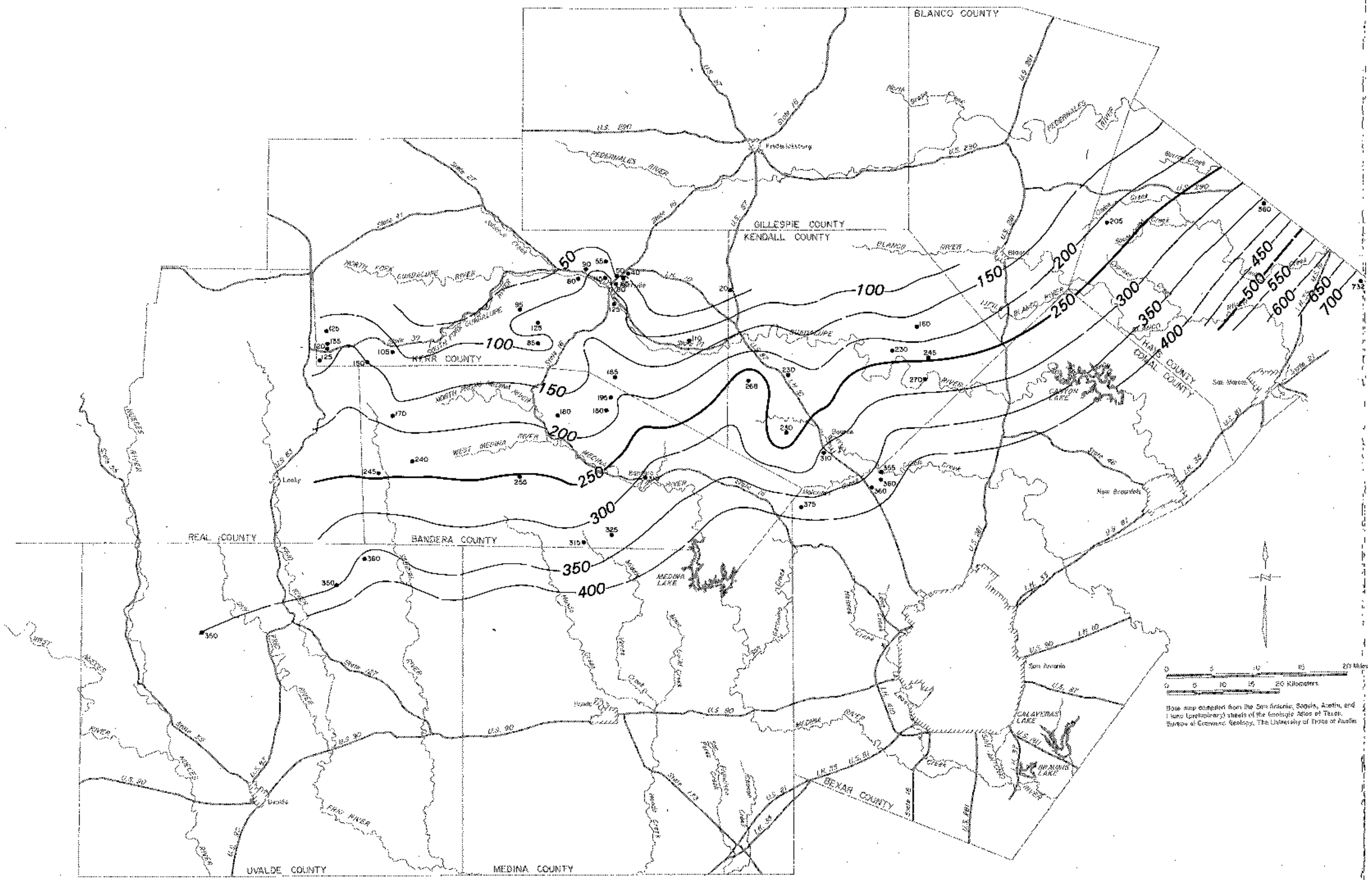
U, upthrown side; D, downthrown side

Dashed where approximately located

Approximate updip (subcrop) limit of the Sligo Limestone (after Stricklin, Smith, and Lozo, 1971)

Figure 9

Approximate Altitude of and Depth to the Top of the Lower Trinity Aquifer



EXPLANATION

• 250

Well used for control
Number indicates total thickness of the lower Trinity aquifer in feet

—200—

Line showing approximate total thickness of the lower Trinity aquifer
Dashed where control is absent or limited
Interval 50 feet

Figure 10
Approximate Total Thickness of the Lower Trinity Aquifer

shaly marine sediments. The Hammett is composed predominantly of dark blue to gray, fossiliferous, calcareous and dolomitic shale with thinly interbedded layers of limestone and sand. The unit pinches out in the northern portion of the study area and thickens downdip to approximately 80 feet (24 m). It consists of a heaving shale that caves in a newly drilled well and must be cased off if further depth is desired. The unit is impermeable, thus confining the water in the underlying strata and serving as a hydrologic barrier between the lower and middle Trinity aquifers with the possible exception of leakage where faulting occurs.

The Cow Creek Limestone overlies the marine Hammett Shale and represents a seaward growth of the shoreline. Structural features within the Cow Creek indicate that the limestone was deposited in a beach or near-shore environment. The approximate altitude of and depth to the top of the Cow Creek are shown on Figure 11.

The Cow Creek is a massive, fossiliferous, white to gray, shaly to dolomitic limestone composed of a fine to medium grained calcarenite with local thinly bedded layers of sand, shale, and lignite. It forms steep overhanging bluffs and cliffs where it crops out along the Pedernales, Blanco, and Guadalupe Rivers in the eastern part of the study area. The unit is often honeycombed in the outcrop. The Cow Creek attains a maximum thickness of approximately 90 feet (27 m) downdip, although 50 to 60 feet (15 to 18 m) is average over most of the area. Updip it thins to approximately 20 feet (6 m) before it becomes indistinguishable by grading into sand and shale (Figure 6). The updip portion of the Cow Creek has been eroded to form a disconformable surface for the deposition of Hensell sand. This disconformity disappears midway through the study area in the downdip direction.

The Cow Creek yields small to moderate amounts of fresh to slightly saline water.

The Hensell Sand Member of the Travis Peak Formation is a time-transgressive unit that consists of alluvial and near-shore sediments deposited as the sea transgressed across the eroded Cow Creek, and is time-equivalent to the Glen Rose Limestone that was being deposited offshore.

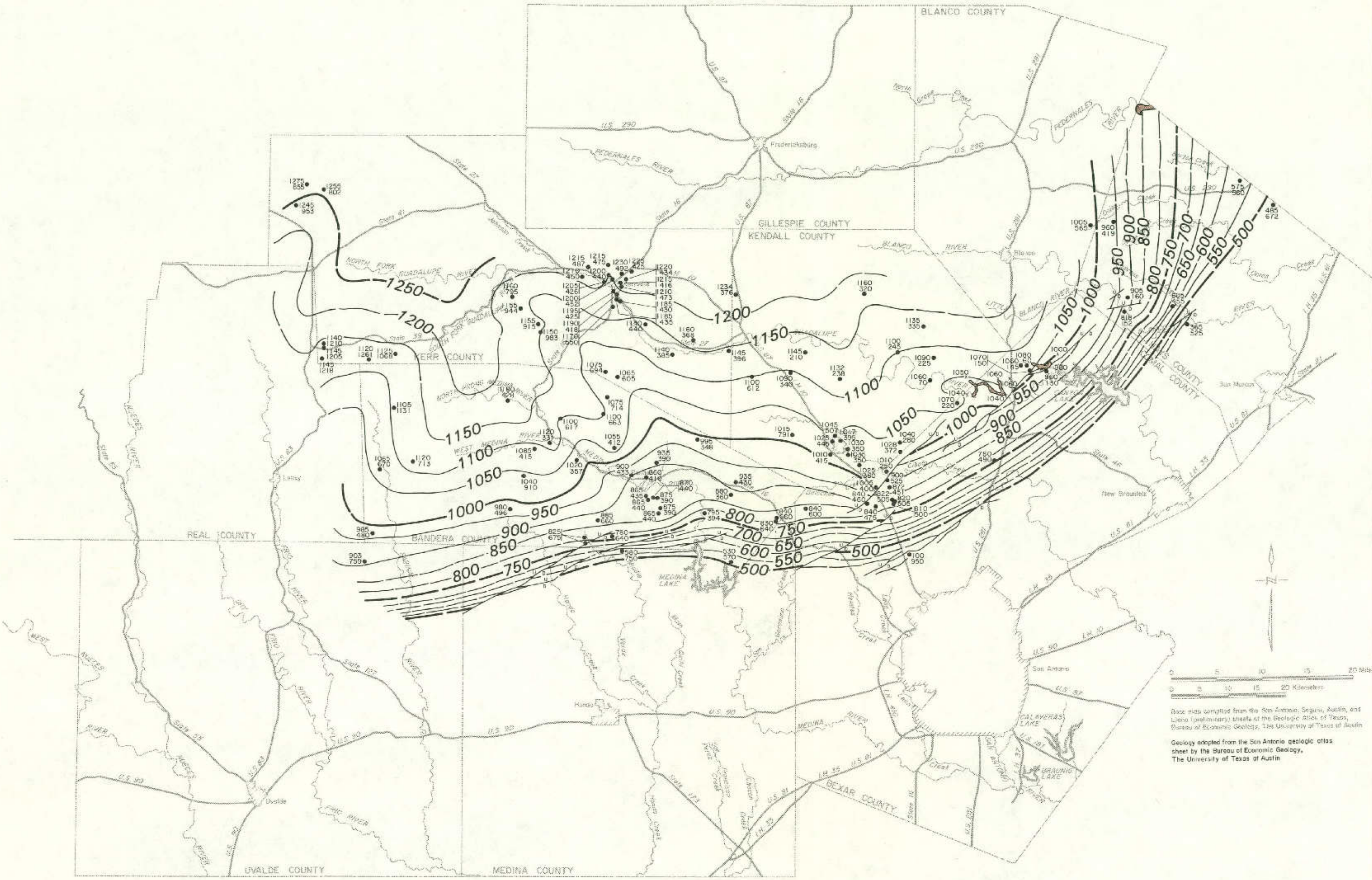
The Hensell consists of both continental and marine deposits. Updip, in the outcrop along the Pedernales River, the Hensell (Gillespie Formation of Hill and Vaughan, 1898) is composed of thick continental deposits of red clay, silt, sand, and conglomerate with limestone beds in the subsurface, and rests on highly faulted pre-Cretaceous rocks. In the outcrop, the Hensell breaks down to a loose sand due to lack of induration and forms gentle slopes. The unit becomes gray and less sandy as it grades upward into the lower Glen Rose. Farther downdip past the pre-Hensell disconformity, the Hensell grades into marine deposits of silty dolomite, marl, calcareous shale, and shaly limestone (Figure 6). This zone is designated as the Bexar Shale (Forgotson, 1956).

The thickness of the Hensell varies considerably because of the nature of its upper gradational boundary with the Glen Rose and the uneven erosional surface on which it was deposited. A maximum thickness of 300 feet (91 m) is reported by Mount (1963) in Gillespie County. In northern Gillespie County, the Hensell abuts abruptly with pre-Cretaceous rocks of the Llano uplift. In general, the Hensell thins by interfingering into the Glen Rose in a downdip direction from an average 150 feet (46 m) to 80 feet (24 m). This aquifer is often referred to locally as the "first Trinity" or the "upper Trinity" sand. The approximate altitude of and depth to the top of the Hensell Sand are shown on Figure 12.

The Glen Rose Limestone is the uppermost formation of the Trinity Group and is exposed over approximately three-fourths of the study region (Figure 5). The Glen Rose along with the Hensell Sand represents a wedge of sediments deposited in a transgressing sea. In Comal County, George (1952) separated the Glen Rose into upper and lower members. The boundary between the two members is identified by a thin limestone bed containing numerous fossils of *Corbula martinae* (Whitney, 1952) that persists throughout the study area except where erosion has lowered the land surface below the bed.

The lower member of the Glen Rose Limestone consists of a massive, fossiliferous limestone at the base grading upward into thin beds of limestone, dolomite, marl, and shale. The top 15 to 20 feet (5 to 6 m) of the lower member, designated the *Salenia texana* zone, is a highly fossiliferous, nodular marl and limestone which is capped by the "Corbula bed." The member has a maximum thickness of approximately 320 feet (98 m) in the southern part of the study area and thins updip by grading laterally into the underlying Hensell Sand.

Rudist and coral reefs are characteristic of the basal massive section. A number of reefs exposed in the study area have been described by Perkins (1968, 1970) and Stricklin, Smith, and Lozo (1971). The



EXPLANATION

• 1150 / 300

Well used for control

Top number indicates altitude of top of the Cow Creek Limestone, in feet above mean sea level

Bottom number indicates depth to top of the Cow Creek Limestone, in feet below land surface

× 1050

Surface contact used for control

Number indicates altitude of top of the Cow Creek Limestone, in feet above mean sea level

Data points derived from topographic and geologic maps

—1050—

Line showing approximate altitude of top of the Cow Creek Limestone

Dashed where control is absent or limited

Interval 50 feet

Datum is mean sea level

Outcrop of Cow Creek Limestone

Contact

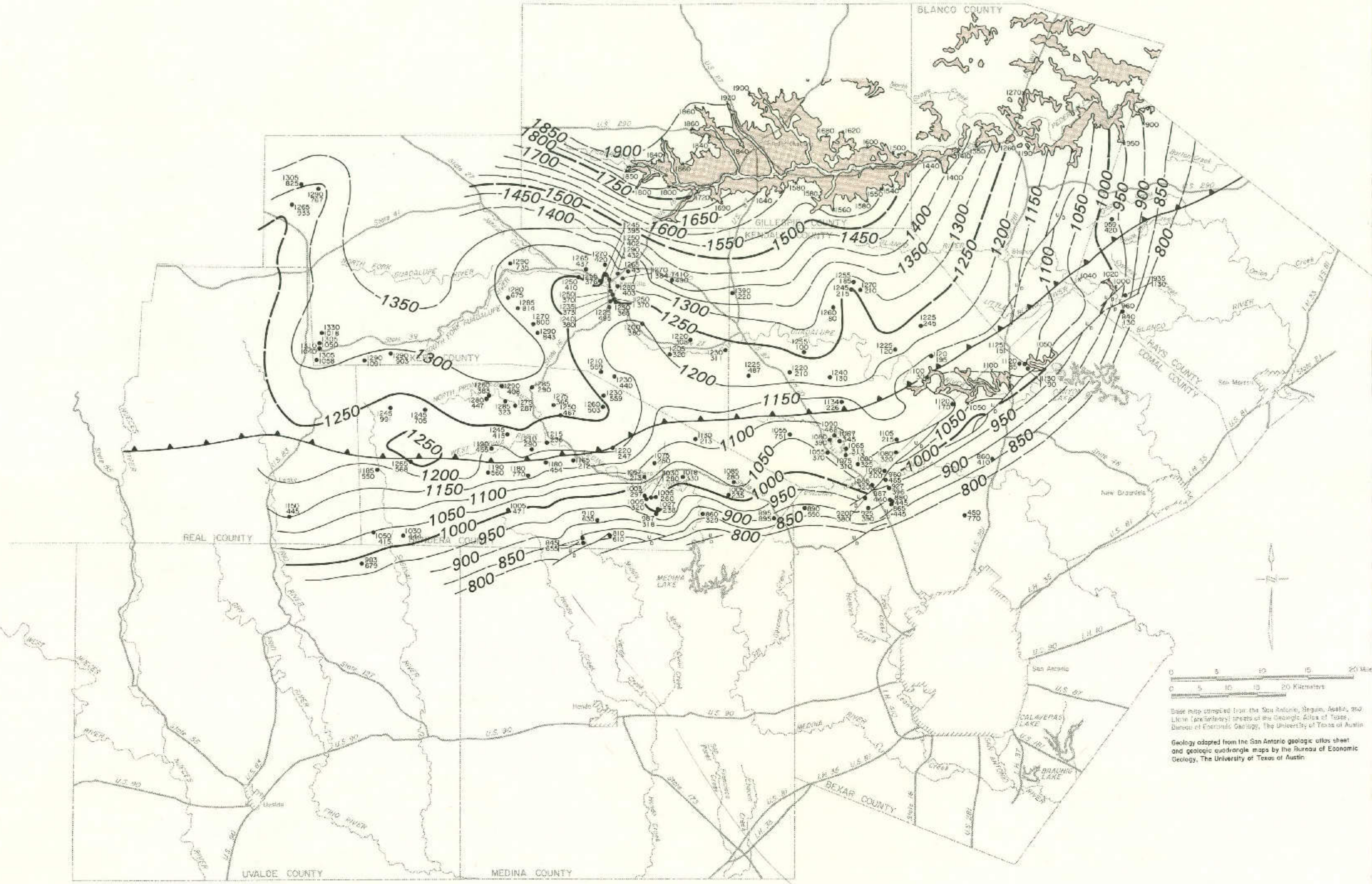
Fault

U, upthrown side; D, downthrown side

Dashed where approximately located

Figure 11

Approximate Altitude of and Depth to the Top of the Cow Creek Limestone of the Middle Trinity Aquifer



EXPLANATION

Well used for control

Top number indicates altitude of top of the Hensell Sand or Bexar Shale, in feet above mean sea level

Bottom number indicates depth to top of the Hensell Sand or Bexar Shale, in feet below land surface

Surface contact used for control

Number indicates altitude of top of the Hensell Sand, in feet above mean sea level

Data points derived from topographic and geologic maps

Line showing approximate altitude of top of the Hensell Sand or Bexar Shale

Dashed where control is absent or limited

Interval 50 feet

Datum is mean sea level

Outcrop of the Hensell Sand

Contact

Fault

U, upthrown side; D, downthrown side

Dashed where covered or approximately located

Approximate downdip limit of the sandy facies (Hensell Sand) of the middle Trinity aquifer

Figure 12

Approximate Altitude of and Depth to the Top of the Hensell Sand and Bexar Shale of the Middle Trinity Aquifer

reefs consist of two basic types: the small, circular to slightly elongate mounds or patch reefs are less than 75 feet (23 m) in diameter and 30 feet (9 m) in thickness; the second type is the less numerous but more extensive tabular reef. The full dimensions of these reefs have not been determined but are on the magnitude of several hundred feet laterally by 50 feet (15 m) in thickness. A number of wells have been drilled through material that has been described as reef rock. The majority of the reefs are composed of *Caprinid*-type rudists and only a few are composed of coral with *Montastrea* being the predominant type. Some of the reefs show a high degree of porosity due to the dissolving of the original shell material and leaving a cavity; however, unless the zone has become fractured the permeability remains low.

Because the lower member of the Glen Rose is massive, it is more susceptible than the upper member to the development of secondary porosity which results from jointing, faulting, and the dissolving action of ground water, and hence is generally the more prolific water-producing zone. The zone is hydrologically connected to the underlying Hensell Member. Figure 13 shows the approximate altitude of and depth to the top of the lower member of the Glen Rose Limestone, which is the top of the middle Trinity aquifer. Total thickness of the middle Trinity is shown on Figure 14.

Upper Trinity Aquifer

The upper member of the Glen Rose Limestone consists of laterally continuous, alternating resistant and nonresistant beds of blue shale, nodular marl, and impure, fossiliferous limestone. The uneven resistance to erosion by the alternating beds results in the characteristic "stairstep" topography. The upper member thins updip from a maximum thickness of approximately 450 feet (137 m). In the northern portion of the study region where the lower member has pinched out, the upper member thins rapidly by grading laterally into the underlying Hensell Sand. The Glen Rose Limestone pinches out just north of the Pedernales River (Figure 6).

Two evaporite zones occur within the upper member. The first zone occurs at the base and because of its high resistivity curve on electric logs, it serves as a convenient correlation marker between the upper and lower members. The second evaporite zone is located near the middle of the member and has the same characteristics. At the outcrop and within the zone above the water table, the evaporite has been leached out, resulting in slumping and distortion of the overlying rocks.

Fredericksburg Group

The Fredericksburg Group, which forms the caprock of the Edwards Plateau, overlies the Trinity Group deposits at the upper elevations to the north and west of the study area and to the south and east where it has been downfaulted along the Balcones fault zone (Figure 5). Many of the higher hilltops are capped by the resistant limestone. The group is composed of, in ascending order, the Walnut Clay, Comache Peak Limestone, and the Edwards Limestone (Table 1).

The Fredericksburg Group yields small to moderate amounts of fresh water to wells primarily in the sparsely populated northwestern portion of the study area. Many springs of very good chemical quality issue from near the base of the group throughout its extent in the study area.

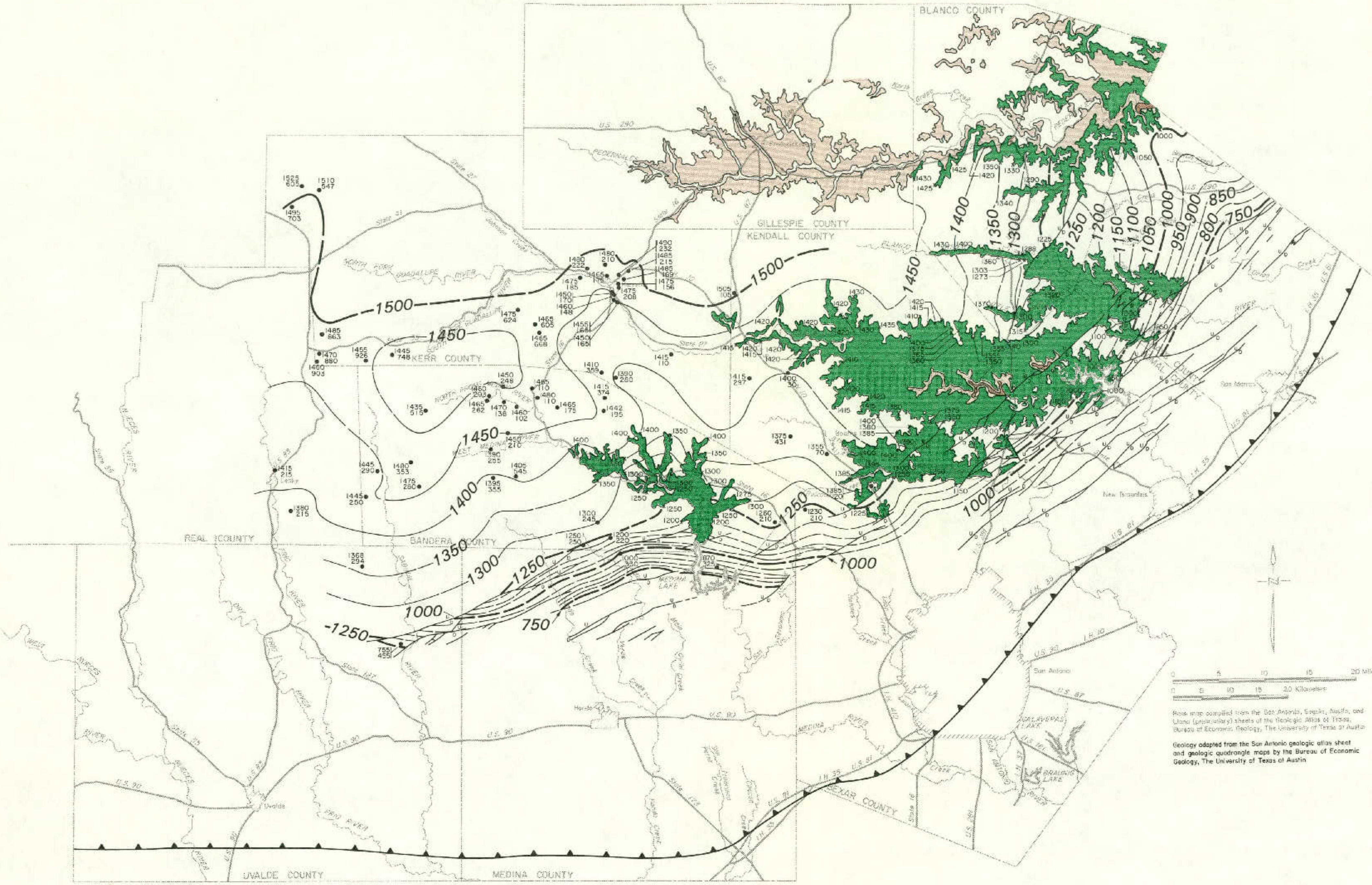
Quaternary Alluvium

Alluvial deposits ranging in age from Pleistocene to Recent occur predominantly within stream valleys and consist of flood-plain, terrace, and alluvial fan deposits. The material is derived from locally eroded limestone and forms longitudinal or fan-shaped beds of gravel, sand, silt, and clay, often cemented by calcium carbonate. The beds are highly permeable, have a low dip, a maximum thickness of approximately 50 feet (15 m), small areal extent, and yield only small amounts of good quality water.

CHEMICAL QUALITY OF GROUND WATER AS RELATED TO USE

General Chemical Quality of Ground Water

All ground water contains minerals carried in solution, the type and concentration of which depend upon the environment, movement, and source of the ground water. Rainfall is relatively free of minerals until it comes in contact with the various constituents which make up the soils and component rocks of the aquifer; then, as a result of the solvent power of water, minerals are dissolved and carried into solution as the water passes through the aquifer. The concentration depends upon the solubility of the



EXPLANATION

• 1430 / 250

Well used for control

Top number indicates altitude of top of the lower member of the Glen Rose Limestone, in feet above mean sea level

Bottom number indicates depth to top of the lower member of the Glen Rose Limestone, in feet below land surface

x 1450

Surface contact used for control

Number indicates altitude of top of the lower member of the Glen Rose Limestone, in feet above mean sea level

Data points derived from topographic and geologic maps

—900—

Line showing approximate altitude of top of the lower member of the Glen Rose Limestone

Dashed where control is absent or limited

Interval 50 feet

Datum is mean sea level

Outcrop of the lower member of the Glen Rose Limestone

Outcrop of the Hensell Sand

Outcrop of the Cow Creek Limestone

Contact

Fault

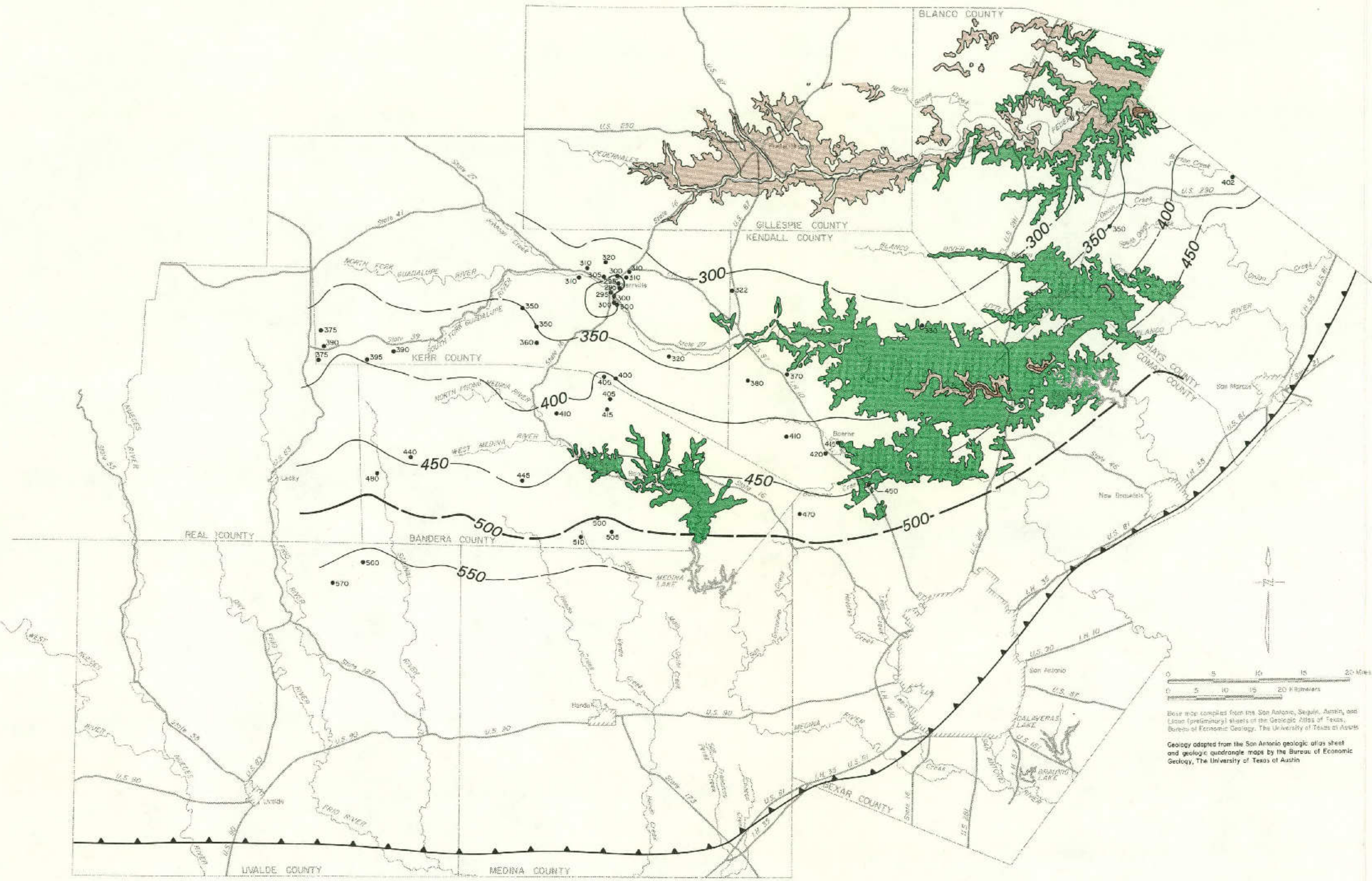
U, upthrown side; D, downthrown side

Dashed where approximately located

Approximate downdip limit of fresh to slightly saline water in the middle Trinity aquifer (After Duffin, 1974)

Figure 13

Approximate Altitude of and Depth to the Top of the Middle Trinity Aquifer



EXPLANATION

• 430

Well used for control

Number indicates total thickness of the middle Trinity aquifer, in feet

—400—

Line showing approximate total thickness of the middle Trinity aquifer

Dashed where control is absent or limited

Interval 50 feet

Outcrop of the lower member of the Glen Rose Limestone

Outcrop of the Hensell Sand

Outcrop of the Cow Creek Limestone

Contact

Approximate downdip limit of fresh to slightly saline water in the middle Trinity Aquifer (After Duffin, 1974)

Figure 14

Approximate Total Thickness of the Middle Trinity Aquifer

minerals present, the length of time the water is in contact with the rocks, and the amount of dissolved carbon dioxide in the water. In addition, concentrations of dissolved minerals in ground water generally increase with depth and especially increase where circulation has been restricted due to faulting or zones of lower permeability. Restricted circulation retards the flushing action of fresh water moving through the aquifers, causing the water to become highly mineralized.

The source and significance of dissolved mineral constituents and properties of natural waters are given in Table 2. Chemical analyses of water from selected wells and springs in the study region are given in Table 6. The sampled wells and springs are indicated on the county well-location maps by a bar over the well number. Concentrations of sulfate, chloride, and total dissolved solids from samples taken from selected wells and springs in the study region are also shown on Figure 15.

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

Total dissolved-solids content is usually the main factor which limits or determines the use of ground water. Winslow and Kister (1956) used an excellent, and very applicable, general classification of waters based on the dissolved-solids concentration in parts per million (ppm). The classification is as follows:

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

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

$$\text{parts per million} = \frac{\text{milligrams per liter}}{\text{specific gravity of the water}}$$

Public Supply

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

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

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

2. A "community water system" is any system which serves at least four or more service connections or regularly serves 25 permanent-type residents for at least 180 days per year.

3. A "non-community water system" is any public water system which is not a community water system.

Standards which relate to municipal supplies are of two types: (1) primary and (2) secondary. Primary standards are devoted to constituents and regulations affecting the health of consumers. Secondary standards are those which deal with the esthetic

Table 2.—Source and Significance of Dissolved-Mineral Constituents and Properties of Water

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

Constituent or property	Source or cause	Significance
Silica (SiO_2)	Dissolved from practically all rocks and soils, commonly less than 30 mg/l. High concentrations, as much as 100 mg/l, generally occur in highly alkaline waters.	Forms hard scale in pipes and boilers. Carried over in steam of high pressure boilers to form deposits on blades of turbines. Inhibits deterioration of zeolite-type water softeners.
Iron (Fe)	Dissolved from practically all rocks and soils. May also be derived from iron pipes, pumps, and other equipment.	On exposure to air, iron in ground water oxidizes to reddish-brown precipitate. More than about 0.3 mg/l stain laundry and utensils reddish-brown. Objectionable for food processing, textile processing, beverages, ice manufacture, brewing, and other processes. Texas Department of Health (1977) drinking-water standards state that iron should not exceed 0.3 mg/l. Larger quantities cause unpleasant taste and favor growth of iron bacteria.
Calcium (Ca) and Magnesium (Mg)	Dissolved from practically all soils and rocks, but especially from limestone, dolomite, and gypsum. Calcium and magnesium are found in large quantities in some brines. Magnesium is present in large quantities in sea water.	Cause most of the hardness and scale-forming properties of water; soap consuming (see hardness). Waters low in calcium and magnesium desired in electroplating, tanning, dyeing, and in textile manufacturing.
Sodium (Na) and Potassium (K)	Dissolved from practically all rocks and soils. Found also in oil-field brines, sea water, industrial brines, and sewage.	Large amounts, in combination with chloride, give a salty taste. Moderate quantities have little effect on the usefulness of water for most purposes. Sodium salts may cause foaming in steam boilers and a high sodium content may limit the use of water for irrigation.
Bicarbonate (HCO_3) and Carbonate (CO_3)	Action of carbon dioxide in water on carbonate rocks such as limestone and dolomite.	Bicarbonate and carbonate produce alkalinity. Bicarbonates of calcium and magnesium decompose in steam boilers and hot water facilities to form scale and release corrosive carbon-dioxide gas. In combination with calcium and magnesium, cause carbonate hardness.
Sulfate (SO_4)	Dissolved from rocks and soils containing gypsum, iron sulfides, and other sulfur compounds. Commonly present in some industrial wastes.	Sulfate in water containing calcium forms hard scale in steam boilers. In large amounts, sulfate in combination with other ions gives bitter taste to water. Texas Department of Health (1977) drinking-water standards recommend that the sulfate content should not exceed 300 mg/l.
Chloride (Cl)	Dissolved from rocks and soils. Present in sewage and found in large amounts in oil-field brines, sea water, and industrial brines.	In large amounts in combination with sodium, gives salty taste to drinking water. In large quantities, increases the corrosiveness of water. Texas Department of Health (1977) drinking-water standards recommend that the chloride content should not exceed 300 mg/l.
Fluoride (F)	Dissolved in small to minute quantities from most rocks and soils. Added to many waters by fluoridation of municipal supplies.	Fluoride in drinking water reduces the incidence of tooth decay when the water is consumed during the period of enamel calcification. However, it may cause mottling of the teeth, depending on the concentration of fluoride, the age of the child, amount of drinking water consumed, and susceptibility of the individual (Maier, 1950, p. 1120-1132).
Nitrate (NO_3)	Decaying organic matter, sewage, fertilizers, and nitrates in soil.	Concentration much greater than the local average may suggest pollution. Texas Department of Health (1977) drinking-water standards suggest a limit of 45 mg/l (as NO_3) or 10 (as N). Waters of high nitrate content have been reported to be the cause of methemoglobinemia (an often fatal disease in infants) and therefore should not be used in infant feeding (Maxcy, 1950, p. 271). Nitrate has been shown to be helpful in reducing inter-crystalline cracking of boiler steel. It encourages growth of algae and other organisms which produce undesirable tastes and odors.

Table 2.—Source and Significance of Dissolved-Mineral Constituents and Properties of Water—Continued

Constituent or property	Source or cause	Significance
Boron (B)	A minor constituent of rocks and of natural waters.	An excessive boron content will make water unsuitable for irrigation. Wilcox (1955, p. 11) indicated that a boron concentration of as much as 1.0 mg/l is permissible for irrigating sensitive crops; as much as 2.0 mg/l for semitolerant crops; and as much as 3.0 mg/l for tolerant crops. Crops sensitive to boron include most deciduous fruit and nut trees and navy beans; semitolerant crops include most small grains, potatoes and some other vegetables, and cotton; and tolerant crops include alfalfa, most root vegetables, and the date palm.
Dissolved solids	Chiefly mineral constituents dissolved from rocks and soils.	Texas Department of Health (1977) drinking-water standards recommend that waters containing more than 1,000 mg/l dissolved solids not be used if other, less mineralized supplies are available. For many purposes the dissolved-solids content is a major limitation on the use of water. A general classification of water based on dissolved-solids content, in mg/l, is as follows (Winslow and Kister, 1956, p. 5): Waters containing less than 1,000 mg/l of dissolved solids are considered fresh; 1,000 to 3,000 mg/l, slightly saline; 3,000 to 10,000 mg/l, moderately saline; 10,000 to 35,000 mg/l, very saline; and more than 35,000 mg/l, brine.
Hardness as $CaCO_3$	In most waters nearly all the hardness is due to calcium and magnesium. All of the metallic cations other than the alkali metals also cause hardness.	Consumes soap before a lather will form. Deposits soap curd on bathtubs. Hard water forms scale in boilers, water heaters, and pipes. Hardness equivalent to the bicarbonate and carbonate is called carbonate hardness. Any hardness in excess of this is called non-carbonate hardness. Waters of hardness up to 60 mg/l are considered soft; 61 to 120 mg/l, moderately hard; 121 to 180 mg/l, hard; more than 180 mg/l, very hard.
Sodium-adsorption ratio (SAR)	Sodium in water.	A ratio for soil extracts and irrigation waters used to express the relative activity of sodium ions in exchange reactions with soil (U.S. Salinity Laboratory Staff, 1954, p. 72, 156). Defined by the following equation: $SAR = \frac{Na^{+}}{\sqrt{\frac{Ca^{++} + Mg^{++}}{2}}}$, Where Na^{+}, Ca^{++}, and Mg^{++} represent the concentrations in milliequivalents per liter (me/l) of the respective ions.
Residual sodium carbonate (RSC)	Sodium and carbonate or bicarbonate in water.	As calcium and magnesium precipitate as carbonates in the soil, the relative proportion of sodium in the water is increased (Eaton, 1950, p. 123-133). Defined by the following equation: $RSC = (CO_3^{--} + HCO_3^{-}) - (Ca^{++} + Mg^{++})$ where CO_3^{--}, HCO_3^{-}, Ca^{++} and Mg^{++} represent the concentrations in milliequivalents per liter (me/l) of the respective ions.
Specific conductance (micromhos at 25°C)	Mineral content of the water.	Indicates degree of mineralization. Specific conductance is a measure of the capacity of the water to conduct an electric current. Varies with concentration and degree of ionization of the constituents.
Hydrogen ion concentration (pH)	Acids, acid-generating salts, and free carbon dioxide lower the pH. Carbonates, bicarbonates, hydroxides, phosphates, silicates, and borates raise the pH.	A pH of 7.0 indicates neutrality of a solution. Values higher than 7.0 denote increasing alkalinity; values lower than 7.0 indicate increasing acidity. pH is a measure of the activity of the hydrogen ions. Corrosiveness of water generally increases with decreasing pH. However, excessively alkaline waters may also attack metals. The Texas Department of Health (1977) recommends a pH greater than 7.

qualities of drinking water. Contaminants for which secondary maximum contaminant levels are set in these standards do not have a direct impact on the health of the consumers, but their presence in excessive quantities may discourage the use of the water.

Primary Standards

Primary standards for dissolved minerals apply to community water systems and are as follows:

Contaminant	Maximum concentration (mg/l)
Arsenic (As)	0.05
Barium (Ba)	1.0
Cadmium (Cd)	.010
Chromium (Cr^6)	.05
Lead (Pb)	.05
Mercury (Hg)	.002
Selenium (Se)	.01
Silver (Ag)	.05
Nitrate (as NO_3)	45
Nitrate (as N)	10

Except for nitrate content, none of the above contaminant levels for toxic minerals applies to non-community water systems. The maximum of 10 mg/l nitrate as nitrogen (about 45 mg/l nitrate as NO_3) applies to community and non-community systems alike. Water having a concentration of nitrate (as NO_3) in excess of 45 mg/l poses a potential health hazard. A high concentration of nitrate is an indication of organic decomposition, usually within the source well. Steps should be taken to identify and rectify the source of the contamination.

Maximum fluoride concentrations are applicable to community water systems and they vary with the annual average of the maximum daily air temperature at the location of the system. These are shown in the following tabulation:

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

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

	Constituent	Maximum concentration (mg/l)
1.	Chlorinated hydrocarbons:	
	Endrin (1,2,3,4,10, 10-hexachloro-6,7,-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo, endo-5, 8-dimenthano napthalene).	0.0002
	Lindane (1,2,3,4,5,6-hexachloro-cyclohexane, gamma isomer).	.004
	Methoxychlor (1,1,1-Trichloro-2,2-bis [p-methoxyphenyl] ethane).	.1
	Toxaphene ($C_{10}H_{10}Cl_8$ - Technical chlorinated camphene, 67-69 percent chlorine).	.005
2.	Chlorophenoxys:	
	2,4-D (2,4-Dichlorophenoxyacetic acid).	.1
	2,4,5-TP Silvex (2,4,5-Trichlorophenoxypropionic acid).	.01

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

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

Secondary Standards

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

Constituent	Maximum level
Chloride (Cl)	300 mg/l
Color	15 color units
Copper (Cu)	1.0 mg/l
Corrosivity	non-corrosive
Foaming agents	.5 mg/l
Hydrogen sulfide (H_2S)	.05 mg/l
Iron (Fe)	.3 mg/l
Manganese (Mn)	.05 mg/l
Odor	3 Threshold Odor Number
pH	>7.0
Sulfate (SO_4)	300 mg/l

Constituent	Maximum level
Dissolved solids	1,000 mg/l
Zinc (Zn)	5.0 mg/l

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

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

Domestic and Livestock

Ideally, waters used for rural domestic purposes should be as free of contaminants as those used for municipal purposes; however, this is not economically possible. At present, there are no controls placed on private domestic or livestock wells. In general, the chemical constituents of waters used for domestic purposes should not exceed the concentrations shown in the following table, except in those areas where more suitable supplies are not available (Texas Department of Health, 1977):

Substance	Concentration (mg/l)
Chloride (Cl)	300
Fluoride (F)	1.4 to 1.6*
Iron (Fe)	.03
Manganese (Mn)	.05
Nitrate (as N)	10
Nitrate (as NO_3)	45
Sulfate (SO_4)	300
Dissolved solids	1,000

*Maximum fluoride concentration based on annual average of maximum daily air temperatures within the range of 70.7 to 90.5° F (21.5 to 32.5° C) in the study region.

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

Generally, water used for livestock purposes is subject to the same quality limitations as those relating to drinking water for humans; however, the tolerance limits of the various chemical constituents as well as the dissolved-solids concentration may be considerably higher for livestock than that which is considered satisfactory for human consumption. The type of animal, the kind of soluble salts, and the respective amount of soluble salts determine the tolerance limits (Heller, 1933, p. 22). In the western United States, cattle may tolerate drinking water containing nearly 10,000 mg/l of dissolved solids providing these waters contain mostly sodium and chloride (Hem, 1970, p.324). Waters containing high concentrations of sulfate are usually considered undesirable for livestock use. Many investigators recommend an upper limit of dissolved solids near 5,000 mg/l as necessary for maximum growth and reproduction. Hem (1970, p. 324) cited a publication of the Department of Agriculture of the state of Western Australia as recommending the following maximum upper limits for dissolved-solids concentration in livestock water:

Animal	Dissolved solids (mg/l)
Poultry	2,860
Hogs	4,290
Horses	6,435
Cattle (dairy)	7,150
Cattle (beef)	10,000
Adult sheep	12,900

Water having concentrations of chemical constituents in excess of the Texas Department of Health's standards may be objectionable for many reasons. Brief explanations for these objections, as well as the significance of each constituent, are given in Table 2.

Irrigation

The suitability of ground water for irrigation purposes is largely dependent on the chemical composition of the water. The extent to which the chemical quality will affect the growth of crops is in part determined by the climate, soil, management practices, crops grown, drainage, and quantity of water applied.

Primary characteristics that determine the suitability of ground water for irrigation, according to the U.S. Salinity Laboratory Staff (1954), are: (1) total concentration of soluble salts; (2) relative proportion of sodium to other cations (magnesium, calcium, and potassium); (3) concentration of boron or other toxic elements; and (4) under some conditions, the carbonate and bicarbonate concentration as related to the concentration of calcium and magnesium. These have been termed, respectively, the salinity hazard, the sodium (alkali) hazard, the boron hazard, and the bicarbonate ion hazard (U.S. Salinity Laboratory Staff, 1954, p. 69-82; Wilcox, 1955, p. 11-12; and Lyerly and Longenecker, 1957, p.13-15).

A high concentration of soluble salts in irrigation water may cause a buildup of salts in the soil. Saline soils decrease the ability of plants to take up moisture and nutrients from the soil resulting in decreased yields. This salinity hazard is expressed in terms of specific conductance, measured in micromhos per centimeter at 25°C (77°F). In general, water having a conductance below 750 micromhos per centimeter is satisfactory for irrigation; however, salt-sensitive crops, such as strawberries and green beans, may be adversely affected by irrigation water having a conductance in the range of 250 to 750 micromhos per centimeter. Table 6 gives the specific conductance for selective water samples analyzed within the study area.

The physical condition of soil can be adversely affected by a high concentration of sodium relative to the concentration of calcium and magnesium in irrigation water. The sodium hazard is expressed as the sodium-adsorption ratio (SAR; see Table 6) which is the measurement of the relative activity of sodium ions in exchange reactions with soil. A high SAR in irrigation water affects the soil by forming a hard impermeable crust that results in cultivation and drainage problems. Under most conditions, irrigation waters having a percent sodium less than 60 (Table 6) and a low bicarbonate content are probably satisfactory. The sodium hazard becomes progressively greater as the sodium percentage increases above 60.

Boron is necessary for good plant growth, but rapidly becomes highly toxic at concentrations above acceptable levels. Maximum tolerable levels for various crops range from 1.0 to 3.0 mg/l (Scofield, 1936). High concentrations of Boron are not known to be a problem within the study region. Consult Table 2 for specific crops and their tolerance ranges.

A concentration of bicarbonate in irrigation water often causes calcium and magnesium carbonate to precipitate from solution upon drying, which results in an increase in the proportion of sodium in solution. The effect of higher proportions of sodium has been previously discussed. Water containing 1.24 to 2.5 me/l (milliequivalents per liter) of residual sodium carbonate (RSC; see Table 6) are considered marginal and those containing greater than 2.5 me/l probably are not suited for irrigation use (Wilcox, 1955).

Industrial

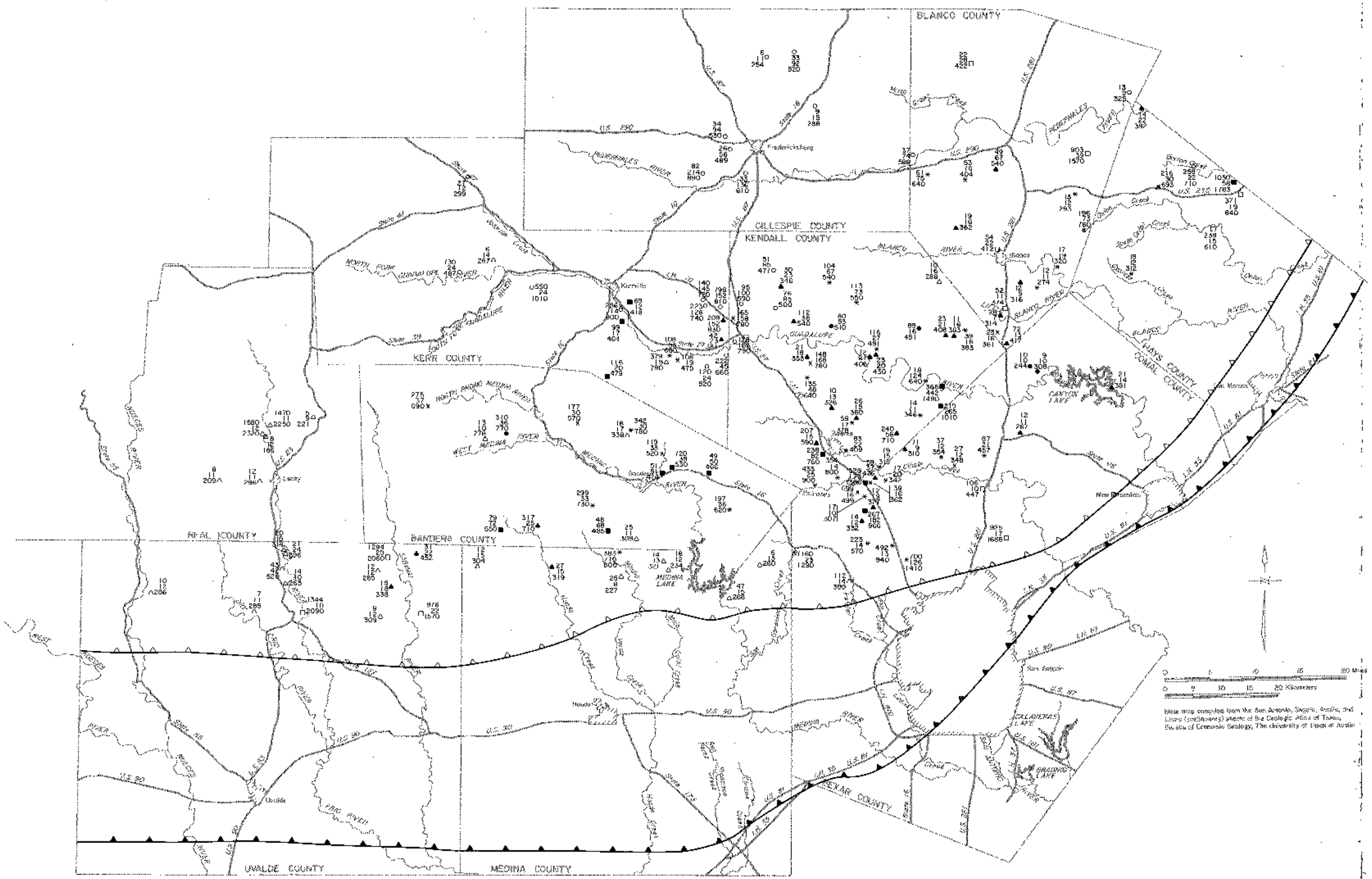
Chemical quality standards for ground water used for industrial purposes vary greatly with the type of industry utilizing the water. The primary concern with many industries is that the water does not have constituents that are corrosive or scale-forming. Also of concern are those minerals that affect color, odor, and taste; therefore, water with a high content of dissolved solids is usually avoided. Table 2 lists the effect that most of the minerals have on industrial usage.

Treatment of Water

When ground water does not meet specific requirements for usage, various methods of treatment can be implemented to alter the chemical composition. Such treatments include softening, aeration, filtration, cooling, dilution, and the addition of chemicals. The type of treatment is dependent on the particular problem; however, the primary limiting factor is economics.

Chemical Quality of Ground Water from the Trinity Group Aquifer

The Trinity Group aquifer yields fresh to slightly saline water with very high content of hardness as calcium carbonate ($CaCO_3$) to almost all of the wells within the study region (Table 6). The majority of water samples that were analyzed indicated hardness within a range of 250 to 500 mg/l although many samples were substantially higher and only a few were lower. This water would be classed as very hard (Table 2). Figure 15 illustrates the dissolved solids, sulfate, and chloride concentrations from selected wells.



EXPLANATION

Source of Water

- △ Upper member of the Glen Rose Limestone
- ▲ Lower member of the Glen Rose Limestone
- □ Glen Rose Limestone, undifferentiated
- ○ Hensell Sand
- ● Cow Creek Limestone
- ■ Sligo Limestone and Hosston Sand
- × Multiple water-bearing units

Sampled Well or Spring

- 60 Sulfate concentration
- △ 40 Chloride concentration
- 450 Total dissolved-solids concentration

Chemical concentrations are in milligrams per liter

Approximate downdip limit of fresh to slightly saline water in the upper Trinity aquifer (After Duffin, 1974)

Approximate downdip limit of fresh to slightly saline water in the middle Trinity aquifer (After Duffin, 1974)

Figure 15

Sulfate, Chloride, and Dissolved-Solids Content in Water From Selected Wells and Springs

The lower Trinity aquifer provides fresh water with dissolved-solids content usually under 500 mg/l in much of Kerr and Bandera Counties. To the west and east of this area, the content of dissolved solids increases and usually ranges from 900 to 1,500 mg/l.

The middle Trinity aquifer yields fresh to slightly saline water to almost all of the study area. Water in the lower member of the Glen Rose Limestone is normally of very good quality although hard. Spring water from the lower Glen Rose is of excellent quality with dissolved solids often under 250 mg/l. The Hensell Sand yields fresh quality water in the northern half of the study area although high quantities of iron occur in a number of localities. Good quality water also occurs in the Cow Creek Limestone. Near the downdip limit of the study area, water from the lower Glen Rose and Cow Creek increase rapidly in dissolved solids (Table 6). Much higher quantities of sulfate are the primary reason for the increase. Water from wells in a few localities contains fluoride in amounts greater than the recommended limit.

Wells developed in the upper Trinity aquifer generally produce water of poor quality. The low permeability of the upper member of the Glen Rose Limestone restricts water movement which causes an increase in mineral concentration. Slow movement and long contact of ground water with highly soluble evaporite zones result in excessive sulfate content. The approximate downdip limits of fresh to slighly saline water in the upper Trinity and middle Trinity aquifers are shown on Figure 15.

OCCURRENCE OF GROUND WATER IN THE TRINITY GROUP AQUIFER

Recharge, Movement, and Discharge

The primary source of recharge to the Trinity Group aquifer is from rainfall on the outcrop and seepage from lakes and streams. The upper and lower members of the Glen Rose Limestone and the Hensell Sand crop out over most of the study region, therefore, these units receive the greatest amount of direct recharge. The other units, Cow Creek Limestone, Sligo Limestone, and Hosston Sand, are recharged primarily by vertical leakage from the other strata. Average annual precipitation over the outcrop ranges from 25 to 35 inches (64 to 89 cm). The estimated effective recharge to the Trinity Group aquifer is about 200,000 acre-feet per year (247 hm^3/yr) within the study area. This estimate is based on the base-flow gain in the Guadalupe River between the Comfort and Spring Branch gaging stations which is a region of very little ground-water pumpage. The base-flow gain is a result of discharge of ground water into the stream, and this discharge should approximately equal the amount of recharge, assuming that the aquifer remained approximately filled. The gain in base flow equates to an average annual recharge of 31,800 acre-feet (39.3 hm^3) from precipitation in the 477.6-square-mile (1,237 km^2) drainage area between the two gages. The 67 acre-feet per square mile per year (0.032 $hm^3/km^2/yr$) as applied to the total Trinity Group outcrop area of 2,985 square miles (7,731 km^2) thus provides an estimate of the average annual recharge or sustained annual yield for the study region. This value is approximately 4 percent of the average annual rainfall.

The majority of streams in the study area traverse predominantly the middle Trinity members of the Travis Peak Formation. Although some recharge to the aquifer does occur, most of the streams show increases in base flow in the downstream direction indicating that ground water is moving from the formations to the streams. This is exemplified on the Guadalupe River where an average annual increase in base flow of 31,800 acre-feet (39.3 hm^3) occurs between the Comfort and Spring Branch gaging stations. The principle exception is in the Cibolo Creek channel. Except during flooding conditions, all water in Cibolo Creek is diverted underground through sinkholes. The largest loss is observed between Boerne and Bulverde where the creek traverses the lower Glen Rose outcrop.

Lakes also recharge the aquifer at least locally. The water level in well DX-68-07-401, which is one-half mile from the shoreline of Canyon Lake, was measured before and during a major flood on the Guadalupe River. The water level in the well rose in relationship to the change in elevation of the lake surface which indicates a hydrologic connection. Not all wells in the vicinity of a lake should be expected to be recharged by the lake, due to impermeable barriers existing between the well and lake.

The Hosston Sand and Sligo Limestone Members of the Travis Peak Formation do not crop out within the study area but derive recharge by leakage from the overlying water-bearing strata. This source is primarily the Hensell Sand in the updip northern area where the Hammett Shale, which usually forms a hydrologic barrier at the base of the Hensell, is thin or absent. In the remainder of the study area where the Hosston exists, particularly in faulted areas, some leakage probably occurs through the Hammett. Figure 16 shows hydrographs of water levels in wells completed in the middle and lower Trinity aquifers superimposed on the hydrograph of the gain in base flow of the Guadalupe River (between the Comfort and Spring Branch gages) near the wells during the same time period. The fluctuations in water levels of both wells appear to coincide approximately with fluctuations in the river's base flow, indicating that water in the middle Trinity is recharging the lower Trinity.

Recharge to the Cow Creek Limestone is also primarily due to vertical leakage from the overlying Hensell Sand in the northern half of the study region. Midway through the area, the Hensell Sand grades into the Bexar Shale (Figures 6 and 12) which acts as a barrier to vertical recharge.

Water entering the Trinity Group aquifer generally moves slowly downdip to the south and southeast. The direction of flow is normally at right angles to the contours of the potentiometric surface and in the direction of decreasing altitude which is illustrated in Figures 17 and 18. Water-level measurements indicate that the average gradient of the potentiometric surface is 20 to 25 feet per mile (3.8 to 4.7 m/km). In areas of continuous pumpage, however, the ground water will flow toward these points of discharge. Locally, ground-water movement is also toward the points of natural discharge through springs.

Discharge from the lower Trinity aquifer occurs primarily by pumpage from wells. Middle Trinity discharge occurs both artificially by pumpage from wells and naturally by springs and seeps. Discharge from the upper Trinity is predominantly from natural rejection through springs and seeps. Discharge in the form of vertical leakage to underlying beds occurs from the middle and upper Trinity.

