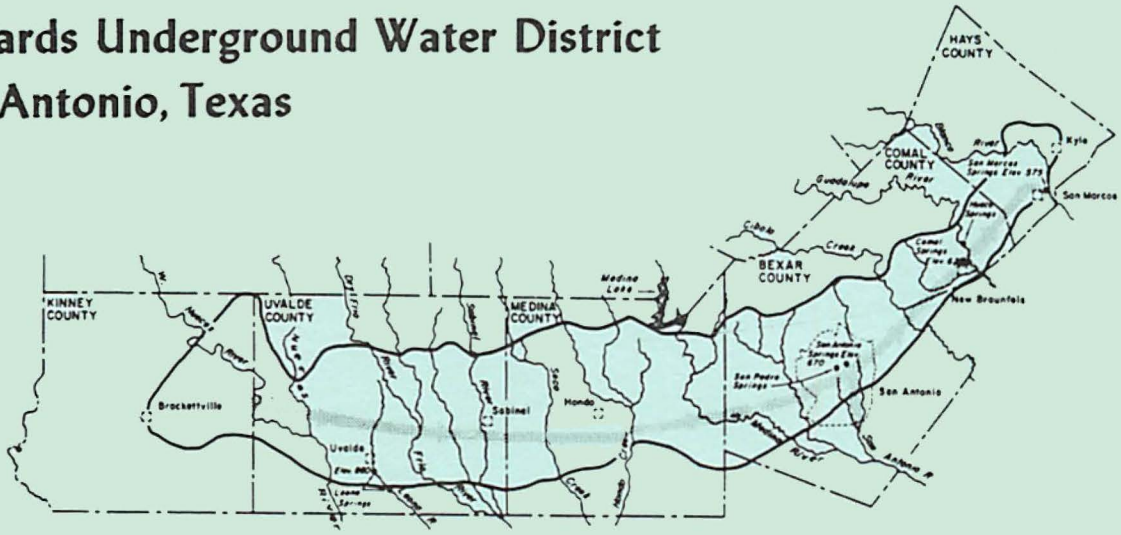
Records of Ground-Water Recharge, Discharge, Water Levels, and Chemical Quality of Water for the Edwards Aquifer in the San Antonio Area, Texas, 1934-82.

Bulletin 42

Edwards Underground Water District
San Antonio, Texas



Prepared in Cooperation with the U. S. Geological Survey and the Texas Department of Water Resources

EDWARDS UNDERGROUND WATER DISTRICT

1615 North St. Mary's
San Antonio, Texas 78212

BULLETIN 42

COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER, SAN ANTONIO AREA, TEXAS, 1982, WITH 1934-82 SUMMARY

Compiled by

R. D. Reeves and G. B. Ozuna
U.S. Geological Survey

Prepared by the U.S. Geological Survey in cooperation
with the Edwards Underground Water District,
the City Water Board of San Antonio, and
the Texas Department of Water Resources

March 1985

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DEFINITIONS OF TERMS

Technical terms and abbreviations as used in this report are defined as follows:

acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equivalent to 43,560 cubic feet, about 326,000 gallons, or 1,233 cubic meters.

bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped in colonies. Some bacteria cause disease, others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C (degrees Celsius). In the laboratory these bacteria are defined as the organisms which produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C $\pm$ 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL (milliliters) of sample.

fecal coliform bacteria are bacteria that are present in the intestines or feces of warm-blooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms which produce blue colonies within 24 hours when incubated at 44.5°C $\pm$ 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

fecal streptococcal bacteria are bacteria found in intestines of warm-blooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C ± 1.0°C on M-enterrococcus medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by microorganisms, such as bacteria.

cfs-day is the volume of water represented by flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons or 2,447 cubic meters.

chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

color unit is produced by 1 milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

contents is the volume of water in a reservoir or lake, and unless otherwise indicated is computed on the basis of a level pool. The computation does not include bank storage.

control designates a feature downstream from a gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

cubic foot per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

cubic foot per second (FT^3/S, ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second. This rate is equivalent to approximately 7.48 gallons per second, 448.8 gallons per minute, or 0.02832 cubic meter per second.

discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

instantaneous discharge is the discharge at a particular instant of time.

dissolved refers to that material in a representative water sample which passes through a 0.45-µm (micrometer) membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified location. Figures of drainage area given herein include all closed basins or noncontributing areas within the area, unless otherwise noted.

drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

gage height (G.HT.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage" although gage height is more appropriate when used with a reading on a gage.

gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

methylene blue active substance (MBAS) is a measure of apparent detergents. This determination depends on the formation of a blue color when methylene blue dye reacts with synthetic detergent compounds.

micrograms per liter (UG/L, µg/L) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to 1 milligram per liter.

milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represent the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in milligrams per liter and is based on the mass of sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called Sea Level Datum of 1929 or mean sea level. Although the datum was derived from the average sea level over a period

of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

partial record station is a particular site where limited streamflow and (or) water-quality data are collected systematically over a period of years for use in hydrologic analyses.

pesticides are chemical compounds used to control undesirable plants and animals. Major categories of pesticides include insecticides and herbicides, which control insects and plants, respectively, and are the two categories reported.

polychlorinated biphenyls (PCBs) are industrial chemicals that are mixtures of chlorinated biphenyl compounds having various percentages of chlorine. They are similar in structure to organochlorine insecticides.

runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

sodium adsorption ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions with soil and is an index of sodium or alkali hazard to the soil. This ratio should be known especially for water used for irrigation.

solute is any substance derived from the atmosphere, vegetation, soil, or rocks that is dissolved in water.

specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in micromhos per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids concentration in the water. Commonly, the concentration of dissolved solids (in milligrams per

liter) is about 55 percent for wells and 65 percent for streams. This relation is not constant from well to well or from stream to stream, and it may vary in the same source with changes in the composition of the water.

stage-discharge relation is the relation between gage height (stage) and the amount of water per unit of time, flowing in a channel.

streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

suspended, recoverable refers to the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-µm membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results. Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

suspended, total refers to the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45-µm membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total." Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

total refers to the total amount of a given constituent in a representative water-suspended sediment sample regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of water-suspended sediment mixture and that the analytical method determines all of the constituent in the sample.)

total, recoverable refers to the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the

sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual basic-data reports.

WRD is used as an abbrevation for "Water Resources Data" in the REVISED RECORDS paragraph to refer to State annual basic-data reports published before 1975.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

METRIC CONVERSIONS

The inch-pound units of measurement used in this report may be converted to metric units by using the following conversions factors:

From	Multiply by	To obtain
acre-feet (acre-ft)	1233	cubic meters (m^3)
	0.001233	cubic hectometers (hm^3)
cubic feet per second (ft^3/s)	0.02832	cubic meters per second (m^3/s)
feet (ft)	0.3048	meters (m)
feet per mile (ft/mi)	0.189	meters per kilometer (m/km)
inches (in.)	25.4	millimeters (mm)
miles (mi)	1.609	kilometers (km)
million gallons per day (Mgal/d)	0.04381	cubic meters per second (m^3/s)
square miles (mi^2)	2.590	square kilometers (km^2)

To convert °C (degrees Celsius) to °F (degrees Fahrenheit): °F = 9/5 x °C + 32.

COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER, SAN ANTONIO AREA, TEXAS, 1982, WITH 1934-82 SUMMARY

Compiled by

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U.S. Geological Survey

ABSTRACT

The average annual ground-water recharge to the Edwards aquifer in the San Antonio area, Texas, from 1934 through 1982, was 608,400 acre-feet. The recharge in 1982 was 417,700 acre-feet. A maximum annual recharge of 1,711,200 acre-feet occurred in 1958, and a minimum annual recharge of 43,700 acre-feet occurred in 1956.

The calculated annual discharge by wells and springs in 1982 was 786,400 acre-feet. Annual discharge by wells and springs ranged from a maximum of 960,900 acre-feet in 1977 to a minimum of 388,800 acre-feet in 1955. The annual discharge by wells was 453,100 acre-feet in 1982, which is the second highest discharge for the 1934-82 period of record.

Although water levels in many of the wells in the Edwards aquifer fluctuated near the midpoint between record high and low levels during the summer of 1982, the volume of ground water in storage in the aquifer was above average for most of the year.

Analyses of water samples from 56 wells and 3 springs show that the water is of a significantly better quality than the level established for public water systems. However, trace concentrations of organic compounds were detected in some of the analyses.

INTRODUCTION

This annual compilation of the records of ground-water recharge, discharge, water levels, and water quality for the Edwards aquifer and for surface-water data in the San Antonio area, Texas, is part of a continuing investigation by the U.S. Geological Survey in cooperation with the Edwards Underground Water District, the City Water Board of San Antonio, and the Texas Department of Water Resources.

The calculations of annual recharge are based on data collected from a network of streamflow-gaging stations and on assumptions that relate the runoff characteristics of gaged areas to ungaged areas (Puente, 1978). The basic approach is a water-balance equation in which recharge within a stream basin is the difference between measured streamflow above and below the infiltration area plus the estimated runoff within the infiltration area. Hydrogeologic features of the Edwards aquifer are shown in figure 1, drainage basins are shown in figure 2, and data-collection sites are shown in figure 3.

Annual discharge is compiled from: (1) data collected by the Texas Department of Water Resources on pumpage for municipal, military, and industrial use; (2) calculations of pumpage for irrigation as determined from records of power consumption and irrigated acreage; and (3) Geological Survey records of spring flow at points of discharge.

Periodic measurements have been made in observation wells in the Edwards aquifer since 1929 to determine changes in ground-water storage in the aquifer. The first continuous water-stage recorders were installed on some observation wells during the late 1930's. During 1982, periodic water-level measurements were made in 18 wells, and continuous water-stage recorders were in operation on 17 wells.

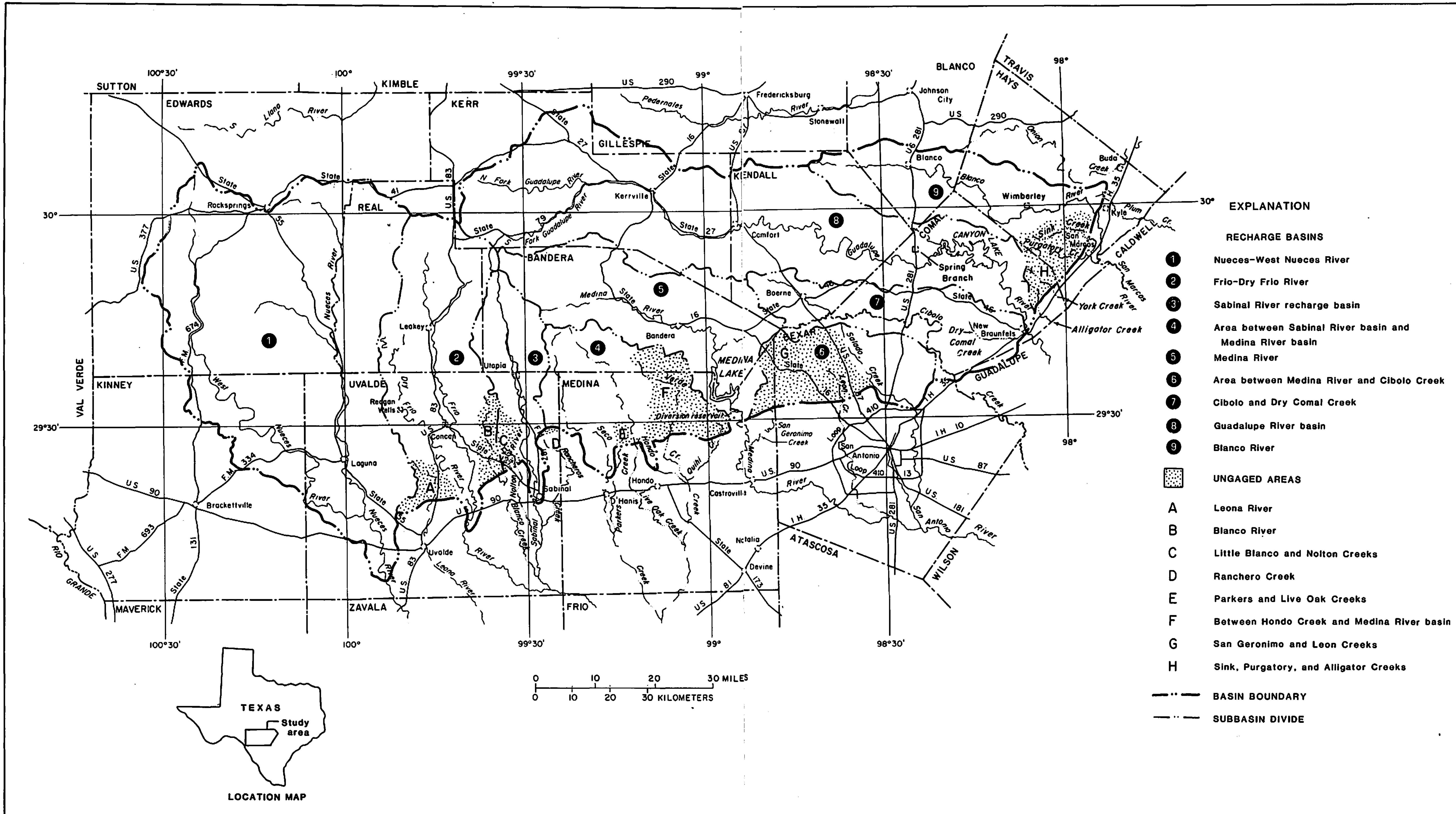


Figure 2.-Location of recharge and ungaged areas

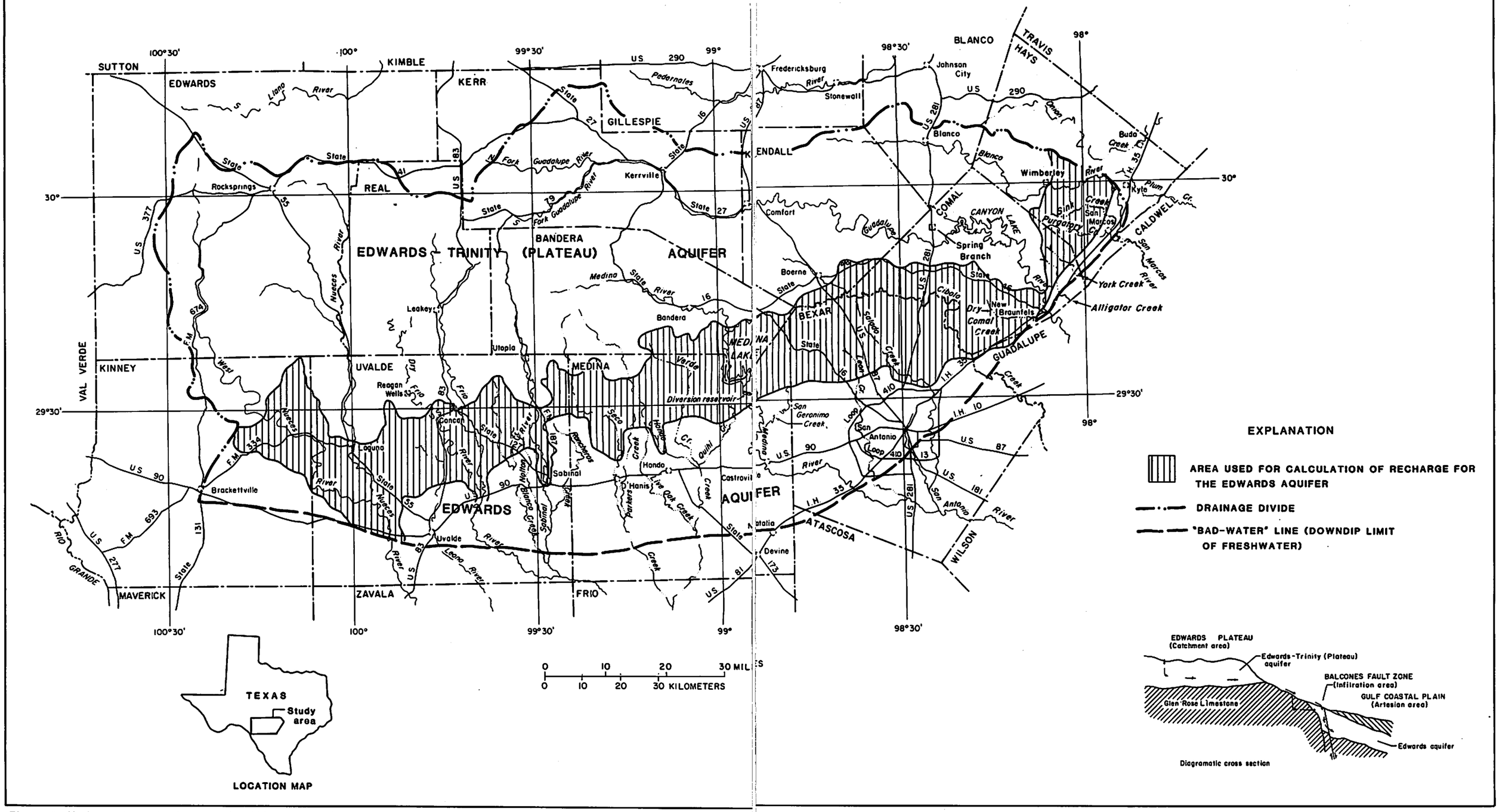
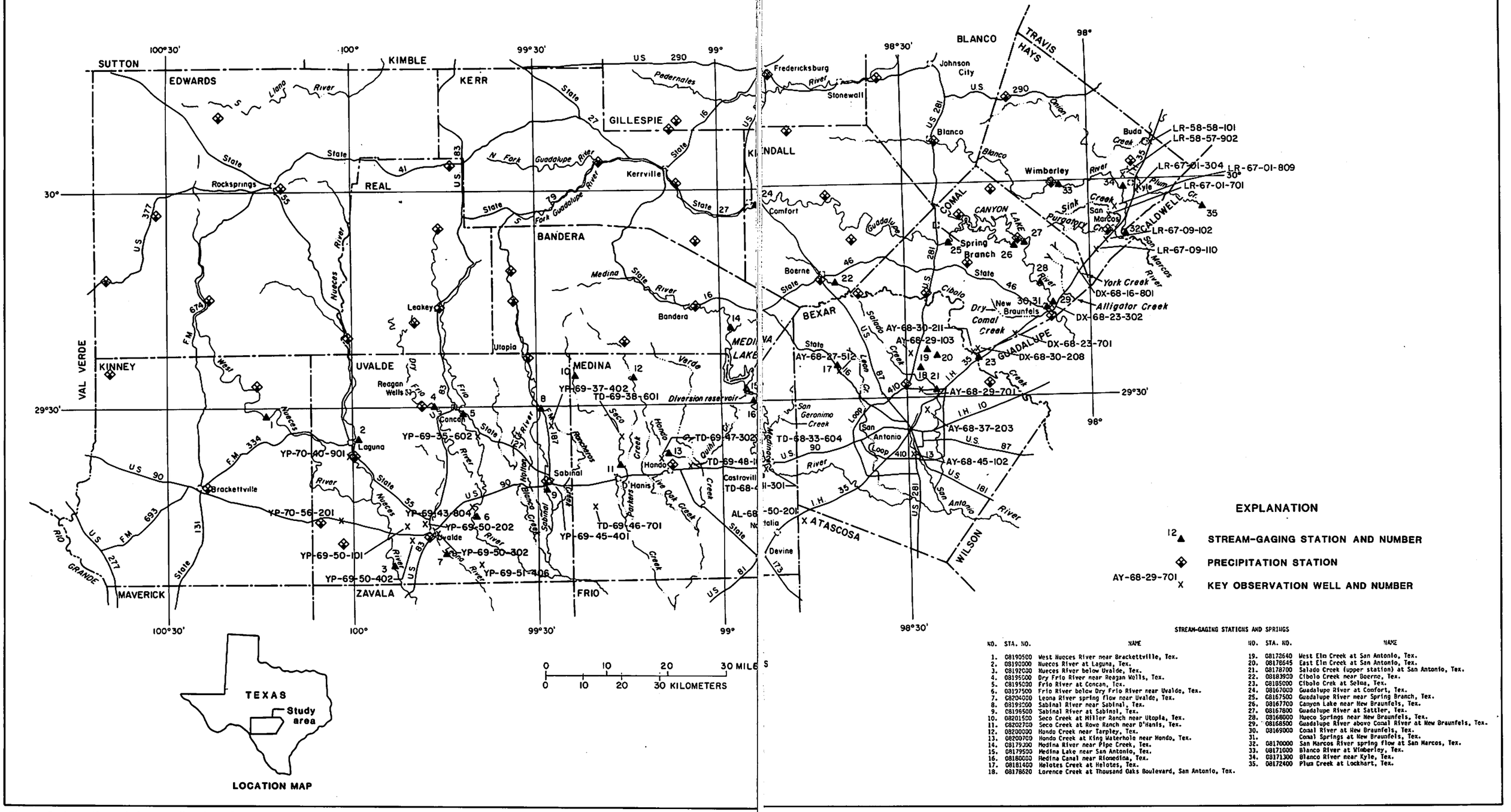


Figure 1.–Hydrogeologic features of the Edwards aquifer



STREAM-GAGING STATIONS AND SPRINGS

NO.	STA. NO.	NAME
1.	08190500	West Nueces River near Brackettville, Tex.
2.	08190000	Nueces River at Laguna, Tex.
3.	08192000	Nueces River below Uvalde, Tex.
4.	08195000	Dry Frio River near Reagan Wells, Tex.
5.	08195500	Frio River at Concan, Tex.
6.	08197500	Frio River below Dry Frio River near Uvalde, Tex.
7.	08204000	Leona River spring flow near Uvalde, Tex.
8.	08199000	Sabinal River near Sabinal, Tex.
9.	08196500	Sabinal River at Sabinal, Tex.
10.	08201500	Seco Creek at Miller Ranch near Utopia, Tex.
11.	08202700	Seco Creek at Rowe Ranch near D'Hanis, Tex.
12.	08200000	Hondo Creek near Tarpley, Tex.
13.	08200700	Hondo Creek at King Waterhole near Hondo, Tex.
14.	08179300	Medina River near Pipe Creek, Tex.
15.	08179500	Medina Lake near San Antonio, Tex.
16.	08180000	Medina Canal near Riomedina, Tex.
17.	08181400	Helotes Creek at Helotes, Tex.
18.	08178620	Lorence Creek at Thousand Oaks Boulevard, San Antonio, Tex.
19.	08173640	West Elm Creek at San Antonio, Tex.
20.	08178645	East Elm Creek at San Antonio, Tex.
21.	08178700	Salado Creek (upper station) at San Antonio, Tex.
22.	08183900	Cibolo Creek near Boerne, Tex.
23.	08185000	Cibolo Creek at Selma, Tex.
24.	08167000	Guadalupe River at Comfort, Tex.
25.	08167500	Guadalupe River near Spring Branch, Tex.
26.	08167700	Canyon Lake near New Braunfels, Tex.
27.	08167800	Guadalupe River at Sattler, Tex.
28.	08168000	Hueco Springs near New Braunfels, Tex.
29.	08168500	Guadalupe River above Comal River at New Braunfels, Tex.
30.	08169000	Comal River at New Braunfels, Tex.
31.		Comal Springs at New Braunfels, Tex.
32.	08170000	San Marcos River spring flow at San Marcos, Tex.
33.	08171000	Blanco River at Wimberley, Tex.
34.	08171300	Blanco River near Kyle, Tex.
35.	08172400	Plum Creek at Lockhart, Tex.

Figure 3.-Location of data-collection sites

Surface-water data for Texas for the 1982 water year are presented in three volumes, appropriately identified by river basins. Data in each volume consist of records of stage, discharge, and water quality of streams and canals and records of stage, contents, and water quality of lakes and reservoirs. Records for a few pertinent stations in bordering states also are included. These data represent that part of the National Water Data System operated by the Geological Survey in cooperation with State and Federal agencies in Texas.

Previous and Related Studies

The Geological Survey and the Texas Department of Water Resources have been collecting hydrologic and geologic data in the San Antonio area on a continuing basis since 1929. Comprehensive reports of previous investigations include Arnow (1959); Bennett and Sayre (1962); DeCook (1963); Garza (1962, 1966); George (1952); Holt (1959); Lang (1954); Livingston, Sayre, and White (1936); Maclay and Small (1976); Petitt and George (1956); and Welder and Reeves (1962). The Texas Department of Water Resources has conducted extensive hydrologic and geologic studies to provide data for construction of a digital model of the aquifer.

In 1968, the Geological Survey, in cooperation with the Texas Department of Water Resources and the Edwards Underground Water District, began a continuing program to collect historical-reference data for detecting pollution and for determining changes in the quality of water in the Edwards aquifer. The results of the study from August 1968 to August 1969 were reported by Reeves and Blakey (1970), and the results from August 1968 to April 1972 were reported by Reeves, Rawson, and Blakey (1972). A progress report for August 1968 to January 1975 was made by Reeves (1976). Compilations of water-quality data for February 1975 to September 1977 were reported by Reeves (1978), for October

1977 to September 1978 and October 1978 to December 1979 were reported by Reeves, Maclay, Grimm, and Davis (1980, 1981), for January 1980 to December 1980 were reported by Reeves, Maclay, and Davis (1982), and for January 1981 to December 1981 were reported by Reeves, Maclay, and Ozuna (1984).

In related studies, the Geological Survey, in cooperation with the Texas Department of Water Resources and the City of San Antonio, collected data from 1969 to 1980 on the quantity and quality of urban runoff in San Antonio. Data collected in the urban study have been reported in an annual series of hydrologic-data reports by Land (1971-72), Steger (1973-75), Gonzalez (1976), Harmsen (1977-78), Perez and Harmsen (1980), and Perez (1981-83).

Additional reports on the geology and hydrology of the San Antonio area as well as reports on recharge, discharge, water levels, and water quality for the Edwards aquifer are given in the section "Selected References."

Well-Numbering System

The well-numbering system in Texas was developed by the Texas Department of Water Resources for use throughout the State. Under this system, each 1-degree quadrangle is given a number consisting of two digits. These are the first two digits in the well number. Each 1-degree quadrangle is divided into 7-1/2-minute quadrangles which are given two-digit numbers from 01 to 64. These are the third and fourth digits of the well number. Each 7-1/2-minute quadrangle is divided into 2-1/2-minute quadrangles which are given a single-digit number from 1 to 9. This is the fifth digit of the well number. Finally, each well within a 2-1/2-minute quadrangle is given a two-digit number in the order in which it was inventoried, starting with 01. These are the last two digits of the well number.

In addition to the seven-digit well number, a two-letter prefix is used to identify the county. The prefix for each county in the San Antonio area is as follows: AL, Atascosa; AY, Bexar; DX, Comal; LR, Hays; TD, Medina; and YP, Uvalde.

Each water-level observation well is also identified by a 15-digit number based on latitude and longitude and by a local number that is provided for continuity with older reports. The first 6 digits of the 15-digit number are degrees, minutes, and seconds of north latitude; the next 7 digits are degrees (including a leading 0 for those less than 100), minutes, and seconds of west longitude; and the final 2 digits are sequential numbers assigned in the order in which the wells are established in that 1-second quadrangle. The second seven-digit number is the State well number. Where there is a number inside parentheses, it is a number assigned to the well in some publication prior to 1978.

PRECIPITATION

The annual and long-term average precipitation at selected stations in the San Antonio area for 1979-82 are given in table 1. Annual rainfall in 1980 and 1982 was below average at most of the stations. Annual rainfall in 1979 and 1981 was above average at most of the stations in the San Antonio area as a result of significant storms in March, April, and June 1979 and April, June, and October 1981.

GROUND-WATER RECHARGE

Recharge to the Edwards aquifer is derived mainly by seepage from streams that cross the outcrop of the aquifer (fig. 1). Some recharge is derived from direct infiltration of precipitation on the outcrop.

The calculated annual recharge by basins for 1934-82 and the average annual recharge for 1934-82 are given in table 2. Recharge in the Guadalupe River basin is not included because the amount of net recharge to the aquifer is not significant.

The annual recharge for 1934-82 ranged from 43,700 acre-feet in 1956 to 1,711,200 acre-feet in 1958. The average annual recharge for 1934-82 was 608,400 acre-feet. Recharge in 1982 was 417,700 acre-feet.

GROUND-WATER DISCHARGE

The calculated discharge, by county, from the Edwards aquifer during 1934-82 is given in table 3. The calculated discharge by county and by water use in 1982 is given in table 4.

The discharge from springs was from San Marcos Springs in Hays County, Comal Springs in Comal County, San Antonio and San Pedro Springs in Bexar County, and Leona River Springs in Uvalde County. The calculated discharge from Leona River Springs includes underflow in the gravel underlying the springs.

The major discharge from wells was in Bexar, Uvalde, and Medina Counties, while the major spring flow was from Comal and Hays Counties. Many wells in Bexar County supplied water for municipal and military use. Other wells in Bexar County and most of the large wells in Uvalde and Medina Counties supplied water for irrigation of about 93,000 acres during 1982. The remaining discharge, principally from wells in Bexar County, was for industrial use, domestic supply, and miscellaneous uses.

The calculated total discharge from wells and springs in 1982 was 786,400 acre-feet (table 4). The discharge from wells increased from 387,100 acre-feet in 1981 to 453,100 acre-feet in 1982, which is the second highest discharge for

the 1934-82 period of record. In 1982, about 58 percent of the total discharge was from wells, and approximately 65 percent of this amount was discharge from wells in Bexar County. The discharge from wells in 1982 was 17 percent more than in 1981, while spring flow decreased by about 18 percent. The total discharge from wells and springs in 1982 was about 1 percent less than in 1981 and about 29 percent more than the average discharge for 1934-81.

The relationship between accumulated recharge and discharge for 1934-82 is shown in figure 4.

WATER LEVELS AND GROUND-WATER STORAGE

Water levels have been measured periodically in selected observation wells in the Edwards aquifer since 1929 to determine changes in ground-water storage. During the late 1930's, continuous water-level recorders were installed on some of the observation wells.

Water levels in wells fluctuate mainly in response to change in ground-water storage in the aquifer. When recharge is greater than discharge, water levels rise, and flow of the springs increases; when discharge is greater than recharge, water levels decline, and spring flow decreases. In general, the water levels are lowest during the summer because of the increased withdrawals from wells.