Hydraulic Characteristics

Hydraulic characteristics of an aquifer are generally described in terms of its coefficients of transmissibility and storage (see Definition of Terms). These values in the Trinity Group aquifer are highly variable due to the nature of the lithology. Limestones and calcareous-cemented sandstone and conglomerates depend on secondary porosity in the form of solution channels for the transmission of water. These solution channels are nonuniform in their occurrence and dimensions which results in unpredictable yields at any one location. Units composed of sand and conglomerate, such as the Hensell and Hosston, have higher yields updip to the north where there is less cementation.

Table 3 lists results from several pumping tests. The values were obtained from a combination of previously published results and recent pumping tests conducted by the Department's staff and private individuals. For added coverage, additional coefficients of transmissibility were determined from specific capacities obtained from water well drilling contractors.

The average coefficient of transmissibility in the lower Trinity aquifer is about 10,000 (gal/d)/ft [124,000 (l/d)/m]. Highest values are in the Kerrville area. An average value of 1,700 (gal/d)/ft [21,000 (l/d)/m] occurs in the middle Trinity. No values were determined for the upper Trinity aquifer although they can be expected to be substantially lower with respect to the lower and middle Trinity.

The coefficient of storage is a measurement of an aquifer's ability to store or release ground water from storage. In an artesian aquifer the coefficient of storage is small compared to that in a water-table aquifer, therefore a discharging artesian well will develop a cone of depression over a wider area in a shorter time. Artesian wells will have a storage coefficient generally ranging from 10^{-5} to 10^{-3} and this is usually about 10^{-6} per foot of thickness, while wells under water-table conditions will range from approximately 0.1 to 0.3.

Four test holes were drilled by the Department of Water Resources in the study area to determine the hydrologic characteristics of the water-bearing units by laboratory analysis of cores taken from the holes. The results of the core analyses are listed in Table 4.

Water Levels

Ground water in the Trinity Group aquifer is predominantly under artesian conditions except in shallow wells in the outcrop where water-table conditions occur. The artesian conditions are a result of the water-bearing unit being overlain by a confining bed such as the Hammett Shale or Bexar Shale. Hydrostatic pressures are thus created which cause the static water level to rise in well bores above the level of the top of the aquifer.

Fluctuations in water levels are predominantly a result of seasonal climatic changes which affect the amount of ground water in storage. Water levels are usually highest in late spring and fall when rainfall is abundant and low during late summer when rainfall is scarce (Figure 16). In areas of heavy pumpage this does not always hold true.

There are no records to indicate long-term trends in water levels in the Hill Country region. Figure 19 shows some more recent trends. Over most of the study region, long-term trends will probably be dependent on climatic conditions. Historically, extended droughts have

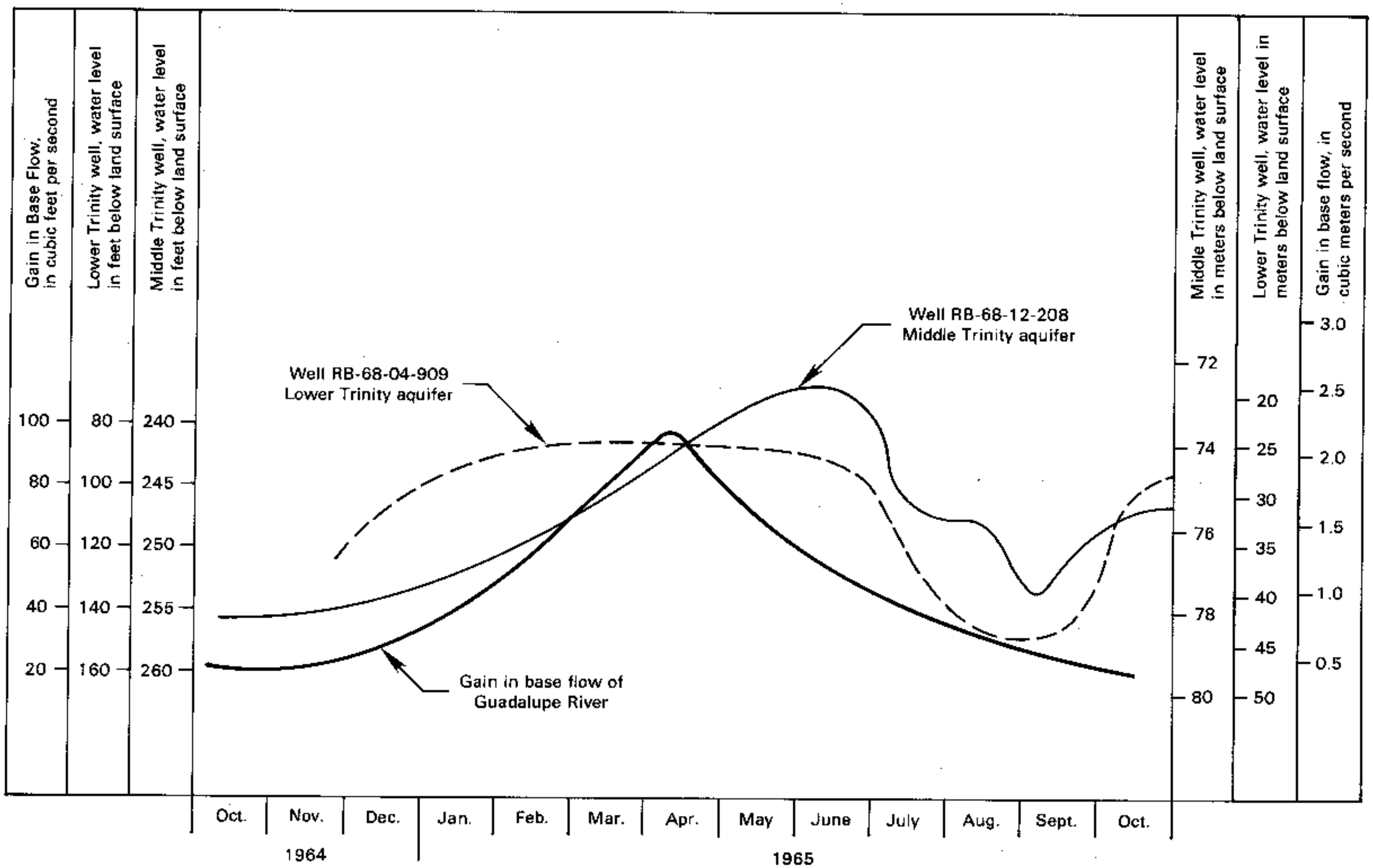


Figure 16

Comparison of Water Levels in Lower and Middle Trinity Wells and the Gain in Base Flow of the Guadalupe River Between the Comfort and Spring Branch Gages

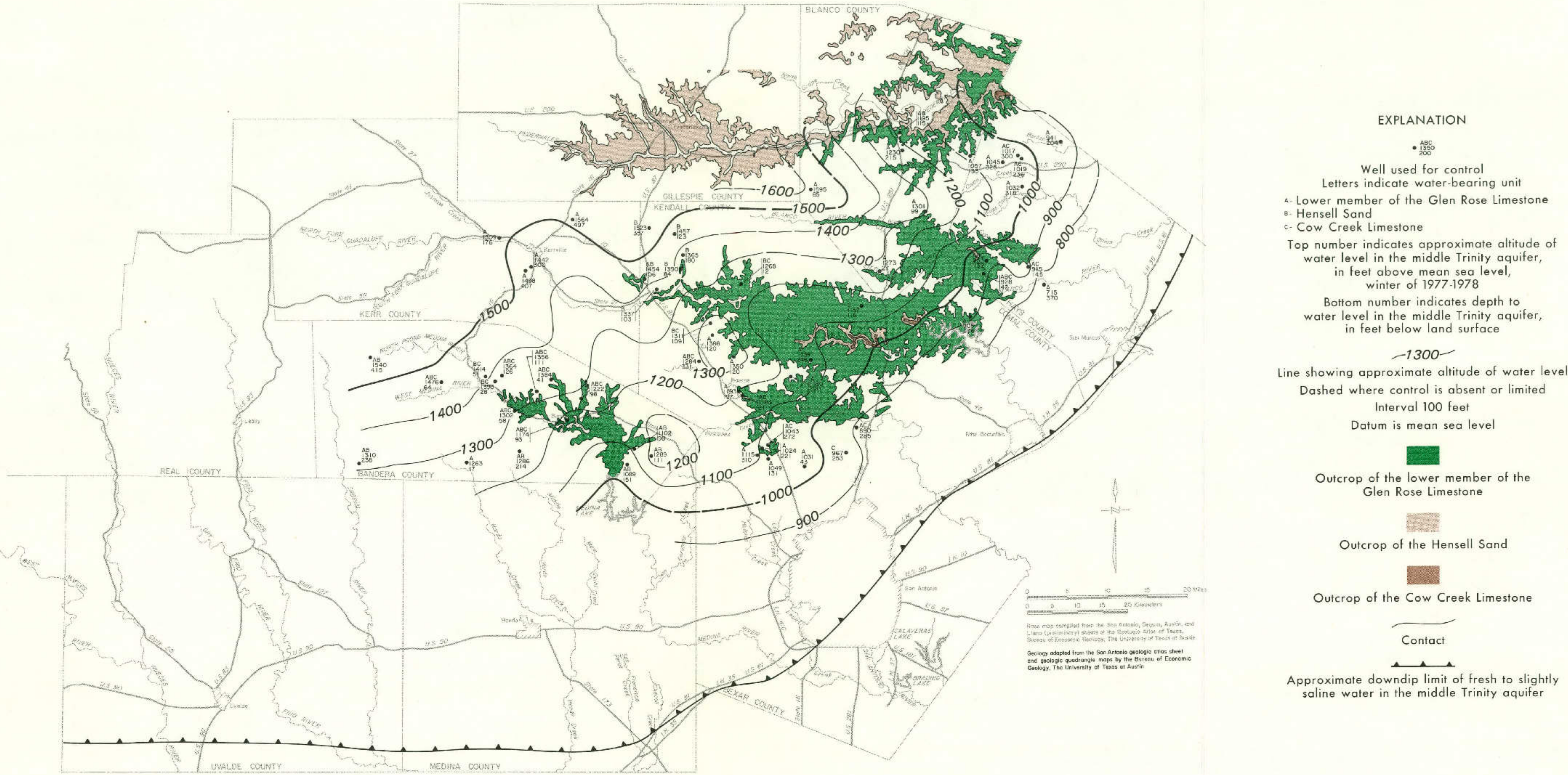
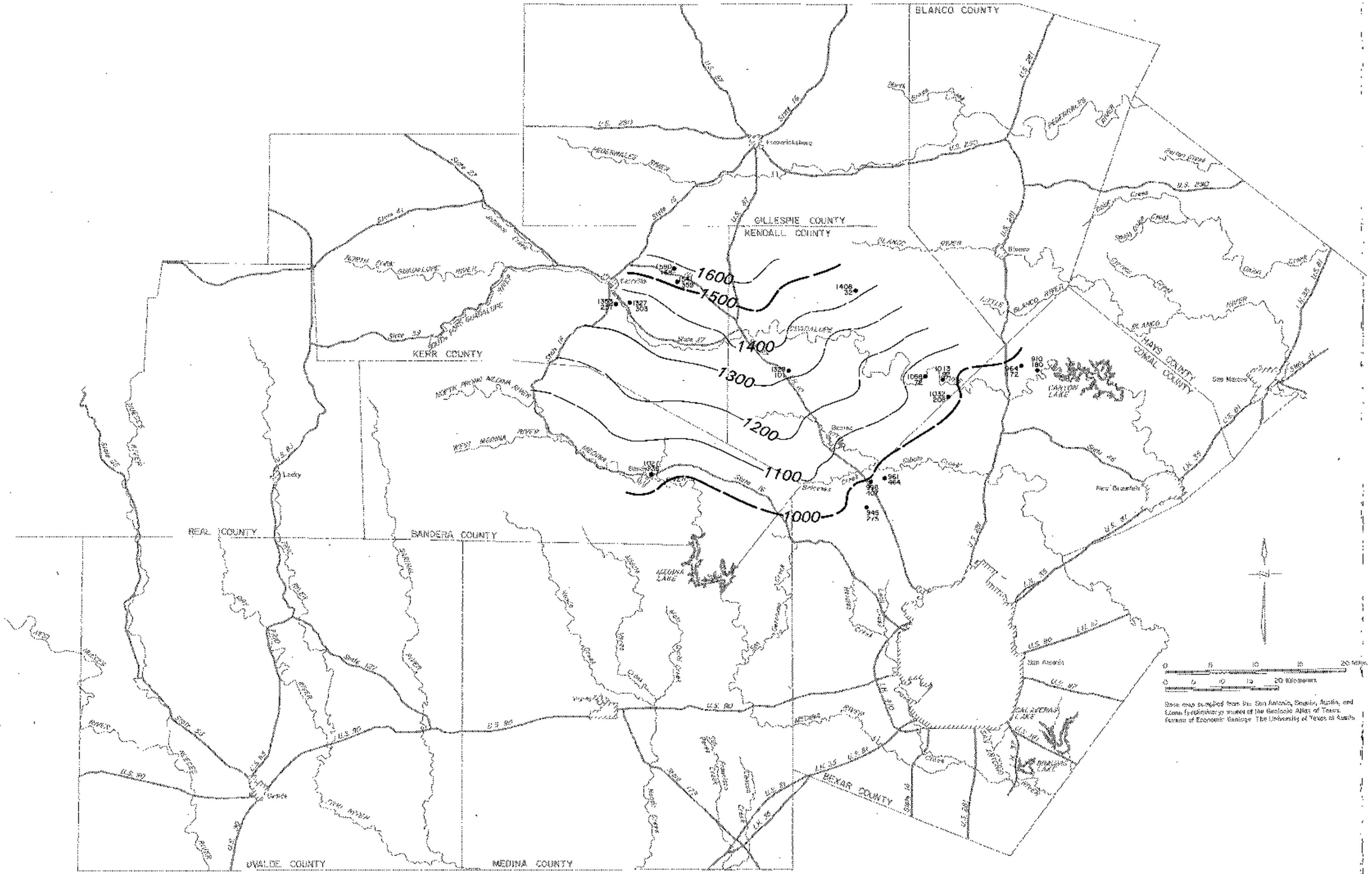


Figure 17

Approximate Altitude of and Depth to Water Levels in Wells Completed in the Middle Trinity Aquifer, Winter of 1977-78



EXPLANATION

$^{1350}_{150}$ •
Well used for control
Top number indicates approximate altitude of water level in the lower Trinity aquifer, in feet above mean sea level, 1975-78
Bottom number indicates depth to water level in the lower Trinity aquifer, in feet below land surface

—1300—
Line showing approximate altitude of water level
Dashed where control is absent or limited
Interval 100 feet
Datum is mean sea level

Figure 18

Approximate Altitude of and Depth to Water Levels in Wells Completed in the Lower Trinity Aquifer, 1975-78

Table 3.—Results of Pumping Tests

County/Well	Member or Formation	Coefficient of Transmissibility [(gal/d)/ft]	Coefficient of Storage
Kerr			
RJ-56-63-603	Sligo and Hosston	22,000	5×10^{-5}
RJ-56-63-604	Sligo and Hosston	24,000	—
RJ-56-63-607	Sligo and Hosston	20,000	2×10^{-5}
RJ-56-63-608	Cow Creek, Sligo and Hosston	46,000	7.4×10^{-4}
RJ-56-63-604	Sligo and Hosston	19,000	5×10^{-5}
RJ-56-63-901	Sligo and Hosston	15,000	3×10^{-5}
Gillespie			
KK-57-41-902	Hensell	600	7×10^{-5}
Kendall			
RB-68-01-301	Hensell	1,130	—
RB-68-02-807	Hosston	1,195[a]	—
RB-68-11-412	Lower Glen Rose	7,100	—
Bexar			
AY-68-21-406	Glen Rose	3,312[a]	—
AY-68-19-501	Hosston	900	—

[a]Determined from specific capacity.

Table 4.—Results of Laboratory Analyses of Cores from Test Wells

Stratigraphic Unit**	Core Depth Interval (ft)	Porosity (Percent)	Specific Gravity	Permeability Vertical [(gal/d)/ft²]	Permeability Horizontal [(gal/d)/ft²]	Modulus of Elasticity (lb/in²)
			KENDALL COUNTY Well RB-57-57-907			
Kcgrl	160 –161	14.2	2.46	0.00048	Imp.*	602,000
	166 –167	25.1	2.48	.00035	0.0020	485,000
Kche	317.5–318.5	21.2	2.24	.51	1.14	—
	323 –323.7	22.4	2.36	.00328	.0086	—
	327.5–329	—	2.37	sample crumbled		431,600
	335 –335.9	—	2.57	—	—	530,000
	340 –341	31.3	2.28	.0039	sample crumbled	—
	345 –345.8	31.4	2.36	.0115	.0263	—
	347.8–348.7	31.3	2.46	.29	.0134	408,600
	354 –354.6	24.8	2.20	2.12	—	—
	360 –360.7	30.9	2.18	.22	23.95	—
	362 –362.7	29.2	2.52	55.91	—	—
	374.5–375	13.4	2.47	12.43	—	—
Kccc	378.5–379	9.1	2.67	Imp.*	.0009	857,700
	383 –383.5	6.4	2.57	.0005	.00027	—
	388.5–389	5.6	2.59	.016	.032	—
	392 –392.6	35.2	2.06	8.45	52.99	—
	398.6–399.3	12.2	2.49	.0017	.0214	746,300
	402 –402.8	7.3	2.51	.0047	.0017	921,300
	409 –409.8	13.2	2.50	.0089	.0012	804,900
	419.4–420	11.3	2.52	.0019	.0026	622,800
	422.4–423.2	32.3	2.31	.266	1.86	809,700
Oe	508.5–509	1.2	2.79	.00006	.0037	1,259,000
			KENDALL COUNTY Well RB-68-11-718			
Kcgrl	254.8–255.8	9.1	—	0.0012	0.0063	792,700
	258.2–259.3	25.0	—	.0082	.0042	910,100
	301 –302	22.7	—	.108	.012	721,300
	308.5–309.5	27.6	—	.063	.0056	1,042,100
	311.2–312.2	26.5	—	.072	.028	365,500

*Impervious
**Kcgrl — lower member of the Glen Rose Limestone
Kche — Hensell Sand
Kccc — Cow Creek Limestone
Kcho — Hosston Sand
Oe — Ellenburger Limestone

Table 4.—Results of Laboratory Analyses of Cores from Test Wells—Continued

Stratigraphic Unit**	Core Depth Interval (ft)	Porosity (Percent)	Specific Gravity	Permeability Vertical [(gal/d)/ft^2]	Permeability Horizontal [(gal/d)/ft^2]	Modulus of Elasticity (lb/in^2)
			KENDALL COUNTY Well RB-68-11-718—Continued			
Kche	322 –323	11.2	–	Imp.*	.002	1,639,700
	335.7–336.6	16.4	–	.0018	.0032	924,100
	341.5–342.2	24.5	–	3.83	.899	426,900
	346 –346.8	24.8	–	1.81	.091	586,700
	355 –356.3	25.9	–	.0466	.066	865,100
	358 –358.8	20.5	–	.044	.003	697,300
	365.4–366.4	17.5	–	.0126	.0106	949,900
	370.9–371.7	25.1	–	.0127	.00007	–
	376.8–377.8	14.1	–	.00137	.0032	1,097,600
	400 –400.9	24.3	–	.0021	.0238	804,400
	414.5–415.3	19.9	–	22.91	20.92	–
Kccc	435 –436	25.5	–	.72	.53	–
	437.8–438.7	26.1	–	1.15	.0107	707,100
	444.8–445.6	27.5	–	.72	.0116	741,400
	455 –456	14.3	–	.0041	.0028	1,146,200
	457.5–458.3	9.1	–	.00053	.0658	1,113,600
Kcho	845.5–846.5	5.6	–	Imp.*	.0077	–
	848.5–849	22.9	–	.023	.896	–
	852 –853	10.9	–	Imp.*	.002	615,300
	859 –860	–	–	sample crumbled		468,400
			KENDALL COUNTY Well RB-68-02-807			
Kcgrl	186.2–187.4	17.2	2.32	0.005	0.00937	937,700
Kche	220 –221	17.4	2.30	.0035	.00033	780,600
	228.6–230	27.8	2.14	.0931	.048	532,600
	233.2–234	33.4	2.22	.0128	.0034	–
	239.1–240	23.5	2.18	.085	.025	188,100
	249.2–250	26.9	2.23	.002	.0026	390,600
	293 –294	21.7	2.33	.032	.0099	796,000

* Impervious
** Kcgrl — lower member of the Glen Rose Limestone
Kche — Hensell Sand
Kccc — Cow Creek Limestone
Kcho — Hosston Sand
Oe — Ellenburger Limestone

Table 4.—Results of Laboratory Analyses of Cores from Test Wells—Continued

Stratigraphic Unit**	Core Depth Interval (ft)	Porosity (Percent)	Specific Gravity	Permeability Vertical [(gal/d)/ft²]	Permeability Horizontal [(gal/d)/ft²]	Modulus of Elasticity (lb/in²)
			KENDALL COUNTY Well RB-68-02-807—Continued			
Kccc	340 –341	37.5	2.18	2.61	0.026	345,000
	350 –350.5	24.1	2.10	4.18	.887	—
	354 –355	18.2	2.17	.025	.0186	430,200
	360.5–361.5	22.3	2.24	.0067	.010	788,000
	373 –373.5	26.8	2.24	.20	.103	—
	379 –380	24.2	2.31	.024	.00182	489,300
	391 –392	—	—	.001	—	360,500
Kcho	556 –557	24.2	2.27	.024	.0086	757,100
	662 –663	14.1	2.63	Imp.*	.00022	1,012,300
	668 –669	7.4	2.66	Imp.*	Imp.*	671,000
	677 –678	16.1	2.65	.0211	.00069	1,136,100
	682 –683	1.0	2.80	—	—	—
			BEXAR COUNTY Well AY-68-19-208			
Kche	356 –357	21.9	2.33	0.00129	0.00359	595,000
	396 –397	30.0	2.27	.723	.189	454,600
Kccc	405 –406	31.9	2.15	.292	.096	264,200
	416 –417	18.0	2.43	.0045	.0038	1,016,500
	423 –424	17.7	2.43	.013	.053	1,085,300
	430 –431	9.6	2.48	.00049	.00523	935,000
	438 –439	13.7	2.43	.033	.0378	1,432,000
	453 –454	20.4	2.43	.00126	.0104	590,800
	462 –463	17.0	2.40	.0079	.0024	660,300
Kcho	667 –668	28.1	2.30	Imp.*	.00136	942,200
	821 –822	22.0	2.67	.044	—	547,500
	828 –829	25.2	2.41	.276	.0736	1,274,100
	839 –840	6.3	2.51	Imp.*	.000918	649,800
	857 –858	17.5	2.51	.139	.017	1,226,200
	864 –865	17.3	2.40	.15	.021	1,072,300
	873 –874	26.2	2.38	.169	.0076	659,500

*Impervious
**Kcgrl — lower member of the Glen Rose Limestone
Kche — Hensell Sand
Kccc — Cow Creek Limestone
Kcho — Hosston Sand
Oe — Ellenburger Limestone

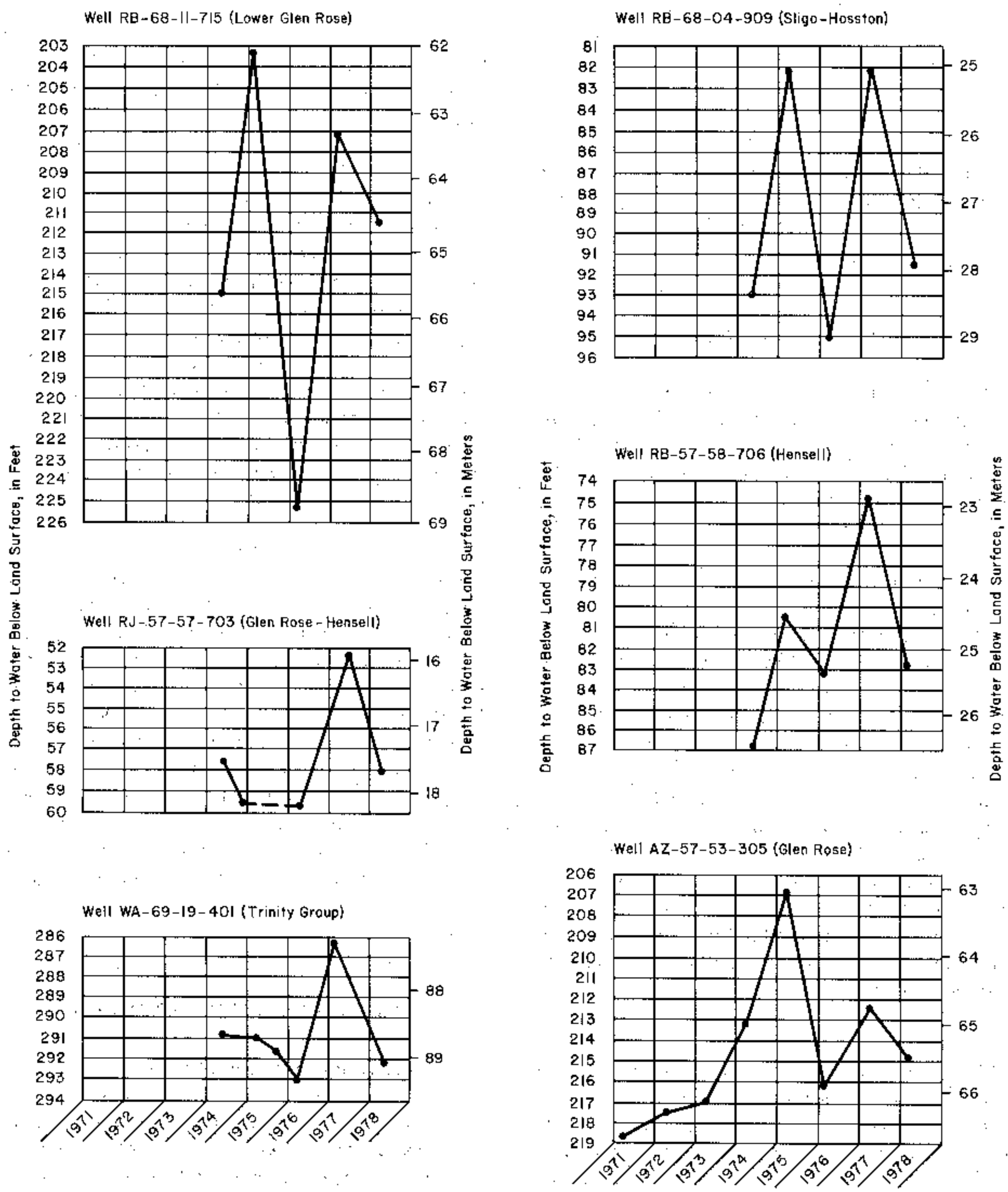


Figure 19
Hydrographs of Water Levels in Selected Wells

caused abnormal lowering of water levels and in many instances wells have actually gone dry. Because the Cow Creek, Sligo, and Hosston are not directly recharged by rainfall, these units will be less affected by droughts than the Hensell and Glen Rose. High pumpage in areas of rising population growth is also trending toward rapid decline in water levels.

Figures 17 and 18 show the altitude of water levels in selected wells in the middle and lower Trinity aquifers, respectively. Water levels in numerous wells are also listed in Table 5.

Utilization and Development

Historically, ground water from the Trinity Group aquifer has been used for public supply, irrigation, industrial, domestic, and livestock purposes. With increased population growth and changing economic conditions, ground-water usage in the hill country has undergone some alteration.

Water from the lower Trinity aquifer is used almost exclusively for municipal and irrigation purposes. The cities of Kerrville and Bandera rely heavily on water from the Hosston Member of the Travis Peak Formation. Other areas such as southern Kendall and northern Bexar Counties have attempted to use lower Trinity water for public supply but have found that the chemical quality will not meet the standards of the Texas State Department of Health. In the past, several large ranches, primarily in Bandera, Bexar, Kendall, and Kerr Counties, have used lower Trinity water to irrigate large grass fields but few of these wells remain active due to the cost of operating the pumps. Depth to the water-producing zone and the necessity to case off the Hammett Shale make drilling to the lower Trinity expensive and infeasible for most domestic needs.

The middle Trinity aquifer is the most widely used ground-water source because of its accessability and good chemical quality. It is the primary source for most domestic and livestock supplies as well as for many small communities and residential developments. Because of its high level of hardness, only a very few industries have been able to utilize the water. Irrigation, primarily in Gillespie County, is increasing, mostly in the form of drip systems for fruit and pecan orchards.

Comparatively few wells have been completed in the upper Trinity aquifer. These wells are exclusively for domestic and livestock use. Almost no new wells are being completed in this zone because of the poor quality and small quantity of the ground water being produced from the upper members of the Glen Rose Limestone.

AVAILABILITY OF GROUND WATER IN THE TRINITY GROUP AQUIFER

The amount of fresh to slightly saline ground water available for development from the Trinity Group aquifer annually in the study region is approximately 200,000 acre-feet (247 hm^3), which is the approximate average annual recharge to the aquifer as discussed earlier. Much of this recharge is lost by natural rejection in the form of small springs, seeps, and evapotranspiration. Theoretically, this 200,000 acre-feet (247 hm^3) annually of ground water can be developed without reducing the quantity of ground water in storage, although pumpage of this rate would probably cause a total depletion of the base flow of the rivers and streams that traverse the study region. In considering these figures of ground-water availability, it should be recognized that a single well, or a well field, cannot recover the total sustainable annual yield of the Trinity Group aquifer. This would require a large number of wells evenly spaced over the study region.

Ground-water availability should be of primary concern for any future development within the study region. Because of the small storage capacity of the Trinity Group aquifer, any large-scale pumpage should be preceded by adequate planning. Best yields generally occur in the outcrops of the lower member of the Limestone and the Hensell Sand (Figure 5) where rainfall has a better chance of entering the aquifer without being discharged through spring flow. Also, areas near creeks often have a better chance of developing solution channels that are necessary for large yield wells. Areas presently experiencing ground-water depletion due primarily to concentrated pumpage are in the Kerrville area and in northern Bexar and western Comal Counties.

GROUND-WATER PROBLEMS

Most ground-water problems in the south-central Texas hill country are related to insufficient well yield, less than desirable chemical quality, or a combination of the two. Before a well is drilled, it is important to consider the expected needs and the actual capacity of the tapped aquifer to meet those needs. As the well is drilled, there are several steps that can be taken to improve its efficiency.

Location of the well is the first point to consider. As a well is pumped, the drawdown of the water will form a cone of depression that expands outward from the well. When this cone of depression encounters the cone of depression from another pumping well, both wells will experience a barrier effect resulting in decreased yields. It is, therefore, helpful to know the hydraulic characteristics of the aquifer in order to properly space the wells. This knowledge can be gained by conducting aquifer tests on nearby wells. The well site should also be located away from sources of surface contamination such as livestock pens and septic tanks.

Proper well completion is vital to an efficient well. An insufficiently cased borehole may collapse or sand-up at the water-producing interval. The type of rock encountered when drilling the well will determine the amount of casing needed. A well drilled in limestone will usually require only surface casing to protect from surface contamination. If sand or shale is encountered, the casing should extend through those zones. Wells drilled to the lower Trinity aquifer particularly require casing through the Hammett Shale. The entire length of casing should be cemented. For wells drilled in a loose, unconsolidated material such as the Hensell Sand in Gillespie County, the casing should be perforated or slotted, extend the entire depth of the hole, and then be gravel packed at the water-producing zone. Screens are often used instead of perforated or slotted casing. Proper well completion impoves the yield, protects from contamination, and extends the life of the well.

Acidizing a limestone water-bearing zone will often increase the yield by increasing the permeability of the adjacent formation. The amount of acid applied depends on the results desired and cost and normally ranges from 5,000 to 20,000 gallons (18,900 to 75,700 liters) of 15 percent concentration of hydrochloric acid. Most domestic wells do not require acidizing for sufficient yields but the process is recommended for high-capacity wells.

Well development and pumping tests should be continued as long as is necessary to adequately clean out the bore hole and adjacent passages and to determine the most efficient pump size to install.

Chemical-quality problems in a well can be a dangerous health hazard. Pollution in the form of organic matter, such as sewage, may result in bacterial contamination and is usually identified by a high nitrate concentration. Bacterial contamination is most common in shallow wells and in wells where surface runoff is allowed to enter the borehole. Wells should be properly cased and cemented to help prevent surface contamination.

Ground water that contains excessively high levels of dissolved solids is encountered in many wells. The upper member of the Glen Rose Limestone in particular contains water with excessive amounts of sulfate. This highly mineralized water, even when mixed with better quality water from other zones, will often render water from the well unusable. Again this contamination can be minimized or eliminated by proper casing and cementing of the problem zones.

Heavy pumpage of ground water from the Trinity Group aquifer in certain areas is resulting in a rapid decline of water levels. Further residential development is continuing in these areas, and continued water-level declines can be expected. Many areas throughout the study region are beginning to develop rapidly and in time will probably also experience water-level decline. A combination of heavy pumpage and drought conditions will likely result in many wells going dry.

RECOMMENDATIONS

Water levels in 89 observation wells in the study region are being measured annually to determine long-term changes. Additional observation wells should be established in areas not presently covered and especially in areas of suspected problems. In addition to the annual measurements, a number of observation wells should be measured monthly or quarterly to determine seasonal variations in water levels throughout the study region. Automatic recording equipment should be installed on wells both in the artesian zone and the water-table zone to determine more precisely the effect of rainfall on recharge.

A water quality monitoring program consisting of 77 wells has been instigated. These wells should continue to be monitored to detect any changes in water quality resulting from well contamination and from possible saline-water encroachment due to heavy pumpage.

Aquifer tests should be conducted, especially in problem areas, to better determine the capabilities and future potential of the aquifer. Well logging should be continued in order to better define the formation horizons so that better well depth recommendations can be made.

A large portion of the study area is covered by "Cedar" (Juniper) trees which have been shown to be especially inefficient water users. Substantial increases in aquifer recharge could be expected by reverting much of this land back to grass. Small dams along creeks would also improve recharge by slowing the rate of surface runoff.

Homeowners can benefit by installing larger water storage units and practicing water conservation. Rainwater retained in cisterns can be used in conjunction with ground water for increased supplies.

Adequate septic tanks should be installed, and raw sewage should never be allowed to drain into an abandoned well or into a creek or river.

The efficient utilization of ground water, especially for large-demand purposes, requires adequate planning. Some developments have experienced severe water shortages and water quality problems primarily due to the lack of such planning. Before development begins, a program of test drilling, test pumping, and water-quality sampling should be instigated. The information gained will determine the most efficient well completion method, pump setting, well spacing, and feasibility of drilling additional wells. Large concentrated withdrawals in small areas should be avoided, and housing developments should not contain more housing units than their water system can support. Whenever possible, surface-water supplies should be considered to supplement the ground-water supply.

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Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.

Water level : Reported water levels given in feet; measured water levels given in feet and tenths.

Method of lift and type of power: C, Cylinder; E, electric; G, gasoline, butane, or diesel engine; J, jet; N, none; Sub, submersible; T, turbine; W, windmill. Number indicates horsepower.

Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, livestock.

Water-bearing units : Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcs, Sligo Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation; Kct, Trinity Group, undifferentiated.

	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			
	AS-68-09-401	Joe H. Berry, well 3	King Stokes	1952	830	7 5	549 819	Kcho	1,422	163	Jan. 12, 1971	T, G 40	Irr	Deepened from 460 to 830 feet on Jan. 12, 1971. Perforated from 549 to 819 feet. Cemented from 549 feet to surface. Pump set at 370 feet. Reported yield 167 gal/min with 204 feet drawdown. Acidized.
	701	Joe H. Berry	--	1948	460	N	N	Kcgrl, Kche, Kccc	1,343	34.3 35.0	Mar. 16, 1954 Nov. 3, 1955	N	N	Well J-2 in Texas Water Commission Bulletin 6210. Abandoned. 1/
	702	Joe H. Berry, well 2	King Stokes	1952	390	7	350	Kccc	1,355	--	--	T, G	N	Open hole from 250 to 390 feet. Cemented from 350 feet to surface. Pump set at 375 feet. Acidized. Unused irrigation well.
*	17-101	Ard E. Richardson, II	Burkett Drilling Co.	1968	1,204	10	970	Kcho	1,440	220	Dec. 12, 1968	Sub, E 40	S	Open hole from 970 to 1,204 feet. Cemented from 970 feet to surface. Pump set at 600 feet. Reported yield 265 gal/min with 385 feet drawdown. Acidized.
	201	Claude H. Krause	C. Haines	1950	500	7	--	Kcgrl, Kche, Kccc	1,365	169.5 166.0	Mar. 14, 1954 Nov. 7, 1977	Sub, E 2	D, S	Well J-26 in Texas Water Commission Bulletin 6210. 1/
*	401	C. D. Lovelace	do	1954	420	7	20	Kcgrl, Kche, Kccc	1,189	80.0	June 4, 1954	N	N	Well J-50 in Texas Water Commission Bulletin 6210. Open hole from 20 to 420 feet. Plugged. 1/
*	501	W. Marrs	Beisler Well and Construction	1969	390	6	63	Kcgrl, Kche	1,200	116.1 94.9 102.8 88.0 97.8	Aug. 5, 1974 Jan. 9, 1975 Feb. 4, 1976 Feb. 4, 1977 Mar. 1, 1978	Sub, E	D	Open hole from 63 to 390 feet. Observation well.
*	502	Curtis Heinrich	Wallace and Erfurt	1954	420	6	--	Kcgrl, Kche, Kccc	1,240	113	June 1954	N	N	Well J-55 in Texas Water Commission Bulletin 6210. Reported yield 35 gal/min with 20 feet drawdown. Abandoned. 1/
*	601	George Hohon	Justin Linney	1973	400	8 6	45 150	Kcgrl, Kche	1,400	117.1 109.5 113.0 106.4 111.3	Aug. 5, 1974 Jan. 9, 1975 Feb. 4, 1976 Feb. 8, 1977 Mar. 1, 1978	Sub, E	D	Open hole from 150 to 400 feet. Observation well.
	801	Jack Holmes	do	1972	365	7	49	Kcgrl, Kche	1,240	156.3 145.0 157.9 133.2 151.2	Aug. 9, 1974 Jan. 9, 1975 Feb. 4, 1976 Feb. 14, 1977 Mar. 1, 1978	Sub, E	D	Open hole from 49 to 365 feet. Cemented from 49 feet to surface. Observation well.
	18-401	Pete Knowles	Haskin Pump and Service, Inc.	1974	750	6	350	Kche, Kccc	1,500	393	July 9, 1974	--	D, S	Open hole from 350 to 750 feet. 1/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* AS-68-18-701	Pete Knowles	-- Rossmann	1956	1,120	10	924	Ket	1,470	295	Apr. 1956	T, E 75	Irr	Well J-62 in Texas Water Commission Bulletin 6210. Perforated from 300 to 880 feet. Open hole from 924 to 1,120 feet. Yield increased from 205 to 1,200 gal/min after acidizing. 1/
25-201	Mrs. Irene Mazurek	G. Weinen	1954	651	7	315	Kche, Kccc	1,100	99.4 76.2	Sept. 22, 1954 Dec. 9, 1977	Sub, E 1 1/2	D	Well P-8 in Texas Water Commission Bulletin 6210. Open hole from 315 to 651 feet. 1/
202	Binford Baptist Mission Church	do	1954	412	6	102	Kcgrl	1,195	132.7 92.4	Feb. 22, 1954 Jan. 15, 1959	Sub, E	D	Well P-17 in Texas Water Commission Bulletin 6210. Open hole from 102 to 412 feet. 1/
69-06-701	V. C. Dabney	Smith Drilling Service	1954	500	7	282	Kcgrl, Kche	1,698	142	Aug. 31, 1954	Sub, E 1 1/2	D	Well C-1 in Texas Water Commission Bulletin 6210. Open hole from 282 to 500 feet. 1/
* 902	Medina Children's Home	do	1952	520	10	140	Kcgrl, Kche	1,600	20 75.9 5.5	Feb. 1952 Feb. 1954 Nov. 13, 1975	Sub, E 15	Irr	Well C-5 in Texas Water Commission Bulletin 6210. Open hole from 140 to 520 feet. Reported yield 500 gal/min with 200 feet drawdown.
903	Mrs. Martin Wright	do	1956	375	7	160	Kcgrl, Kche	1,575	51	Feb. 6, 1956	N	N	Well C-6 in Texas Water Commission Bulletin 6210. Open hole from 160 to 375 feet. 1/
12-205	Mary Haby No. 1	Tesoro Petroleum	1974	6,729	--	--	--	2,236	--	--	--	--	Oil test. 1/
501	Texas Parks and Wildlife Department	Edmonds Drilling Co.	1977	770	6	725	Kccc	1,835	300	Nov. 28, 1977	N	N	Open hole from 725 to 770 feet. Cemented from 725 feet to surface. Reported yield 60 gal/min with 185 feet drawdown. Unused public supply well.
901	S. B. Anderson No. 1	General Crude Oil Co.	1955	1,514	--	--	--	1,833	--	--	--	--	Oil test. 1/
* 13-101	John F. Camp	Smith Drilling Service	1955	825	7	600	Kcgrl, Kche	1,955	350 419.9 412.6 414.3 415.1	Feb. 4, 1955 Aug. 20, 1974 Feb. 13, 1975 Jan. 29, 1976 Feb. 8, 1977	Sub, E	S	Well B-3 in Texas Water Commission Bulletin 6210. Open hole from 600 to 825 feet. Observation well. 1/
* 14-101	C. H. Heimsath	King Stokes	--	445	7	36	Kcgr, Kche	1,662	84	May 1954	C, W	N	Well B-10 in Texas Water Commission Bulletin 6210. Deepened from 100 to 445 feet in May 1954. Open hole from 36 to 445 feet. Unused livestock well. 1/
102	do	do	1953	558	7	--	Kcgrl, Kche	1,727	166.0	July 20, 1953	Sub, E 1 1/2	D	Well B-9 in Texas Water Commission Bulletin 6210. 1/
201	L. R. Neal	Smith Drilling Service	1955	448	7	175	Kcgrl, Kche, Kccc	1,608	54.0 89.2	June 24, 1955 Dec. 16, 1977	Sub, E 1	D	Well B-15 in Texas Water Commission Bulletin 6210. Open hole from 175 to 448 feet. 1/
202	R. W. Payne, Jr.	do	1955	400	7	160	Kcgrl, Kche	1,562	38.6 14.5	July 20, 1955 Dec. 17, 1958	J, E 1	D, S	Well C-20 in Texas Water Commission Bulletin 6210. Open hole from 160 to 400 feet. 1/
* 301	E. Hand	King Stokes	1953	150	6	20	Kcgr	1,590	44.5	Mar. 29, 1954	J, E	D, S	Well C-8 in Texas Water Commission Bulletin 6210. Open hole from 20 to 150 feet. 1/
* 501	Morris Miller	H. C. Murphy Drilling	1971	500	5	436	Kcgrl, Kche, Kccc	1,540	66.2 67.1 62.4 64.0	Aug. 8, 1974 Jan. 16, 1975 Feb. 4, 1977 Mar. 9, 1978	Sub, E	D, S	Open hole from 436 to 500 feet. Cemented from 200 to 100 feet. Observation well.
502	J. Bagwell	Smith Drilling Service	1955	600	6	--	Kcgru, Kcgrl, Kche	1,660	136.7 174.6	July 20, 1955 Dec. 22, 1977	Sub, E 1	D	Well C-2 in Texas Water Commission Bulletin 6210. 1/
601	Medina Water Supply Corp.	Wright Water Wells	1967	810	8 6	400 609	Kccc, Kcho	1,465	170	July 1967	Sub, E 15	P	Screened from 400 to 609 feet. Open hole from 609 to 810 feet. Pump set at 380 feet.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
AS-69-14-602	Don Mead	Smith Drilling Service	1969	155	6	33	Kcgrl	1,450	25.9	Nov. 7, 1975	Sub, E	Irr, D	Open hole from 33 to 155 feet. Reported yield 100 gal/min with 0 feet drawdown.
* 603	E. H. Anderson	do	1954	455	7	20	Kcgrl, Kche, Kccc	1,451	31 64.6	Apr. 1954 Dec. 15, 1977	Sub, E 3	D	Well G-25 in Texas Water Commission Bulletin 6210. Open hole from 20 to 455 feet. 1/
* 701	Mrs. L. S. Stokes	--	--	Spring	--	--	Kcgru	1,680	--	--	Flows	D, S	Spring F-12 in Texas Water Commission Bulletin 6210. Numerous openings produce up to 100 gal/min.
* 702	P. L. Garrison	-- Bronlee	1955	600	7	280	Kcgrl, Kche	1,645	193 180.0	July 1955 Dec. 17, 1977	Sub, E	D, S	Well F-15 in Texas Water Commission Bulletin 6210. Deepened from 487 to 600 feet. Open hole from 280 to 487 feet. 1/
* 901	Gary G. Morley	G. Heinen	1955	520	7	54	Kcgrl, Kche, Kccc	1,500	30 45.6	Mar. 15, 1954 Dec. 15, 1977	Sub, E 1	D, S	Well G-27 in Texas Water Commission Bulletin 6210. Open hole from 54 to 520 feet. Reported yield 400 gal/min with 350 feet drawdown. Acidized. 1/
902	Bill Rau	Smith Drilling Service	1951	515	7	20	Kcgru, Kcgrl, Kche	1,634	235	Jan. 1954	Sub, E 1 1/2	N	Well G-30 in Texas Water Commission Bulletin 6210. Deepened to 515 feet in 1954. Open hole from 20 to 515 feet. Unused livestock well. 1/
15-101	Fay Burch No. 1	Gulf Oil Corp.	1964	5,181	--	--	--	1,717	--	--	--	--	Oil test. 1/
102	Henry Adams	Smith Drilling Service	1954	410	7	50	Kcgru, Kcgrl, Kche	1,640	92.5 70.6	July 1, 1954 Mar. 5, 1959	Sub, E	D, S	Well C-11 in Texas Water Commission Bulletin 6210. Open hole from 50 to 410 feet. 1/
301	G. L. Rowsey No. 2	G. L. Rowsey	1953	5,273	--	--	--	1,789	--	--	--	--	Well D-2 in Texas Water Commission Bulletin 6210. Oil test. 1/
302	G. L. Rowsey No. 1	do	1952	6,205	--	--	--	1,736	--	--	--	--	Well D-3 in Texas Water Commission Bulletin 6210. Oil test. 1/
303	D. M. Montague No. 1	Sunray D-X Oil Co.	1964	4,916	--	--	--	1,763	--	--	--	--	Oil test. 1/
* 401	Henry C. Murphy	H. C. Murphy Drilling	1973	530	5	260	Kche, Kccc	1,465	66.5 38.1 54.0 38.6 51.2	Aug. 8, 1974 Jan. 16, 1975 Jan. 30, 1976 Feb. 4, 1977 Mar. 9, 1978	Sub, E	D	Open hole from 260 to 530 feet. Cemented from 260 feet to surface. Observation well.
* 402	Bill Craddock	do	1973	400	5	400	Kche, Kccc	1,420	23.7 21.2 22.3 18.5 26.8	Aug. 8, 1974 Jan. 16, 1975 Jan. 30, 1976 Feb. 4, 1977 Mar. 9, 1978	Sub, E	D	Slotted from 300 to 400 feet. Cemented from 300 feet to surface. Observation well.
403	M. H. Sandidge	Smith Drilling Service	1953	500	10	60	Kcgrl, Kche, Kccc	1,522	40.4 92	Mar. 30, 1954 Nov. 10, 1975	N	N	Well G-13 in Texas Water Commission Bulletin 6210. Open hole from 60 to 500 feet. Reported yield 337 gal/min with 160 feet drawdown. Abandoned irrigation well.
* 501	R. L. Walker	H. C. Murphy Drilling	1970	485	5	166	Kcgrl, Kche, Kccc	1,490	129.8 127.8 128.7 127.7 126.2	Aug. 7, 1974 Jan. 16, 1975 Jan. 30, 1976 Feb. 4, 1977 Mar. 8, 1978	Sub, E	D	Open hole from 166 to 485 feet. Cemented from 160 feet to surface. Observation well.
701	K. K. Amini	Smith Drilling Service	1954	200	12	30	Kcgrl	1,406	12.8	Mar. 30, 1954	T, G 30	Irr	Well G-23 in Texas Water Commission Bulletin 6210. Open hole from 30 to 200 feet.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
AS-69-15-801	Morgan K. Cox	Smith Drilling Service	1962	495	8	34	Kcgrl, Kchc, Kccc	1,360	60.3 51.9 58.5 49.2 58.0	Aug. 8, 1974 Jan. 6, 1975 Feb. 4, 1976 Feb. 4, 1977 Mar. 9, 1978	Sub, E	D, S	Open hole from 34 to 495 feet. Observation well.
802	B. E. Kyle and W. W. Kyle, Jr.	do	1953	495	7	32	Kcgrl, Kchc, Kccc	1,377	24.2	Mar. 3, 1954	N	N	Well G-32 in Texas Water Commission Bulletin 6210. Open hole from 32 to 495 feet. 1/
* 901	Bates Ranch	do	1954	440	5	--	Kcgrl, Kchc, Kccc	1,467	96.1 92.5 110.7	Mar. 11, 1954 Jan. 26, 1959 Dec. 20, 1977	Sub, E	S	Well H-30 in Texas Water Commission Bulletin 6210. 1/
* 16-401	Forest Stevens	H. C. Murphy Drilling	1969	385	7	34	Kcgrl, Kchc, Kccc	1,425	49.0 45.5 63.1 40.6 41.2	Aug. 6, 1974 Jan. 9, 1975 Jan. 30, 1976 Feb. 9, 1977 Mar. 8, 1978	Sub, E	D	Open hole from 34 to 385 feet. Cemented from 34 feet to surface. Observation well.
* 402	do	--	--	Spring	--	--	Kcgru	1,415	--	--	Flows	D, S	Spring H-6 in Texas Water Commission Bulletin 6210. Estimated flow 20 gal/min on July 13, 1976.
* 802	Roy E. Palmer	H. C. Murphy Drilling	1971	420	5	40	Kcgrl, Kchc, Kccc	1,320	108.2 87.3 91.8 57.8 98.0	Aug. 6, 1974 Jan. 9, 1975 Feb. 4, 1976 Feb. 9, 1977 Mar. 7, 1978	Sub, E	D	Open hole from 40 to 420 feet. Observation well.
803	John W. Goodenough No. 1	Stan Ross Production Corp.	1953	5,509	--	--	--	1,343	--	--	--	--	Well H-20 in Texas Water Commission Bulletin 6210. Oil test. 1/
804	Hugo Bausch	J. P. Heinen	1954	420	7	20	Kcgrl, Kchc, Kccc	1,325	109.3 63.4 95.2	May 11, 1954 Feb. 24, 1959 Dec. 29, 1977	C, G 2	S	Well H-22 in Texas Water Commission Bulletin 6210. Open hole from 20 to 420 feet. 1/
* 902	Purple Sage Ranch, well 4	Ted Vincent Pursley	1973	950	10	517	Kcho	1,335	--	--	Sub, E 25	Irr, D	Open hole from 517 to 950 feet. Pump set at 940 feet. Acidized. 1/
20-102	Hoyt M. Foster	Smith Drilling Service	1955	278	--	--	Kcgr	1,695	67	Mar. 14, 1955	N	N	Well E-19 in Texas Water Commission Bulletin 6210. Plugged. 1/
* 201	Fred Bell, Estate	Mikton Oil Co.	1946	872	10	872	Kccc	1,735	--	--	Sub, E 3	D, S	Well E-18 in Texas Water Commission Bulletin 6210. Oil Test drilled to 9,515 feet, plugged back to 872 feet and converted to water well. Perforated from 675 to 690 feet and 705 to 720 feet. 1/
601	Cedar Fiber Co.	--	--	458	8	40	Kcgrl, Kchc, Kccc	1,507	161	Jan. 28, 1977	Sub, E 5	Ind	Deepened from 430 to 458 feet in Dec. 1976. Open hole from 40 to 458 feet. Cemented from 40 feet to surface. Reported yield 10 gal/min with 84 feet drawdown.
* 801	T. J. Baby	C. Walker	1955	490	7	380	Kchc, Kccc	1,465	165 154.1	Oct. 1955 Mar. 18, 1959	C, W	D	Well K-3 in Texas Water Commission Bulletin 6210. Open hole from 380 to 490 feet. 1/
* 901	Vernon Porter	H. C. Murphy Drilling	1970	545	5	111	Kcgrl, Kchc	1,548	246.0 236.1 236.9 223.2 237.7	Aug. 21, 1974 Jan. 17, 1975 Jan. 30, 1976 Feb. 8, 1977 Mar. 8, 1978	Sub, E	D	Open hole from 111 to 545 feet. Observation well.
902	Bandera Electric Coop.	Smith Drilling Service	--	455	5	--	Kcgrl, Kchc	1,474	168 161.5	1956 Dec. 8, 1977	N	N	Well K-7 in Texas Water Commission Bulletin 6210. 1/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
AS-69-21-101	L. R. Duke	Smith Drilling Service	1955	400	7	20	Kcgru, Kcgrl	1,755	37 43.5	Oct. 1955 Dec. 14, 1977	N	N	Well F-19 in Texas Water Commission Bulletin 6210. Open hole from 20 to 400 feet. 1/
22-201	P. L. Garrison	do	1953	615	7	20	Kcgru, Kcgrl, Kche	1,750	200	July 1955	N	N	Well F-17 in Texas Water Commission Bulletin 6210. Open hole from 20 to 615 feet. 1/
201	Ruth Whitehead No. 1	Gulf Oil Corp.	1965	7,848	--	--	--	1,950	--	--	--	--	Oil test. 1/
* 501	J. W. Kelley	Smith Drilling Service	1955	570	7	20	Kcgrl, Kche, Kccc	1,476	115	Mar. 1955	C, E	D, S	Well G-38 in Texas Water Commission Bulletin 6210. Open hole from 20 to 570 feet. 1/
* 701	Paul Kayser	Layne Texas Co.	1956	1,000	8	1,000	Kcho	1,465	200	1956	Sub, E 10	D, S	Well M-2 in Texas Water Commission Bulletin 6210. Perforated from 980 to 1,000 feet. Reported yield 65 gal/min with 300 feet drawdown.
* 901	Arthur Erfurt	Justin Lisney	1973	330	6	26	Kcgrl	1,280	17.1 14.7 16.1 12.1 16.8	Aug. 22, 1974 Jan. 17, 1975 Jan. 30, 1976 Feb. 8, 1977 Mar. 8, 1978	Sub, E	D	Open hole from 26 to 330 feet. Observation well.
* 23-501	C. T. Clements	do	1972	635	5	301	Kcgrl, Kche	1,500	229.1 209.5 208.4 214.0	Aug. 18, 1974 Jan. 17, 1975 Jan. 30, 1976 Mar. 8, 1978	Sub, E	D	Open hole from 301 to 635 feet. Observation well.
* 601	Dixie Dude Ranch	Muckelroy Drilling Co.	1953	1,085	5	812	Kcs, Kcho	1,545	270	Sept. 1954	Sub, E 2	P	Well H-73 in Texas Water Commission Bulletin 6210. Open hole from 812 to 1,085 feet. 1/
* 602	Bill Firneisen	H. C. Murphy Drilling	1972	550	6	215	Kcgrl, Kche	1,500	87.9 84.7 89.1 82.1 91.1	Aug. 18, 1974 Jan. 16, 1975 Jan. 30, 1976 Feb. 8, 1977 Mar. 8, 1978	Sub, E 2	D	Open hole from 215 to 550 feet. Observation well.
* 801	J. F. Merrick, Estate	J. R. Johnson Drilling Co.	1953	1,137	7	900	Kcs, Kcho	1,500	275 315	May 1953 Nov. 21, 1975	N	N	Well H-11 in Texas Water Commission Bulletin 6210. Open hole from 900 to 1,137 feet. Reported yield 16 gal/min with 75 feet drawdown. 1/
802	J. F. Merrick No. 1	Shell Oil Co.	1969	6,757	--	--	--	1,500	--	--	--	--	Oil test. 1/
* 901	J. S. Morris	J. R. Johnson Drilling Co.	1953	1,110	--	--	Kcs, Kcho	1,420	135	July 1953	Sub, E	D, S	Well N-3 in Texas Water Commission Bulletin 6210. Yield increased from 150 to 350 gal/min when acidized. 1/
* 24-101	Raymond Hicks	J. P. Heinen	1954	560	7	280	Kcgrl, Kche, Kccc	1,333	92	Oct. 1954	Sub, E 2	D	Well H-39 in Texas Water Commission Bulletin 6210. Open hole from 280 to 560 feet. 1/
201	Bandera Water Control and Improvement District No. 1	J. R. Johnson Drilling Co.	1953	900	--	--	Kcho	1,287	--	--	N	N	Well H-42 in Texas Water Commission Bulletin 6210. Plugged public supply well.
202	Bandera Water Control and Improvement District No. 1, well 4	do	1953	898	15 12	-- 742	Kcho	1,270	55 74.2 95.7	Apr. 28, 1953 Feb. 23, 1959 Apr. 18, 1962	T, E 40	P	Well H-43 in Texas Water Commission Bulletin 6210. Open hole from 742 to 898 feet. Pump set at 180 feet. Reported yield 1,327 gal/min with 215 feet drawdown. Acidized. 1/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* AS-69-24-203	Bandera Water Control and Improvement District No. 1, well 2	Rayfield Brothers	1945	435	6	--	Kegrl, Kchc, Kccc	1,230	63 7.2 36.14 69.70 104.45 56.38 93.2	July 1954 Feb. 23, 1959 Aug. 6, 1974 Jan. 9, 1975 Jan. 30, 1976 Feb. 4, 1977 Mar. 7, 1978	N	N	Well H-44 in Texas Water Commission Bulletin 6210. Reported yield 40 gal/min with large drawdown. Observation well. Abandoned public supply well.
* 204	Bandera Water Control and Improvement District No. 1, well 3	J. R. Johnson Drilling Co.	1946	896	11 9	421 680	Kcho	1,250	97	July 21, 1954	Sub, E 20	P	Well H-45 in Texas Water Commission Bulletin 6210. Open hole from 680 to 896 feet. Pump set at 400 feet. Reported flow 30 gal/min in 1946. Acidized.
* 205	Bandera Water Control and Improvement District No. 1, well 1	-- Cravens	1940	467	10	--	Kegrl, Kchc, Kccc	1,250	--	--	N	N	Well H-46 in Texas Water Commission Bulletin 6210. Reported breaks suction pumping in excess of 26 gal/min. Capped public supply well.
* 206	Lost Valley Resort Ranch	Heisler Well and Construction	1975	785	8 6	420 630	Kcho	1,318	--	--	Sub, E 10	Irr	Open hole from 630 to 785 feet. Pump set at 410 feet.
207	Flying L Ranch, well 1	Associated Construction Services	1972	816	10	460	Kccc, Kcs, Kcho	1,310	--	--	Sub, E 10	N	Open hole from 460 to 816 feet. Reported yield 125 gal/min with 250 foot drawdown. Acidized. Unused public supply well. 1/
208	Flying L Ranch, well 2	do	1972	790	10	--	Kccc, Kcs, Kcho	1,265	--	--	T, E 75	Irr	Cemented. Pump set at 460 feet. 1/
209	Flying L Ranch	Smith Drilling Service	1945	413	8	--	Kegrl, Kchc, Kccc	1,260	165	Aug. 1953	N	N	Well H-51 in Texas Water Commission Bulletin 6210. Slotted. Reported yield 250 gal/min with 27 feet drawdown. Unused public supply well.
210	do	King Stokes	1945	960	10	--	Kegrl, Kchc, Kccc, Kcs, Kcho	1,260	120	Aug. 1958	Sub, E 2 1/2	P	Well H-50 in Texas Water Commission Bulletin 6210. Reported to flow in 1945. Reported broke suction at 48 gal/min with pump set at 180 feet.
211	Bandera Independent School District	Heisler Well and Construction	1976	1,160	8	530	Kcs, Kcho	1,262	235	Oct. 15, 1976	Sub, E 10	P	Open hole from 530 to 1,160 feet. Cemented from 530 feet to surface. Reported yield 90 gal/min with 150 feet drawdown.
212	H. J. Risinger	Smith Drilling Service	1955	435	7	--	Kegrl, Kchc, Kccc	1,300	126 102.8	Mar. 1955 Dec. 9, 1977	Sub, E	D	Well H-48 in Texas Water Commission Bulletin 6210. 1/
213	Frank Kalka	Rayfield Brothers	1900	462	6	40	Kegrl, Kchc, Kccc	1,325	145.5	May 31, 1954	Sub, E	D	Well H-49 in Texas Water Commission Bulletin 6210. 1/
301	J. P. Heinen	J. P. Heinen	1918	463	7	84	Kegrl, Kchc	1,348	195 189.4	Apr. 1953 Feb. 12, 1959	Sub, E 1 1/2	D, S	Well H-60 in Texas Water Commission Bulletin 6210. Deepened from 432 to 463 feet in 1953. Open hole from 84 to 463 feet. Reported yield 15 gal/min with 40 feet drawdown. 1/
* 502	Albert Aikek	Smith Drilling Service	1954	420	7	150	Kegrl, Kchc, Kccc	1,265	83	May 1954	Sub, E 1	D	Well H-65 in Texas Water Commission Bulletin 6210. Open hole from 150 to 420 feet. 1/
503	I. C. Mazurek	G. Heinen	1954	463	7	43	Kegrl, Kchc, Kccc	1,305	161.0	Aug. 24, 1955	Sub, E	S	Well H-69 in Texas Water Commission Bulletin 6210. Open hole from 43 to 463 feet. 1/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
AS-69-24-601	B. Parker	J. R. Johnson Drilling Co.	--	925	11	820	Kcho	1,405	116.4	Jan. 8, 1959	Sub, E 40	Irr	Well H-61 in Texas Water Commission Bulletin 6210. Open hole from 820 to 925 feet. Pump set at 550 feet. Reported yield 210 gal/min with 84 feet drawdown.
* 701	Mrs. Helen Zickler	H. C. Murphy Drilling	1969	120	5	120	Kcgru	1,420	25.3 6.8 29.1 6.6 30.8	Aug. 22, 1974 Jan. 9, 1975 Jan. 30, 1976 Feb. 14, 1977 Mar. 7, 1978	Sub, E	D	Observation well.

* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcs, Sligo Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation; Kct, Trinity Group, undifferentiated.

Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

Analyses by Texas State Department of Health.

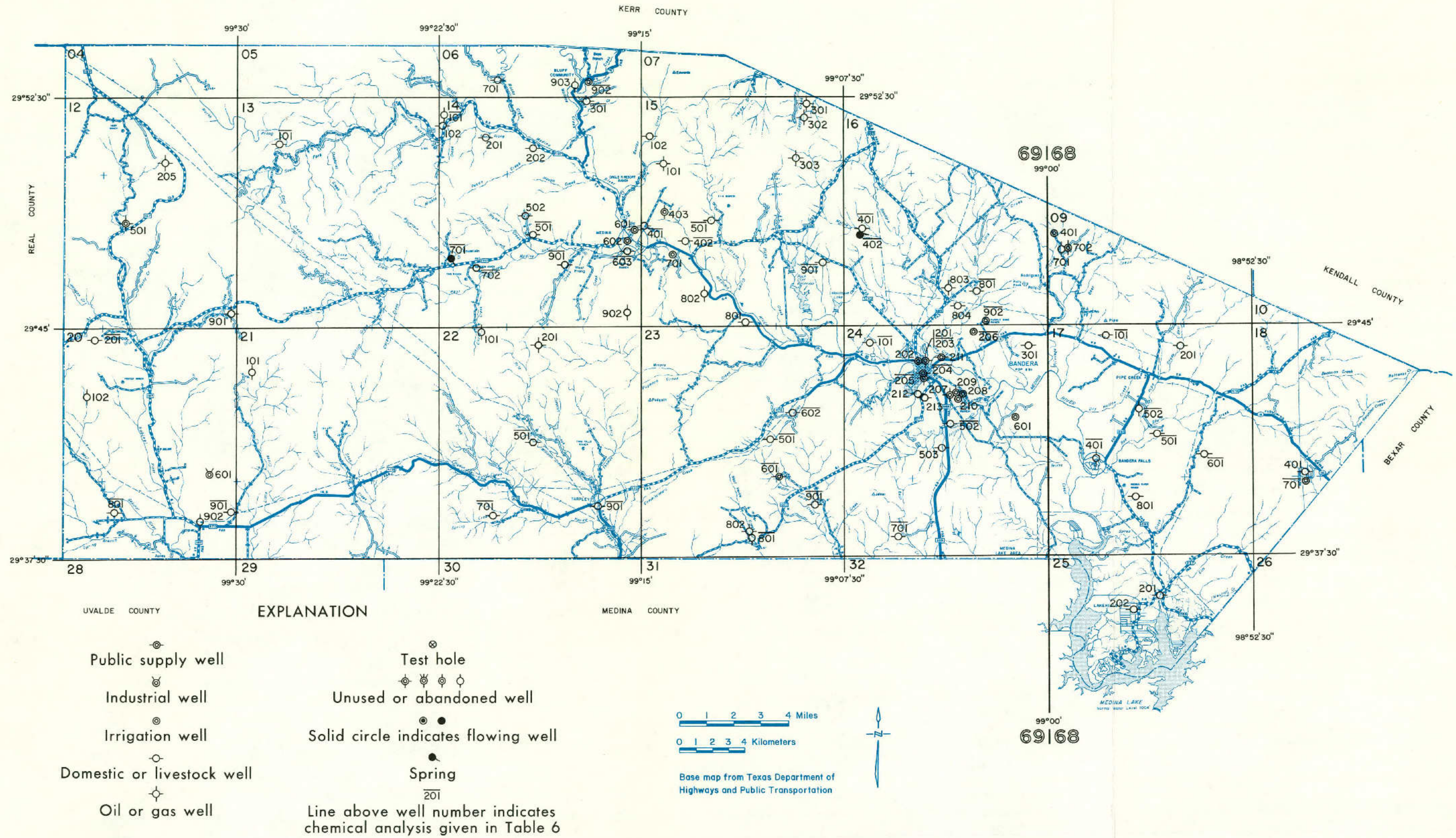
Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AS-68-17-101	Kcho	1,204	Nov. 21, 1975	12	--	41	25	95	13	353	49	50	2.0	< 0.4	--	460	205	763	8.5	48	2.8	1.6
401	Kche, Kcgrl, Kccc	420	Aug. 19, 1955	20	0.0	92	17	22	--	339	15	37	--	1.0	--	370	300	662	7.4	14	.5	.0
501	Kche, Kcgrl	390	Aug. 5, 1974	12	--	67	54	67	--	356	191	36	2.9	1.5	--	606	390	950	7.9	27	1.4	.0
501	Kche, Kcgrl	390	July 13, 1976	11	--	68	53	67	--	356	176	37	2.7	1.9	--	591	390	965	7.7	27	1.4	.0
501	Kche, Kcgrl	390	July 7, 1977	11	--	65	55	64	15	362	197	36	2.7	< .4	--	624	390	967	7.6	25	1.4	.0
502	Kche, Kcgrl, Kccc	420	July 2, 1954	13	--	64	57	66	--	356	189	35	--	.0	--	599	394	977	7.9	27	1.4	.0
601	Kche, Kcgrl	400	Aug. 5, 1974	12	--	74	53	58	--	360	182	34	3.4	.8	--	594	403	926	7.9	24	1.2	.0
18-701	Kct	1,120	Dec. 21, 1956	13	--	304	180	46	--	316	1,260	20	--	1.4	--	1,979	1,500	2,270	7.4	6	.5	.0
69-06-902	Kche, Kcgrl	520	Feb. 1, 1952	13	.0	86	64	34	9.2	351	190	34	2.8	1.0	0.5	607	478	982	7.8	13	.6	.0
13-101	Kche, Kcgrl	825	Feb. 3, 1971	12	--	102	65	37	--	318	275	37	2.8	< .4	--	687	520	1,050	7.6	13	.7	.0
101	Kche, Kcgrl	825	Aug. 20, 1974	9	.1	114	66	59	--	325	336	37	3.6	< .4	--	784	560	1,091	8.1	19	1.0	.0
14-101	Kche, Kcgr	455	May 6, 1954	9	--	516	421	124	--	274	2,910	25	--	.0	--	4,139	3,020	4,220	7.7	8	.9	.0
301	Kcgr	150	Aug. 24, 1955	12	.0	554	263	48	--	267	2,210	34	--	.5	--	3,252	2,460	3,430	7.2	4	.4	.0
501	Kche, Kcgrl, Kccc	500	Aug. 8, 1974	10	--	510	40	21	--	361	1,070	25	1.4	< .4	--	1,855	1,440	2,001	7.7	3	.2	.0
501	Kche, Kcgrl, Kccc	500	July 19, 1976	12	--	143	53	44	--	346	310	36	2.2	< .4	--	770	570	1,139	7.7	14	.7	.0
603	Kche, Kcgrl, Kccc	455	May 16, 1954	11	--	476	209	28	--	292	1,770	18	--	.0	--	2,655	2,050	2,850	7.4	3	.2	.0
701	Kcgru	--	Nov. 7, 1975	10	--	97	2	6	--	295	10	13	.2	< .4	--	283	270	476	7.9	5	.1	.0
701	Kcgru	--	July 12, 1977	12	--	73	18	6	--	292	13	10	.1	2.5	--	278	257	482	7.9	5	.1	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AS-69-14-702	Kche, Kcgrl	487	Aug. 25, 1955	13	0.0	83	55	57	--	337	215	39	--	1.0	--	628	433	1,010	7.4	22	1.1	0.0
901	Kche, Kcgrl, Kccc	520	Aug. 29, 1955	12	.0	580	76	31	--	220	1,560	16	--	.5	--	2,383	1,760	2,560	7.3	4	.3	.0
15-401	Kche, Kccc	530	Aug. 8, 1974	9	--	95	56	37	--	366	175	45	3.0	< .4	--	600	466	954	7.7	15	.7	.0
402	Kche, Kccc	400	do	10	--	85	50	41	--	354	164	36	2.5	< .4	--	562	419	888	7.9	18	.8	.0
501	Kche, Kcgrl, Kccc	485	Aug. 7, 1974	10	--	92	56	36	--	362	191	33	3.0	< .4	--	599	463	919	7.9	15	.7	.0
501	Kche, Kcgrl, Kccc	485	July 19, 1976	10	--	90	57	34	15	362	189	32	2.5	< .4	--	607	459	932	7.6	13	.6	.0
501	Kche, Kcgrl, Kccc	485	July 12, 1977	10	--	83	55	37	--	362	177	30	2.5	< .4	--	572	436	907	7.6	16	.7	.0
901	Kche, Kcgrl, Kccc	425	May 16, 1954	11	--	80	53	41	--	390	142	28	--	.0	--	546	418	915	7.6	18	.8	.0
16-401	Kche, Kcgrl, Kccc	385	Aug. 6, 1974	9	--	116	75	29	--	342	315	32	4.0	< .4	--	748	600	1,074	7.9	10	.5	.0
401	Kche, Kcgrl, Kccc	385	July 13, 1976	10	--	110	72	28	13	350	286	33	2.9	.6	--	727	570	1,065	7.6	9	.5	.0
401	Kche, Kcgrl, Kccc	385	July 7, 1977	12	--	110	78	27	13	342	342	30	3.1	< .4	--	783	600	1,114	7.6	9	.4	.0
402	Kcgru	--	July 13, 1976	14	--	85	13	8	--	296	14	15	.3	2.0	--	296	268	505	7.8	6	.2	.0
402	Kcgru	--	July 7, 1977	14	--	96	15	9	--	342	18	17	.0	.7	--	338	304	580	7.5	6	.2	.0
801	Kche, Kcgrl, Kccc	420	Aug. 6, 1974	10	--	89	84	36	--	373	266	28	4.9	1.2	--	702	570	1,075	7.8	12	.6	.0
801	Kche, Kcgrl, Kccc	420	July 13, 1976	11	--	72	50	37	14	372	121	34	2.4	.9	--	525	387	837	7.7	17	.8	.0
801	Kche, Kcgrl, Kccc	420	July 7, 1977	12	--	68	49	36	15	369	119	33	2.5	< .4	--	516	371	830	7.8	17	.8	.0
902	Kcho	950	Nov. 18, 1975	10	--	66	42	56	--	365	100	43	2.5	1.0	--	499	338	824	8.0	27	1.3	.0
902	Kcho	950	July 15, 1977	10	--	68	48	43	16	368	120	39	2.5	< .4	--	527	368	845	7.7	19	.9	.0
20-201	Kccc	872	Feb. 12, 1957	11	--	121	83	91	--	331	482	41	3.6	.2	--	995	644	1,400	7.6	24	1.5	.0
801	Kche, Kccc	490	do	12	--	194	142	45	--	336	810	26	3.6	1.3	--	1,399	1,070	1,780	7.3	8	.5	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AS-69-20-901	Kche, Kcgrl	545	Aug. 21, 1974	10	--	398	228	30	--	349	1,600	26	4.9	5.7	--	2,474	1,940	2,500	8.0	3	0.2	0.0
22-501	Kche, Kcgrl, Kccc	570	Jan. 17, 1957	11	--	522	330	61	--	346	2,360	27	5.2	.8	--	3,487	2,660	3,570	7.3	5	.5	.0
701	Kcho	1,000	Nov. 17, 1975	9	--	34	20	140	14	371	79	72	2.8	< .4	--	553	169	902	8.3	62	4.7	2.7
901	Kcgrl	330	Aug. 22, 1974	12	--	115	19	10	--	375	44	16	1.2	< .4	--	401	364	647	8.0	6	.2	.0
901	Kcgrl	330	July 19, 1976	10	--	105	49	21	5	301	216	21	1.7	< .4	--	577	463	858	7.7	9	.4	.0
901	Kcgrl	330	July 8, 1977	11	--	99	72	33	--	308	317	25	2.7	< .4	--	711	540	1,041	7.6	12	.6	.0
23-501	Kche, Kcgrl	635	Aug. 18, 1974	10	--	84	89	24	--	340	302	19	6.7	4.1	--	705	580	1,025	8.1	8	.4	.0
501	Kche, Kcgrl	635	July 19, 1976	10	--	78	96	21	--	355	286	16	5.6	4.0	--	691	590	1,048	7.7	7	.3	.0
501	Kche, Kcgrl	635	July 8, 1977	12	--	82	77	41	17	344	299	23	4.3	1.2	--	725	520	1,055	7.8	14	.7	.0
601	Kcho, Kcs	1,085	Jan. 1, 1957	13	--	32	21	134	--	360	51	73	2.8	.0	--	503	166	858	7.6	64	4.5	2.5
602	Kche, Kcgrl	550	Aug. 18, 1974	10	--	194	154	22	--	372	800	21	4.8	< .4	--	1,389	1,120	1,710	8.0	4	.2	.0
801	Kcho, Kcs	1,137	Jan. 17, 1957	13	--	39	20	137	15	364	70	85	3.0	.0	0.8	561	180	949	7.7	60	4.4	2.3
901	Kcho, Kcs	1,110	July 15, 1977	10	--	35	20	116	14	348	48	68	2.5	< .4	--	485	171	808	7.8	57	3.8	2.3
24-101	Kche, Kcgrl, Kccc	560	Aug. 16, 1955	13	0.0	72	52	46	--	362	146	32	--	1.0	--	539	394	899	7.6	20	1.0	.0
203	Kche, Kcgrl, Kccc	435	Nov. 2, 1945	14	.2	73	51	38	21	362	139	37	2.8	.0	--	553	392	933	7.2	16	.8	.0
204	Kcho	896	Mar. 22, 1950	11	1.6	50	33	--	--	372	68	57	2.2	< .4	--	492	261	--	--	--	--	.8
205	Kche, Kcgrl, Kccc	467	Nov. 2, 1945	13	.1	86	62	39	20	358	220	36	2.4	.0	--	654	464	1,070	6.9	15	.7	.0
206	Kcho	785	Nov. 18, 1975	11	--	43	26	94	13	370	51	51	2.0	.9	--	473	213	788	7.9	47	2.7	1.7
502	Kche, Kcgrl, Kccc	420	June 14, 1954	13	--	73	55	49	--	355	167	35	--	1.5	--	568	408	954	8.0	21	1.0	.0
701	Kcgru	120	Aug. 22, 1974	11	--	86	23	9	--	312	39	16	.7	< .4	--	338	308	557	8.1	6	.2	.0
701	Kcgru	120	July 19, 1976	12	--	86	10	9	--	264	35	13	.3	8.0	.1	303	256	500	7.7	7	.2	.0
701	Kcgru	120	July 13, 1977	12	--	90	11	18	--	301	25	11	.2	4.2	--	319	271	524	7.8	13	.4	.0



Location of Selected Wells, Springs, and Oil and Gas Tests in Bandera County

BEXAR COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.
Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of power: C, cylinder; E, electric; N, none; Sub, submersible; T, turbine. Number indicates horsepower.
Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply.
Water-bearing units : Kgr, Glen Rose Limestone; Kgru, upper member of the Glen Rose Limestone; Kgrl, lower member of the Glen Rose Limestone; Khe, Hensell Sand Member of the Travis Peak Formation; Kcc, Cow Creek Limestone Member of the Travis Peak Formation; Ks, Sligo Limestone Member of the Travis Peak Formation; Kho, Hosston Sand Member of the Travis Peak Formation; Kt, Trinity Group, undifferentiated.

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			
AY-68-18-901	R. L. White No. 7	J. R. Johnson Drilling Co.	1952	1,241	--	--	Kcs, Kcho	1,440	--	--	C, E	N	Well A-17 in Texas Board of Water Engineers Bulletin 5608. Reported yield 30 gal/min. 1/
* 19-207	James C. Beatty	H. W. Schwope and Sons Water Well Drilling	1974	500	6	147	Kcgrl, Kche, Kccc	1,476	371.1	Aug. 7, 1974	Sub, E	D	Open hole from 147 to 500 feet. Cemented from 207 feet to surface. Reported yield 10 gal/min with 125 feet drawdown.
* 208	State of Texas	Texas Department of Water Resources	1977	893	6	545	Kcs, Kcho	1,405	406 404	Dec. 21, 1977 Mar. 7, 1978	N	N	Open hole from 545 to 893 feet. Cemented from 545 feet to surface. Observation well. 1/
* 302	Fair Oaks Ranch Water Co., well 3	H. W. Schwope and Sons Water Well Drilling	1976	1,070	8	772	Kcho	1,425	464	Sept. 29, 1976	Sub, E 20	Irr	Open hole from 772 to 1,070 feet. Cemented from 772 feet to surface. Acidized. 1/
* 303	Fair Oaks Ranch Water Co., well 2	Louis Bergmann and Sons	--	555	6	445	Kccc	1,345	220	Jan. 8, 1975	Sub, E 15	P	Deepened from 384 to 555 feet on Jan. 8, 1975. Open hole from 445 to 555 feet. Reported yield 20 gal/min with 19 feet drawdown.
* 305	B. J. Faris	do	--	350	--	--	Kcgrl	1,370	--	--	C, E	D	--
306	Fair Oaks Ranch Water Co., well 5	do	1978	526	8	323	Kcgrl, Kccc	1,323	264 290	Dec. 9, 1977 Jan. 27, 1978	Sub, E 20	P	Open hole from 323 to 526 feet. Cemented from 323 feet to surface. Pump set at 483 feet. Acidized. 1/
307	Fair Oaks Ranch Water Co., well 6	do	1978	625	8	420	Kcgrl, Kccc	1,442	--	--	Sub, E 15	P	Open hole from 420 to 625 feet. Cemented from 420 feet to surface. Pump set at 588 feet. Acidized.
* 501	Edgar Linkenhouger, Estate	J. R. Johnson Drilling Co.	1952	950	8	780	Kcho	1,220	344.5 274.3	Nov. 4, 1977 Mar. 30, 1978	Sub, E 30	Irr	Well A-11 in Texas Board of Water Engineers Bulletin 5608. Open hole from 780 to 950 feet. Cemented from 780 feet to surface. Pump set at 530 feet. Pump test: Drawdown of 218 feet while pumping 150 gal/min for 14 hours on March 30, 1978.
502	Haskin Water Co., Scenic Hills, Estate	Haskin Pump and Service, Inc.	1968	555	7	261	Kcgrl	1,425	320 308.6	May 10, 1968 Oct. 28, 1977	Sub, E 5	P	Open hole from 261 to 555 feet. Cemented from 261 feet to surface.
503	Delta Utilities, Inc., Serene Hills	--	--	580	7	364	Kcgrl	1,430	342.3	Nov. 4, 1977	Sub, E 1 1/2	P	Deepened from 364 to 580 feet on Apr. 11, 1964. Open hole from 364 to 580 feet. Acidized.
* 504	Thurman Barrett, Jr.	J. R. Johnson Drilling Co.	1963	1,040	8 6	386 1,040	Kccc, Kcho	1,300	261.1	Nov. 4, 1977	Sub, E 20	D	Perforated from 390 to 400 feet. Slotted from 960 to 1,000 feet. Cemented from 386 feet to surface.
506	Denton and Linkenhouger, well 1	H. W. Schwope and Sons Water Well Drilling	1978	535	--	--	Kcgrl, Kccc	1,300	280	Aug. 29, 1978	--	--	Measured yield 235 gal/min with 15 feet of drawdown in 24 hours. 1/
602	U.S. Government: Camp Stanley, well 9	--	1958	546	--	--	Kcgrl, Kccc	1,310	337	Sept. 1, 1959	Sub, E	P	Pump set at 486 feet. 1/
603	U.S. Government: Camp Stanley, well 10	--	1958	559	--	390	Kcgrl, Kccc	1,325	362	Nov. 10, 1969	Sub, E 15	P	Open hole from 390 to 559 feet. Pump set at 528 feet. 1/
604	U.S. Government: Camp Stanley, well 11	--	1958	550	--	--	Kcgrl, Kccc	1,335	--	--	Sub, E	P	Pump set at 525 feet. 1/
606	Leon Springs Villa Water Co., well 2	Haskin Pump and Service, Inc.	1967	415	7	348	Kccc	1,170	275	June 1967	Sub, E 10	P	Open hole from 348 to 415 feet. Cemented from 348 feet to surface.
607	Leon Springs Villa Water Co., well 3	do	1970	404	7	312	Kccc	1,160	--	--	Sub, E 7 1/2	P	Open hole from 312 to 404 feet.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
AY-68-19-608	Leon Springs Villa Water Co., well 4	Haskin Pump and Service, Inc.	1971	505	7	205	Kcgrl, Kccc	1,140	268	June 3, 1971	Sub, E 7 1/2	P	Open hole from 205 to 505 feet. Cemented from 205 feet to surface.
* 610	R. C. Sealy	H. W. Schwope and Sons Water Well Drilling	1975	440	6	227	Kcgrl, Kcbe, Kccc	1,350	240	Mar. 24, 1975	Sub, E 1 1/2	D	Open hole from 227 to 440 feet. Cemented from 227 feet to surface. Reported yield 100 gal/min.
* 611	-- McGee	W. W. Nichols Well Drilling	1974	350	5	60	Kcgrl	1,250	115	Feb. 3, 1974	Sub, E	D	Open hole from 60 to 350 feet. Cemented from 60 feet to surface. Pump set at 315 feet. Reported yield 10 gal/min.
612	Stage Coach Hills Water System, well 1	Haskin Pump and Service, Inc.	1960	351	7	180	Kcgrl	1,180	206 128.8	Aug. 11, 1960 Oct. 28, 1977	Sub, E 10	P	Open hole from 180 to 351 feet. Cemented from 180 feet to surface.
613	Stage Coach Hills Water System, well 2	do	1967	455	7 --	225 --	Kcgrl, Kccc	1,204	214	Dec. 1968	Sub, E 5	P	Deepened from 360 to 455 feet and added liner in Feb. 1968. Cemented from 225 feet to surface.
614	Stage Coach Hills Water System, well 4	do	1970	406	7	189	Kcgrl, Kccc	1,174	140	Jan. 21, 1970	Sub, E 10	P	Open hole from 189 to 406 feet. Cemented from 189 feet to surface. Pump set at 399 feet.
615	Stage Coach Hills Water System, well 5	do	1972	483	7	204	Kcgrl, Kccc	1,172	84	Apr. 1975	Sub, E 10	P	Open hole from 204 to 483 feet. Cemented from 204 feet to surface.
616	H. W. Marschall, Jr., Trailwood well 4	H. W. Schwope and Sons Water Well Drilling	1974	500	6	145	Kcgrl, Kccc	1,315	260 272	June 22, 1974 May 17, 1978	N	N	Open hole from 145 to 500 feet. Cemented from 145 feet to surface. Reported yield 67 gal/min with 240 feet drawdown. 1/
* 701	Frank Hoofress	Louis Bergmann and Sons	1958	650	6	347	Kcgrl	1,387	364	Aug. 14, 1974	Sub, E	D	Open hole from 347 to 650 feet.
* 802	E. K. Melton	do	--	600	--	--	Kcgrl, Kcbe, Kccc	1,322	283.2	Aug. 7, 1974	--	D	--
* 803	H. W. Marschall, Jr.	Haskin Pump and Service, Inc.	1966	505	7	407	Kcgrl	1,371	290	June 1966	Sub, E 3	P	Open hole from 407 to 505 feet. Cemented from 407 feet to surface. Acidized.
* 804	Robert Olive	H. W. Schwope and Sons Water Well Drilling	1973	900	6	586	Kcgrl, Kcbe, Kccc	1,384	370 378.7	Oct. 16, 1973 Aug. 1, 1974	Sub, E	D	Open hole from 586 to 900 feet. Cemented from 586 feet to surface. Reported yield 75 gal/min.
805	Stage Coach Hills Water System, well 3	Haskin Pump and Service, Inc.	1964	634	8	400	Kcgrl	1,345	433 282.8	Apr. 14, 1964 Oct. 28, 1977	Sub, E 5	N	Open hole from 400 to 634 feet. Cemented from 400 feet to surface. Unused public supply well.
901	San Antonio Parks and Recreation Department, Frederich Park	Hill Country Water, Inc.	1976	500	8	304	Kcgrl	1,155	350	Mar. 22, 1976	Sub, E 7 1/2	P	Open hole from 304 to 500 feet. Cemented from 304 feet to surface. Reported yield 25 gal/min with 60 feet drawdown.
20-101	U.S. Government: Camp Stanley, well 16	--	--	442	--	--	Kcgrl, Kccc	1,240	201	Feb. 19, 1960	Sub, E	P	Pump set at 416 feet.
102	Fair Oaks Ranch Water Co., well 9	Haskin Pump and Service, Inc.	1978	485	8	290	Kcgrl, Kccc	1,310	270	Mar. 16, 1978	Sub, E 20	P	Open hole from 290 to 485 feet. Cemented from 290 feet to surface. Pump set at 420 feet. Acidized.
103	Fair Oaks Ranch Water Co., well 7	do	1978	525	8	290	Kcgrl, Kccc	1,315	270	Jan. 11, 1978	Sub, E 20	P	Open hole from 290 to 525 feet. Cemented from 290 feet to surface. Acidized.
104	Fair Oaks Ranch Water Co., well 8	Louis Bergmann and Sons	1978	525	8	310	Kcgrl, Kccc	1,325	--	--	Sub, E 20	P	Open hole from 310 to 525 feet. Cemented from 310 feet to surface. Pump set at 483 feet. Acidized.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
AY-68-20-401	U.S. Government: Camp Stanley, Schasse well 1	J. R. Johnson Drilling Co.	1940	451	10	451	Kegrl	1,232	--	--	Sub, E 15	P	Well B-24 in Texas Board of Water Engineers Bulletin 5608. Drilled to 1,022 feet and plugged back to 451 feet. Perforated. Pump set at 420 feet. Reported yield 87 gal/min.
402	Leon Springs Villa Water Co., well 1	Haskin Pump and Service, Inc.	--	425	--	--	Kegrl, Kecc	1,190	--	--	Sub, E 7 1/2	P	--
* 701	R. L. Brand Construction Co.	do	1974	715	6	205	Kegrl, Kche, Kecc	1,175	270	Apr. 23, 1974	Sub, E 7 1/2	Ind	Open hole from 205 to 715 feet. Cemented from 205 feet to surface.
* 801	U.S. Government: Camp Bullis, well 3	--	1929	260	8	210	Kegr	1,105	70 69.5	Aug. 1929 Nov. 8, 1977	Sub, E 40	P	Well E-3 in Texas Board of Water Engineers Bulletin 5608. Open hole from 210 to 260 feet. Reported yield 350 gal/min with 93 feet drawdown.
802	U.S. Government: Camp Bullis, well 15	Haskin Pump and Service, Inc.	1976	300	8	220	Kegrl	1,074	41.7	Nov. 22, 1977	T, E 40	P	Slotted from 175 to 220 feet. Open hole from 220 to 300 feet. Cemented. Yield increased from 100 to 417 gal/min when acidized.
* 803	U.S. Government: Camp Bullis, well 8	J. R. Johnson Drilling Co.	1932	289	8	86	Kegr	1,074	50.3 59.2	Nov. 28, 1933 Apr. 28, 1943	T, E 40	P	Well E-2 in Texas Board of Water Engineers Bulletin 5608. Open hole from 86 to 289 feet. Reported yield 370 gal/min with 70 feet drawdown.
21-101	Oaks North Mobile Estates, well 5	Haskin Pump and Service, Inc.	1974	642	6	203	Kegrl, Kecc	1,175	200	Feb. 1, 1974	Sub, E 10	P	Open hole from 203 to 642 feet.
102	Oaks North Mobile Estates, well 6	do	1974	632	6	200	Kegrl, Kecc	1,175	185 283.2	Feb. 19, 1974 Oct. 27, 1977	Sub, E 10	P	Open hole from 200 to 632 feet. Cemented from 200 feet to surface.
103	Bavarian Hills Subdivision	--	--	500	7	--	Kegrl	1,277	--	--	Sub, E 3	P	Pump set at 485 feet.
104	do	Haskin Pump and Service, Inc.	1976	524	6	102	Kegrl	1,275	250	Nov. 16, 1976	N	N	Open hole from 102 to 524 feet. Cemented from 102 feet to surface. Unused public supply well.
* 205	Ronald Branham	--	--	580	7	20	Kegr	1,225	315	Oct. 27, 1975	Sub, E	D	Deepened to 580 feet in 1975. Open hole from 20 to 580 feet. Reported yield 20 gal/min.
401	Oaks North Mobile Estates, well 1	Haskin Pump and Service, Inc.	1969	500	7	255	Kegrl	1,281	290	May 27, 1969	Sub, E 5	P	Open hole from 255 to 500 feet. Cemented from 255 feet to surface.
402	Oaks North Mobile Estates, well 2	do	1970	590	7	256	Kegrl	1,283	--	--	Sub, E 5	P	Open hole from 256 to 590 feet. Cemented from 256 feet to surface.
403	Oaks North Mobile Estates, well 3	do	1970	642	7	290	Kegrl, Kecc	1,285	340	Aug. 27, 1970	Sub, E 5	P	Open hole from 290 to 642 feet. Cemented from 290 feet to surface.
404	Oaks North Mobile Estates, well 4	do	1972	543	7	232	Kegrl	1,284	--	--	Sub, E 5	P	Drilled to 1,100 feet and plugged back to 543 feet. Open hole from 232 to 543 feet. Cemented from 232 feet to surface.
405	Haskin Water Utility, Inc., Timberwood Park	Hill Country Water, Inc.	1977	647	7	322	Kegrl, Kecc	1,250	322 284.1	Feb. 16, 1977 Oct. 25, 1977	Sub, E 10	P	Open hole from 322 to 647 feet. Cemented from 322 feet to surface. Pump set at 399 feet.
406	Oak Moss Estates	Frank Rosenkranz and Sons	1973	915	7	847	Kecc	1,270	253	Nov. 30, 1977	N	N	Open hole from 847 to 915 feet. Cemented from 847 feet to surface. Reported yield 60 gal/min with 26 feet drawdown. 1/
501	Dr. Shelton's Health School	Glass and Tucker, Inc.	1972	615	6	232	Kegrl	1,230	450	June 21, 1972	Sub, E 1 1/2	P	Open hole from 232 to 615 feet. Cemented from 232 feet to surface.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
* AY-68-21-801	Canyon Lake Forest Utility, Inc., Northwood Hills Subdivision, well 1	--	--	971	8	404	Kcgr	1,032	244	June 3, 1964	Sub, E 7 1/2	P	Deepened from 496 to 971 feet on June 3, 1964. Open hole from 404 to 971 feet.
803	Canyon Lake Forest Utility, Inc., Northwood Hills Subdivision, well 2	--	--	408	5	205	Kcgr	1,034	288.3	Nov. 3, 1977	Sub, E 1 1/2	P	Deepened to 408 feet in 1970. Open hole from 205 to 408 feet.
804	Canyon Lake Forest Utility, Inc., Northwood Hills Subdivision, well 3	Baskin Pump and Service, Inc.	1970	538	5	282	Kcgr	1,034	287.7	do	Sub, E 1 1/2	P	Open hole from 282 to 538 feet. Cemented from 282 feet to surface.
* 27-304	Helotes Little League Corp.	Doyal Drilling Co.	1969	290	7	47	Kcgru	1,130	155	Mar. 3, 1969	Sub, E 1 1/2	P	Open hole from 47 to 290 feet. Cemented from 45 feet to surface. Pump set at 256 feet. Reported yield 20 gal/min with 0 feet drawdown.
* 516	Edith Cohen	Frank Rosenkranz and Sons	1965	180	6	28	Kcgru	1,005	179	Nov. 16, 1965	Sub, E 1	D	Open hole from 28 to 180 feet. Cemented from 28 feet to surface.
* 28-101	McDonough Brothers, Inc., well 1	J. R. Johnson Drilling Co.	1967	1,470	10 8	719 1,470	Kct	1,050	150	Apr. 7, 1967	T, E 75	Ind	Slotted from 781 to 1,470 feet. Cemented from 40 feet to surface. Pump set at 450 feet.
104	McDonough Brothers, Inc., well 2	do	1967	1,503	8	1,500	Kct	1,050	150	Apr. 24, 1967	T, E 75	Ind	Slotted from 587 to 1,500 feet. Cemented from 200 feet to surface. Reported yield 450 gal/min with 350 feet drawdown. Acidized.
105	McDonough Brothers, Inc., well 3	do	1969	1,260	8	--	Kct	1,050	326	July 10, 1978	T, E 60	Ind	Drilled to approximately 1,500 feet and caved back to 1,260 feet. Slotted. 1/
106	McDonough Brothers, Inc., well 4	do	1973	1,481	12 8	154 1,432	Kct	1,050	137	Nov. 14, 1973	T, E 75	Ind	Slotted from 445 to 1,432 feet. Open hole from 1,432 to 1,481 feet. Cemented from 156 feet to surface. Reported yield 800 gal/min with 184 feet drawdown.
108	Bexar Concrete Co.	Baskin Pump and Service, Inc.	1975	992	8	504	Kcgr	1,045	230 230	Mar. 25, 1975 Nov. 21, 1977	N	N	Open hole from 504 to 992 feet. Cemented from 10 feet to surface. Unused industrial well. 1/
109	McDonough Brothers, Inc., Mobile Home Park	--	--	550	8	--	Kcgr	1,105	--	--	Sub, E 10	P	--
206	McDonough Brothers, Inc., Delta Truck Lines	Hill Country Water, Inc.	1974	600	6	174	Kcgr	1,105	280	May 15, 1974	Sub, E 10	Ind	Open hole from 174 to 600 feet. Cemented from 174 to 130 feet and 10 feet to surface. Reported yield 25 gal/min.

* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

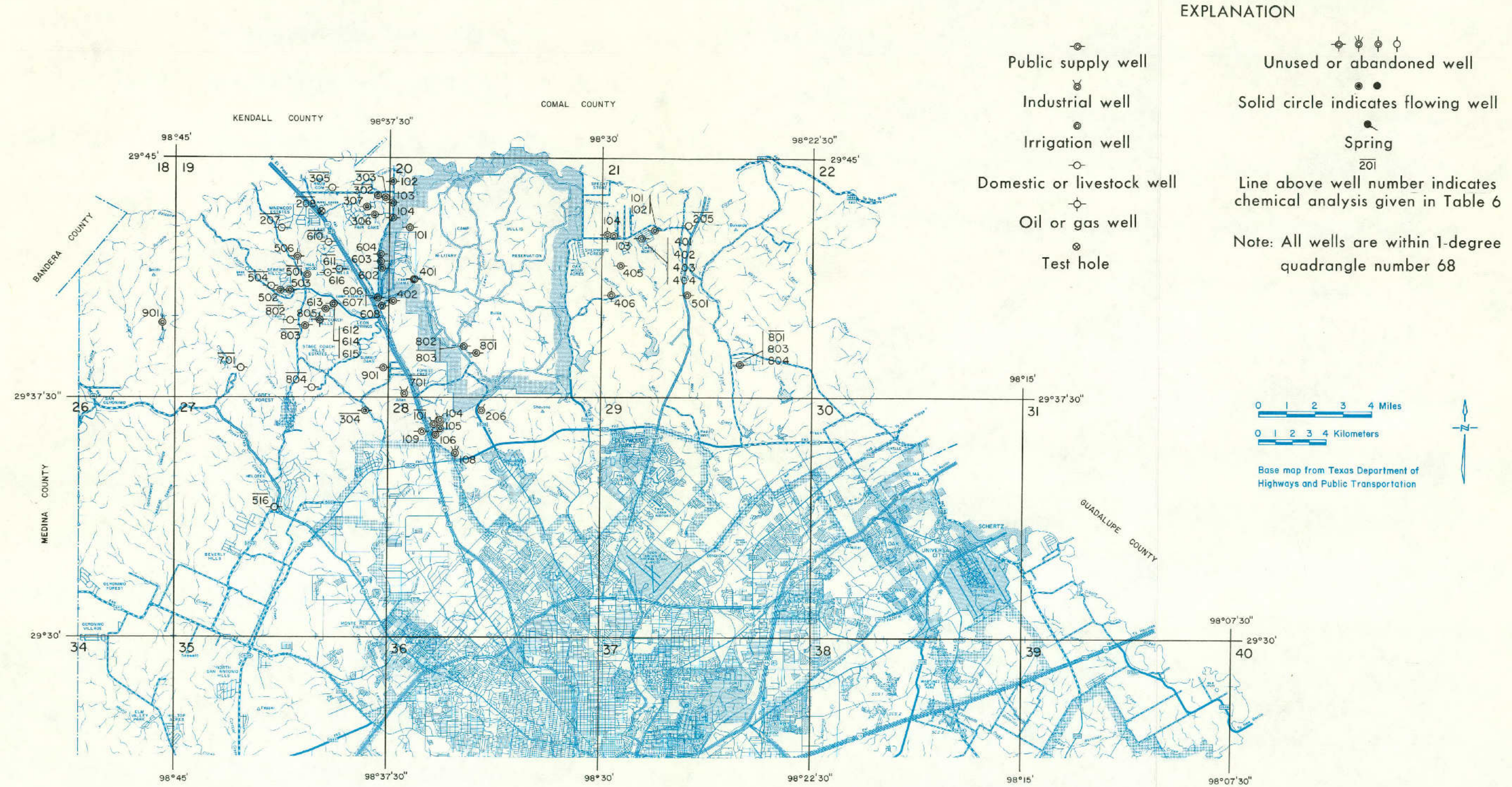
Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcs, Sligo Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation; Kct, Trinity Group, undifferentiated.
Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.
Analyses by Texas State Department of Health.

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AY-68-19-207	Kche, Kcgrl, Kccc	500	Nov. 25, 1974	14	--	104	58	9	--	439	122	17	2.9	< 0.4	--	543	500	840	7.9	4	0.1	0.0
207	Kche, Kcgrl, Kccc	500	July 26, 1976	12	--	101	51	8	--	425	99	16	2.4	.7	--	499	462	795	7.9	4	.1	.0
208	Kcho, Kcs	893	Nov. 18, 1977	11	--	64	25	34	--	325	39	16	1.0	11	--	360	264	599	7.8	22	.9	.0
208	Kcho, Kcs	893	Dec. 21, 1977	10	--	111	62	200	--	246	528	173	1.0	< .4	--	1,206	534	1,810	7.9	45	3.7	.0
302	Kcho	1,070	Apr. 5, 1977	13	--	310	169	232	--	255	1,350	231	1.7	< .4	--	2,432	1,470	2,860	7.5	26	2.6	.0
303	Kccc	555	do	11	--	89	21	10	--	337	17	20	.4	8.0	--	342	307	586	7.6	7	.2	.0
305	Kcgrl	350	do	10	--	125	23	21	--	406	59	37	.6	< .4	--	475	408	785	7.5	10	.4	.0
501	Kcho	950	Nov. 4, 1977	8	--	50	25	250	--	296	267	182	1.2	< .4	--	929	227	1,500	7.9	70	7.2	.3
504	Kccc Kcho	1,040	do	11	--	89	31	12	--	317	80	13	.8	2.3	--	394	349	635	8.4	7	.2	.0
610	Kche, Kcgrl, Kccc	440	July 26, 1976	12	--	70	28	6	2.0	323	17	10	.6	1.5	--	305	290	520	7.7	4	.1	.0
611	Kcgrl	350	Aug. 20, 1976	12	--	112	12	11	--	350	12	19	.3	27	--	377	329	613	8.2	7	.2	.0
701	Kcgrl	650	Nov. 27, 1974	14	--	93	19	8	--	300	60	12	.4	4.0	--	357	312	567	7.9	5	.1	.0
802	Kche, Kcgrl, Kccc	600	do	19	--	83	13	7	--	292	11	14	.2	6.0	--	296	262	490	7.6	6	.1	.0
803	Kcgrl	505	do	17	--	95	18	9	--	344	13	15	.4	13	--	349	311	570	8.1	6	.2	.0
803	Kcgrl	505	July 1, 1977	13	--	92	17	9	--	342	14	12	.4	7.0	--	332	299	566	7.6	6	.2	.0
804	Kche, Kcgrl, Kccc	900	Nov. 24, 1974	10	--	99	39	12	--	300	161	14	.7	3.6	--	486	407	739	7.8	6	.2	.0
804	Kche, Kcgrl, Kccc	900	July 26, 1976	11	--	110	46	12	--	301	223	14	.6	3.8	--	568	464	825	7.9	5	.2	.0
20-701	Kche, Kcgrl, Kccc	715	do	12	--	195	64	10	5.0	304	492	13	1.8	< .4	0.2	942	750	1,200	7.5	3	.1	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AY-68-20-801	Kegr	260	Apr. 28, 1943	14	--	116	47	--	1.1	379	149	11	0.9	2.5	--	576	483	--	--	--	--	0.0
801	Kegr	260	June 3, 1954	12	0.1	112	38	--	5.3	401	99	10	.6	.2	--	514	436	792	7.4	--	--	.0
803	Kegr	289	Aug. 10, 1943	9	--	101	12	--	6.9	357	8	10	.2	1.2	--	330	302	--	7.4	--	--	.0
803	Kegr	289	June 3, 1954	11	.0	113	15	--	5.5	403	10	10	.2	1.2	--	378	344	647	7.5	--	--	.0
21-205	Kegr	580	July 27, 1976	11	--	99	37	6	3.0	354	106	10	1.0	< .4	--	447	398	694	8.2	3	.1	.0
801	Kegr	971	Nov. 4, 1977	13	--	223	153	26	--	336	925	17	4.2	< .4	--	1,526	1,188	1,820	7.3	5	.3	.0
27-304	Kegro	290	July 26, 1976	11	--	73	40	7	3.0	303	94	11	1.0	< .4	--	389	345	621	7.9	4	.1	.0
304	Kegro	290	June 20, 1977	11	--	72	38	7	--	298	87	10	.9	1.1	--	373	338	614	7.8	4	.1	.0
516	Kegro	180	July 27, 1976	12	--	96	67	9	--	277	286	15	2.1	< .4	--	623	520	881	7.8	4	.1	.0
516	Kegro	180	June 20, 1977	11	--	62	47	8	3.0	285	112	14	2.0	< .4	--	399	351	642	7.8	5	.1	.0
28-101	Ket	1,470	July 22, 1975	14	--	156	74	185	13	275	700	126	1.2	3.5	--	1,407	700	1,830	7.8	36	3.0	.0



Location of Selected Wells, Springs, and Oil and Gas Tests in Northern Bexar County

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.

Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of power: C, cylinder; E, electric; G, gasoline, butane, or diesel engine; J, jet; N, none; Sub, submersible; T, turbine; W, windmill. Number indicates horsepower.
Use of water : D, domestic; Irr, irrigation; N, none; P, public supply; S, livestock.
Water-bearing units : Qal, alluvium; Kgr, Glen Rose Limestone; Kgru, upper member of the Glen Rose Limestone; Kgrl, lower member of the Glen Rose Limestone; Ktp, Travis Peak Formation; Khe, Hensell Sand Member of the Travis Peak Formation; Ch, Hickory Sandstone Member of the Riley Formation.

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			
AZ-57-36-804	H. H. Grote	Lonnie Itz Well Drilling	1957	135	6	--	Kctp	1,686	19.1 34.0 33.3 30.7 30.7 10.0 26.7 19.5 31.7	July 8, 1966 Mar. 23, 1971 Apr. 25, 1972 Mar. 15, 1973 Feb. 28, 1974 Feb. 25, 1975 Jan. 28, 1976 Feb. 15, 1977 Feb. 15, 1978	C	N	Perforated. Unused domestic and livestock well. Observation well. 2/
* 806	-- Grote, Estate	Lee Polvado	1906	78	6	20	Kctp	1,540	9.8 9.1	July 31, 1941 July 8, 1968	C, W	D, S	Open hole from 20 to 78 feet. 2/
* 37-505	J. V. Reno	--	1954	360	--	--	Kche	1,530	85	1954	C, E	D, S	2/
702	Erwin Sultemeier	A. W. Sultemeier	1920	126	6	--	Kctp	1,550	49.1 55.7 58.0 58.5 52.2 56.3 51.7 56.8 54.0 58.5	July 31, 1941 July 10, 1968 Mar. 23, 1971 Apr. 25, 1972 Mar. 15, 1973 Feb. 28, 1974 Feb. 25, 1975 Jan. 28, 1976 Feb. 15, 1977 Feb. 15, 1978	C, W	N	Unused livestock well. Observation well. 2/
* 703	Julia Sultemeier	--	--	Spring	--	--	Kcgru	1,510	--	--	Flows	D, S	Reported flow 15 gal/min in 1941 and 1968. 2/
* 705	Fred Sultemeier	A. W. Sultemeier	1929	82	6	--	Kcgru	1,565	37	July 31, 1941	C, W	D, S	2/
* 805	L. F. Stribling	Earl Johnson	1930	238	6	191	Kche	1,490	234.8 117.5	July 24, 1941 July 12, 1968	C, W	D, S	Open hole from 191 to 238 feet. 2/
* 904	J. R. Ross and Sons	--	--	Spring	--	--	Kcgru	1,420	--	--	Flows	S	Reported flow 2 gal/min on July 22, 1941. 2/
* 38-407	Mrs. D. D. Sharp	--	--	Spring	--	--	Kctp	1,310	--	--	Flows	D, S	Reported flow 5 gal/min in 1941. 2/
* 409	Max Wenmohs	Virdell Brothers Drilling Co.	1962	253	6	10	Kctp	1,420	120	1962	C, W	S	Open hole from 10 to 253 feet. Reported yield 7 gal/min. 2/
* 39-602	Otto Hollingsworth	--	--	131	--	--	Kctp	965	84.4	July 18, 1968	C, W	S	2/
* 701	Emil Jonst	Virdell Brothers Drilling Co.	--	125	10	--	Kche	980	--	--	J, E 3	D, S	Reported yield 56 gal/min. 2/
* 703	John Ben Wenmohs	--	--	180	6	--	Kctp	1,005	71.7 44.0 59.68 61.47 56.58 41.00 58.57 51.69 58.6	Aug. 5, 1938 July 18, 1968 Mar. 23, 1971 Apr. 25, 1972 Feb. 28, 1974 Feb. 25, 1975 Jan. 28, 1976 Feb. 15, 1977 Feb. 14, 1978	C, W	N	Unused domestic and livestock well. Observation well. 2/
* 44-501	Otto Sultemeier	-- Ottmers	--	213	6	20	Kche	1,620	--	--	C, E	D, S	Open hole from 20 to 213 feet. 2/
* 505	Herman Deike	Lonnie Itz Well Drilling	1967	188	--	--	Kche	1,620	169	Mar. 27, 1967	Sub, E	D, S	Perforated. Reported yield 22 gal/min with 0 feet drawdown. 2/
* 701	Lyndon B. Johnson, Estate	--	1945	75	4	--	Kctp	1,430	40.6	July 29, 1968	C, W	D, S	Reported yield 10 gal/min. 2/
45-301	Bill Stribling No. 1	Stratoray Oil Corp.	1955	1,355	10	223	Ch	1,255	19.3	Mar. 22, 1961	C, W	S	Oil test converted to water well. Open hole from 223 to 1,355 feet. 1/ 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* AZ-57-45-303	L. P. Stribling	--	--	Spring	--	--	Kegrl	1,270	--	--	Flows	S	Reported flow 6 gal/min in 1941. 2/
308	do	--	--	Spring	--	--	Kegru	1,335	--	--	Flows C, W	D, S	2/
* 704	Charles Wolf	Virdell Brothers Drilling Co.	1955	220	6	--	Kctp	1,400	--	--	C, W	S	2/
808	Clara Waller No. 1	Johnson City Oil Co.	1933	1,552	--	--	--	1,250	--	--	--	--	Oil test. 2/
* 902	City of Johnson City	--	1950	30	10	30	Qal	1,209	--	--	T, E 7 1/2	P	Slotted from 10 to 30 feet. Gravel packed. 2/
* 907	Tom Mayfield	--	--	21	42	3	Kcbc	1,170	3 0	Sept. 25, 1968 May 2, 1969	C, W	S	Dug well, curbed with rock. Open hole from 3 to 21 feet. Flows during wet season. 2/
910	T. N. Odiorne	Virdell Brothers Drilling Co.	1945	135	6	--	Kegr, Kctp	1,310	107.2 134.3 110.8 109.3 108.5 12.6 15.3 115.3	Sept. 25, 1968 Mar. 22, 1971 Apr. 25, 1972 Mar. 15, 1973 Feb. 28, 1974 Feb. 25, 1975 Feb. 15, 1977 Feb. 15, 1978	Sub, E	S	Observation well. 2/
* 46-901	Jim Davis	Earl Johnson	1932	211	6	10	Kegru	1,160	140	July 12, 1938	C, G	D, S	Open hole from 10 to 211 feet. Reported yield 12 gal/min. 2/
* 902	do	E. R. Owens	1967	250	7	18	Kegrl	1,130	110	1967	Sub, E	D, S	Open hole from 18 to 250 feet. Reported yield 20 gal/min. 2/
* 905	R. W. Robinson	--	--	200	--	--	Kcbc	1,126	--	--	C, W	S	2/
* 47-201	Gus Steiler	Charles Lyendecker	1935	142	6	6	Kctp	1,020	119.8	July 15, 1938	C, E	D, S	Open hole from 6 to 142 feet. Reported yield 3 gal/min. 2/
* 402	Mrs. H. M. Ulrich	Virdell Brothers Drilling Co.	1965	400	8	--	Kcbc	970	--	--	Sub, E	D, S	2/
* 52-101	Lyndon B. Johnson, Estate	--	--	65	--	--	Kctp	1,400	--	--	N	N	Destroyed. 2/
* 302	Skaggs Ranch	-- Cravens	1955	320	6	--	Kegr, Kctp	1,455	--	--	Sub, E 1 1/2	D, S	Reported yield 60 gal/min. 2/
* 305	Neal Swope	--	--	225	--	--	Kegr, Kctp	1,460	--	--	Sub, E	D, S	2/
* 508	Felix Sultemeier	-- Grobe	1950	200	6	--	Kegru	1,620	--	--	C, W	S	2/
* 603	W. W. Death	--	--	210	--	--	Kegr	1,510	--	--	C, E	D, S	2/
804	Clarence Kilborn	Tom Benson	--	260	6	--	Kegr	1,680	50.9 42.5 115.1 88.8 7.0 8.2 2.4 99.1 3.0 85.1	Aug. 9, 1941 July 30, 1968 Mar. 24, 1971 Apr. 26, 1972 Mar. 26, 1973 Feb. 28, 1974 Feb. 25, 1975 Jan. 29, 1976 Feb. 16, 1977 Feb. 16, 1978	Sub, E	S	Observation well. 2/
* 805	do	Earl Johnson	1946	411	6	--	Kegr	1,710	--	--	C, E	S	2/

See footnotes at end of table.