The annual high and low water levels recorded in five selected observation wells in the artesian part of the aquifer during 1979-82 are given in table 5. The water levels in observation wells in 1982 are given in table 6. The measured and recorded data show that the water levels during the first 5 months of 1982 fluctuated above average conditions when compared with historically recorded high and low measurements. However, the data also show that

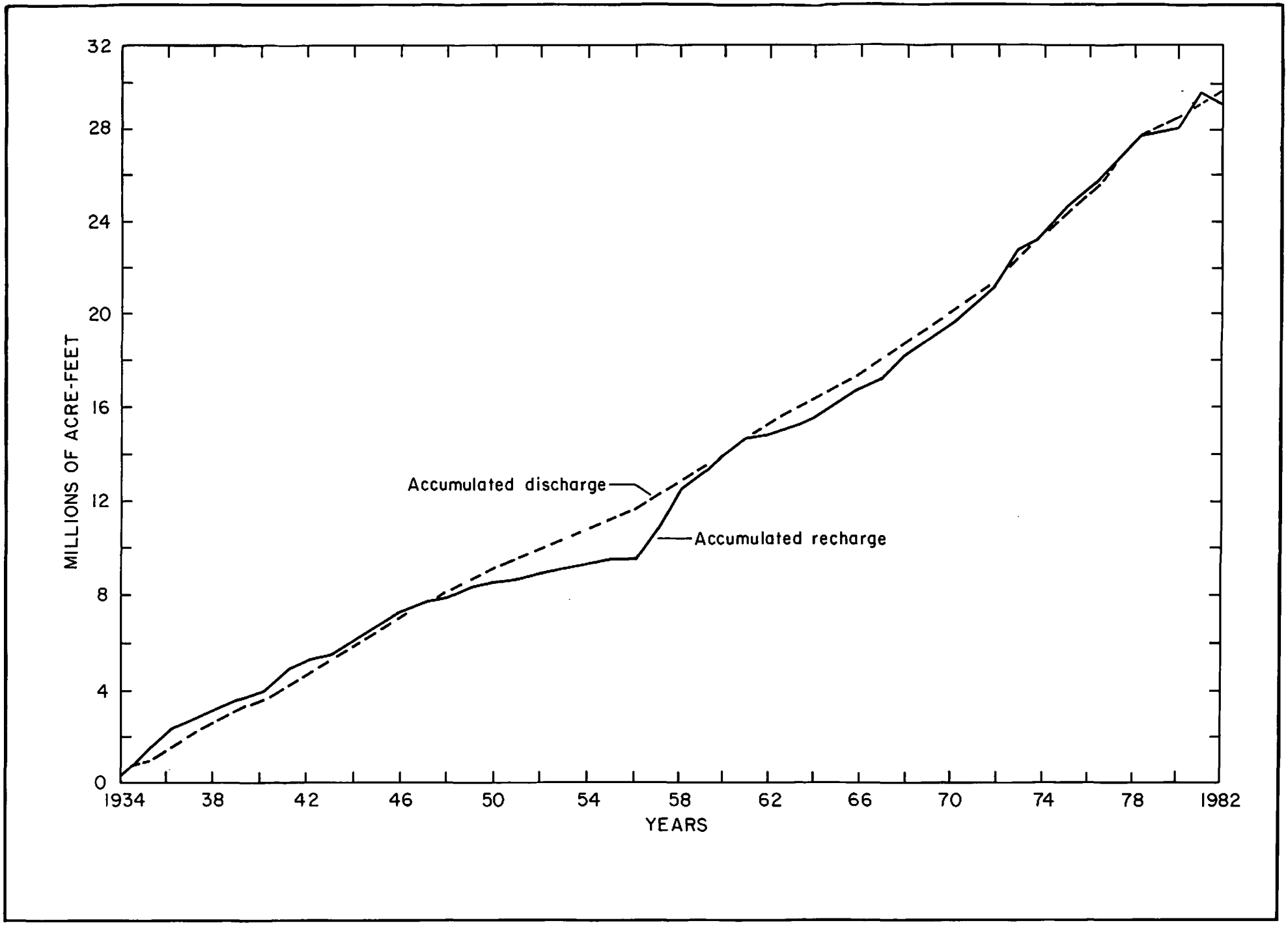


FIGURE 4.-Accumulated recharge and discharge, 1934-82

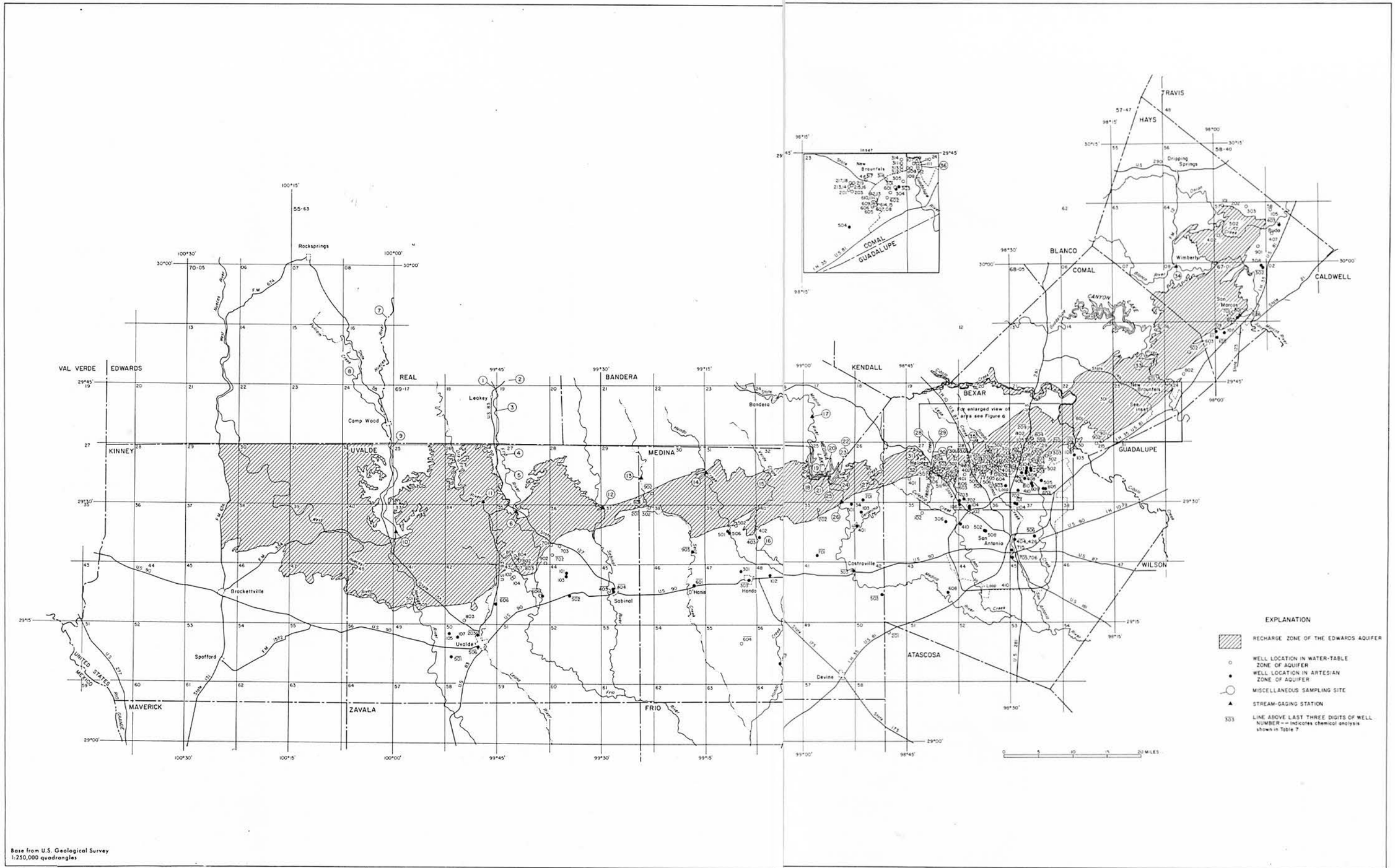
The annual high and low water levels recorded in five selected observation wells in the artesian part of the aquifer during 1979-82 are given in table 5. The water levels in observation wells in 1982 are given in table 6. The measured and recorded data show that the water levels during the first 5 months of 1982 fluctuated above average conditions when compared with historically recorded high and low measurements. However, the data also show that substantial declines occurred during the summer and then fluctuated near average conditions for the remainder of the year. During the year, rainfall was below normal and withdrawals were at a near record high. The volume in storage in the Edwards aquifer was above average during most of 1982.

In 1982, 18 wells were measured periodically, and continuous recorders were in operation on 17 wells (fig. 3). Water levels in about 80 additional wells are measured annually in the San Antonio area by personnel of the Texas Department of Water Resources. Tabulations of current and historical water-level measurements are available on computer printouts from the Texas Department of Water Resources in Austin, Texas. These records also are on file in the office of the Geological Survey in San Antonio, Texas.

Water-level measurements are reported in feet below land-surface datum (lsd) unless otherwise indicated. Water levels above land surface are indicated by a plus (+) sign. Water levels in wells equipped with recorders are reported every fifth day and at the end of the month (eom). If known, the altitude of the land surface above NGVD of 1929 is given in the well description.

WATER QUALITY FOR WELLS AND SPRINGS

The water-quality data-collection sites for the area are shown in figure 5, which also shows the sites for which data are given in Reeves (1976, 1978). Figure 6 is an inset for the San Antonio area. Although some of the wells are



Base from U.S. Geological Survey
1:250,000 quadrangles

Figure 5.-Locations of water-quality data-collection sites for wells and springs

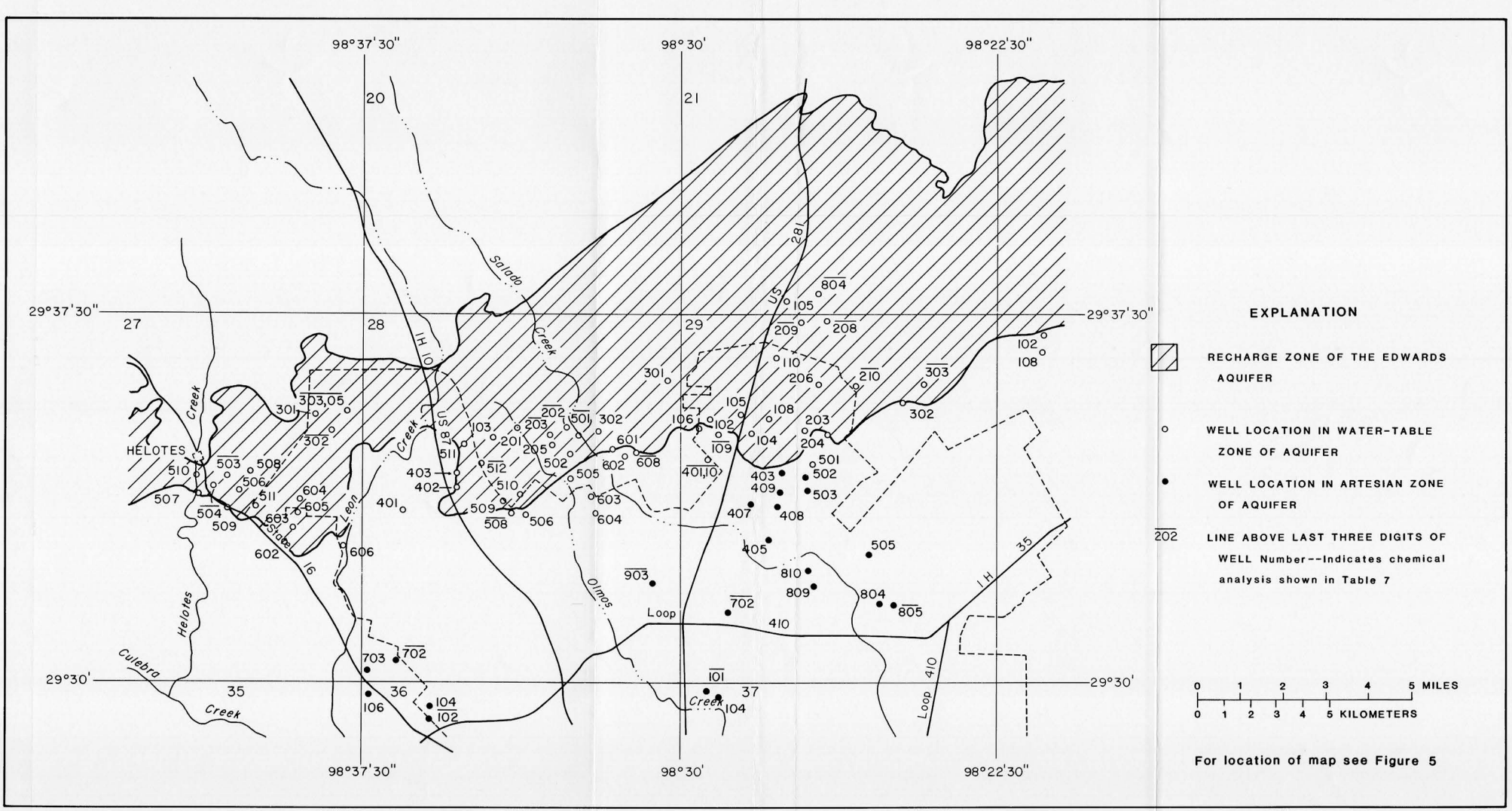


Figure 6.-Location of water-quality data-collection sites for wells and springs in the San Antonio area

no longer in use, additional samples can be collected at most of the sites in order to detect any deterioration in water quality.

The results of the analyses of water samples that were collected from 56 wells and 3 springs in the Edwards aquifer during 1982 are given in table 7. The samples were analyzed for more than 50 properties or constituents, most of which affect the suitability of the water for domestic use. The analyses included determinations of the concentrations of bacteria; major inorganic constituents; minor elements, including heavy metals; and pesticides. Analyses of samples from the wells and springs show that the water is of a significantly better quality than the level established for public water systems (table 9).

Since contamination of ground water with manmade organic compounds is a growing problem, samples from seven wells and two springs were analyzed for purgeable volatile and base/neutral-acid extractable organic compounds in 1982. The samples were analyzed for, but not limited to, the following compounds on the Environmental Protection Agency Priority Pollutant list:

Volatile Organic Compounds

Benzene	1,2-Dichloroethane
Bromoform	1,1-Dichloroethylene
Carbon tetrachloride	1,2-trans-Dichloroethylene
Chlorobenzene	1,2-Dichloropropane
Chlorodibromomethane	Cis-1,3-Dichloropropene
Chloroethane	Trans-1,3-Dichloropropene
2-Chloroethyl vinyl ether	Ethylbenzene
Chloroform	Methylbromide
Dichlorobromomethane	Methylene chloride
Chloromethane	1,1,2,2-Tetrachlorethane
1,1-Dichloroethane	Tetrachloroethylene

Acid-Extractable Organic Compounds

4-Chloro-3 methylphenol	2,4-Dinitrophenol
2-Chlorophenol	2-Nitrophenol
2,4-Dichlorophenol	4-Nitrophenol
2,4-Dimethylphenol	Pentachlorophenol
4,6-Dinitro-2-methylphenol	Phenol
2,4,6-Trichlorophenol	

Examples of other compounds which may be identified:

8-Methyl decanoic acid	Undecanoic acid

Base/Neutral Extractable Organic Compounds

Acenaphthene	Dibenz (a,h) anthracene
Acenaphthylene	1,2-Dichlorobenzene
Anthracene	1,3-Dichlorobenzene
Benzidine	1,4-Dichlorobenzene
Benzo (a) anthracene	3,3-Dichlorobenzidine
Benzo (b) fluoranthene	Dimethyl phthalate
Benzo (k) fluoranthene	Di-n-butyl phthalate
Benzo (g,h,i) perylene	2,4-Dinitrotoluene
Benzo (a) pyrene	2,6-Dinitrotoluene
4-Bromophenyl phenyl ether	Di-n-octylphthalate
Butyl benzyl phthalate	bis (2-Ethylhexyl) phthalate
bis (2-Chloroethoxy) methane	Fluoranthene
bis (2-Chloroethyl) ether	Fluorene
bis (2-Chloroisopropyl) ether	Hexachlorobenzene
2-Chloronaphthalene	Hexachlorobutadiene
4-Chlorophenyl phenyl ether	Hexachlorocyclopentadiene
Chrysene	Hexachloroethane

Indeno (1,2,3-cd) pyrene

Isophorone

Napthalene

Nitrobenzene

n-Nitrosodimethylamine

n-Nitrosodiphenylamine

n-Nitrosodi-n-propylamine

Phenanthrene

Pyrene

2,3,7,8-Tetrachlorodibenzo-p-dioxin

1,2,4-Trichlorobenzene

Examples of other compounds which may be identified:

2-Chlorobenzenamine, total recoverable (µg/L)

2,5-Dimethylnonane, total recoverable (µg/L)

2,4-Dimethylpentane, total recoverable (µg/L)

Analytical methods used for the determination of the organic compounds are described by Wershaw and others (1983) in "Methods for the Determination of Organic Substances in Water and Fluvial Sediments."

The volatile organics are determined by purge and trap followed by gas chromatography/mass spectrometry. A water sample is purged with helium and the purgeable organic compounds are carried by the helium and trapped on a porous polymer trap. The trapped compounds are thermally desorbed into the gas chromatograph and detected by mass spectrometry. Data reported below the method detection limit of 3.0 µg/L are provisional in that precision and accuracy are not defined at these lower concentrations; however, the data are qualitatively accurate.

Base/neutral-acid compounds are extracted from a water sample with methylene chloride by the following method:

The base/neutral fraction is extracted with methylene chloride after the pH of the sample is adjusted to greater than 11. The acid fraction is extracted with methylene chloride after the pH of the

The base/neutral fraction is extracted with methylene chloride after the pH of the sample is adjusted to greater than 11. The acid fraction is extracted with methylene chloride after the pH of the sample is adjusted to less than 2. Each extract is concentrated and subjected to analysis by gas chromatography using a mass spectrometric detector. The method detection limit for base/neutral-acid compounds ranges from 5 to 30 µg/L; therefore, concentrations reported below this limit are provisional. However, the data are qualitatively accurate.

Mass spectra are obtained for every compound that elutes from the gas chomatograph in sufficient concentration to yield a discernible peak. A computerized search is performed for the unknowns using a National Bureau of Standards computer library reference spectra of about 35,000 compounds. Although most common organic compounds can be identified by this method, most of the samples contain compounds that cannot be identified because the concentrations were too low or because reliable library matches could not be obtained.

Samples from only one well contained a purgeable volatile organic compound. Samples collected from well AY-68-28-903 on June 24, 1982, and September 21, 1982, contained 5.5 and 1.5 µg/L of tetrachloroethylene, respectively. Volatile organic compounds also were detected in samples collected from this well in 1983 and 1984; however, the concentrations were less than 10 µg/L.

The base/neutral-acid extractable compounds listed in table 8 are those which could most reliably be determined to exist in the samples at the time of analysis. Although 21 base/neutral-acid extractable organic compounds were detected in the study area, only 3 compounds were detected in excess of 1.0 µg/L, and only 1 compound, diethyl phthlate, was detected in escess of 3.0

SURFACE-WATER DATA

Records of discharge (or stage) of streams and of contents (or stage) of lakes and reservoirs, and records of chemical quality, water temperature, and suspended-sediment data for streams are published in Geological Survey water-supply papers or in Geological Survey water-data reports. These reports may be seen in the libraries of principal cities of the United States or in the offices of the Water Resources Division of the Geological Survey.

Records of streamflow and contents of reservoirs and measurements of spring flow and water quality of streams and reservoirs for selected stations in the vicinity of the Edwards aquifer in the San Antonio area are given in table 10. These data are used in the calculation of the annual recharge to the aquifer or in the calculation of the annual discharge from the aquifer.

Water-quality data collected at stations upstream from the recharge zone are used to evaluate the quality of recharge water for the aquifer. Data collected at stations in Bexar County provide streamflow and water-quality information for areas of different types of utilization and for floods of various magnitudes during all seasons of the year. Data-collection sites are shown in figure 3.

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Table 1.--Annual and long-term average precipitation at selected stations, 1979-82[1]

Station	Precipitation (inches)				Long-term average	
	1979	1980	1981	1982	Inches	Years of record
Brackettville	16.34	18.33	28.73	12.62	20.78	91
Uvalde	32.35	23.05	26.24	23.35	24.73	79
Sabinal	31.44	22.67	30.19	18.44	25.79	59
Hondo	28.83	21.27	27.40	21.99	28.64	76
San Antonio	36.64	24.23	36.37	22.96	28.31	104
Boerne	39.97	29.02	41.05	27.64	33.14	86
New Braunfels	36.72	33.69	43.23	21.04	31.72	87
San Marcos	38.74	29.56	49.62	--	33.66	79

[1] Precipitation data from the U.S. Department of Commerce (1979-82).

Table 2.--Calculated annual recharge to the Edwards aquifer by basin, 1934-82
(in thousands of acre-feet)

Calendar year	Nueces-West Nueces River basin	Frio-Dry Frio River basin[1]	Sabinal River basin[1]	Area between Sabinal River and Medina River basins[1]	Medina Lake	Area between Cibolo Creek and Medina River basins[1]	Cibolo-Dry Comal Creek basin	Blanco River basin[1]	Total
1934	8.6	27.9	7.5	19.9	46.5	21.0	28.4	19.8	179.6
1935	411.3	192.3	56.6	166.2	71.1	138.2	182.7	39.8	1,258.2
1936	176.5	157.4	43.5	142.9	91.6	108.9	146.1	42.7	909.6
1937	28.8	75.7	21.5	61.3	80.5	47.8	63.9	21.2	400.7
1938	63.5	69.3	20.9	54.1	65.5	46.2	76.8	36.4	432.7
1939	227.0	49.5	17.0	33.1	42.4	9.3	9.6	11.1	399.0
1940	50.4	60.3	23.8	56.6	38.8	29.3	30.8	18.8	308.8
1941	89.9	151.8	50.6	139.0	54.1	116.3	191.2	57.8	850.7
1942	103.5	95.1	34.0	84.4	51.7	66.9	93.6	28.6	557.8
1943	36.5	42.3	11.1	33.8	41.5	29.5	58.3	20.1	273.1
1944	64.1	76.0	24.8	74.3	50.5	72.5	152.5	46.2	560.9
1945	47.3	71.1	30.8	78.6	54.8	79.6	129.9	35.7	527.8
1946	80.9	54.2	16.5	52.0	51.4	105.1	155.3	40.7	556.1
1947	72.4	77.7	16.7	45.2	44.0	55.5	79.5	31.6	422.6
1948	41.1	25.6	26.0	20.2	14.8	17.5	19.9	13.2	178.3
1949	166.0	86.1	31.5	70.3	33.0	41.8	55.9	23.5	508.1
1950	41.5	35.5	13.3	27.0	23.6	17.3	24.6	17.4	200.2
1951	18.3	28.4	7.3	26.4	21.1	15.3	12.5	10.6	139.9
1952	27.9	15.7	3.2	30.2	25.4	50.1	102.3	20.7	275.5
1953	21.4	15.1	3.2	4.4	36.2	20.1	42.3	24.9	167.6
1954	61.3	31.6	7.1	11.9	25.3	4.2	10.0	10.7	162.1
1955	128.0	22.1	0.6	7.7	16.5	4.3	3.3	9.5	192.0
1956	15.6	4.2	1.6	3.6	6.3	2.0	2.2	8.2	43.7
1957	108.6	133.6	65.4	129.5	55.6	175.6	397.9	76.4	1,142.6
1958	266.7	300.0	223.8	294.9	95.5	190.9	268.7	70.7	1,711.2
1959	109.6	158.9	61.6	96.7	94.7	57.4	77.9	33.6	690.4
1960	88.7	128.1	64.9	127.0	104.0	89.7	160.0	62.4	824.8
1961	85.2	151.3	57.4	105.4	88.3	69.3	110.8	49.4	717.1
1962	47.4	46.6	4.3	23.5	57.3	16.7	24.7	18.9	239.4
1963	39.7	27.0	5.0	10.3	41.9	9.3	21.3	16.2	170.7
1964	126.1	57.1	16.3	61.3	43.3	35.8	51.1	22.2	413.2
1965	97.9	83.0	23.2	104.0	54.6	78.8	115.3	66.7	623.5
1966	169.2	134.0	37.7	78.2	50.5	44.5	66.5	34.6	615.2
1967	82.2	137.9	30.4	64.8	44.7	30.2	57.3	19.0	466.5
1968	130.8	176.0	66.4	198.7	59.9	83.1	120.5	49.3	884.7
1969	119.7	113.8	30.7	84.2	55.4	60.2	99.9	46.6	610.5
1970	112.6	141.9	35.4	81.6	68.0	68.8	113.8	39.5	661.6
1971	263.4	212.4	39.2	155.6	68.7	81.4	82.4	22.2	925.3
1972	108.4	144.6	49.0	154.6	87.9	74.3	104.2	33.4	756.4
1973	190.6	256.9	123.9	286.4	97.6	237.2	211.7	82.2	1,486.5
1974	91.1	135.7	36.1	115.3	96.2	68.1	76.9	39.1	658.5
1975	71.8	143.6	47.9	195.9	93.4	138.8	195.7	85.9	973.0
1976	150.7	238.6	68.2	182.0	94.5	47.9	54.3	57.9	894.1
1977	102.9	193.0	62.7	159.5	77.7	97.9	191.6	66.7	952.0
1978	69.8	73.1	30.9	103.7	76.7	49.6	72.4	26.3	502.5
1979	128.4	201.4	68.6	203.1	89.4	85.4	266.3	75.2	1,117.8
1980	58.6	85.6	42.6	25.3	88.3	18.8	55.4	31.8	406.4
1981	205.0	365.2	105.6	252.1	91.3	165.0	196.8	67.3	1,448.4
1982	19.4	123.4	21.0	90.9	76.8	22.6	40.1	23.5	417.7
AVERAGE	102.6	110.8	38.5	94.4	60.0	65.2	100.2	36.8	[2]608.4

[1] Includes recharge from gaged and ungaged areas within the basin.
[2] Average totals may not be identical because of rounding procedures.

Table 3.--Calculated annual discharge from the Edwards aquifer by county, 1934-82 (in thousands of acre-feet)

Year	Kinney-Uvalde Counties	Medina County	Bexar County	Comal County	Hays County	Total	Total spring discharge	Total well discharge
1934	12.6	1.3	109.3	229.1	85.6	437.9	336.0	101.9
1935	12.2	1.5	171.8	237.2	96.9	519.6	415.9	103.7
1936	26.6	1.5	215.2	261.7	93.2	598.2	485.5	112.7
1937	28.3	1.5	201.8	252.5	87.1	571.2	451.0	120.2
1938	25.2	1.6	187.6	250.0	93.4	557.8	437.7	120.1
1939	18.2	1.6	122.5	219.4	71.1	432.8	313.9	118.9
1940	16.1	1.6	116.7	203.8	78.4	416.6	296.5	120.1
1941	17.9	1.6	197.4	250.0	134.3	601.2	464.4	136.8
1942	22.5	1.7	203.2	255.1	112.2	594.7	450.1	144.6
1943	19.2	1.7	172.0	249.2	97.2	539.3	390.2	149.1
1944	11.6	1.7	166.3	252.5	135.3	567.4	420.1	147.3
1945	12.4	1.7	199.8	263.1	137.8	614.8	461.5	153.3
1946	6.2	1.7	180.1	261.9	134.0	583.9	428.9	155.0
1947	13.8	2.0	193.3	256.8	127.6	593.5	426.5	167.0
1948	9.2	1.9	159.2	203.0	77.3	450.6	281.9	168.7
1949	13.2	2.0	165.3	209.5	89.8	479.8	300.4	179.4
1950	17.8	2.2	177.3	191.1	78.3	466.7	272.9	193.8
1951	16.9	2.2	186.9	150.5	69.1	425.6	215.9	209.7
1952	22.7	3.1	187.1	133.2	78.8	424.9	209.5	215.4
1953	27.5	4.0	193.7	141.7	101.4	468.3	238.5	229.8
1954	26.6	6.3	208.9	101.0	81.5	424.3	178.1	246.2
1955	28.3	11.1	215.2	70.1	64.1	388.8	127.8	261.0
1956	59.6	17.7	229.6	33.6	50.4	390.9	69.8	321.1
1957	29.0	11.9	189.4	113.2	113.0	456.5	219.2	237.3
1958	23.7	6.6	199.5	231.8	155.9	617.5	398.2	219.3
1959	43.0	8.3	217.5	231.7	118.5	619.0	384.5	234.5
1960	53.7	7.6	215.4	235.2	143.5	655.4	428.3	227.1
1961	56.5	6.4	230.3	249.5	140.8	683.5	455.3	228.2
1962	64.6	8.1	220.0	197.5	98.8	589.0	321.1	267.9
1963	51.4	9.7	217.3	155.7	81.9	516.0	239.6	276.4
1964	49.3	8.6	201.0	141.8	73.3	474.0	213.8	260.2
1965	46.8	10.0	201.1	194.7	126.3	578.9	322.8	256.1
1966	48.5	10.4	198.0	198.9	15.4	571.2	315.3	255.9
1967	81.1	15.2	239.7	139.1	82.3	557.4	216.1	341.3
1968	58.0	9.9	207.1	238.2	146.8	660.0	408.3	251.7
1969	88.5	13.6	216.3	218.2	122.1	658.7	351.2	307.5
1970	100.9	16.5	230.6	229.2	149.9	727.1	397.7	329.4
1971	117.0	32.4	262.8	168.2	99.1	679.5	272.7	406.8
1972	112.6	28.8	247.7	234.3	123.7	747.1	375.8	371.3
1973	96.5	14.9	273.0	289.3	164.3	838.0	527.6	310.4
1974	133.3	28.6	272.1	286.1	141.1	861.2	483.8	377.4
1975	112.0	22.6	259.0	296.0	178.6	868.2	540.4	327.8
1976	136.4	19.4	253.2	279.7	164.7	853.4	503.9	349.5
1977	156.5	19.9	317.5	295.0	172.0	960.9	580.3	380.6
1978	154.3	38.7	269.5	245.7	99.1	807.3	375.5	431.8
1979	130.1	32.9	294.5	300.0	157.0	914.5	523.0	391.5
1980	151.0	39.9	300.3	220.3	107.9	819.4	328.3	491.1
1981	104.2	26.1	280.7	241.8	141.6	794.4	407.3	387.1
1982	129.2	33.4	305.1	213.2	105.5	786.4	333.3	453.1

Table 4.--Calculated discharge from the Edwards aquifer by county and by water use, 1982

County	Springs	Municipal supply and military use	Irrigation	Industrial use	Domestic supply, stock, and miscellaneous use	Total (million gallons per day)	Total (thousand acre-feet per year)
	Million gallons per day						
Kinney	--	--	--	--	0.2	0.2	0.2
Uvalde	29.4	4.8	78.8	--	2.2	115.2	129.0
Medina	--	4.1	25.1	--	.6	29.8	33.4
Bexar	7.8	213.1	11.4	9.7	30.4	272.4	305.1
Comal	176.9	10.0	.2	2.6	.6	190.3	213.2
Hays	83.4	7.8	.6	1.1	1.3	94.2	105.5
Total (million gallons per day)	297.5	239.8	116.1	13.4	35.3	702.1	
Total (thousand acre-feet per year)	333.3	268.6	130.0	15.0	39.5		786.4

Table 5.--Annual high and low water levels in selected observation wells in the Edwards aquifer, 1979-82
(feet above NGVD of 1929)

Well	1979		1980		1981		1982		Record high	Record low	Period of record
	High	Low	High	Low	High	Low	High	Low			
YP-69-50-302[1] H-5-1 (Uvalde Co.)	882.00	876.11	879.12	868.05	881.85	867.95	881.80	876.40	886.26 May 1977	811.0 Apr. 1957	1929-32 1934-82
TD-68-41-301[1] J-1-82 (Medina Co.)	728.18	710.25	716.05	666.72	723.13	693.25	717.08	682.73	737.78 May 1977	622.3 Aug. 1956	1950-82
AY-68-37-203[1,2] J-17 (Bexar Co.)	690.52	676.25	680.29	640.76	685.98	661.27	680.53	647.33	696.5 Oct. 1973	[3]612.5 Aug. 1956	1932-82[4]
DX-68-23-302[1] G-49 (Comal Co.)	628.97	627.25	627.49	623.00	627.96	625.34	627.26	623.57	630.17 Apr. 1977	613.3 Aug. 1956	1948-82
LR-67-01-304[1] H-23 (Hays Co.)	584.86	572.95	571.97	551.82	586.15	565.50	584.66	647.33	593.8 Mar. 1968	540.4 July 1978	1937-82

[1] New State well number replaces old well number.
[2] Replaces well 26 and reflects the same water level; composite record of wells 26 and AY-68-37-203.
[3] Record low for well 26.
[4] Composite record of wells 26 and AY-68-37-203.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1982
(Water levels furnished by Edwards Underground Water District)

291342098475401. AL-68-50-201. Public supply artesian well in Edwards aquifer, diam. 10 to 8 in., depth 2,379 ft, cased to 2,304 ft. Lsd 724.14 ft above msl. Highest water level 14.12 ft below lsd, Nov. 12, 1973; lowest 87.62 ft below lsd, Jan. 12, 1957. Records available 1957-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6, 1982	27.07	Apr. 3, 1982	33.65	Oct. 1, 1982	53.89	Dec. 5, 1982	43.25
Jan. 30	29.48	May 8	34.49	Oct. 29	50.31	Dec. 30	46.95
Mar 5	32.38	June 2	30.15				

293345098405901. AY-68-27-512. Unused water-table well in Edwards aquifer, diam. 6 in., depth 502 ft, cased to 18 ft. Lsd 992.0 ft above msl. Highest water level 130.09 ft below lsd, Oct. 26, 1973; lowest 241.10 ft below lsd, July 6, 1978. Records available 1971-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6, 1982	197.32	May 9, 1982	194.59	July 27, 1982	195.18	Oct. 29, 1982	193.79
Feb. 5	195.09	June 2	192.75	Aug. 29	195.39	Dec. 7	194.10
Mar. 6	194.70	July 2	192.68	Sept. 29	195.20	Dec. 28	193.49
Apr. 4	194.34						

293522098291201. AY-68-29-103 (F-214). Unused water-table well in Edwards aquifer, diam. 10 in., depth 547 ft, cased to 100 ft. Lsd 952.67 ft above msl. Highest water level 224.80 ft below lsd, May 31, 1977; lowest 284.35 ft below lsd, Nov. 21, 1957. Records available 1957-82.

Highest 1982 water level 252.65 ft below lsd on Jan. 3; lowest 1982 water level 266.01 ft below lsd on Dec. 29.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	252.90	254.22	254.88	256.33	.....	253.12	255.76	261.31	264.30	265.87	265.66	265.79
10	253.38	253.99	255.45	256.96	256.53	253.94	257.74	260.85	263.80	265.03	265.80	265.67
15	252.91	254.08	256.19	257.55	.....	253.20	257.67	261.60	264.42	265.04	265.72	265.82
20	253.12	254.61	256.26	257.53	.....	253.82	258.80	262.51	264.51	265.31	265.51	a265.78
25	253.60	254.74	256.06	257.23	.....	254.46	259.07	263.71	264.64	265.62	265.75	265.85
Eom	253.82	254.93	255.98	257.79	252.73	255.39	260.35	264.01	e265.15	265.81	265.61	265.64

293215098274601. AY-68-29-701 (F-172). Unused artesian well in Edwards aquifer, diam. 10 in., depth 500 ft, casing information not available. Lsd 778.8 ft above msl. Highest water level 74.84 ft below lsd, Oct. 21, 1973; lowest 165.10 ft below lsd, Aug. 17, 1956. Records available 1952-82.

Highest 1982 water level 94.36 ft below lsd on May 22; lowest 1982 water level 130.12 ft below lsd on Sept. 7.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	98.72	.....	103.87	104.81	107.65	102.05	113.51	127.93	128.89	125.79	117.41	112.88
10	.....	.....	103.61	105.72	100.05	107.54	116.80	123.85	129.14	121.41	117.07	112.95
15	.....	.....	104.12	108.82	97.64	105.12	119.45	124.02	126.94	119.62	116.65	112.67
20	.....	.....	105.36	108.74	94.51	107.64	120.63	125.89	125.09	119.36	116.01	112.52
25	.....	.....	103.97	106.40	94.61	113.20	121.69	127.71	124.52	119.28	115.42	112.54
Eom	.....	.....	103.73	107.78	96.12	116.52	125.43	129.08	125.76	118.26	113.34	111.81

293617098194001. AY-68-30-211 (G-69). Unused artesian well in Edwards aquifer, diam. 6 in., depth 777 ft, cased to 230 ft. Lsd 776.45 ft above msl. Highest water level 85.70 ft below lsd, Oct. 16, 1973; lowest 152.34 ft below lsd, Aug. 17, 1967. Records available 1964-82.

Highest 1982 water level 107.43 ft below lsd on May 25; lowest 1982 water level 133.49 ft below lsd on Sept. 7.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	107.93	110.34	111.96	113.27	115.43	111.18	119.69	130.94	132.72	130.44	124.58	.....
10	108.34	110.79	112.28	113.94	111.24	114.60	121.91	128.62	133.04	127.88	124.15	120.83
15	109.22	111.42	112.58	115.57	109.70	117.95	124.10	128.55	131.68	126.53	123.66	120.53
20	109.32	112.64	113.23	116.06	107.91	116.28	125.40	129.97	130.22	126.10	123.40	120.39
25	109.39	112.69	112.70	114.78	107.43	118.61	126.11	131.38	129.66	125.73	122.87	120.20
Eom	109.86	112.15	112.42	115.55	108.34	121.40	129.15	132.62	130.57	125.20	.....	119.90

292845098255401. AY-68-37-203 (J-17)[b]. Unused artesian well in Edwards aquifer, diam. 6 in., depth 874 ft, cased to 491 ft. Lsd 730.81 ft above msl. Highest water level 34.29 ft below lsd, Oct. 22, 1973; lowest 110.05 ft[c] below lsd, Aug. 17, 1956. Records available 1932-82[d].

Highest 1982 water level 50.28 ft below lsd on May 25; lowest 1982 water level 83.48 ft below lsd on Sept. 7.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	52.14	55.30	56.67	58.04	60.78	57.21	66.94	81.35	82.00	78.60	70.28	65.68
10	52.59	55.85	57.07	58.95	54.50	62.01	70.25	77.17	82.45	74.36	69.78	65.84
15	54.02	56.70	57.47	61.60	53.09	59.57	73.09	76.99	79.94	72.47	69.00	65.36
20	53.85	58.30	58.36	62.06	50.67	61.51	74.69	79.15	78.26	72.13	68.84	65.30
25	54.81	58.22	57.22	59.48	50.28	67.18	75.08	81.17	77.31	71.88	68.30	65.25
Eom	54.57	56.91	56.81	60.99	52.29	70.91	79.12	82.29	78.64	70.96	66.40	64.47

See footnotes at end of table.

292244098295801. AY-68-45-102 (CY-175). Unused artesian well in Edwards aquifer, diam. 8 in., depth 2,103 ft, cased to 1,200 ft. Lsd 621.60 ft above msl. Highest water level 65.8 ft above lsd, May 20, 1977; lowest 18.01 ft above lsd, Aug. 2, 1956. Records available 1933-36, 1950-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 18, 1982	e+47.68	Apr. 14, 1982	e+49.50	July 20, 1982	e+44.71	Oct. 14, 1982	e+52.74
Feb. 18	e+47.53	May 12	e+54.37	Aug. 23	e+40.54	Nov. 16	e+42.48
Mar. 12	e+46.43	June 14	e+52.67	Sept. 9	e+48.08		

294720098030001. DX-68-16-801 (G-25). Domestic water-table well in Edwards aquifer, diam. 6 in., depth 210 ft, casing information not available. Lsd 752.71 ft above msl. Highest water level 128.19 ft below lsd, June 22, 1981; lowest 169.56 ft below lsd, Oct. 1, 1956. Records available 1936-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1982	142.45	May 6, 1982	144.22	July 26, 1982	144.82	Oct. 27, 1982	147.58
Jan. 29	143.31	May 31	139.22	Aug. 25	146.40	Dec. 1	147.49
Mar. 9	144.65	June 28	142.50	Sept. 27	147.25	Dec. 28	147.55
Apr. 5	145.23						

294310098080001. DX-68-23-302 (G-49). Unused water-table well in Edwards aquifer, diam. 7 to 3 in., depth 230 ft, cased to 27 ft. Lsd 642.7 ft above msl. Highest water level 12.53 ft below lsd, Apr. 20, 1977; lowest 29.36 ft below lsd, Aug. 21, 1956. Records available 1948-82.

Highest 1982 water level 15.44 ft below lsd on Jan. 3; lowest 1982 water level 19.13 ft below lsd on Sept. 10.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	15.47	15.85	16.13	16.33	16.67	15.91	17.05	18.57	19.04	18.81	18.18	17.66
10	15.57	15.93	16.22	16.43	16.20	16.23	17.32	18.47	19.13	18.56	18.09	17.64
15	15.65	15.99	16.24	16.58	15.90	16.26	17.63	18.48	18.95	18.38	18.06	17.61
20	15.68	16.14	16.29	16.64	15.69	16.40	17.83	18.62	18.81	18.33	18.00	17.58
25	15.72	16.16	16.28	16.57	15.61	16.77	17.95	18.75	18.73	18.28	17.92	17.56
Eom	15.79	16.12	16.28	16.66	15.68	17.07	18.33	18.96	18.83	18.24	17.74	17.52

293855098125901. DX-68-23-701 (H-20). Domestic artesian well in Edwards aquifer, diam. 4 in., depth 300 ft, cased to 300 ft. Lsd 684.45 ft above msl. Highest water level 17.84 ft below lsd, Oct. 29, 1973; lowest 70.07 ft below lsd, Oct. 2, 1956. Records available 1934, 1937-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1982	f33.43	May 7, 1982	33.52	July 26, 1982	46.48	Oct. 27, 1982	43.51
Jan. 29	31.18	May 31	30.60	Aug. 25	f51.09	Dec. 1	40.33
Mar. 9	33.24	June 28	39.27	Sept. 29	46.67	Dec. 28	39.32
Apr. 8	f37.68						

293636098190901. DX-68-30-208 (H-36). Unused artesian well in Edwards aquifer, diam. 8 in., depth 292 ft, casing slotted 272-292 ft. Lsd 797.81 ft above msl. Highest water level 111.26 ft below lsd, Oct. 17, 1973; lowest 184.45 ft below lsd, Aug. 18, 1956. Records available 1945, 1955-82.

Highest 1982 water level 129.91 ft below lsd on Jan. 2; lowest 1982 water level 154.86 ft below lsd on Sept. 13.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	130.12	132.37	134.12	135.32	137.37	132.90	.....	152.11	154.33	152.04	.....	143.16
10	130.55	132.83	134.34	135.99	133.65	135.90	143.30	150.35	154.50	149.95	.....	142.94
15	a131.30	133.40	134.63	137.32	131.80	135.60	145.32	150.15	153.39	.....	145.71	142.70
20	131.43	134.48	135.21	137.94	130.51	136.70	146.75	151.48	152.04	.....	145.48	.....
25	131.57	134.64	134.89	136.95	130.00	.....	147.57	152.70	151.46	.....	145.05	.....
Eom	131.98	134.27	134.61	137.55	130.65	142.49	150.40	153.96	152.18	.....	143.65	.....

300025097533501. LR-58-57-902 (E-65). Domestic water-table well in Edwards aquifer, diam. 6 in., depth 450 ft, casing information not available. Lsd 821.55 ft above msl. Highest water level 179.86 ft below lsd, May 25, 1977; lowest 247.63 ft below lsd, Aug. 29, 1956. Records available 1943, 1950-52, 1954, 1956, 1958, 1961, 1971-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1982	208.61	May 6, 1982	221.89	July 26, 1982	214.42	Oct. 27, 1982	222.32
Jan. 29	213.15	May 31	211.47	Aug. 25	218.52	Dec. 1	222.68
Mar. 9	218.59	June 28	210.94	Sept. 27	220.93	Dec. 28	223.77
Apr. 5	221.10						

300510097504001. LR-58-58-101 (E-36). Domestic artesian well in Edwards aquifer, diam. 5 in., depth 244 ft, cased to 230 ft. Lsd 707.23 ft above msl. Highest water level 53.05 ft below lsd, Nov. 29, 1973; lowest 148.76 ft below lsd, July 12, 1956. Records available 1937-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1982	118.79	May 6, 1982	126.27	July 26, 1982	136.46	Oct. 27, 1982	126.49
Jan. 29	106.77	May 31	110.32	Aug. 25	128.02	Dec. 1	137.12
Mar. 9	128.86	June 28	101.94	Sept. 27	129.48	Dec. 28	129.89
Apr. 5	115.28						

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1982--Continued

295909097523301. LR-67-01-304 (LR-67-02-102) (H-23). Unused artesian well in Edwards aquifer, diam. 5 in., depth 372 fe, cased to 340 ft. Lsd 718.0 ft above msl. Highest water level 124.23 ft below lsd, Mr. 29, 1968; lowest 177.60 ft below lsd, July 10, 1978. Records available 1937-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1982	133.34	May 6, 1982	153.08	July 26, 1982	165.75	Oct. 27, 1982	156.52
Jan. 29	137.06	May 31	152.13	Aug. 25	173.30	Dec. 1	153.18
Mar. 9	148.02	June 28	157.01	Sept. 27	163.63	Dec. 28	153.53
Apr. 5	151.40						

295344097575001. LR-67-01-701 (H-75a). Domestic artesian well in Edwards aquifer, diam. 6 in., depth and casing information not available. Lsd 734.40 ft above msl. Highest water level 150.63 ft below lsd, June 22, 1981; lowest 177.15 ft below lsd, Nov. 2, 1972. Records available 1954-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1982	157.79	Apr. 5, 1982	f158.70	May 31, 1982	157.78	Oct. 27, 1982	158.70
Mar. 9	158.27	May 6	158.50	June 28	158.50	Dec. 1	f158.68

295443097554201. LR-67-01-809 (H-49). Domestic water-table well in Edwards aquifer, diam. 34 in., depth and casing information not available. Highest water level 19.73 ft below lsd, June 17, 1981; lowest 27.01 ft below lsd, Oct. 31, 1982. Records available 1937, 1950, 1954-55, 1980-82.

Highest 1982 water level 25.52 ft below lsd on May 14; lowest 1982 water level 27.01 ft below lsd on Oct. 31, Nov. 1, 2, 3, 4, 24.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	.....	.....	26.57	e26.71	.....	26.26	26.42	.....	26.76	26.97	26.98	26.84
10	.....	.....	26.54	.....	26.81	26.36	26.43	.....	26.84	26.98	26.96	26.82
15	.....	.....	26.58	.....	25.56	26.28	.....	.....	26.90	26.93	26.96	26.83
20	.....	.....	26.62	.....	25.84	26.32	.....	.....	26.93	26.94	26.96	26.84
25	.....	.....	26.60	.....	25.99	26.35	.....	26.66	26.91	26.96	27.00	26.89
Eom	26.36	26.54	.....	.....	26.10	.....	.....	26.71	26.97	27.01	26.90	26.94

295103097583301. LR-67-09-102 (LR-68-16-601) (H-95). Unused artesian well in Edwards aquifer, diam. 6 in., depth 194 ft, casing information not available. Lsd 696.80 ft above msl. Highest water level 108.48 ft below lsd, June 1, 1976; lowest 125.30 ft below lsd, Apr. 11, 1978. Records available 1937-57, 1959-72, 1974-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1982	119.92	May 6, 1982	119.58	July 26, 1982	121.88	Oct. 27, 1982	120.10
Jan. 29	119.84	May 31	118.73	Aug. 25	119.28	Dec. 1	120.04
Mar. 9	119.38	June 28	120.39	Sept. 27	120.05	Dec. 28	120.16
Apr. 5	120.29						

295035097585501. LR-67-09-110. SWT farm well. Unused artesian well in Edwards aquifer, diam. 7 in., depth 634 ft, cased to 141.50 ft. Lsd 685.00 ft above msl. Highest water level 92.17 ft below lsd, June 15, 1975; lowest 101.60 ft below lsd, May 19, 1980. Records available 1973-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 4, 1982	99.85	Mar. 9, 1982	100.55	May 6, 1982	100.88	June 28, 1982	100.47
Jan. 29	100.18	Apr. 5	100.77	May 31	99.86	July 26	100.85

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	.....	.....	.....	e100.77	.....	.....	.....	.....	101.16	101.28	101.27	101.21
10	.....	.....	.....	.....	.....	.....	.....	.....	101.20	101.29	101.28	101.20
15	.....	.....	.....	.....	.....	.....	.....	.....	101.24	101.28	101.27	101.21
20	.....	.....	.....	.....	.....	.....	.....	101.03	101.24	101.27	101.29	101.20
25	.....	.....	.....	.....	.....	.....	.....	101.05	101.23	101.28	101.30	101.21
Eom	.....	.....	.....	.....	e99.86	.....	.....	101.12	101.27	101.27	101.23	101.28

292519099531701. TD-68-33-604 (J-1-41). Domestic artesian well in Edwards aquifer, diam. 6 in., depth 641 ft, cased to 58 ft. Lsd 846.00 ft above msl. Highest water level 96.90 ft below lsd, Apr. 28, 1977; lowest 217.74 ft below lsd, Aug. 31, 1956. Records available 1930, 1934-46, 1951-52, 1954-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6, 1982	119.47	May 2, 1982	132.20	July 27, 1982	147.07	Oct. 29, 1982	146.00
Jan. 30	124.33	May 8	f140.02	Aug. 28	152.08	Dec. 3	141.83
Mar. 6	126.54	May 8	i127.57	Oct. 1	151.07	Dec. 30	140.90
Apr. 4	128.07	June 20	152.04				

See footnotes at end of table.

292110098530001. TD-68-41-301 (J-1-82). Unused artesian well in Edwards aquifer, diam. 6 in., depth 712 ft, casing information not available. Lsd 756.80 ft above msl. Highest water level 19.02 ft below lsd, May 1, 1977; lowest 134.53 ft below lsd, Aug. 18, 1956. Records available 1950-82.

Highest 1982 water level 39.72 ft below lsd on Jan. 3; lowest 1982 water level 74.07 ft below lsd on Sept. 9.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	40.19	46.50	46.95	47.98	51.78	54.63	62.45	71.31	73.48	.....	64.64	61.22
10	40.88	47.74	46.91	49.67	47.12	59.38	62.86	.....	73.97	.....	63.92	60.83
15	41.45	49.66	46.94	52.13	45.20	54.62	63.77	.....	72.75	.....	63.75	60.63
20	41.87	51.09	47.99	54.42	.....	59.29	65.10	.....	70.65	65.86	63.56	60.50
25	42.38	50.25	47.83	51.40	.....	65.40	66.04	71.55	.....	65.63	63.35	60.64
Eom	44.62	48.25	47.44	52.30	43.85	68.28	69.47	73.19	70.82	65.80	61.38	60.13

292618099165901. TD-69-38-601 (I-2-104). Unused water-table well in Edwards aquifer, diam. 7 in., depth 538 ft, cased to 74 ft. Lsd 1,008.3 ft above msl. Highest water level 73.41 ft below lsd, Sept. 1, 1979; lowest 274.60 ft below lsd, Sept. 21, 1957. Records available 1957-82.

Highest 1982 water level 81.83 ft below lsd on Jan. 2; lowest 1982 water level 115.70 ft below lsd on Dec. 12.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	82.11	84.34	87.15	89.95	93.59	93.96	96.61	99.97	103.76	107.50	111.47	114.69
10	82.47	.....	87.78	90.74	93.76	94.35	97.09	100.50	104.35	108.17	112.00	115.37
15	82.70	85.50	88.15	91.17	92.58	94.63	97.55	101.05	105.03	108.88	112.71	.....
20	83.02	86.11	88.56	91.84	93.12	95.11	98.09	101.72	105.61	109.47	113.10	.....
25	a83.35	86.63	89.19	92.44	93.31	95.59	98.58	102.34	106.26	110.15	113.94	.....
Eom	83.99	86.94	89.62	93.09	93.57	96.10	99.36	103.11	106.86	110.78	114.09	.....

291550099211001. TD-69-46-701 (I-4-12). Domestic artesian well in Edwards aquifer, diam. 8 in., depth 1,303 ft, casing information not available. Lsd 950.00 ft above msl. Highest water level 132.42 ft below lsd, Apr. 28, 1977; lowest 291.37 ft below lsd, Aug. 31, 1956. Records available 1930, 1934, 1937-38, 1940-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6, 1982	151.53	Apr. 3, 1982	163.62	July 1, 1982	i201.82	Dec. 5, 1982	197.79
Jan. 30	157.53	May 8	g168.05	Oct. 1	i216.33	Dec. 29	185.99
Mar. 5	160.86	June 1	g195.76	Nov. 5	186.31		

292209099094801. TD-69-47-302 (I-3-148). Unused artesian well in Edwards aquifer, diam. 5 in., depth 1,410 ft, casing information not available. Lsd 956.1 ft above msl. Highest water level 182.26 ft below lsd, May 18, 1977; lowest 294.74 ft below lsd, June 15, 1971. Records available 1960-82.

Highest 1982 water level 204.90 ft below lsd on Jan. 4; lowest 1982 water level 241.52 ft below lsd on Sept. 11.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	205.00	214.66	213.06	215.21	220.04	225.06	231.36	238.60	240.61	238.57	233.79	231.34
10	205.84	216.50	212.93	217.51	214.60	229.80	230.33	237.20	241.48	236.45	233.36	231.04
15	206.31	217.31	212.98	220.58	212.53	223.74	230.87	236.08	240.02	234.83	233.34	231.01
20	206.79	218.46	214.63	223.33	209.16	228.49	231.83	236.76	237.99	234.60	233.47	231.03
25	207.63	217.37	214.49	219.10	209.33	237.27	233.33	238.33	237.33	234.51	233.23	231.19
Eom	211.90	214.49	214.39	220.80	213.38	.....	236.96	239.88	238.55	234.53	231.46	230.91

292110099054501. TD-69-48-102 (I-3-146). Irrigation artesian well in Edwards aquifer, diam. 12 in., depth 1,654 ft, cased to 1,320 ft. Lsd 867.2 ft above msl. Highest water level 95.26 ft below lsd, Apr. 28, 1977; lowest 257.36 ft below lsd, Aug. 14, 1963. Records available 1958-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6, 1982	118.25	Apr. 2, 1982	126.99	July 27, 1982	149.68	Nov. 1, 1982	147.47
Jan. 30	123.87	May 8	129.68	Aug. 28	152.63	Dec. 3	144.27
Mar. 5	125.94	July 13	144.04	Oct. 1	152.10	Dec. 30	143.60

292339099401501. YP-69-35-602 (YP-69-35-501) (H-2-23). Unused water-table well in Edwards aquifer, diam. 7 in., depth 237 ft, cased to 57 ft. Lsd 1,170.8 ft above msl. Highest water level 23.52 ft below lsd, July 18, 1976; lowest 69.15 ft below lsd, Jan. 28, 1964. Records available 1957-82.

Highest 1982 water level 51.05 ft below lsd on May 14; lowest 1982 water level 65.95 ft below lsd on Sept. 12, 13.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	64.49	65.39	65.02	65.25	65.48	62.41	65.02	65.67	65.79	65.60	65.87	65.54
10	64.78	65.50	65.18	65.40	64.99	63.47	65.14	65.59	65.89	65.70	65.82	65.51
15	65.01	65.49	65.12	65.38	51.55	64.07	65.25	65.71	65.30	65.68	65.83	65.68
20	65.15	65.56	65.15	65.44	55.80	64.37	65.39	65.79	65.44	65.81	65.83	65.65
25	65.13	65.49	65.20	65.45	56.28	64.70	65.47	65.82	65.41	65.81	65.85	65.77
Eom	65.27	65.02	65.28	65.56	60.96	64.95	65.59	65.86	65.50	65.80	65.53	65.77

See footnotes at end of table.

292711099282201. YP-69-37-402. Unused water-table well in Edwards aquifer, diam. 6 in., depth 694 ft, cased to 233 ft. Lsd 1,158 ft above msl. Highest water level 256.05 ft below lsd, July 21, 1977; lowest 328.50 ft below lsd, Mar. 5, 1981. Records available 1974-82.

Highest 1982 water level e/280.90 ft below lsd on Jan. 8; lowest 1982 water level a/323.47 ft below lsd on Dec. 25.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	.....	.....	.....	289.30	294.05	292.53	295.86	301.65	306.59	311.91	317.21	a321.18
10	.....	.....	286.36	290.33	294.54	292.71	296.70	302.56	307.41	312.88	317.65	321.70
15	.....	.....	287.70	290.82	294.58	292.86	.....	302.96	308.56	313.70	318.44	322.42
20	.....	.....	287.40	291.65	293.82	293.50	.....	303.88	309.34	314.57	.....	323.01
25	.....	.....	.....	292.42	293.20	294.13	.....	304.69	310.22	315.37	.....	a323.47
Eom	282.40	.....	.....	293.35	292.75	294.97	300.66	305.69	311.11	316.21	.....	.....

291633099413301. YP-69-43-804. Irrigation artesian well in Edwards aquifer, diam. 16 in., depth 967 ft, cased to 365 ft. Lsd 975.00 ft above msl. Highest water level 80.28 ft below lsd, May 26, 1977; lowest 283.80 ft below lsd, June 7, 1971. Records available 1971-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6, 1982	93.67	Apr. 2, 1982	101.83	June 30, 1982	118.03	Dec. 4, 1982	174.06
Jan. 30	90.51	May 8	108.38	July 28	f196.33	Dec. 29	148.84
Mar. 5	95.65	June 3	98.68	Nov. 3	186.08		

291909099281001. YP-69-45-401 (I-4-35) (I-4-4). Unused artesian well in Edwards aquifer, diam. 10 in., depth 1,476 ft, cased to 937 ft. Lsd 954.04 ft above msl. Highest water level 118.64 ft below lsd, May 20, 1977; lowest 290.03 ft below lsd, Oct. 13, 1956. Records available 1956-82.

Highest 1982 water level 141.80 ft below lsd on Jan. 2; lowest 1982 water level 181.08 ft below lsd on Sept. 12.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	142.50	150.80	151.98	154.55	.....	161.30	.....	177.01	180.11	179.76	178.99	178.61
10	143.49	152.45	151.78	.....	.....	168.45	.....	176.50	180.97	179.52	178.91	178.52
15	143.32	154.22	152.10	.....	.....	.....	170.90	176.18	180.68	178.77	179.18	178.65
20	144.28	155.81	153.61	.....	153.19	.....	171.14	176.35	179.61	178.83	179.70	178.76
25	145.28	155.38	154.17	.....	152.40	.....	173.67	176.71	179.04	179.06	179.65	178.92
Eom	148.69	153.47	154.71	.....	155.01	.....	176.39	178.50	179.39	179.20	178.64	179.04

291426099510201. YP-69-50-101 (H-4-6). Stock artesian well in Edwards aquifer, diam. 8 in., depth 100 ft, casing information not available. Lsd 950.6 ft above msl. Highest water level 48.15 ft below lsd, May 29, 1980; lowest 126.17 ft below lsd, Mar. 14, 1957. Records available 1929-33, 1935-42, 1944-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6, 1982	f55.83	Apr. 8, 1982	f57.67	July 28, 1982	f58.40	Nov. 3, 1982	f60.46
Jan. 30	57.24	June 3	f57.08	Aug. 27	f59.22	Dec. 4	f60.73
Mar. 5	57.21	June 30	f58.11	Oct. 2	60.29	Dec. 29	60.76
Apr. 2	57.00						

291414099475301. YP-69-50-202. Unused artesian well in Edwards aquifer, diam. 6 in., depth 137 ft, cased 65 ft. Lsd 928.00 ft above msl. Highest water level 33.10 ft below lsd, Apr. 6, 1977; lowest water level 115.02 ft below lsd, Mar. 11, 1957. Records available 1956-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6, 1982	40.28	May 9, 1982	43.12	July 29, 1982	44.50	Nov. 3, 1982	46.97
Jan. 30	41.35	June 3	41.94	Aug. 28	45.86	Dec. 5	46.87
Mar. 5	42.32	July 1	43.77	Oct. 2	47.05	Dec. 28	46.83
Apr. 2	42.08						

291237099471201. YP-69-50-302 (H-5-1). Unused artesian well in Edwards aquifer, diam. 12 in., depth 350 ft, casing information not available. Lsd 904.9 ft above msl. Highest water level 18.64 ft below lsd, May 23, 1977; lowest 93.90 ft below lsd, Apr. 13, 1957. Records available 1929-32, 1934-82.

Highest 1982 water level 23.02 ft below lsd on Jan. 2; lowest 1982 water level 28.50 ft below lsd on Sept. 8, 9, 10.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	23.09	24.19	24.64	24.69	25.41	24.71	25.45	26.78	27.74	28.46	28.21	27.91
10	23.10	24.46	24.60	24.74	25.16	25.11	25.29	26.96	27.88	28.50	28.21	27.83
15	23.07	24.74	24.46	24.93	24.78	25.16	25.33	26.95	27.95	28.34	28.24	27.82
20	23.16	25.01	24.52	25.11	24.57	25.41	25.61	27.10	28.16	28.25	28.24	27.84
25	23.28	24.85	24.39	25.25	24.35	25.51	25.94	27.26	28.28	28.21	28.27	27.83
Eom	23.76	24.79	24.46	25.46	24.31	25.76	26.44	27.53	28.38	28.19	28.09	27.81

See footnotes at end of table.

291127099501201. YP-69-50-402 (H-4-60). Unused artesian well in Edwards aquifer, diam. 10 in., depth 536 ft, casing information not available. Lsd 918.9 ft above msl. Highest water level 39.19 ft below lsd, May 26, 1977; lowest 111.31 ft below lsd, Feb. 13, 1957. Records available 1954, 1957, 1961-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 6, 1982	43.33	Mar. 5, 1982	45.39	May 8, 1982	45.01	June 30, 1982	45.54
Jan. 30	43.59	Apr. 2	45.13	June 3	44.58	July 28	46.39

291025099442701. YP-69-51-406 (H-5-259). Unused water-table well in Leona Formation, diam. 14 in., depth 74 ft, casing information not available. Lsd 874.9 ft above msl. Highest water level 23.25 ft below lsd, June 6, 1979; lowest 61.38 ft below lsd, Mar. 13, 1957. Records available 1956-57, 1966-82.