BLANCO COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
* AZ-57-52-901	W. W. Heath	Howard Craven	1951	425	6	150	Kcgr	1,810	--	--	C, W	S	Open hole from 150 to 425 feet. 2/
* 902	do	-- Crutcher	1964	475	6	150	Kcgru	1,850	235.8	Aug. 1, 1968	C, W	S	Open hole from 150 to 475 feet. 2/
* 903	Eugene Elkins	--	--	280	--	--	Kcgr	1,585	--	--	C, W	D, S	2/
* 53-105	Morgan Ranch	--	--	500	--	--	Kctp	1,640	--	--	C, E	D, S	2/
* 208	Mrs. Vivian Bryan	--	1954	140	--	--	Kcgrl	1,380	--	--	Sub, E	D, S	2/
* 215	Withers Ranch	--	--	Spring	--	--	Kcgru	1,470	--	--	Flows	S	Reported flow 50 gal/min on May 21, 1969. 2/
* 217	Ernest Hobbs	Virdell Brothers Drilling Co.	1966	224	6	148	Kcgr, Kctp	1,415	--	--	Sub, E	D, S	Open hole from 148 to 224 feet. Reported yield 12 gal/min. 2/
* 304	George E. Stanton	--	--	Spring	--	--	Kcgru	1,280	--	--	Flows J, E	D, S	Reported flow 10 gal/min on Sept. 20, 1968. 2/
305	do	--	1950	300	6	--	Kcgr	1,445	214.4 218.7 217.5 216.9 213.1 206.9 216.1 212.5 214.9	Sept. 20, 1968 Mar. 22, 1971 Apr. 25, 1972 Mar. 15, 1973 Feb. 28, 1974 Feb. 26, 1975 Jan. 28, 1976 Feb. 15, 1977 Feb. 15, 1978	N	N	Observation well. 2/
* 310	Tom Benson	Wright Water Wells	1964	453	6	300	Kcgr, Kctp	1,340	--	--	Sub, E	D, S	Open hole from 300 to 453 feet. Reported yield 15 gal/min. 2/
* 311	J. D. McLemore	E. R. Owens	1967	202	5	--	Kcgr, Kctp	1,320	120	1967	Sub, E	D	Reported yield 2 gal/min. 2/
* 501	C. C. Capps	D. N. Johnson	1938	1,005	10	81	Kcgr, Kctp	1,410	74.8	Aug. 6, 1941	C, W	S	Oil test converted to water well. Open hole from 81 to 1,005 feet. 2/
* 507	Reed Ranch	Dorsey Smith	1964	300	7	--	Kcgr	1,480	176	Aug. 8, 1968	Sub, E	D, S	2/
* 508	H. C. Winters	-- Merkel	1965	450	7 5	340 450	Kche	1,560	--	--	Sub, E	S	Slotted from 330 to 450 feet. Cemented from 40 feet to surface. Reported yield 6 gal/min. 2/
* 509	do	--	1965	501	4	501	Kcgr	1,807	397	Nov. 19, 1965	C, W	S	Slotted from 396 to 501 feet. Reported yield 15 gal/min. 2/
* 512	do	Pink Kennedy	1939	178	5	178	Kcgru	1,506	105	Aug. 6, 1941	C, W	S	Slotted. Reported yield 8 gal/min. 2/
* 608	do	Virdell Brothers Drilling Co.	1965	80	8	41	Kcgrl	1,320	--	--	Sub, E	D, S	Open hole from 41 to 80 feet. Reported yield 10 gal/min. 2/
* 701	Hilmer Biedseil	Frank Kennedy	1950	300	--	--	Kcgr	1,505	50	Mar. 21, 1961	C, E	D, S	Reported yield 5 gal/min. 2/
* 705	W. W. Heath	Howard Cravens	1951	300	6	--	Kcgru	1,840	--	--	C, W	S	2/
* 707	A. E. Rose	Frank Kennedy	1945	120	6	100	Kcgrl	1,480	92.6	Aug. 8, 1968	C, E	S	Open hole from 100 to 120 feet. 2/
* 802	B. T. Fudge	--	--	Spring	--	--	Kcgru	1,495	--	--	Flows C, E	D, S	Reported flow 20 gal/min on Sept. 13, 1941 and Mar. 29, 1961. 2/
* 804	E. dalMolin	-- Owens	1950	444	6	80	Kcgr	1,570	--	--	C, W	S	Open hole from 80 to 444 feet. 2/
* 905	Claude Bourland	Crawford Well Drilling	1965	132	6	132	Kcgru	1,380	60	1965	Sub, E 1	D, S	Slotted from 92 to 132 feet. Cemented from 20 feet to surface. Pump set at 107 feet. Reported yield 15 gal/min with 107 feet drawdown. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
* AZ-57-53-906	Claude Gourland	--	--	125	--	--	Kegru	1,453	--	--	C, W	S	2/
* 54-303	Glen Longley	-- Ake	1953	190	7	--	Kegr	1,290	--	--	C, W	S	Reported yield 30 gal/min. 2/
* 306	Rowan Altgelt	K. K. Magee	1967	200	7	200	Ketp	1,150	60	Aug. 23, 1967	Sub, E 3/4	S	Slotted. 2/
* 307	do	--	--	18	48	--	Kegrl	1,120	10.6	Sept. 23, 1968	C, E	D, S	Dug well curbed with rock. 2/
* 401	Henry Bindseil	--	--	Spring	--	--	Kegrl	1,150	--	--	Flows	D, S	Reported flow 18 gal/min in 1938. 2/
* 402	J. W. Farrelly, Mill Seat Spring	--	--	Spring	--	--	Kegrl	1,160	--	--	Flows C, E	D	2/
* 403	J. W. Farrelly	T. J. Decker	1943	170	--	--	Kcbe	1,180	--	--	J, E	S	2/
* 501	Louis Danz	--	--	97	--	--	Kegr, Ketp	1,135	33.3	Sept. 26, 1968	C, E	D, S	2/
* 502	Mrs. R. A. Richards	--	--	Spring	--	--	Kegru	1,190	--	--	Flows	S	2/
* 503	M. T. Burchett	--	--	Spring	--	--	Kegrl	1,180	--	--	Flows	D, S	2/
* 504	do	--	--	Spring	--	--	Kegrl	1,800	--	--	Flows	D, S	2/
* 604	L. M. Murphy	--	1898	169	8	6	Kegr, Ketp	1,160	--	--	C, W	D, S	Deepened in 1937. Open hole from 6 to 169 feet. 2/
* 701	Mrs. R. A. Richards	-- Kennedy	1942	375	6	20	Kegr, Ketp	1,360	--	--	C, E	S	Open hole from 20 to 375 feet. Reported yield 3 gal/min. 2/
* 702	do	Frank Kennedy	1940	372	6	270	Kegrl	1,495	257.9	Mar. 29, 1961	C, W	S	Open hole from 270 to 372 feet. Reported 1 1/2 gal/min. 2/
* 804	do	Pink Kennedy	1940	130	5	20	Kegru	1,350	--	--	C, W, E	D, S	Open hole from 20 to 130 feet. Reported yield 8 gal/min. 2/
* 901	Emil Heckel	Crawford Well Drilling	1967	598	6	--	Kegrl	1,550	75	1967	Sub, E	D, S	2/
* 902	Joe Patterson	--	1905	285	--	--	Kegrl	1,370	--	--	Sub, E	D, S	Reported yield 6 gal/min. 2/
* 903	F. C. Gillespie	Glass and Bible Drilling Co.	1966	353	6	20	Kegr	1,370	288	1966	Sub, E	D, S	Open hole from 20 to 353 feet. Reported yield 6 gal/min.
* 904	Mrs. Russell Singleton	--	1948	720	10	--	Kegr, Ketp	1,670	--	--	C, E	D, S	Reported yield 5 gal/min. 2/
* 905	Mrs. Hannah Jones	Crawford Well Drilling	1967	400	6	360	Kegr	1,555	154.6 167.7 159.6 153.7 152.0 144.1 160.3 146.3 156.9	Oct. 25, 1968 Mar. 24, 1971 Apr. 26, 1972 Mar. 16, 1973 Feb. 28, 1974 Feb. 26, 1975 Jan. 29, 1976 Feb. 15, 1977 Feb. 16, 1978	C, E	S	Reported yield 10 gal/min. Observation well. 2/
* 906	Randolph Coleman	Hill Country Water, Inc.	1974	650	6	27	Kegr, Ketp	1,570	500	Sept. 11, 1974	N	N	Open hole from 27 to 650 feet. Unused domestic and livestock well. 1/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
AZ-57-55-101	K. M. Hodges	--	--	145	--	--	Kcgr	1,190	134.5 136.0 137.7 133.8 130.5 128.2 131.4 127.5 133.1	Sept. 19, 1968 Mar. 22, 1971 Apr. 26, 1972 Mar. 15, 1973 Feb. 28, 1974 Feb. 25, 1975 Jan. 13, 1976 Feb. 15, 1977 Feb. 16, 1978	C, W, E	N	Unused domestic and livestock well. Observation well. 2/
* 103	Hodges Ranch	--	--	Spring	--	--	Kcgru	1,180	--	--	Flows	N	Reported flow 1/2 gal/min in 1938. 2/
* 104	Tom Parker	--	1948	312	--	--	Kcgr	1,225	--	--	C, E	D, S	2/
* 105	do	-- Owens	1963	378	6	60	Kcgr, Kctp	1,240	--	--	Sub, E	D, S	Open hole from 60 to 378 feet. Reported yield 30 gal/min. 2/
* 107	Glen Longley	--	--	Spring	--	--	Kcgrl	1,060	--	--	Flows	N	Reported flow 25 gal/min on May 27, 1969. 2/
* 60-301	Gus Flugrath	--	1920	315	--	--	Kcgr, Kctp	1,420	80	Oct. 1961	C, E	D, S	Reported yield 10 gal/min. 2/
* 303	Rae Doran	--	--	Spring	--	--	Kcgru	1,400	--	--	Flows J, E	D	Reported flow 84 gal/min on Aug. 20, 1941. 2/
* 304	do	-- Owens	1962	128	7	128	Kcgrl	1,500	--	--	Sub, E	S	Perforated from 108 to 128 feet. 2/
* 305	do	do	1965	200	7	15	Kcgr	1,470	74.6	Aug. 13, 1968	C, W	S	Open hole from 15 to 200 feet. 2/
* 309	John J. Klepac	--	1962	232	6	76	Kcgr, Kctp	1,460	--	--	Sub, E	D, Irr, S	Slotted from 52 to 76 feet. Open hole from 76 to 232 feet. 2/
* 607	Max C. Kluge and Hugo Brodbeck	E. R. Owens	1969	110	5	110	Kcgru	1,670	71.2	Oct. 24, 1968	C, W	S	Perforated from 100 to 110 feet. Reported yield 48 gal/min. 2/
* 61-101	Mrs. C. R. Whitworth	do	1963	370	7	26	Kcgr, Kctp	1,455	138.4 154.0 147.9 85.4 183.2 79.4 138.5 82.3 136.1	Aug. 14, 1968 Mar. 24, 1971 Apr. 26, 1972 Mar. 16, 1973 Feb. 28, 1974 Feb. 25, 1975 Jan. 29, 1976 Feb. 16, 1977 Feb. 16, 1978	C, W	S	Open hole from 26 to 370 feet. Observation well. 2/
* 105	L. L. Smith	-- Trainer	1917	190	--	--	Kcgru	1,600	--	--	C, W	S	2/
* 106	R. S. Jones	-- Owens	1956	158	6	10	Kcgru	1,530	--	--	Sub, E	D, S	Open hole from 10 to 158 feet. Reported yield 50 gal/min. 2/
* 201	T. M. Phipps	--	--	Spring	--	--	Kcgru	1,375	--	--	Flows	--	Reported flow 84 gal/min on Aug. 20, 1941. 2/
* 202	Gilbert Zercher	--	--	Spring	--	--	Kcgru	1,450	--	--	Flows	D, S	Reported flow 126 gal/min on Aug. 4, 1941. 2/
* 209	Blanco State Park	--	--	Spring	--	--	Kcgrl	1,300	--	--	Flows	N	Reported flow 15 gal/min on Aug. 20, 1941. 2/
* 210	Layne Smith	--	1954	54	10	--	Kcgru	1,400	--	--	T, E	N	Unused public supply well. 2/
* 211	Jim N. English	Wilmer McDonald	1974	341	5 4	18 341	Kcgr	1,430	105.4	Nov. 13, 1974	N	N	Slotted from 301 to 341 feet. Cemented from 12 feet to surface. Plugged.
* 212	William A. Walker	do	1972	217	4	217	Kcgru	1,405	--	--	Sub, E	S	Slotted. Cemented from 30 feet to surface.
* 213	do	do	1972	248	4	248	Kcgr	1,410	56.9	Nov. 13, 1974	Sub, E	D, S	Slotted from 90 to 110 feet and 170 to 220 feet. Cemented from 30 feet to surface.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* AZ-57-61-214	Conway Johnston	--	1959	--	--	--	Kcgr	1,440	92	Nov. 13, 1974	Sub, E	D	Drilled to 320 feet and plugged back to unknown depth.
* 215	Wesley Joe Dechert	--	--	220	5	--	Kcgru	1,400	--	--	Sub, E	D, S	--
* 216	Jim M. English	--	--	148	4	145	Kcgru	1,380	--	--	Sub, E 1/2	D	Open hole from 145 to 148 feet. Pump set at 145 feet.
* 304	C. S. Ethridge, Cold Spring	--	--	Spring	--	--	Kcgrl	1,280	--	--	Flows C, E	D, S	Reported flow 15 gal/min in 1938. 2/
* 308	O. C. Collins	--	1967	450	8	--	Kcgr, Kctp	1,290	--	--	Sub, E	D, S	2/
* 309	Henry Trinch	Alex Evans	1917	201	6	--	Kcgrl	1,290	25.5	June 2, 1938	C, W	S	2/
* 404	W. T. Yett	E. R. Owen	1967	480	5	480	Kcgrl	1,810	380	1967	C, W	S	Slotted. Reported yield 20 gal/min with 60 feet drawdown. 2/
* 406	Max C. Kluge	do	1967	170	5	170	Kcgrl	1,440	115	1967	Sub, E	D, S	Slotted from 160 to 170 feet. Reported yield 25 gal/min. 2/
* 501	Ted Moffett	Crawford Well Drilling	1966	375	7	--	Kcgr, Kctp	1,340	175	1966	Sub, E 1 1/4	S	Reported yield 15 gal/min with 50 feet drawdown. 2/
* 502	W. T. Yett	E. R. Owens	1967	437	5	437	Kctp	1,500	180	1967	Sub, E	S	Slotted. Reported yield 20 gal/min. 2/
601	C. E. Crist No. 3	E. L. Nixon	1940	1,332	--	--	--	1,315	--	--	--	--	Oil test. 1/ 2/
* 604	Alvin Beckman	--	--	Spring	--	--	Kcgru	1,320	--	--	Flows	S	Reported flow 2 gal/min on June 6, 1938. 2/
* 605	do	--	1916	290	8	7	Kcgr	1,340	--	--	Sub, E 1	D, S	Open hole from 7 to 290 feet. Reported yield 10 gal/min. 2/
* 608	L. Cloud	--	--	90	6	--	Kcgrl	1,320	--	--	C, E	D, S	2/
* 609	do	-- Owen	1965	357	--	--	Kcgr, Kctp	1,320	--	--	Sub, E	D, S	2/
* 613	Arthur Matz	-- Crawford	1961	216	5	--	Kcgrl	1,410	--	--	C, E	D, S	Perforated. 2/
617	Joe Cloud	Glass and Tucker Inc.	1977	380	6	22	Kcgr, Kctp	1,321	173	June 28, 1977	Sub, E 1 1/2	D	Open hole from 22 to 380 feet. Reported yield 25 gal/min with 200 feet drawdown. 1/
* 801	Howard A. Doebbler	R. R. Pence Drilling Co.	1968	155	7	8	Kcgru	1,500	100	Aug. 16, 1968	Sub, E 1/2	S	Open hole from 8 to 155 feet. Cemented from 7 feet to surface. Pump set at 127 feet. Reported yield 10 gal/min with 55 feet drawdown. 2/
* 802	Fred Poenisch	--	--	Spring	--	--	Kcgru	1,480	--	--	Flows	S	Reported flow less than 1 gal/min on Aug. 19, 1968. 2/
* 803	Reuben Cage	Pink Kennedy	1931	60	6	20	Kcgrl	1,300	25.3 23.5 25.7 27.8 23.8 25.4 20.1 25.5 24.1 26.7	July 8, 1938 Aug. 19, 1968 Mar. 24, 1971 Apr. 25, 1972 Mar. 16, 1973 Feb. 28, 1974 Feb. 24, 1975 Jan. 29, 1976 Feb. 16, 1977 Feb. 16, 1978	Sub, E 1	S	Open hole from 20 to 60 feet. Observation well. 2/

See footnotes at end of table.

BLANCO COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* AZ-57-61-806	Fred Poenisch	Frank Kennedy	1950	340	6	--	Kcgr	1,510	--	--	C, W	S	2/
* 904	Oscar Jonas	Crawford Well Drilling	1965	249	6	40	Kcgr	1,405	175	May 1965	Sub, E 1	S	Open hole from 40 to 249 feet. Cemented from 40 feet to surface. Pump set at 231 feet. Reported yield 12 gal/min with 56 feet drawdown. 2/
* 905	do	do	1965	150	6	30	Kcgru	1,425	90	Dec. 1965	Sub, E	S	Open hole from 30 to 150 feet. Cemented from 30 feet to surface. Reported yield 20 gal/min with 10 feet drawdown. 2/
* 906	Udo Bruemmer	--	1960	260	6	10	Kcgr, Kctp	1,320	--	--	C, W	D, S	Open hole from 10 to 260 feet. Reported yield 7 gal/min. 2/
* 62-103	Austin C. Webb	Crawford Well Drilling	1966	180	8	30	Kcgrl	1,220	130	Oct. 10, 1966	Sub, E	D, S	Open hole from 30 to 180 feet. Cemented from 30 feet to surface. Reported yield 20 gal/min with 20 feet drawdown. 2/
106	Mrs. R. A. Richards, Jr.	Pink Kennedy	1939	185	6	20	Kcgrl	1,300	89 101.4 89.0 92.4 88.6 79.3 91.3 77.3 99.3	Oct. 1, 1968 Mar. 24, 1971 Apr. 26, 1972 Mar. 16, 1973 Feb. 28, 1974 Feb. 26, 1975 Jan. 13, 1976 Feb. 15, 1977 Feb. 16, 1978	C, W	D, S	Deepened in 1956. Open hole from 20 to 185 feet. Observation well. 2/
* 108	Joe S. Wagner	Virdell Brothers Drilling Co.	1956	350	--	--	Kcgr, Kctp	1,340	--	--	Sub, E	D, S	2/
* 109	do	--	1935	160	6	--	Kcgrl	1,260	--	--	C, E	D, S	2/
* 207	John C. Dollahite	-- Kock	1924	180	8	170	Kcgrl	1,335	--	--	C, W	D, S	Open hole from 170 to 180 feet. 2/
* 209	Boardhouse Spring	--	--	Spring	--	--	Kcgru	1,300	--	--	Flows	--	Reported flow 50 gal/min on May 20, 1969. 2/
* 301	Charles Wagnes, Jr.	Kutcher Drilling Co.	1968	340	6	--	Kcgr, Kctp	1,310	225	1968	Sub, E	D, S	2/
403	A. J. Waggoner	--	--	Spring	--	--	Kcgrl	1,260	--	--	Flows	--	2/
* 405	Howard Cox	Crawford Well Drilling	1966	360	--	--	Kcgr, Kctp	1,380	--	--	Sub, E	D, S	2/
* 406	C. A. Rust, Jr.	F. R. Owen	1968	120	5	17	Kcgrl	1,320	90	Mar. 1968	Sub, E 1/2	D	Open hole from 17 to 120 feet. Reported yield 10 gal/min. 2/
* 407	do	do	1968	135	7	15	Kcgrl	1,360	95	do	Sub, E	S	Open hole from 15 to 135 feet. Reported yield 2 1/2 gal/min. 2/
* 409	do	do	1968	170	7	12	Kcgrl	1,350	123	do	Sub, E	S	Open hole from 12 to 170 feet. Reported yield 6 gal/min. 2/
* 410	Frank K. Willis	Crawford Well Drilling	1965	175	6	40	Kcgr, Kctp	1,230	135	Sept. 2, 1965	Sub, E 1/2	D	Open hole from 40 to 175 feet. Cemented from 40 feet to surface. Pump set at 168 feet. Reported yield 7 gal/min. 2/
* 502	H. Wilcox	do	1967	210	5	210	Kcgr, Kctp	1,245	180	Jan. 20, 1967	Sub, E 2	D, S	Perforated from 100 to 210 feet. Cemented from 60 feet to surface. Pump set at 189 feet. Reported yield 20 gal/min with 0 feet drawdown. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* AZ-57-62-503	Grace Hearne	Earl Johnson	1936	250	6	250	Kcgr, Kctp	1,200	--	--	C, E	D, S	Slotted. Reported yield 15 gal/min. 2/
* 506	E. A. Craft, Estate	Frank Kennedy	1940	400	--	--	Kcgr, Kctp	1,235	--	--	Sub, E	D, S	2/
* 707	Emery Nix	Crawford Well Drilling	1965	150	6	20	Kcgr, Kctp	1,180	40	Oct. 1965	Sub, E 3/4	D, S	Open hole from 20 to 150 feet. Cemented from 20 feet to surface. Pump set at 127 feet. 2/
* 68-05-107	Harford Hills Ranch	--	--	500	--	--	Kcgr, Kctp	1,580	266.7	Aug. 20, 1968	C, W	S	2/
* 201	Elton Zuercher	Willie Fischer	1912	210	6	12	Kcgrl	1,390	198.5	do	C, W	D, S	Open hole from 12 to 210 feet. Reported yield 6 gal/min. 2/
* 202	do	--	1912	263	6	6	Kcgrl	1,380	190	1967	Sub, E	D, S	Deepened from 190 to 263 feet in 1967. Open hole from 6 to 263 feet. 2/
* 203	B. B. Beveridge	--	--	100	--	--	Kcgr	1,410	--	--	C, W	S	Reported yield 6 gal/min. 2/
* 206	do	Crawford Well Drilling	1966	258	6	20	Kcgr	1,430	85	1966	Sub, E	D, S	Open hole from 20 to 258 feet. 2/
* 301	Luther Hill	John West	1902	306	8	7	Kcgr, Kctp	1,385	--	--	C, W	D, S	Open hole from 7 to 306 feet. 2/
* 302	do	--	1905	350	6	10	Kcgr, Kctp	1,370	255.4	July 7, 1938	Sub, E	D, S	Open hole from 10 to 350 feet. Reported yield 2 gal/min. 2/
* 309	H. E. Stover	--	--	92	6	--	Kcgrl	1,270	33.1	Aug. 22, 1968	C, E	D, S	2/
601	Albert Specht No. 1	--	1931	1,430	--	--	--	1,320	--	--	--	--	Oil test. 1/ 2/
* 602	Joe Sawyer	Crawford Well Drilling	1966	180	6	20	Kcgr	1,400	--	--	Sub, E 1 1/2	D, S	Open hole from 20 to 180 feet. Reported yield 15 gal/min. 2/
* 06-102	L. W. Chick	Frank Kennedy	1945	200	6	--	Kcgr, Kctp	1,240	--	--	C, E	D, S	Reported yield 50 gal/min. 2/

* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.
2/ Well also appears in Texas Water Development Board Report 174.

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Table 6.--Chemical Analyses of Water From Selected Wells and Springs

Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Qal, alluvium; Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kctp, Travis Peak Formation; Kche, Hensell Sand Member of the Travis Peak Formation.

Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

Analyses by Texas State Department of Health.

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AZ-57-36-806	Kctp	78	Aug. 12, 1977	26	--	94	52	14	--	540	6	22	0.5	< 0.4	--	480	447	805	7.5	6	0.2	0.0
37-505	Kche	360	May 1, 1969	--	--	65	49	--	--	424	120	75	--	--	--	--	364	1,040	7.7	--	--	.0
703	Kcgru	--	July 31, 1941	--	--	100	54	9	--	494	25	28	--	28	--	487	473	--	--	4	.1	.0
705	Kcgru	82	Aug. 10, 1977	18	--	82	43	14	--	417	22	28	.5	9.4	--	421	380	710	7.9	7	.3	.0
805	Kche	238	May 1, 1969	--	--	78	47	--	--	456	18	22	--	--	--	--	388	755	7.2	--	--	.0
904	Kcgru	--	July 11, 1941	--	--	86	14	21	--	348	15	12	.2	2.0	--	321	274	--	--	14	.5	.2
38-407	Kctp	--	July 25, 1941	--	--	80	31	27	--	360	35	25	.3	26	--	401	329	--	--	15	.6	.0
409	Kctp	253	Aug. 10, 1977	14	--	76	24	9	--	312	24	16	.3	7.2	--	323	289	520	8.3	6	.2	.0
39-602	Kctp	131	July 18, 1968	12	--	93	41	9	1.6	408	42	15	.4	21	--	435	400	763	7.1	5	.1	.0
701	Kche	125	May 1, 1969	--	--	94	29	--	--	380	20	26	--	--	--	--	354	714	7.1	--	--	.0
703	Kctp	180	Mar. 14, 1947	--	--	116	37	27	--	460	23	49	--	38	--	516	551	--	--	12	.5	.0
44-501	Kche	213	Apr. 30, 1969	--	--	94	57	--	--	440	59	58	--	--	--	--	469	975	7.1	--	--	.0
505	Kche	188	do	--	--	104	70	--	--	358	133	156	--	--	0.2	--	548	1,220	7.3	--	--	.0
701	Kctp	75	July 29, 1968	22	--	88	55	51	1.8	476	38	73	.7	18	--	581	446	985	7.4	20	1.0	.0
701	Kctp	75	Aug. 10, 1977	25	--	88	52	55	--	482	37	24	.7	17	--	535	434	965	7.8	22	1.1	.0
45-303	Kcgrl	--	Aug. 19, 1941	--	--	106	30	19	--	464	13	25	--	--	--	421	388	--	--	10	.4	.0
308	Kcgru	--	Aug. 18, 1941	--	--	--	--	--	--	354	9	18	--	--	--	331	--	--	--	--	--	--
704	Kctp	200	Aug. 12, 1968	9	--	92	26	19	.9	324	21	43	.3	37	--	407	336	706	7.8	11	.4	.0
902	Qal	30	Aug. 11, 1977	18	--	125	64	30	--	539	48	51	.4	99	--	700	575	1,121	8.1	10	.5	.0
907	Kche	21	May 2, 1969	--	--	87	53	--	--	478	39	31	--	--	.1	--	435	846	7.1	--	--	.0
46-901	Kcgrl	211	July 13, 1968	--	--	128	44	2	--	415	132	22	1.9	--	--	532	503	--	--	1	.0	.0
902	Kcgrl	250	Sept. 19, 1968	12	--	104	67	21	9.6	400	227	18	3.2	< .4	--	658	535	1,020	7.4	8	.3	.0
902	Kcgrl	250	July 29, 1976	12	--	226	123	58	18	360	850	39	2.2	< .4	--	1,505	1,070	1,790	7.6	10	.7	.0
902	Kcgrl	250	Aug. 11, 1977	13	--	248	127	62	--	359	903	39	2.1	< .4	--	1,571	1,142	1,900	7.7	11	.7	.0
905	Kche	200	May 2, 1969	--	--	86	33	--	--	314	46	36	--	64	--	--	350	771	7.3	--	--	.0
47-201	Kctp	142	Aug. 9, 1977	18	--	88	15	9	--	322	13	9	.3	15	--	325	280	530	7.9	6	.2	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AZ-57-47-402	Kche	400	May 22, 1969	--	--	86	37	--	--	398	24	33	--	--	--	--	366	763	7.7	--	--	0.0
52-101	Kctp	65	Oct. 7, 1951	23	--	91	56	49	--	470	38	87	--	21	--	596	458	1,080	7.7	19	0.9	.0
302	Kcgr, Kctp	120	July 29, 1976	18	--	170	18	31	--	434	61	75	0.4	55	0.2	641	497	1,005	7.8	12	.6	.0
305	Kcgr, Kctp	225	July 31, 1968	10	--	560	202	80	21	278	1,970	118	.3	--	--	3,097	2,230	3,340	7.1	7	.7	.0
508	Kcgru	200	Aug. 1, 1968	10	--	258	166	49	16	236	1,080	93	2.5	.1	--	1,790	1,330	2,210	7.7	7	.5	.0
603	Kcgr	210	do	12	--	83	35	12	1.8	340	49	26	.4	11	--	397	351	669	7.4	7	.2	.0
805	Kcgr	411	July 30, 1968	9	93.0	255	162	67	14	420	944	100	3.2	.0	--	2,690	1,300	2,250	7.1	10	.8	.0
901	Kcgr	425	Aug. 1, 1968	7	27.0	288	107	26	13	354	862	26	1.6	5.2	--	1,779	1,160	1,860	7.2	5	.3	.0
902	Kcgru	475	do	9	--	340	86	22	9.3	240	976	23	1.1	.1	--	1,584	1,200	1,920	7.4	4	.2	.0
903	Kcgr	280	Aug. 12, 1977	12	--	98	22	8	--	378	19	16	.4	1.1	--	362	337	610	7.9	5	.1	.0
53-105	Kctp	500	Aug. 7, 1968	12	--	78	42	9	2.2	384	56	15	.5	1.8	--	405	367	691	7.5	5	.2	.0
105	Kctp	500	Aug. 11, 1977	14	--	79	43	10	--	381	53	16	.5	2.3	--	405	370	670	7.9	5	.2	.0
208	Kcgrl	140	Aug. 7, 1968	13	--	128	16	13	1.0	340	28	46	.3	42	--	454	386	782	7.4	7	.2	.0
208	Kcgrl	140	Aug. 11, 1977	16	--	143	18	23	--	368	49	67	.3	44	--	540	431	870	7.6	10	.4	.0
215	Kcgru	--	May 21, 1969	--	--	78	20	--	--	312	11	8	--	--	--	--	277	521	7.7	--	--	.0
217	Kcgr, Kctp	224	Oct, 25, 1968	--	--	--	--	--	--	374	394	22	--	--	--	--	710	1,240	7.7	--	--	--
304	Kcgru	--	Sept. 20, 1968	12	--	99	16	6	1.3	356	14	10	.2	10	--	343	313	588	7.6	4	.1	.0
310	Kcgr, Kctp	453	Oct. 3, 1968	--	--	--	--	--	--	304	2,260	40	--	--	--	--	2,460	3,460	7.3	--	--	--
311	Kcgr, Kctp	202	Oct. 24, 1968	--	--	--	--	--	--	412	32	27	--	--	.1	--	425	824	7.3	--	--	--
501	Kcgr, Kctp	1,005	Aug. 6, 1941	--	--	379	138	78	--	336	1,312	23	3.3	1.0	--	2,099	1,515	--	--	10	.8	.0
507	Kcgr	300	Aug. 6, 1968	10	--	255	103	16	12	346	760	21	2.4	.0	--	1,349	1,060	1,700	7.4	3	.2	.0
508	Kche	450	May 21, 1969	--	--	610	374	--	--	113	2,900	55	--	--	--	--	3,060	4,030	7.3	--	--	.0
509	Kcgr	501	do	--	--	500	101	--	--	340	1,340	26	--	--	--	--	1,660	2,430	7.2	--	--	.0
512	Kcgru	178	Aug. 6, 1941	--	--	492	165	98	--	348	1,720	32	--	--	--	2,680	1,910	--	--	10	.9	.0
512	Kcgru	178	May 21, 1969	--	--	542	177	--	--	336	1,760	30	--	--	--	--	2,080	2,930	7.2	--	--	.0
608	Kcgrl	80	do	--	--	100	17	--	--	346	22	20	--	--	--	--	320	630	7.6	--	--	.0
701	Kcgr	300	Aug. 8, 1968	10	--	87	19	10	1.1	312	26	21	.4	10	--	337	295	573	7.5	7	.2	.0
705	Kcgru	300	Aug. 1, 1968	9	--	79	41	11	3.7	378	52	21	.4	4.5	--	407	366	702	7.3	6	.2	.0
707	Kcgrl	120	Aug. 8, 1968	11	--	106	22	14	1.7	376	28	30	.6	7.5	--	405	355	688	7.8	8	.3	.0

BLANCO COUNTY

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AZ-57-53-802	Kcgru	--	Aug. 13, 1941	--	--	--	--	--	--	323	8	11	--	--	--	294	--	--	--	--	--	--
804	Kcgr	444	Aug. 2, 1968	12	--	106	35	8	2.6	372	86	12	0.9	25	--	470	408	765	7.5	4	0.1	0.0
905	Kcgru	132	Aug. 23, 1968	11	3.4	595	163	32	11	304	1,850	62	3.0	.0	--	2,910	2,160	3,060	7.4	3	.2	.0
906	Kcgru	125	do	10	9.9	552	67	14	4.2	358	1,310	30	1.2	.0	--	2,263	1,650	2,400	7.3	2	.1	.0
54-303	Kcgr	190	Sept. 19, 1968	13	.2	74	41	7	2.7	384	36	12	.7	9.0	--	386	353	660	7.6	4	.1	.0
306	Kctp	200	May 2, 1969	--	--	110	7	--	--	344	12	11	--	--	--	--	304	590	7.1	--	--	.0
307	Kcgrl	18	do	--	--	80	16	--	--	290	21	13	--	--	--	--	266	524	7.3	--	--	.0
401	Kcgrl	--	June 9, 1938	--	--	57	15	9	--	297	20	16	.1	12	--	231	204	--	--	9	.2	.7
402	Kcgrl	--	do	--	--	85	23	5	--	317	20	14	.1	22	--	325	309	--	--	3	.1	.0
403	Kche	170	Oct. 3, 1968	--	--	418	169	--	--	304	1,510	20	--	--	0.3	--	1,740	2,580	7.2	--	--	.0
501	Kcgr, Kctp	97	May 21, 1969	--	--	112	14	--	--	312	22	16	--	--	.1	--	337	675	7.8	--	--	.0
502	Kcgru	--	June 17, 1938	--	--	--	--	--	--	323	12	14	--	--	--	304	--	--	--	--	--	--
503	Kcgrl	--	do	--	--	--	--	--	--	354	9	16	--	--	--	328	--	--	--	--	--	--
504	Kcgrl	--	do	--	--	82	10	3	--	268	10	16	--	--	--	253	246	--	--	3	.0	.0
604	Kcgr, Kctp	169	Aug. 11, 1977	11	--	90	9	7	--	304	13	12	.2	2.2	--	293	263	496	7.8	5	.1	.0
701	Kcgr, Kctp	375	May 20, 1969	--	--	80	54	--	--	352	150	10	--	--	--	--	422	805	7.6	--	--	.0
702	Kcgrl	372	Aug. 26, 1941	--	--	122	85	74	--	415	288	15	2.6	--	--	790	652	--	--	20	1.2	.0
804	Kcgru	130	May 20, 1969	--	--	98	23	--	--	366	30	16	--	--	.1	--	399	640	7.7	--	--	.0
901	Kcgrl	598	Sept. 12, 1968	10	--	88	69	16	7.2	458	136	22	1.6	.2	--	575	504	936	7.1	6	.3	.0
902	Kcgrl	285	Sept. 13, 1968	10	--	169	139	33	12	406	648	43	4.1	< .4	--	1,258	993	1,710	6.9	7	.4	.0
903	Kcgr	353	do	11	--	157	138	33	13	406	608	45	5.6	2.5	--	1,212	--	1,660	7.2	7	.4	.0
904	Kcgr, Kctp	720	Sept. 30, 1968	--	--	--	--	--	--	316	540	42	--	--	.4	--	780	1,430	8.0	--	--	--
905	Kcgr	400	Oct. 25, 1968	--	--	--	--	--	--	400	25	13	--	--	.0	--	354	652	7.8	--	--	--
906	Kcgr, Kctp	650	Sept. 11, 1974	10	--	136	68	36	--	468	196	73	6.1	< .4	--	755	620	1,151	7.8	11	.6	.0
55-103	Kcgru	--	July 13, 1938	--	--	95	22	2	--	366	14	13	--	--	--	326	329	--	--	1	.0	.0
104	Kcgr	312	Sept. 18, 1968	13	--	255	160	42	1.5	400	964	30	2.1	2.7	--	1,666	1,290	2,080	7.6	7	.5	.0
105	Kcgr, Kctp	378	Sept. 19, 1968	12	--	86	23	7	1.7	336	22	12	.5	9.5	--	338	309	578	7.6	5	.1	.0
107	Kcgrl	--	do	11	--	87	16	7	1.3	320	16	13	.2	6.6	--	315	283	549	7.6	5	.1	.0
60-301	Kcgr, Kctp	315	Feb. 22, 1961	11	--	555	168	14	--	290	1,760	26	--	.0	--	2,676	2,080	2,920	7.3	1	.1	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

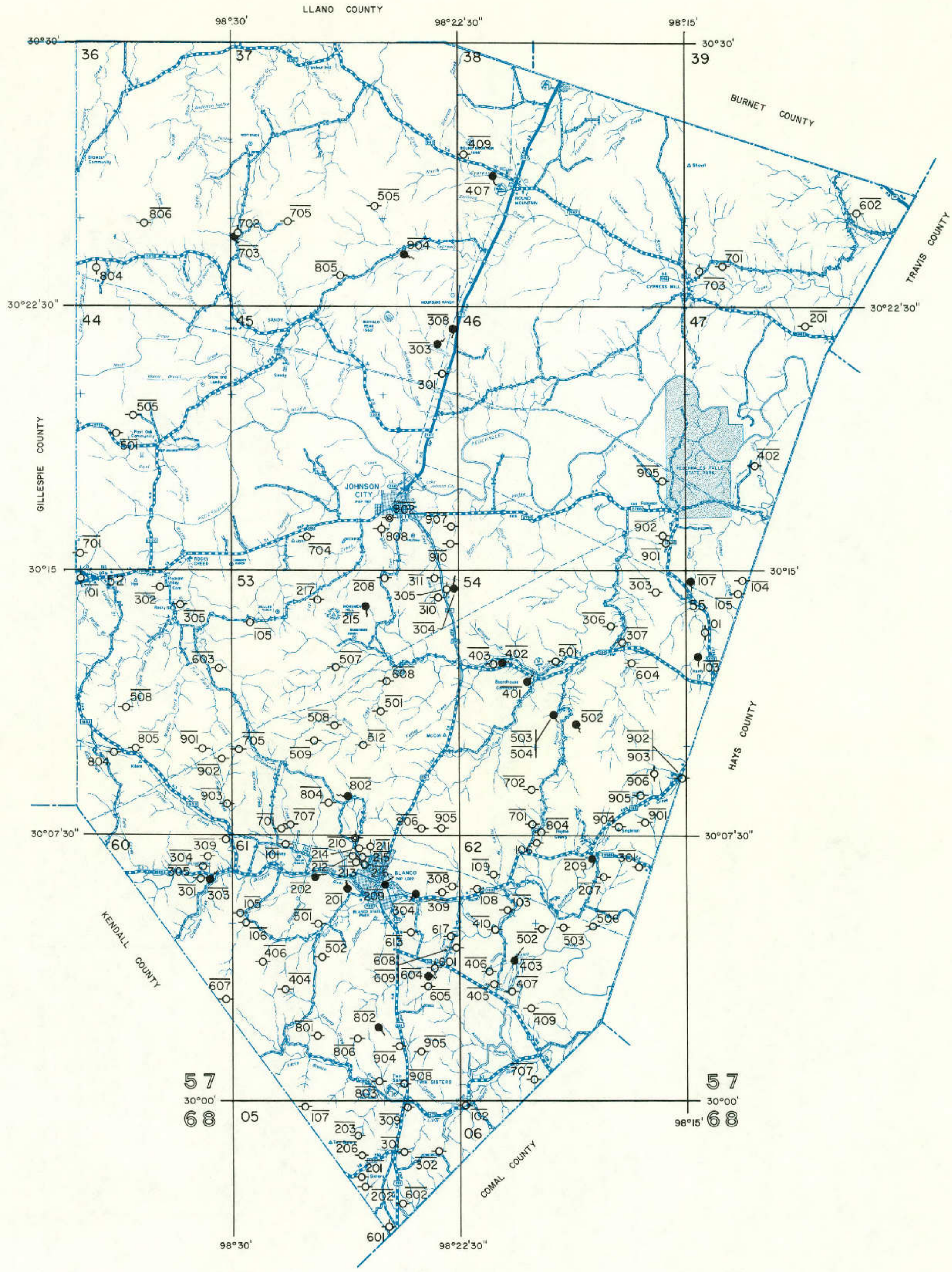
Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AZ-57-60-303	Kcgru	--	Aug. 20, 1941	--	--	68	21	12	--	275	25	18	--	8.0	--	287	258	--	--	9	0.3	0.0
304	Kcgrl	128	Aug. 13, 1968	10	0.6	75	27	8	1.5	316	30	18	0.4	2.8	--	334	298	575	7.4	5	.2	.0
305	Kcgr	200	do	11	--	88	23	12	1.6	316	42	19	.4	16	--	368	314	622	7.4	8	.2	.0
309	Kcgr, Kctp	232	Jan. 29, 1967	11	--	67	24	9	1.3	294	18	18	.4	2.2	--	295	266	526	7.6	7	.2	.0
607	Kcgru	110	Oct. 24, 1968	--	--	81	41	--	--	344	100	9	--	--	0.1	--	370	690	7.8	--	--	.0
61-101	Kcgr, Kctp	370	Aug. 25, 1963	--	--	570	282	71	--	248	2,280	54	--	--	--	3,378	2,580	3,510	6.8	6	.6	.0
105	Kcgru	190	Aug. 14, 1968	10	--	232	93	20	11	404	624	26	2.1	.0	--	1,216	696	1,600	7.2	4	.2	.0
106	Kcgru	158	Aug. 16, 1968	8	--	72	24	6	1.3	300	32	12	.6	1.4	--	304	278	530	7.5	4	.1	.0
201	Kcgru	--	Aug. 20, 1941	--	--	100	18	14	--	360	25	12	--	17	--	363	321	--	--	9	.3	.0
202	Kcgru	--	Aug. 4, 1941	--	--	100	17	4	--	348	18	18	--	--	--	328	320	--	--	3	.0	.0
209	Kcgrl	--	Aug. 20, 1941	--	--	105	22	29	--	329	31	56	.3	46	--	451	354	--	--	15	.6	.0
210	Kcgru	54	Apr. 13, 1968	--	1.2	102	25	10	--	334	26	33	.4	41	--	570	358	780	--	6	.2	.0
210	Kcgru	54	July 18, 1969	--	.0	106	26	11	--	356	25	27	.8	41	--	590	371	800	--	6	.2	.0
211	Kcgr	341	Nov. 13, 1974	12	--	328	150	12	6.0	315	1,130	19	5.0	< .4	--	1,817	1,440	1,960	7.2	2	.1	.0
211	Kcgr	341	do	12	--	333	138	11	5.0	314	1,080	19	2.7	9.0	--	1,764	1,400	1,990	7.1	2	.1	.0
211	Kcgr	341	do	11	--	380	139	12	6.0	306	1,180	19	4.1	9.0	--	1,910	1,520	2,100	7.1	2	.1	.0
211	Kcgr	341	do	11	--	427	139	12	5.0	300	1,310	19	4.4	10	--	2,084	1,640	2,200	7.1	2	.1	.0
211	Kcgr	341	do	11	--	446	148	12	6.0	296	1,430	19	4.1	9.0	--	2,230	1,720	2,300	7.0	1	.1	.0
211	Kcgr	341	do	11	--	489	146	13	6.0	292	1,540	19	3.8	8.0	--	2,379	1,820	2,400	7.0	2	.1	.0
211	Kcgr	341	Apr. 29, 1975	14	--	186	73	10	--	334	455	19	1.8	4.9	--	927	760	1,250	7.3	3	.1	.0
212	Kcgru	217	Nov. 13, 1974	10	--	105	24	10	.1	364	51	22	.4	2.5	--	403	364	671	7.5	6	.2	.0
213	Kcgr	248	do	10	--	107	25	10	.1	368	54	22	.4	2.5	--	411	371	685	7.4	6	.2	.0
214	Kcgr	320	do	11	--	79	85	158	2.0	387	30	380	.5	3.1	--	938	550	1,700	7.3	38	2.9	.0
215	Kcgru	220	do	11	--	83	37	11	2.0	383	30	25	.6	4.7	--	392	361	675	7.4	6	.2	.0
216	Kcgru	148	Apr. 29, 1975	12	--	97	28	9	--	395	22	20	.5	4.4	--	387	357	660	7.6	5	.2	.0
216	Kcgru	148	July 24, 1975	12	--	105	28	9	--	406	31	20	.5	1.7	--	406	379	680	7.5	5	.2	.0
304	Kcgrl	--	June 7, 1938	--	--	138	11	12	--	427	21	20	.1	22	--	434	392	--	--	6	.2	.0
308	Kcgr, Kctp	450	Oct. 2, 1968	--	--	--	--	--	--	322	365	20	--	--	--	--	615	1,150	7.7	--	--	--
309	Kcgrl	201	June 2, 1968	--	--	143	18	28	--	366	96	38	.2	49	--	552	552	--	--	12	.5	.0
404	Kcgrl	480	Aug. 15, 1968	12	--	72	41	7	4.5	360	60	10	1.2	.0	--	384	348	647	7.6	4	.1	.0
406	Kcgrl	170	Oct. 24, 1968	--	--	--	--	--	--	330	1,230	--	--	--	--	--	1,540	2,250	7.5	--	--	--

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AZ-57-61-501	Kegr, Ketp	375	Aug. 15, 1968	10	--	150	10	5	1.1	392	87	9	0.2	6.8	--	471	415	759	7.2	2	0.1	0.0
502	Ketp	437	do	10	--	75	22	6	2.5	312	18	12	.3	8.5	--	307	278	531	7.8	4	.1	.0
604	Kegru	--	June 6, 1938	--	--	100	10	24	--	360	25	16	--	--	--	352	291	--	--	15	.6	.0
605	Kegr	290	July 30, 1976	10	--	103	8	5	2.0	333	12	9	.2	3.3	--	316	290	525	7.6	4	.1	.0
608	Kegrl	90	Sept. 12, 1968	11	--	122	32	8	1.1	496	26	14	.3	.1	--	458	436	787	7.4	4	.1	.0
609	Kegr, Ketp	357	do	10	--	465	197	196	36	274	1,960	122	2.4	.0	--	3,123	1,970	3,500	7.5	17	1.9	.0
613	Kegrl	216	Oct. 1, 1968	--	--	--	--	--	--	354	24	15	--	--	--	--	332	617	7.5	--	--	--
801	Kegru	155	Aug. 16, 1968	12	--	76	57	10	4.8	444	65	14	2.0	.0	--	459	424	780	7.4	5	.2	.0
802	Kegru	--	Aug. 19, 1968	11	--	81	16	5	.7	304	10	10	.2	4.2	--	287	270	505	7.5	4	.1	.0
803	Kegrl	60	July 29, 1976	10	--	101	9	5	1.0	311	28	7	.3	< .4	--	314	289	519	7.7	4	.1	.0
806	Kegr	340	Aug. 20, 1968	10	--	142	51	14	3.3	356	269	20	.8	2.8	--	687	564	1,020	7.5	5	.2	.0
904	Kegr	249	Aug. 19, 1968	12	--	76	30	7	1.6	346	30	10	2.0	.0	--	338	313	589	7.5	5	.1	.0
904	Kegr	249	July 24, 1975	10	--	85	30	7	--	348	40	12	2.2	< .4	--	357	336	595	8.2	4	.1	.0
904	Kegr	249	Aug. 1, 1977	12	--	80	36	8	--	351	52	11	2.0	< .4	--	373	349	614	8.1	5	.1	.0
905	Kegru	150	Aug. 19, 1968	9	--	72	9	7	2.5	244	14	12	.3	7.0	--	252	217	443	7.7	6	.2	.0
908	Kegr, Ketp	260	do	10	--	130	24	10	1.1	424	68	22	.6	.0	--	474	76	787	7.5	5	.2	.0
62-103	Kegrl	180	Sept. 12, 1968	11	--	64	24	9	1.6	278	27	16	.1	3.6	--	292	258	515	7.3	7	.2	.0
108	Kegr, Ketp	350	May 20, 1969	--	--	325	157	--	--	270	1,320	139	--	--	--	--	1,460	2,750	7.3	--	--	.0
109	Kegrl	160	do	--	--	90	27	--	--	324	57	22	--	--	--	--	336	700	7.5	--	--	.0
207	Kegrl	180	do	--	--	82	40	--	--	354	84	14	--	--	--	--	369	711	7.5	--	--	.0
209	Kegru	--	do	--	--	99	13	--	--	342	15	11	--	--	0.0	--	300	573	7.4	--	--	.0
301	Kegr, Ketp	340	Sept. 16, 1968	13	--	107	62	12	4.7	456	142	26	1.5	.0	--	592	522	972	7.3	5	.2	.0
405	Kegr, Ketp	360	Sept. 11, 1968	10	--	146	44	11	2.7	330	266	16	.6	3.5	--	662	546	966	7.9	4	.2	.0
405	Kegr, Ketp	360	July 30, 1976	10	--	72	16	6	--	275	13	12	.4	1.6	--	266	247	457	7.8	5	.1	.0
405	Kegr, Ketp	360	Aug. 1, 1977	14	--	71	17	7	--	283	12	11	.6	2.2	--	273	249	465	7.7	6	.1	.0
406	Kegrl	120	Sept. 11, 1968	11	--	90	27	7	1.5	360	36	12	.9	.1	--	362	336	623	7.3	4	.1	.0
407	Kegrl	135	do	9	--	100	10	6	.7	340	60	10	.4	9.0	--	372	290	555	7.2	4	.1	.0
409	Kegrl	170	do	11	--	80	24	9	1.1	348	12	14	.5	.2	--	322	298	569	7.3	6	.2	.0
410	Kegr, Ketp	175	Oct. 1, 1968	--	--	--	--	--	--	348	51	11	--	--	.0	--	340	614	8.2	--	--	--

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
AZ-57-62-502	Kcgr, Kctp	210	Sept. 16, 1968	10	--	78	24	10	1.1	320	13	15	0.3	16	--	324	--	563	7.6	7	0.2	0.0
503	Kcgr, Kctp	250	Aug. 12, 1977	12	--	71	26	10	--	305	17	19	.3	15	--	319	285	545	8.0	7	.2	.0
506	Kcgr, Kctp	400	Sept. 16, 1968	10	--	68	21	6	1.3	280	14	11	.3	8.6	--	277	256	490	7.5	5	.1	.0
707	Kcgr, Kctp	150	Sept. 12, 1968	10	--	84	19	5	1.1	330	17	8	.5	.6	--	307	288	541	7.4	4	.1	.0
68-05-107	Kcgr, Kctp	500	Aug. 20, 1968	12	--	96	23	7	1.0	372	18	13	.4	9.2	--	362	334	622	7.7	4	.1	.0
201	Kcgrl	210	July 7, 1938	--	--	146	10	11	--	409	41	31	--	10	--	450	406	--	--	6	.2	.0
201	Kcgrl	210	May 20, 1969	--	--	128	8	--	--	388	26	22	--	--	--	--	351	683	7.4	--	--	.0
202	Kcgrl	263	July 7, 1938	--	--	120	11	8	--	354	28	17	.2	26	--	384	347	--	--	5	.1	.0
202	Kcgrl	263	Aug. 1, 1977	13	--	119	7	7	--	328	23	16	.2	15	--	361	326	580	7.8	4	.1	.0
203	Kcgr	100	Aug. 20, 1968	12	1.4	490	170	11	9.0	304	1,640	10	2.5	.3	--	2,508	1,920	2,660	7.3	1	.1	.0
206	Kcgr	258	Aug. 21, 1968	10	--	100	32	8	1.7	372	72	15	.7	3.4	--	425	--	703	8.0	4	.1	.0
301	Kcgr, Kctp	306	May 20, 1969	--	--	66	43	--	--	404	22	13	--	--	--	--	342	662	7.5	--	--	.0
302	Kcgr, Kctp	350	do	--	--	82	58	--	--	388	154	17	--	--	--	--	443	864	7.5	--	--	.0
309	Kcgrl	92	Aug. 22, 1968	11	.3	97	24	9	1.3	312	79	18	1.8	.0	--	397	340	657	7.4	5	.2	.0
602	Kcgr	180	Aug. 21, 1968	13	--	86	37	8	2.0	364	65	13	1.1	.0	--	404	366	678	7.4	4	.1	.0
602	Kcgr	180	July 30, 1976	13	--	92	35	9	3.0	362	72	13	1.0	.5	--	416	376	670	7.6	5	.2	.0
06-102	Kcgr, Kctp	200	Aug. 22, 1968	11	--	82	23	8	1.1	332	25	12	.6	3.4	--	329	299	570	7.6	5	.2	.0



EXPLANATION

Public supply well

Industrial well

Irrigation well

Domestic or livestock well

Oil or gas well

Test hole

Unused or abandoned well

Solid circle indicates flowing well

Spring

201

Line above well number indicates chemical analysis given in Table 6

0 1 2 3 4 Miles

0 1 2 3 4 Kilometers

Base map from Texas Department of Highways and Public Transportation

Location of Selected Wells, Springs, and Oil and Gas Tests in Blanco County

COMAL COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.
Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of power: E, electric; N, none; Sub, submersible; T, turbine. Number indicates horsepower.
Use of water : D, domestic; Irr, irrigation; N, none; P, public supply.
Water-bearing units : Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcs, Sligo Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation.

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
DX-68-05-605	Cypress Lake Gardens, well 6	--	--	257	5	165	Kcs	1,140	171 174	Mar. 23, 1976 June 2, 1976	N	N	Open hole from 165 to 257 feet. Unused public supply well. 1/
606	Cypress Lake Gardens, well 7	--	--	300	--	--	Kcs	1,225	--	--	Sub, E	P	--
607	Cypress Lake Gardens, well 9	--	--	300	--	--	Kcs	1,200	--	--	Sub, E	P	--
608	Indian Hills Development Co., well 1	Central Texas Drilling Co.	1968	314	--	--	Kcs	1,220	80 83.5	July 9, 1968 Mar. 23, 1976	Sub, E	P	Reported yield 3 gal/min with 234 feet drawdown.
609	Indian Hills Development Co., well 2	do	1968	230	7	--	Kcs	1,195	80 83.9	Aug. 1, 1968 Mar. 23, 1976	Sub, E	P	--
610	Indian Hills Development Co., well 3	do	1968	332	7	--	Kcs	1,195	80	Mar. 23, 1976	Sub, E 2	P	--
611	Indian Hills Development Co., well 4	do	1968	196	--	--	Kcgrl	1,290	--	--	Sub, E 1/2	P	Reported yield 6 gal/min.
612	Indian Hills Development Co., well 5	do	1968	218	--	--	Kcgrl	1,300	78	Aug. 27, 1968	Sub, E 3/4	P	Reported yield 4 gal/min.
613	Indian Hills Development Co., well 6	do	1968	176	6	--	Kcgrl	1,245	90 130	1968 Mar. 23, 1976	N	N	Reported yield 3 gal/min. Unused public supply well.
614	Cypress Lake Gardens	--	--	281	5	257	Kcs	1,205	96 97	do June 2, 1976	N	N	Open hole from 257 to 281 feet. Unused public supply well. 1/
901	do	--	--	217	6	45	Kcgrl, Kccc	1,220	163	Mar. 23, 1976	N	N	Open hole from 45 to 217 feet. Unused public supply well. 1/
06-401	Cypress Lake Gardens, well 5	--	--	300	--	--	Kcs	1,070	--	--	N	N	Abandoned.
402	Cypress Lake Gardens, well 8	--	--	75	--	--	Kcs	985	--	--	Sub, E	P	--
* 403	Cypress Lake Gardens, Rebecca Spring	--	--	Spring	--	--	Kccc	1,020	--	--	--	--	Spring no. A-5 in Texas Board of Water Engineers Bulletin 5608. Reported flow 1,500 to 2,000 gal/min on Oct. 7, 1943. Estimated flow 300 gal/min on Feb. 26, 1976.
404	Cypress Cove Development Co.	Crawford Well Drilling	1966	242	7	42	Kcgrl, Kccc	1,165	210	May 1966	Sub, E 2	P	Open hole from 42 to 242 feet. Cemented from 42 feet to surface. Reported yield 20 gal/min.
701	Cypress Lake Gardens, well 1	--	--	230	5	--	Kcs	1,090	179 178	Mar. 23, 1976 June 2, 1976	N	N	Unused public supply well. 1/
702	Cypress Lake Gardens, well 2	--	--	120	--	--	Kcgrl	965	56	Feb. 26, 1976	Sub, E 3/4	P	--
703	Cypress Lake Gardens, well 3	--	--	230	--	--	Kcgrl, Kccc	980	--	--	Sub, E	P	--
* 704	Cypress Lake Gardens, well 4	--	--	120	--	--	Kccc	980	--	--	Sub, E 1/2	P	--

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
DX-68-06-706	Cypress Cove Development Co.	Crawford Well Drilling	1964	184	--	--	Kegrl, Kecc	930	151	Oct. 10, 1964	Sub, E 2 1/2	P	--
801	U.S. Army Corps of Engineers, Cranes Mill well 1	Ward and Ward Drilling Co.	1965	228	4 3	218 228	Kegrl	960	72	Nov. 1, 1965	Sub, E 2	P	Screened from 218 to 228 feet. Cemented from 218 feet to surface. Reported yield 17 gal/min with 5 feet drawdown.
901	U.S. Army Corps of Engineers, Potters Creek well 1	do	1966	218	4 3	208 218	Kegrl	955	74	Oct. 16, 1966	Sub, E 2	P	Screened from 208 to 218 feet. Cemented from 208 feet to surface. Pump set at 102 feet. Reported yield 17 gal/min with 8 feet drawdown.
902	Canyon Springs Resort Water Co., well 2	--	--	--	--	--	--	1,130	--	--	Sub, E	P	--
903	Canyon Lake Hills	--	--	--	--	--	--	1,070	--	--	Sub, E	P	--
904	do	--	--	--	--	--	--	1,000	--	--	Sub, E 5	P	--
905	do	Kutscher Drilling Co.	1967	396	--	--	Kegrl	1,030	--	--	Sub, E 5	P	--
07-401	Hancock Oak Hills Water System	Owen Drilling Co.	--	395	6	--	Kegrl	1,081	175.3 174.6 163.7	Feb. 9, 1978 Aug. 4, 1978 Aug. 10, 1978	Sub, E 2	P	--
701	U.S. Army Corps of Engineers, Jacobs Creek Park well 1	Ward and Ward Drilling Co.	1965	404	4 3	394 404	Kegrl	965	75	Oct. 22, 1965	Sub, E 2	P	Screened from 394 to 404 feet. Cemented from 394 feet to surface. Reported yield 17 gal/min with 9 feet drawdown.
* 702	U.S. Army Corps of Engineers, Jacobs Creek Park well 2	do	1965	440	4 3	430 440	Kegrl	965	88	Sept. 18, 1965	Sub, E 2	P	Screened from 430 to 440 feet. Cemented from 430 feet to surface. Reported yield 14 gal/min with 59 feet drawdown.
703	U.S. Army Corps of Engineers, Canyon Park well 1	do	1965	307	4 3	297 307	Kegrl	987	112	Oct. 25, 1965	Sub, E 2	P	Screened from 297 to 307 feet. Cemented from 297 feet to surface. Reported yield 16 gal/min with 16 feet drawdown.
704	U.S. Army Corps of Engineers, Canyon Park well 2	do	1965	270	4 3	260 270	Kegrl	970	98	Oct. 12, 1965	Sub, E 2	P	Screened from 260 to 270 feet. Cemented from 260 feet to surface. Reported yield 17 gal/min with 2 feet drawdown.
705	U.S. Army Corps of Engineers, Canyon Park well 3	do	1965	274	4 3	264 274	Kegrl	1,015	132	Sept. 5, 1965	Sub, E 2	P	Screened from 264 to 274 feet. Cemented from 264 feet to surface. Reported yield 15 gal/min with 28 feet drawdown.
706	U.S. Army Corps of Engineers, Canyon Park well 4	do	1965	266	4 3	256 266	Kegrl	970	87	Sept. 7, 1965	Sub, E 2	P	Screened from 256 to 266 feet. Cemented from 256 feet to surface. Reported yield 16 gal/min with 7 feet drawdown.
707	U.S. Army Corps of Engineers, Canyon Park well 5	do	1965	260	4 3	250 260	Kegrl	950	72	Sept. 21, 1965	Sub, E 2	P	Screened from 250 to 260 feet. Cemented from 250 feet to surface. Reported yield 17 gal/min with 5 feet drawdown.
708	Canyon Lake Yacht Club, well 2	Kutscher Drilling Co.	1976	315	6	96	Kegrl	1,040	125	Aug. 18, 1976	Sub, E 2	P	Open hole from 96 to 315 feet. Cemented from 96 feet to surface. Reported yield 15 gal/min with 75 feet drawdown.
12-302	Texas Parks and Wildlife Department	--	1978	520	--	--	Kcbo	1,290	--	--	--	--	[1]
* 703	Mrs. Max Langenberg	Glass and Tucker, Inc.	1975	340	6	60	Kegrl	1,380	275	Aug. 4, 1975	Sub, E	D	Open hole from 60 to 340 feet. Cemented from 60 feet to surface. Reported yield 10 gal/min.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
* DX-68-12-901	Mrs. A. June McFalls	Hill Country Water, Inc.	1972	360	7	88	Kcgrl, Kche, Kccc	1,200	200 176.6	Sept. 20, 1972 Aug. 29, 1974	Sub, E	D	Open hole from 88 to 360 feet. Reported yield 20 gal/min.
* 902	John C. Anz	do	1972	420	6	91	Kcgrl, Kche, Kccc	1,243	280 237.9	Aug. 14, 1972 Aug. 29, 1974	Sub, E	D	Open hole from 91 to 420 feet. Reported yield 18 gal/min. Acidized.
* 13-604	Garry Fuller	do	1974	420	6	100	Kcgrl	1,200	330	Feb. 22, 1974	Sub, E 1	D	Open hole from 100 to 420 feet. Cemented from 100 feet to surface. Reported yield 15 gal/min.
701	Comal Independent School District, Bulverde Middle School	do	1976	467	6	84	Kcgrl	1,180	285	Mar. 10, 1976	Sub, E 3	P	Open hole from 84 to 467 feet. Cemented from 84 feet to surface. Reported yield 8 gal/min.
801	Bulverde Utility Co., well 5	do	1973	540	7	256	Kcgrl, Kccc	1,240	325	Dec. 27, 1973	Sub, E 1 1/2	P	Open hole from 256 to 540 feet. Cemented from 256 feet to surface. Reported yield 10 gal/min.
802	Bulverde Utility Co., well 6	do	1974	580	6	170	Kcgrl, Kccc	1,240	400	July 21, 1974	Sub, E 1 1/2	P	Open hole from 170 to 580 feet. Cemented from 170 feet to surface. Reported yield 17 gal/min.
803	Bulverde Utility Co., well 7	do	1974	600	6	171	Kcgrl, Kccc	1,180	330	July 17, 1974	Sub, E 1 1/2	P	Open hole from 171 to 600 feet. Cemented from 171 feet to surface. Reported yield 15 gal/min.
804	Bulverde Utility Co., well 8	do	1974	545	6	171	Kcgrl, Kccc	1,270	400 482	July 25, 1974 July 7, 1978	Sub, E 1 1/2	P	Drilled to 700 feet and caved back to 545 feet. Open hole from 171 to 545 feet. Cemented from 171 feet to surface. Reported yield 35 gal/min.1/
805	Bulverde Utility Co., well 9	do	1974	595	6	168	Kcgrl, Kccc	1,200	250	July 30, 1974	Sub, E 1 1/2	P	Open hole from 168 to 595 feet. Cemented from 168 feet to surface. Reported yield 28 gal/min.
* 806	Bulverde Baptist Church	do	1975	500	6	121	Kcgrl, Kche, Kccc	1,225	285	Apr. 21, 1975	Sub, E	P	Open hole from 121 to 500 feet. Cemented from 121 feet to surface. Reported yield 15 gal/min.
901	Haskin Water Co., Oak Village North well 3	Haskin Pump and Service, Inc.	1973	816	7	205	Kcgrl, Kccc	1,163	344	May 5, 1973	Sub, E 15	P	Open hole from 205 to 816 feet. Pump set at 490 feet.
14-201	Canyon Lake Mobile Home Estates, well 2	Kutscher Drilling Co.	1972	530	8	252	Kcgrl	1,200	325	Oct. 31, 1972	Sub, E 15	P	Open hole from 252 to 530 feet. Cemented from 252 feet to surface. Reported yield 135 gal/min.
202	Canyon Lake Mobile Home Estates, well 1	do	1964	460	8	82	Kcgrl	1,200	310	June 22, 1964	Sub, E 5	P	Open hole from 82 to 460 feet. Cemented from 82 feet to surface. Reported yield 20 gal/min with 0 feet drawdown.
203	Canyon Lake Mobile Home Estates North	--	--	350	--	--	Kcgrl	1,120	--	--	Sub, E 3 1/2	P	--
204	Canyon Lake Hills, Rolling Hills	Kutscher Drilling Co.	1972	475	8	48	Kcgrl, Kccc	1,120	210	Apr. 21, 1972	Sub, E 7 1/2	P	Open hole from 48 to 475 feet. Cemented from 48 feet to surface. Reported yield 25 gal/min.
205	Canyon Lake Hills, Lake View Park	--	--	330	8	90	Kcgrl	1,080	--	--	Sub, E 5	P	Open hole from 90 to 330 feet.
206	do	E. R. Owen Water Well Contractor	1968	335	8	96	Kcgrl	1,120	--	--	Sub, E 5	P	Open hole from 96 to 335 feet.
301	Canyon Enterprises, Inc., The Oaks well 5	Kutscher Drilling Co.	1964	200	6	42	Kcgrl	980	42	Nov. 7, 1964	--	N	Open hole from 42 to 200 feet. Cemented from 42 feet to surface. Unused public supply well.
302	Canyon Springs Resort Water Co., well 1	--	--	--	--	--	--	1,100	--	--	Sub, E 7 1/2	P	--

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
DX-68-14-303	Westhaven Development, well 1	Kutscher Drilling Co.	--	410	--	--	Kcgrl, Kcc	1,080	--	--	T, E	P	--
304	Westhaven Development, well 2	do	--	320	--	--	Kcgrl, Kcc	1,000	--	--	T, E	P	--
305	Canyon Lake Hills Water Front Park	do	1971	540	8	40	Kcgrl, Kcc	1,120	200	Jan. 4, 1971	Sub, E 5	P	Open hole from 40 to 540 feet. Reported yield 25 gal/min with 0 feet drawdown.
306	Canyon Lake Forest	--	--	--	--	--	--	1,150	--	--	Sub, E	P	--
307	Canyon Lake Hills, Scenic Heights	Kutscher Drilling Co.	1975	530	8	175	Kcgrl, Kcc	1,120	240 223	Oct. 21, 1975 May 27, 1976	Sub, E 5	P	Open hole from 175 to 530 feet. Cemented from 175 feet to surface. Reported yield 25 gal/min.
308	do	--	--	--	--	--	--	1,140	--	--	N	N	Unused public supply well.
309	do	Kutscher Drilling Co.	1973	785	8	110	Kcgrl, Kcc	1,250	--	--	Sub, E 3	P	Open hole from 110 to 785 feet.
401	Comal Independent School District, Smithson Valley High School, well 1	Hill Country Water, Inc.	1972	300	7	143	Kcgru, Kcgrl	1,280	175	Dec. 4, 1972	Sub, E 7 1/2	Irr	Open hole from 143 to 300 feet. Cemented from 143 feet to surface. Reported yield 25 gal/min.
402	Comal Independent School District, Smithson Valley High School, well 2	do	1972	600	7	153	Kcgru, Kcgrl	1,280	415	Nov. 30, 1972	Sub, E 7 1/2	P	Open hole from 153 to 600 feet. Cemented from 153 feet to surface.
15-101	U. S. Army Corps of Engineers, Comal Park, well 1	Ward and Ward Drilling Co.	1965	387	4 3	377 387	Kcgrl	990	134	Nov. 4, 1965	Sub, E 2	P	Screened from 377 to 387 feet. Cemented from 377 feet to surface. Pump set at 273 feet. Reported yield 12 gal/min with 96 feet drawdown.
104	Canyon Enterprises, Inc., The Oaks well 4	Kutscher Drilling Co.	1965	470	8	240	Kcgrl	960	180	Oct. 7, 1964	Sub, E	P	Open hole from 240 to 470 feet. Cemented from 240 feet to surface. Reported yield 50 gal/min with 200 feet drawdown.
105	Canyon Enterprises, Inc., The Oaks well 6	do	1964	510	8	255	Kcgrl	980	200	Dec. 1, 1964	--	P	Open hole from 255 to 510 feet. Cemented from 255 feet to surface.
107	Canyon Enterprises, Inc., The Oaks well 8	do	1965	263	8	81	Kcgru, Kcgrl	1,080	150	Mar. 18, 1965	N	N	Open hole from 81 to 263 feet. Cemented from 81 feet to surface. Reported yield 40 gal/min with 0 feet drawdown. Unused public supply well.
108	Canyon Enterprises, Inc., The Oaks well 9	do	1967	225	8	48	Kcgru, Kcgrl	1,025	115	Jan. 1967	Sub, E 7 1/2	P	Open hole from 48 to 225 feet. Cemented from 48 feet to surface. Reported yield 35 gal/min with 8 feet drawdown.
109	Canyon Enterprises, Inc., The Oaks well 10	--	--	--	--	--	--	1,020	--	--	Sub, E	P	--
110	Tom Sheridan Properties, Inc., Canyon Lake Village well 11	E. R. Owen Water Well Contractor	--	460	8	441	Kcgrl	1,270	--	--	Sub, E 7 1/2	P	Open hole from 441 to 460 feet.
201	Tom Sheridan Properties, Inc. Canyon Lake Village	Kutscher Drilling Co.	1965	530	8	40	Kcgru, Kcgrl	1,120	350	Aug. 13, 1965	Sub, E 15	P	Open hole from 40 to 530 feet. Cemented from 40 feet to surface. Pump set at 475 feet. Reported yield 20 gal/min with 0 feet drawdown.
202	U. S. Army Corps of Engineers, North Park	Ward and Ward Drilling Co.	1965	549	4 3	539 549	Kcgrl	995	127	Nov. 4, 1965	Sub, E	P	Screened from 539 to 549 feet. Cemented from 539 feet to surface. Reported yield 12 gal/min with 129 feet drawdown.

See footnotes at end of table.

COMAL COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
DX-68-15-203	Tom Sheridan Properties, Inc., Canyon Lake Village Pool well	Hill Country Water, Inc.	1974	660	8	54	Kcgru, Kcgrl	1,080	395	July 9, 1974	Sub, E 10	P	Open hole from 54 to 660 feet. Cemented from 54 feet to surface. Reported yield 18 gal/min.
204	S. D. David, Jr.	E. R. Owen Water Well Contractor	1962	502	--	80	Kcgru, Kcgrl	830	--	--	Sub, E 10	P	Open hole from 80 to 502 feet. Cemented from 80 feet to surface.
205	do	Hill Country Water, Inc.	1975	460	6	180	Kcgru, Kcgrl	830	55	May 27, 1975	Sub, E 7 1/2	P	Open hole from 180 to 460 feet. Cemented from 180 feet to surface. Reported yield 60 gal/min.
501	Tom Sheridan Properties, Inc., Ponderosa Unit 2	do	1974	460	6	40	Kcgru	760	350	July 12, 1974	Sub, E 3	P	Open hole from 40 to 460 feet. Cemented from 40 feet to surface. Reported yield 10 gal/min.
19-301	Ralph E. Fair, Jr., well 1	J. R. Johnson Drilling	1973	1,008	--	--	Kcgrl, Kccc, Kcs, Kcho	1,260	125	Feb. 12, 1976	N	N	1/
21-201	Bulverde Utility Co., well 1	Kutscher Drilling Co.	1967	635	7	152	Kcgrl, Kccc	1,240	--	--	Sub, E 5	P	Open hole from 152 to 635 feet. Cemented from 152 feet to surface. Acidized.
202	Bulverde Utility Co., well 2	Dealer Supply Co.	1971	635	7	152	Kcgrl, Kccc	1,240	416	Nov. 15, 1971	N	N	Open hole from 152 to 635 feet. Cemented from 152 feet to surface. Reported yield 10 gal/min with 30 feet drawdown. Unused public supply well. Acidized.
203	Bulverde Utility Co., well 3	Hill Country Water, Inc.	1972	580	7	200	Kcgrl, Kccc	1,230	375	Sept. 7, 1972	Sub, E 10	P	Open hole from 200 to 580 feet. Cemented from 200 feet to surface. Reported yield 65 gal/min. Acidized.
204	Bulverde Utility Co., well 4	do	1973	630	7	255	Kcgrl, Kccc	1,230	425	June 22, 1976	Sub, E 20	P	Open hole from 255 to 630 feet. Cemented from 255 feet to surface. Reported yield 30 gal/min. Acidized.
301	Haskin Water Co., Oak Village North, well 1	Haskin Pump and Service, Inc.	1968	480	7	200	Kcgrl, Kccc	1,008	150 184	Sept. 10, 1968 May 17, 1976	Sub, E	P	Open hole from 200 to 480 feet. Cemented from 200 feet to surface.
302	Haskin Water Co., Oak Village North, well 2	do	1968	523	7	200	Kcgrl, Kccc	1,015	205	Nov. 20, 1968	Sub, E 15	P	Open hole from 200 to 523 feet. Cemented from 200 feet to surface.
22-401	Mrs. Clara Wuest Heideman, Natural Bridge Cavern	Kutscher Drilling Co.	1964	330	7	15	Kcgru	1,105	280	May 26, 1964	Sub, E 2	P	Open hole from 15 to 330 feet. Cemented from 15 feet to surface. Reported yield 30 gal/min.

* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

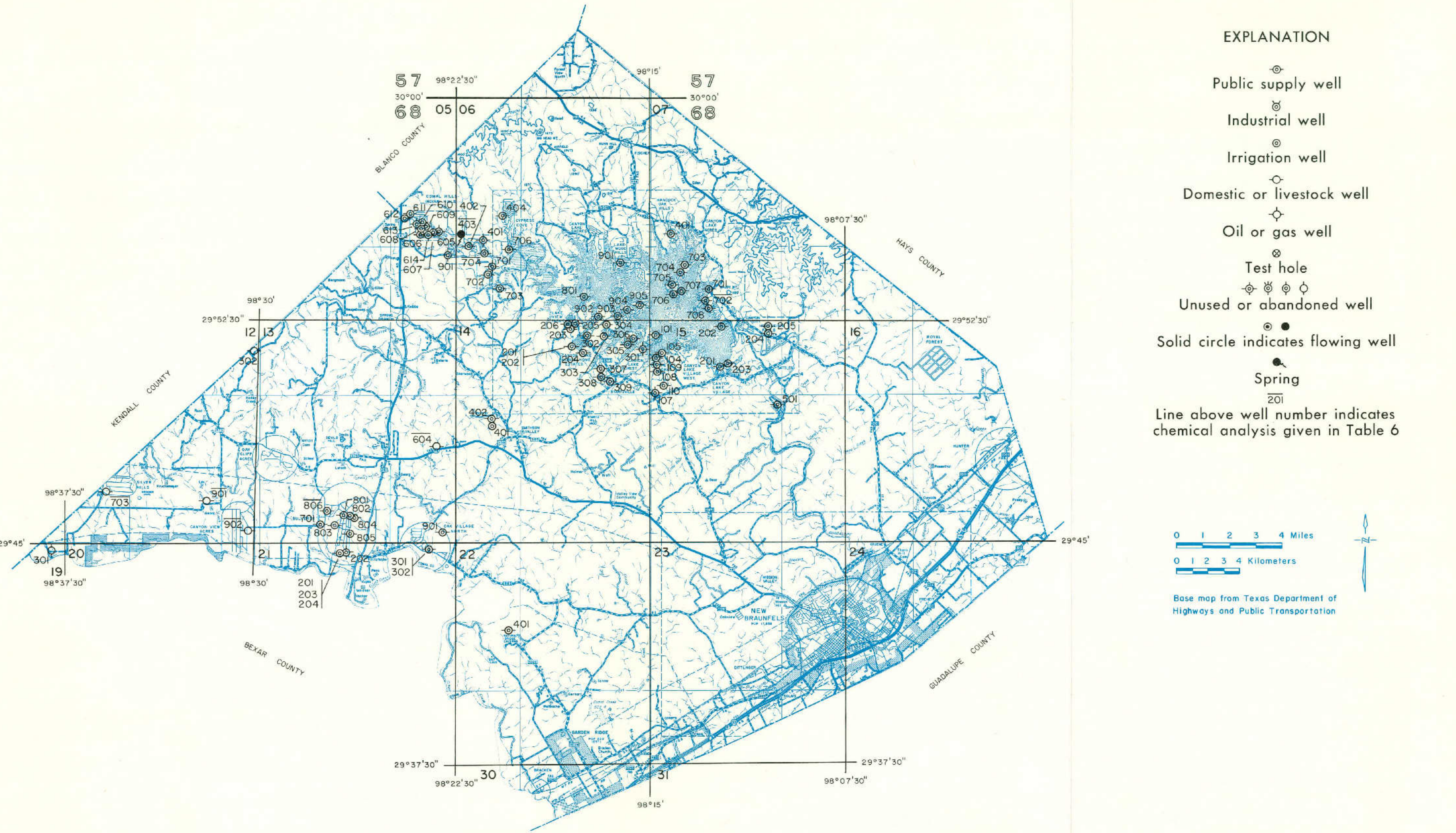
Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Kegrl, lower member of the Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation.

Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

Analyses by Texas State Department of Health.

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
DX-68-06-403	Kccc	--	Oct. 7, 1943	--	--	84	24	11	--	352	17	16	--	3.8	--	329	308	--	--	7	0.2	0.0
403	Kccc	--	Mar. 28, 1945	--	--	--	--	--	--	271	9	13	--	1.8	--	--	201	--	--	--	--	--
403	Kccc	--	June 29, 1977	12	--	71	10	6	--	254	10	10	0.2	< .4	--	244	220	422	7.8	6	.1	.0
704	Kccc	120	do	13	--	94	11	7	--	334	9	10	.3	< .4	--	308	283	526	7.6	5	.1	.0
07-702	Kegrl	440	July 27, 1977	13	--	115	15	8	--	390	21	14	.2	2.5	--	380	347	600	7.9	5	.1	.0
12-703	Kegrl	340	Aug. 20, 1976	11	--	98	17	6	--	357	16	10	.4	2.3	--	336	316	559	8.2	4	.1	.0
703	Kegrl	340	June 29, 1977	14	--	90	15	5	--	334	11	9	.4	2.4	--	311	286	528	7.9	4	.1	.0
901	Kche, Kegrl, Kccc	360	Nov. 24, 1974	15	--	72	32	15	--	346	42	13	.5	< .4	--	360	310	589	7.9	9	.3	.0
901	Kche, Kegrl, Kccc	360	July 25, 1975	10	--	76	31	13	--	354	37	12	.5	< .4	--	353	315	590	7.7	8	.3	.0
902	Kche, Kegrl, Kccc	420	Nov. 24, 1974	15	--	93	18	7	--	342	19	13	.5	6.0	--	339	307	560	7.7	5	.1	.0
902	Kche, Kegrl, Kccc	420	Aug. 3, 1976	11	--	89	22	8	3.0	333	27	12	.6	4.7	--	341	315	563	8.5	5	.1	.0
13-604	Kegrl	420	Aug. 2, 1976	10	--	83	8	6	1.0	253	12	11	.2	4.7	--	260	239	438	8.6	5	.1	.0
806	Kche, Kegrl, Kccc	500	do	12	--	81	44	20	4.0	368	87	21	1.1	6.0	--	457	382	735	7.8	10	.4	.0



Location of Selected Wells, Springs, and Oil and Gas Tests in Comal County

GILLESPIE COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.

Water level : Reported water levels given in feet; measured water levels given in feet and tenths.

Method of lift and type of power: C, cylinder; Cf, centrifugal; E, electric; J, jet; N, none; Sub, submersible; T, turbine; W, windmill. Number indicates horsepower.

Use of water : D, domestic; Irr, irrigation; N, none; P, public supply; S, livestock.

Water-bearing units : Kef, Fredericksburg Group, undifferentiated; Kcgr, Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation; Ch, Hickory Sandstone Member of the Riley Formation.

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
* KK-56-38-301	Edwin Anderegg	--	--	170	--	--	Kche	1,874	141.8	Nov. 21, 1969	C, W	D, S	--
* 40-401	Marcus Rode	Lonnie Itz Well Drilling	1955	155	6	155	Kche	1,840	113.4	Oct. 22, 1966	Sub, E 3/4	D, S	Slotted from 115 to 155 feet.
* 47-301	Mrs. Gordon Kidd	--	1935	84	6	--	Kcgr, Kche	1,945	4.4	Nov. 6, 1969	C, W	N	Unused livestock well.
* 48-404	Martin Dittmar	--	--	102	--	--	Kcf, Kcgr	1,995	13.5	Oct. 14, 1969	C, W, E 3/4	D, S	--
901	-- Hayden, Estate	Thousand Island Oil Co.	--	1,505	--	--	--	1,850	--	--	--	--	Oil test.
* 55-202	Claton Feller	--	--	101	7	--	Kcf, Kcgr	1,984	78.4	Oct. 15, 1969	C, W	D, S	--
* 302	J. B. Johnson, Jr.	--	--	168	6	--	Kcf, Kcgr	2,030	--	--	C, W	S	--
* 56-402	Mrs. J. Hardin Penny	-- Shaper	1952	250	6	250	Kcgr, Kche	1,992	80.2	Nov. 20, 1969	C, W	S	--
* 57-34-402	Louis Lee Bruns	-- Model	--	217	7	--	Kche	2,010	133.1	Nov. 7, 1969	C, W	S	--
* 501	Billy Teague	--	--	30	--	--	Kche	1,705	--	--	J, E 2/3	D, S	--
* 502	Louis Lee Bruns	--	--	68	36	--	Kche	1,770	42.4	Nov. 7, 1969	J, E	S	--
* 503	Levy Ersch	--	--	66	6	--	Kche	1,815	49.1	do	C	N	Unused livestock well.
* 803	Louis Lee Bruns	Milton Carr Water	1951	78	--	--	Kche	1,788	16	Oct. 30, 1969	C, E	D, S	--
* 804	Levy Ersch	Lonnie Itz Well Drilling	1967	118	8	118	Kche	1,790	45.5	Oct. 10, 1969	Sub, E 1/2	D, S	--
35-703	Raymond Wilke	Lone Star Pump Service	1976	245	8	28	Kche	1,720	3.5	July 12, 1976	Sub, E 7 1/2	Irr	Open hole from 28 to 245 feet. Reported yield 115 gal/min.
* 41-102	Gus Basse	do	1960	275	--	--	Kche	1,937	171.3	Nov. 4, 1969	Sub, E 1/2	D, S	--
301	City of Fredericksburg, Stehling No. 2	Ed Kipps	1948	500	16 10	254 332	Kche, Ch	1,985	194.0 195.9	May 2, 1962 Nov. 8, 1962	Sub, E 30	P	Oil test converted to water well. Reworked in 1962. Slotted from 218 to 332 feet. Gravel packed. Open hole from 332 to 500 feet. Pump set at 300 feet. Reported yield 300 gal/min. 2/
* 609	Paul Stehling	Milton Carr Water	--	92	--	--	Kche	1,901	--	--	J, E 1	D, S	Pump set at 92 feet.
611	Arthur Danz	Lone Star Pump Service	1975	143	5	143	Kche	1,770	32	Sept. 10, 1975	Sub, E 3	Irr	Perforated. Reported yield 40 gal/min.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
KX-57-41-612	Crawford and Hennig	Lonnie Itz Well Drilling	--	140	6	140	Kche	1,765	--	--	Sub, E 3	Irr	--
613	Gerold Schmidt	do	1976	202	6	192	Kche	1,770	34.7	Oct. 20, 1977	Sub, E 3	Irr	Slotted from 112 to 190 feet. Open hole from 192 to 202 feet. Reported yield 45 gal/min with 2-3/4 feet drawdown.
* 801	John A. Gonzales	Itz Well Service	1975	42	8	42	Kche	1,710	11	Mar. 15, 1975	Cf, E 3	Irr	Slotted from 11 to 18 feet and 24 to 42 feet. Cemented from 5 feet to surface. Reported yield 65 gal/min with 1 foot drawdown.
* 802	Floyd M. Burgess	--	--	Spring	--	--	Kche	1,700	--	--	Flows	S	Reported flow 30 gal/min.
* 803	John A. Gonzales	Victor Krauskoph	--	120	--	--	Kche	1,760	--	--	Sub, E	D, S	Reported yield 12 gal/min.
804	Roy Heiner	Lone Star Pump Service	1976	151	5	151	Kche	1,678	18	Feb. 19, 1976	Sub, E 1 1/2	Irr	Perforated.
* 901	City of Fredericksburg, National Guard well 1	King Stokes	1956	400	8	247	Kche	1,762	90	Mar. 3, 1962	Sub, E 15	P	Caved in at 275 feet. Open hole from 247 to 275 feet. 1/2/
902	City of Fredericksburg, Hennig well 1	Texas Water Wells, Inc.	1957	279	26 10 --	100 105 275	Kche	1,755	62	Jan. 1958	N	N	Drilled to 397 feet and plugged back to 279 feet. Screened from 105 to 275 feet. Unused public supply well. 1/2/
903	City of Fredericksburg, Basse well 1	Layne Texas Co.	1959	352	8	165	Kche	1,757	76	Apr. 17, 1959	N	N	Drilled to 426 feet and plugged back to 352 feet. Open hole from 165 to 352 feet. Abandoned. 1/2/
905	City of Fredericksburg, Hennig well 2	do	1958	394	--	--	Kche	1,755	--	--	N	N	Plugged. 1/2/
907	Eddie Oestrich	Lonnie Itz Well Drilling	1974	148	6 5	97 148	Kche	1,740	50	Nov. 21, 1974	Sub, E	D	Slotted from 108 to 146 feet. Gravel packed. Reported yield 22 gal/min with 2 feet drawdown.
* 42-306	Harold Kneese	do	1960	295	--	--	Kche	2,023	--	--	C, W	S	--
704	Jack Smith	Lone Star Pump Service	1974	100	5	100	Kche	1,670	25	Nov. 20, 1974	Sub, E 1	Irr	Slotted. Gravel packed. Reported yield 30 gal/min.
801	Kelly White	do	1976	105	5	105	Kche	1,660	10	Jan. 28, 1976	Sub, E 3	Irr	Perforated. Gravel packed.
* 49-102	T. A. Immel	--	--	80	5	--	Kche	1,720	--	--	T, E 5	Irr, S	2/
* 103	do	Howard Cravens	1957	115	6	115	Kche	1,710	--	--	T, E 3	Irr	Slotted. 2/
106	-- Rayborn	Joe Burkett, Jr.	1948	775	--	--	--	1,900	--	--	--	--	Oil test.
* 108	T. A. Immel	Lonnie Itz Well Drilling	1975	79	5	78	Kche	1,710	29	July 18, 1975	Sub, E 1	D	Slotted from 63 to 77 feet. Cemented from 15 feet to surface. Reported yield 40 gal/min with 10 feet drawdown.
202	Vern Rogers	W. E. Page Water	1976	200	8	200	Kche	1,665	80	Nov. 20, 1976	C, W	Irr	Slotted. Reported yield 140 gal/min with 200 feet drawdown.
* 303	Milton Boos	--	1929	151	8	--	Kche	1,656	16.1	Nov. 27, 1962	Sub, E 1/3	S	2/
* 304	do	Werner Wehmeymer	1958	214	6	214	Kche	1,639	45 51.1	1958 Nov. 27, 1962	Sub, E 1	D, S	Slotted. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* KK-57-50-304	R. S. King	Lone Star Pump Service	1974	91	5	91	Kche	1,570	49.4 41	Dec. 19, 1962 Dec. 2, 1974	Sub, E I	Irr	Perforated. Reported yield 60 gal/min. 2/
402	-- Raybom	B. & G. Lochte	1948	1,030	--	--	--	1,600	--	--	--	--	Oil test.

* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.
2/ Well also appears in Texas Water Commission Memorandum Report 63-03, "Investigation of Ground-Water Resources Near Fredericksburg, Texas".

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

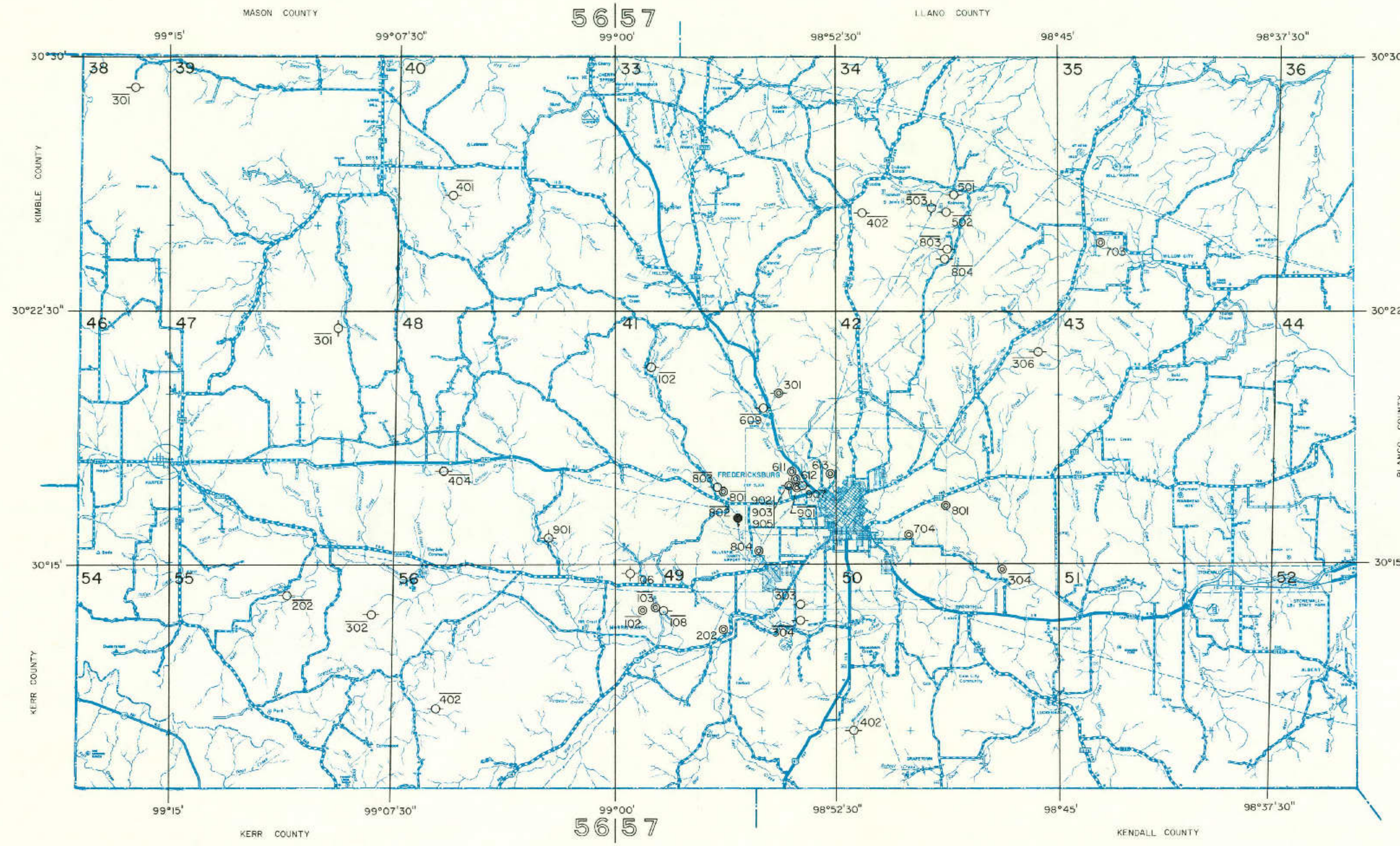
Water-bearing unit: Kcf, Fredericksburg Group, undifferentiated; Kcgr, Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation.
Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

Analyses by Texas State Department of Health.

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
KK-56-38-301	Kche	170	Nov. 21, 1969	16	--	91	44	23	--	436	23	45	0.4	7.0	--	463	410	781	7.7	11	0.4	0.0
40-401	Kche	155	Oct. 22, 1969	14	--	84	44	24	--	434	19	40	.5	< .4	--	439	392	754	7.6	12	.5	.0
47-301	Kche, Kcgr	84	Nov. 6, 1969	6	--	40	26	20	--	200	18	44	1.7	3.0	--	257	208	474	7.5	17	.6	.0
48-404	Kcgr, Kcf	102	Oct. 14, 1969	12	--	71	29	18	--	338	11	30	.3	< .4	--	337	295	584	7.5	12	.4	.0
55-202	Kcgr, Kcf	101	Oct. 15, 1969	12	--	81	41	12	--	436	8	18	.4	< .4	--	387	373	666	7.6	7	.2	.0
302	Kcgr, Kcf	168	Oct. 16, 1969	12	--	66	40	13	--	382	10	21	.4	< .4	--	350	328	609	7.6	8	.3	.0
56-402	Kche, Kcgr	250	Nov. 20, 1969	8	--	71	40	6	--	398	8	9	.4	< .4	--	338	344	595	7.6	4	.1	.0
57-34-402	Kche	217	Nov. 7, 1969	10	--	42	33	9	--	289	6	11	.7	< .4	--	254	240	451	7.9	8	.2	.0
501	Kche	30	do	19	--	92	56	23	--	407	33	94	.5	5.0	--	522	460	904	7.4	10	.4	.0
502	Kche	68	do	22	--	81	139	54	--	560	61	165	1.2	155	--	953	770	1,510	7.6	13	.8	.0
503	Kche	66	do	12	--	86	57	12	--	500	12	27	.5	6.0	--	458	448	792	7.4	5	.2	.0
803	Kche	78	Oct. 30, 1969	13	--	75	47	24	--	451	17	27	.5	5.0	--	430	384	732	7.6	12	.5	.0
804	Kche	118	do	13	--	78	39	9	--	397	10	21	.4	3.0	--	368	353	632	7.5	5	.2	.0
41-102	Kche	275	Nov. 4, 1969	11	--	83	33	16	17	320	24	32	.3	77	--	451	343	715	7.9	9	.3	.0
609	Kche	92	Oct. 29, 1969	13	--	59	45	17	--	372	19	26	.5	< .4	--	362	334	645	7.3	10	.4	.0
801	Kche	42	Dec. 3, 1975	15	--	73	40	13	--	381	14	27	.4	< .4	--	370	347	645	8.4	8	.3	.0
802	Kche	--	do	19	--	96	23	48	--	371	26	56	.4	39	--	489	335	788	8.3	24	1.1	.0
803	Kche	120	Feb. 5, 1976	17	--	92	41	42	--	365	34	94	.5	27	--	526	401	915	7.5	19	.9	.0
901	Kche	400	May 25, 1956	--	0.6	58	42	19	--	384	25	28	.5	2.7	--	--	320	--	7.8	12	.4	.0
901	Kche	400	Dec. 1, 1960	12	--	62	39	18	--	342	20	34	.3	3.8	--	357	315	657	7.0	11	.4	.0
42-306	Kche	295	Oct. 30, 1969	8	--	52	30	7	--	292	8	12	.2	< .4	--	261	254	460	7.6	6	.1	.0
306	Kche	295	July 23, 1974	12	--	54	34	9	--	314	9	15	.3	.6	--	288	275	506	8.0	7	.2	.0
49-102	Kche	80	Nov. 13, 1962	19	--	94	48	48	--	412	31	110	.2	10	--	563	431	906	7.2	19	1.0	.0
103	Kche	115	do	23	--	146	58	196	--	426	104	378	.2	39	--	1,154	603	1,690	7.2	41	3.4	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
KX-57-49-108	Kche	79	Dec. 2, 1975	20	--	112	50	139	--	436	82	214	0.4	63	--	894	484	1,490	8.3	38	2.7	0.0
303	Kche	151	Dec. 3, 1975	20	--	98	63	41	4.0	434	33	136	.4	6.0	--	614	493	1,050	8.3	15	.7	.0
304	Kche	214	Nov. 27, 1962	20	0.3	80	66	45	--	398	47	132	.7	19	--	605	470	1,095	7.4	17	.9	.0
304	Kche	214	Dec. 3, 1975	20	--	78	61	67	--	425	50	133	.9	15	--	633	446	1,060	7.8	25	1.3	.0
50-304	Kche	90	Aug. 2, 1977	30	--	124	51	109	--	520	59	160	.3	30	--	819	520	1,330	7.6	31	2.0	.0



EXPLANATION

Public supply well

Industrial well

Irrigation well

Domestic or livestock well

Oil or gas well

Test hole

Unused or abandoned well

Solid circle indicates flowing well

Spring

201

Line above well number indicates chemical analysis given in Table 6

0 1 2 3 4 Miles

0 1 2 3 4 Kilometers

Base map from Texas Department of Highways and Public Transportation

Location of Selected Wells, Springs, and Oil and Gas Tests in Gillespie County

HAYS COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.
Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of power: C, cylinder; E, electric; N, none; Sub, submersible; T, turbine; W, windmill. Number indicates horsepower.
Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, livestock.
Water-bearing units : Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kchs, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation; Kct, Trinity Group, undifferentiated.

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
* LR-57-47-302	P. W. Agnell	Glass and Tucker, Inc.	1971	111	5	111	Kcgrl	910	80	1971	C, W	S	Perforated from 92 to 96 feet. Pump set at 105 feet.
601	S. H. Hurlbut No. 1	M. B. Rudman	1970	4,620	--	--	--	864	--	--	--	--	Oil test. 1/
55-301	Jack Brown	Glass and Tucker, Inc.	1977	510	6	288	Kcgrl, Kccc	1,317	300	June 21, 1977	--	D	Open hole from 288 to 510 feet. Cemented from 60 feet to surface. Reported yield 50 gal/min with 0 feet drawdown. 1/
602	John R. Martindale, Estate	do	1972	470	7	22	Kcgrl, Kccc	1,260	320	May 9, 1972	Sub, E 1	P	Open hole from 22 to 470 feet. Cemented from 22 feet to surface. Reported yield 60 gal/min.
* 603	M. S. Bass	do	1977	480	6	220	Kcgrl	1,370	325	June 26, 1977	--	D	Open hole from 220 to 480 feet. Cemented from 40 feet to surface. Reported yield 20 gal/min. 1/
* 605	Artis Wilkerson	do	1977	480	6	41	Kcgrl, Kchs, Kccc	1,255	236	June 27, 1977	Sub, E	D	Open hole from 41 to 480 feet. 1/
701	J. L. Harwell No. 1	Shell Oil Co.	1956	4,660	--	--	--	1,379	--	--	--	--	Well C-33 in Texas Board of Water Engineers Bulletin 6004. Oil test. 1/
901	Olsa A. Kelly, Jr.	Glass and Tucker, Inc.	1977	480	6	23	Kcgrl	1,350	318	June 14, 1977	Sub, E 3	D	Open hole from 23 to 480 feet. Pump set at 441 feet. Reported yield 25 gal/min with 50 feet of drawdown. 1/
* 56-101	Jerry Nelson	do	1973	500	6	20	Kcgr	1,290	320	Aug. 13, 1973	Sub, E	D, S	Open hole from 20 to 500 feet. Cemented from 20 feet to surface. Reported yield 100 gal/min with 160 feet drawdown.
* 201	Wiley Hayden	--	--	290	6	6	Kcgru	1,124	107	Oct. 1, 1974	N	N	Open hole from 6 to 290 feet. 1/
* 202	do	--	1974	365	6	20	Kcgr	1,121	--	--	Sub, E 3	D	Open hole from 20 to 365 feet.
* 203	do	Richard L. Bible Drilling Co.	1974	165	5	20	Kcgru	1,100	80	Oct. 1, 1974	N	N	Open hole from 20 to 165 feet. 1/
204	V. F. Taylor	Glass and Tucker, Inc.	1976	455	6	44	Kcgru, Kcgrl	1,145	220 204	Sept. 11, 1976 Oct. 14, 1977	N	N	Open hole from 44 to 455 feet. Cemented from 44 feet to surface. Reported yield 15 gal/min with 235 feet drawdown. 1/
* 401	Antone Allen, Walnut Spring	--	--	Spring	--	--	Kcgru	1,145	--	--	Flows	D	Spring B-44 in Texas Board of Water Engineers Bulletin 6004. Estimated flow 50 gal/min.
* 701	J. D. Spillar	Glass and Tucker, Inc.	1974	260	5	260	Kcgr	1,085	65	May 2, 1974	Sub, E 1	D, S	Perforated from 60 to 65 feet and 220 to 240 feet. Cemented from 40 feet to surface. Pump set at 240 feet. Reported yield 150 gal/min with 195 feet drawdown.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
LR-57-56-702	Dripping Springs Water Supply Corp.	Glass and Tucker, Inc.	1975	345	6	45	Kcgrl, Kccc	1,030	--	--	T, E 10	P	Open hole from 45 to 345 feet. Cemented from 41 feet to surface. Acidized. 1/
703	do	Texas Water Wells, Inc.	1964	820	8	700	Kccc, Kcbo	1,030	--	--	T, E 10	P	Slotted from 315 to 345 feet, 395 to 440 feet, 495 to 560 feet, 600 to 640 feet, and 660 to 690 feet. Open hole from 700 to 820 feet. Cemented from 310 feet to surface. Pump set at 200 feet.
* 901	J. P. Towers	--	1961	--	--	--	Kcgr	1,050	--	--	Sub, E	D	--
* 63-501	A. O. Reichert	Glass and Tucker, Inc.	1974	625	6	39	Kct	1,270	300	Aug. 20, 1975	Sub, E 3/4	D	Open hole from 39 to 625 feet. Cemented from 39 feet to surface. Pump set at 399 feet. Reported yield 30 gal/min.
601	Woodcreek Development, Westside well 4	Central Texas Drilling Co.	1976	300	8	25	Kcgrl, Kccc	1,000	--	--	Sub, E 20	Irr	Open hole from 25 to 300 feet. Cemented from 25 feet to surface.
801	G. W. Haschke	Kutscher Drilling Co.	--	225	6	90	Kcgrl, Kccc	970	31.0 42	Sept. 28, 1977 Nov. 17, 1977	N	N	Open hole from 90 to 225 feet. Cemented from 90 feet to surface. 1/
802	Doyal S. Peters	Central Texas Drilling Co.	1977	230	8	20	Kcgrl, Kccc	1,065	129.9 132	Sept. 22, 1977 Nov. 17, 1977	N	N	Open hole from 20 to 230 feet. 1/
803	do	do	1977	207	8	24	Kcgrl, Kccc	1,085	--	--	Sub, E 3	Irr	Open hole from 24 to 207 feet. Cemented from 24 feet to surface. Pump set at 190 feet. Reported yield 60 gal/min.
901	Woodcreek Development, Westside well 1	do	1976	300	6	56	Kcgrl, Kccc	1,050	--	--	Sub, E 30	Irr	Open hole from 56 to 300 feet. Cemented from 56 feet to surface. Reported yield 250 gal/min.
902	Woodcreek Development, Westside well 2	do	1976	370	8	13	Kcgrl, Kccc	1,055	--	--	Sub, E 20	Irr	Open hole from 13 to 370 feet. Cemented from 13 feet to surface. Reported yield 100 gal/min.
903	Woodcreek Development, Westside well 3	do	1976	300	8	21	Kcgrl, Kccc	1,045	--	--	Sub, E 20	Irr	Open hole from 21 to 300 feet. Cemented from 21 feet to surface. Reported yield 200 gal/min.
904	Woodcreek Development	do	1976	400	10 8	180 240	Kccc	1,005	80	Mar. 30, 1976	Sub, E 30	P, Irr	Open hole from 240 to 400 feet. Cemented from 180 feet to surface. Reported yield 300 gal/min with 10 feet drawdown.
905	Woodcreek Development, Jacob's well	--	--	Spring	--	--	Kccc	930	--	--	Flows	N	Spring D-69 in Texas Board of Water Engineers Bulletins 6004 and 5608. Estimated flow 1,070 gal/min on Jan. 26, 1955.
64-701	Joe M. Redinger	Owen Drilling Co.	1974	287	6	19	Kcgr	1,030	110	Aug. 29, 1974	Sub, E 1 1/2	Ind	Open hole from 19 to 287 feet. Cemented from 19 feet to surface. Pump set at 275 feet. Reported yield 15 gal/min with 177 feet drawdown.
702	Woodcreek Development, Eastside well 1	Central Texas Drilling Co.	1974	400	6	32	Kcgrl, Kccc	940	-20	June 5, 1974	Sub, E 20	Irr	Open hole from 32 to 400 feet. Cemented from 32 feet to surface.
703	Woodcreek Development, Eastside well 2	--	--	460	8	--	Kcgrl, Kccc	950	--	--	Sub, E 20	Irr	--
704	Woodcreek Development, Eastside well 3	--	--	450	8	--	Kcgrl, Kccc	955	--	--	Sub, E 20	Irr	--
705	Wimberly Water Supply Corp., well 1	Central Texas Drilling Co.	1975	400	10	180	Kcgrl, Kccc	920	--	--	Sub, E 30	P	Open hole from 180 to 400 feet. Cemented from 180 feet to surface. Pump set at 300 feet.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
LR-57-64-706	Wimberly Water Supply Corp., well 2	Austin Pump and Supply Co.	1966	415	8	180	Kegrl, Kccc	920	25	Aug. 30, 1966	Sub, E 30	P	Open hole from 180 to 415 feet. Cemented from 180 feet to surface. Pump set at 220 feet. Reported yield 242 gal/min with 64 feet drawdown.
707	Wimberly Water Supply Corp., well 3	Glass and Tucker, Inc.	1974	400	--	180	Kegrl, Kccc	920	--	--	Sub, E 60	P	Open hole from 180 to 400 feet. Cemented from 180 feet to surface.
708	Wimberly Water Supply Corp.	Elbert Williamson	1954	620	6	22	Kegru, Kegrl, Kccc	1,060	145	Apr. 20, 1978	N	N	Open hole from 22 to 620 feet. Unused public supply well. 1/
* 58-49-103	Amanda Hudson	Richard L. Bible Drilling Co.	1968	705	7	30	Kegrl, Kche, Kccc	1,190	--	--	Sub, E 2	D	Open hole from 300 to 705 feet. Pump set at 683 feet.
* 114	John C. Stanley	Central Texas Drilling Co.	1970	860	7	844	Kcho	1,135	350 218.5	Apr. 28, 1970 Sept. 8, 1970	Sub, E	D	Slotted from 571 to 613 feet and 676 to 844 feet. Open hole from 844 to 860 feet. Cemented from 565 feet to surface. Reported yield 15 gal/min. 1/
118	Mrs. F. J. Turck	S. W. Glass	1931	623	6	--	Kegr	1,200	--	--	Sub, E	D	Well B-63 in Texas Board of Water Engineers Bulletin 6004. Deepened from 235 to 623 feet in Nov. 1950.
* 402	C. A. Sears	Roy A. Farrer Drilling Co.	1962	495	8	17	Kegr	1,180	295	Nov. 18, 1962	Sub, E 1 1/2	D	Open hole from 17 to 495 feet. Reported yield 15 gal/min with 25 feet drawdown.
* 403	do	Glass and Tucker, Inc.	1947	400	8	--	Kegru	1,290	--	--	C, E	D	--
* 404	Wilburn Foster	Dick Sanders Drilling Co.	1974	750	6	40	Kegrl, Kche, Kccc	1,152	360	May 11, 1973	N	N	Open hole from 40 to 750 feet. 1/
505	-- Forgy No. 1	--	--	--	--	--	--	1,157	--	--	--	--	1/
68-08-101	Wimberly Water Supply Corp.	--	1968	1,165	8	--	Kct	1,085	370	Oct. 14, 1977	N	N	Abandoned. 1/
102	do	Glass and Tucker, Inc.	1978	555	--	--	Kegrl, Kccc	890	--	--	--	P	1/

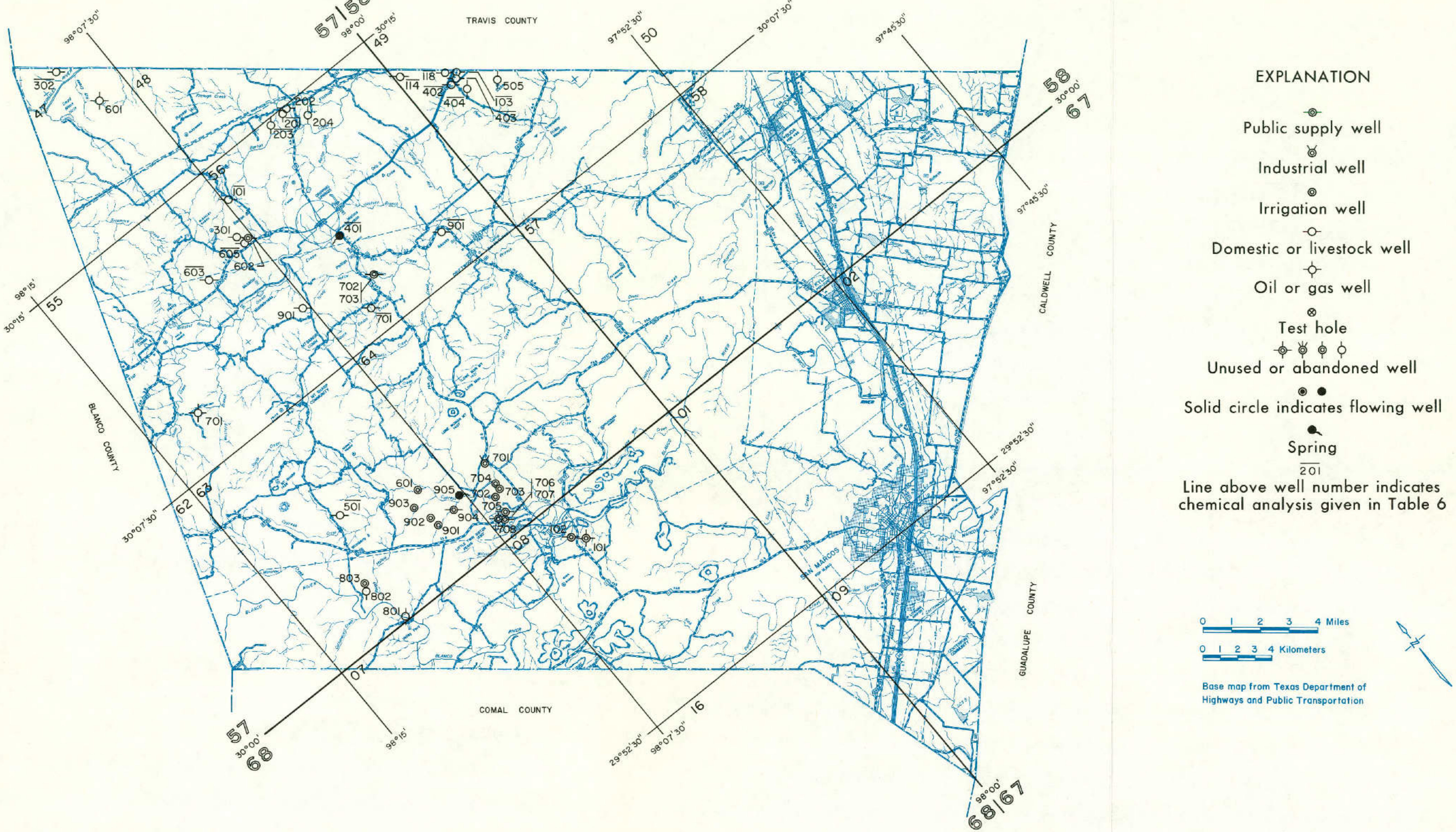
* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation; Kct, Trinity Group, undifferentiated.
Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.
Analyses by Texas State Department of Health.

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
LR-57-47-302	Kcgrl	111	May 26, 1972	15	--	81	39	13	--	410	14	22	0.3	7.0	--	392	365	645	7.6	7	0.2	0.0
55-603	Kcgrl	480	June 16, 1977	12	--	180	138	35	16	399	690	43	3.5	< .4	--	1,314	1,020	1,680	7.6	7	.4	.0
605	Kche, Kcgrl, Kccc	480	June 27, 1977	10	--	96	86	27	--	455	216	30	3.6	1.4	--	693	590	1,065	7.8	9	.4	.0
605	Kche, Kcgrl, Kccc	480	do	12	--	261	166	64	--	351	1,060	52	2.3	.8	--	1,790	1,340	2,030	7.8	9	.7	.0
56-101	Kcgr	500	Aug. 4, 1976	11	--	145	115	35	13	455	470	40	3.2	1.3	--	1,057	830	1,450	7.6	8	.5	.0
201	Kcgru	290	Oct. 1, 1974	12	--	690	24	13	--	345	1,460	26	1.5	55	--	2,451	1,820	2,380	7.4	2	.1	.0
202	Kcgr	365	do	10	--	630	75	15	--	340	1,540	21	2.8	.2	--	2,461	1,880	2,440	7.3	2	.1	.0
202	Kcgr	365	July 25, 1975	8	--	520	85	13	--	348	1,270	28	2.2	< .4	--	2,097	1,660	2,170	7.5	2	.1	.0
202	Kcgr	365	Aug. 18, 1977	13	--	635	109	14	--	353	1,619	20	2.1	< .4	--	2,586	2,033	2,600	7.6	1	.1	.0
203	Kcgru	165	Oct. 1, 1974	12	--	115	83	13	--	417	258	22	2.1	< .4	--	710	630	1,036	7.6	4	.2	.0
401	Kcgru	--	Sept. 2, 1937	--	--	87	19	--	1.0	305	20	20	--	--	--	297	297	--	--	--	--	.0
701	Kcgr	260	Aug. 4, 1976	11	--	48	16	6	1.0	207	15	10	.2	< .4	--	209	186	362	8.1	7	.1	.0
901	Kcgr	--	Apr. 21, 1977	9	4.1	101	46	8	--	325	174	14	1.5	< .4	--	517	441	787	7.5	4	.1	.0
901	Kcgr	--	June 24, 1977	10	--	118	55	8	--	332	239	15	1.8	< .4	--	610	520	907	7.6	3	.1	.0
63-501	Kct	625	Aug. 4, 1976	10	--	81	22	7	2.0	318	19	12	.3	2.8	--	312	294	524	8.4	5	.1	.0
58-49-103	Kche, Kcgrl, Kccc	705	July 1, 1968	12	--	174	67	12	.0	370	371	19	2.4	1.0	--	840	710	1,570	7.3	4	.1	.0
114	Kcho	850	Sept. 3, 1970	15	--	221	168	93	--	357	1,050	58	2.5	< .4	--	1,783	1,240	2,120	7.4	14	1.1	.0
118	Kcgr	623	Aug. 26, 1952	12	--	178	111	29	--	421	547	30	2.6	.2	--	1,116	900	1,540	7.4	7	.4	.0
118	Kcgr	623	Sept. 17, 1975	12	--	217	169	37	--	304	960	35	2.7	< .4	--	1,582	1,240	1,880	8.0	6	.4	.0
118	Kcgr	623	June 28, 1977	13	--	204	134	33	13	382	790	31	2.4	2.0	--	1,410	1,060	1,750	7.6	6	.4	.0
402	Kcgr	495	Jan. 8, 1969	12	--	174	67	12	--	370	371	19	2.4	1.0	--	840	710	1,172	7.3	4	.1	.0
403	Kcgru	400	do	12	--	123	70	13	--	448	205	17	2.9	2.0	--	665	590	1,054	7.3	5	.2	.0
403	Kcgru	400	June 24, 1977	11	--	92	32	15	--	412	19	25	.2	5.1	--	401	363	689	7.7	8	.3	.0
404	Kche, Kcgrl, Kccc	750	Jan. 8, 1969	10	--	85	27	7	--	362	12	15	.4	7.2	--	341	325	582	7.4	4	.1	.0



Location of Selected Wells, Springs, and Oil and Gas Tests in Hays County

KENDALL COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.
Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of power: C, cylinder; Cf, centrifugal; E, electric; G, gasoline, butane, or diesel engine; H, hand; J, jet; N, none; Sub, submersible; T, turbine; W, windmill. Number indicates horse power.
Use of water : D, domestic; Irr, irrigation; N, none; P, public supply; S, livestock.
Water-bearing units : Kee, Edwards and associated limestones; Kegr, Glen Rose Limestone; Kegru, upper member of the Glen Rose Limestone; Kegrl, lower member of the Glen Rose Limestone; Kctp, Travis Peak Formation; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcs, Sligo Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation; Kct, Trinity Group, undifferentiated; Oe, Ellenburger Group, undifferentiated.