Highest 1982 water level 27.71 ft below lsd on May 20; lowest 1982 water level 34.48 ft below lsd on Feb. 5.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	28.05	34.48	29.45	27.86	29.60	31.25	30.48	32.51	29.78	30.61	29.62	28.89
10	28.02	33.91	28.70	28.41	28.61	32.26	30.35	31.90	30.27	30.66	29.40	28.76
15	.....	34.01	28.30	28.85	27.91	31.68	31.35	30.93	30.79	30.33	29.31	28.60
20	27.96	33.29	28.37	29.43	27.71	31.96	32.07	30.35	30.79	30.02	29.90	28.56
25	29.41	32.03	28.38	29.87	28.06	30.88	32.86	30.21	30.68	29.75	29.67	28.57
Eom	32.25	30.62	28.05	29.87	28.86	31.18	32.96	29.90	30.60	29.76	29.16	28.35

292344100002701. YP-70-40-901 (G-3-19). Unused water-table well in Edwards aquifer, diam. 7 in., depth 140 ft, cased to 70 ft. Lsd 1,122.0 ft above msl. Highest water level 38.85 ft below lsd, Sept. 15, 1974; lowest 42.95 ft below lsd, Sept. 19, 1964. Records available 1957-82.

Highest 1982 water level 41.44 ft below lsd on Aug. 7; lowest 1982 water level 42.34 ft below lsd on Nov. 3, 4, 5, 6, 7, 9.

Highest water level for the day, from recorder graph, 1982

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	42.25	42.27	42.13	42.20	42.22	.....	42.15	41.55	42.15	.....	42.34	42.29
10	42.26	42.29	42.16	42.21	42.19	41.76	42.15	41.65	42.04	.....	42.29	42.30
15	42.27	42.28	42.18	42.21	42.07	41.96	42.93	41.85	42.15	.....	42.24	42.30
20	42.29	42.26	42.19	41.85	41.07	41.86	41.93	41.95	41.86	42.32	42.31	42.31
25	42.28	42.22	42.19	42.16	41.84	42.10	41.95	41.94	41.89	42.14	42.31	42.32
Eom	42.26	42.17	42.20	42.21	41.94	42.13	41.68	41.90	.....	42.31	42.30	42.30

291412100033001. YP-60-56-201 (G-6-4). Domestic water-table well in Austin Chalk, diam. 6 in., depth 120 ft, casing information not available. Lsd 1,008.00 ft above msl. Highest water level 34.00 ft below lsd, Dec. 1, 1976; lowest 77.78 ft below lsd, Apr. 8, 1953. Records available 1937-82.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 1, 1982	44.41	May 8, 1982	41.78	July 28, 1982	40.26	Nov. 3, 1982	42.19
Jan. 30	43.40	June 3	39.80	Aug. 27	41.04	Dec. 4	42.59
Mar. 5	42.12	June 30	41.82	Oct. 2	41.65	Dec. 29	42.83

a Estimated.
b Replaces well 26 and reflects the same water level; composite record of wells 26 and AY-68-37-203.
c Record low for well 26. Equivalent water level for AY-68-37-203 would be 118.30 ft below lsd.
d Composite record of wells 26 and AY-68-37-203.
e Measured.
f Well pumping.
g Reported.

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982
ATASCOSA COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)
AL-68-50-201	82-07-16	1345	45	560	750	7.5	36.5	310	130	77

LOCAL IDENTIFIER	DATE OF SAMPLE	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
AL-68-50-201	82-07-16	28	19	.5	1.8	130	34	2.3	17	420

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
AL-68-50-201	82-07-16	<.020	<.060	.40	<.010	.80

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)
AL-68-50-201	82-07-16	1345	45	560	4	110	<1	<10	<1	65

LOCAL IDENTIFIER	DATE OF SAMPLE	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
AL-68-50-201	82-07-16	1	3	<.1	<1	<1	4

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
BEXAR COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	DEPTH OF WELL, TOTAL (FEET)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
AY-68-21-804	82-07-21	0945	60	279	5.0	587	6.7	23.5	<10	<10
AY-68-27-302	82-07-22	1125	45	517	10	506	6.9	23.0	<1	<1
AY-68-27-303	82-06-16	1300	60	354	15	530	6.7	22.5	<1	<1
	82-09-07	1435	60	354	15	535	7.0	23.0	--	--
AY-68-27-305	82-06-16	1120	60	253	3.0	540	6.6	22.0	<1	<1
	82-09-07	1325	60	253	3.0	545	7.0	22.5	--	--
AY-68-27-503	82-06-23	1330	420	435	275	530	7.3	21.5	--	--
AY-68-27-504	82-07-07	1200	30	508	525	555	7.1	22.5	K13	K1
AY-68-28-202	82-06-30	1215	60	457	80	517	7.4	23.0	<1	<1
AY-68-28-203	82-06-30	1010	60	435	300	500	7.2	23.5	<1	<1
AY-68-28-501	82-06-30	1110	60	468	100	529	7.1	23.0	<1	<1
AY-68-28-502	82-06-24	1345	30	506	100	555	7.2	23.5	K15	K5
AY-68-28-508	82-07-23	0745	60	396	150	452	7.3	25.0	<1	<1
AY-68-28-512	82-07-16	1115	60	400	7.0	536	6.7	23.0	<1	<1
AY-68-28-608	82-07-16	1245	60	500	15	526	6.7	22.0	<1	<1
AY-68-28-702	82-05-19	1020	10	450	1000	544	6.9	22.0	<1	<1
AY-68-28-903	82-06-24	1100	20	762	3500	808	6.8	22.0	--	--
	82-09-21	1350	22	762	3500	634	7.1	22.0	--	--
AY-68-29-109	82-07-23	1045	30	460	450	587	6.8	23.0	<1	<1
AY-68-29-208	82-07-21	0820	60	266	10	525	6.7	23.5	<1	<1
AY-68-29-209	82-06-15	1210	60	315	5.0	518	6.7	23.0	<1	<1
AY-68-29-210	82-06-15	1515	60	330	15	534	6.5	23.0	<1	<1
AY-68-29-303	82-07-29	0820	360	527	1000	507	6.7	22.0	<1	<1
AY-68-29-401	82-07-23	1000	30	517	600	552	6.8	23.5	<1	<1
AY-68-29-702	82-07-28	0930	30	872	3000	580	6.7	22.0	<1	<1
AY-68-29-805	82-08-10	0900	60	800	2700	543	7.1	23.5	<1	<1
AY-68-30-506	82-08-16	1420	30	552	3100	501	7.2	27.0	<1	<1
AY-68-35-102	82-07-28	1230	30	796	1880	550	7.1	23.0	<1	<1
AY-68-36-102	82-07-28	1125	30	786	9000	564	6.9	22.0	<1	<1
AY-68-37-101	82-07-28	1020	30	1000	7700	542	6.9	23.0	<1	<1
AY-68-37-404	82-07-29	1105	20	1320	13800	478	7.0	25.0	<1	<1
AY-68-37-506	82-07-29	1010	20	1400	7600	480	7.1	27.0	<1	<1
AY-68-37-705	82-07-29	1200	20	1790	3000	483	7.1	27.0	<1	<1

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
AY-68-21-804	82-07-21	<10	280	24	110	2.2	3.2	.0	.70	<5.0
AY-68-27-302	82-07-22	<1	250	25	82	12	5.9	.2	.80	11
AY-68-27-303	82-06-16	<1	280	26	94	10	5.5	.2	.70	13
	82-09-07	--	270	16	91	9.2	5.2	.1	.70	10
AY-68-27-305	82-06-16	<1	270	21	94	8.6	5.2	.1	.80	9.0
	82-09-07	--	270	21	94	8.6	5.4	.1	.80	11
AY-68-27-503	82-06-23	--	270	29	83	15	7.3	.2	1.0	20
AY-68-27-504	82-07-07	K4	280	28	88	14	9.0	.2	1.7	29
AY-68-28-202	82-06-30	<1	260	24	90	9.5	6.1	.2	1.3	14
AY-68-28-203	82-06-30	<1	260	18	85	11	5.4	.2	1.0	11
AY-68-28-501	82-06-30	<1	270	20	98	6.0	6.0	.2	1.1	9.0
AY-68-28-502	82-06-24	<1	280	35	86	17	6.4	.2	1.4	22
AY-68-28-508	82-07-23	K14	220	26	70	10	7.0	.2	1.0	15
AY-68-28-512	82-07-16	<1	270	25	95	9.1	5.8	.2	.90	12
AY-68-28-608	82-07-16	<1	270	23	100	5.5	6.2	.2	1.1	12
AY-68-28-702	82-05-19	<1	270	31	82	16	8.6	.2	1.5	22
AY-68-28-903	82-06-24	--	370	11	130	11	31	.7	2.2	26
	82-09-21	--	--	--	--	--	--	--	--	--
AY-68-29-109	82-07-23	K15	290	11	100	9.9	8.2	.2	.80	7.0
AY-68-29-208	82-07-21	K12	260	3	100	3.2	5.1	.1	.60	<5.0
AY-68-29-209	82-06-15	<1	260	9	100	2.1	4.4	.1	.70	<5.0
AY-68-29-210	82-06-15	<1	270	18	94	7.9	4.8	.1	.80	24
AY-68-29-303	82-07-29	<1	250	25	90	7.2	5.1	.1	.80	11
AY-68-29-401	82-07-23	K3	280	20	89	14	7.3	.2	.90	10
AY-68-29-702	82-07-28	<1	280	35	91	14	8.4	.2	1.2	25

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
AY-68-29-805	82-08-10	<1	270	43	81	17	9.9	.3	1.4	30
AY-68-30-506	82-08-16	<1	--	--	--	--	--	--	--	--
AY-68-35-102	82-07-28	<1	290	67	85	18	8.1	.2	1.3	42
AY-68-36-102	82-07-28	<1	270	34	85	15	9.6	.3	1.4	26
AY-68-37-101	82-07-28	<1	260	40	76	17	9.0	.3	1.4	32
AY-68-37-404	82-07-29	<1	230	32	68	15	8.6	.3	1.1	15
AY-68-37-506	82-07-29	<1	240	36	68	16	9.6	.3	1.2	20
AY-68-37-705	82-07-29	<1	240	36	68	16	9.2	.3	1.2	22

LOCAL IDENTIFIER	DATE OF SAMPLE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRATE TOTAL (MG/L AS N)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)
AY-68-21-804	82-07-21	12	<.10	13	--	--	<.020	.060	1.4
AY-68-27-302	82-07-22	11	.10	11	270	--	<.020	.060	.44
AY-68-27-303	82-06-16	11	.10	12	300	--	<.020	<.060	--
	82-09-07	10	.10	11	290	--	<.020	<.060	--
AY-68-27-305	82-06-16	9.7	.10	11	290	--	<.020	<.060	--
	82-09-07	11	.10	11	290	--	<.020	<.060	--
AY-68-27-503	82-06-23	12	.20	11	290	--	<.020	.060	.54
AY-68-27-504	82-07-07	12	.30	11	310	--	<.020	<.060	--
AY-68-28-202	82-06-30	10	.20	12	290	--	<.020	<.070	--
AY-68-28-203	82-06-30	9.3	.20	12	280	--	<.020	<.070	--
AY-68-28-501	82-06-30	11	.10	13	290	--	<.020	<.070	--
AY-68-28-502	82-06-24	11	.30	12	310	--	<.020	.060	1.0
AY-68-28-508	82-07-23	12	.20	12	240	--	<.020	<.060	--
AY-68-28-512	82-07-16	11	.10	12	300	--	<.020	<.060	--
AY-68-28-608	82-07-16	10	.10	13	300	--	<.020	<.060	--
AY-68-28-702	82-05-19	13	.30	11	300	--	<.020	.120	.66
AY-68-28-903	82-06-24	30	.20	17	460	--	<.020	.180	.82
	82-09-21	--	--	--	--	--	--	--	--
AY-68-29-109	82-07-23	15	.10	14	320	--	<.020	<.060	--
AY-68-29-208	82-07-21	9.1	<.10	13	--	--	<.020	.060	1.6
AY-68-29-209	82-06-15	8.7	.10	14	--	--	<.020	<.060	--
AY-68-29-210	82-06-15	7.8	.10	11	300	--	<.020	<.060	--
AY-68-29-303	82-07-29	11	.10	11	270	--	<.020	.060	.44
AY-68-29-401	82-07-23	12	.20	13	300	1.18	.020	.060	.44
AY-68-29-702	82-07-28	13	.20	12	310	--	<.020	<.060	--
AY-68-29-805	82-08-10	14	.20	13	300	--	<.020	.120	.38
AY-68-30-506	82-08-16	--	--	--	--	--	--	--	--
AY-68-35-102	82-07-28	21	.20	12	320	1.28	.020	.060	.54
AY-68-36-102	82-07-28	14	.20	13	310	--	<.020	<.060	--
AY-68-37-101	82-07-28	14	.20	13	290	--	<.020	<.060	--
AY-68-37-404	82-07-29	17	.20	13	260	--	<.020	<.060	--
AY-68-37-506	82-07-29	17	.30	13	270	--	<.020	<.060	--
AY-68-37-705	82-07-29	17	.30	13	270	--	<.020	<.060	--

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
AY-68-21-804	82-07-21	1.5	7.3	.030	1.0
AY-68-27-302	82-07-22	.50	2.2	.030	.30
AY-68-27-303	82-06-16	.90	3.3	.030	.70
	82-09-07	.80	3.2	.020	1.0
AY-68-27-305	82-06-16	1.0	3.2	.040	1.6
	82-09-07	.90	3.4	.030	6.8
AY-68-27-503	82-06-23	.60	2.2	--	1.0
AY-68-27-504	82-07-07	.80	1.7	.070	1.2
AY-68-28-202	82-06-30	.80	1.8	.040	<.30
AY-68-28-203	82-06-30	.80	1.7	.040	<.30

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
BEXAR COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
AY-68-28-501	82-06-30	1.0	1.9	.050	.30
AY-68-28-502	82-06-24	1.1	1.9	--	.80
AY-68-28-508	82-07-23	.50	2.3	.030	.40
AY-68-28-512	82-07-16	.70	2.4	.010	1.0
AY-68-28-608	82-07-16	.80	1.9	<.010	.90
AY-68-28-702	82-05-19	.78	2.5	.070	1.0
AY-68-28-903	82-06-24	1.0	3.0	--	1.4
	82-09-21	--	--	--	--
AY-68-29-109	82-07-23	.70	2.1	.040	.30
AY-68-29-208	82-07-21	1.7	2.8	<.010	.70
AY-68-29-209	82-06-15	1.5	2.7	.030	1.4
AY-68-29-210	82-06-15	.70	1.8	.030	1.1
AY-68-29-303	82-07-29	.50	2.1	.040	.40
AY-68-29-401	82-07-23	.50	1.7	.040	.30
AY-68-29-702	82-07-28	.70	2.2	.030	.50
AY-68-29-805	82-08-10	.50	2.2	<.010	.80
AY-68-30-506	82-08-16	--	--	--	--
AY-68-35-102	82-07-28	.60	1.9	.020	1.1
AY-68-36-102	82-07-28	.60	2.7	.040	.50
AY-68-37-101	82-07-28	.50	2.2	.030	.40
AY-68-37-404	82-07-29	.60	2.5	.030	.40
AY-68-37-506	82-07-29	.50	2.1	.020	.30
AY-68-37-705	82-07-29	.40	1.8	.030	.40

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)
AY-68-21-804	82-07-21	0945	279	60	5.0	<1	28	<1	<10	1
AY-68-27-302	82-07-22	1125	517	45	10	<1	28	<1	10	2
AY-68-27-303	82-06-16	1300	354	60	15	<1	32	<1	<10	<10
	82-09-07	1435	354	60	15	<1	30	<1	<10	<1
AY-68-27-305	82-06-16	1120	253	60	3.0	<1	35	<1	<10	<10
	82-09-07	1325	253	60	3.0	<1	33	<1	<10	2
AY-68-27-503	82-06-23	1330	435	420	275	<1	29	<1	10	1
AY-68-27-504	82-07-07	1200	508	30	525	1	32	<1	<10	4
AY-68-28-202	82-06-30	1215	457	60	80	1	30	<1	<10	3
AY-68-28-203	82-06-30	1010	435	60	300	1	28	<1	<10	2
AY-68-28-501	82-06-30	1110	468	60	100	1	36	<1	<10	3
AY-68-28-502	82-06-24	1345	506	30	100	1	32	<1	10	3
AY-68-28-508	82-07-23	0745	396	60	150	1	38	<1	<10	2
AY-68-28-512	82-07-16	1115	400	60	7.0	<1	31	<1	<10	2
AY-68-28-608	82-07-16	1245	500	60	15	<1	34	<1	<10	6
AY-68-28-702	82-05-19	1020	450	10	1000	1	32	<3	<10	<30
AY-68-28-903	82-06-24	1100	762	20	3500	1	61	<1	10	2
AY-68-29-109	82-07-23	1045	460	30	450	<1	45	<1	<10	3
AY-68-29-208	82-07-21	0820	266	60	10	1	33	<1	10	<1
AY-68-29-209	82-06-15	1210	315	60	5.0	<1	34	<1	<10	<10
AY-68-29-210	82-06-15	1515	330	60	15	<1	30	<1	<10	<10
AY-68-29-303	82-07-29	0820	527	360	1000	<1	31	<1	<10	1
AY-68-29-401	82-07-23	1000	517	30	600	1	36	1	10	1
AY-68-29-702	82-07-28	0930	872	30	3000	<1	32	<1	10	2
AY-68-29-805	82-08-10	0900	800	60	2700	<1	38	<1	<10	5
AY-68-35-102	82-07-28	1230	796	30	1880	1	32	1	10	6
AY-68-36-102	82-07-28	1125	786	30	9000	<1	35	<1	<10	3
AY-68-37-101	82-07-28	1020	1000	30	7700	<1	34	<1	<10	2
AY-68-37-404	82-07-29	1105	1320	20	13800	<1	55	<1	<10	2
AY-68-37-506	82-07-29	1010	1400	20	7600	1	100	<1	<10	1
AY-68-37-705	82-07-29	1200	1790	20	3000	1	120	<1	<10	2

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
AY-68-21-804	82-07-21	5	11	2	<.1	<1	<1	1500
AY-68-27-302	82-07-22	4	<1	<1	<.1	<1	<1	230
AY-68-27-303	82-06-16	5	--	<1	<.1	<1	<1	330
	82-09-07	<3	3	<1	<.1	<1	<1	310
AY-68-27-305	82-06-16	3	--	<1	<.1	1	<1	2500
	82-09-07	<3	1	<1	<.1	<1	<1	2100
AY-68-27-503	82-06-23	<3	1	<1	<.1	<1	<1	<3
AY-68-27-504	82-07-07	5	2	<1	<.1	<1	<1	13
AY-68-28-202	82-06-30	7	<1	<1	.1	<1	<1	10
AY-68-28-203	82-06-30	12	2	<1	.1	<1	<1	11
AY-68-28-501	82-06-30	4	4	<1	.1	<1	<1	22
AY-68-28-502	82-06-24	<3	1	<1	<.1	<1	<1	54
AY-68-28-508	82-07-23	4	<1	<1	<.1	<1	<1	<3
AY-68-28-512	82-07-16	9	8	<1	<.1	<1	<1	520
AY-68-28-608	82-07-16	8	6	<1	<.1	<1	<1	500
AY-68-28-702	82-05-19	<9	--	<3	<.1	<1	<1	<12
AY-68-28-903	82-06-24	5	<1	<1	.6	<1	<1	20
AY-68-29-109	82-07-23	4	<1	<1	<.1	<1	<1	5
AY-68-29-208	82-07-21	7	11	<1	<.1	<1	10	570
AY-68-29-209	82-06-15	6	--	<1	<.1	<1	<1	680
AY-68-29-210	82-06-15	9	--	<1	<.1	1	<1	850
AY-68-29-303	82-07-29	3	<1	<1	<.1	<1	<1	5
AY-68-29-401	82-07-23	4	1	1	.1	1	1	5
AY-68-29-702	82-07-28	3	1	<1	<.1	<1	<1	11
AY-68-29-805	82-08-10	<3	2	1	<.1	<1	<1	6
AY-68-35-102	82-07-28	4	1	1	.1	1	1	--
AY-68-36-102	82-07-28	3	<1	<1	<.1	<1	<1	7
AY-68-37-101	82-07-28	3	<1	<1	<.1	1	<1	7
AY-68-37-404	82-07-29	<3	<1	<1	<.1	<1	<1	9
AY-68-37-506	82-07-29	4	<1	<1	<.1	<1	<1	10
AY-68-37-705	82-07-29	5	<1	<1	<.1	<1	<1	6

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
COMAL COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	DEPTH OF WELL, TOTAL (FEET)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
DX-68-15-901	82-07-15	0915	--	--	--	575	6.7	22.0	--	--
DX-68-16-502	82-07-01	1200	30	230	250	574	7.2	23.0	<1	<1
DX-68-22-901	82-07-02	0935	45	255	1400	522	7.1	22.5	<1	<1
DX-68-22-902	82-07-02	1045	60	240	520	516	7.1	22.0	<1	<1
DX-68-23-301	82-06-14	1400	--	--	--	539	7.0	23.0	K1	<1
DX-68-23-303	82-07-06	0830	60	1040	4700	545	7.2	24.0	<1	<1
DX-68-23-316	82-07-15	0830	35	350	10	542	6.8	23.0	<1	<1
DX-68-23-317	82-08-09	0912	10	360	80	560	7.0	23.0	<1	<1
DX-68-23-602	82-07-06	0905	30	790	2750	543	7.2	23.0	<1	<1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
DX-68-15-901	82-07-15	--	280	13	90	14	7.4	.2	1.4	20
DX-68-16-502	82-07-01	<1	290	29	89	16	8.4	.2	1.2	19
DX-68-22-901	82-07-02	<1	270	17	87	12	6.2	.2	.90	10
DX-68-22-902	82-07-02	<1	260	20	84	12	6.1	.2	.80	11
DX-68-23-301	82-06-14	<1	270	29	81	16	9.7	.3	1.3	27
DX-68-23-303	82-07-06	<1	260	33	77	17	9.9	.3	1.0	31
DX-68-23-316	82-07-15	<1	280	11	91	13	5.2	.1	.90	12
DX-68-23-317	82-08-09	<1	290	18	87	17	6.1	.2	1.1	12
DX-68-23-602	82-07-06	<1	270	29	83	15	8.2	.2	1.3	21

LOCAL IDENT-I-FIER	DATE OF SAMPLE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)
DX-68-15-901	82-07-15	11	.20	11	320	<.020	<.060	--
DX-68-16-502	82-07-01	17	.30	12	320	<.020	<.060	--
DX-68-22-901	82-07-02	10	.10	12	290	<.020	<.060	--
DX-68-22-902	82-07-02	9.9	.10	11	280	<.020	<.060	--
DX-68-23-301	82-06-14	11	.20	13	300	<.020	<.060	--
DX-68-23-303	82-07-06	19	.30	13	310	<.020	<.060	--
DX-68-23-316	82-07-15	8.9	.10	12	310	<.020	<.060	--
DX-68-23-317	82-08-09	9.8	.20	12	310	<.020	.080	.22
DX-68-23-602	82-07-06	13	.20	12	300	<.020	<.060	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
DX-68-15-901	82-07-15	2.0	3.5	<.010	1.6
DX-68-16-502	82-07-01	.70	2.4	.040	.90
DX-68-22-901	82-07-02	1.2	3.0	.080	.40
DX-68-22-902	82-07-02	1.2	2.9	.130	<.30
DX-68-23-301	82-06-14	.70	2.5	.030	1.0
DX-68-23-303	82-07-06	1.2	2.8	.040	.60
DX-68-23-316	82-07-15	2.2	3.7	<.010	1.1
DX-68-23-317	82-08-09	.30	1.9	<.010	.50
DX-68-23-602	82-07-06	.70	2.5	.040	.40

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
COMAL COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)
DX-68-15-901	82-07-15	0915	--	--	--	1	33	<1	<10	1
DX-68-16-502	82-07-01	1200	230	30	250	1	40	<1	<10	1
DX-68-22-901	82-07-02	0935	255	45	1400	<1	31	<1	<10	2
DX-68-22-902	82-07-02	1045	240	60	520	<1	29	<1	<10	<1
DX-68-23-301	82-06-14	1400	--	--	--	1	50	<1	<10	<10
DX-68-23-303	82-07-06	0830	1040	60	4700	1	52	<1	<10	5
DX-68-23-316	82-07-15	0830	350	35	10	<1	32	<1	<10	1
DX-68-23-317	82-08-09	0912	360	10	80	<1	35	<1	<10	1
DX-68-23-602	82-07-06	0905	790	30	2750	1	39	<1	10	4

LOCAL IDENT-I-FIER	DATE OF SAMPLE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELENIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
DX-68-15-901	82-07-15	11	<1	<1	<.1	<1	<1	7
DX-68-16-502	82-07-01	5	<1	<1	.2	<1	<1	5
DX-68-22-901	82-07-02	12	1	<1	.1	<1	<1	15
DX-68-22-902	82-07-02	5	<1	<1	.1	<1	<1	<3
DX-68-23-301	82-06-14	<3	--	<1	<.1	<1	<1	5
DX-68-23-303	82-07-06	<3	1	<1	<.1	1	<1	<3
DX-68-23-316	82-07-15	20	6	<1	<.1	<1	<1	520
DX-68-23-317	82-08-09	<3	1	<1	<.1	<1	<1	140
DX-68-23-602	82-07-06	<3	<1	<1	<.1	<1	<1	<3

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)
DX-68-23-317	82-08-09	0912	360	10	80	<.1	<.10	<.010	<.1	<.010

LOCAL IDENT-I-FIER	DATE OF SAMPLE	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)	DIELDRIN TOTAL (UG/L)	ENDOSULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTACHLOR, TOTAL (UG/L)	HEPTACHLOR EPOXIDE TOTAL (UG/L)
DX-68-23-317	82-08-09	<.010	<.010	<.01	<.010	<.010	<.010	<.01	<.010	<.010

LOCAL IDENT-I-FIER	DATE OF SAMPLE	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	PERTHANE TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)
DX-68-23-317	82-08-09	<.010	<.01	<.01	<.01	<.01	<.01	<.1	<1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
DX-68-23-317	82-08-09	<.01	<.01	<.01	<.01

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
HAYS COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	DEPTH OF WELL, TOTAL (FEET)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
LR-58-58-403	82-07-19	1130	35	243	800	586	7.0	22.5	--	--
LR-67-01-302	82-07-19	1000	30	360	550	705	7.3	25.0	--	--
LR-67-01-701	82-03-24	1135	40	176	10	543	7.1	22.5	--	--
LR-67-01-801	82-06-14	1115	--	--	--	580	6.8	21.5	70	47
LR-67-01-806	82-07-13	1045	45	128	1900	611	7.0	22.5	<1	<1
LR-67-09-105	82-07-01	1150	180	330	1500	622	7.0	23.0	<1	<1
LR-67-09-111	82-07-01	1315	180	264	350	590	7.2	23.0	<1	<1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
LR-58-58-403	82-07-19	--	290	21	75	25	6.4	.2	1.2	23
LR-67-01-302	82-07-19	--	320	100	62	40	9.5	.2	2.0	130
LR-67-01-701	82-03-24	--	280	25	94	12	6.9	.2	.80	10
LR-67-01-801	82-06-14	65	290	41	85	19	12	.3	1.5	29
LR-67-01-806	82-07-13	<1	300	39	93	16	12	.3	1.4	28
LR-67-09-105	82-07-01	<1	290	35	90	17	14	.4	1.4	31
LR-67-09-111	82-07-01	<1	290	34	91	16	10	.3	1.3	23

LOCAL IDENT-I-FIER	DATE OF SAMPLE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)
LR-58-58-403	82-07-19	11	.50	11	320	<.020	<.060
LR-67-01-302	82-07-19	11	3.5	14	400	<.020	<.060
LR-67-01-701	82-03-24	12	.10	12	300	<.020	<.060
LR-67-01-801	82-06-14	17	.20	12	330	<.020	<.060
LR-67-01-806	82-07-13	16	.20	12	330	<.020	<.060
LR-67-09-105	82-07-01	24	.20	12	350	<.020	<.060
LR-67-09-111	82-07-01	16	.20	12	330	<.020	<.060

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
LR-58-58-403	82-07-19	.60	2.1	<.010	.90
LR-67-01-302	82-07-19	.40	--	.020	.70
LR-67-01-701	82-03-24	1.3	4.6	.010	1.0
LR-67-01-801	82-06-14	1.0	2.3	.030	.50
LR-67-01-806	82-07-13	4.1	5.8	.020	.80
LR-67-09-105	82-07-01	.90	2.5	.040	<.30
LR-67-09-111	82-07-01	.70	2.3	.040	.40

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)
LR-58-58-403	82-07-19	1130	243	35	800	1	140	<1	<10	2
LR-67-01-302	82-07-19	1000	360	30	550	<1	56	2	<10	<1
LR-67-01-801	82-06-14	1115	--	--	--	<1	35	<1	<10	<10
LR-67-01-806	82-07-13	1045	128	45	1900	<1	38	<1	<10	1
LR-67-09-105	82-07-01	1150	330	180	1500	<1	40	<1	<10	1
LR-67-09-111	82-07-01	1315	264	180	350	<1	39	<1	<10	4

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
HAYS COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
LR-58-58-403	82-07-19	5	3	<1	<.1	<1	<1	9
LR-67-01-302	82-07-19	53	<1	1	.1	<1	<1	7
LR-67-01-801	82-06-14	<3	--	<1	<.1	<1	<1	<3
LR-67-01-806	82-07-13	3	<1	<1	<.1	<1	<1	4
LR-67-09-105	82-07-01	<3	<1	<1	<.1	1	<1	<3
LR-67-09-111	82-07-01	5	<1	<1	.1	<1	<1	5

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
MEDINA COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	DEPTH OF WELL, TOTAL (FEET)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
TD-68-26-701	82-06-23	1015	120	750	1000	536	7.3	23.0	--	--
TD-68-33-202	82-07-27	1010	30	279	10	460	7.0	22.5	<1	<1
TD-68-33-701	82-06-21	1215	300	1240	1950	469	7.3	24.0	--	--
TD-68-41-303	82-06-25	0915	60	717	400	490	7.4	23.5	--	--
TD-68-42-503	82-07-27	1250	10	1370	700	463	7.0	26.0	<1	<1
TD-69-29-901	82-07-26	1020	60	276	20	474	6.9	23.0	--	--
TD-69-29-902	82-07-14	1435	35	347	5.0	544	6.7	23.0	--	--
TD-69-37-302	82-07-14	0945	45	410	20	489	7.3	26.0	<1	<1
TD-69-38-905	82-06-21	1400	420	997	1500	443	7.3	24.5	<1	<1
TD-69-40-403	82-06-25	1030	150	518	1000	457	7.1	23.0	--	--
TD-69-46-601	82-06-29	1100	15	1280	350	479	7.3	23.5	--	--
TD-69-47-303	82-06-25	1200	30	1800	1150	475	7.3	24.0	--	--
TD-69-55-604	82-08-11	0935	30	2350	225	525	7.2	24.0	<1	<1
TD-69-56-507	82-07-16	1040	90	2160	300	479	7.4	34.5	<1	<1