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
RB-57-50-701	Hohenberger Brothers	B. L. Reborn	1947	260	8	10	Kee, Kegru	2,030	59.5	Apr. 8, 1965	C	N	Oil test drilled to 720 feet, plugged back to 260 feet and converted to water well. Open hole from 10 to 260 feet. Unused since 1952. 2/
* 702	Monroe Klinksiek	W. Fester	1914	433	6	--	Kegr	1,885	289.8	Feb. 21, 1940	N	N	Destroyed. 2/
* 801	Milton Boos	--	1926	371	8	200	Kegr, Kche	1,752	137.6 136.3	Feb. 21, 1940 Apr. 7, 1965	C, E	D, S	Open hole from 200 to 371 feet. 2/
* 51-701	V. N. Schultz	--	1926	420	6	--	Kegr, Kche	1,735	275.1	Feb. 19, 1940	C, E 1 1/2	D, S	2/
* 801	Henry Schladoer	A. M. Cunningham	1919	211	6	--	Kegru	1,770	75.2 139.5	Mar. 4, 1940 Aug. 9, 1965	C, W, E 1/2	D, S	Deepened from 180 to 211 feet. Pump set at 160 feet. 2/
* 57-304	Richard T. Davis	Louis Bergmann and Sons	1963	550	7 5	507 550	Kche	1,885	350 354.0 354.7 360.2 364.6 356.6	July 1963 Apr. 23, 1974 Feb. 24, 1975 Jan. 30, 1976 Feb. 16, 1977 Feb. 17, 1978	Sub, E 1 1/2	S	Perforated from 507 to 550 feet. Pump set at 430 feet. Reported yield 15 gal/min with 70 feet drawdown. Observation well. 2/
* 601	Roy Willmann	do	1958	375	5	--	Kegr, Kche	1,700	194.8	Aug. 13, 1965	C, W, E 3/4	S	Reported yield 14 gal/min. 2/
* 903	Felix L. Barth	--	1890	265	6	15	Kegrl, Kche	1,535	69.7 64.7 64.7	Feb. 7, 1940 Apr. 14, 1965 May 10, 1965	C, E	D, S	Open hole from 15 to 265 feet. Pump set at 105 feet. Reported yield 5 gal/min with 40 feet drawdown. 2/
* 905	Travis Bailey	Louis Bergmann and Sons	1960	356	6	200	Kche	1,630	150	1960	Sub, E 1	D, S	Open hole from 200 to 356 feet. 2/
* 906	Mrs. G. Stein	--	1900	260	8	40	Kegrl, Kche, Kccc	1,500	96.8	Feb. 22, 1940	C, W	D, S	Open hole from 40 to 260 feet. 2/
907	State of Texas	Texas Department of Water Resources	1977	585	N	N	Kct, Oe	1,610	77	Apr. 27, 1977	N	N	Reported yield 3 gal/min with 185 feet drawdown. Plugged. 1/
* 58-201	Otto Grabbe	--	1900	80	7	--	Kegru	1,815	31 36	Feb. 21, 1940 Apr. 7, 1965	J, E 3/4	D, S	2/
* 202	J. L. Ridner	Louis Bergmann and Sons	1961	435	7	366	Kegrl, Kche	1,800	310	Dec. 1961	T, E 2	D, S	Open hole from 366 to 435 feet. Reported yield 5 gal/min. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* RB-57-58-402	Mrs. Laura B. McNeel	Louis Bergmann and Sons	1963	315	7	262	Kehe	1,585	123 126.8 127.4 128.5 125.0 122.8	Aug. 1963 Apr. 24, 1974 Feb. 21, 1975 Jan. 30, 1976 Feb. 16, 1977 Feb. 17, 1978	Sub, E 1 1/2	D, S	Open hole from 262 to 315 feet. Pump set at 168 feet. Reported yield 42 gal/min with 0 feet drawdown. Observation well. 2/
* 502	Gilbert M. Moldenhaur	--	1929	190	6	40	Kegrl, Kehe	1,475	33.5	Feb. 21, 1940	--	D, S	Open hole from 40 to 190 feet. 2/
* 701	Mrs. P. Dreiss	Louis Bergmann and Sons	1956	500	6	--	Kegr, Kehe	1,660	40	Aug. 23, 1957	C, W	S	2/
* 703	do	--	1909	350	6	40	Kegrl, Kehe	1,580	95 80	Feb. 1940 Apr. 20, 1965	Sub, E 1	D, S	Open hole from 40 to 350 feet. Pump set at 120 feet. 2/
* 704	James Marquart	J. Giles	1887	156	6	--	Kegrl	1,405	14.9 35.7	Feb. 21, 1940 Sept. 1, 1965	J, E	D, S	Reported yield 15 gal/min with 0 feet drawdown. 2/
705	Fred Seidensticker	Louis Bergmann and Sons	1971	341	6	270	Kehe	1,545	195 181.4 177.4 161.9 172.7 179.6	Sept. 10, 1971 Apr. 17, 1974 Feb. 21, 1975 Jan. 30, 1976 Feb. 16, 1977 Feb. 17, 1978	Sub, E	D, S	Open hole from 270 to 341 feet. Cemented from 270 feet to surface. Reported yield 26 gal/min with 5 feet drawdown. Observation well.
* 706	Mary T. Davis	Virdell Brothers Drilling Co.	1970	200	6	169	Kehe	1,480	86.9 80.6 83.2 74.9 82.9	Apr. 17, 1974 Feb. 21, 1975 Jan. 30, 1976 Feb. 16, 1977 Feb. 17, 1978	Sub, E	D	Open hole from 169 to 200 feet. Observation well.
* 801	Mrs. F. Barth	--	1908	180	6	40	Kegrl	1,450	34.8 57.2	Feb. 21, 1940 Sept. 1, 1965	C, W	D, S	Open hole from 40 to 180 feet. 2/
* 59-302	V. H. Rose	Bob Page	1898	300	8	--	Kegru	1,750	200	Aug. 9, 1965	C, E 1	D, S	2/
401	Malsnor A. Shumard, Jr.	--	--	Spring	--	--	Kegru	1,460	--	--	Flows	S	Estimated flow 10 gal/min on Aug. 4, 1975. 2/
* 402	Bruno C. Oelkers, Estate	A. Meckel	1908	232	6	40	Kegrl, Kehe	1,445	15.6 33.8	Feb. 19, 1940 Aug. 25, 1965	J, E 3/4	S	Open hole from 40 to 232 feet. 2/
* 403	do	H. W. Schwope and Sons Water Well Drilling	1963	232	6	--	Kegrl, Kehe	1,490	115	Aug. 25, 1965	Sub, E	D, S	Reported yield 20 gal/min. 2/
501	W. H. Cothrum, well 4	Edmunds Drilling Co.	1964	966	7	930	Keho	1,700	550.1	Sept. 9, 1965	N	N	Open hole from 930 to 966 feet. 1/ 2/
* 701	W. H. Whitworth	--	1890	250	36	50	Kegrl, Kehe	1,440	22.3 38.5	Feb. 19, 1940 Aug. 25, 1965	C, W	N	Dug well curbed with rock and later drilled from 50 to 250 feet. Unused livestock well. 2/
705	Edgar Scheele	Louis Bergmann and Sons	1967	210	6	80	Kehe	1,340	--	--	Flows	N	Open hole from 80 to 210 feet. Cemented from 80 feet to surface. Estimated flow 2 gal/min on Sept. 22, 1977. 1/
* 801	W. H. Cothrum, well 1	Edmunds Drilling Co.	1963	600	12	530	Ketp, Keho	1,425	32 26.5	Aug. 1965 Apr. 11, 1975	T, E 60	Irr	Open hole from 530 to 600 feet. Pump set at 400 feet. Reported yield 425 gal/min. 2/
* 802	W. H. Cothrum, well 2	do	--	600	11	200	Ketp, Keho	1,439	41.5 42.0	Aug. 27, 1965 Apr. 11, 1975	Sub, E 20	Irr	Open hole from 200 to 600 feet. Reported yield 180 gal/min with 243 feet drawdown. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* RB-57-59-804	W. H. Cothrum, well 3	Edmunds Drilling Co.	1964	787	11	180	Ketp, Kcho	1,430	106 61.9	Aug. 17, 1965 Apr. 11, 1975	C, E	S	Open hole from 180 to 787 feet. Reported yield 275 gal/min. 2/
807	W. H. Cothrum, well 5	--	--	555	8	555	Kcho	1,460	66	Apr. 5, 1977	N	N	1/
808	W. H. Cothrum	--	--	800	10	800	Kcho	1,440	32	Mar. 3, 1977	N	N	Caved in at 461 feet and abandoned. 1/
809	W. H. Cothrum, well 6	--	--	4,200	12	435	Kcho	1,480	62	Mar. 3, 1977	N	N	Drilled to 4,200 feet and plugged back to 506 feet; Open hole from 435 to 506 feet. 1/
901	W. H. Cothrum, well 12	--	--	650	8	650	Kcho	1,640	107	Mar. 9, 1977	N	N	Caved in at 590 feet. 1/
* 60-101	M. L. Moore	Bob Page	1915	140	8	90	Kegru	1,665	89.5 94.5	Mar. 4, 1940 Aug. 10, 1965	C, W	D, S	Deepened from 106 to 140 feet. Open hole from 90 to 140 feet. Reported yield 2 gal/min with 34 feet drawdown. 2/
* 501	David W. Granberg	--	--	220	6	40	Kegru	1,630	129.2	Aug. 17, 1965	N	N	Open hole from 40 to 220 feet. 2/
* 601	Jack Esser	--	1918	125	6	20	Kegru	1,525	41.9 40.3	Mar. 4, 1940 Aug. 16, 1965	C, W	D, S	Open hole from 20 to 125 feet. 2/
* 604	David W. Granberg	--	--	Spring	--	--	Kegru	1,555	--	--	Flows	S	Estimated flow 40 gal/min on July 9, 1975. 2/
* 801	W. E. Eckermann	Tom Cox	1900	184	6	--	Kegru	1,680	180	Mar. 1940	C, E 1	D, S	2/
802	Bill Myers	--	--	Spring	--	--	Kegru	1,560	--	--	Flows	S	Reported flow 50 gal/min on Nov. 24, 1964. 2/
* 907	Elmer Wilke	--	1933	250	6	--	Kegru	1,710	95.1 97.2	Mar. 24, 1940 Nov. 24, 1964	C, W	S	2/
* 68-01-301	City of Comfort, well 1	J. R. Johnson Drilling Co.	1947	295	10	195	Kche	1,420	33	July 7, 1947	T, E 15	P	Drilled to 420 feet and plugged back to 295 feet. Open hole from 195 to 295 feet. Reported yield 110 gal/min with 125 feet drawdown. 2/
* 302	City of Comfort, well 2	Louis Bergmann and Sons	1949	300	10	213	Kche	1,465	115.2	Oct. 19, 1961	T, E 10	P	Open hole from 213 to 300 feet. Cemented from 213 feet to surface. Reported yield 75 gal/min. 2/
303	City of Comfort, well 3	do	1957	310	10	174	Kche	1,400	61	Apr. 1957	Sub, E 10	P	Open hole from 174 to 310 feet. Pump set at 295 feet. Reported yield 60 gal/min with 120 feet drawdown. 2/
* 306	Roy Robinson	do	1963	350	8	91	Kegrl, Kche	1,550	98.6 99.8 104 106 107.4 111.8 104.4 112.6 112.8 112.8 106.5	Apr. 14, 1965 June 10, 1965 July 7, 1965 Aug. 3, 1965 Oct. 2, 1965 Oct. 8, 1965 Dec. 17, 1965 Apr. 16, 1974 Feb. 21, 1975 Jan. 30, 1976 Feb. 16, 1977	Sub, E 3	D, S	Open hole from 91 to 350 feet. Cemented from 91 feet to surface. Pump set at 315 feet. Reported yield 50 gal/min with 245 feet drawdown. Observation well. 2/
* 309	City of Comfort, well 5	do	1965	415	10	220	Kche, Kcce	1,460	122.9 108.7	June 25, 1965 Mar. 20, 1975	Sub, E 15	P	Open hole from 220 to 415 feet. Cemented from 220 feet to surface. Pump set at 350 feet. Reported yield 160 gal/min with 238 foot drawdown. Acidized. 2/
* 310	City of Comfort, well 4	do	1963	300	10	172	Kche, Kcce	1,420	120 121.2	May 1963 Mar. 20, 1975	Sub, E 15	P	Deepened from 300 to 640 feet in 1972. Caved back to 300 feet. Open hole from 172 to 300 feet. Cemented from 172 feet to surface. Pump set at 268 feet. Reported yield 123 gal/min with 150 feet drawdown. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
AB-68-01-312	Harry Seidensticker	Louis Bergmann and Sons	1970	280	6	160	Kcbe	1,440	117.7 82.3 94.8 85.5 103.4	July 10, 1974 Feb. 21, 1975 Jan. 30, 1976 Feb. 16, 1977 Feb. 17, 1978	Sub, E	D	Open hole from 160 to 280 feet. Cemented from 160 feet to surface. Reported yield 32 gal/min with 30 feet drawdown. Observation well.
313	City of Comfort, well 6	do	1970	350	10 8	158 300	Kcbe	1,485	36.6	Mar. 20, 1975	Sub, E 15	P	Open hole from 300 to 350 feet. Pump set at 330 feet. Reported yield 119 gal/min.
* 601	C. E. Schaefer	D. Edwards	1954	208	7	40	Kcgrl, Kcbe	1,420	33	July 1959	J, E 1/2	D	Open hole from 40 to 208 feet. 2/
* 603	B. L. Biermann	Louis Bergmann and Sons	1961	325	5	167	Kcgrl, Kcbe	1,500	90	June 1961	C, E 1/3	D, S	Open hole from 167 to 325 feet. 2/
* 604	Mrs. Estelle Biermann	Bill Rust	1930	275	6	--	Kcgrl	1,500	118.3 131.0	Feb. 7, 1940 May 17, 1965	Sub, E 1	D, S	2/
901	Ed Below, No. 1	Magnolia Petroleum Co.	1953	6,512	--	--	--	1,712	--	--	--	--	Oil test. 1/ 2/
* 904	R. Linder	W. Rust	1930	105	8	40	Kcgru	1,710	86.2 84.9	Apr. 11, 1940 June 22, 1965	C, W	D, S	Open hole from 40 to 105 feet. Reported yield 3 gal/min with 15 feet drawdown. 2/
* 02-103	R. J. Rose	--	1925	100	8	--	Kcgrl	1,380	39.7 39.8	Feb. 22, 1940 Apr. 20, 1965	T, E 1	D, S	Pump set at 80 feet. Reported yield 10 gal/min with 40 feet drawdown. 2/
* 104	C. Voigt	--	1886	150	6	50	Kcgrl	1,400	40	Feb. 1940	C, W, E 1/2	D, S	Open hole from 50 to 150 feet. 2/
* 105	C. C. Houseworth, Sr.	B. Page	1920	228	6	50	Kcgrl	1,460	55	do	Sub, E 1	D	Open hole from 50 to 228 feet. 2/
* 106	William C. Sprawls	Louis Bergmann and Sons	1964	315	8	153	Kcbe, Kccc	1,405	60 52	Apr. 1964 Apr. 10, 1975	T, G 35	Irr	Open hole from 153 to 315 feet. Pump set at 240 feet. Reported yield 227 gal/min with 195 feet drawdown. Reported yield increased from 60 to 227 gal/min after acidizing. 2/
* 107	R. K. Bullock	do	1952	223	7	106	Kcgrl, Kcbe	1,400	65 68.8	July 9, 1965 July 21, 1965	T, E 3	D, S	Open hole from 106 to 223 feet. Reported yield 20 gal/min with 34 feet drawdown. 2/
* 109	Mrs. H. F. Droughtfels	--	1910	300	8	40	Kcgrl, Kcbe	1,450	104.9 120.2	Feb. 22, 1940 July 12, 1965	C, W	D, S	Open hole from 40 to 300 feet. 2/
* 201	R. L. Clift	--	1925	250	6	--	Kcgrl	1,560	172.6 180	Feb. 21, 1940 July 20, 1965	C, E 1	D, S	2/
* 202	Ernst Marquart	H. W. Schwope and Sons Water Well Drilling	1964	300	7	288	Kcgrl	1,560	240	Sept. 1964	Sub, E 3/4	D, S	Open hole from 288 to 300 feet. Reported yield 15 gal/min. 2/
* 203	E. Wiedenfeld	B. Page	1929	275	6	80	Kcgrl, Kcbe	1,520	171.2	Feb. 21, 1940	C, W, E 3/4	D, S	Deepened from 225 to 275 feet. Open hole from 80 to 275 feet. 2/
* 204	Jack V. Busbee	Louis Bergmann and Sons	1958	210	6	154	Kcgrl, Kcbe	1,400	84.1	July 21, 1965	Sub, E 1	D, S	Open hole from 154 to 210 feet. Cemented from 154 feet to surface. Reported yield 43 gal/min with 147 feet drawdown. 2/
* 301	A. Zoeller	A. Meckel	1912	198	8	40	Kcgrl	1,485	64.7	July 20, 1965	C, W	D, S	Open hole from 40 to 198 feet. 2/
* 401	Mrs. Mike Rusch	--	1904	120	36	50	Kcgrl	1,405	34.6 32.9	Feb. 22, 1940 July 8, 1965	N	N	Dug well curbed with rock and later drilled from 50 to 120 feet. Open hole from 50 to 120 feet. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* RB-68-02-502	E. H. Treiber	O. Rechenthin	1912	163	6	22	Kcgrl, Kche	1,350	41 43	Jan. 30, 1940 May 5, 1965	C, W	D	Deepened from 125 to 163 feet. Open hole from 22 to 163 feet. 2/
* 505	F. M. Treiber	--	1922	221	8	100	Kcgrl, Kche	1,330	38.3 36.8	Feb. 22, 1940 July 13, 1965	C, W	D, S	Open hole from 100 to 221 feet. 2/
* 601	G. Brinkmann	W. Leonard	1896	170	8	40	Kcgrl, Kche	1,320	30.4	July 14, 1965	J, E 1/2	N	Open hole from 40 to 170 feet. 2/
* 603	Robert D. Beverage	Louis Bergmann and Sons	1954	345	10	301	Kcgrl, Kche, Kccc	1,310	15.5 19.1	May 3, 1965 Aug. 11, 1965	T, G 30	Irr	Perforated from 85 to 100 feet and 173 to 231 feet. Open hole from 301 to 345 feet. Yield increased from 150 to 560 gal/min after acidizing. 2/
* 605	Mrs. G. W. Holcamp	--	--	Spring	--	--	Kcgrl	1,315	--	--	Flows	S	Measured flow 143 gal/min on Apr. 9, 1940 and 160 gal/min on Aug. 11, 1965. 2/
* 608	John Sweeney	Louis Bergmann and Sons	1966	360	6	240	Kche, Kccc	1,420	131.1 105.1 109.3 103.1 108.9	July 10, 1974 Feb. 22, 1975 Jan. 30, 1976 Feb. 16, 1977 Feb. 27, 1978	Sub, E	D	Open hole from 240 to 360 feet. Cemented from 240 feet to surface. Pump set at 168 feet. Reported yield 24 gal/min with 32 feet drawdown. Observation well.
609	Alton Grimm	do	1975	281	6	161	Kche, Kccc	1,355	60 73	June 13, 1975 Sept. 23, 1977	N	N	Open hole from 161 to 281 feet. Cemented from 161 feet to surface. Reported yield 35 gal/min with 4 feet drawdown. 1/
705	Arthur P. Below	--	--	Spring	--	--	Kcgru	1,660	--	--	Flows	S	Reported flow 100 gal/min on June 11, 1965. 2/
* 801	Otto Rust	W. Rust	1919	200	6	50	Kcgrl	1,450	40.9	June 12, 1965	C, W	D, S	Open hole from 50 to 200 feet. 2/
* 804	B. E. Nelson	H. W. Schwope and Sons Water Well Drilling	1964	529	6	197	Kcgrl, Kche, Kccc	1,545	237	Aug. 10, 1965	Sub, E 3	D, S	Open hole from 197 to 529 feet. Cemented from 197 feet to surface. Reported yield 20 gal/min. 2/
807	State of Texas	Texas Department of Water Resources	1978	708	6	485	Kcho	1,430	108 101	Feb. 28, 1978 Mar. 7, 1978	N	N	Open hole from 485 to 708 feet. Cemented from 485 feet to surface. Reported yield 50 gal/min with 60 feet drawdown. Observation well. 1/
* 902	Perry J. Laas	--	--	Spring	--	--	Kcgrl	1,360	--	--	Flows	S	Estimated flow 30 gal/min on July 7, 1975. 2/
* 903	Harry Scheutz	--	--	270	6	100	Kcgrl, Kche	1,410	125	Apr. 1965	C, E	D, S	Deepened from 170 to 270 feet. Open hole from 100 to 270 feet. Pump set at 180 feet. 2/
* 904	do	Louis Bergmann and Sons	1962	250	5	108	Kcgrl	1,505	119.6 117.9 117.0 118.7 115.2 119.5	Apr. 27, 1965 July 9, 1974 Feb. 21, 1975 Jan. 30, 1976 Feb. 16, 1977 Feb. 27, 1978	C, E 3/4	S	Open hole from 108 to 250 feet. Pump set at 147 feet. Reported yield 40 gal/min with 5 feet drawdown. Observation well. 2/
* 905	Louis Magers	--	--	Spring	--	--	Kcgru	1,380	--	--	Flows	S	Estimated flow 25 gal/min on July 7, 1975. 2/
906	do	--	--	Spring	--	--	Kcgru	1,380	--	--	Flows	S	Do.
* 907	Mrs. C. Fuchnert	--	1890	200	6	40	Kcgrl	1,425	43.8 42.6	Apr. 27, 1965 Dec. 17, 1965	C, W	D, S	Open hole from 40 to 200 feet. 2/
* 909	Fred Sarcel	--	--	Spring	--	--	Kcgru	1,440	--	--	Flows	D, S	Estimated flow 10 gal/min on July 8, 1975. 2/
* 03-101	Sisterdale Community Center	-- Haag	1917	100	6	20	Kcgrl	1,405	25	Feb. 1940	C, H	N	Open hole from 20 to 100 feet. 2/
* 102	Ben O. Timberlake	H. W. Schwope and Sons Water Well Drilling	1963	190	7	132	Kche	1,290	26.1 14.3	Aug. 19, 1965 Apr. 11, 1975	Sub, E 1	Irr, D, S	Open hole from 132 to 190 feet. Pump set at 185 feet. Reported yield 20 gal/min with 20 feet drawdown. 2/
* 307	Eugene Ebell	R. Schwarz	1900	120	6	30	Kcgrl, Kche	1,285	30	Feb. 19, 1940	J, E 3/4	D, S	Open hole from 30 to 120 feet. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
* RB-68-03-108	Sam Woolvin	Louis Bergmann and Sons	1965	200	8	99	Kche, Kccc	1,280	27.4 8.5 7.9 11.9	Apr. 18, 1974 Feb. 24, 1975 Feb. 16, 1977 Apr. 18, 1974	Sub, E 7 1/2	Irr	Open hole from 99 to 200 feet. Cemented from 99 feet to surface. Pump set at 168 feet. Observation well.
* 601	Holt Atherton	do	1951	185	6	158	Kche	1,305	44	June 19, 1951	T, E 1 1/2	D, S	Open hole from 158 to 185 feet. Reported yield 30 gal/min. 2/
* 405	O. E. Behr	--	1914	100	6	--	Kcgrl, Kche	1,285	60	Feb. 1940	C, W	D, S	2/
* 501	do	--	1927	210	6	--	Kcgrl, Kche	1,373	145.9 141.1	Feb. 19, 1940 Aug. 25, 1965	C, W	S	2/
* 605	Andrew G. Cowles	Louis Bergmann and Sons	1950	188	6	17	Kcgrl	1,366	120	Dec. 1964	C, E 1/2	S	Open hole from 17 to 188 feet. Reported yield 6 gal/min with 66 feet drawdown. 2/
* 606	Paul S. Ranzau	--	--	Spring	--	--	Kcgrl	1,200	--	--	Flows	S	Estimated flow 75 gal/min on July 10, 1975. 2/
* 607	Andrew G. Cowles	Louis Bergmann and Sons	1953	540	5	363	Kcs, Kchn	1,363	187	Sept. 1953	C, E 1	S	Open hole from 363 to 540 feet. Reported yield 8 gal/min. 2/
* 608	do	do	1971	321	6	225	Kche, Kccc	1,400	--	--	Sub, E	D	Open hole from 225 to 321 feet. Cemented from 225 feet to surface. Reported yield 15 gal/min.
* 701	N. B. West	do	1955	460	6	230	Kcgrl, Kche	1,522	270	July 15, 1955	Sub, E 1 1/2	D, S	Open hole from 230 to 460 feet. Reported yield 15 gal/min. 2/
* 702	Alvin Herbst	B. Rust	1905	220	8	20	Kcgrl	1,365	89.8 92.1	Feb. 19, 1940 Aug. 30, 1965	C, W, E 3/4	D, S	Open hole from 20 to 220 feet. Reported yield 5 gal/min with 22 feet drawdown. 2/
706	Leroy Puls	Louis Bergmann and Sons	1965	380	8	232	Kcgrl, Kche	1,385	166	Dec. 8, 1965	C, E 3	D, S	Open hole from 232 to 380 feet. Cemented from 232 feet to surface. Pump set at 210 feet. Reported yield 100 gal/min with 182 feet drawdown.
707	R. Rentz	H. W. Schwope and Sons Water Well Drilling	1977	275	6	239	Kccc	1,370	83	Sept. 22, 1977	--	D	Open hole from 239 to 275 feet. 1/
* 903	Golden Fawn Guest Ranch	--	1928	290	6	--	Kcgrl, Kche	1,300	141	Feb. 28, 1940	Sub, E	D, S	2/
* 04-101	Joe Haag	Charles Schwarz	1906	120	8	20	Kcgrl	1,405	40 60	do Dec. 1964	C, E 1/2	D, S	Open hole from 20 to 120 feet. 2/
* 103	Kendall County School	--	--	100	--	--	Kcgrl	1,460	49.7 40.8	Feb. 28, 1940 July 6, 1965	C, H	N	2/
* 201	R. Schuetz	--	--	Spring	--	--	Kcgru	1,430	--	--	Flows	S	Estimated flow 15 gal/min on July 11, 1975. 2/
* 202	Bill Myers	--	--	226	6	10	Kcgrl, Kche	1,410	90	Nov. 1964	C, E	D, S	Open hole from 10 to 226 feet. 2/
203	Sam Edmonson	--	--	Spring	--	--	Kcgrl	1,385	--	--	Flows	S	Reported flow 25 gal/min on Nov. 24, 1964. 2/
206	E. E. Heidrick, no. 1	C. G. Newton	1950	1,040	--	--	--	1,470	--	--	--	--	Oil test. 1/ 2/
* 207	Sam Bell Steves	--	1960	300	7	288	Kche	1,380	53.5	Nov. 20, 1964	Sub, E 1 1/2	D	Open hole from 288 to 300 feet. 2/
* 302	E. Ludolf	A. C. Kneupper	1909	804	6	--	Kcgrl, Kche	1,465	150.6	Nov. 12, 1964	C, E	D, S	Reported yield 5 gal/min with 200 feet drawdown. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* RB-68-04-307	F. H. Heidrich	C. Harwell	1955	260	6	20	Kcgrl, Kche	1,380	140	Nov. 1964	C, E 1/2	D, S	Open hole from 20 to 260 feet. 2/
* 309	Bob Mathis	Louis Bergmann and Sons	1961	180	7	131	Kcgrl	1,350	95	Feb. 1961	Sub, E 5	D	Open hole from 131 to 180 feet. Reported yield 29 gal/min. 2/
* 310	J. W. Rogers	--	--	79	--	10	Kcgrl	1,360	--	--	C, E	D	Open hole from 10 to 79 feet.
401	Allen Haag	Kendalia Co., Inc.	1950	300	5	200	Kche, Kccc	1,345	--	--	C, W	S	Oil test drilled to 1,364 feet and converted to water well. 1/
* 503	D. P. Ranch	--	--	300	8	20	Kcgrl, Kche	1,365	255	Apr. 1940	C, W, E 3/4	D, S	Open hole from 20 to 300 feet. 2/
* 504	Robert Young	H. Swoap	1904	312	8	3	Kcgrl, Kche	1,365	197	do	C, E 1 1/2	D, S	Open hole from 3 to 312 feet. 2/
505	-- Hagelstein	C. C. Newton	1950	2,342	--	--	--	1,315	--	--	--	--	Oil test. 1/ 2/
* 601	A. C. Kneupper	B. Edge	1939	119	8	20	Kcgrl	1,290	68.6	Jan. 11, 1965	C, W	D, S	Open hole from 20 to 119 feet. 2/
* 602	C. D. Myers	--	--	Spring	--	--	Kcgrl	1,205	--	--	Flows	S	Reported flow 20 gal/min on April 3, 1940 and 30 gal/min on Jan. 25, 1965. 2/
* 606	A. G. Kneupper	--	--	35	36	12	Kcgrl	1,210	17 16.6	Apr. 12, 1940 Jan. 11, 1965	N	N	Dug well curbed with rock. Open hole from 12 to 35 feet. 2/
607	C. D. Myers	--	--	Spring	--	--	Kcgrl	1,205	--	--	Flows	S	Estimated flow 300 gal/min on July 11, 1975.
* 701	Mrs. J. Ebell, Cave without a Name	--	--	100	--	--	Kcgrl	1,130	--	--	Cf, E	D	Source is from stream in cave. Reported stream-flow 60 gal/min. 2/
* 801	Donner Corp.	--	1928	100	8	20	Kccc	1,141	78.7 78 70.9 78.2	Apr. 8, 1940 Oct. 16, 1964 July 6, 1965 Sept. 3, 1965	C, W	S	Open hole from 20 to 100 feet. 2/
* 803	Lakecroft, Inc.	Hill Country Water, Inc.	1977	120	7	45	Kccc	1,140	75	Mar. 24, 1977	Sub, E 1 1/2	P	Open hole from 45 to 120 feet. Cemented from 45 feet to surface. Reported yield 10 gal/min with 10 feet drawdown.
804	do	do	1977	140	7	50	Kccc	1,140	90	Mar. 25, 1977	Sub, E 1 1/2	P	Open hole from 50 to 140 feet. Cemented from 48 feet to surface. Reported yield 10 gal/min with 10 feet drawdown.
805	do	W. W. Schwope and Sons Water Well Drilling	1976	475	6	335	Kcho	1,130	120 72	May 3, 1976 Sept. 21, 1977	N	N	Open hole from 335 to 475 feet. Cemented from 335 feet to surface. Reported yield 6 gal/min. Unused public supply well. 1/
806	do	do	1976	450	6	336	Kcho	1,140	100	May 18, 1976	N	N	Open hole from 336 to 450 feet. Cemented from 336 feet to surface. Reported yield 5 gal/min. Unused public supply well.
* 901	J. M. Edge	--	--	100	8	20	Kccc	1,146	67	Apr. 12, 1940	C, W	D, S	Open hole from 20 to 100 feet. 2/
* 902	Hal Harwell	--	--	Spring	--	--	Kcgrl	1,093	--	--	Flows	S	Reported flow 99 gal/min on April 2, 1940 and 200 gal/min on Nov. 20, 1964. 2/
903	do	--	--	Spring	--	--	Kcgrl	1,093	--	--	Flows	S	Reported flow 23 gal/min on April 2, 1940 and 50 gal/min on Nov. 20, 1964. 2/
904	do	--	--	Spring	--	--	Kcgrl	1,093	--	--	Flows	S	Reported flow 11 gal/min on April 2, 1940 and 20 gal/min on Nov. 20, 1964. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
* RB-68-04-905	Hal Harwell	--	--	Spring	--	--	Kcgrl	1,093	--	--	Flows	S	Reported flow 45 gal/min on April 2, 1940 and 840 gal/min on Nov. 20, 1964. 2/
* 906	A. P. Lux	--	1910	360	6	--	Kcs, Kcho	1,275	125	Nov. 1964	C, E	D, S	2/
* 908	Donner Corp.	--	1890	105	8	40	Kcgrl	1,160	58.2 57.7	Apr. 8, 1940 Oct. 16, 1964	C, W	S	Open hole from 40 to 105 feet. 2/
* 909	Nicholas N. Colden	C. Harwell	1954	365	5	200	Kcs, Kcho	1,115	124.5 103 93.9 88.0 89.8 109.9 142.5 146.1 104.6 95 93.0 82.0 95.0 82.0 91.6	Nov. 26, 1964 Dec. 30, 1964 Jan. 25, 1965 Apr. 29, 1965 June 29, 1965 July 26, 1965 Aug. 23, 1965 Sept. 23, 1965 Oct. 28, 1965 Dec. 17, 1965 Apr. 15, 1974 Feb. 20, 1975 Jan. 29, 1976 Feb. 16, 1977 Feb. 16, 1978	Sub, E	D	Open hole from 200 to 365 feet. Reported yield 10 gal/min with 105 feet drawdown. Observation well. 2/
* 05-102	W. Kneupper	E. Laubach	1947	260	5	10	Kcgrl	1,385	120	Nov. 1964	C, W	D, S	Open hole from 10 to 260 feet. Reported yield 8 gal/min. 2/
* 402	Marvin Gass	H. W. Schwope and Sons Water Well Drilling	1971	225	6	151	Kcc	1,273	115.4 109.1 109.0 116.4	July 9, 1974 Feb. 20, 1975 Feb. 16, 1977 Feb. 16, 1978	C, W	S	Open hole from 151 to 225 feet. Cemented from 151 feet to surface. Observation well.
* 502	B. Sattler	--	1924	160	6	20	Kcgrl	1,275	148.6	Dec. 27, 1964	C, W, E, 3/4	D, S	Open hole from 20 to 160 feet. 2/
* 09-301	Edwin Lindner	--	1938	230	8	--	Kcgru	1,720	124.4	Apr. 10, 1940	N	N	Caved in and abandoned. 2/
* 10-201	E. Offenhauser	Louis Bergmann and Sons	1959	840	5	586	Kcgrl, Kche, Kccc	1,880	535	Oct. 1959	Sub, E 3	D, S	Open hole from 586 to 840 feet. Reported yield 9 gal/min. 2/
* 203	Sidney Cravey	do	1965	600	7	365	Kcgrl, Kche, Kccc	1,615	341.3 337.7 339.5 328.5 331.0	July 9, 1974 Feb. 21, 1975 Jan. 30, 1976 Feb. 14, 1977 Feb. 27, 1978	Sub, E 1	D	Open hole from 365 to 600 feet. Cemented from 365 feet to surface. Pump set at 421 feet. Reported yield 15 gal/min with 78 feet drawdown. Observation well.
* 301	C. S. Teague	--	--	350	4	--	Kcgrl	1,560	157	June 8, 1965	C, E 2	D, S	Pump set at 210 feet. 2/
* 501	L. A. Nordan	--	--	Spring	--	--	Kcgru	1,740	--	--	Flows	S	Estimated flow 10 gal/min on July 7, 1975. 2/
* 502	do	--	1960	1,167	8	1,167	Kcs, Kcho	1,805	500	Aug. 1960	C, E 3	N	Slotted from 920 to 1,167 feet. 1/ 2/
* 601	Arthur F. Leesch	Louis Bergmann and Sons	1956	230	6	168	Kcgru	1,700	169.1	July 28, 1965	C, E 1	D, S	Open hole from 168 to 230 feet. 2/
611	Cibolo Oaks Water Co.	--	--	540	7 --	244 --	Kcgrl, Kccc	1,460	230	Nov. 12, 1973	Sub, E 3	P	Deepened from 488 to 540 feet. Slotted liner added. Cemented from 244 feet to surface. Reported yield 35 gal/min with 20 feet drawdown.

See footnotes at end of table.

KENDALL COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
RB-68-10-612	Cibolo Oaks Water Co.	Haskin Pump and Service, Inc.	1972	475	7	203	Kegrl, Kcoc	1,460	--	--	Sub, E 3	P	Open hole from 203 to 475 feet. Cemented from 203 feet to surface.
* 613	Jehovah's Witness Church	H. W. Schwope and Sons Water Well Drilling	1973	152	6	87	Kegrl	1,510	60	Nov. 1973	Sub, E 1/2	P	Open hole from 87 to 152 feet. Cemented from 87 feet to surface. Reported yield 15 gal/min.
* 801	John Lees	Louis Bergmann and Sons	1957	600	6	419	Kegrl	1,700	436	Apr. 1957	Sub, E 2	S	Open hole from 419 to 600 feet. Reported yield 11 gal/min. 2/
* 803	Julius Gombert	--	1900	145	6	10	Kegru	1,635	115	July 1965	N	N	Open hole from 10 to 145 feet. 2/
* 806	T. N. Smith, Sr., Estate	Louis Bergmann and Sons	1955	1,098	4 2	1,000 1,012	Kcho	1,630	73.9 70.5 73.0 38.7 97.4	July 9, 1974 Feb. 20, 1975 Jan. 30, 1976 Feb. 14, 1977 Feb. 27, 1978	Sub, E 1 1/2	D, S	Reworked July 1978. Perforated from 1,000 to 1,012 feet. Open hole from 1,012 to 1,098 feet. Cemented from 1,000 feet to surface. Reported yield 6 gal/min. Observation well. 2/
808	do	--	--	Spring	--	--	Kegru	1,810	--	--	Flows	S	Estimated flow 10 gal/min on July 15, 1975.
* 902	Ervin G. Rolf	Louis Bergmann and Sons	1962	589	6	182	Kegrl, Kche, Kcoc	1,545	320	Apr. 1962	C, E 3/4	D	Open hole from 182 to 589 feet. Cemented from 182 feet to surface. Pump set at 420 feet. Reported yield 17 gal/min with 159 feet drawdown. 2/
* 904	W. H. Maytum	--	1890	40	60	--	Kegru	1,585	36.4 30.5	Jan. 9, 1940 July 22, 1965	J, E 1	D, S	Dug well curbed with rock. 2/
* 905	H. C. Jordt	--	1910	100	4	--	Kegru	1,605	33.3 31.8	Jan. 9, 1940 July 23, 1965	C, W, G	D, S	2/
* 906	do	--	--	30	38	--	Kegru	1,560	8.5 6.3	Jan. 9, 1940 July 22, 1965	N	N	Dug well curbed with rock. Abandoned. 2/
907	E. H. Knowlton	--	--	50	6	40	Kegru	1,505	--	--	Sub, E	D, S Irr	Open hole from 40 to 50 feet.
908	Foothills Mobile Home Ranch, well 1	Louis Bergmann and Sons	1970	565	8	365	Kegrl, Kcoc	1,510	--	--	Sub, E 5	P	Open hole from 365 to 565 feet.
909	Foothills Mobile Home Ranch, well 2	do	1972	565	8	365	Kegrl, Kcoc	1,505	--	--	Sub, E 2 1/2	P	Open hole from 365 to 565 feet.
910	Foothills Mobile Home Ranch, well 3	do	1974	560	8	269	Kegrl, Kcoc	1,490	375	June 1974	Sub, E 10	P	Open hole from 269 to 560 feet, Cemented from 269 feet to surface. Reported yield 31 gal/min with 60 feet drawdown.
* 11-103	Clifton Frantzen	do	1963	200	7	77	Kegrl	1,470	119 115.5 124.1 116.7 120.3	Apr. 18, 1974 Feb. 24, 1975 Jan. 30, 1976 Feb. 16, 1977 Feb. 17, 1978	Sub, E 3/4	D	Open hole from 77 to 200 feet. Cemented from 77 feet to surface. Pump set at 147 feet. Reported yield 32 gal/min with 0 feet drawdown. Observation well. 3/
106	Jack Adams	H. W. Schwope and Sons Water Well Drilling	1977	300	6	88	Kegrl, Kche, Kcoc	1,360	72	Oct. 13, 1977	--	D	Open hole from 88 to 300 feet. Reported yield 40 gal/min. 1/
* 205	Max Pfeiffer	--	--	15	36	3	Kegrl	1,415	3.1 1.4	Feb. 28, 1940 Dec. 24, 1965	J, E 1/2	S	Dug well curbed with rock. Open hole from 3 to 15 feet. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
* RB-68-11-207	A. C. Florés	--	1910	200	8	15	Kcgrl	1,435	105 92.4 81.2 66.7 54.0 5.4 10.2 63.8 93.6 80.0 66.2 83.3 84.5	Feb. 28, 1940 Feb. 1, 1965 Mar. 29, 1965 Apr. 9, 1965 May 10, 1965 June 8, 1965 July 6, 1965 Aug. 3, 1965 Sept. 3, 1965 Oct. 8, 1965 Dec. 17, 1965 Apr. 16, 1974 Jan. 29, 1976	C, W	D, S	Open hole from 15 to 200 feet. Observation well. 2/
* 208	Mrs. C. G. Groos	--	1919	95	8	40	Kcgru	1,480	67.2 63.8	Nov. 29, 1954 Aug. 16, 1965	C, W	S	Open hole from 40 to 95 feet. 2/
* 209	Mrs. Charlie Vogt	Louis Bergmann and Sons	1967	55	8	16	Kcgrl	1,365	18 16.5	Mar. 8, 1967 Mar. 21, 1979	Sub, E 5	Irr	Open hole from 16 to 55 feet. Cemented from 16 feet to surface. Pump set at 40 feet. Reported yield 100 gal/min with 2 feet drawdown.
* 401	City of Boerne, well 2	do	1952	46	10	28	Kcgru	1,400	31	Feb. 1952	T, E 20	P	Open hole from 28 to 46 feet. Cemented from 28 feet to surface. Reported yield 320 gal/min. 2/
402	City of Boerne, well 1	do	1945	40	10	33	Kcgru	1,400	31 22.4	Nov. 1945 Apr. 1, 1975	T, E 20	P	Open hole from 33 to 40 feet. Pump set at 40 feet. Reported yield 214 gal/min. 2/
* 403	City of Boerne, well 3	do	1953	198	8	154	Kcgrl	1,420	162	Feb. 1953	T, E 25	P	Open hole from 154 to 198 feet. Cemented from 154 feet to surface. Reported yield 54 gal/min. 2/
404	City of Boerne, well 4	do	1954	522	10	350	Kcgrl, Kccc	1,465	227	Jan. 1955	Sub, E 30	P	Open hole from 350 to 522 feet. Reported yield 107 gal/min. Acidized. 1/ 2/
* 405	City of Boerne	D. Henkel	1933	38	12	28	Kcgru	1,400	28.5 28.0 27.8 28.0 28.1 27.0 23.7 19.1 23.5 19.9 25.2	Mar. 2, 1940 Mar. 25, 1940 May 7, 1940 May 11, 1940 May 30, 1940 Aug. 30, 1965 Apr. 15, 1974 Feb. 20, 1975 Jan. 29, 1976 Feb. 14, 1977 Feb. 17, 1978	N	N	Open hole from 28 to 38 feet. Public supply well, unused since 1952. Observation well. 2/
406	City of Boerne, well 7	J. R. Johnson Drilling Co.	1957	450	12	450	Kccc	1,412	238.1 245.8	May 10, 1965 Dec. 17, 1965	N	N	Drilled to 896 feet and plugged back to 450 feet. Shot perforated from 400 to 450 feet. Cemented from 450 feet to surface. Reported yield 75 gal/min. Abandoned. 1/ 2/
407	City of Boerne, well 9	Louis Bergmann and Sons	1964	580	10	396	Kcgrl, Kccc	1,550	179.3 348	Jan. 12, 1965 Apr. 1, 1972	Sub, E 25	P	Open hole from 396 to 580 feet. Reported yield 169 gal/min. Acidized. 1/ 2/
* 411	P. Schwope	-- Fooc	1910	247	8	7	Kcgrl	1,420	203.9	Feb. 28, 1940	N	N	Caved and abandoned in 1964. 2/
412	City of Boerne, well 6	Louis Bergmann and Sons	1956	349	10	212	Kcgrl	1,385	206 250	Mar. 1956 1975	T, E 40	P	Open hole from 212 to 349 feet. Cemented from 212 feet to surface. Pump set at 340 feet. Reported yield 187 gal/min with 6 feet draw-down. Acidized. 2/
413	Don E. Backer	do	1963	80	8	34	Kcgrl	1,410	31 29.1	Feb. 1963 Apr. 10, 1975	T, E 5	Irr	Open hole from 34 to 80 feet. Reported yield 50 gal/min with 9 feet drawdown. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
RB-68-11-415	Foothills Mobile Home Ranch, Annex	Louis Bergmann and Sons	--	--	--	--	--	1,455	--	--	Sub, E 1 1/2	P	--
* 501	George Kallen	do	1963	249	7	200	Kgrl	1,600	170.3	Feb. 3, 1965	Sub, E 1/2	D	Open hole from 200 to 249 feet.
* 507	Mrs. William Yonavich	do	1971	595	6	290	Kgrl, Kche, Kccc	1,613	383.6	July 23, 1974	Sub, E	D	Open hole from 290 to 595 feet.
508	Mrs. Leslie Bowman, Jr.	H. W. Schwope and Sons Water Well Drilling	1973	260	6	125	Kgrl	1,480	135 121	Mar. 29, 1973 Aug. 4, 1975	Sub, E	Irr	Open hole from 125 to 260 feet. Cemented from 125 feet to surface. Reported yield 65 gal/min.
* 601	Clifford Mooers, Estate, well 1	Louis Bergmann and Sons	1943	346	6	75	Kgrl	1,400	200	1943	C, E 2	D, S	Open hole from 75 to 346 feet. 2/
* 602	Clifford Mooers, Estate, well 4	Arno Harz	1947	8	95	8	Kgrl	1,383	7.5 1.2	Oct. 16, 1951 July 31, 1975	Sub, E	N	Dug well curbed with rock. Reported yield 150 gal/min with 1/2 foot drawdown. Unused irrigation well. 2/
* 603	Clifford Mooers, Estate, well 6	--	--	55	8	--	Kgrl	1,408	31.6	Oct. 16, 1951	C, W	D, S	2/
* 604	Clifford Mooers, Estate	--	--	Spring	--	--	Kgrl	1,374	--	--	Flows	S	Estimated flow 150 gal/min on July 15, 1975. 2/
* 605	Clifford Mooers, Estate, well 11	--	--	15	--	--	Kgrl	1,460	--	--	N	N	Open pit in stream channel. 2/
* 606	Clifford Mooers, Estate, well 14	Louis Bergmann and Sons	1947	362	6	--	Kgrl	1,421	240	Dec. 1947	C, W	S	Reported yield 10 gal/min. 2/
* 607	G. B. Ranzau	Bill Rust	--	60	6	6	Kgrl	1,420	39.9	Nov. 1, 1951	C, E 1	D, S	Open hole from 6 to 60 feet. 2/
* 610	Pleasant Valley Community Center	--	1928	240	6	--	Kgrl	1,535	213.7	Apr. 8, 1940	C, E	D	2/
701	City of Boerne, well 5	Dingmann Drilling Co.	1928	464	8	444	Kccc	1,478	187.8 260	Apr. 2, 1940 June 25, 1955	N	N	Drilled to 938 feet and plugged back to 464 feet. Open hole from 444 to 464 feet. Reported yield 135 gal/min. Acidized. Abandoned. 2/
* 703	L. Marchak	--	--	180	4	--	Kgru	1,520	130.8 112.8	Jan. 9, 1940 July 23, 1965	N	N	Abandoned. 2/
* 704	L. A. Lemm	A. Werner	1914	100	4	10	Kgru	1,465	77.4	Aug. 24, 1965	C, W	D, S	Open hole from 10 to 100 feet. 2/
* 707	City of Boerne, well 10	H. W. Schwope and Sons Water Well Drilling	1965	425	10	268	Kgrl, Kche, Kccc	1,380	211.8	June 10, 1965	T, E 25	P	Open hole from 268 to 425 feet. Pump set at 398 feet. Reported yield 128 gal/min. Acidized. 1/ 2/
708	City of Boerne, well 8	Louis Bergmann and Sons	1962	357	12	275	Kgrl, Kche	1,385	206 211.7 201.6 211.8 198.0 197.3	July 1962 Apr. 17, 1974 Feb. 20, 1975 Jan. 29, 1976 Feb. 14, 1977 Feb. 16, 1978	N	N	Open hole from 275 to 357 feet. Cemented from 275 feet to surface. Reported yield 140 gal/min with 80 feet drawdown. Acidized. Unused public supply well. Observation well. 2/
* 710	Mrs. M. A. Shumard	do	1938	70	8	20	Kgrl	1,410	34.1 32.1 31 31.8	Apr. 8, 1940 Jan. 27, 1965 Mar. 4, 1965 Aug. 3, 1965	C, W	D	Deepened from 35 to 70 feet in 1949. Open hole from 20 to 70 feet. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* RB-68-11-711	Mrs. H. A. Shumard	--	--	330	6	--	Kcgrl	1,405	239.4	Jan. 27, 1965	C, E 1	D	2/
* 714	John Blank	Louis Bergmann and Sons	1940	91	8	20	Kcgrl	1,460	80	Nov. 1964	Sub, E 1	D	Open hole from 20 to 91 feet. 2/
* 715	Kendall County Junior Livestock Association	H. W. Schwope and Sons Water Well Drilling	1971	373	6	136	Kcgrl, Kcbe, Kccc	1,395	215 203.3 225.7 207.0 211.5	Apr. 16, 1974 Feb. 20, 1975 Jan. 29, 1976 Feb. 14, 1977 Feb. 16, 1978	Sub, E 1	P, S	Open hole from 136 to 373 feet. Reported yield 35 gal/min. Observation well.
716	Mrs. Shirley Galloway	--	--	Spring	--	--	Kcgrl	1,380	--	--	Flows	N	Estimated flow 40 gal/min on July 15, 1975.
718	State of Texas	Texas Department of Water Resources	1977	875	N	N	Kct	1,425	33	July 1, 1977	N	N	Yield 6 gal/min with 25 feet drawdown. Plugged. 1/
* 719	James L. Wyatt	H. W. Schwope and Sons Water Well Drilling	1972	475	6	415	Kccc	1,430	365	May 1972	Sub, E	D	Open hole from 415 to 475 feet. Cemented from 415 feet to surface. Reported yield 30 gal/min.
* 721	Drew Caughman	Louis Bergmann and Sons	1963	500	7	430	Kccc	1,445	240	May 28, 1963	Sub, E 1	D	Open hole from 430 to 500 feet. Cemented from 430 feet to surface.
* 722	Ray Smart	do	1969	80	6	63	Kcgru	1,438	55	Feb. 28, 1969	Sub, E 1/2	D	Open hole from 63 to 80 feet. Cemented from 63 feet to surface. Reported yield 22 gal/min with 25 feet drawdown.
* 723	Milton H. Hawkins	A. Schwarz	1895	104	5	61	Kcgru	1,450	65.8	Nov. 6, 1974	N	N	Well Reworked. Open hole from 61 to 104 feet. Cemented from 61 feet to surface.
* 724	do	H. W. Schwope and Sons Water Well Drilling	1971	105	6	59	Kcgru	1,450	66	do	Sub, E 1 1/2	D	Open hole from 59 to 105 feet. Cemented from 59 feet to surface. Pump set at 94 feet.
* 725	Mrs. Ivan Pue	Louis Bergmann and Sons	1947	80	--	--	Kcgru	1,440	46.1	do	C, E 1/2	D	--
* 726	Vernon Norris	A. Schwarz	1900	55	7	10	Kcgru	1,420	--	--	T, E 1 1/2	D, S	Open hole from 10 to 55 feet.
804	W. D. Cline, Jr.	L. V. Doss	1952	895	7	542	Kcs, Kcho	1,405	492	1952	N	N	Open hole from 542 to 895 feet. Acidized. Unused domestic well. 1/ 2/
808	Haskin Water Co.: Cascade Mobile Village, well 1	Haskin Pump and Service, Inc.	1969	500	7	274	Kcgrl, Kccc	1,425	280	Apr. 8, 1969	Sub, E 10	P	Open hole from 274 to 500 feet. Cemented from 274 feet to surface. Pump set at 462 feet.
809	Haskin Water Co.: Cascade Mobile Village, well 2	do	1970	485	7	245	Kcgrl, Kccc	1,425	--	--	Sub, E 15	P	Open hole from 245 to 485 feet. Cemented from 245 feet to surface.
810	City of Boerne, well 11	--	1966	278	12	278	Kcgrl	1,385	210.6	Apr. 1, 1975	T, E 40	P	Drilled to 420 feet and plugged back to 278 feet. Perforated from 271 to 278 feet. Reported yield 244 gal/min. Acidized. 1/
* 901	Ralph E. Fair, Jr.	Louis Bergmann and Sons	1955	320	--	--	Kcgrl, Kcbe, Kccc	1,296	137.1	Aug. 24, 1974	Sub, E	S	--
* 12-101	Thomas D. Riebe	--	--	Spring	--	--	Kcgrl	1,140	--	--	Flows	S	Estimated flow 10 gal/min on July 30, 1975. 2/
201	Donner Corp.	--	--	Spring	--	--	Kcgrl	1,185	--	--	Flows	S	Do.

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
* RB-68-12-203	Donner Corp.	E. Laubach	1940	410	8	42	Kegrl, Kcbe, Kcco	1,235	119.6	Aug. 3, 1965	C, E 3/4	D, S	Open hole from 42 to 410 feet. 2/
* 208	Alvin J. Smith	--	--	352	6	--	Kegrl, Kcbe, Kcco	1,385	256.2 253.9 242.6 239.4 237.3 244.2 247.8 253.5 247.3 243.5 240.2 246.4 239.1 246.5	Oct. 8, 1964 Dec. 30, 1964 Apr. 9, 1965 May 10, 1965 June 9, 1965 July 6, 1965 Aug. 3, 1965 Sept. 3, 1965 Oct. 8, 1965 Apr. 15, 1974 Feb. 24, 1975 Jan. 29, 1976 Feb. 16, 1977 Feb. 17, 1978	Sub, E	D, S	Deepened from 250 to 352 feet in 1956. Observation well. 2/
* 209	H. B. O'Brien	W. Rust	1928	365	6	40	Kegrl	1,400	250	Oct. 1964	C, E 1	D, S	Open hole from 40 to 365 feet. 2/
* 301	Arlon Richter	Louis Bergmann and Sons	1975	555	6 4	297 555	Kcbo	1,240	208	Sept. 25, 1975	Sub, E 2	D, S	Slotted from 258 to 555 feet. Cemented from 70 feet to surface. Pump set at 420 feet. Reported yield 10 gal/min with 4 feet drawdown.
401	Lena Kunz and Joe Nickel	Abercrombie Co. and Harrison Oil Co.	1930	2,252	--	--	--	1,352	--	--	--	--	Oil test. 2/
402	Bob Stunz	--	--	Spring	--	--	Kegrl	1,350	--	--	Flows	S	Estimated flow 20 gal/min on July 15, 1975. 2/
* 409	Joe E. Nickel	W. Nickel	1902	351	6	--	Kegrl	1,380	265 230.3 220.6 221.2 215.2 217.0 223.3 225.4 219.4 206.4 201.4 210.0 192.3 199.7	Mar. 7, 1940 Oct. 9, 1964 Dec. 30, 1964 May 10, 1965 June 10, 1965 July 6, 1965 Aug. 3, 1965 Sept. 3, 1965 Oct. 8, 1965 Apr. 15, 1974 Feb. 24, 1975 Jan. 29, 1976 Feb. 16, 1977 Feb. 16, 1978	C, E 3/4	D, S	Pump set at 303 feet. Reported yield 5 gal/min with 36 feet drawdown. Observation well. 2/
* 410	R. E. Ferguson	--	--	290	6	--	Kegrl	1,320	165	Mar. 1940	C, W	D, S	2/
* 411	Lawrence B. Owens	H. W. Schwope and Sons Water Well Drilling	1964	260	6	60	Kegrl	1,350	230.6	Oct. 2, 1940	Sub, E 1	D, S	Open hole from 60 to 260 feet. Reported yield 20 gal/min. 2/
412	Kenneth Marquardt	Geotech Drilling Corp.	1976	330	6	38	Kegrl, Kcco	1,320	179	Mar. 27, 1976	N	N	Open hole from 38 to 330 feet. Cemented from 38 feet to surface. Plugged. 1/
* 501	B. F. Laubach	E. Wehe	1935	425	7	20	Kegrl	1,470	330	Mar. 1940	C, E 1	D, S	Deepened from 409 to 425 feet. Open hole from 20 to 425 feet. 2/
* 502	Alfred Engel, Estate	A. Schwarz	1900	410	8	18	Kegrl	1,435	350	Mar. 8, 1940	C, E	D, S	Deepened from 385 to 410 feet in 1950. Open hole from 18 to 410 feet. 2/
* 503	R. H. Kunz	W. Leonard	1925	310	8	12	Kegrl	1,400	304	Mar. 1940	C, W, E 1	D, S	Open hole from 12 to 310 feet. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
RB-68-12-704	Glenn L. Marquardt	Louis Bergmann and Sons	1967	447	6	113	Kcgrl, Kccc	1,400	260	Apr. 25, 1978	Sub, E 1	D, S	Deepened from 350 to 447 feet in 1978. Open hole from 113 to 447 feet. Cemented from 113 feet to surface. Pump set at 330 feet. 1/
* 18-201	T. N. Smith, Sr., Estate	do	1968	490	7	208	Kcgru	1,910	188 211.4 189.2 196.1	Feb. 21, 1975 Jan. 30, 1976 Feb. 14, 1977 Feb. 27, 1978	C, G	S	Open hole from 208 to 490 feet. Pump set at 460 feet. Observation well.
* 301	Don Braswell	do	1969	490	8 6	23 340	Kcgrl, Kche, Kccc	1,497	349.7	Aug. 3, 1974	Sub, E 1 1/2	D	Open hole from 340 to 490 feet. Pump set at 470 feet.
* 19-101	A. Weodler	--	1900	90	6	--	Kcgru	1,450	70.8 69.7	Jan. 9, 1940 Nov. 23, 1964	C, W	D, S	2/
* 102	Mrs. Leon C. Langbein	--	1925	135	4	20	Kcgru	1,495	80	Jan. 1940	C, E 1	D, S	Open hole from 20 to 135 feet. 2/
* 103	H. D. Bordelon	--	--	390	6	50	Kcgrl	1,445	190	Apr. 1940	Sub, E 1	D, S	Deepened from 370 to 390 feet in 1962. Open hole from 50 to 390 feet. 2/
* 106	A. M. Biedenharn, Jr.	Louis Bergmann and Sons	1966	440	7	181	Kcgrl, Kche, Kccc	1,475	320	June 11, 1966	Sub, E 1 1/2	D	Open hole from 181 to 440 feet. Cemented from 181 feet to surface. Pump set at 420 feet. Reported yield 18 gal/min with 70 feet drawdown.
202	Bel-Aire Mobile Park	do	1955	417	7	84	Kcgrl, Kccc	1,395	237 241	Dec. 14, 1964 Jan. 15, 1965	Sub, E 2	P	Open hole from 84 to 417 feet. Reported yield 16 gal/min. 2/
* 204	R. L. Hastings	do	1963	425	6	44	Kcgrl, Kche, Kccc	1,390	237.8	Aug. 2, 1965	Sub, E 1 1/2	D	Open hole from 44 to 425 feet. Pump set at 378 feet. Reported yield 14 gal/min with 170 feet drawdown. 2/

* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.
2/ Well also appears in Texas Water Development Board Report 60, "Ground-Water Resources of Kendall County, Texas".