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
TD-68-26-701	82-06-23	--	270	60	75	20	7.6	.2	1.5	51
TD-68-33-202	82-07-27	<1	220	31	72	9.9	6.6	.2	1.0	27
TD-68-33-701	82-06-21	--	230	19	70	13	7.5	.2	1.2	16
TD-68-41-303	82-06-25	--	240	37	70	15	9.0	.3	1.1	16
TD-68-42-503	82-07-27	<1	220	29	63	15	7.8	.2	1.1	13
TD-69-29-901	82-07-26	--	230	12	81	7.0	5.9	.2	.90	13
TD-69-29-902	82-07-14	--	280	26	100	6.2	7.0	.2	1.0	16
TD-69-37-302	82-07-14	<1	240	33	74	14	6.6	.2	1.1	22
TD-69-38-905	82-06-21	<1	230	18	68	14	6.4	.2	1.5	13
TD-69-40-403	82-06-25	--	220	0	73	9.3	5.2	.2	1.0	8.0
TD-69-46-601	82-06-29	--	230	18	68	14	7.2	.2	1.2	19
TD-69-47-303	82-06-25	--	220	19	63	15	7.5	.2	1.2	18
TD-69-55-604	82-08-11	<1	250	47	74	15	11	.3	1.1	
TD-69-56-507	82-07-16	<1	210	24	51	21	9.5	.3	1.1	34

LOCAL IDENTIFIER	DATE OF SAMPLE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)
TD-68-26-701	82-06-23	12	.30	12	310	<.020	<.060	--
TD-68-33-202	82-07-27	12	.10	12	250	<.020	<.060	--
TD-68-33-701	82-06-21	11	.20	12	260	<.020	<.060	--
TD-68-41-303	82-06-25	18	.20	12	260	<.020	<.070	--
TD-68-42-503	82-07-27	15	.20	12	240	<.020	<.060	--
TD-69-29-901	82-07-26	9.1	.10	13	260	<.020	<.060	--
TD-69-29-902	82-07-14	12	.20	14	310	<.020	<.060	--
TD-69-37-302	82-07-14	11	.20	13	270	<.020	.060	3.5
TD-69-38-905	82-06-21	9.2	.20	13	250	<.020	<.060	--
TD-69-40-403	82-06-25	9.0	.20	12	250	<.020	<.070	--
TD-69-46-601	82-06-29	12	.20	12	260	<.020	<.070	--
TD-69-47-303	82-06-25	13	.20	12	250	<.020	<.070	--
TD-69-55-604	82-08-11	28	.20	13	280	<.020	.080	.32
TD-69-56-507	82-07-16	14	.80	15	260	<.020	<.060	--

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
MEDINA COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
TD-68-26-701	82-06-23	.80	2.0	--	.50
TD-68-33-202	82-07-27	.40	1.2	.030	.40
TD-68-33-701	82-06-21	.90	2.6	--	.40
TD-68-41-303	82-06-25	.80	2.9	.040	.30
TD-68-42-503	82-07-27	.50	2.2	.040	.50
TD-69-29-901	82-07-26	.50	1.6	.030	.60
TD-69-29-902	82-07-14	3.2	4.8	<.010	1.2
TD-69-37-302	82-07-14	3.6	5.5	.040	.70
TD-69-38-905	82-06-21	.60	1.4	--	.60
TD-69-40-403	82-06-25	1.3	2.6	.110	2.7
TD-69-46-601	82-06-29	1.3	3.0	.060	1.5
TD-69-47-303	82-06-25	.70	2.3	.050	<.30
TD-69-55-604	82-08-11	.40	2.8	.090	.50
TD-69-56-507	82-07-16	.70	1.1	<.010	1.3

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)
TD-68-26-701	82-06-23	1015	750	120	1000	1	33	<1	<10	1
TD-68-33-202	82-07-27	1010	279	30	10	1	33	<1	<10	2
TD-68-33-701	82-06-21	1215	1240	300	1950	1	38	<1	<10	<1
TD-68-41-303	82-06-25	0915	717	60	400	<1	47	<1	<10	1
TD-68-42-503	82-07-27	1250	1370	10	700	1	70	<1	<10	1
TD-69-29-901	82-07-26	1020	267	60	20	<1	32	<1	<10	2
TD-69-29-902	82-07-14	1435	347	35	5.0	<1	39	<1	<10	3
TD-69-37-302	82-07-14	0945	410	45	20	<1	33	<1	<10	5
TD-69-38-905	82-06-21	1400	997	420	1500	1	37	<1	<10	1
TD-69-40-403	82-06-25	1030	518	150	1000	<1	29	<1	<10	1
TD-69-46-601	82-06-29	1100	1280	15	350	<1	36	<1	<10	1
TD-69-47-303	82-06-25	1200	1800	30	1150	<1	42	<1	<10	2
TD-69-55-604	82-08-11	0935	2350	30	225	1	57	<1	<10	1
TD-69-56-507	82-07-16	1040	2160	90	300	1	180	<1	<10	<1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
TD-68-26-701	82-06-23	<3	<1	<1	<.1	<1	<1	<3
TD-68-33-202	82-07-27	4	<1	<1	<.1	<1	<1	200
TD-68-33-701	82-06-21	<3	<1	<1	.1	<1	<1	<3
TD-68-41-303	82-06-25	5	1	<1	.1	<1	<1	<3
TD-68-42-503	82-07-27	4	<1	<1	<.1	<1	<1	7
TD-69-29-901	82-07-26	5	2	<1	<.1	<1	<1	720
TD-69-29-902	82-07-14	4	<1	2	<.1	<1	<1	320
TD-69-37-302	82-07-14	4	<1	<1	<.1	<1	<1	74
TD-69-38-905	82-06-21	<3	<1	<1	<.1	<1	<1	8
TD-69-40-403	82-06-25	<3	<1	<1	<.1	<1	<1	<3
TD-69-46-601	82-06-29	5	<1	<1	<.1	<1	<1	3
TD-69-47-303	82-06-25	3	<1	<1	<.1	<1	<1	8
TD-69-55-604	82-08-11	<3	1	<1	<.1	<1	<1	4
TD-69-56-507	82-07-16	9	2	3	.1	7	<1	7

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
UVALDE COUNTY

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	DEPTH OF WELL, TOTAL (FEET)	FLOW RATE, INSTANTANEOUS (GPM)	SPECIFIC CONDUCTANCE (UMHOS)	PH (STANDARD UNITS)	TEMPERATURE (DEG C)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
YP-69-36-702	82-06-22	1145	180	538	1250	479	7.4	22.0	--	--
YP-69-37-201	82-07-14	1200	60	440	8.0	489	6.8	24.0	--	--
YP-69-42-606	82-06-22	1300	300	525	1200	616	7.2	23.0	<1	<1
YP-69-43-606	82-07-12	1130	45	698	390	514	7.1	23.5	--	--
YP-69-44-502	82-06-18	1445	360	1380	1500	586	6.9	28.5	<1	<1
YP-69-45-404	82-07-12	1235	35	1490	480	611	7.0	23.0	--	--
YP-69-45-405	82-07-12	1315	35	1210	1000	485	7.0	23.0	--	--
YP-69-50-203	82-08-20	0845	30	525	1400	570	7.2	23.0	--	--
YP-69-50-506	82-07-30	0905	45	525	510	578	7.2	23.5	<1	<1

LOCAL IDENT-I-FIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	SULFATE DISSOLVED (MG/L AS SO4)
YP-69-36-702	82-06-22	--	230	44	67	16	9.4	.3	1.1	14
YP-69-37-201	82-07-14	--	250	19	91	5.2	5.8	.2	.80	7.0
YP-69-42-606	82-06-22	<1	270	73	93	9.7	18	.5	1.2	17
YP-69-43-606	82-07-12	--	240	36	78	10	11	.3	1.1	14
YP-69-44-502	82-06-18	<1	270	76	80	16	13	.4	1.3	23
YP-69-45-404	82-07-12	--	280	70	79	20	17	.5	2.4	80
YP-69-45-405	82-07-12	--	240	28	72	14	7.6	.2	1.1	21
YP-69-50-203	82-08-20	--	260	46	86	10	14	.4	1.0	17
YP-69-50-506	82-07-30	<1	260	48	89	8.6	15	.4	1.1	23

LOCAL IDENT-I-FIER	DATE OF SAMPLE	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NITRITE TOTAL (MG/L AS N)	NITROGEN, AMMONIA TOTAL (MG/L AS N)	NITROGEN, ORGANIC TOTAL (MG/L AS N)
YP-69-36-702	82-06-22	26	.20	12	260	<.020	<.060	--
YP-69-37-201	82-07-14	10	.10	13	270	<.020	<.060	--
YP-69-42-606	82-06-22	53	.10	13	320	<.020	.060	1.1
YP-69-43-606	82-07-12	28	.10	12	270	<.020	.060	.54
YP-69-44-502	82-06-18	47	.30	13	310	<.020	<.060	--
YP-69-45-404	82-07-12	18	.30	13	360	<.020	<.060	--
YP-69-45-405	82-07-12	13	.20	13	270	<.020	<.060	--
YP-69-50-203	82-08-20	38	.10	13	310	<.020	.090	.91
YP-69-50-506	82-07-30	34	.10	13	310	<.020	<.060	--

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC DISSOLVED (MG/L AS C)
YP-69-36-702	82-06-22	1.6	3.8	--	1.8
YP-69-37-201	82-07-14	1.8	2.8	.030	.70
YP-69-42-606	82-06-22	1.2	5.0	--	.50
YP-69-43-606	82-07-12	.60	3.5	.020	.70
YP-69-44-502	82-06-18	1.1	3.1	--	.50
YP-69-45-404	82-07-12	.80	2.7	.030	.80
YP-69-45-405	82-07-12	.70	2.4	.060	.50
YP-69-50-203	82-08-20	1.0	3.8	.030	.70
YP-69-50-506	82-07-30	.50	3.5	.020	.50

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1982--Continued
UVALDE COUNTY--Continued

LOCAL IDENT-I-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN)	FLOW RATE, INSTANTANEOUS (GPM)	ARSENIC DISSOLVED (UG/L AS AS)	BARIUM, DISSOLVED (UG/L AS BA)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)
YP-69-36-702	82-06-22	1145	538	180	1250	1	38	<1	<10	1
YP-69-37-201	82-07-14	1200	440	60	8.0	<1	32	<1	10	4
YP-69-42-606	82-06-22	1300	525	300	1200	1	59	<1	10	<1
YP-69-43-606	82-07-12	1130	698	45	390	1	49	<1	<10	6
YP-69-44-502	82-06-18	1445	1380	360	1500	1	120	<1	<10	6
YP-69-45-404	82-07-12	1235	1490	35	480	1	50	<1	<10	4
YP-69-45-405	82-07-12	1315	1210	35	1000	1	36	<1	<10	1
YP-69-50-203	82-08-20	0845	525	30	1400	1	53	<1	<10	1
YP-69-50-506	82-07-30	0905	525	45	510	1	65	<1	<10	2

LOCAL IDENT-I-FIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	SILVER, DISSOLVED (UG/L AS AG)	ZINC, DISSOLVED (UG/L AS ZN)
YP-69-36-702	82-06-22	4	<1	<1	<.1	<1	<1	6
YP-69-37-201	82-07-14	5	<1	<1	<.1	<1	<1	240
YP-69-42-606	82-06-22	<3	1	<1	.1	1	<1	<3
YP-69-43-606	82-07-12	<3	2	<1	<.1	<1	<1	6
YP-69-44-502	82-06-18	3	<1	<1	<.1	3	<1	<3
YP-69-45-404	82-07-12	<3	<1	<1	<.1	1	<1	<3
YP-69-45-405	82-07-12	11	<1	<1	<.1	<1	<1	<3
YP-69-50-203	82-08-20	<3	<1	<1	<.1	<1	<1	7
YP-69-50-506	82-07-30	<3	<1	<1	.1	<1	<1	7

Table 8.--Analyses for base/neutral-acid extractable organic compounds from selected wells and springs in the Edwards aquifer, 1982

Well number	Date	Extract	Compound name	Concentration (µg/L)
AY-68-27-303	June 16, 1982	Base/neutral	Diethyl phthalate	0.2
		Acid	Benzoic acid, methylester	.2
			Nonanoic acid, methylester	.4
			Tetradecanoic acid, methylester	.1
			Hexadecanoic acid, methylester	.4
			Octadecanoic acid, methylester	.3
AY-68-27-305	June 16, 1982	Base/neutral	Diethyl phthalate	.9
		Acid	Decanoic acid, methylester	.2
			Dodecanoic acid, methylester	.2
			Butanoic acid, methylester	1.1
			Hexanoic acid, methylester	.3
			Cyclohexane carboxylic acid, methylester	.8
			Benzoic acid, methylester	.4
			Nonanoic acid, methylester	.2
			Benzene propanoic acid, methylester	.4
AY-68-27-503	June 23, 1982	Base/neutral	M-Xylene	.2
			2-Butoxy ethyl butyl phthalate	.3
			Diethyl phthalate	.9
		Acid	Hexanoic acid, methylester	.2
			Butyl methyl phthalate	2.0
			Hexadecanoic acid, methylester	.3
AY-68-28-502	June 24, 1982	Base/neutral	Diethyl phthalate	1.5
		Acid	Hexadecanoic acid, methylester	.4
AY-68-28-903	June 24, 1982	Base/neutral	Tetrachloroethylene	.5
			2-Octanone	1.0
			2-Heptanol, 6-methyl	.6
			1,2,3-Propanetriol, triacetate	.3
AY-68-29-209	June 15, 1982	Base/neutral	2-Octanone	.5
			2-Octanol	.9
			Diethyl phthalate	2.6
		Acid	Dodecanoic acid, methylester	.2
			Hexanoic acid, methylester	<.1
			Benzoic acid, methylester	.4
			Nonanoic acid, methylester	.4
			Hexadecanoic acid, methylester	.3
AY-68-29-210	June 15, 1982	Base/neutral	Diethyl phthalate	3.4
		Acid	Hexanoic acid, methylester	.2
			Benzoic acid, methylester	.4
			Octanoic acid, methylester	.2
			Hexadecanoic acid, methylester	.5
DX-68-23-301	June 14, 1982	Base/neutral	Diethyl phthalate	4.3
		Acid	Hexanoic acid, methylester	.3
			Benzoic acid, methylester	.3
			Octanoic acid, methylester	.2
			Nonanoic acid, methylester	.5
			Hexadecanoic acid, methylester	.4
			Octadecanoic acid, methylester	.3
LR-67-01-801	June 14, 1982	Base/neutral	Diethyl phthalate	.6
		Acid	Benzoic acid, methylester	.3
			Nonanoic acid, methylester	.3
			Hexadecanoic acid, methylester	.5
			Octadecanoic acid, methylester	.2

Table 9.--Summary of regulations for selected water-quality constituents and properties for public water systems

DEFINITIONS

Contaminant---------Any physical, chemical, biological, or radiological substance or matter in water.

Public water system---------A system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serves at least 25 individuals daily at least 60 days during the year.

Maximum contaminant level----The maximum permissible level of a contaminant in water which is delivered to the free-flowing outlet of the ultimate user of a public water system. Maximum contaminant levels are those levels set by the U.S. Environmental Protection Agency (1976) in the National Interim Primary Drinking Water Regulations. These regulations deal with contaminants that may have a significant direct impact on the health of the consumer and are enforceable by EPA.

Secondary maximum contaminant level----The advisable maximum level of a contaminant in water which is delivered to the free-flowing outlet of the ultimate user of a public water system. Secondary maximum contaminant levels are those levels proposed by EPA (1977) in the National Secondary Drinking Water Regulations. These regulations deal with contaminants that may not have a significant direct impact on the health of the consumer, but their presence in excessive quantities may affect the esthetic qualities and discourage the utilization of a drinking water supply by the public.

INORGANIC CHEMICALS AND RELATED PROPERTIES

Contaminant	Maximum contaminant level	Secondary maximum contaminant level
Arsenic (As)	50 µg/L	--
Barium (Ba)	1,000 µg/L	--
Cadmium (Cd)	10 µg/L	--
Chloride (Cl)	--	250 mg/L
Chromium (Cr)	50 µg/L	--
Copper (Cu)	--	1,000 µg/L
Iron (Fe)	--	300 µg/L
Lead (Pb)	50 µg/L	--
Manganese (Mn)	--	50 µg/L
Mercury (Hg)	2 µg/L	--
Nitrate (as N)	10 mg/L	--
pH	--	6.5 - 8.5
Selenium (Se)	10 µg/L	--
Silver (Ag)	50 µg/L	--
Sulfate (SO_4)	--	250 mg/L
Zinc (Zn)	--	5,000 µg/L
Dissolved solids	--	500 mg/L

Fluoride-------The maximum contamination level for fluoride depends on the annual average of the maximum daily air temperatures for the location in which the community water system is situated. A range of annual averages of maximum daily air temperatures and corresponding maximum contamination level for fluoride are given in the following tabulation.

Average of maximum daily air temperatures (degrees Celsius)	Maximum contaminant level for fluoride (mg/L)
12.0 and below	2.4
12.1 - 14.6	2.2
14.7 - 17.6	2.0
17.7 - 21.4	1.8
21.5 - 26.2	1.6
26.3 - 32.5	1.4

ORGANIC CHEMICALS

Contaminant	Maximum contaminant level (µg/L)
Chlorinated Hydrocarbons	
Endrin	0.2
Lindane	4
Methoxychlor	100
Toxaphene	5
Chlorophenoxys	
2,4-D	100
Silvex	10

Table 10.--Streamflow, spring flow, reservoir contents, and water-quality data for streams, October 1981 to September 1982

08167000 GUADALUPE RIVER AT COMFORT, TX

LOCATION.--Lat 29°58'10", long 98°53'33", Kendall County, Hydrologic Unit 12100201, on right bank at downstream side of southbound bridge on Interstate Highway 10, at Comfort, 0.5 mi (0.8 km) downstream from Cypress Creek, and at mile 396.2 (637.5 km).

DRAINAGE AREA.--839 mi² (2,173 km²).

PERIOD OF RECORD.--May 1939 to current year.

REVISED RECORDS.--WSP 1632: 1958. WSP 1732: 1939(M). WSP 2123: Drainage area, 1944(M), 1952(M), 1957(M), 1960(M).

GAGE.--Water-stage recorder. Datum of gage is 1,371.83 ft (418.134 m) National Geodetic Vertical Datum of 1929. Prior to Nov. 27, 1939, nonrecording gage. Nov. 27, 1939, to June 2, 1980 recording at gage site 0.4 mi (0.6 km) upstream at datum 0.22 ft (0.067 m) lower.

REMARKS.--Records good. Many small diversions above station for irrigation. Several observations of water temperature were made during the year. Gage-height telemeter at station.

AVERAGE DISCHARGE.--43 years (water years 1940-82), 188 ft³/s (5.324 m³/s), 136,200 acre-ft/yr (168 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 240,000 ft³/s (6,800 m³/s) Aug. 2, 1978, gage height, 40.90 ft (12.466 m), from high-water mark in well, from rating curve extended above 74,000 ft³/s (2,100 m³/s) on basis of current-meter measurement of 124,000 ft³/s (3,510 m³/s) at gage height 32.47 ft (9.897 m) and slope-area measurement of 182,000 ft³/s (5,150 m³/s) at gage height 38.4 ft (11.70 m), made at former gaging station "near Comfort" 5 mi (8 km) upstream; no flow at times in 1952-57, 1963-64. All stages are at site and datum then in use.
Maximum stage since at least 1848, that of Aug. 2, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of July 1869 reached a stage of 40.3 ft (12.28 m), from report by Corps of Engineers. Flood of July 1, 1932, reached a stage of 38.4 ft (11.70 m), from floodmark, and from information by State Department of Highways and Public Transportation. Flood of July 16, 1900, reached about the same stage as that of July 1, 1932, from information by local residents. All stages are at site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,600 ft³/s (73.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 7	0430	11,700	331	12.11	3.691	May 13	1430	6,920	196	9.36	2.853
Oct. 13	1530	*36,400	1,030	20.38	6.212	June 12	0900	19,700	558	15.41	4.697

Minimum daily discharge, 54 ft³/s (1.53 m³/s) Sept. 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	167	426	283	217	184	192	165	135	174	184	77	70
2	170	393	271	216	185	184	161	150	169	149	73	70
3	166	378	272	216	184	179	153	149	161	110	70	70
4	162	371	267	207	184	178	143	134	158	104	70	76
5	158	371	259	202	182	174	143	143	152	128	65	71
6	1060	361	264	202	182	169	133	228	146	130	61	66
7	4020	354	270	207	182	168	134	197	143	134	60	62
8	677	378	268	209	178	167	140	162	138	130	98	59
9	637	368	260	209	178	165	139	152	136	126	122	58
10	534	354	258	209	184	168	135	153	133	120	116	56
11	480	347	257	207	184	175	136	139	128	118	115	55
12	442	347	254	207	175	174	127	161	3560	104	104	54
13	11500	344	255	207	171	174	136	4080	653	100	90	56
14	3950	340	254	207	171	175	140	1330	450	132	84	63
15	1340	330	246	200	171	175	142	569	360	104	78	78
16	978	327	245	196	167	174	123	412	330	99	75	89
17	816	324	239	196	163	176	127	339	290	93	73	84
18	701	320	240	193	165	175	122	313	280	97	71	82
19	624	314	237	193	165	170	126	289	260	90	77	74
20	588	298	236	199	184	170	135	257	280	88	85	106
21	565	298	239	197	197	173	132	236	304	88	84	112
22	612	298	240	197	184	176	151	233	190	88	77	92
23	626	298	223	193	172	192	174	223	179	97	83	81
24	516	291	222	187	170	185	164	255	174	108	81	74
25	500	298	220	186	176	176	179	240	146	122	80	75
26	456	295	222	183	236	164	173	225	181	108	76	73
27	437	286	226	180	237	168	122	215	167	93	73	70
28	434	287	224	182	204	173	107	219	161	90	73	67
29	434	290	223	185	---	172	112	186	147	87	73	66
30	422	297	220	197	---	179	123	210	145	84	71	66
31	449	---	226	199	---	176	---	187	---	77	70	---
TOTAL	34621	9983	7620	6185	5115	5416	4197	11921	9895	3382	2505	2175
MEAN	1117	333	246	200	183	175	140	385	330	109	80.8	72.5
MAX	11500	426	283	217	237	192	179	4080	3560	184	122	112
MIN	158	286	220	180	163	164	107	134	128	77	60	54
AC-FT	68670	19800	15110	12270	10150	10740	8320	23650	19630	6710	4970	4310

CAL YR 1981	TOTAL	183525	MEAN 503	MAX 12900	MIN 132	AC-FT	364000	
WTR YR 1982	TOTAL	103015	MEAN 282	MAX 11500	MIN 54	AC-FT	204300	

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX

LOCATION.--Lat 29°23'00", long 98°23'00", Comal County, Hydrologic Unit 12100201, on downstream side of bridge on Ranch Road 311, 1.9 mi (3.1 km) southeast of Spring Branch Post Office, 7.5 mi (12.1 km) downstream from Curry Creek, and at mile 334.4 (538.0 km).

DRAINAGE AREA.--1,315 mi² (3,406 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1922 to current year.

REVISED RECORDS.--WSP 1562: 1923-24, 1926, 1927-28(M), 1929, 1930(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 948.10 ft (288.981 m) National Geodetic Vertical Datum of 1929. Prior to Jan. 14, 1981, at site 220 ft (67 m) downstream at same datum.

REMARKS.--Water-discharge records good. Several small diversions above station for irrigation. Several observations of water temperature were made during the year. Gage-height telemeter located at station.

AVERAGE DISCHARGE.--60 years, 313 ft³/s (8.864 m³/s), 226,800 acre-ft (280 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 160,000 ft³/s (4,530 m³/s) Aug. 3, 1978, gage height, 45.25 ft (13.792 m), from floodmark, from rating curve extended above 55,600 ft³/s (1,570 m³/s) on basis of slopearea measurement of peak flow; no flow at times in 1951-52, 1954-56, and 1963-64.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1859, about 53 ft (16.2 m) in 1869; flood in July 1900 reached a stage of about 49 ft (14.9 m), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 4,000 ft³/s (113 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 7	2100	12,100	343	15.34	4.676	May 13	1200	9,180	260	13.01	3.965
Oct. 14	1000	*25,500	722	23.53	7.172	June 13	unknown	6,770	192	10.85	3.307

Minimum daily discharge, 64 ft³/s (1.81 m³/s) Sept. 4, 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	139	721	390	295	238	268	208	168	295	205	90	67
2	132	610	374	295	225	242	207	175	274	230	87	67
3	131	553	365	299	222	235	202	194	263	199	83	66
4	130	516	350	290	222	232	193	196	247	172	82	64
5	122	498	345	280	220	223	188	184	234	141	78	64
6	1280	499	345	276	218	215	177	230	221	159	77	72
7	7190	475	345	272	220	208	172	415	211	163	76	74
8	3440	480	352	268	222	206	171	309	206	163	75	70
9	1270	520	364	266	221	200	174	253	195	160	80	69
10	847	489	355	265	218	205	179	230	187	156	171	65
11	642	461	350	256	218	205	175	226	181	147	149	65
12	539	460	346	268	211	208	172	239	351	143	131	65
13	482	455	337	272	208	211	169	5230	3000	135	125	69
14	15400	456	340	277	205	205	165	5700	794	133	111	70
15	3170	455	337	279	205	201	174	1850	538	143	101	67
16	1950	452	327	274	205	201	184	1120	443	135	95	790
17	1500	445	326	259	202	198	157	860	396	122	89	133
18	1200	429	317	259	196	198	157	688	370	116	95	112
19	954	421	309	259	195	196	159	600	337	112	85	101
20	853	406	311	259	198	191	163	550	312	111	86	99
21	800	369	316	259	222	188	175	497	292	104	89	92
22	763	374	322	261	248	191	192	448	329	103	92	128
23	836	390	313	255	227	200	238	420	316	104	89	116
24	789	390	299	246	213	213	270	439	301	108	79	106
25	712	390	291	242	205	214	251	462	257	111	79	98
26	652	379	291	228	225	198	246	414	213	117	76	91
27	597	379	294	225	279	196	242	366	234	122	75	91
28	578	374	295	225	295	195	201	370	222	112	73	90
29	560	379	294	225	---	201	168	366	215	103	72	84
30	556	390	291	232	---	208	149	315	196	99	70	85
31	894	---	293	232	---	208	---	316	---	93	70	---
TOTAL	49108	13615	10184	8098	6183	6460	5678	22850	11630	4221	2830	3230
MEAN	1584	454	329	261	221	208	189	769	388	136	91.3	108
MAX	15400	721	390	299	295	268	270	5700	3000	230	171	790
MIN	122	369	291	225	195	188	149	168	161	93	70	64
AC-FT	97410	27010	20200	16060	12260	12810	11260	47310	23070	8370	5610	6410

CAL YR 1981 TOTAL 289004 MEAN 792 MAX 17400 MIN 122 AC-FT 573200
WTR YR 1982 TOTAL 145087 MEAN 397 MAX 15400 MIN 64 AC-FT 287800

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1980 to September 1982 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS (MG/L AS CACO3)
OCT 14...	1408	21300	235	7.8	23.0	50	880	7.4	88	3.8	120
JAN 12...	1543	270	503	8.2	7.0	0	1.2	11.7	101	1.1	250
FEB 22...	1532	240	494	8.4	17.0	0	3.3	9.8	105	.5	240
APR 06...	1025	182	484	8.3	19.0	5	5.7	8.6	97	1.1	230
MAY 13...	1746	6400	236	8.0	20.0	60	430	7.6	85	4.7	110
JUN 28...	1135	220	458	--	27.5	--	--	--	--	1.6	--
AUG 10...	1426	157	465	8.1	27.5	5	7.3	7.3	96	1.0	220

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT 14...	16	34	7.6	3.3	.1	3.2	100	6.0	5.4	.2	11
JAN 12...	18	63	22	12	.4	1.4	230	26	16	.3	9.1
FEB 22...	18	59	22	12	.4	1.4	220	22	19	.3	9.3
APR 06...	16	56	21	12	.4	1.7	210	20	25	.2	9.3
MAY 13...	10	34	6.2	3.5	.2	2.9	100	7.0	6.0	.2	9.6
JUN 28...	--	--	--	--	--	--	--	--	--	--	--
AUG 10...	21	54	21	13	.4	1.9	200	25	18	.3	15

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 14...	131	--	--	.32	.050	.37	.130	.79	.92	.130	35
JAN 12...	288	6	5	--	<.020	1.1	.080	.65	.73	<.010	1.2
FEB 22...	277	10	8	--	<.020	.90	.200	.43	.63	<.010	1.5
APR 06...	272	14	9	--	<.020	.52	.070	.36	.43	<.010	2.3
MAY 13...	130	827	103	.32	.030	.35	.090	2.2	2.30	.310	33
JUN 28...	--	--	--	--	--	--	--	--	--	--	--
AUG 10...	269	<2	4	--	<.020	.32	.100	.60	.70	.010	3.2

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
OCT 14...	1408	1	22	<1	0	2	40
JAN 12...	1543	1	39	<1	<10	<1	<10
APR 06...	1025	1	40	<3	<10	1	<9
MAY 13...	1746	1	20	<3	10	3	93
AUG 10...	1426	1	40	<1	<10	1	80

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
OCT 14...	1	1	.0	0	0	<3
JAN 12...	1	<1	<.1	1	<1	4
APR 06...	2	<3	<.1	<1	<1	<12
MAY 13...	<1	<3	<.1	<1	<1	<12
AUG 10...	<1	3	<.1	<1	<1	6

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX

LOCATION.--Lat 29°52'07", long 98°11'55", Comal County, Hydrologic Unit 12100201, in intake structure of Canyon Dam on Guadalupe River, 12 mi (19 km) northwest of New Braunfels, and at mile 303.0 (487.5 km).

DRAINAGE AREA.--1,432 mi² (3,709 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1962 to current year. Prior to October 1970, published as Canyon Reservoir.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Sept. 24, 1964, nonrecording gage at present site and datum.

REMARKS.--The lake is formed by a rolled earthfill dam 6,830 ft (2,082 m) long, consisting of the main dam 4,410 ft (1,344 m) long, an earthen dike 210 ft (64 m) long, a 1,260-foot-long (384 m) uncontrolled broad-crested-type spillway, and a 950-foot (290 m) concrete and earthen nonoverflow section. Deliberate impoundment began June 16, 1964, and main part of dam was completed in August 1964. The flood-control outlet works consist of a 10.0-foot-diameter (3.0 m) conduit controlled by two 5.7 by 10.0-foot (1.7 by 3.0 m) hydraulically operated slide gates. The lake was built for water conservation and flood control. Capacity table beginning Oct. 1, 1974, is based on a sedimentation survey of August 1972. Small diversions above the lake for irrigation. Gage-height telemeter at station. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Elevation (feet)	Capacity (acre-feet)
Top of dam	974.0	-
Crest of spillway	943.0	736,700
Top of conservation pool	909.0	382,000
Lowest gated outlet (invert)	775.0	240

COOPERATION.--Records furnished by the Corps of Engineers and reviewed by the Geological Survey.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 588,400 acre-ft (725 hm³) Aug. 4, 1978, elevation, 930.61 ft (283.650 m); minimum observed since conservation pool first reached in April 1968, 338,600 acre-ft (417 hm³) Sept. 5, 1980, elevation, 903.54 ft (275.399 m).