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kctp, Travis Peak Formation; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcs, Sligo Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation.

Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

Analyses by Texas State Department of Health.

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RB-57-50-702	Kcgr	433	Feb. 21, 1940	--	--	108	65	31	--	372	252	24	--	--	--	662	535	--	--	11	0.5	0.0
801	Kche, Kcgr	371	do	--	--	129	84	38	--	421	299	66	--	--	--	823	667	--	--	11	.6	.0
51-701	Kche, Kcgr	420	Feb. 19, 1940	--	--	94	73	42	--	390	193	70	2.3	--	--	666	535	--	--	15	.7	.0
801	Kcgru	211	Mar. 4, 1940	--	--	129	61	5	--	451	177	21	--	--	--	614	573	--	--	2	.0	.0
57-304	Kche	550	Apr. 23, 1974	11	--	70	42	50	--	362	49	80	1.2	< 0.4	--	481	349	834	7.4	24	1.1	.0
601	Kche, Kcgr	375	Oct. 13, 1965	9	--	318	128	13	--	234	1,060	30	3.6	.0	--	1,676	1,320	2,190	8.6	2	.1	.0
903	Kche, Kcgrl	265	Feb. 7, 1940	--	--	99	49	64	--	378	119	106	--	--	--	622	450	--	--	24	1.3	.0
905	Kche	356	July 23, 1976	13	--	87	45	66	--	360	95	100	1.6	< .4	--	585	401	1,001	7.7	26	1.4	.0
906	Kche, Kcgrl, Kccc	260	Feb. 22, 1940	--	--	109	48	19	--	427	114	29	--	--	--	528	469	--	--	8	.3	.0
58-201	Kcgru	80	Feb. 21, 1940	--	--	126	23	31	--	416	32	44	.1	50	--	510	409	--	--	14	.6	.0
202	Kche, Kcgrl	435	Sept. 1, 1965	15	--	106	66	62	--	360	253	74	3.0	.0	--	756	536	1,200	7.1	20	1.1	.0
402	Kche	315	Apr. 24, 1974	10	3.4	68	40	47	--	370	43	65	1.2	< .4	--	459	334	796	7.4	23	1.1	.0
402	Kche	315	July 21, 1976	14	2.7	74	41	48	--	370	63	66	1.2	< .4	--	492	354	839	7.7	23	1.1	.0
502	Kche, Kcgrl	190	Feb. 21, 1940	--	--	62	33	23	--	317	43	24	.1	--	--	340	290	--	--	15	.5	.0
502	Kche, Kcgrl	190	July 21, 1977	15	--	66	35	12	--	327	30	23	.3	1.9	--	343	309	576	8.4	8	.2	.0
701	Kche, Kcgr	500	Aug. 23, 1957	13	--	476	227	31	19	314	1,830	26	5.2	1.5	--	2,783	2,120	3,000	--	3	.2	.0
703	Kche, Kcgrl	350	Feb. 22, 1940	--	--	136	50	63	--	372	224	99	1.5	--	--	756	596	--	--	20	1.1	.0
704	Kcgrl	156	Feb. 21, 1940	--	--	64	42	58	--	305	83	85	--	--	--	481	331	--	--	28	1.3	.0
706	Kche	200	July 21, 1977	14	--	66	41	59	--	327	76	85	1.4	< .4	--	503	335	870	7.9	28	1.4	.0
801	Kcgrl	180	Feb. 21, 1940	--	--	73	48	60	--	360	102	76	--	--	--	536	379	--	--	26	1.3	.0
59-302	Kcgru	300	Mar. 4, 1940	--	--	103	75	17	--	409	224	25	--	--	--	645	566	--	--	6	.3	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RB-57-59-402	Kche, Kcgrl	232	Feb. 19, 1940	--	--	73	48	57	--	366	104	65	1.1	--	--	528	379	--	--	25	1.2	0.0
403	Kche, Kcgrl	232	July 23, 1976	14	--	82	46	51	11	345	130	69	2.5	< 0.4	--	575	397	921	7.7	21	1.1	.0
403	Kche, Kcgrl	232	July 22, 1977	16	--	79	43	52	--	351	104	67	1.4	< .4	--	535	376	890	7.9	23	1.1	.0
701	Kche, Kcgrl	250	Feb. 19, 1940	--	--	77	45	52	--	348	102	70	--	--	--	517	378	--	--	23	1.1	.0
801	Kctp, Kcho	600	Aug. 17, 1965	13	--	68	41	80	10	364	112	83	1.5	.0	0.6	588	338	1,000	7.2	33	1.8	.0
802	Kctp, Kcho	600	do	13	--	62	40	84	--	336	87	76	1.6	--	.0	528	319	946	7.1	36	2.0	.0
804	Kctp, Kcho	787	July 22, 1977	17	--	69	45	62	--	334	113	73	1.5	< .4	--	545	356	903	8.3	27	1.4	.0
60-101	Kcgru	140	Mar. 4, 1940	--	--	99	37	--	--	268	134	9	--	35	--	447	398	--	--	--	--	.0
501	Kcgru	220	Aug. 13, 1965	10	--	160	105	11	--	364	500	20	3.0	.2	--	988	831	1,440	7.2	3	.1	.0
601	Kcgru	125	Mar. 4, 1940	--	--	183	25	46	--	305	106	73	--	245	--	827	560	--	--	15	.8	.0
604	Kcgru	--	July 9, 1975	8	--	69	19	8	--	253	10	16	.5	33	--	287	252	490	7.8	6	.2	.0
801	Kcgru	184	Mar. 4, 1940	--	--	110	84	29	--	476	256	20	--	--	--	733	622	--	--	9	.5	.0
907	Kcgru	250	do	--	--	299	81	78	--	293	945	16	1.6	--	--	1,564	1,080	--	--	14	1.0	.0
68-01-301	Kche	295	July 15, 1947	--	--	174	83	99	--	318	186	380	--	.0	--	1,078	776	1,950	--	22	1.5	.0
301	Kche	295	July 21, 1977	12	--	101	57	98	--	362	178	163	1.6	< .4	--	788	488	1,300	8.1	30	1.9	.0
302	Kche	300	Oct. 18, 1961	12	--	92	56	99	14	358	164	156	1.9	.0	.5	771	460	1,300	7.0	31	2.0	.0
306	Kche, Kcgrl	350	Apr. 15, 1974	11	--	97	53	99	11	356	168	160	2.2	.2	--	776	461	1,260	7.3	31	2.0	.0
306	Kche Kcgrl	350	July 22, 1975	9	--	101	51	103	--	361	159	164	2.0	< .4	--	766	464	1,250	7.6	33	2.0	.0
306	Kche, Kcgrl	350	July 21, 1977	12	--	98	52	101	15	356	165	158	1.9	< .4	--	778	458	1,260	7.6	31	2.0	.0
309	Kche, Kccc	415	Jan. 29, 1966	14	--	195	86	110	15	436	175	385	2.1	1.2	.5	1,198	840	2,040	6.9	22	1.6	.0
310	Kche, Kccc	300	Aug. 10, 1965	12	0.0	99	64	93	13	370	178	164	1.6	.0	.5	807	510	1,380	7.3	28	1.7	.0
601	Kche, Kcgrl	208	Oct. 20, 1961	18	--	101	31	83	2.6	374	130	58	.6	44	.2	652	380	1,030	6.7	32	1.8	.0
603	Kche, Kcgrl	325	Dec. 24, 1966	14	--	90	61	66	--	364	173	96	2.4	.2	--	681	476	1,140	7.4	23	1.3	.0
604	Kcgrl	275	Feb. 7, 1940	--	--	98	37	9	--	366	91	16	--	--	--	430	398	--	--	5	.1	.0
904	Kcgru	105	Apr. 11, 1940	--	--	389	177	16	--	207	1,472	17	2.7	--	--	2,175	1,700	--	--	2	.1	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RB-68-02-103	Kegrl	100	Feb. 22, 1940	--	--	87	46	47	--	366	75	94	--	--	--	528	409	--	--	20	1.0	0.0
104	Kegrl	150	do	--	--	82	50	58	--	354	98	102	--	--	--	564	411	--	--	24	1.2	.0
105	Kegrl	228	do	--	--	104	14	16	--	305	13	27	--	65	--	388	319	--	--	10	.3	.0
106	Kche, Kccc	315	July 21, 1965	14	--	94	65	100	16	358	168	182	1.9	0.2	0.6	817	466	1,320	6.8	29	1.9	.0
107	Kche, Kegrl	223	do	14	--	91	58	92	13	360	163	154	2.0	.2	.6	764	466	1,320	6.8	29	1.8	.0
109	Kche, Kegrl	300	Feb. 22, 1940	--	--	82	51	75	--	390	94	111	1.6	--	--	606	417	--	--	28	1.6	.0
201	Kegrl	250	Feb. 21, 1940	--	--	110	57	56	--	384	197	76	1.6	--	--	686	510	--	--	19	1.0	.0
202	Kegrl	300	July 23, 1976	13	--	99	51	22	--	405	112	38	1.1	< .4	--	535	455	856	7.7	9	.4	.0
203	Kche, Kegrl	275	Feb. 21, 1940	--	--	45	45	72	--	336	79	70	--	--	--	476	298	--	--	34	1.8	.0
204	Kche, Kegrl	210	July 21, 1965	14	--	74	44	63	10	364	86	92	1.7	.5	.4	453	366	997	7.3	27	1.4	.0
301	Kegrl	198	Feb. 22, 1940	--	--	121	10	15	--	342	12	18	--	75	--	419	346	--	--	9	.3	.0
401	Kegrl	120	do	--	--	109	29	4	--	378	47	19	--	20	--	413	393	--	--	2	.0	.0
502	Kche, Kegrl	163	Jan. 30, 1940	--	--	86	56	126	--	415	154	154	--	--	--	780	444	--	--	38	2.5	.0
505	Kche, Kegrl	221	Feb. 22, 1940	--	--	71	38	98	--	372	79	113	--	--	--	581	333	--	--	39	2.3	.0
601	Kche, Kegrl	170	do	--	--	71	39	82	--	366	79	96	--	--	--	546	339	--	--	35	1.9	.0
603	Kche, Kegrl Kccc	345	Aug. 11, 1965	11	--	155	3	175	--	416	163	188	1.8	.0	.8	902	400	1,420	7.0	49	3.8	.0
605	Kegrl	--	Apr. 9, 1940	--	--	76	21	6	--	275	43	15	.2	--	--	296	278	--	--	5	.1	.0
605	Kegrl	--	July 8, 1975	15	--	105	11	11	--	340	21	18	.4	4.6	--	353	307	587	7.4	7	.2	.0
608	Kche, Kccc	360	July 10, 1974	13	--	80	49	127	--	353	151	168	2.4	< .4	--	764	401	1,180	7.5	41	2.7	.0
608	Kche, Kccc	360	July 21, 1976	10	--	72	49	121	16	340	142	168	2.1	< .4	--	747	382	1,250	7.9	40	2.6	.0
608	Kche, Kccc	360	July 21, 1977	12	--	80	47	131	--	355	148	166	2.1	< .4	--	761	392	1,260	7.9	42	2.8	.0
801	Kegrl	200	Feb. 8, 1940	--	--	106	22	12	--	384	17	16	.2	30	--	392	353	--	--	7	.2	.0
804	Kche, Kegrl, Kccc	529	Aug. 10, 1965	11	--	119	96	53	--	366	398	60	3.4	.0	--	920	692	1,390	7.4	14	.8	.0
902	Kegrl	--	Apr. 9, 1940	--	--	116	28	8	--	415	59	17	.2	--	--	432	407	--	--	4	.1	.0
903	Kche, Kegrl	270	July 22, 1977	12	--	158	34	21	--	460	135	48	.8	2.9	--	637	540	986	8.3	8	.3	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RB-68-02-904	Kegrl	250	July 9, 1974	12	--	98	16	6	--	343	17	12	0.5	1.2	--	331	311	558	7.6	4	0.1	0.0
905	Kegru	--	Feb. 24, 1940	--	--	52	24	10	--	238	30	16	.2	--	--	249	230	--	--	9	.2	.0
907	Kegrl	200	Jan. 30, 1940	--	--	44	43	16	--	299	47	20	--	--	--	317	287	--	--	11	.4	.0
909	Kegru	--	Apr. 9, 1940	--	--	92	25	3	--	372	15	11	--	--	--	328	330	--	--	2	.0	.0
03-101	Kegrl	100	Feb. 9, 1940	--	--	112	66	34	--	403	193	66	--	--	--	669	551	--	--	12	.6	.0
102	Kche	190	Aug. 19, 1965	13	--	62	40	101	--	372	120	74	1.6	.5	--	595	319	1,030	7.3	41	2.4	.0
102	Kche	190	July 22, 1977	15	--	88	32	52	--	375	80	53	1.1	< .4	--	505	353	840	7.8	24	1.2	.0
107	Kche, Kegrl	120	Feb. 19, 1940	--	--	60	40	103	--	372	122	76	--	--	--	583	315	--	--	42	2.5	.0
108	Kche, Kccc	200	Apr. 18, 1974	11	--	61	37	92	11	366	101	81	2.0	1.3	--	577	306	945	7.5	39	2.2	.0
401	Kche	185	Mar. 4, 1957	13	--	51	33	127	--	378	96	90	--	2.0	--	597	262	1,050	7.6	51	3.4	.9
405	Kche, Kegrl	100	Feb. 19, 1940	--	--	84	53	120	--	372	175	142	--	--	--	756	427	--	--	38	2.5	.0
501	Kche, Kegrl	210	do	--	--	75	30	25	--	354	30	34	.3	--	--	368	314	--	--	15	.6	.0
605	Kegrl	188	Jan. 25, 1966	13	--	100	31	12	--	408	20	24	.5	14	--	415	376	73	7.2	6	.2	.0
605	Kegrl	188	July 28, 1977	17	--	112	26	13	--	440	23	20	.4	2.5	--	430	388	710	7.9	7	.2	.0
606	Kegrl	--	July 10, 1975	14	--	126	12	10	--	410	12	21	.3	9.0	--	405	365	680	7.3	6	.2	.0
607	Kcho, Kcs	540	Jan. 25, 1966	9	--	46	30	276	14	356	192	265	2.0	1.0	--	1,010	240	1,740	7.5	70	7.7	1.0
608	Kche, Kccc	321	July 28, 1977	13	--	80	51	28	--	357	116	27	2.0	< .4	--	492	413	798	8.6	13	.6	.0
701	Kche, Kegrl	460	Apr. 29, 1956	--	--	--	--	--	--	426	--	20	--	--	--	229	--	810	8.2	--	--	--
702	Kegrl	220	Feb. 19, 1940	--	--	79	72	4	--	427	91	40	--	--	--	495	494	--	--	2	.0	.0
903	Kche, Kegrl	290	do	--	--	94	50	47	--	403	150	38	1.6	--	--	578	441	--	--	19	.9	.0
04-101	Kegrl	120	do	--	--	89	45	--	--	342	98	19	--	--	--	419	408	--	--	--	--	.0
103	Kegrl	100	do	--	--	88	20	11	--	299	59	13	.3	--	--	338	302	--	--	7	.2	.0
201	Kegru	--	Aug. 17, 1965	11	--	116	14	12	--	372	30	16	.3	17	--	399	347	669	7.5	7	.2	.0
202	Kche, Kegrl	226	Aug. 13, 1965	13	--	129	9	14	--	332	35	36	.5	36	--	435	360	750	7.1	8	.3	.0
207	Kche	300	Jan. 26, 1966	11	--	139	15	12	--	348	111	20	.3	5.8	--	485	408	454	7.2	6	.2	.0
207	Kche	300	July 27, 1977	13	--	129	14	11	--	351	89	16	.3	5.9	--	450	379	717	7.7	6	.2	.0
302	Kche, Kegrl	304	Feb. 28, 1940	--	--	114	60	4	--	464	126	20	--	--	--	552	532	--	--	2	.0	.0
307	Kche, Kegrl	260	Aug. 17, 1965	11	--	142	30	10	--	340	21	56	.6	148	--	585	478	1,070	7.1	4	.1	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RB-68-04-309	Kcgrl	180	July 23, 1976	14	--	98	22	8	--	368	14	19	0.4	13	0.1	369	336	620	7.5	5	0.1	0.0
309	Kcgrl	180	July 27, 1977	14	--	99	21	9	--	365	11	16	.4	14	--	364	334	620	7.8	6	.2	.0
310	Kcgrl	79	July 22, 1976	15	--	116	12	15	--	364	23	21	.3	27	--	408	342	671	7.9	9	.3	.0
503	Kcho, Kcgrl	300	Apr. 12, 1940	--	--	86	44	18	--	342	93	42	--	--	--	451	397	--	--	9	.3	.0
504	Kche, Kcgrl	312	do	--	--	81	39	7	--	378	34	18	--	--	--	364	364	--	--	4	.1	.0
601	Kcgrl	119	do	--	--	72	42	32	--	366	65	37	--	--	--	427	351	--	--	16	.7	.0
602	Kcgrl	--	Apr. 3, 1940	--	--	107	18	7	--	384	20	15	--	--	--	355	341	--	--	4	.1	.0
606	Kcgrl	35	Apr. 12, 1940	--	--	129	18	2	--	415	14	32	--	--	--	399	396	--	--	1	.0	.0
701	Kcgrl	--	Jan. 17, 1940	--	--	93	18	15	--	372	12	15	--	--	--	335	306	--	--	10	.3	.0
801	Kccc	100	Apr. 8, 1940	--	--	95	18	22	--	390	18	14	--	--	--	358	311	--	--	13	.5	.1
803	Kccc	120	July 27, 1977	16	--	193	25	14	--	495	18	124	.3	4.9	--	638	588	1,053	8.3	5	.2	.0
901	Kccc	100	Apr. 12, 1940	--	--	54	44	40	--	360	51	40	--	--	--	406	317	--	--	22	.9	.0
902	Kcgrl	--	Apr. 2, 1940	--	--	82	13	4	--	275	25	11	.2	--	--	270	258	--	--	3	.1	.0
905	Kcgrl	--	do	--	--	76	13	22	--	293	28	16	.2	--	--	299	243	--	--	16	.6	.0
905	Kcgrl	--	Aug. 3, 1965	14	--	102	16	9	1.3	344	30	18	.1	8.8	.1	368	320	644	7.0	6	.2	.0
906	Kcho, Kcs	360	July 25, 1965	10	--	98	46	272	--	294	264	342	1.1	28	--	1,205	434	2,060	6.9	58	5.6	.0
908	Kcgrl	105	Apr. 8, 1940	--	--	87	23	8	--	372	--	17	--	--	--	317	314	--	--	5	.1	.0
909	Kcho, Kcs	365	Aug. 3, 1965	12	--	50	40	447	16	276	400	460	1.0	3.0	4.2	1,568	290	2,630	7.1	76	11.4	.0
909	Kcho, Kcs	365	Apr. 15, 1974	11	--	59	36	437	--	270	359	479	2.5	5.5	--	1,521	295	2,400	7.5	76	11.0	.0
909	Kcho, Kcs	365	July 22, 1976	11	--	53	35	449	17	275	362	487	1.9	2.9	--	1,554	277	2,450	7.7	77	11.7	.0
909	Kcho, Kcs	365	July 27, 1977	13	--	62	31	435	--	273	368	442	1.9	< .4	--	1,487	285	2,370	7.8	77	11.2	.0
05-102	Kcgrl	260	Jan. 25, 1966	9	--	78	34	8	2.2	336	56	15	.8	1.0	--	369	336	645	7.4	5	.1	.0
102	Kcgrl	260	July 27, 1977	12	--	112	19	9	--	365	39	16	.4	9.0	--	395	357	640	8.1	5	.2	.0
402	Kccc	225	July 9, 1974	12	--	81	29	11	--	364	14	17	.5	.2	--	343	324	596	7.6	7	.2	.0
502	Kcgrl	160	Jan. 25, 1966	11	--	82	12	6	1.3	284	4	10	.4	14	--	280	252	498	7.3	5	.1	.0
09-301	Kcgru	230	Apr. 10, 1940	--	--	439	147	6	--	293	1,390	21	--	--	--	2,347	1,700	--	--	.7	.0	.0
10-201	Kche, Kcgrl, Kccc	840	Jan. 24, 1966	10	--	480	210	13	--	340	1,700	20	4.6	.2	--	2,604	2,060	2,930	7.1	1	.1	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Streams--Continued

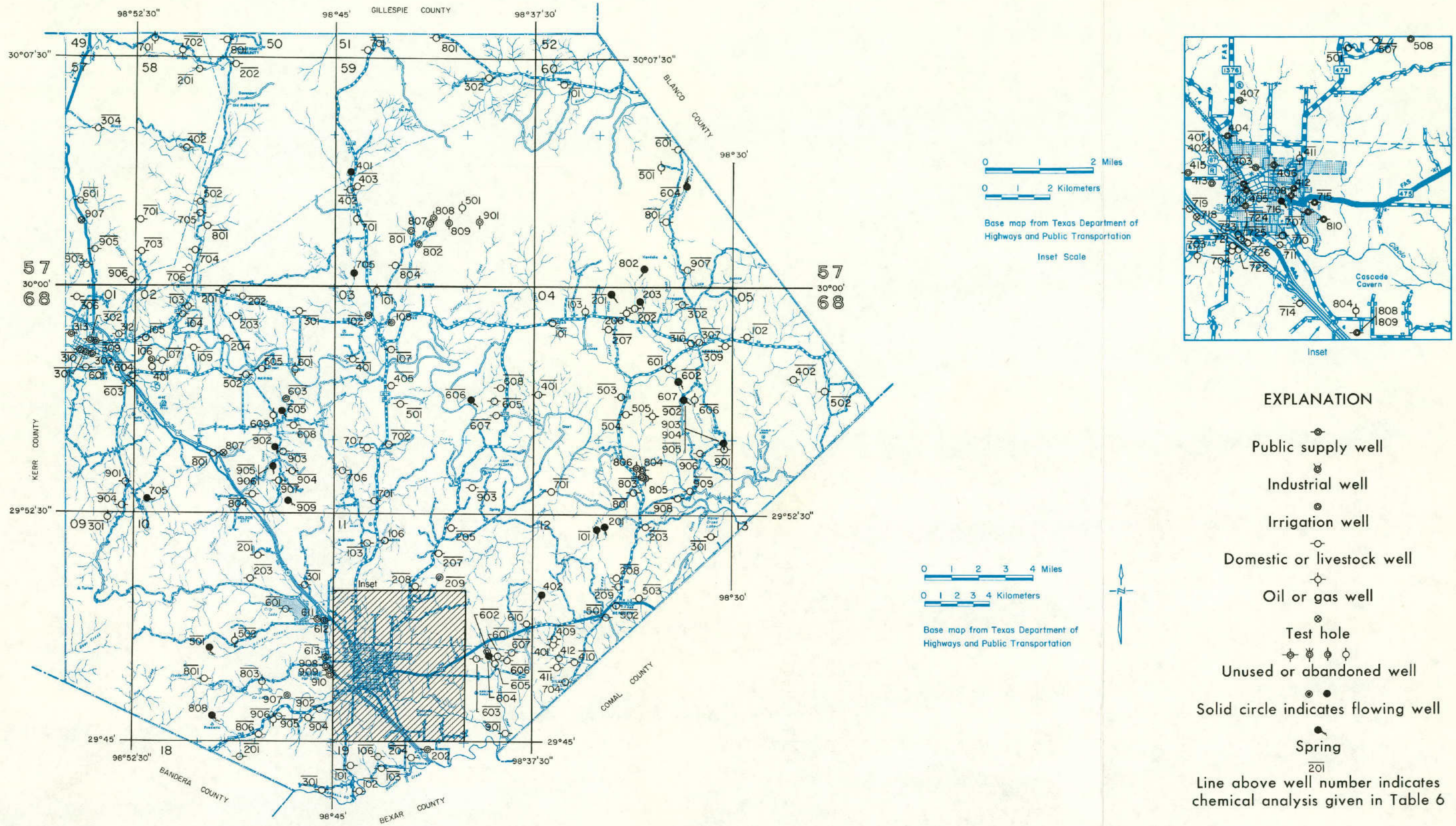
Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RB-68-10-203	Kche, Kcgrl, Kccc	600	July 9, 1974	10	--	150	110	18	--	361	520	16	4.0	1.3	--	1,006	830	1,340	7.4	5	0.2	0.0
301	Kcgrl	350	Jan. 29, 1940	--	--	120	47	4	--	336	191	16	1.2	--	--	544	494	--	--	2	.0	.0
501	Kcgru	--	Apr. 10, 1940	--	--	--	--	--	--	323	--	13	--	--	--	171	--	--	--	--	--	--
502	Kcbo, Kcs	1,167	July 28, 1965	15	--	62	44	262	19	320	200	335	1.4	1.5	1.6	1,098	336	1,920	7.0	61	6.2	.0
601	Kcgru	230	do	12	--	142	101	11	--	422	405	14	2.9	.0	--	895	770	1,340	6.8	3	.1	.0
613	Kcgrl	152	July 27, 1977	13	--	141	40	9	--	344	207	15	.8	6.3	--	601	520	880	7.8	4	.1	.0
801	Kcgrl	600	July 29, 1965	12	--	173	138	45	--	328	726	43	4.0	--	.2	1,302	999	1,800	6.8	9	.6	.0
803	Kcgru	145	Jan. 10, 1940	--	--	196	93	2	--	348	538	14	2.4	--	--	1,016	872	--	--	.5	.0	.0
806	Kcbo	1,098	July 23, 1965	13	--	30	26	193	13	322	128	154	1.6	.2	1.6	718	182	1,290	7.5	68	6.2	1.6
902	Kche, Kcgrl, Kccc	589	Jan. 24, 1966	11	1.6	88	88	61	--	384	322	41	1.8	.2	--	803	580	1,260	7.4	19	1.1	.0
904	Kcgru	40	Jan. 9, 1940	--	--	124	32	17	--	317	128	36	.1	41	--	533	440	--	--	8	.3	.0
905	Kcgru	100	do	--	--	82	34	12	--	311	95	13	.1	--	--	389	346	--	--	7	.2	.0
906	Kcgru	30	do	--	--	71	20	3	--	287	10	12	--	--	--	257	257	--	--	2	.0	.0
11-103	Kcgrl	200	Apr. 18, 1974	10	--	105	7	6	--	314	9	14	.6	22	--	327	292	554	7.2	4	.1	.0
103	Kcgrl	200	July 21, 1976	11	--	103	9	6	1.0	317	9	14	.3	19	--	328	295	554	7.6	4	.1	.0
205	Kcgrl	15	Feb. 28, 1940	--	--	117	8	2	--	343	13	25	.2	--	--	333	325	--	--	1	.0	.0
207	Kcgrl	200	do	--	--	117	9	14	--	354	22	14	--	--	--	350	331	--	--	8	.3	.0
208	Kcgru	95	Aug. 16, 1965	11	--	152	35	13	--	346	234	16	.8	.0	--	631	523	962	7.3	5	.2	.0
209	Kcgrl	55	July 22, 1975	12	--	115	9	9	--	351	26	15	.5	2.2	--	361	325	595	7.7	6	.2	.0
401	Kcgru	46	July 30, 1965	14	--	110	17	13	1.4	360	37	24	.3	2.8	.1	396	344	703	6.7	8	.3	.0
403	Kcgrl	98	Feb. 7, 1962	--	--	98	30	13	--	301	75	23	1.1	19	--	407	370	764	7.1	7	.2	.0
405	Kcgru	38	Nov. 2, 1945	12	--	104	18	8	2.6	300	69	20	.4	10	--	391	334	607	6.8	5	.1	.0
411	Kcgrl	247	Feb. 28, 1940	--	--	18	43	98	--	354	110	20	--	--	--	463	221	--	--	49	2.8	1.3
501	Kcgrl	249	Feb. 7, 1962	--	--	94	36	11	--	320	87	18	1.2	17	--	422	385	760	7.2	6	.2	.0
507	Kche, Kcgrl, Kccc	595	Nov. 25, 1974	14	--	86	29	8	--	334	59	17	.9	< .4	--	378	335	605	8.3	5	.1	.0
601	Kcgrl	346	Nov. 1, 1951	12	--	86	19	4	--	325	16	11	--	4.5	--	312	292	554	7.4	3	.1	.0
602	Kcgrl	8	Nov. 2, 1951	11	--	96	15	1	--	332	15	10	--	4.0	--	315	301	561	7.6	.7	.0	.0
603	Kcgrl	55	Nov. 1, 1951	13	--	114	11	5	--	366	13	11	--	13	--	359	330	626	7.3	3	.1	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RB-68-11-604	Kcgrl	--	Nov. 1, 1951	12	--	110	12	12	--	362	33	11	--	4.0	--	371	324	608	7.6	7	0.2	0.0
605	Kcgrl	15	do	9	--	44	13	14	--	160	19	30	--	.0	--	207	163	400	7.8	16	.4	.0
606	Kcgrl	362	do	12	--	75	25	6	--	319	15	16	--	6.3	--	312	290	557	7.5	4	.1	.0
607	Kcgrl	60	do	11	--	92	18	8	--	334	16	15	--	6.1	--	330	304	586	7.3	5	.1	.0
610	Kcgrl	240	Apr. 8, 1940	--	--	119	35	16	--	458	77	15	--	--	--	487	441	--	--	7	.3	.0
703	Kcgru	180	Jan. 9, 1940	--	--	599	136	49	--	293	1,810	25	--	--	--	2,763	2,060	--	--	5	.4	.0
704	Kcgru	100	do	--	--	202	49	19	--	305	434	27	1.4	--	--	882	705	--	--	6	.3	.0
707	Kche, Kcgrl, Kccc	425	Jan. 24, 1966	13	--	92	39	16	3.2	354	89	25	1.5	5.7	0.1	458	388	773	7.3	8	.3	.0
710	Kcgrl	70	Apr. 8, 1940	--	--	122	20	--	--	397	15	15	--	29	--	396	387	--	--	--	--	.0
710	Kcgrl	70	Aug. 3, 1965	11	--	99	14	19	--	284	58	23	.3	23	--	386	304	659	7.0	12	.4	.0
711	Kcgrl	330	do	13	--	134	110	21	--	388	466	15	3.4	.2	--	953	787	1,390	7.0	5	.3	.0
714	Kcgrl	91	Apr. 9, 1940	--	--	55	8	54	--	329	--	8	--	--	--	286	170	--	--	41	1.8	1.9
715	Kche, Kcgrl, Kccc	373	July 27, 1977	8	--	73	44	14	--	332	83	22	1.6	< .4	--	409	365	670	8.3	8	.3	.0
719	Kccc	475	June 20, 1977	12	--	74	57	104	17	362	239	85	2.7	2.3	--	770	419	1,163	7.8	34	2.2	.0
719	Kccc	475	July 27, 1977	12	--	75	58	109	--	336	238	82	2.7	.8	--	742	427	1,162	8.6	36	2.2	.0
721	Kccc	500	Nov. 7, 1974	11	--	73	60	98	--	361	229	81	2.8	2.1	--	734	427	1,155	7.9	33	2.0	.0
722	Kcgru	80	do	9	--	112	47	14	--	372	147	24	2.3	< .4	--	538	471	840	7.8	6	.2	.0
723	Kcgru	104	Nov. 6, 1974	11	--	159	27	13	--	328	220	24	1.2	1.1	--	617	510	895	7.5	5	.2	.0
724	Kcgru	105	do	10	--	272	79	14	--	326	690	24	2.3	< .4	--	1,251	1,000	1,550	7.6	3	.1	.0
725	Kcgru	80	do	9	--	133	24	10	--	361	120	17	1.4	7.0	--	498	429	765	7.8	5	.2	.0
726	Kcgru	--	Nov. 7, 1974	12	--	124	19	10	--	405	43	16	.3	7.0	--	430	389	705	7.5	5	.2	.0
901	Kche, Kcgrl, Kccc	320	Nov. 24, 1974	21	--	72	24	9	--	314	19	15	.4	4.0	--	318	282	530	7.8	7	.2	.0
12-101	Kcgrl	--	Apr. 8, 1940	--	--	45	8	12	--	201	--	4	--	--	--	167	145	--	--	15	.4	.3
203	Kche, Kcgrl, Kccc	410	Aug. 3, 1965	12	--	114	12	6	1.8	392	7	12	.0	8.3	--	365	334	648	6.8	4	.1	.0
208	Kche, Kcgrl, Kccc	352	Apr. 15, 1974	10	--	107	15	8	--	349	21	15	.6	17	--	365	329	604	7.4	5	.1	.0
208	Kche, Kcgrl, Kccc	352	July 22, 1976	9	--	104	13	6	--	348	12	11	.3	5.7	--	332	311	559	7.7	4	.1	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RB-68-12-208	Kche, Kcgrl, Kccc	352	July 22, 1977	11	--	103	15	7	--	365	14	11	0.3	5.7	--	346	321	584	7.8	5	0.1	0.0
209	Kcgrl	365	Mar. 8, 1940	--	--	83	55	72	--	378	197	49	2.2	--	--	644	434	--	--	27	1.5	.0
301	Kcho	555	Dec. 3, 1976	14	--	57	37	252	--	328	219	265	1.1	< .4	--	1,006	299	1,620	8.1	65	6.3	.0
409	Kcgrl	351	Apr. 15, 1974	8	--	90	25	20	--	329	62	21	1.0	< .4	--	389	330	640	7.5	12	.4	.0
409	Kcgrl	351	July 22, 1976	11	--	82	61	79	--	360	240	56	2.6	< .4	--	709	459	1,100	7.6	27	1.6	.0
410	Kcgrl	290	Aug. 3, 1965	--	--	97	17	16	--	354	12	14	--	27	--	357	310	--	--	10	.3	.0
411	Kcgrl	260	do	11	--	88	13	4	.9	322	7	73	.0	2.8	--	358	273	532	7.1	3	.1	.0
501	Kcgrl	425	Mar. 7, 1940	--	--	83	54	44	--	311	189	48	2.0	--	--	572	428	--	--	18	.9	.0
502	Kcgrl	410	Mar. 8, 1940	--	--	84	23	12	--	268	20	22	.2	71	--	363	304	--	--	8	.2	.0
503	Kcgrl	310	do	--	--	74	18	13	--	317	12	12	--	--	--	284	261	--	--	10	.3	.0
18-201	Kcgru	490	July 9, 1974	9	--	310	29	5	--	224	680	9	.7	< .4	--	1,153	890	1,380	7.6	1	.0	.0
301	Kche, Kcgrl, Kccc	490	Nov. 25,1974	15	--	107	103	37	--	354	433	25	5.1	2.1	--	901	690	1,250	7.8	10	.6	.0
19-101	Kcgru	90	Jan. 9, 1940	--	--	111	20	24	--	366	26	43	--	2.6	--	406	357	--	--	13	.5	.0
102	Kcgru	135	do	--	--	89	45	5	--	384	80	15	--	--	--	422	408	--	--	3	.1	.0
103	Kcgrl	390	Apr. 9, 1940	--	--	104	43	13	--	354	146	13	1.4	--	--	494	436	--	--	6	.2	.0
106	Kche, Kcgrl, Kccc	440	Aug. 20, 1976	11	0.2	110	95	22	--	382	354	14	4.2	< .4	--	798	670	1,136	8.1	7	.3	.0
204	Kche, Kcgrl, Kccc	425	Aug. 2, 1965	13	--	83	66	41	--	400	177	33	2.9	.8	--	613	478	1,010	6.8	16	.8	.0



Location of Selected Wells, Springs, and Oil and Gas Tests in Kendall County

KERR COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.

Water level : Reported water levels given in feet; measured water levels given in feet and tenths.

Method of lift and type of power: C, cylinder; E, electric; G, gasoline, butane, or diesel engine; J, jet; N, none; Sub, submersible; T, turbine; W, windmill. Number indicates horsepower.

Use of water : D, domestic; Ind, industrial; Irr, irrigation; N, none; P, public supply; S, livestock.

Water-bearing units : Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kctp, Travis Peak Formation; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation.

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
RJ-56-51-401	M. B. Schreiner no. 1	O. N. Beer, Inc.	1960	4,218	--	--	--	2,198	--	--	--	--	Oil test. 1/ 2/
501	W. R. Schreiner no. 1	Tucker Drilling	1958	4,014	--	--	--	2,130	--	--	--	--	Do.
502	do	Humble Oil & Refining Co.	1945	3,770	--	--	--	2,057	--	--	--	--	Do.
* 52-301	J. T. Burrus	M. Scarbrough	1939	742	6 4	360 742	Kcgr, Kche	2,192	525	1966	C, W	S	Slotted from 700 to 742 feet. 2/
53-207	Allen Keller Co.	H. W. Schwope and Sons Water Well Drilling	1974	738	8	738	Kche	2,165	--	--	Sub, E 30	Ind	Slotted. Reported yield 118 gal/min.
* 208	do	Edmonds Drilling Co.	1973	730	8 7	659 730	Kche	2,180	562	Nov. 1973	Sub, E 30	Ind	Slotted from 560 to 730 feet. Reported yield 85 gal/min.
* 61-502	Boy Scouts of America	do	1964	756	7	756	Kche	2,060	482.5	Apr. 11, 1967	Sub, E 7 1/2	P	Perforated from 712 to 756 feet. Cemented from 712 feet to surface. 2/
506	do	do	1974	750	10 7	40 687	Kche	2,090	484	Apr. 4, 1974	Sub, E 5	P	Open hole from 687 to 750 feet. Cemented from 687 feet to surface. Reported yield 100 gal/min.
601	Camp Wildemar	do	1967	765	7	565	Kche	1,845	262.9	Apr. 3, 1967	Sub, E 15	P	Open hole from 565 to 765 feet.
* 62-106	J. H. Duncan	--	--	Spring	--	--	Kcgru	1,780	--	--	Flows	--	Estimated flow 10 gal/min. 2/
304	Holiday Mobile Home Park	--	--	425	6 4	-- 420	Kche	1,790	265	Aug. 10, 1976	Sub, E 3	P	Deepened from 319 to 425 feet on Aug. 10, 1976.
* 401	C. A. Clements	--	--	305	6	--	Kcgru	1,780	150	1951	N	N	2/
* 404	J. D. Brance	William E. Page	1965	618	7	600	Kche	1,780	225	May 1966	T, E 3	D	Open hole from 600 to 618 feet. 2/
* 405	L. Graham	Edmonds Drilling Co.	1965	712	7	712	Kche	1,800	157	Dec. 1965	Sub, E 3	D, S	Slotted from 602 to 626 feet, 652 to 675 feet, and 692 to 712 feet. 2/
406	Camp Flaming Arrow	William E. Page	1974	520	6	520	Kcgrl	1,840	--	--	Sub, E 5	P	Perforated.
* 501	J. W. Calvin, well 1	Edmonds Drilling Co.	1963	921	7 5	756 921	Kche	2,025	413.7	May 5, 1966	Sub, E 15	P	Slotted from 760 to 921 feet. 1/ 2/
* 504	Joe T. Meyer	Schumacher Pump Service	1974	460	6	440	Kche	1,780	237	Feb. 11, 1974	Sub, E 3	D	Open hole from 440 to 460 feet. Cemented from 430 feet to surface. Reported yield 200 gal/min.
505	J. W. Calvin, well 2	Edmonds Drilling Co.	1972	820	8 6	583 820	Kche	1,970	295	Nov. 30, 1972	Sub, E 15	P	Slotted from 577 to 820 feet. Cemented from 583 feet to surface. Reported yield 100 gal/min.
* 601	W. D. Lancaster	do	1960	400	5 4	360 400	Kche	1,745	158	1960	Sub, E 1	D, S	Slotted from 360 to 400 feet. Pump set at 231 feet. 2/

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
RJ-56-62-604	Camp Rio Vista	Hill Country Water Inc.	1976	480	6	461	Kche	1,820	250	Apr. 21, 1976	Sub, E 5	P	Open hole from 461 to 480 feet. Cemented from 461 feet to surface. Reported yield 40 gal/min.
* 801	Mrs. H. C. Hanszen	--	1956	864	8	864	Kche, Kccc	1,955	378.8 265.5	May 16, 1966 Mar. 12, 1976	Sub, E 15	D, S	Drilled to 1,060 feet and plugged back to 864. feet. Perforated from 729 to 795 feet and 805 to 820 feet. Reported yield 150 gal/min. Observation well. 1/ 2/
804	J. Moore	British-American Oil Co.	1964	1,232	--	--	--	2,097	--	--	--	--	Oil test. 1/ 2/
63-204	S. L. Ballard	W. Wehmeyer	1961	234	6	--	Kegrl	1,720	158.3 172.1	Nov. 23, 1966 May 19, 1977	Sub, E 3/4	D	Observation well. 2/
* 401	Ingram Water Supply, well 1	Edmonds Drilling Co.	1965	600	8 7 5	67 400 600	Kche	1,780	215	Apr. 1966	T, E 15	P	Perforated from 400 to 600 feet. Cemented from 400 feet to surface. Reported yield 140 gal/min. 2/
402	Ingram Water Supply, well 2	do	1962	625	8 7	435 625	Kche	1,840	276 298	Apr. 26, 1966 May 4, 1973	Sub, E 20	P	Perforated from 435 to 625 feet. Cemented from 435 feet to surface. Reported yield 120 gal/min with 13 feet drawdown.
* 403	J. W. Hill	do	1958	536	7	536	Kche	1,905	335	July 1958	Sub, E 2	D	Slotted from 486 to 536 feet. Pump set at 420 feet.
407	Ingram Water Supply, well 3	William E. Page	1973	610	8	442	Kche	1,870	--	--	Sub, E 15	P	Open hole from 442 to 610 feet. Cemented from 442 feet to surface. Reported yield 20 gal/min with 0 feet drawdown.
408	L. M. York	Hill Country Water Inc.	1975	320	6	251	Kegrl	1,685	174.1	Oct. 6, 1977	Sub, E 1	P	Open hole from 251 to 320 feet. Cemented from 251 feet to surface. Reported yield 50 gal/min.
501	City of Kerrville	R. Saunders	1957	620	16 12	513 620	Kcho	1,674	214.9 252	Feb. 16, 1967 Oct. 23, 1973	Sub, E 100	P	Slotted from 513 to 620 feet. Cemented from 513 feet to surface. Pump set at 400 feet. Reported yield 900 gal/min with 84 feet drawdown. Acidized. 2/
* 502	W. F. Stelzer	Edmonds Drilling Co.	1965	657	9	657	Kctp, Kcho	1,702	400	Apr. 26, 1966	Sub, E 15	D	Slotted from 470 to 540 feet and 550 to 630 feet. Pump set at 550 feet. 1/ 2/
507	R. Hansen	King Stokes	1956	614	8	450	Kccc, Kcho	1,665	200	Dec. 2, 1966	Sub, E 1/2	D	Open hole from 450 to 614 feet. Yield increased to 300 gal/min when acidized. 1/ 2/
601	City of Kerrville, well 1	--	--	610	7	--	Kctp, Kcho	1,650	157.1	Apr. 14, 1966	N	N	Plugged. 2/
* 602	City of Kerrville, well 2	--	--	650	7	252	Kctp, Kcho	1,650	153.6	do	N	N	Open hole from 252 to 650 feet. Reported yield 500 gal/min. Plugged. 2/
* 603	City of Kerrville, well 3	J. R. Johnson Drilling Co.	1940	725	12 10	219 498	Kcho	1,652	275.3 242 220 243	June 14, 1967 Sept. 1967 Mar. 24, 1968 May 24, 1968	T, E 75	P	Drilled to 725 feet and caved back to 667 feet. Open hole from 498 to 667 feet. Cemented from 219 feet to surface. Pump set at 400 feet. Reported yield 610 gal/min with 39 feet drawdown. 1/ 2/
* 604	City of Kerrville, well 4	J. H. Crowder	1945	606	14 10	292 470	Kcho	1,653	192.5 248	Feb. 14, 1967 Sept. 1967	T, E 75	P	Open hole from 470 to 606 feet. Cemented from 292 feet to surface. Pump set at 450 feet. Reported yield 670 gal/min with 30 feet drawdown. Acidized. 2/
* 605	City of Kerrville, well 5	J. R. Johnson Drilling Co.	1947	600	14 10	384 470	Kcho	1,656	232.7 244 245	Apr. 13, 1967 May 17, 1972 Oct. 24, 1973	T, E 100	P	Open hole from 463 to 600 feet. Cemented from 470 feet to surface. Pump set at 410 feet. Reported yield 1,000 gal/min. Acidized. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
RJ-56-63-606	City of Kerrville, well 14	J. R. Johnson Drilling Co.	1949	665	12	605	Kcho	1,683	200 235 326	Aug. 1967 Mar. 21, 1973 Nov. 2, 1973	Sub, E 115	P	Open hole from 605 to 665 feet. Cemented from 605 feet to surface. Pump set at 550 feet. Reported yield 927 gal/min. Acidized. 1/ 2/
607	City of Kerrville, well 7	do	1949	634	16 13	478 530	Kcho	1,640	267.6 248 267 243	June 14, 1967 Sept. 5, 1968 Apr. 20, 1971 Nov. 9, 1973	T, E 125	P	Open hole from 530 to 634 feet. Cemented from 478 feet to surface. Pump set at 400 feet. Reported yield 1,150 gal/min with 38 feet drawdown. Acidized. 1/ 2/
608	City of Kerrville, well 8	do	1952	619	20	440	Kcho	1,632	139.6 184 173 163 175.2	Mar. 17, 1967 July 1, 1971 May 21, 1973 Oct. 31, 1973 Mar. 3, 1976	Sub, E 150	P	Open hole from 440 to 619 feet. Cemented from 440 feet to surface. Pump set at 376 feet. Reported yield 140 gal/min with 82 feet drawdown. Acidized. Observation well. 1/ 2/
609	City of Kerrville	Edmonds Drilling Co.	1963	601	--	--	Kcho	1,631	--	--	N	N	1/ 2/
610	do	do	1965	670	--	--	Kcho	1,722	--	--	--	D	1/ 2/
611	City of Kerrville, well 12	do	1965	610	12	540	Kcho	1,695	171 195 237 215.8	Mar. 23, 1966 June 21, 1966 Aug. 25, 1966 Apr. 13, 1967	T, E 125	P	Open hole from 540 to 610 feet. Cemented from 540 feet to surface. Pump set at 450 feet. Reported yield 1,227 gal/min with 124 feet drawdown. Acidized. 1/ 2/
614	City of Kerrville, well 13	do	1966	603	12	532	Kcho	1,620	197.0 256	Sept. 20, 1966 Oct. 26, 1973	Sub, E 115	P	Open hole from 532 to 603 feet. Cemented from 532 feet to surface. Pump set at 500 feet. Reported yield 512 gal/min with 207 feet drawdown. Acidized. 1/ 2/
801	Montebellow Estates	William E. Page	1976	645	5	562	Kcgrl	1,905	407	Sept. 9, 1977	Sub, E 5	P	Open hole from 562 to 645 feet. Cemented from 562 feet to surface.
802	Otheil Orlund	do	1971	540	5	480	Kcgrl	1,830	347	July 2, 1975	Sub, E 5	P	Open hole from 480 to 540 feet. Cemented from 480 feet to surface.
901	City of Kerrville, well 9	J. R. Johnson Drilling Co.	1952	625	12 10	475 625	Kcho	1,608	157 194 163 177.3	Mar. 23, 1966 June 21, 1966 Jan. 26, 1967 Mar. 17, 1967	Sub, E 75	P	Slotted from 500 to 625 feet. Pump set at 333 feet. Reported yield 764 gal/min with 85 feet drawdown. Acidized. 1/ 2/
902	Kerrville South Utilities, well 2	Gus Braendel	1951	583	8	--	--	1,640	175 242.9	1951 Oct. 7, 1977	Sub, E 7 1/2	P	2/
903	Riverhill Municipal Utility Dist.	Wright Drilling Co.	1966	560	12	350	Kcgrl, Kcho, Kccc	1,620	123.2	Apr. 7, 1966	Sub, E 25	P	Slotted from 255 to 350 feet. Cemented from 255 feet to surface. Yield increased from 325 to 700 gal/min when acidized. 1/ 2/
904	do	do	1966	600	8	340	Kcgrl, Kcho, Kccc	1,720	204.8	do	N	N	Open hole from 340 to 600 feet. Reported yield 200 gal/min with 42 feet drawdown. Yield increased from 135 to 200 gal/min when acidized. 1/ 2/
905	do	William E. Page	--	395	8	--	Kcgrl	1,620	175	1972	Sub, E 15	Irr	Drilled to 600 feet and caved back to 395 feet. Reported yield 80 gal/min. 2/
906	do	Edmonds Drilling Co.	1964	631	8	631	Kcho	1,610	150 257	1964 June 1975	Sub, E 5	P	Slotted from 545 to 568 feet and 575 to 618 feet. Pump set at 441 feet. 1/ 2/
909	do	Wright Drilling Co.	1975	642	10	551	Kcho	1,615	269	do	Sub, E 75	P	Slotted from 551 to 632 feet. Cemented from 551 feet to surface. Pump set at 531 feet. Reported yield 450 gal/min with 204 feet drawdown. 1/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
RJ-56-63-910	Riverhill Municipal Utility Dist.	Edmonds Drilling Co.	1969	630	8	630	Kegrl, Kehe	1,810	331	1975	Sub, E 25	P	Slotted from 450 to 630 feet. Cemented from 450 feet to surface. Pump set at 441 feet. Reported yield 125 gal/min.
912	Oak Grove Trailer Park	do	1969	540	7	436	Kegr, Kehe	1,725	--	--	Sub, E 7 1/2	P	Slotted from 380 to 436 feet. Open hole from 436 to 540 feet. Cemented from 380 feet to surface. Reported yield 100 gal/min with 50 feet drawdown.
913	Kerrville South Utilities, well 1	do	1967	740	8	740	Kegrl, Kehe, Kccc	1,875	--	--	Sub, E 30	P	Slotted from 500 to 642 feet and 695 to 720 feet. Cemented from 500 feet to surface.
914	Kerrville South Utilities, well 3	do	1967	480	5	390	Kegrl	1,750	--	--	Sub, E 3	P	Open hole from 390 to 480 feet. Cemented from 390 feet to surface.
915	Kerrville South Utilities, well 4	Gus Braendel	--	500	8 7	-- --	Kegrl, Kehe	1,685	279.3	Oct. 19, 1977	Sub, E 7 1/2	P	--
916	Kerrville South Utilities, well 5	Edmonds Drilling Co.	1973	440	7	385	Kegrl	1,742	297.6	Oct. 6, 1977	Sub, E 7 1/2	P	Open hole from 385 to 440 feet. Cemented from 385 feet to surface.
64-205	Wilderness Park	do	1971	750	7 6 5	600 694 750	Kegrl	2,061	470 495.8	July 7, 1971 Oct. 6, 1977	Sub, E	P	Slotted. Cemented from 600 feet to surface.
* 401	United States Department of Agriculture	W. F. Wehmeyer	1960	465	5 4	376 465	Kehe	1,840	307	1960	Sub, E 3	P	Slotted from 376 to 465 feet. 2/
403	City of Kerrville	Edmonds Drilling Co.	1965	604	--	--	Keho	1,654	--	--	N	N	1/ 2/
406	United States Department of Agriculture	do	1966	430	5	430	Kehe	1,820	225	1966	Sub, E 5	P, S	Perforated from 370 to 430 feet. Cemented from 370 feet to surface. Pump set at 430 feet.
407	City of Kerrville, well 15	do	1972	620	12	541	Keho	1,720	219 440	May 1972 Oct. 26, 1973	Sub, E 40	P	Open hole from 541 to 600 feet. Cemented from 541 feet to surface. Pump set at 550 feet. 1/
* 501	Dan Madeley	--	--	Spring	--	--	Kegru	1,830	--	--	Flows	S	Reported flow 15 gal/min on June 15, 1966. 2/
* 601	B. R. Schulz	J. R. Johnson Drilling Co.	1952	634	12	600	Keho	1,758	150 167.5	1952 Aug. 21, 1975	T, E 75	Irr	Open hole from 600 to 634 feet. Pump set at 330 feet. Reported yield 1,000 gal/min. 2/
* 605	Texas Department of Highways and Transportation	Hill Country Water, Inc.	1975	690	10	580	Keho	1,900	359	July 17, 1975	--	P	Open hole from 580 to 690 feet. Reported yield 249 gal/min with 171 feet drawdown. 1/
701	City of Kerrville, well 11	J. R. Johnson Drilling Co.	1963	638	12	528	Keho	1,600	171.5 194.7 207 244 250 269.9	Mar. 23, 1966 June 21, 1966 Mar. 29, 1970 Jan. 10, 1971 Oct. 25, 1973 Mar. 12, 1976	T, E 150	P	Open hole from 528 to 638 feet. Cemented from 528 feet to surface. Pump set at 450 feet. Reported yield 938 gal/min with 97 feet drawdown. Acidized. Observation well. 1/ 2/
* 702	United States Veterans Administration Hospital	do	1962	665	12	643	Keho	1,630	135 303	May 1966 Sept. 3, 1975	Sub, E 75	P	Perforated from 598 to 643 feet. Open hole from 643 to 665 feet. Pump set at 398 feet. Reported yield 325 gal/min with 13 feet drawdown. Acidized. 2/
* 703	City of Kerrville, Farm well	King Stokes	1953	457	7	427	Kehe	1,639	138.7	Mar. 16, 1967	C, E 1	D, S	Drilled to 600 feet and caved back to 457 feet. Open hole from 427 to 457 feet. Pump set at 245 feet. 1/ 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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
* RJ-56-64-704	J. Peschel	William E. Page	1962	302	6	184	Kcgru	1,635	197	1962	Sub, E	D, S	2/
* 705	Kerrville State Park	--	1933	336	7	336	Kchc	1,585	62.7 106.9 126	July 28, 1950 Mar. 15, 1967 July 7, 1969	Sub, E 5	P	Slotted. Reported yield 228 gal/min with 127 feet drawdown. 2/
707	Lions Camp, well 2	Edmonds Drilling Co.	1957	668	8	548	Kcho	1,620	135	1957	Sub, E 15	P	Slotted from 548 to 668 feet. Cemented from 548 feet to surface. Reported yield 80 gal/min. 2/
708	Lions Camp, well 1	Cravens Drilling Co.	1952	466	7	443	Kche	1,620	76 158	1952 Apr. 1975	Sub, E 10	P	Open hole from 443 to 466 feet. Pump set at 225 feet. 2/
709	City of Kerrville, Oak Ridge Estates	J. R. Johnson Drilling Co.	1974	760	16	724	Kcho	1,790	440	July 24, 1974	N	N	Open hole from 724 to 760 feet. Cemented from 724 feet to surface. Reported yield 185 gal/min with 60 feet drawdown.
* 57-57-701	A. C. Pfeiffer	B. Werner	1956	263	6	181	Kcgrl, Kche	1,545	45	1959	J, E 1	D, S	2/
702	do	do	1956	270	8	55	Kcgru, Kcgrl, Kche	1,520	30	1957	T, G 25	Irr	Deepened from 230 to 270 feet. Open hole from 60 to 270 feet. Pump set at 160 feet. Reported yield 300 gal/min. 2/
* 703	Lee Roy Rusch	Louis Bergmann and Sons	1964	360	8	187	Kche	1,565	56.1 52.5 58.0	Mar. 21, 1967 May 19, 1977 Mar. 13, 1978	Sub, E 7 1/2	Irr	Open hole from 187 to 360 feet. Cemented from 187 feet to surface. Reported yield 113 gal/min with 105 feet drawdown. Observation well. 2/
* 708	Harry Reeh	Edmonds Drilling Co.	1965	350	5	300	Kche	1,590	76.4	Feb. 21, 1967	Sub, E 3/4	D	Open hole from 300 to 350 feet. Pump set at 150 feet. Reported yield 100 gal/min. 2/
* 804	Louis G. Staglik	Louis Bergmann and Sons	1974	341	6	240	Kche	1,650	140	Aug. 2, 1974	Sub, E 1	D, S	Open hole from 240 to 341 feet. Cemented from 240 feet to surface. Reported yield 26 gal/min with 18 feet drawdown.
68-01-103	George P. Walker	G. L. Rowsey and Taylor Oil Co.	1954	2,115	--	--	--	1,528	--	--	--	--	Oil test. 1/ 2/
104	R. O. Perkins no. 1	Tucker Drilling Co.	1954	3,495	--	--	--	1,534	--	--	--	--	Do.
* 201	G. Karger	C. Spenrath	1892	210	6	16	Kcgrl, Kche	1,485	16	Sept. 1966	C, E 3	D	2/
202	Alvin Kutzer	Louis Bergmann and Sons	1948	322	7	140	Kcgrl	1,880	120	1961	T, E 3	Irr	Open hole from 140 to 322 feet. Reported yield 38 gal/min. 2/
* 205	Willard J. Barns	Lackeys Water Well Drilling	1964	268	6	268	Kcgrl	1,535	80	1964	Sub, E 1	D	Perforated from 208 to 268 feet. Reported yield 80 gal/min with 40 feet drawdown. 2/
* 207	Clarence Haufler	Louis Bergmann and Sons	1963	210	7	62	Kcgrl	1,525	120	1963	Sub, E 3/4	D	Open hole from 62 to 210 feet. Pump set at 165 feet. Reported yield 40 gal/min with 15 feet drawdown. 2/
208	Westwood Park, well 2	--	--	250	5	--	Kcgrl	1,453	99.0	Oct. 21, 1977	Sub, E 2	P	--
209	Westwood Park, well 1	Bill Werner and Son	1964	255	5	161	Kcgrl	1,463	--	--	Sub, E 2	P	Open hole from 161 to 255 feet.
* 407	Mrs. Laverne Dieckow	do	1975	485	6	360	Kche	1,640	235	Sept. 17, 1975	Sub, E	D	Open hole from 360 to 485 feet. Reported yield 20 gal/min with 100 feet drawdown.
505	Hermann Sons	do	1974	441	7	430	Kche, Kccc	1,541	176.5 169.9 184.4	May 22, 1974 May 19, 1977 Mar. 13, 1978	Sub, E	P	Screened from 290 to 430 feet. Open hole from 430 to 441 feet. Cemented from 318 feet to surface. Observation well. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* RJ-68-01-506	Pot of Cold Ranch	Louis Bergmann and Sons	1966	320	6	260	Kche	1,480	170.0	July 10, 1974	Sub, E	P	Open hole from 260 to 320 feet.
69-03-201	G. F. Schreiner no. 1	Continental Oil Co.	1942	6,010	--	--	--	2,348	--	--	--	--	Oil test. 1/ 2/
501	Hilda Auld no. 1	Auld and Tucker	1958	5,972	--	--	--	2,355	--	--	--	--	Do.
502	William Auld no. 1	Edministon and Fowler	1949	3,504	--	--	--	2,350	--	--	--	--	Do.
503	do	Woodward and Co.	1951	5,932	--	--	--	2,363	--	--	--	--	Do.
04-601	C. O. Whitworth no. 1	Phillips Petroleum Co.	1945	6,620	--	--	--	2,193	--	--	--	--	Do.
701	Adam Wilson, Jr.	Mull Drilling Co.	1961	7,031	--	--	--	2,381	--	--	--	--	Do.
06-301	Hugo Real no. 1	Elmer Schmidt, et al	1952	2,519	--	--	--	2,070	--	--	--	--	Do.
302	Aime Real no. 1	Union Oil of California	1973	3,077	--	--	--	2,133	--	--	--	--	Oil test. 1/
601	W. J. Goldeton	--	--	Spring	--	--	Kegru	1,800	--	--	Flows	S	Reported flow 20 gal/min on Dec. 11, 1958. 2/
* 801	T. Friedman	A. Smith	1954	450	7	237	Kegrl, Kche	1,671	83	May 1954	T, E	D	Open hole from 237 to 450 feet. 2/
* 901	W. J. Goldeton	do	1954	455	6	455	Kche	1,693	120	July 1954	Sub, E 1 1/2	D	Perforated from 300 to 400 feet. 2/
* 07-101	F. Logan	--	1955	460	8	275	Kegr, Kche	1,760	100	1966	Sub, E 1	D	Open hole from 275 to 460 feet. 2/
202	F. Real	W. E. Page	1938	400	6	400	Kegrl, Kche	1,650	88.4 101.8	Dec. 17, 1952 Sept. 15, 1966	C, W	S	Perforated. Historical Observation well. 2/
204	L. and M. Enterprises	Edmonds Drilling Co.	1973	570	8	460	Kegrl	1,781	260	Dec. 1973	Sub, E 7 1/2	P	Open hole from 460 to 570 feet. Cemented from 460 feet to surface.
* 301	G. E. Ross	--	--	600	6	600	Kche	1,780	274.4	May 26, 1966	Sub, E 2	D	Reworked in 1961. Slotted from 480 to 600 feet. Pump set at 330 feet. Reported yield 50 gal/min with 9 1/2 feet drawdown. 2/
* 902	T. S. Clements	William E. Page	1952	1,000	8	796	Kcho	1,769	334	Nov. 1952	Sub, E 30	Irr	Open hole from 796 to 1,000 feet. Pump set at 480 feet. Reported yield 90 gal/min. 1/ 2/
903	R. B. Nowlin	G. L. Rowsey	1954	7,903	--	--	--	1,670	--	--	--	--	Oil test. 1/ 2/
* 08-101	City of Kerrville, Airport well	Edmonds Drilling Co.	1957	665	10	551	Kcho	1,580	149 116 117 234 232.2 249.0	Jan. 1957 Nov. 1958 Jan. 26, 1967 Nov. 1, 1973 May 19, 1977 Mar. 13, 1978	Sub, E 15	P	Open hole from 551 to 665 feet. Cemented from 551 feet to surface. Pump set at 480 feet. Reported yield 90 gal/min. Observation well. 1/ 2/
103	Guadalupe Heights Utility Corp., well 2	do	1962	660	6	660	Kcho	1,620	200	Apr. 1965	Sub, E 10	P	Perforated from 605 to 660 feet. Pump set at 440 feet. Reported yield 115 gal/min. 2/
104	Guadalupe Heights Utility Corp., well 3	William E. Page	1967	690	8 7	590 690	Kcho	1,620	240.5	Apr. 29, 1966	Sub, E 10	P	Perforated from 630 to 680 feet. Reported yield 150 gal/min with 31 feet drawdown. 2/
106	C. Meek	G. L. Rowsey	1954	900	15	600	Kcho	1,580	80	1954	T, G 150	Irr	Slotted from 200 to 600 feet. Open hole from 600 to 900 feet. Reported yield 1,100 gal/min. 2/