EXTREMES FOR CURRENT YEAR.--Maximum daily contents, 409,900 acre-ft (505 hm³) Oct. 17, elevation, 912.31 ft (278.072 m); minimum daily, 349,200 acre-ft (431 hm³) Oct. 5, elevation, 904.91 ft (275.817 m).

Capacity table (elevation, in feet, and total contents, in acre-feet)

904.0	342,200	907.0	365,800	912.0	407,300
905.0	349,900	908.0	373,800	914.0	424,600
906.0	357,800	910.0	390,300		

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	349900	405000	384700	362800	361500	360400	359000	357500	375900	372400	364200	361500
2	349700	405600	383800	362200	361600	360300	359000	357400	375000	372000	363900	361200
3	349500	405500	382900	361600	361100	360400	358700	357400	374200	371500	363800	361300
4	349500	404500	382000	361200	361100	360400	358900	357300	373500	371000	363700	361000
5	349200	403700	380600	361200	361000	360400	358400	357000	373300	370300	363400	360700
6	352700	403000	380200	361200	360700	360100	358100	357800	373200	369800	363400	360500
7	361600	402300	379500	361300	360600	359900	358000	357800	372700	368900	363100	360300
8	371500	402100	379000	361100	360800	359800	357700	357800	372400	368600	364300	360200
9	373800	401200	378300	361000	360600	359700	357800	357800	372100	368500	364600	360200
10	375000	400500	377700	361000	360500	359700	357600	357900	371900	368000	364600	359900
11	375900	399800	377200	360700	360500	359700	357400	357900	371700	367800	364600	359800
12	376700	399300	376600	361200	360300	359900	357300	358600	372000	367700	364600	359500
13	377500	398600	375900	361300	360300	359900	357300	370600	375600	367400	364600	359600
14	403400	398000	375400	361200	360300	359900	357100	381300	376300	367000	364500	359500
15	408300	397500	374600	361300	360300	359900	357200	382400	376800	366900	364300	359400
16	409400	396600	374100	361200	360200	359900	357000	382800	377200	366500	364200	360300
17	409900	396200	373300	361200	360100	359900	357000	383800	377200	366200	364100	360300
18	409900	395400	372300	361200	360100	359800	356800	383700	377100	365800	363900	360300
19	409500	394600	371600	361200	360200	359800	356800	383400	376900	365700	363900	360300
20	409000	393600	371000	361400	360100	359700	356900	383100	376800	365500	363800	360500
21	408600	392700	370500	361500	360100	359700	356600	382700	376300	365400	363500	360200
22	408300	391900	370100	361600	360200	359500	357100	382100	376000	365400	363400	359900
23	407400	391200	369100	361600	360300	359500	357300	381500	375700	365400	363200	359900
24	406800	390400	368200	361500	360300	359400	357600	381500	375400	365400	362900	359800
25	406400	389700	367700	361500	360400	359300	357500	381000	375000	365200	362600	359800
26	405400	388900	367000	361400	360300	359100	357600	380400	374600	365000	362600	359500
27	404600	388100	366200	361500	360300	359000	357600	379800	374100	365000	362200	359400
28	403800	387100	365400	361500	360300	358800	357700	379200	373700	364800	362100	359100
29	402900	386500	364600	361500	---	358900	357600	378600	373400	364600	362000	359100
30	402100	385700	364200	361800	---	358900	357600	377700	373000	364600	361900	358900
31	404300	---	363400	361400	---	358900	---	377100	---	364300	361600	---
MAX	409900	405600	384700	362800	361600	360400	359000	383800	377200	372400	364600	361500
MIN	349200	385700	363400	360700	360100	358800	356600	357000	371700	364300	361600	358900
(†)	911.65	909.45	906.71	906.45	906.31	906.14	905.98	908.40	907.90	906.82	906.48	906.14
(‡)	+54400	+18600	-22300	-2000	-1100	-1400	-1300	+19500	-4100	-8700	-2700	-2700

CAL YR 1981 MAX 471900 MIN 349200 ‡ -4200
WTR YR 1982 MAX 409900 MIN 349200 ‡ +9000

† Elevation, in feet, at end of month.
‡ Change in contents, in acre-feet.

PERIOD OF RECORD.--Chemical analyses: October 1969 to current year.

295148098115201 CANYON LAKE SITE AR

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
JAN							
25...	1415	1.00	393	7.9	12.5	8.6	82
25...	1417	10.0	393	7.9	12.0	8.6	81
25...	1420	20.0	393	7.9	11.5	8.4	78
25...	1422	30.0	393	7.9	11.5	8.4	78
25...	1425	44.0	394	7.9	11.5	8.4	78

295206098115501 CANYON LAKE SITE AC

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TRANSPARENCY (SECCHI DISK) (M)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN										
25...	1330	1.00	392	7.9	12.0	2.20	8.6	81	K6	K1
25...	1332	3.50	--	--	--	--	--	--	--	--
25...	1334	10.0	392	7.9	12.0	--	8.6	81	--	--
25...	1336	20.0	392	7.9	11.5	--	8.4	78	--	--
25...	1338	30.0	392	7.9	11.0	--	8.4	77	--	--
25...	1340	40.0	392	7.9	11.0	--	8.4	77	--	--
25...	1342	50.0	392	7.9	11.0	--	8.4	77	--	--
25...	1345	60.0	392	7.9	11.0	--	8.4	77	--	--
25...	1348	70.0	392	7.9	11.0	--	8.4	77	--	--
25...	1350	80.0	392	7.9	10.5	--	8.4	76	--	--
25...	1352	90.0	392	7.9	10.5	--	8.4	76	--	--
25...	1355	100	392	7.9	10.5	--	8.3	75	--	--
25...	1358	110	393	7.9	10.5	--	8.3	75	--	--
25...	1400	120	394	7.9	10.5	--	8.3	75	--	--
25...	1402	130	394	7.9	10.5	--	8.3	75	--	--
25...	1404	136	395	7.9	10.5	--	8.3	75	--	--
MAY										
19...	1155	1.00	382	7.9	22.5	3.1	7.9	93	<1	K11
19...	1156	5.10	--	--	--	--	--	--	--	--
19...	1157	10.0	382	7.9	22.5	--	7.9	93	--	--
19...	1159	20.0	382	7.9	21.5	--	7.8	91	--	--
19...	1201	30.0	382	7.8	21.0	--	7.7	89	--	--
19...	1203	40.0	389	7.7	19.0	--	7.3	80	--	--
19...	1205	50.0	403	7.6	17.0	--	6.9	73	--	--
19...	1207	60.0	403	7.5	16.0	--	6.8	71	--	--
19...	1209	70.0	403	7.5	14.5	--	6.8	68	--	--
19...	1210	80.0	403	7.5	14.0	--	6.8	67	--	--
19...	1212	90.0	403	7.5	13.5	--	6.8	67	--	--
19...	1214	100	403	7.4	13.0	--	6.2	60	--	--
19...	1216	110	403	7.4	13.0	--	6.0	58	--	--
19...	1218	120	403	7.4	12.5	--	5.8	56	--	--
19...	1220	130	403	7.4	12.5	--	5.6	54	--	--
19...	1222	140	403	7.4	12.5	--	5.6	54	--	--
19...	1224	150	403	7.5	12.5	--	5.6	54	--	--
AUG										
10...	1245	1.00	343	7.9	27.5	3.1	7.1	91	<1	3
10...	1249	10.0	343	7.9	27.5	--	7.1	92	--	--
10...	1252	20.0	343	7.8	27.0	--	6.9	86	--	--
10...	1256	30.0	343	7.7	26.5	--	6.8	86	--	--
10...	1300	40.0	365	7.1	25.0	--	1.6	20	--	--

GUADALUPE RIVER BASIN

CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 CANYON LAKE SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	HARDNESS (MG/L AS CACO3)
AUG								
10...	1304	50.0	383	7.1	21.0	1.2	14	--
10...	1307	60.0	388	7.1	19.5	1.9	21	--
10...	1311	70.0	390	7.2	18.5	2.9	32	--
10...	1315	80.0	391	7.1	17.5	3.1	33	--
10...	1319	90.0	391	7.1	17.0	3.0	32	--
10...	1322	100	396	7.0	16.5	2.1	22	--
10...	1326	110	400	7.0	16.0	1.6	16	--
10...	1330	120	410	7.0	15.5	.6	6	--
10...	1334	130	410	7.0	15.0	.1	1	--
10...	1337	140	410	7.0	15.0	.0	0	--
10...	1341	150	410	7.0	14.5	.0	0	200

DATE	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
JAN										
25...	200	26	49	18	9.3	.3	2.0	170	17	17
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--	--
25...	200	26	49	18	9.2	.3	2.1	180	15	13
MAY										
19...	190	17	45	18	9.7	.3	2.2	170	15	14
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--
19...	190	22	49	17	9.4	.3	2.3	170	21	14
AUG										
10...	160	22	35	18	9.7	.4	2.0	140	19	15
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--	--

DATE	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
AUG									
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	18	48	19	10	.3	1.9	180	19	13

295206098115501 CANYON LAKE SITE AC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)
JAN									
25...	.2	7.9	234	.30	.56	.86	.010	<10	2
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	.30	.68	.98	.010	70	<10
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	11	220	.31	.59	.90	.010	<10	3
MAY									
19...	.3	9.3	216	.27	.76	1.0	.020	<9	<3
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	.33	.79	1.1	<.010	10	<10
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--
19...	--	11	226	.37	.96	1.3	.070	<9	22
AUG									
10...	.2	9.1	192	<.10	1.00	--	.020	8	1
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	.11	.70	.81	.030	30	20
10...	--	--	--	.26	.90	1.2	.010	20	10

DATE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN,AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)
AUG									
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	.33	.90	1.2	.030	30	50
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	13	232	.27	1.20	1.5	.020	160	130

295210098142001 CANYON LAKE SITE BR

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
JAN							
25...	1040	1.00	392	7.9	12.5	9.1	87
25...	1042	10.0	392	7.9	12.0	9.1	86
25...	1043	20.0	392	7.9	12.0	9.1	86
25...	1044	30.0	392	7.9	11.5	8.9	83
25...	1046	40.0	392	7.9	11.5	8.9	83
25...	1048	50.0	392	7.9	11.0	8.8	81
25...	1050	60.0	392	7.9	11.0	8.8	81
25...	1052	66.0	394	7.9	11.0	8.8	81

295241098132101 CANYON LAKE SITE BC

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
JAN							
25...	1016	1.00	392	7.9	12.5	9.1	87
25...	1017	10.0	392	7.9	12.5	9.1	87
25...	1018	20.0	392	7.9	12.0	9.1	86
25...	1019	30.0	392	7.9	11.5	9.1	84
25...	1020	40.0	392	7.9	11.5	9.1	84
25...	1021	50.0	392	7.9	11.0	9.1	83
25...	1022	60.0	393	7.9	10.5	9.1	83
25...	1024	70.0	398	7.9	10.5	9.1	83
25...	1026	80.0	400	7.8	10.5	9.1	83
25...	1028	90.0	408	7.8	10.0	9.1	82
25...	1030	100	435	7.8	10.0	8.8	79
25...	1032	110	435	7.8	10.0	8.8	79
25...	1034	120	440	7.8	9.5	8.8	79
25...	1036	130	442	7.8	9.5	8.8	79
25...	1038	135	442	7.9	9.5	8.8	79
MAY							
19...	1020	1.00	380	7.9	22.5	7.8	92
19...	1025	10.0	380	7.9	22.5	--	--
19...	1030	20.0	380	7.9	22.0	7.8	92
19...	1035	30.0	383	7.7	20.5	7.6	86
19...	1040	40.0	390	7.5	19.0	--	--
19...	1045	50.0	400	7.4	17.0	6.6	70
19...	1050	60.0	404	7.4	15.5	--	--
19...	1055	70.0	405	7.3	14.5	6.3	63
19...	1100	80.0	406	7.3	14.0	--	--
19...	1105	90.0	406	7.3	13.5	--	--
19...	1110	100	406	7.3	13.5	5.7	56
19...	1115	110	406	7.3	13.0	--	--
19...	1120	120	406	7.2	13.0	--	--
19...	1125	135	406	7.2	12.5	5.2	50
AUG							
10...	1356	1.00	343	7.9	27.5	6.9	88
10...	1358	20.0	343	7.9	27.5	6.9	88
10...	1400	30.0	343	7.6	27.0	6.6	85
10...	1402	40.0	370	7.0	24.5	.8	9
10...	1404	50.0	386	7.0	21.0	.4	4
10...	1406	70.0	395	7.0	18.0	.7	7
10...	1408	90.0	400	7.0	17.0	.1	1
10...	1410	110	408	7.0	16.0	.1	1
10...	1412	134	410	7.2	15.0	.1	1

295235098133501 CANYON LAKE SITE BL

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
JAN							
25...	0959	1.00	393	7.9	12.0	9.5	90
25...	1001	10.0	393	7.9	12.0	9.5	90
25...	1003	20.0	393	7.9	12.0	9.5	90
25...	1005	30.0	393	7.9	11.5	9.6	90
25...	1007	40.0	393	7.9	11.5	9.6	90
25...	1010	51.0	395	8.0	11.5	9.3	87

CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295240098152001 CANYON LAKE SITE CC

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
JAN							
25...	1100	1.00	392	7.9	12.5	9.0	86
25...	1102	10.0	392	7.9	12.0	9.0	85
25...	1104	20.0	392	7.9	11.5	8.9	83
25...	1106	30.0	392	7.9	11.5	8.8	82
25...	1108	40.0	392	7.9	11.0	8.8	81
25...	1110	50.0	392	7.9	11.0	8.8	81
25...	1112	60.0	395	7.9	11.0	8.8	81
25...	1114	69.0	395	7.9	11.0	8.8	81
MAY							
17...	1349	1.00	379	8.0	22.5	7.4	87
17...	1351	10.0	381	8.0	22.0	7.3	86
17...	1353	20.0	381	8.0	22.0	7.5	88
17...	1355	30.0	381	7.9	22.0	7.6	89
17...	1357	40.0	375	7.7	20.5	7.2	82
17...	1359	50.0	404	7.4	17.0	5.8	62
17...	1402	60.0	404	7.4	16.0	5.0	52
17...	1404	70.0	404	7.3	14.5	3.7	37
17...	1407	80.0	404	7.4	14.0	--	--
AUG							
09...	1325	1.00	345	7.9	29.5	7.5	100
09...	1327	10.0	345	7.9	28.5	7.5	97
09...	1329	20.0	345	7.7	28.0	7.5	97
09...	1331	30.0	355	7.1	26.0	5.0	62
09...	1333	40.0	374	6.5	24.5	1.2	15
09...	1335	50.0	393	6.4	21.0	1.2	14
09...	1337	60.0	400	6.5	20.0	1.2	13
09...	1339	70.0	400	6.5	18.5	1.2	13
09...	1341	76.0	400	6.6	18.0	1.2	13

295349098143101 CANYON LAKE SITE DC

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)
JAN							
25...	1122	1.00	392	7.9	12.5	8.9	85
25...	1124	10.0	392	7.9	12.5	8.9	85
25...	1126	20.0	392	7.9	12.0	8.8	83
25...	1128	30.0	392	7.9	11.5	8.8	82
25...	1130	40.0	392	7.9	11.5	8.7	81
25...	1132	50.0	394	7.9	11.0	8.7	80
25...	1134	60.0	394	7.8	11.0	8.7	80
25...	1137	70.0	394	7.8	10.5	8.7	79
25...	1140	80.0	445	7.8	10.0	8.6	77
25...	1143	90.0	452	7.8	10.0	8.5	77
25...	1146	98.0	476	7.7	10.0	8.1	73
MAY							
17...	1259	1.00	381	8.0	22.5	7.5	88
17...	1302	10.0	381	8.0	22.5	7.2	85
17...	1306	20.0	372	7.8	22.0	7.2	85
17...	1310	30.0	353	7.6	20.5	6.4	73
17...	1314	40.0	404	7.5	16.5	5.7	60
17...	1318	50.0	404	7.4	15.5	6.8	69
17...	1322	60.0	404	7.3	15.0	6.3	64
17...	1326	70.0	404	7.2	14.0	4.5	45
17...	1330	80.0	404	7.1	14.0	3.5	35
17...	1334	91.0	404	7.1	14.0	3.4	34
AUG							
10...	1420	1.00	341	7.9	28.0	6.8	86
10...	1422	20.0	342	7.8	28.0	6.3	82
10...	1424	30.0	343	7.6	27.0	5.9	76
10...	1426	40.0	370	7.0	25.0	.9	11
10...	1428	50.0	391	7.0	21.0	.1	1
10...	1430	70.0	407	7.1	18.0	.1	1
10...	1432	88.0	417	7.2	17.5	.1	1

295329098151001 CANYON LAKE SITE EC

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TRANSPARENCY (SECCHI DISK) (M)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN										
25...	1155	1.00	393	7.9	13.0	2.30	8.8	85	<1	K2
25...	1157	10.0	393	7.9	12.5	--	8.8	84	--	--
25...	1200	20.0	393	7.9	12.5	--	8.8	84	--	--
25...	1202	30.0	393	7.9	11.5	--	8.8	82	--	--
25...	1205	40.0	395	7.9	11.0	--	8.8	81	--	--
25...	1207	50.0	395	7.9	10.5	--	8.8	80	--	--
25...	1210	60.0	399	7.8	10.5	--	8.7	79	--	--
25...	1213	70.0	432	7.7	9.5	--	8.6	77	--	--
25...	1215	80.0	480	7.7	9.5	--	8.6	77	--	--
25...	1217	90.0	484	7.7	9.0	--	8.6	75	--	--
25...	1220	101	485	7.7	9.0	--	8.6	75	--	--
MAY										
17...	1211	1.00	379	8.0	22.5	1.60	7.1	84	K10	K20
17...	1215	10.0	379	8.0	22.5	--	6.9	81	--	--
17...	1218	20.0	379	7.9	22.0	--	6.9	80	--	--
17...	1221	30.0	379	7.9	22.0	--	6.9	80	--	--
17...	1225	40.0	357	7.5	19.5	--	6.2	69	--	--
17...	1228	50.0	404	7.4	16.5	--	5.3	55	--	--
17...	1232	60.0	404	7.3	15.5	--	4.7	48	--	--
17...	1235	70.0	411	7.2	14.5	--	4.4	44	--	--
17...	1239	80.0	411	7.2	13.5	--	4.2	41	--	--
17...	1242	90.0	411	7.2	13.5	--	3.6	35	--	--
17...	1246	102	411	7.4	13.5	--	3.2	31	--	--
AUG										
10...	1055	1.00	346	7.8	28.5	--	6.1	80	K2	K13
10...	1058	10.0	346	7.7	28.5	--	6.0	79	--	--
10...	1100	20.0	346	7.7	28.0	--	5.9	77	--	--
10...	1102	30.0	346	7.5	27.5	--	5.6	72	--	--
10...	1104	40.0	368	6.9	25.5	--	.8	10	--	--
10...	1106	45.0	389	6.9	25.5	--	.4	5	--	--
10...	1108	50.0	397	6.8	21.5	--	.2	2	--	--
10...	1110	60.0	410	6.8	19.5	--	.2	2	--	--
10...	1112	70.0	410	6.8	18.5	--	.1	1	--	--
10...	1114	80.0	410	6.9	17.5	--	.1	1	--	--
10...	1116	90.0	410	6.9	17.5	--	.1	1	--	--
10...	1118	98.0	410	7.0	17.0	--	.1	1	--	--

DATE	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)
JAN									
25...	190	10	48	17	8.9	.3	1.9	180	14
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	230	9	57	21	11	.3	1.5	220	21
MAY									
17...	180	10	44	17	9.2	.3	2.1	170	10
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	190	25	50	17	9.3	.3	2.2	170	20
AUG									
10...	160	22	35	18	9.9	.4	2.0	140	20
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	200	13	50	19	9.7	.3	1.9	190	17

295329098151001 CANYON LAKE SITE EC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)
JAN									
25...	14	11	223	.30	.44	.74	.010	<10	<1
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	.33	.46	.79	.010	10	<10
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	15	9.4	268	.86	.65	1.5	.010	12	6
MAY									
17...	13	9.1	207	.27	.79	1.1	<.010	<9	<3
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	.32	.93	1.3	<.010	50	10
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	.39	--	--	.100	50	10
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	14	11	226	.39	.81	1.2	<.010	14	15
AUG									
10...	13	9.8	192	<.10	.90	--	.030	28	4
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	<.10	.90	--	.010	50	20
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	<.10	.80	--	.010	60	90
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	13	13	238	<.10	.80	--	.010	150	190

295349098173701 CANYON LAKE SITE FC

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SAMPLING DEPTH (FEET)	SPECIFIC CONDUCTANCE (UMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	TRANSPARENCY (SECCHI DISK) (M)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN										
25...	1240	1.00	397	7.9	13.0	1.50	8.7	84	K1	K16
25...	1241	2.50	--	--	--	--	--	--	--	--
25...	1243	10.0	397	7.9	12.5	--	8.7	83	--	--
25...	1246	20.0	397	7.8	11.5	--	8.7	81	--	--
25...	1249	30.0	416	7.8	11.0	--	8.6	79	--	--
25...	1252	40.0	425	7.7	11.0	--	8.4	77	--	--
25...	1255	50.0	493	7.6	9.5	--	9.3	83	--	--
25...	1300	60.0	503	7.6	9.5	--	9.0	80	--	--
25...	1306	66.0	504	7.8	9.5	--	8.8	79	--	--
MAY										
17...	1120	1.00	394	7.8	23.0	1.00	6.3	75	K15	K28
17...	1122	1.70	--	--	--	--	--	--	--	--
17...	1124	10.0	405	7.7	22.5	--	5.9	69	--	--
17...	1128	20.0	358	7.6	22.0	--	5.5	64	--	--
17...	1132	30.0	354	7.4	20.5	--	5.2	58	--	--
17...	1136	40.0	315	7.3	20.0	--	5.1	57	--	--
17...	1142	50.0	364	7.2	18.0	--	5.0	54	--	--
17...	1147	60.0	442	7.2	16.0	--	4.0	41	--	--
17...	1154	70.0	500	7.2	15.0	--	.7	7	--	--
AUG										
10...	1136	1.00	360	7.8	28.5	1.20	6.1	80	K1	<1
10...	1138	10.0	360	7.8	28.5	--	6.0	79	--	--
10...	1140	20.0	362	7.6	28.0	--	5.4	70	--	--
10...	1142	30.0	375	7.2	27.5	--	3.0	38	--	--
10...	1144	40.0	393	6.8	24.5	--	.2	2	--	--
10...	1146	50.0	450	6.7	21.0	--	.2	2	--	--
10...	1148	60.0	450	6.7	19.5	--	.2	2	--	--
10...	1150	68.0	450	6.9	19.0	--	.2	2	--	--

295349098173701 CANYON LAKE SITE FC--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)
JAN									
25...	200	26	49	18	9.1	.3	2.0	170	14
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	240	13	61	22	11	.3	1.4	230	22
MAY									
17...	180	15	46	17	9.5	.3	2.1	170	9.0
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	210	14	56	18	10	.3	2.0	200	12
AUG									
10...	170	18	36	19	11	.4	2.0	150	21
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	220	0	60	17	8.9	.3	1.8	220	13

DATE	CHLORIDE, DISSOLVED (MG/L AS CL)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 TOTAL (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	NITROGEN, TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	IRON, DISSOLVED (UG/L AS FE)	MANGANESE, DISSOLVED (UG/L AS MN)
JAN									
25...	12	11	217	.31	.55	.86	.010	<10	<1
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	.97	.72	1.7	.010	30	<10
25...	--	--	--	--	--	--	--	--	--
25...	--	--	--	--	--	--	--	--	--
25...	15	9.5	280	1.0	.76	1.8	.010	<10	3
MAY									
17...	14	9.2	209	.27	1.10	1.4	<.010	<9	<3
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	.33	1.10	1.4	.020	40	<10
17...	--	--	--	--	--	--	--	--	--
17...	--	--	--	.44	.85	1.3	<.010	30	30
17...	10	11	240	.36	.89	1.3	.040	250	120
AUG									
10...	14	11	204	<.10	1.00	--	.020	10	3
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	<.10	.90	--	.010	70	30
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	<.10	1.00	--	.020	80	200
10...	--	--	--	--	--	--	--	--	--
10...	--	--	--	--	--	--	--	--	--
10...	12	13	258	<.10	1.50	--	.020	210	260

CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295206098115501 CANYON LAKE SITE AC

PHYTOPLANKTON ANALYSES, OCTOBER 1981 TO AUGUST 1982

DATE	JAN 25,82		MAY 19,82		AUG 10,82	
TIME	1332		1156		1247	
TOTAL CELLS/ML	250		590		490	
DIVERSITY: DIVISION	1.0		1.3		1.0	
.CLASS	1.0		1.3		1.0	
..ORDER	1.8		1.9		1.6	
...FAMILY	1.8		2.6		1.6	
....GENUS	1.8		2.6		1.6	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)						
.BACILLARIOPHYCEAE						
..BACILLARIALES						
...NITZSCHIACEAE						
....NITZSCHIA	27	11	--	-	--	-
..EUPODISCALES						
...COSCINODISCACEAE						
....CYCLOTELLA	68#	28	29	5	--	-
..FRAGILARIALES						
...FRAGILARIACEAE						
....SYNEDRA	--	-	--	-	130#	26
..NAVICULALES						
...NAVICULACEAE						
....NAVICULA	41#	17	--	-	170#	35
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...COCCOMYXACEAE						
....ELAKATOTHRIX	--	-	29	5	--	-
...HYDRODICTYACEAE						
....PEDIASTRUM	--	-	200#	34	--	-
...SCENEDESMACEAE						
....SCENEDESMUS	--	-	86	15	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	100#	17	--	-
CHRYSOPHYTA						
.CHRYSOPHYCEAE						
..OCHROMONADALES						
...DINOBRYACEAE						
....DINOBRYON	--	-	86	15	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..OSCILLATORIALES						
...OSCILLATORIACEAE						
....OSCILLATORIA	110#	44	--	-	--	-
PYRRHOPHYTA (FIRE ALGAE)						
.DINOPHYCEAE						
..DINOKONTAE						
...CERATIACEAE						
....CERATIUM	--	-	14	2	--	-
...PERIDINIACEAE						
....PERIDINIUM	--	-	43	7	190#	38

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

295349098173701 CANYON LAKE SITE FC

PHYTOPLANKTON ANALYSES, OCTOBER 1981 TO AUGUST 1982

DATE	JAN 25,82		MAY 17,82		AUG 10,82	
TIME	1241		1122		1137	
TOTAL CELLS/ML	180		1100		1800	
DIVERSITY: DIVISION	0.9		2.4		1.7	
.CLASS	0.9		2.4		1.7	
..ORDER	0.9		2.8		2.6	
...FAMILY	0.9		3.2		2.6	
....GENUS	0.9		3.3		2.9	
ORGANISM	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT	CELLS /ML	PER-CENT
BACILLARIOPHYTA (DIATOMS)						
.BACILLARIOPHYCEAE						
..BACILLARIALES						
...NITZSCHIACEAE						
....NITZSCHIA	--	-	28	3	--	-
..EUPODISCALES						
...COSCINODISCACEAE						
....CYCLOTELLA	--	-	200#	18	290#	16
....MELOSIRA	--	-	--	-	230	13
..FRAGILARIALES						
...FRAGILARIACEAE						
....SYNEDRA	--	-	--	-	43	2
..NAVICULALES						
...NAVICULACEAE						
....NAVICULA	55#	31	--	-	200	11
CHLOROPHYTA (GREEN ALGAE)						
.CHLOROPHYCEAE						
..CHLOROCOCCALES						
...CHLOROCOCCACEAE						
....SCHROEDERIA	120#	69	--	-	--	-
....TETRAEDRON	--	-	42	4	360#	20
...OOCYSTACEAE						
....ANKISTRODESMUS	--	-	42	4	--	-
....OOCYSTIS	--	-	28	3	--	-
....TREUBARIA	--	-	14	1	--	-
...SCENEDESMACEAE						
....SCENEDESMUS	--	-	140	13	--	-
..VOLVOCALES						
...CHLAMYDOMONADACEAE						
....CHLAMYDOMONAS	--	-	84	8	58	3
..ZYGNEMATALES						
...DESMIDIACEAE						
....COSMARIUM	--	-	--	-	170	10
CHRYSOPHYTA						
.CHRYSOPHYCEAE						
..OCHROMONADALES						
...OCHROMONADACEAE						
....OCHROMONAS	--	-	170#	15	--	-
...SYNURACEAE						
....MALLOMONAS	--	-	14	1	--	-
.XANTHOPHYCEAE						
..MISCHOCOCCALES						
...SCIADACEAE						
....OPHIOCYTIUM	--	-	14	1	--	-
CRYPTOPHYTA (CRYPTOMONADS)						
.CRYPTOPHYCEAE						
..CRYPTOMONADALES						
...CRYPTOMONADACEAE						
....CRYPTOMONAS	--	-	70	6	--	-
CYANOPHYTA (BLUE-GREEN ALGAE)						
.CYANOPHYCEAE						
..CHROOCOCCALES						
...CHROOCOCCACEAE						
....ANACYSTIS	--	-	210#	19	--	-
EUGLENOPHYTA (EUGLENOIDS)						
.EUGLENOPHYCEAE						
..EUGLENALES						
...EUGLENACEAE						
....EUGLENA	--	-	56	5	--	-
....TRACHELOMONAS	--	-	--	-	43	2
PYRRHOPHYTA (FIRE ALGAE)						
.DINOPHYCEAE						
..DINOKONTAE						
...PERIDINIACEAE						
....PERIDINIUM	--	-	--	-	360#	20

NOTE: # - DOMINANT ORGANISM; EQUAL TO OR GREATER THAN 15%
* - OBSERVED ORGANISM, MAY NOT HAVE BEEN COUNTED; LESS THAN 1/2%

08167800 GUADALUPE RIVER AT SATTLER, TX

LOCATION.--Lat 29°51'32", long 98°10'47", Comal County, Hydrologic Unit 12100202, on right bank 200 ft (61 m) upstream from Horseshoe Falls, 0.8 mi (1.3 km) north of Sattler, 1.8 mi (2.9 km) downstream from Canyon Dam, 2.3 mi (3.7 km) upstream from Heiser Hollow, 11.2 mi (18.0 km) north of New Braunfels, and at mile 301.2 (484.6 km).