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
* RJ-69-08-107	C. Meek	G. L. Rowsey	1954	900	15	600	Kcho	1,615	130	1954	Sub, E	D, S	Slotted from 200 to 600 feet. Open hole from 600 to 900 feet. Reported yield 700 gal/min. 2/
* 201	J. L. Rappolee	--	1964	530	5	445	Kche, Kccc	1,655	162.7 156.2 171.1	Mar. 17, 1967 May 19, 1977 Mar. 13, 1978	Sub, E 2	D	Observation well. 2/
* 401	A. B. Prais	--	--	480	6	20	Kcgrl, Kche, Kccc	1,575	32	1966	T, E 3	S	Open hole from 20 to 480 feet. Pump set at 120 feet. 2/
* 402	do	Edmonds Drilling Co.	1966	580	5	580	Kche, Kccc	1,575	81.5	Mar. 17, 1967	Sub, E 1 1/2	D	Slotted from 560 to 580 feet. Pump set at 220 feet. 2/
* 502	Harold L. Thompson	B. F. Lackey	1956	78	8	75	Kcgru	1,530	58	1956	T, G 20	Irr	Open hole from 75 to 78 feet. Pump set at 76 feet. Reported yield 1,000 gal/min. 2/
506	Verde Hills, well 1	William E. Page	1972	155	6	--	Kcgru	1,560	--	--	Sub, E 7 1/2	P	--
507	Verde Hills, well 2	do	1972	380	6	320	Kcgru	1,560	--	--	Sub, E 3	P	Open hole from 320 to 380 feet. Cemented from 320 feet to surface.
* 601	Mosty Brothers	Edmonds Drilling Co.	1954	312	10	60	Kcgr, Kche	1,525	128.4 41.4 45.4	Mar. 15, 1967 May 19, 1977 Mar. 13, 1978	Sub, E 10	Irr	Drilled to 495 feet and caved back to 312 feet. Open hole from 60 to 312 feet. Reported yield 100 gal/min with 112 feet drawdown. Observation well. 1/ 2/
603	Joe Burkett	--	--	320	6	320	Kche	1,515	80 35.4	Apr. 1966 Aug. 11, 1975	Sub, E 5	P	Pump set at 250 feet. Reported yield 65 gal/min with 108 feet drawdown. 2/
604	do	Edmonds Drilling Co.	1965	314	8	251	Kche	1,530	143	1965	Sub, E 7 1/2	P	Open hole from 251 to 314 feet. Reported yield 100 gal/min with 60 feet drawdown. 2/
605	do	--	--	314	8	230	Kche	1,530	71.5	May 27, 1966	Sub, E 15	P	Open hole from 230 to 314 feet. Reported yield 150 gal/min with 212 feet drawdown. 2/
* 606	Mosty Brothers	William E. Page	1921	317	15	60	Kcgr, Kche	1,525	120	Jan. 27, 1967	Sub, E 10	Irr, D	Perforated from 40 to 60 feet. Open hole from 60 to 317 feet. Pump set at 275 feet. Reported yield 95 gal/min with 150 feet drawdown. 2/
* 613	G. Walker	F. Fox	1906	225	6	147	Kcgrl, Kche	1,510	54.8	May 9, 1966	C, W	D, S	Open hole from 147 to 225 feet.
* 614	Mosty Brothers	A. Week	1956	427	8	180	Kche, Kccc	1,570	104.8 108	Apr. 29, 1966 June 27, 1966	T	N	Drilled to 600 feet and caved back to 427 feet. Open hole from 180 to 427 feet. Reported yield 110 gal/min with 87 feet drawdown. Unused irrigation well. 1/ 2/
* 616	Joe Wilson	Louis Bergmann and Sons	1973	401	6	305	Kche, Kccc	1,470	90	Aug. 1, 1973	Sub, E	D	Open hole from 305 to 401 feet. Cemented from 305 feet to surface. Reported yield 28 gal/min with 60 feet drawdown.
* 617	J. B. Crutchfield	Bill Werner and Son	1974	340	6	340	Kcgrl, Kche	1,480	45	Nov. 12, 1974	Sub, E 3/4	D	Slotted from 240 to 340 feet. Cemented from 10 feet to surface. Reported yield 30 gal/min with 60 feet drawdown.
* 618	Mrs. George Rhodes	H. C. Murphy Drilling	1974	100	5	100	Kcgru	1,515	35	Dec. 25, 1974	Sub, E	D	Slotted. Reported yield 60 gal/min.
619	Starlite Village Hospital Inc.	W. W. Nichols Well Drilling	1975	480	6	432	Kche	1,625	155	Sept. 30, 1975	Sub, E 3	P	Open hole from 432 to 480 feet. Cemented from 432 feet to surface. Reported yield 20 gal/min with 20 feet drawdown.
620	Elvin R. Irving	--	--	499	6	--	Kcgrl, Kche, Kccc	1,602	--	--	Sub, E 5	P	--

See footnotes at end of table.

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests--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			
RJ-69-08-621	George Crowley, Kerrville South Utilities	--	--	--	--	--	--	1,522	40.4	Oct. 7, 1977	Sub, E 3	P	--
* 16-102	Dickey Brothers Dairy	William E. Page	1956	680	5	680	Kcbe, Kcoc	1,755	100	Jan. 1956	Sub, E 2	D	Slotted from 600 to 680 feet. 2/
201	C. E. Morgan	do	1951	520	5	492	Kcbe, Kcoc	1,552	144.8 154.2 155.4	Feb. 25, 1959 May 19, 1977 Mar. 13, 1978	C, E 2	D, S	Open hole from 492 to 520 feet. Observation well. 2/

* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.
2/ Well also appears in Texas Water Development Board Report 102, "Ground-Water Resources of Kerr County, Texas".

KERR COUNTY

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kctp, Travis Peak Formation; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation; Kcho, Hosston Sand Member of the Travis Peak Formation.

Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.

Analyses by Texas Department of Health.

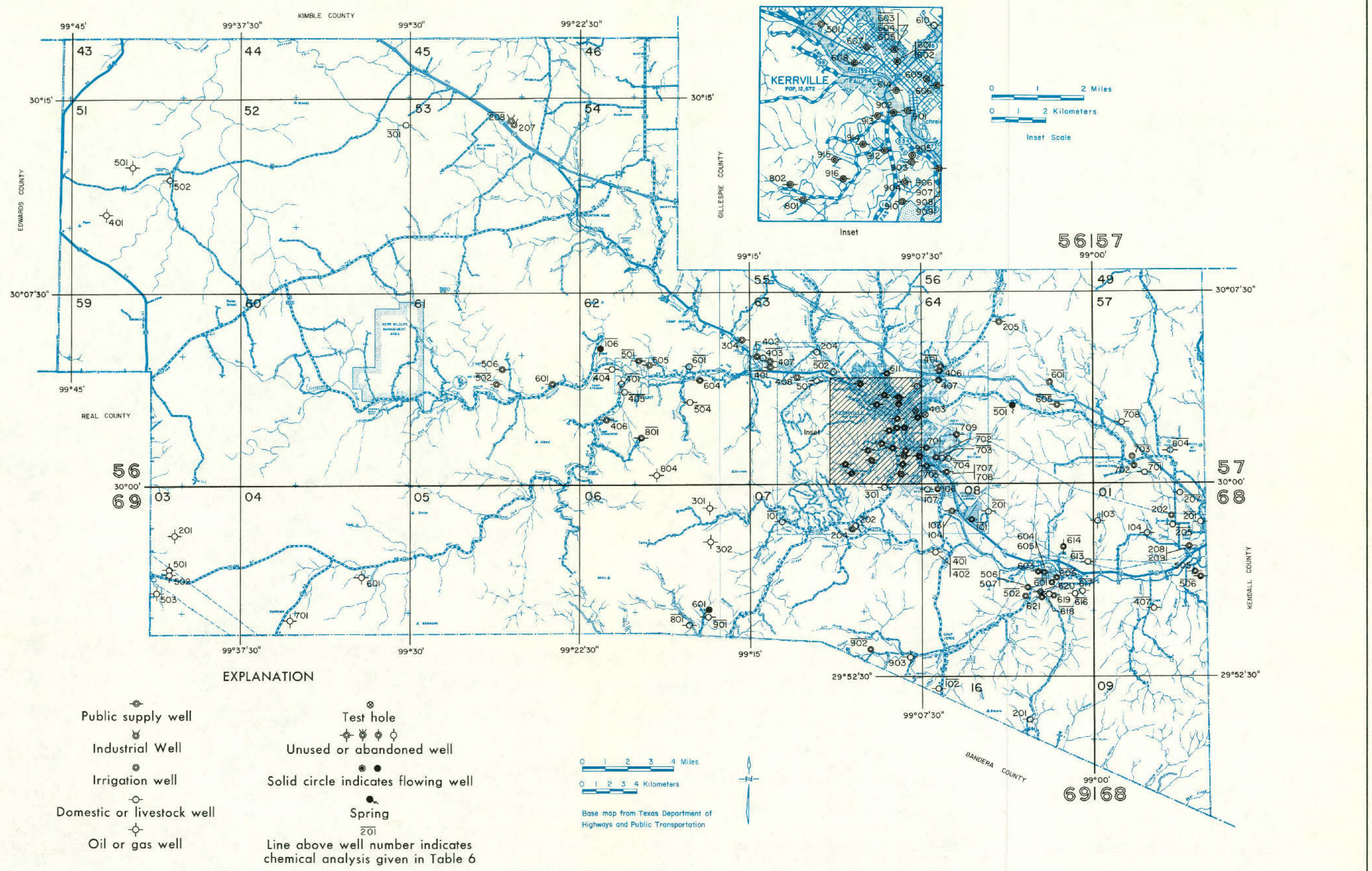
Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RJ-56-52-301	Kche, Kcgr	742	Aug. 17, 1966	--	5.6	--	--	--	--	240	876	18	--	--	--	--	1,080	1,790	7.2	--	--	--
53-208	Kche	730	Sept. 9, 1975	18	--	37	36	19	--	293	27	12	0.9	0.9	--	294	242	488	8.5	15	0.5	0.0
61-502	Kche	756	Sept. 22, 1975	14	--	75	47	27	--	342	130	24	1.9	< .4	--	487	383	770	8.2	13	.6	.0
62-106	Kcgru	--	Apr. 4, 1975	20	--	63	19	7	--	262	6	14	.2	2.2	--	260	236	443	8.5	6	.1	.0
401	Kcgru	305	Sept. 18, 1951	9	--	346	212	29	--	258	1,490	26	--	--	--	2,238	1,740	2,590	8.0	3	.3	.0
404	Kche	618	May 5, 1966	11	--	45	33	90	10	394	36	70	1.1	--	--	489	248	--	7.4	43	2.4	1.4
405	Kche	712	June 13, 1966	9	--	38	34	101	10	396	39	69	1.4	--	--	496	235	--	7.0	47	2.8	1.7
501	Kche	921	June 20, 1966	11	--	46	30	72	7.5	360	30	50	1.3	1.0	0.3	426	240	--	7.4	39	2.0	1.1
504	Kche	460	Sept. 4, 1975	18	--	161	91	26	--	278	550	24	2.0	< .4	--	1,009	780	1,300	8.1	7	.4	.0
601	Kche	400	Apr. 26, 1966	13	--	60	48	24	8.7	382	60	17	1.3	.2	--	420	347	--	7.3	13	.5	.0
801	Kche, Kccc	864	May 4, 1966	11	--	64	38	124	9.9	384	155	89	1.5	--	--	681	316	--	7.3	45	3.0	.0
63-401	Kche	600	Apr. 26, 1966	14	--	60	42	24	7.0	382	42	13	.9	.2	--	390	322	--	7.3	14	.5	.0
403	Kche	536	do	13	--	69	55	21	8.7	372	115	17	2.0	--	--	483	398	--	7.1	10	.4	.0
502	Kctp, Kcho	657	do	11	--	29	31	24	20	288	24	12	.9	.2	--	293	200	--	7.8	19	.7	.7
602	Kctp, Kcho	650	Nov. 16, 1945	14	--	79	45	11	6.6	368	79	20	1.0	.5	--	437	382	--	7.9	6	.2	.0
603	Kcho	725	June 9, 1966	12	--	74	46	16	3.7	376	105	17	1.2	--	--	459	374	--	7.2	8	.3	.0
604	Kcho	606	Nov. 16, 1945	14	--	62	43	9	6.3	370	26	19	.8	.2	--	362	332	--	7.9	5	.2	.0
604	Kcho	606	Nov. 21, 1945	12	--	66	43	9	--	373	26	20	1.0	--	--	360	342	--	7.4	5	.2	.0
605	Kcho	600	May 9, 1966	12	--	61	43	17	7.0	379	44	20	1.1	--	--	391	329	--	7.0	10	.4	.0
64-401	Kche	465	June 17, 1966	12	--	64	46	16	6.3	388	56	13	1.5	.5	--	406	350	--	7.4	9	.3	.0
501	Kcgru	--	June 15, 1966	12	--	88	22	6	.8	366	6	2	.6	1.8	--	319	310	--	7.2	4	.1	.0
601	Kcho	634	do	9	--	76	45	95	8.2	374	43	168	1.5	--	.3	629	375	--	7.2	35	2.1	.0
605	Kcho	690	July 24, 1974	10	--	83	41	73	--	368	72	115	1.4	< .4	--	576	375	985	7.9	30	1.6	.0
702	Kcho	665	Sept. 4, 1963	11	--	62	43	20	6.7	383	30	25	1.1	--	--	387	332	--	--	11	.4	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RJ-56-64-703	Kche	457	Sept. 12, 1975	18	--	72	41	19	--	368	69	12	1.4	< 0.4	--	413	349	659	8.4	11	0.4	0.0
704	Kcgru	302	May 6, 1966	6	--	426	286	43	21	206	2,040	37	--	.2	--	2,960	2,240	--	6.7	4	.3	.0
705	Kche	336	Aug. 8, 1966	12	--	114	62	16	7.5	358	258	12	1.5	--	--	659	540	--	7.5	6	.2	.0
705	Kche	336	Sept. 12, 1975	18	--	92	61	17	--	281	256	14	1.4	< .4	--	597	481	880	8.1	7	.3	.0
57-57-701	Kche, Kcgrl	263	Oct. 19, 1961	--	--	108	57	100	13	358	224	144	1.8	--	--	823	504	1,370	7.0	29	1.9	.0
703	Kche	360	Aug. 8, 1975	15	--	88	55	93	--	278	223	126	1.7	< .4	--	738	446	1,160	8.0	31	1.9	.0
708	Kche	350	Feb. 21, 1967	11	--	90	46	91	24	360	138	140	1.8	--	--	718	414	--	7.3	31	1.9	.0
708	Kche	390	Aug. 12, 1976	13	2.5	101	46	94	--	364	140	145	1.6	< .4	--	722	442	1,168	8.2	32	1.9	.0
804	Kche	341	do	12	--	109	53	103	--	361	196	152	1.7	< .4	--	804	491	1,300	8.0	31	2.0	.0
68-01-201	Kche, Kcgrl	210	Oct. 18, 1961	12	--	100	57	126	14	362	202	196	1.8	--	--	886	484	1,480	7.0	35	2.4	.0
205	Kcgrl	268	Aug. 12, 1976	24	--	92	11	22	--	260	42	23	.6	38	0.2	380	275	602	7.7	15	.5	.0
207	Kcgrl	210	do	13	.4	114	56	98	14	357	209	152	1.8	< .4	--	834	520	1,320	7.9	29	1.8	.0
407	Kche	485	Aug. 16, 1976	13	--	84	50	25	13	381	120	24	1.8	< .4	--	518	415	808	8.0	11	.5	.0
506	Kche	320	July 10, 1974	13	--	106	61	33	--	354	222	45	2.3	.2	--	656	510	992	7.5	12	.6	.0
69-06-801	Kche, Kcgrl	450	July 1, 1954	14	--	86	62	39	--	342	222	30	--	.0	--	621	470	988	8.0	15	.7	.0
901	Kche	455	Aug. 29, 1955	14	--	100	55	33	--	350	212	28	--	.2	--	614	475	965	7.4	13	.6	.0
07-101	Kche, Kcgr	460	Aug. 6, 1955	14	--	141	90	28	--	341	461	16	--	--	--	917	722	1,300	7.4	8	.4	.0
301	Kche	600	May 26, 1966	12	--	88	52	22	9.8	366	195	16	1.8	.2	--	576	442	--	7.2	10	.4	.0
902	Kche	1,000	Mar. 17, 1967	13	--	71	47	30	11	376	108	19	1.5	.2	--	485	370	--	7.3	14	.6	.0
902	Kche	1,000	Aug. 15, 1975	15	--	72	47	29	--	350	116	20	1.5	< .4	--	472	371	746	8.4	14	.6	.0
08-101	Kche	665	May 6, 1966	11	--	57	37	35	8.1	388	31	15	1.0	--	.2	386	294	--	7.7	20	.8	.4
107	Kche	900	Aug. 15, 1975	20	--	81	41	22	--	370	99	17	1.6	< .4	--	463	371	730	8.2	11	.4	.0
201	Kche, Kccc	530	May 19, 1966	12	--	65	44	21	9.1	374	85	14	1.5	.2	--	435	350	--	7.4	11	.4	.0
401	Kche, Kcgrl, Kccc	480	June 9, 1966	10	7.6	463	244	38	3.2	290	2,010	26	--	.8	--	2,945	2,080	3,280	6.9	4	.3	.0
402	Kche, Kccc	580	Mar. 17, 1967	--	--	--	--	--	--	372	118	24	--	--	--	--	390	825	7.3	--	--	--
502	Kcgru	78	May 27, 1966	12	.9	435	109	17	10	341	1,280	24	2.6	1.5	.6	2,060	1,550	2,460	7.2	2	.1	.0
601	Kche, Kcgr	312	July 25, 1962	12	--	180	99	20	6.2	302	592	26	2.0	.2	.4	1,086	856	1,450	6.7	5	.2	.0

Table 6.--Chemical Analyses of Water From Selected Wells and Springs--Continued

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
RJ-69-08-606	Kche, Kcgr	317	July 23, 1975	17	--	166	11	39	--	370	108	53	0.2	85	--	661	459	975	8.1	16	0.7	0.0
613	Kche, Kcgrl	225	June 11, 1966	9	--	70	48	21	11	380	18	16	1.6	--	--	381	382	--	7.0	11	.4	.0
614	Kche, Kccc	427	June 27, 1966	12	--	76	49	26	9.3	388	110	16	1.4	--	--	490	392	--	7.2	12	.5	.0
616	Kche, Kccc	401	Aug. 16, 1976	13	1.7	73	48	23	11	348	108	19	1.7	< .4	--	469	379	738	8.5	11	.5	.0
617	Kche, Kcgrl	340	Aug. 13, 1976	13	--	83	46	22	--	378	102	16	1.6	< .4	--	469	396	762	8.1	11	.4	.0
618	Kcgru	100	Aug. 16, 1976	12	--	146	69	14	--	290	379	19	3.7	< .4	--	785	650	1,058	8.5	4	.2	.0
16-102	Kche, Kccc	680	Feb. 13, 1957	12	--	72	50	41	--	375	120	26	1.8	.6	--	507	385	825	7.6	19	.9	.0



Location of Selected Wells, Springs, and Oil and Gas Tests in Kerr County

MEDINA COUNTY

Table 5.--Records of Selected Water Wells and Springs

All wells are drilled unless otherwise noted in remarks column.
Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of power: E, electric; Sub, submersible; T, turbine. Number indicates horsepower.
Use of water : D, domestic; N, none; S, livestock.
Water-bearing units : Kgru, upper member of the Glen Rose Limestone; Kgrl, lower member of the Glen Rose Limestone; Khe, Hensell Sand Member of the Travis Peak Formation; Kcc, Cow Creek Limestone Member of the Travis Peak Formation.

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			
TD-68-25-601	R. E. Haby	--	--	Spring	--	--	Kgru	1,100	--	--	Flows	S	Spring D-7-9 in Texas Board of Water Engineers Bulletins 5601 and 5608. Estimated flow 1 gal/min on Nov. 5, 1975.
* 803	Mrs. Tony Plachy	Frank Rosenkranz and Sons	1974	400	7	50	Kgru	1,145	150	Sept. 19, 1974	Sub, E	D	Open hole from 50 to 400 feet. Cemented from 50 feet to surface. Reported yield 20 gal/min with 4 feet drawdown.
* 26-101	Rudolph Schott, Pecan Spring	--	--	Spring	--	--	Kgru	1,300	--	--	Flows	N	Spring D-7-4 in Texas Board of Water Engineers Bulletins 5601 and 5608. Estimated flow 10 gal/min on Nov. 5, 1975.
401	Schuhart Brothers Ranch, Bear Spring	--	--	Spring	--	--	Kgru	1,160	--	--	Flows	S	Spring D-7-44 in Texas Board of Water Engineers Bulletins 5601 and 5608. Reported flow 32 gal/min on Mar. 18, 1952 and estimated flow 15 gal/min on Nov. 15, 1975.
* 69-29-301	Elton Miller, Richter Spring	--	--	Spring	--	--	Kgru	1,380	--	--	Flows	D, S	Spring C-7-9 in Texas Board of Water Engineers Bulletins 5601 and 5608. Reported flow 58 gal/min on June 12, 1952 and estimated flow 20 gal/min on Oct. 24, 1975.
302	-- Mazurek	--	--	Spring	--	--	Kgru	1,475	--	--	Flows	S	Spring C-7-1 in Texas Board of Water Engineers Bulletins 5601 and 5608. Estimated flow 3 1/2 gal/min on Oct. 13, 1950.
303	Louis Reiber	--	--	Spring	--	--	Kgru	1,330	--	--	Flows	N	Spring C-7-8 in Texas Board of Water Engineers Bulletins 5601 and 5608. Reported flow 10 gal/min on Oct. 13, 1950.
304	do	--	--	Spring	--	--	Kgru	1,385	--	--	Flows	N	Spring C-7-7 in Texas Board of Water Engineers Bulletins 5601 and 5608. Estimated flow 5 gal/min on Oct. 24, 1975.
* 31-101	-- Foster	--	--	Spring	--	--	Kgru	1,205	--	--	Flows	N	Spring C-8-32 in Texas Board of Water Engineers Bulletins 5601 and 5608. Estimated flow 10 gal/min on Oct. 28, 1975.
* 301	J. S. Morris, Verde Spring	--	--	Spring	--	--	Kgru	1,300	--	--	Flows	N	Spring C-9-64 in Texas Board of Water Engineers Bulletins 5601 and 5608. Estimated flow 12 gal/min on July 21, 1975.
* 32-101	J. S. Morris	J. R. Johnson Drilling Co.	1952	800	8	691	Kgrl, Khe, Kcc	1,330	--	--	T, E 5	D, S	Well C-9-63 in Texas Board of Water Engineers Bulletins 5601 and 5608, and N-4 in Texas Water Commission Bulletin 6210. Open hole from 691 to 800 feet. Reported yield 723 gal/min with 61 feet drawdown.
* 301	R. A. Haby, Middle Spring	--	--	Spring	--	--	Kgru	1,285	--	--	Flows	S	Estimated flow 35 gal/min on Nov. 4, 1975.
* 302	E. J. Leinweber, Indian Spring	--	--	Spring	--	--	Kgru	1,180	--	--	Flows	S	Spring C-9-8 in Texas Board of Water Engineers Bulletins 5601 and 5608. Reported flow 80 gal/min on Oct. 25, 1950 and estimated flow 25 gal/min on Nov. 4, 1975.
* 401	Mrs. Joe Short	--	--	Spring	--	--	Kgru	1,275	--	--	Flows	S	Spring C-9-5 in Texas Board of Water Engineers Bulletins 5601 and 5608. Estimated flow 30 gal/min on Oct. 31, 1975.

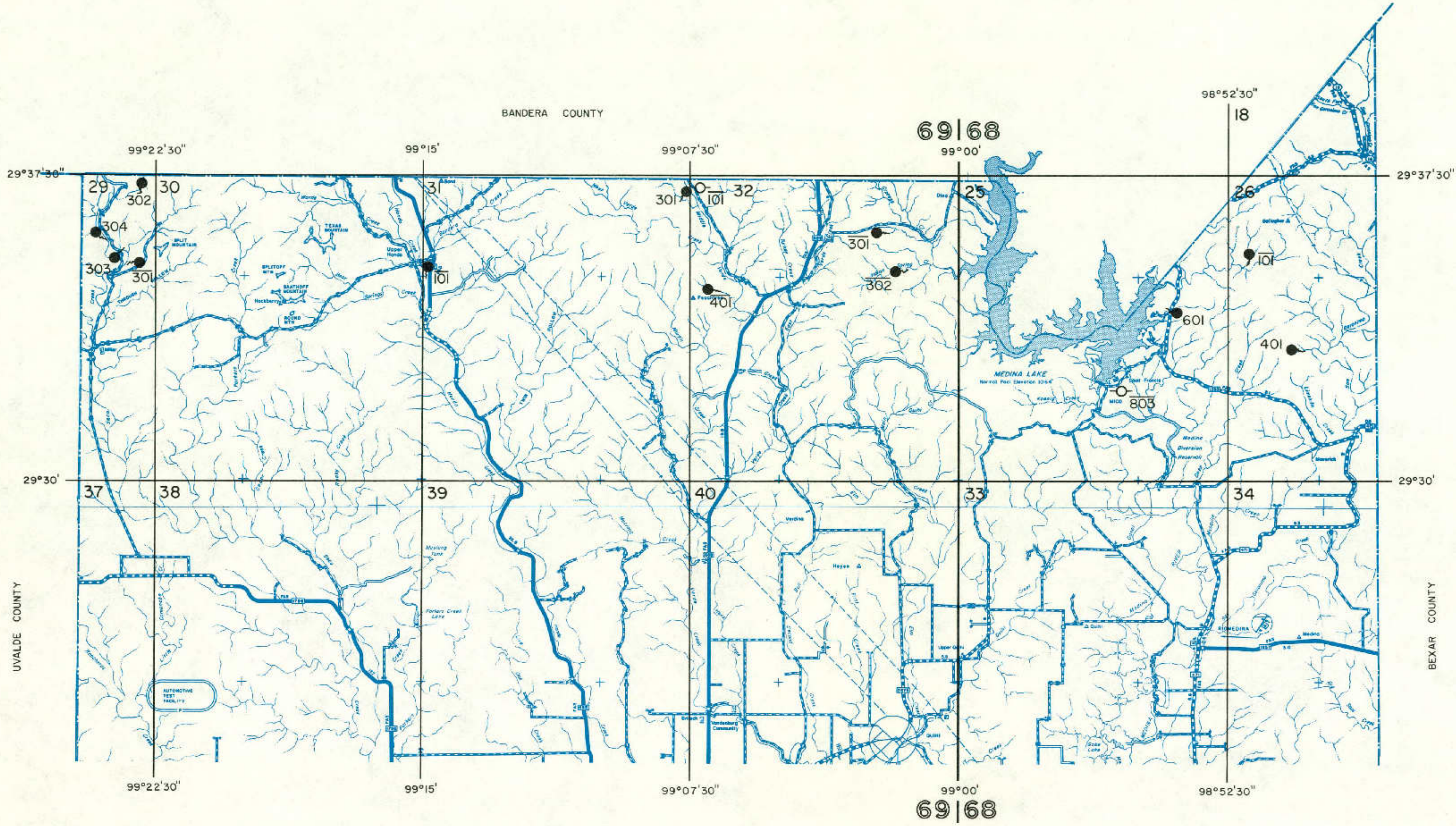
* For chemical analyses of water, see Table 6.

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Kgru, upper member of the Glen Rose Limestone; Kgrl, lower member of the Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation.
Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.
Analyses by Texas State Department of Health.

Well	Water-bearing Unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
TD-68-25-803	Kcgru	400	Aug. 17, 1976	11	--	64	13	8	--	201	45	15	0.2	< 0.4	--	255	215	434	7.3	8	0.2	0.0
803	Kcgru	400	July 20, 1977	11	--	64	16	9	--	212	47	15	.2	1.5	--	267	226	443	7.7	8	.2	.0
26-101	Kcgru	--	Nov. 5, 1975	11	--	73	13	7	--	231	6	13	.1	6.0	--	242	235	428	8.4	6	.1	.0
69-29-301	Kcgru	--	Oct. 12, 1950	10	--	88	11	--	5.8	280	16	10	--	21	--	314	264	520	7.6	--	--	.0
301	Kcgru	--	Oct. 24, 1975	13	--	96	9	7	--	295	20	15	.2	12	--	317	276	520	7.6	5	.1	.0
301	Kcgru	--	July 19, 1977	15	--	93	9	8	--	292	12	15	.1	8.4	--	304	269	505	7.7	6	.2	.0
31-101	Kcgru	--	Jan. 14, 1952	15	--	102	18	--	7.4	353	23	20	--	4.0	--	384	328	625	7.7	--	--	.0
101	Kcgru	--	Oct. 28, 1975	13	--	89	13	9	--	289	28	16	.2	1.2	--	311	283	523	7.8	7	.2	.0
101	Kcgru	--	July 19, 1977	15	--	91	13	9	--	296	27	15	.2	2.6	--	318	279	528	7.7	7	.2	.0
301	Kcgru	--	Mar. 27, 1952	1	0.0	--	--	27	--	216	430	175	--	2.0	--	--	815	1,600	8.0	--	--	--
32-101	Kche, Kcgrl, Kccc	800	do	2	.9	--	--	13	--	143	622	65	--	14	--	--	840	1,730	7.9	--	--	--
101	Kche, Kcgrl, Kccc	800	July 21, 1975	9	--	127	77	22	--	340	370	18	3.6	< .4	--	794	640	1,100	7.8	7	.3	.0
101	Kche, Kcgrl, Kccc	800	July 15, 1977	10	--	109	80	24	15	317	383	15	3.2	< .4	--	795	600	1,101	7.8	8	.4	.0
301	Kcgru	--	Nov. 4, 1975	12	--	96	12	9	--	332	14	13	.2	2.4	--	321	292	535	7.6	6	.2	.0
302	Kcgru	--	Jan. 22, 1952	12	--	57	14	--	4.8	221	11	11	--	3.5	0.2	223	200	429	7.7	--	--	.0
302	Kcgru	--	Nov. 4, 1975	11	--	67	10	6	--	234	8	12	.1	4.8	--	233	207	402	8.1	6	.1	.0
401	Kcgru	--	Oct. 18, 1950	10	--	69	9	--	3.7	238	4	9	--	9.3	--	238	211	416	8.0	--	--	.0
401	Kcgru	--	Oct. 31, 1975	10	--	72	6	4	--	234	5	8	.1	7.0	--	227	206	380	8.2	4	.1	.0



EXPLANATION

Public supply well

Industrial well

Irrigation well

Domestic or livestock well

Oil or gas well

Test hole

Unused or abandoned well

Solid circle indicates flowing well

Spring

201
Line above well number indicates chemical analysis given in Table 6

0 1 2 3 4 Miles

0 1 2 3 4 Kilometers

Base map from Texas Department of Highways and Public Transportation

Location of Selected Wells and Springs in Northern Medina County

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.
Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of power: C, cylinder; E, electric; N, none; Sub, submersible; W, windmill.
Use of water : D, domestic; N, none; S, livestock.
Water-bearing units : Qal, alluvium; Kgr, Glen Rose Limestone; Kgru, upper member of the Glen Rose Limestone; Kgrl, lower member of the Glen Rose Limestone; Khe, Hensell Sand Member of the Travis Peak Formation; Kcc, Cow Creek Limestone Member of the Travis Peak Formation; Kt, Trinity Group, undifferentiated.

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			
* WA-69-10-502	H. W. Lewis	--	--	Spring	--	--	Kgru	1,800	--	--	Flows	S	Spring D-4 in Texas Water Commission Bulletin 5803. Estimated flow 25 gal/min on Oct. 14, 1975.
* 601	-- O'Shea	H & D Well Drilling and Service, Inc.	1974	110	6	110	Kgru	1,720	22	Aug. 21, 1974	Sub, E	D	Slotted from 90 to 110 feet, Cemented from 20 feet to surface, Pump set at 43 feet.
* 602	do	--	--	Spring	--	--	Qal, Kgr	1,700	--	--	Flows	N	Estimated flow 20 gal/min on Oct. 7, 1975.
* 603	Donald McClure	H & D Well Drilling and Service, Inc.	1974	110	6	110	Kgru	1,730	25	Aug. 22, 1974	Sub, E	D	Slotted from 90 to 110 feet. Cemented from 15 feet to surface. Pump set at 84 feet. Reported yield 100 gal/min.
604	C. O. Knippa	Stanolind Oil and Gas Co.	1953	8,184	--	--	--	1,730	--	--	--	--	Well D-7 in Texas Water Commission Bulletin 5803. Oil test.
* 11-502	Oscar DeVaux	--	--	Spring	--	--	Kgru	1,960	--	--	Flows	N	Spring D-13 in Texas Water Commission Bulletin 5803. Estimated flow 40 gal/min on Oct. 10, 1975.
* 17-101	C. E. Vernor	Burrows Drilling Co.	1965	124	5	124	Kgru	1,610	55 90.3	July 30, 1965 Apr. 21, 1978	C, W	D	Slotted from 100 to 117 feet. Reported yield 1 1/2 gal/min. Observation well.
* 18-201	H. L. Naumann	William O. Cornelius	1975	52	5	52	Kgru	1,730	15	Apr. 9, 1975	Sub, E	D, S	Perforated from 32 to 42 feet. Reported yield 25 gal/min with 4 feet drawdown.
* 303	Texas Department of Highways and Public Transportation	Smith Drilling Service	1952	640	6	280	Kgrl, Khe, Kcc	1,630	280 283.2	1954 Mar. 25, 1977	N	N	Well D-24 in Texas Water Commission Bulletin 5803. Open hole from 280 to 640 feet. Reported yield 10 gal/min with 40 feet drawdown. Unused industrial well. Observation well. 1/
19-401	Sam Harrison	Mike C. Huber	1967	820	12	743	Kt	1,595	230 286.4 288.9	May 1967 Mar. 25, 1977 Apr. 21, 1978	N	N	Slotted from 605 to 685 feet. Open hole from 743 to 820 feet. Reported yield 500 gal/min with 175 feet drawdown. Unused irrigation well. Observation well. 1/

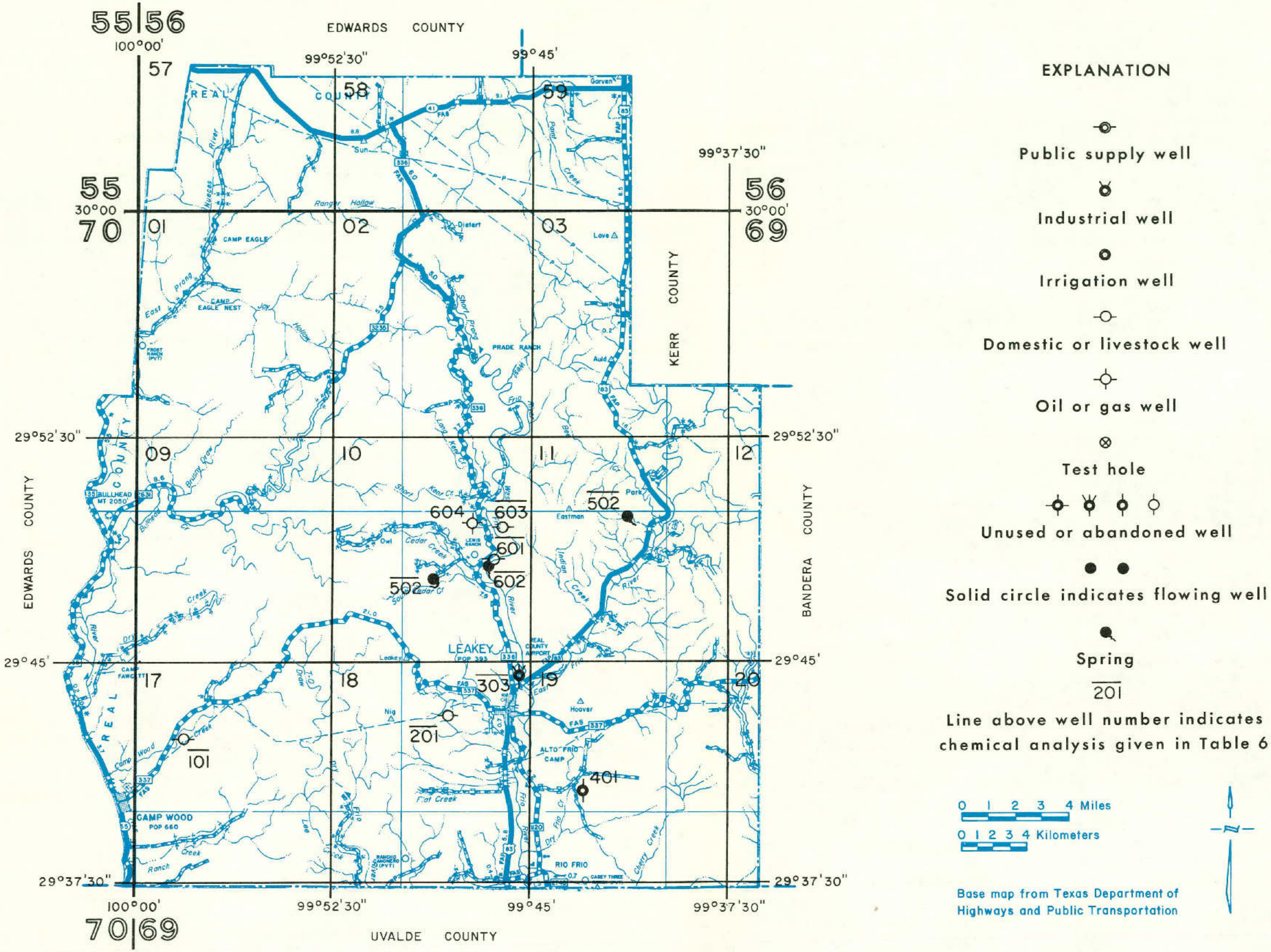
* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Qal, alluvium; Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone; Kche, Hensell Sand Member of the Travis Peak Formation; Kccc, Cow Creek Limestone Member of the Travis Peak Formation.
Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.
Analyses by Texas State Department of Health.

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
WA-69-10-502	Kcgru	--	Mar. 27, 1956	10	--	70	19	6	0.6	304	7	11	--	0.3	--	273	252	502	7.3	5	0.1	0.0
601	Kcgru	110	Oct. 7, 1975	13	--	540	99	12	--	189	1,550	12	1.2	< .4	--	2,320	1,760	2,200	8.1	1	.1	.0
602	Kcgr, Qal	--	do	12	--	48	10	6	--	174	8	12	.1	3.6	--	185	162	325	7.8	7	.2	.0
603	Kcgru	110	Aug. 18, 1976	11	--	630	31	6	1.0	181	1,470	11	.5	.4	--	2,249	1,710	2,280	7.7	1	.0	.0
11-502	Kcgru	--	Oct. 15, 1975	10	--	63	11	4	--	234	5	9	.1	3.7	--	220	205	380	7.7	4	.1	.0
17-101	Kcgru	--	May 14, 1974	9	--	57	11	5	--	205	8	11	.1	7.0	--	208	187	361	7.6	5	.1	.0
18-201	Kcgru	52	Aug. 18, 1976	14	--	80	16	7	--	294	12	11	.2	11	--	295	269	497	7.9	5	.1	.0
303	Kche, Kcgrl, Kccc	640	Mar. 28, 1956	11	0.0	204	144	151	--	311	1,050	47	5.2	.0	--	1,765	1,100	2,210	7.6	23	1.9	.0



Location of Selected Wells, Springs, and Oil and Gas Tests in Real County

UVALDE COUNTY

Table 5.--Records of Selected Water Wells, Springs, and Oil and Gas Tests

All wells are drilled unless otherwise noted in remarks column.
Water level : Reported water levels given in feet; measured water levels given in feet and tenths.
Method of lift and type of power: E, electric; J, jet; N, none; Sub, submersible. Number indicates horsepower.
Use of water : D, domestic; N, none; P, public supply; S, livestock.
Water-bearing units : Qal, alluvium; Kegr, Glen Rose Limestone; Kegru, upper member of the Glen Rose Limestone; Kegrl, lower member of the Glen Rose Limestone.

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
* YP-69-25-402	Mrs. -- Whitley	--	--	Spring	--	--	Kegru	1,340	--	--	Flows	S	Four major openings. Estimated flow 60 gal/min on Oct. 21, 1975.
* 26-801	W. J. Nelson	--	--	Spring	--	--	Kegru	1,410	--	--	Flows	S	Spring B-8-27 in Texas Water Commission Bulletin 6212. Estimated flow 10 gal/min on Oct. 15, 1975.
* 27-101	Garner State Park	--	--	60	6	60	Kegru	1,400	26.7 71.4	Nov. 17, 1970 Oct. 15, 1975	Sub, E 5	P	Slotted.
102	do	--	--	40	6	40	Kegru	1,400	23.5 20.4	Aug. 17, 1956 Oct. 15, 1975	Sub, E 5	P	Well B-8-14 in Texas Water Commission Bulletin 6212. Slotted.
206	W. Crutchfield	William O. Cornelius	1976	52	6	33	Qal, Kegr	1,425	32	Mar. 19, 1976	Sub, E 1/2	D	Slotted from 29 to 33 feet. Open hole from 33 to 52 feet. Reported yield 2 gal/min with 20 feet drawdown.
* 107	Cold Springs Resort	--	--	Spring	--	--	Kegru	1,415	--	--	Flows	N	Estimated flow 60 gal/min on Aug. 19, 1976.
* 401	H. J. Van Pelt	--	--	100	8 5	20 100	Kegru	1,400	57	May 16, 1975	J, E	D	Deepened from 92 to 100 feet in 1975. Perforated from 79 to 99 feet. Reported yield 11 gal/min with 43 feet drawdown.
601	C. C. Magruder no. 1	Gulf Oil Corp.	1962	7,611	--	--	--	1,547	--	--	--	--	Oil test. 1/
* 701	-- Oliver and -- Casey	Carmon Drilling Co.	1974	101	5	99	Kegru	1,265	19	Oct. 1974	Sub, E 1/2	D	Slotted from 39 to 42 feet, 62 to 68 feet, 82 to 85 feet, and 96 to 98 feet. Cemented from 36 feet to surface. Pump set at 62 feet. Reported yield 100 gal/min. Acidized.
28-101	C. C. Michell no. 1	The Texas Co.	1949	6,503	--	--	--	1,870	--	--	--	--	Well B-9-16 in Texas Water Commission Bulletin 6212. Oil test. 1/
* 201	W. J. Jacobs	William O. Cornelius	1976	251	6	32	Kegru	1,420	107	Jan. 23, 1976	Sub, E	D, S	Open hole from 32 to 251 feet. Cemented from 32 feet to surface. Reported yield 10 gal/min with 144 feet drawdown.
* 301	Utopia Community Park	--	--	200	--	--	Qal, Kegr	1,354	--	--	J, E 1	P	--
* 501	D. R. Thrasher	--	--	Spring	--	--	Kegru	1,495	--	--	Flows	S	Three major openings. Estimated flow 30 gal/min on Oct. 16, 1975.
* 601	Earl Lewis	William O. Cornelius	1976	100	6	56	Qal, Kegr	1,300	30	Apr. 1976	Sub, E 3/4	D, S	Perforated from 44 to 56 feet. Open hole from 56 to 100 feet. Reported yield 35 gal/min with 10 feet drawdown.
* 801	-- Burton, Estate	--	--	Spring	--	--	Kegru	1,350	--	--	Flows	D, S	Spring B-9-51 in Texas Water Commission Bulletin 6212. Estimated flow 10 gal/min on Oct. 27, 1975.
* 29-101	Henry Bunk, Jr.	William O. Cornelius	1975	195	6	18	Kegrl	1,375	70	Dec. 10, 1975	Sub, E	D	Open hole from 18 to 195 feet.
* 701	H. H. Phillips, Jr.	--	--	315	--	300	Kegrl	1,250	--	--	Sub, E	D	Open hole from 300 to 315 feet.
33-301	-- Zesch no. 1	Gulf Oil Corp.	1963	3,821	--	--	--	1,700	--	--	--	--	Oil test. 1/
* 35-201	John H. Frazier	--	--	50	--	--	Kegrl	1,238	32.5	Nov. 18, 1970	J, E	P	--
* 202	do	--	--	50	6	--	Kegrl	1,250	33	do	N	N	--
* 203	do	--	--	100	6	--	Kegrl	1,240	28.6	Nov. 23, 1970	N	N	--
36-302	-- Pesley no. 1	Gulf Oil Corp.	1963	2,033	--	--	--	1,210	--	--	--	--	Oil test. 1/

* For chemical analyses of water, see Table 6.
1/ Geophysical logs in files of the Texas Department of Water Resources, Austin, Texas.

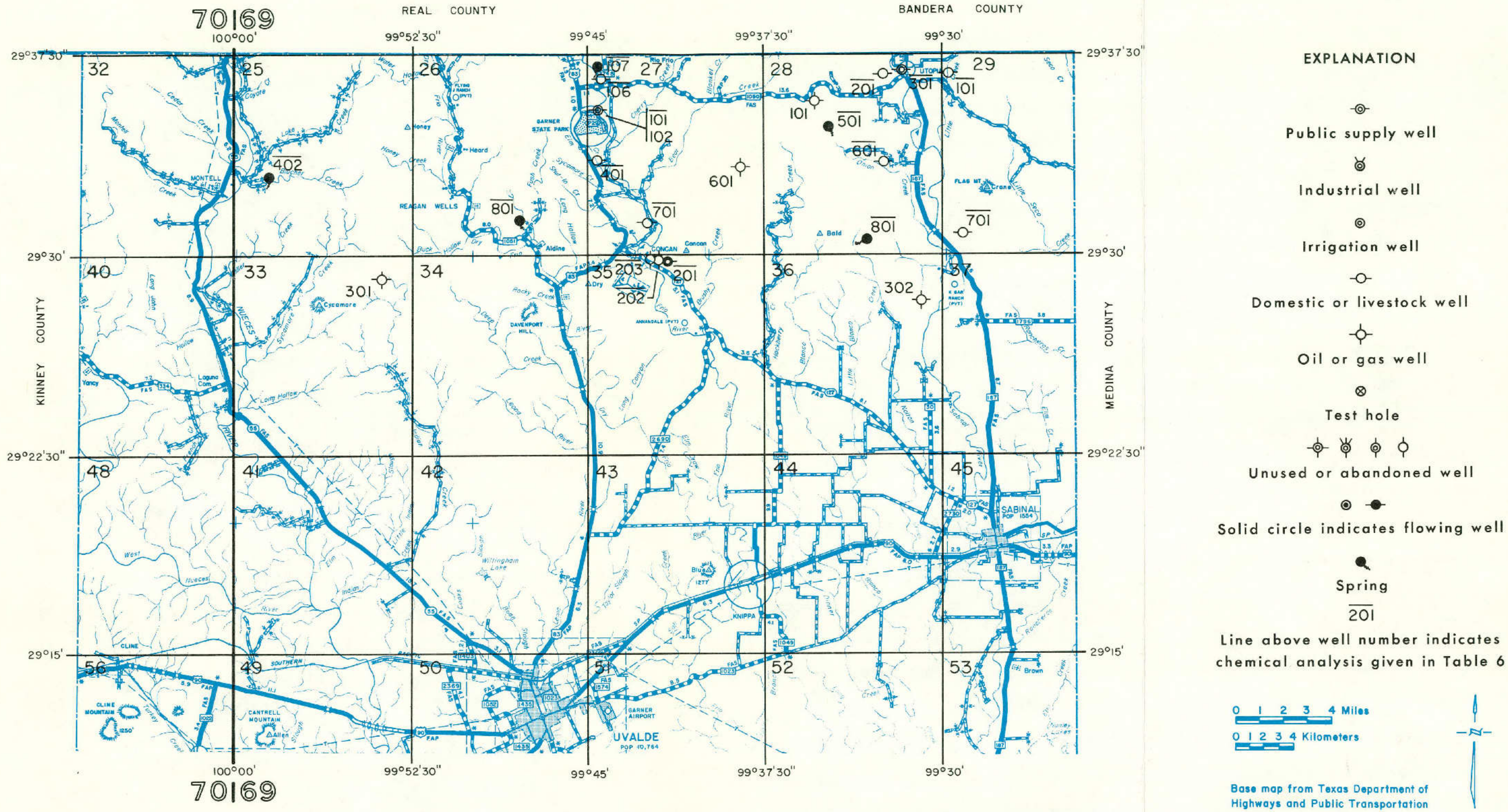
See footnotes at end of table.

Table 6.--Chemical Analyses of Water From Selected Wells and Springs

Analyses are in milligrams per liter except percent sodium, specific conductance, pH, sodium adsorption ratio (SAR), and residual sodium carbonate (RSC).

Water-bearing unit: Qal, alluvium; Kcgr, Glen Rose Limestone; Kcgru, upper member of the Glen Rose Limestone; Kcgrl, lower member of the Glen Rose Limestone.
Dissolved solids : The bicarbonate "reported" is converted by computation (multiplying by 0.4917) to an equivalent amount of carbonate, and the carbonate figure is used in the computation of this sum.
Analyses by Texas State Department of Health.

Well	Water-bearing unit	Depth of well or sampled interval (ft)	Date of collection	Silica (SiO_2)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO_3)	Sulfate (SO_4)	Chloride (Cl)	Fluoride (F)	Nitrate (NO_3)	Boron (B)	Dissolved solids	Total hardness as $CaCO_3$	Specific conductance (micromhos at 25°C)	pH	Percent sodium	Sodium adsorption ratio (SAR)	Residual sodium carbonate (RSC)
YP-69-25-402	Kcgru	--	Oct. 21, 1975	10	--	79	16	6	--	292	10	12	0.1	10	--	286	265	488	7.8	5	0.1	0.0
26-801	Kcgru	--	Oct. 15, 1975	10	--	86	11	5	--	296	7	11	.1	9.0	--	284	262	480	8.1	4	.1	.0
27-101	Kcgru	58	Nov. 17, 1970	17	--	155	28	14	--	418	139	30	.5	10	--	599	500	898	7.4	6	.2	.0
101	Kcgru	58	Aug. 18, 1977	21	--	135	21	24	--	417	43	42	.2	30	--	521	425	842	7.8	11	.5	.0
106	Kcgr, Qal	52	Aug. 19, 1976	17	--	108	18	12	--	354	21	24	.2	22	--	396	343	644	8.2	7	.2	.0
107	Kcgru	--	do	13	--	86	16	9	--	301	20	15	.2	7.0	--	314	280	526	7.7	7	.2	.0
401	Kcgru	100	do	11	--	88	6	6	--	265	10	11	.1	13	--	275	246	458	8.1	5	.1	.0
401	Kcgru	100	Aug. 18, 1977	13	--	77	9	5	--	248	14	10	.1	12	--	262	230	443	7.8	5	.1	.0
701	Kcgru	101	Aug. 19, 1976	12	--	476	85	7	3.0	157	1,340	9	1.3	< .4	--	2,010	1,540	2,070	8.0	1	.0	.0
701	Kcgru	101	Aug. 18, 1977	14	--	503	83	6	--	256	1,344	10	1.5	< .4	--	2,087	1,600	2,200	7.7	1	.0	.0
28-201	Kcgru	251	Aug. 19, 1976	11	--	267	200	32	10	243	1,230	29	4.1	< .4	--	1,902	1,490	2,150	8.2	4	.3	.0
201	Kcgru	251	Aug. 18, 1977	15	--	302	213	33	--	349	1,294	29	4.3	< .4	--	2,062	1,633	2,300	7.8	4	.3	.0
301	Kcgr, Qal	100	Nov. 17, 1970	13	--	92	15	9	--	305	33	17	.2	< .4	--	329	291	541	7.5	6	.2	.0
501	Kcgru	--	Oct. 16, 1975	12	--	66	25	5	--	292	12	12	.2	10	--	285	266	486	7.8	4	.1	.0
601	Kcgr, Qal	100	Aug. 19, 1976	14	--	116	3	13	1.0	328	17	20	.2	10	--	355	300	580	7.9	9	.3	.0
601	Kcgr, Qal	100	Aug. 18, 1977	18	--	106	5	10	--	318	15	18	.2	9.7	--	338	285	560	7.7	7	.2	.0
801	Kcgru	--	Dec. 1, 1956	10	--	67	10	5	.7	228	6	11	.2	11	--	233	207	409	7.9	5	.1	.0
801	Kcgru	--	Oct. 27, 1975	12	--	97	8	6	--	307	9	12	.2	14	--	309	277	515	7.6	5	.1	.0
29-101	Kcgrl	195	Aug. 18, 1977	27	--	114	22	17	--	407	31	22	.8	18	--	451	376	717	7.7	9	.3	.0
701	Kcgrl	315	Aug. 16, 1977	15	14.3	208	178	27	--	273	976	22	2.4	3.6	--	1,580	1,552	1,860	8.2	4	.3	.0
35-201	Kcgrl	50	Nov. 18, 1970	11	--	101	24	8	--	353	46	13	.2	9.0	--	385	351	621	7.6	5	.1	.0
202	Kcgrl	50	Nov. 23, 1970	14	--	98	14	7	10	451	4	18	.1	< .4	--	387	303	703	7.1	5	.1	1.3
203	Kcgrl	100	do	10	--	486	166	12	--	232	1,590	11	2.6	< .4	--	2,392	1,900	2,440	7.5	1	.1	.0



Location of Selected Wells, Springs, and Oil and Gas Tests in Northern Uvalde County