DRAINAGE AREA.--1,436 mi² (3,719 km²), of which 1,432 mi² (3,709 km²) is above Canyon Dam.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1960 to current year.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 742.24 ft (226.235 m) National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Water-discharge records good. Flow completely regulated since July 21, 1962, by Canyon Lake (station 08167700) 1.8 mi (2.9 km) upstream. Small diversions above station for irrigation. Gage-height telemeter located at station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years (water years 1962-82) since regulation began at Canyon Lake, 405 ft³/s (11.47 m³/s), 293,400 acre-ft/yr (362 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,800 ft³/s (589 m³/s) Oct. 29, 1960, gage height, 12.20 ft (3.719 m). Maximum discharge since closure of Canyon Dam on July 21, 1962, 5,850 ft³/s (166 m³/s) Aug. 5, 1978, gage height, 8.31 ft (2.533 m); no flow July 31 to Aug. 6, 1962 (result of closure of Canyon Dam), and part of Jan. 29, 30, Feb. 1, 1965 (result of closure while constructing present control).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1869 (stage unknown) has not been exceeded since that date; flood in July 1900 (stage unknown) exceeded 39 ft (11.9 m); maximum stage since at least 1904, 39 ft (11.9 m) in July 1932 and June 1935, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 996 ft³/s (26.8 m³/s) Oct. 15-31, gage height, 6.12 ft (1.865 m); minimum daily, 79 ft³/s (2.24 m³/s) Sept. 8-12, 15-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	241	206	772	635	217	241	241	212	755	403	101	92
2	241	206	772	635	269	241	241	212	755	408	101	92
3	241	588	772	635	287	241	241	212	755	410	101	92
4	241	936	772	416	237	241	241	212	580	410	102	91
5	241	936	772	244	237	241	241	212	405	410	99	90
6	245	868	772	244	237	241	241	214	405	410	99	90
7	241	772	745	244	237	241	241	212	405	410	99	86
8	241	772	657	244	237	241	241	212	400	338	106	79
9	243	772	642	244	237	242	241	212	367	215	111	79
10	242	772	642	244	237	244	241	212	313	212	100	79
11	244	772	642	242	237	244	241	212	313	212	99	79
12	244	764	642	243	237	244	241	212	313	212	99	79
13	244	763	642	244	234	244	241	250	313	212	99	80
14	244	763	642	244	234	244	228	365	313	212	99	80
15	524	763	637	244	234	244	212	746	313	212	98	79
16	946	763	635	244	236	244	212	752	318	212	130	79
17	946	763	635	244	237	244	212	755	318	212	93	79
18	946	763	635	244	237	244	212	755	349	212	93	79
19	946	763	635	244	237	244	212	755	400	153	93	79
20	946	763	635	244	237	244	212	755	400	105	93	79
21	946	763	635	244	237	244	212	755	400	93	93	79
22	946	763	635	241	239	244	212	755	400	100	92	79
23	946	763	635	241	241	243	212	755	400	102	92	79
24	946	763	635	241	241	241	212	755	400	104	92	79
25	946	763	635	241	241	241	212	755	402	104	92	79
26	946	767	635	222	241	241	212	755	405	104	92	79
27	946	772	635	266	241	241	212	755	405	104	92	79
28	946	772	635	268	241	241	212	755	405	102	92	79
29	946	772	635	265	---	241	212	755	405	102	92	79
30	946	772	635	303	---	241	212	755	291	101	92	79
31	562	---	635	244	---	241	---	755	---	101	92	---
TOTAL	18669	22138	20683	8998	6714	7513	6753	15984	12403	6697	3028	2452
MEAN	602	738	667	290	240	242	225	516	413	216	97.7	81.7
MAX	946	936	772	635	287	244	241	755	755	410	130	92
MIN	241	206	635	222	217	241	212	212	291	93	92	79
AC-FT	37030	43910	41020	17850	13320	14900	13390	31700	24600	13280	6010	4860

CAL YR 1981 TOTAL 287295 MEAN 787 MAX 5420 MIN 139 AC-FT 569800
WTR YR 1982 TOTAL 132032 MEAN 362 MAX 946 MIN 79 AC-FT 261900

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical and biochemical analyses: October 1980 to September 1982 (discontinued).

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	HARD-NESS (MG/L AS CACO3)
OCT 21...	1404	946	333	--	23.5	--	--	--	--	--	--
JAN 25...	1522	241	394	8.2	10.5	5	4.9	10.3	94	.7	190
MAY 17...	1358	769	408	--	12.5	--	--	--	--	--	--
19...	1448	746	403	7.9	12.5	5	.70	10.4	100	1.4	190
JUN 29...	0838	405	406	--	13.5	--	--	--	--	3.0	--
AUG 09...	1000	99	390	7.9	14.5	5	1.7	10.0	100	1.0	200

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
OCT 21...	--	--	--	--	--	--	150	--	--	--	--
JAN 25...	24	48	18	9.4	.3	2.0	170	16	13	.2	11
MAY 17...	--	--	--	--	--	--	--	--	--	--	--
19...	10	48	17	9.2	.3	2.2	180	11	10	.3	11
JUN 29...	--	--	--	--	--	--	--	--	--	--	--
AUG 09...	29	50	18	9.7	.3	2.0	170	20	14	.2	11

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
OCT 21...	--	--	--	--	--	--	--	--	--	--
JAN 25...	220	35	5	<.020	.30	.120	.40	.52	.010	--
MAY 17...	--	--	--	--	--	--	--	--	--	--
19...	217	18	2	--	--	--	--	--	--	2.4
JUN 29...	--	--	--	--	--	--	--	--	--	--
AUG 09...	227	7	3	<.020	.33	.100	.60	.70	.010	2.8

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN 25...	1522	1	31	<1	<10	1	<10
MAY 19...	1448	1	32	<3	<10	1	<9
AUG 09...	1000	1	34	<1	<10	1	<3

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 25...	2	2	<.1	<1	<1	<3
MAY 19...	1	<3	<.1	<1	<1	<12
AUG 09...	<1	34	<.1	<1	<1	<3

08168000 HUECO SPRINGS NEAR NEW BRAUNFELS, TX

LOCATION.--Lat 29°45'34", long 98°08'24", Comal County, Hydrologic Unit 12100202, two springs located 1,700 ft (520 m) upstream from mouth of unnamed tributary which enters the Guadalupe River at Slumber Falls, and 4.2 mi (6.8 km) north of New Braunfels.

DRAINAGE AREA.--Not applicable.

PERIOD OF RECORD.--August 1944 to current year. Miscellaneous measurements only.

GAGE.--None.

REMARKS.--Discharge represents flow from springs. Surface runoff from precipitation is excluded. No diversion above station.

EXTREMES FOR PERIOD OF RECORD.--Maximum spring discharge measured 131 ft^3/s (3.71 m^3/s) Jan. 21, 1968; no flow at times in 1948-49, 1951-57, 1963-64, 1967.

DISCHARGE MEASUREMENTS, IN CUBIC FEET PER SECOND
WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
Oct. 10, 1981	35	Apr. 5, 1982	12	Aug. 9, 1982	13
Dec. 4	34	May 20	77	Sept. 20	9.6
Feb. 23, 1982	15	June 29	26		

08168500 GUADALUPE RIVER ABOVE COMAL RIVER AT NEW BRAUNFELS, TX

LOCATION.--Lat 29°42'53", long 98°06'35", Comal County, Hydrologic Unit 12100202, on right bank at New Braunfels, 1.1 mi (1.8 km) upstream from Comal River, 21.9 mi (35.2 km) downstream from Canyon Lake, and at mile 281.1 (452.3 km).

DRAINAGE AREA.--1,518 mi² (3,932 km²).

PERIOD OF RECORD.--December 1927 to current year.

REVISED RECORDS.--WSP 898: 1935. WSP 1562: 1932. WSP 2123: Drainage area.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 586.65 ft (178.811 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Small diversions for irrigation below station 08167800 and above this station. Since July 21, 1962, flow is largely regulated by Canyon Lake (station 08167700) 21.9 mi (35.2 km) upstream. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--34 years (water years 1929-62) prior to regulation by Canyon Lake, 372 ft³/s (10.54 m³/s), 269,500 acre-ft/yr (332 hm³/yr); 20 years (water year 1963-82) regulated, 497 ft³/s (14.08 m³/s), 360,100 acre-ft/yr (444 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 101,000 ft³/s (2,860 m³/s) June 15, 1935, gage height, 32.95 ft (10.043 m); no flow July 8, 9, July 17 to Aug. 20, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1845, 38 ft (11.6 m) July 8, 1869, and in December 1913, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,200 ft³/s (176 m³/s) Oct. 31 at 1400 hours, gage height, 6.91 ft (2.106 m); minimum daily, 92 ft³/s (2.61 m³/s) Sept. 9, 10, 22, 23, 26-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	302	410	859	678	258	269	263	226	882	368	119	105
2	299	357	859	678	300	271	266	227	882	410	118	107
3	299	535	859	678	315	275	263	227	882	410	118	106
4	299	1120	859	587	275	275	263	225	802	409	123	109
5	299	1120	859	287	276	272	261	228	468	406	120	108
6	325	1080	859	287	275	270	257	324	463	403	118	105
7	315	917	857	283	275	269	262	259	458	402	119	104
8	317	938	734	281	275	269	261	249	457	399	119	97
9	328	917	698	281	274	270	263	244	451	235	136	92
10	318	911	698	281	275	271	263	242	372	223	144	92
11	318	908	698	281	275	270	262	242	365	223	124	94
12	312	906	697	295	275	269	260	289	380	223	119	94
13	312	906	692	283	275	269	260	732	365	222	118	99
14	315	906	694	281	275	269	260	435	358	222	117	112
15	374	906	688	281	275	269	234	935	357	222	117	97
16	1030	906	688	281	269	267	234	941	363	221	136	98
17	1060	894	688	281	269	270	221	927	351	221	119	99
18	1060	889	688	282	269	269	220	919	351	226	108	96
19	1060	880	688	285	269	269	223	917	428	218	109	94
20	1060	876	688	287	276	269	225	914	426	132	107	103
21	1060	871	688	287	270	269	223	913	423	122	106	94
22	1060	870	686	287	269	267	234	906	420	117	106	92
23	1050	870	680	287	269	270	227	906	418	125	106	92
24	1050	870	678	287	269	269	229	924	418	125	102	94
25	1050	868	680	287	269	265	223	906	416	123	103	93
26	1050	864	679	274	276	264	223	904	414	121	104	92
27	1050	859	679	307	269	269	223	905	413	121	102	92
28	1050	859	679	303	269	264	223	900	410	121	102	92
29	1050	859	678	305	---	265	223	894	410	121	101	92
30	1060	858	684	330	---	268	225	892	363	120	99	92
31	1610	---	680	281	---	265	---	888	---	119	103	---
TOTAL	22142	25930	22541	10393	7685	8336	7274	19640	13966	7130	3542	2936
MEAN	714	864	727	335	274	269	242	634	466	230	114	97.9
MAX	1610	1120	859	678	315	275	266	941	882	410	144	112
MIN	299	357	678	274	258	264	220	225	351	117	99	92
AC-FT	43920	51430	44710	20610	15240	16530	14430	38960	27700	14140	7030	5820

CAL YR 1981 TOTAL 331166 MEAN 907 MAX 5920 MIN 223 AC-FT 656900
WTR YR 1982 TOTAL 151515 MEAN 415 MAX 1610 MIN 92 AC-FT 300500

08169000 COMAL RIVER AT NEW BRAUNFELS, TX

LOCATION.--Lat 29°42'21", long 98°07'20", Comal County, Hydrologic Unit 12100202, on right bank 200 ft (61 m) upstream from San Antonio Street viaduct in New Braunfels and 1.1 mi (1.8 km) upstream from mouth.

DRAINAGE AREA.--130 mi² (337 km²). Normal flow of river comes from springs; drainage area not applicable.

PERIOD OF RECORD.--1882 to current year (1882 to November 1927, discharge measurements only).

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Concrete control since Oct. 1, 1955. Datum of gage is 582.80 ft (177.637 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. The flow from Comal Springs emerges from the Edwards and associated limestones in the Balcones Fault Zone. Except during periods of rainfall, flow of river is primarily from Comal Springs about 1.0 mi (1.6 km) upstream. Diurnal fluctuations from steam powerplant 0.5 mi (0.8 km) upstream. Flow is affected at times by discharge from flood-detention pools of five floodwater-retarding structures with combined detention capacity of 17,580 acre-ft (21.7 hm³). These structures control runoff from 74.6 mi² (193 km²). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--50 years (water years 1933-82), 299 ft³/s (8.468 m³/s), 216,600 acre-ft/yr (267 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,800 ft³/s (1,720 m³/s) May 11, 1972, gage height, 36.55 ft (11.140 m), from floodmark, from rating curve extended above 13,000 ft³/s (368 m³/s) on basis of contractedopening measurements on Blieders and Dry Comal Creeks and unit rainfall-runoff studies; no flow from Comal Springs from June 13 to Nov. 3, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood information begins with flood of July 8, 1869, which reached a stage of 36.91 ft (11.250 m), from painted and dated marks in old Remmert Brewery 0.5 mi (0.8 km) downstream; the flood of Oct. 17, 1870, reached a stage of 37.65 ft (11.476 m) at same site (probably some backwater from Guadalupe River).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,100 ft³/s (31.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1500	1,110	31.4	5.69	1.734
May 6	0800	*5,040	143	11.50	3.505
May 13	1530	1,140	32.3	5.75	1.753

Minimum daily discharge, 201 ft³/s (5.69 m³/s) Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	304	485	337	330	326	304	290	290	322	279	234	211
2	299	418	335	330	326	308	294	294	322	274	234	208
3	299	355	340	330	326	308	286	296	322	274	230	208
4	299	335	335	344	322	308	290	294	317	270	226	208
5	299	330	335	330	322	304	290	294	317	278	226	208
6	308	335	340	330	322	304	286	1520	312	278	219	208
7	308	335	340	330	322	304	290	335	312	274	219	208
8	308	365	340	326	322	304	290	312	304	274	222	211
9	308	355	340	330	322	304	290	312	304	266	234	211
10	308	345	335	330	322	304	294	312	299	266	230	204
11	308	335	335	335	322	299	290	312	294	266	238	204
12	308	335	335	335	322	304	290	362	312	262	238	204
13	308	335	335	326	312	304	290	615	304	262	230	201
14	308	330	340	330	312	304	286	360	308	262	234	215
15	308	335	340	330	308	299	286	335	308	262	234	208
16	308	335	335	326	308	294	290	330	304	258	234	215
17	312	335	340	326	299	294	282	330	308	258	226	215
18	312	335	335	326	308	294	290	322	299	254	230	211
19	312	335	335	326	304	290	294	322	299	254	230	215
20	312	335	335	330	312	286	290	326	299	250	226	261
21	312	335	335	326	308	290	290	322	299	250	226	219
22	322	340	335	326	308	290	294	322	290	250	226	222
23	317	335	335	326	304	290	294	322	290	246	226	222
24	317	335	340	326	307	290	294	335	290	250	215	219
25	317	335	335	326	304	290	294	326	282	246	219	222
26	317	335	335	322	308	290	299	330	282	246	226	222
27	330	335	335	322	304	294	299	326	278	242	215	222
28	317	335	330	322	304	290	294	322	282	238	215	219
29	317	335	330	322	---	294	294	322	274	238	211	219
30	317	345	335	326	---	290	294	322	278	238	211	215
31	547	---	330	322	---	290	---	322	---	234	211	---
TOTAL	9866	10368	10417	10166	8786	9218	8734	11444	9011	7999	6995	6435
MEAN	318	346	336	328	314	297	291	369	300	258	226	215
MAX	547	485	340	344	326	308	299	1520	322	279	238	261
MIN	299	330	330	322	299	286	282	290	274	234	211	201
AC-FT	19570	20560	20660	20160	17430	18280	17320	22700	17870	15870	13870	12760

CAL YR 1981 TOTAL 118208 MEAN 324 MAX 1510 MIN 270 AC-FT 234500
WTR YR 1982 TOTAL 109439 MEAN 300 MAX 1520 MIN 201 AC-FT 217100

GUADALUPE RIVER BASIN

COMAL SPRINGS AT NEW BRAUNFELS, TX

LOCATION.--Lat 29°42'21", long 98°07'20", Comal County, Hydrologic Unit 12100202, on right bank 200 ft (61 m) upstream from San Antonio Street viaduct in New Braunfels and 1.1 mi (1.8 km) upstream from mouth.

DRAINAGE AREA.--Not applicable. Flow at station has been corrected to reflect only flow from Comal Springs.

PERIOD OF RECORD.--1882 to current year (1882 to November 1927, discharge measurements only).

GAGE.--Water-stage recorder. Concrete control since Oct. 1, 1955. Datum of gage is 582.80 ft (177.637 m) National Geodetic Vertical Datum of 1929.

REMARKS.--The flow from Comal Springs emerges from the Edwards and associated limestones in the Balcones Fault Zone. Except during period of rainfall, flow of river is primarily from Comal Springs about 1.0 mi (1.6 km) upstream. Flow at gaging station 08169000 Comal River at New Braunfels, Tex. has been corrected to reflect only that flow from Comal Springs.

AVERAGE DISCHARGE.--55 years (water years 1928-82), 290 ft^3/s (8.213 m^3/s), 210,100 acre-ft/yr (259 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge, 534 ft^3/s (15.121 m^3/s) Oct. 16, 1973; no flow June 13 to Nov. 4, 1956.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	304	440	337	330	326	304	290	290	322	279	234	211
2	299	418	335	330	326	308	294	294	322	274	234	208
3	299	355	340	330	326	308	286	296	322	274	230	208
4	299	335	335	333	322	308	290	294	317	270	226	208
5	299	330	335	330	322	304	290	294	317	278	226	208
6	308	335	340	330	322	304	286	360	312	278	219	208
7	308	335	340	330	322	304	290	335	312	274	219	208
8	308	355	340	326	322	304	290	312	304	274	222	211
9	308	355	340	330	322	304	290	312	304	266	234	211
10	308	345	335	330	322	304	294	312	299	266	230	204
11	308	335	335	335	322	299	290	312	294	266	238	204
12	308	335	335	335	317	304	290	330	308	262	238	204
13	308	335	335	326	312	304	290	355	304	262	230	201
14	308	330	340	330	312	304	286	355	308	262	234	215
15	308	335	340	330	308	299	286	330	308	262	234	208
16	308	335	335	326	308	294	290	330	304	258	234	215
17	312	335	335	326	299	294	282	330	308	258	226	215
18	312	335	335	326	308	294	290	322	299	254	230	211
19	312	335	335	326	304	290	294	322	299	254	230	215
20	312	335	335	330	312	286	290	326	299	250	226	230
21	312	335	335	326	308	290	290	322	299	246	226	219
22	322	340	335	326	308	290	294	322	290	250	226	222
23	317	335	335	326	304	290	294	322	290	246	226	222
24	317	335	340	326	304	290	294	335	290	250	215	219
25	317	335	335	326	304	290	294	326	282	246	219	222
26	317	335	335	322	308	290	299	330	282	246	226	222
27	322	335	335	322	304	294	299	326	278	242	215	222
28	317	335	330	322	304	290	294	322	282	238	215	219
29	317	335	330	322	--	294	294	322	274	238	211	219
30	317	345	335	326	--	290	294	322	278	238	211	215
31	380	--	330	322	--	290	--	322	--	234	211	--
TOTAL	9,691	10,313	10,412	10,155	8,778	9,218	8,734	9,982	9,007	7,995	6,995	6,404
MEAN	313	344	336	328	314	297	291	322	300	258	226	213
MAX	380	440	340	335	326	308	299	360	322	279	238	230
MIN	299	330	330	322	299	286	282	290	274	234	211	201

CAL YR 1981 TOTAL 115,296 MEAN 316 MAX 478 MIN 270 AC-FT 228,700
WTR YR 1982 TOTAL 107,684 MEAN 295 MAX 440 MIN 201 AC-FT 214,000

08170000 SAN MARCOS RIVER SPRING FLOW AT SAN MARCOS, TX

LOCATION.--Lat 29°52'06", long 97°55'38", Hays County, Hydrologic Unit 12100203, on left bank 0.7 mi (1.1 km) downstream from bridge on Interstate Highway 35 and U.S. Highway 81, 1.2 mi (1.9 km) southeast of courthouse in San Marcos, and 2.1 mi (3.4 km) upstream from Blanco River.

DRAINAGE AREA.--93.0 mi² (240.9 km²). Normal flow of river comes from springs, drainage area of stream not applicable.

PERIOD OF RECORD.--May 1956 to current year. June 1915 to January 1916, March 1916 to September 1921, and May to September 1956, published as San Marcos River at San Marcos; records include some surface runoff. Periodic measurements of spring flow were made at this location outside periods of records since Nov. 14, 1894, and are published as miscellaneous measurements.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 536.82 ft (163.623 m) National Geodetic Vertical Datum of 1929. June 10, 1915, to Jan. 19, 1916, nonrecording gage at site 1.2 mi (1.9 km) upstream, and Mar. 13, 1916, to Sept. 7, 1921, water-stage recorder near present site, datum relations unknown.

REMARKS.--Records good. Flow slightly regulated by utilities dam about 1.5 mi (2.4 km) upstream. Entire flow of river is from San Marcos Springs, about 1.8 mi (2.9 km) upstream, except during period of local runoff. Springs emerge from the Edwards and associated limestones in the Balcones Fault Zone. Small diversion for operation of State fish hatchery, some of which is returned above gage. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years (water years 1957-82), 167 ft³/s (4.729 m³/s), 121,000 acre-ft/yr (149 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge (estimated), 350 ft³/s (9.91 m³/s) June 20, 1981; maximum discharge, 76,600 ft³/s (2,170 m³/s) May 15, 1970, gage height, 35.12 ft (10.705 m); minimum daily spring discharge, 46 ft³/s (1.30 m³/s) Aug. 15, 16, 1956.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1913, 38.6 ft (11.77 m) Sept. 10, 1921 (from floodmark, backwater from Blanco River), present datum.

EXTREMES FOR CURRENT YEAR.--Maximum daily spring discharge, 201 ft³/s (5.692 m³/s) Oct. 3; maximum gage height, 14.27 ft (4.349 m) May 13 at 1500 hours (flood runoff), minimum daily spring discharge, 116 ft³/s (3.29 m³/s) Aug. 30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	183	164	164	146	139	130	124	137	132	128	119
2	199	184	166	164	147	136	130	124	136	129	126	116
3	201	183	166	163	147	137	127	122	135	130	126	116
4	198	181	166	161	146	136	127	121	136	128	124	119
5	197	179	166	159	146	135	126	120	135	129	123	122
6	196	176	166	159	147	132	122	122	135	127	123	123
7	196	178	166	158	146	132	124	121	133	126	125	125
8	196	179	166	157	147	130	124	127	133	126	125	124
9	197	179	165	159	145	130	125	125	132	128	126	123
10	196	178	164	158	145	131	125	123	130	128	127	121
11	196	176	165	155	145	132	125	121	131	129	126	121
12	196	176	164	154	141	132	125	125	129	129	126	119
13	195	176	163	155	141	135	125	135	125	130	124	121
14	195	177	164	154	142	134	125	172	128	130	123	122
15	194	176	163	154	141	135	125	170	129	126	123	123
16	192	175	163	154	141	134	125	160	130	126	122	122
17	193	175	162	152	140	135	123	154	129	127	122	121
18	191	176	163	152	139	132	125	153	130	128	119	122
19	190	174	163	152	138	131	124	148	130	131	119	124
20	188	171	164	153	140	129	124	146	130	130	119	124
21	187	172	164	153	140	129	124	147	129	128	120	123
22	189	173	166	153	138	130	124	146	130	127	120	124
23	188	171	166	150	138	131	124	144	132	126	119	124
24	187	171	166	150	136	131	124	143	131	128	118	119
25	186	171	168	147	138	131	124	142	132	129	120	123
26	183	168	167	146	139	130	122	141	132	128	119	123
27	182	168	165	148	139	135	122	140	131	127	119	122
28	182	169	165	148	139	131	122	141	130	127	120	119
29	181	167	164	149	---	132	123	140	129	128	120	117
30	181	166	163	150	---	132	124	139	129	126	116	117
31	183	---	163	146	---	131	---	138	---	128	118	---
TOTAL	5933	5248	5106	4777	3977	4110	3739	4274	3938	3971	3785	3638
MEAN	191	175	165	154	142	133	125	138	131	128	122	121
MAX	201	184	168	164	147	139	130	172	137	132	128	125
MIN	181	166	162	146	136	129	122	120	125	126	116	116
AC-FT	11770	10410	10130	9480	7890	8150	7420	8480	7810	7880	7510	7220

CAL YR 1981 TOTAL 66042 MEAN 181 MAX 350 MIN 117 AC-FT 131000
WTR YR 1982 TOTAL 52496 MEAN 144 MAX 201 MIN 116 AC-FT 104100

08171000 BLANCO RIVER AT WIMBERLEY, TX

LOCATION.--Lat 29°59'39", long 98°05'19", Hays County, Hydrologic Unit 12100203, on left bank at downstream side of highway, near left end of bridge on Ranch Road 12, 0.3 mi (0.5 km) southeast of Wimberley, 2,200 ft (671 m) downstream from Cypress Creek, and at mile 29.0 (46.7 km).

DRAINAGE AREA.--355 mi² (919 km²).

PERIOD OF RECORD.--August 1924 to September 1926, June 1928 to current year.

REVISED RECORDS.--WSP 1562: 1929, 1930-31(M), 1935-36(M), 1938(M), 1941-42(M), 1947(M), 1949(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gages. Datum of gage is 797.23 ft (242.996 m) National Geodetic Vertical Datum of 1929. Aug. 6, 1924, to Sept. 30, 1926, nonrecording gage at site 1,030 ft (314 m) upstream at datum 5.00 ft (1.524 m) higher. Recording gage June 6, 1928, to June 12, 1975, at site 1,000 ft (305 m) upstream at datum 5.00 ft (1.524 m) higher.

REMARKS.--Records good. Numerous small diversions above station. Flow is affected at times by discharge from flood-detention pool of a floodwater-retarding structure with a detention capacity of 185 acre-ft (228,000 m³). This structure controls runoff from 0.61 mi² (1.58 km²) in the Town Creek drainage basin. Several observations of water temperature were made during the year. Gage-height telemeter located at station.

AVERAGE DISCHARGE.--56 years (water years 1925-26, 1929-82), 124 ft³/s (3.512 m³/s), 4.74 in/yr (120 mm/yr), 89,840 acre-ft/yr (111 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 113,000 ft³/s (3,200 m³/s) May 28, 1929, gage height, 33.9 ft (10.33 m), present site and datum, from floodmarks, from rating curve extended above 30,000 ft³/s (850 m³/s) on basis of slope-area measurements of 95,000 and 113,000 ft³/s (2,690 and 3,200 m³/s); minimum, 0.6 ft³/s (0.017 m³/s) Aug. 16, 1956.
Maximum stage since at least 1869, that of May 28, 1929.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1869 reached a stage of 26 ft (7.9 m), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,800 ft³/s (51.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 6	1615	10,500	297	12.29	3.746	May 13	1630	13,200	374	13.58	4.139
Oct. 7	1300	*14,600	413	14.29	4.356	Aug. 8	2300	4,860	138	8.99	2.740
Oct. 31	1800	3,100	87.8	7.68	2.341						

Minimum daily discharge, 25 ft³/s (0.71 m³/s) Sept. 18, 19.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	440	103	72	59	56	45	59	144	65	39	26
2	46	225	101	73	62	56	45	58	138	63	37	27
3	44	189	100	70	59	56	44	56	133	61	35	28
4	44	168	97	69	56	56	43	57	129	61	35	34
5	45	159	93	68	56	54	44	56	123	60	34	28
6	2640	153	94	68	54	53	41	70	119	58	33	27
7	3090	145	94	64	55	53	41	57	116	56	33	27
8	629	150	94	62	56	53	43	60	110	54	247	27
9	343	176	92	62	56	54	46	68	109	53	192	26
10	242	145	90	61	54	54	42	69	103	55	66	26
11	201	143	91	58	55	54	39	65	100	56	51	26
12	171	141	87	68	56	54	40	71	108	56	47	26
13	200	137	83	61	55	53	41	4380	98	55	45	32
14	243	135	84	60	56	52	40	901	99	55	41	28
15	196	129	80	63	56	50	39	504	97	54	39	26
16	157	126	81	61	56	49	38	413	103	52	39	27
17	145	123	80	58	57	46	36	368	94	51	38	29
18	131	123	77	61	58	45	36	345	92	49	37	25
19	121	120	75	62	57	45	37	301	84	48	35	25
20	116	112	77	63	59	45	45	270	84	48	35	34
21	117	111	79	61	58	44	38	248	84	47	35	30
22	118	111	80	61	57	44	53	234	83	45	34	28
23	121	112	77	70	57	46	56	217	77	46	33	28
24	126	110	77	62	58	45	60	227	81	44	31	32
25	117	108	75	63	57	45	66	234	80	43	30	33
26	112	106	76	62	58	44	68	200	78	43	30	32
27	107	102	76	63	55	46	65	184	74	42	29	31
28	106	101	74	63	55	45	63	175	71	40	29	30
29	110	99	72	63	---	46	61	173	72	40	29	29
30	110	102	71	66	---	47	61	163	66	41	27	29
31	675	---	72	59	---	47	---	151	---	39	26	---
TOTAL	10669	4301	2602	1977	1587	1537	1416	10434	2949	1580	1491	856
MEAN	344	143	83.9	63.8	56.7	49.6	47.2	337	98.3	51.0	48.1	28.5
MAX	3090	440	103	73	62	56	68	4380	144	65	247	34
MIN	44	99	71	58	54	44	36	56	66	39	26	25
CFSM	.97	.40	.24	.18	.16	.14	.13	.95	.28	.14	.14	.08
IN.	1.12	.45	.27	.21	.17	.16	.15	1.09	.31	.17	.16	.09
AC-FT	21160	8530	5160	3920	3150	3050	2810	20700	5850	3130	2960	1700

CAL YR 1981 TOTAL 69991 MEAN 192 MAX 5490 MIN 35 CFSM .54 IN 7.33 AC-FT 138800
WTR YR 1982 TOTAL 41399 MEAN 113 MAX 4380 MIN 25 CFSM .32 IN 4.34 AC-FT 82110

08171300 BLANCO RIVER NEAR KYLE, TX

LOCATION.--Lat 29°58'45", long 97°54'35", Hays County, Hydrologic Unit 12100203, on left bank 800 ft (240 m) downstream from Tarbutton Ranch House (Hatchett Ranch), 2.2 mi (3.5 km) southwest of Kyle, 4.2 mi (6.8 km) downstream from Halifax Creek, and 6.3 mi (10.1 km) upstream from bridge on U.S. Highway 81.

DRAINAGE AREA.--412 mi² (1,067 km²).

PERIOD OF RECORD.--May 1956 to current year.

REVISED RECORDS.--WSP 1923: 1957-58, 1960(M). WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 620.12 ft (189.013 m) Corps of Engineers datum.

REMARKS.--Records good. Small diversions above station for irrigation. Most of the low flow of the Blanco River enters the Edwards and associated limestones in the Balcones Fault Zone which crosses the basin upstream from this station and below the station at Wimberley. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08171000. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--26 years (water years 1957-82), 151 ft³/s (4.276 m³/s), 4.98 in/yr (126 mm/yr), 109,400 acreft/yr (135 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 98,000 ft³/s (2,780 m³/s) May 2, 1958, gage height, 36.3 ft (11.06 m); from floodmark, from rating curve extended above 37,000 ft³/s (1,050 m³/s) on basis of slope-area measurement of 139,000 ft³/s (3,940 m³/s) and slope-conveyance study; no flow at times in 1956-57, 1963-65, 1967, 1971, and 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1882, about 40 ft (12.2 m) in May 1929, from information by local residents, discharge, 139,000 ft³/s (3,940 m³/s). Flood of Sept. 11, 1952, reached a stage of 38.0 ft (11.58 m), discharge, 115,000 ft³/s (3,260 m³/s).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,500 ft³/s (70.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 6	1915	12,500	354	17.91	5.459	Oct. 31	2215	2,600	73.6	10.83	3.301
Oct. 7	1615	15,800	447	19.38	5.907	May 13	1630	*16,300	462	19.58	5.968

Minimum discharge, 2.6 ft³/s (0.074 m³/s) Sept. 11-13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	28	650	91	68	52	43	35	43	109	46	12	3.8
2	28	222	91	69	55	43	35	42	103	41	11	3.5
3	27	184	89	69	57	44	33	39	99	38	11	3.3
4	27	162	88	65	52	44	31	39	95	36	10	5.4
5	26	147	84	62	53	43	32	38	90	35	10	6.6
6	2450	141	85	61	53	43	30	53	84	35	9.6	4.5
7	3390	134	85	60	51	42	30	48	82	33	9.1	3.8
8	803	139	85	58	51	41	32	39	79	32	8.9	3.5
9	384	156	84	57	52	41	34	41	76	30	287	3.2
10	256	140	82	58	51	41	45	48	74	29	62	3.0
11	205	131	82	57	51	41	33	49	70	27	31	2.7
12	181	129	82	67	50	41	30	54	80	26	21	2.7
13	178	125	80	64	49	39	30	5420	74	26	17	2.7
14	198	123	81	60	49	38	29	1870	70	26	15	3.8
15	212	120	79	59	50	38	29	562	65	25	13	6.2
16	158	116	78	60	50	37	29	403	70	24	12	3.5
17	140	113	76	59	48	37	28	329	65	22	11	3.0
18	132	110	75	58	48	34	26	297	62	21	10	3.4
19	122	108	74	58	47	34	28	255	58	20	10	3.2
20	115	104	75	59	48	33	32	223	55	20	9.7	3.2
21	114	100	76	59	48	33	36	202	55	20	9.1	4.9
22	118	100	77	58	45	33	38	186	58	20	8.3	4.5
23	117	101	74	60	43	36	56	172	59	21	7.6	3.6
24	127	99	73	59	43	36	49	178	53	21	6.9	3.7
25	118	98	71	57	45	35	52	178	51	17	6.4	3.8
26	113	96	71	55	50	34	51	169	50	16	5.8	3.7
27	108	94	71	55	45	38	50	148	49	15	5.7	3.6
28	104	92	71	56	43	38	47	137	47	14	5.4	3.4
29	103	91	70	56	---	37	44	130	51	14	5.0	3.0
30	109	92	70	59	---	39	43	125	45	13	4.8	3.0
31	352	---	70	57	---	37	---	118	---	13	4.6	---
TOTAL	10543	4217	2440	1859	1379	1193	1097	11635	2078	776	649.9	112.2
MEAN	340	141	78.7	60.0	49.3	38.5	36.6	375	69.3	25.0	21.0	3.74
MAX	3390	650	91	69	57	44	56	5420	109	46	287	6.6
MIN	26	91	70	55	43	33	26	38	45	13	4.6	2.7
CFSM	.83	.34	.19	.15	.12	.09	.09	.91	.17	.06	.05	.009
IN.	.95	.38	.22	.17	.12	.11	.10	1.05	.19	.07	.06	.01
AC-FT	20910	8360	4840	3690	2740	2370	2180	23080	4120	1540	1290	223

CAL YR 1981 TOTAL 80169.0 MEAN 220 MAX 7150 MIN 26 CFSM .53 IN 7.24 AC-FT 159000
WTR YR 1982 TOTAL 37979.1 MEAN 104 MAX 5420 MIN 2.7 CFSM .25 IN 3.43 AC-FT 75330

08172400 PLUM CREEK AT LOCKHART, TX

LOCATION.--Lat 29°55'22", long 97°40'44", Caldwell County, Hydrologic Unit 12100203, on right bank 548 ft (167 m) upstream from bridge on U.S. Highway 183, 2.7 mi (4.3 km) north of Lockhart, 3.7 mi (6.0 km) upstream from Town Creek, 5.0 mi (8.0 km) downstream from Brushy Creek, and 30.4 mi (48.9 km) upstream from mouth.

DRAINAGE AREA.--112 mi² (290 km²).

PERIOD OF RECORD.--April 1959 to current year.

REVISED RECORDS.--WSP 2123: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 431.19 ft (131.427 m) National Geodetic Vertical Datum of 1929. Apr. 30, 1959, to July 25, 1968, at site 548 ft (167 m) downstream at present datum.

REMARKS.--Records good. No known diversion above station. Flow at times is affected by discharge from the flood-detention pools of 17 floodwater-retarding structures with combined detention capacity of 24,850 acre-ft (30.6 hm³). These structures control runoff from 67.8 mi² (175.6 km²) above this station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--23 years, 48.3 ft³/s (1.368 m³/s), 34,990 acre-ft/yr (43.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,600 ft³/s (753 m³/s) Oct. 29, 1960, gage height, 20.62 ft (6.285 m); no flow at times each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1905, 22 ft (6.7 m) in June 1936 at present site; flood in 1951 reached a stage of 20 ft (6.1 m) at present site, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,000 ft³/s (56.6 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 15	0500	2,450	69.4	14.91	4.545
May 13	1400	*9,530	270	17.29	5.270

Minimum dischcarge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	67	3.0	2.2	1.5	1.4	1.1	9.9	6.6	21	.00	4.0
2	.00	33	3.0	2.4	1.5	1.3	1.1	7.9	5.1	16	.00	3.8
3	.00	19	2.9	2.2	3.6	1.2	1.0	6.4	4.1	12	.00	3.5
4	.00	13	2.4	1.8	5.5	1.1	.84	5.2	3.3	8.3	.00	4.1
5	.00	10	2.3	1.6	5.1	1.1	.80	4.2	2.5	5.9	.00	2.3
6	17	7.9	2.3	1.6	4.5	1.1	.62	46	2.0	4.4	.00	.46
7	42	6.3	2.3	1.4	4.3	.96	.58	22	1.5	3.5	.00	.07
8	37	82	2.8	1.4	4.2	.93	.56	12	1.1	3.1	.00	.00
9	19	86	2.8	1.4	4.4	.88	.77	8.3	.79	2.9	.00	.00
10	14	32	2.8	1.2	4.3	.91	1.6	6.2	.60	2.6	.00	.00
11	12	19	2.7	1.2	4.2	.92	4.2	5.2	.41	2.0	.00	.00
12	9.9	14	2.6	1.8	4.0	.96	2.9	16	.39	1.3	.00	.00
13	8.8	10	2.5	4.9	3.6	.97	1.6	3480	.35	1.0	.00	.00
14	24	8.5	2.4	4.3	3.6	1.0	1.3	1160	1.4	.52	.00	.00
15	766	7.2	2.3	3.1	3.4	1.0	1.1	718	1.6	.16	.00	.00
16	117	6.3	2.4	2.5	3.3	1.0	.96	596	1.1	.08	.00	.00
17	88	5.8	2.5	2.0	3.2	1.0	.81	521	.73	.05	.00	.00
18	59	5.3	2.2	1.8	3.0	.96	.76	412	.50	.01	.00	.00
19	36	5.0	2.0	1.6	2.6	.94	.70	350	.32	.00	.00	.00
20	21	4.4	2.0	1.7	2.8	.93	.79	266	.22	.00	.00	.00
21	14	4.0	2.2	1.8	2.9	.85	.81	197	.11	.00	.00	.00
22	12	3.6	2.9	2.2	2.9	.75	20	152	.49	.00	.00	.00
23	11	3.5	2.8	2.2	2.5	.76	101	107	3.5	.00	.00	.00
24	8.7	3.3	2.4	1.7	1.6	.76	96	86	3.7	.00	.00	.00
25	7.1	3.3	2.0	1.5	1.2	1.2	87	78	4.6	.00	.00	.00
26	5.8	3.2	1.9	1.4	1.5	1.1	50	54	5.2	.00	.00	.00
27	5.0	3.1	1.8	1.3	1.5	1.0	31	35	5.7	.00	.00	.00
28	4.2	2.9	1.8	1.3	1.7	1.1	22	23	26	.00	.00	.00
29	3.6	2.8	1.7	1.4	---	.98	16	16	26	.00	.00	.00
30	3.5	3.0	1.7	1.5	---	1.2	12	12	25	.00	3.1	.00
31	43	---	1.9	1.6	---	1.2	---	8.9	---	.00	4.5	---
TOTAL	1388.60	474.4	73.3	60.0	88.4	31.46	459.90	8421.2	134.91	84.82	7.60	18.23
MEAN	44.8	15.8	2.36	1.94	3.16	1.01	15.3	272	4.50	2.74	.25	.61
MAX	766	86	3.0	4.9	5.5	1.4	101	3480	26	21	4.5	4.1
MIN	.00	2.8	1.7	1.2	1.2	.75	.56	4.2	.11	.00	.00	.00
AC-FT	2750	941	145	119	175	62	912	16700	268	168	15	36

CAL YR 1981 TOTAL 31271.57 MEAN 85.7 MAX 7340 MIN .00 AC-FT 62030
WTR YR 1982 TOTAL 11242.82 MEAN 30.8 MAX 3480 MIN .00 AC-FT 22300

08173000 PLUM CREEK NEAR LULING, TX

LOCATION.--Lat 29°41'58", long 97°36'12", Caldwell County, Hydrologic Unit 12100203, near left bank on downstream side of pier of bridge on county road, 1.2 mi (1.9 km) upstream from West Fork, 1.9 mi (3.1 km) upstream from Southern Pacific Railroad Co. bridge, 2.2 mi (3.5 km) upstream from McNeil Creek, 2.9 mi (4.7 km) northeast of Luling, and at mile 7.5 (12.1 km).

DRAINAGE AREA.--309 mi² (800 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--March 1930 to current year.

REVISED RECORDS.--WSP 1923: 1933. WSP 2123: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 321.57 ft (98.015 m) National Geodetic Vertical Datum of 1929. Prior to Aug. 18, 1976, at datum 5 ft (1.5 m) higher.

REMARKS.--Water-discharge records good except those for July 30 to Sept. 8, which are fair. Low flow is slightly regulated by oilfield operation above station. At end of year, flow from 119 mi² (308 km²) above this station was partly controlled by 27 floodwater-retarding structures with a combined detention capacity of 41,840 acre-ft (51.6 hm³). No known diversion above station.

AVERAGE DISCHARGE.--52 years (water years 1931-82), 104 ft³/s (2.945 m³/s), 75,350 acre-ft/yr (92.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 78,500 ft³/s (2,220 m³/s) July 1, 1936, gage height, 30.7 ft (9.36 m), from floodmarks, present datum, from rating curve extended above 37,500 ft³/s (1,060 m³/s); no flow at times. Maximum stage since at least 1868, that of July 1, 1936.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1913 reached about same stage, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 2,300 ft³/s (65.1 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	2400	2,710	76.7	19.12	5.828
May 14	0100	*13,300	377	23.51	7.166

Minimum daily discharge, 1.5 ft³/s (0.042 m³/s) Aug. 30, 31, Sept. 13.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.6	1200	11	12	12	18	12	23	32	35	3.0	9.2
2	3.6	198	11	11	13	16	11	19	29	27	2.9	7.4
3	3.4	123	10	12	13	16	11	16	26	21	2.9	6.0
4	5.9	66	9.5	12	13	16	9.7	13	22	17	2.8	8.0
5	4.5	44	9.0	10	14	13	9.1	10	19	13	2.7	6.2
6	223	30	9.2	10	15	13	8.2	178	17	11	2.6	5.0
7	384	27	8.8	11	14	13	7.8	196	16	9.1	2.5	4.2
8	123	156	10	11	14	14	7.8	50	14	7.8	2.4	3.3
9	66	957	9.7	9.7	15	12	6.9	25	13	7.4	2.4	2.7
10	35	212	9.3	10	14	13	6.9	19	12	7.4	2.3	2.0
11	27	108	10	9.8	12	13	8.0	14	10	7.3	2.3	1.8
12	19	70	10	9.7	12	13	9.7	230	11	6.8	2.2	1.6
13	15	50	10	19	11	12	12	2610	14	6.0	2.2	1.5
14	12	40	10	19	11	12	11	8270	13	5.3	2.2	1.6
15	363	33	10	16	12	13	9.0	2170	14	5.1	2.1	10
16	431	28	10	14	14	12	9.3	1100	15	4.9	2.1	7.9
17	152	23	10	12	14	13	8.5	954	13	4.6	2.0	6.5
18	114	20	9.3	11	12	12	7.9	831	12	4.4	2.0	4.7
19	75	18	7.8	11	12	12	7.8	535	11	4.0	2.0	3.4
20	48	15	7.3	11	14	11	7.8	411	11	3.8	1.9	12
21	29	13	9.1	13	29	11	6.6	290	10	3.7	1.9	12
22	21	13	10	15	25	11	7.6	224	9.9	3.4	1.8	7.1
23	19	12	10	15	21	10	38	185	16	3.6	1.8	4.8
24	16	12	10	15	21	10	149	243	15	3.6	1.8	3.8
25	15	11	9.7	13	20	11	142	312	12	3.6	1.7	3.8
26	12	10	9.5	13	20	9.8	118	154	11	3.6	1.7	3.4
27	11	10	9.2	12	22	11	81	115	11	3.3	1.6	3.2
28	9.7	10	8.9	13	19	12	57	86	11	3.3	1.6	3.0
29	9.1	9.7	8.7	13	---	13	39	64	27	3.3	1.6	2.8
30	8.3	10	9.5	14	---	13	28	51	33	3.2	1.5	2.5
31	990	---	10	12	---	12	---	39	---	3.1	1.5	---
TOTAL	3248.1	3528.7	296.5	389.2	438	390.8	847.6	19437	479.9	245.6	66.0	151.4
MEAN	105	118	9.56	12.6	15.6	12.6	28.3	627	16.0	7.92	2.13	5.05
MAX	990	1200	11	19	29	18	149	8270	33	35	3.0	12
MIN	3.4	9.7	7.3	9.7	11	9.8	6.6	10	9.9	3.1	1.5	1.5
AC-FT	6440	7000	588	772	869	775	1680	38550	952	487	131	300

CAL YR 1981 TOTAL 45219.7 MEAN 124 MAX 6480 MIN 2.1 AC-FT 89690
WTR YR 1982 TOTAL 29518.8 MEAN 80.9 MAX 8270 MIN 1.5 AC-FT 58550

NOTE.--No gage-height record July 30 to Sept. 8.

GUADALUPE RIVER BASIN

08178620 LORENCE CREEK AT THOUSAND OAKS BOULEVARD, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°35'24", long 98°217'47", Bexar County, Hydrologic Unit 12100301, on right bank 30 ft (9 m) upstream from Thousand Oaks Boulevard and 4.2 mi (6.8 km) upstream from mouth.

DRAINAGE AREA.--4.05 mi^2 (10.5 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--January 1980 to current year.

GAGE.--Digital recorders (stage and rainfall), concrete control, and crest-stage gages. Gage is not referenced to National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 600 ft^3/s (17.0 m^3/s) Oct. 18, 1980, at 1335 hours, gage height, 2.59 ft (0.789 m); no flow most of time.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft^3/s (2.83 m^3/s) and maximum (*):

Time	Discharge (ft^3/s)	Discharge (m^3/s)	Gage height (ft)	Gage height (m)
Oct. 7	(+)	(+)	4.01	1.22
Oct. 31	262	7.42	2.35	.701
May 6	(+)	(+)	5.90	1.80

(+) Not determined.

Minimum discharge, no flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1980 to current year.

WATER QUALITY.--No samples obtained during current year.

GUADALUPE RIVER BASIN

08178640 WEST ELM CREEK AT SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°37'23", long 98°26'29", Bexar County, Hydrologic Unit 12100301, at mid-channel, 1.8 mi (2.9 km) upstream from mouth of East Elm Creek, 2.1 mi (3.4 km) upstream from Farm Road 1604, and 7.0 mi (11.3 km) north of San Antonio International Airport.

DRAINAGE AREA.--2.45 mi^2 (6.35 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--February 1976 to current year.

GAGE.--Digital recorders (stage and rainfall) and crest-stage gages. Gage is not referenced to National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 841 ft^3/s (23.8 m^3/s) May 6, 1982, gage height, 6.79 ft (2.070 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 841 ft^3/s (23.8 m^3/s) May 6 at 1655 hours, gage height, 6.79 ft (2.070 m); no flow most of time.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, pesticide, and bacteria analyses: May 1976 to current year. Water temperatures: May 1976 to current year.

WATER-QUALITY.--No samples obtained during current year.

GUADALUPE RIVER BASIN

08178645 EAST ELM CREEK AT SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°37'04", long 98°25'41", Bexar County, Hydrologic Unit 12100301, at mid-channel, 2.1 mi (3.4 km) upstream from Farm Road 1604, and 6.90 mi (11.1 km) north of San Antonio International Airport.

DRAINAGE AREA.--2.33 mi^2 (6.03 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--November 1975 to current year.

GAGE.--Digital recorders (stage and rainfall) and crest-stage gages. Gage is not referenced to National Geodetic Vertical Datum of 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 435 ft^3/s (12.3 m^3/s) May 6, 1982, gage height, 7.96 ft (2.426 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 435 ft^3/s (12.3 m^3/s) May 6, gage height, 7.96 ft (2.426 m), no other peak discharge above base of 100 ft^3/s (2.83 m^3/s).

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and bacteria analyses: May 1976 to current year. Water temperatures: May 1976 to current year.

REMARKS.--No samples obtained during current year.

08178700 SALADO CREEK (UPPER STATION) AT SAN ANTONIO, TX

LOCATION.-Lat 29°30'57", long 98°25'51", Bexar County, Hydrologic Unit 12100301, on right bank at downstream side of eastbound bridge on Interstate Highway 410 in San Antonio, 1.0 mi (1.6 km) west of Northeast School, 1.1 mi (1.8 km) upstream from Perrin-Beitel Creek, and 2.7 mi (4.3 km) east of San Antonio International Airport.

DRAINAGE AREA.--137 mi² (355 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1960 to current year.

GAGE.--Water-stage recorder with concrete control. Datum of gage is 684.60 ft (208.666 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. No known diversion above station. Recording rain gage located at station with four additional recording rain gages located in watershed. Flow is affected at times by discharge from flood-detention pools of eleven floodwater-retarding structures with combined detention capacity of 26,770 acre-ft (33.0 hm³). These structures control runoff from 74.6 mi² (193.2 km²) above this station.

AVERAGE DISCHARGE.--22 years, 9.68 ft³/s (0.274 m³/s), 7,010 acre-ft/yr (8.64 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,900 ft³/s (705 m³/s) May 12, 1972, gage height, 15.22 ft (4.639 m), from rating curve extended above 8,000 ft³/s (227 m³/s) on basis of slope-area measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1853, 23 to 24 ft (7.0 to 7.3 m) in October 1913. Flood in September 1921 reached a stage of 18 ft (5.5 m), and flood of Sept. 27, 1946, reached a stage of 18.2 ft (5.55 m), and are the second and third highest since 1899.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s (7.08 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 7	0330	2,440	69.1	7.41	2.259
May 06	unknown	*10,200	289	a11.20	3.414

a From floodmark.

Minimum discharge, no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.51	28	.23	1.2	.63	1.4	.65	.18	1.2	.16	.04	.00
2	.51	9.0	.36	4.4	.70	1.0	.55	.63	5.2	.11	.00	.00
3	.66	7.6	.47	5.1	2.4	1.4	.44	.14	5.3	.09	.00	.00
4	.52	7.5	.48	4.3	5.7	1.3	.51	.07	5.3	.00	.00	.04
5	.67	7.0	.33	.35	5.4	1.3	.63	.04	5.1	.00	.00	.03
6	40	6.0	.43	.15	1.6	1.2	.51	1800	.84	.00	.00	.00
7	462	5.3	2.0	3.5	1.5	1.4	.95	47	.63	.13	.00	.00
8	19	6.9	4.4	4.0	1.6	1.2	1.8	13	.63	.40	.01	.00
9	13	2.2	2.3	4.0	1.5	1.3	1.7	11	.51	1.3	.06	.07
10	9.1	2.1	.23	1.0	1.4	1.7	1.5	11	.50	2.0	.95	.00
11	8.3	2.1	2.3	3.7	1.5	1.8	1.5	8.2	.32	1.8	.43	.00
12	7.5	4.7	.93	6.9	1.5	1.1	1.7	16	7.5	1.1	.13	.00
13	7.8	.38	3.8	4.6	1.5	1.2	1.8	21	1.3	1.1	.08	.09
14	5.5	1.2	3.9	4.5	1.5	1.1	1.8	11	.77	.77	.03	.41
15	1.9	1.2	3.6	3.8	1.5	.96	.13	9.1	1.0	.71	.00	.05
16	1.1	2.0	3.6	.47	1.1	.63	.04	8.1	.80	.25	.00	.15
17	.61	5.7	3.6	.29	.89	.09	.00	14	.63	.06	.00	.05
18	.46	4.8	3.6	.18	.88	.05	.00	34	.24	.00	.03	.00
19	.60	.19	3.6	.21	.76	4.5	.00	22	.13	.00	.00	.00
20	.79	.07	3.6	.20	4.1	.98	.00	10	.05	.00	.00	1.6
21	1.0	.64	3.6	1.1	1.3	.77	.00	9.1	.00	.00	.00	.10
22	3.4	1.3	3.5	8.1	1.2	.91	1.5	7.9	.00	.08	.00	.00
23	1.4	2.0	2.9	8.4	.84	1.3	.16	6.6	.00	.00	.00	.00
24	.88	3.1	.43	6.1	1.6	1.4	.11	8.1	.00	.02	.00	.00
25	.79	5.2	.19	1.5	6.4	1.0	.04	4.9	.00	.04	.00	.00
26	.58	5.2	.14	1.1	12	.95	.00	2.0	.00	.00	.02	.00
27	.40	4.7	.13	1.1	1.9	1.9	.00	1.8	.00	.00	.08	.00
28	.20	4.0	.14	1.1	1.4	1.3	.00	1.8	.00	.00	.05	.00
29	.10	.46	.15	1.0	---	1.3	.00	1.5	.00	.02	.00	.00
30	.20	.27	1.3	1.7	---	1.4	.00	1.3	.00	.07	.00	.00
31	110	---	3.6	.78	---	1.3	---	1.1	---	.05	.00	---
TOTAL	699.48	130.81	59.84	84.83	64.30	39.14	18.02	2082.56	37.95	10.26	1.91	2.59
MEAN	22.6	4.36	1.93	2.74	2.30	1.26	.60	67.2	1.27	.33	.062	.086
MAX	462	28	4.4	8.4	12	4.5	1.8	1800	7.5	2.0	.95	1.6
MIN	.10	.07	.13	.15	.63	.05	.00	.04	.00	.00	.00	.00
AC-FT	1390	259	119	168	128	78	36	4130	75	20	3.8	5.1

CAL YR 1981 TOTAL 2693.78 MEAN 7.38 MAX 462 MIN .00 AC-FT 5340
WTR YR 1982 TOTAL 3231.69 MEAN 8.85 MAX 1800 MIN .00 AC-FT 6410

08178700 SALADO CREEK (UPPER STATION) AT SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: November 1971 to September 1973. Water temperatures: November 1968 to current year. Bacteria analyses: May 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)
NOV 05...	1408	7.6	657	7.7	20.0	5	12	8.9	100	2.6	K1700	280
MAY 13...	0950	13	570	8.0	22.0	--	--	6.7	80	--	--	--

DATE	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
NOV 05...	48	99	7.4	21	.6	26	230	84	20	.4	15
MAY 13...	--	--	--	--	--	--	--	--	--	--	--

DATE	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRATE TOTAL (MG/L AS N)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
NOV 05...	411	17	9	.93	.070	1.0	.410	.31	.72	.010	4.1
MAY 13...	--	--	--	--	--	--	--	--	--	--	--

08179000 MEDINA RIVER NEAR PIPE CREEK, TX

LOCATION.--Lat 29°40'31", long 98°58'33", Bandera County, Hydrologic Unit 12100302, on right bank 500 ft (150 m) upstream from Bandera Falls, 0.6 mi (1.0 km) upstream from Red Bluff Creek, and 4.1 mi (6.6 km) southwest of Pipe Creek.

DRAINAGE AREA.--474 mi² (1,228 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1922 to June 1935, October 1952 to current year. Monthly discharge only for some periods published in WSP 1312 and 1732.

REVISED RECORDS.--WSP 1312: 1925(M). WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,067.37 ft (325.334 m) Corps of Engineers datum. December 1922 to June 1935, water-stage recorder at site 1.9 mi (3.1 km) upstream at different datum.

REMARKS.--Water-discharge records good except those for periods of no gage-height record, which are poor. Small diversion above station.

AVERAGE DISCHARGE.--42 years (water years 1923-34, 1953-82), 146 ft³/s (4.135 m³/s), 4.18 in/yr (106 mm/yr), 105,800 acre-ft/yr (130 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 281,000 ft³/s (7,960 m³/s) Aug. 2, 1978, gage height, 49.6 ft (15.12 m), from floodmark, from rating curve extended above 32,000 ft³/s (906 m³/s) on basis of slope-area measurements of 64,000 and 281,000 ft³/s (1,810 and 7,960 m³/s); minimum, 0.2 ft³/s (0.006 m³/s) July 14-16, 1956.
Maximum stage since at least 1880, that of Aug. 2, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1919 reached a stage of about 43 ft (13.1 m), present site and datum, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,600 ft³/s (45.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 7	unknown	unknown	---	unknown	---	May 13	1900	7,240	205	11.10	3.383
Oct. 13	unknown	*29,800	844	a22.78	6.943	June 12	1300	2,570	72.8	6.84	2.085

a From floodmark.

Minimum daily discharge, 42 ft³/s (1.19 m³/s) Aug. 5, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	295	160	126	93	101	80	88	138	107	47	45
2	97	280	155	126	92	96	78	84	136	101	48	46
3	93	270	157	124	90	93	74	76	131	99	47	44
4	91	260	152	120	88	92	74	72	127	94	44	44
5	88	260	149	119	88	89	73	69	125	95	42	45
6	1010	250	149	121	87	85	70	134	123	93	43	47
7	6600	240	149	115	88	84	70	104	121	92	42	49
8	770	250	151	114	87	85	72	102	119	89	62	48
9	650	240	147	116	85	84	70	90	115	83	124	47
10	565	230	146	115	84	84	69	84	113	80	77	46
11	495	225	145	112	83	84	70	84	110	78	76	46
12	445	225	142	122	82	83	70	86	825	75	70	50
13	14300	220	140	122	80	83	70	2900	310	73	66	47
14	4500	215	144	121	80	82	69	1150	198	72	69	51
15	1410	210	142	118	80	81	67	490	166	68	69	54
16	850	205	139	113	77	81	67	335	151	65	69	75
17	760	205	135	111	77	83	67	274	145	64	68	61
18	630	200	133	112	76	80	65	242	152	60	63	56
19	550	195	133	110	76	79	67	218	145	59	54	52
20	490	190	134	110	83	78	65	201	140	59	55	52
21	450	185	134	111	103	76	67	190	137	58	55	52
22	500	180	135	110	91	77	76	182	130	59	54	51
23	520	180	129	104	86	77	78	171	125	66	63	51
24	430	180	126	102	82	78	80	202	122	60	61	50
25	410	175	127	101	82	76	80	205	122	57	55	49
26	360	175	128	99	98	74	76	179	118	55	52	50
27	330	170	129	97	104	75	72	168	114	53	54	57
28	320	167	126	98	106	74	70	164	114	50	46	50
29	315	166	125	97	---	77	69	162	108	49	47	46
30	300	165	126	99	---	80	69	153	105	49	48	45
31	300	---	126	94	---	81	---	143	---	48	48	---
TOTAL	38726	6408	4313	3459	2428	2552	2144	8802	4785	2210	1818	1506
MEAN	1249	214	139	112	86.7	82.3	71.5	284	160	71.3	58.6	50.2
MAX	14300	295	160	126	106	101	80	2900	825	107	124	75
MIN	88	165	125	94	76	74	65	69	105	48	42	44
CFSM	2.64	.45	.29	.24	.18	.17	.15	.60	.34	.15	.12	.11
IN.	3.04	.50	.34	.27	.19	.20	.17	.69	.38	.17	.14	.12
AC-FT	76810	12710	8550	6860	4820	5060	4250	17460	9490	4380	3610	2990

CAL YR 1981	TOTAL	145321	MEAN 398	MAX 14300	MIN 87	CFSM .84	IN 11.40	AC-FT	288200	
WTR YR 1982	TOTAL	79151	MEAN 217	MAX 14300	MIN 42	CFSM .46	IN 6.21	AC-FT	157000	

NOTE.--No gage-height record Oct. 4 to Nov. 26.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (HG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
18...	1245	114	538	.0	9.5	0	.40	12.2	110	.9	K8	K18
MAY												
11...	1308	84	504	7.9	21.0	5	1.2	8.6	100	.6	--	180
13...	1445	4980	255	--	--	--	--	--	--	--	--	--
JUL												
12...	1246	74	477	--	29.0	<1	1.2	8.2	109	2.4	20	250

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN											
18...	280	81	81	19	7.4	.2	1.1	200	78	13	.2
MAY											
11...	250	81	71	18	7.9	.2	2.2	170	75	13	.3
13...	130	22	39	7.8	3.4	.1	2.5	107	23	5.9	.2
JUL											
12...	240	84	68	18	8.3	.2	1.8	160	70	13	.3

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
18...	8.6	329	4	3	<.020	.70	.070	.52	.59	<.010	1.0
MAY											
11...	11	301	49	6	<.020	.36	.170	.71	.88	.930	1.7
13...	11	157	--	--	--	--	--	--	--	--	--
JUL											
12...	12	288	<1	<2	<.020	.27	<.060	--	.40	.020	1.0

08179000 MEDINA RIVER NEAR PIPE CREEK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN 18...	1245	<1	30	2	<10	<1	<10
JUL 12...	1246	1	34	<1	10	<1	<3

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 18...	1	<1	<.1	<1	<1	<3
JUL 12...	2	2	.1	<1	<1	6

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)
JAN 18...	1245	.00	.00	.00	.00	.00	.00	.00	.00
JUL 12...	1246	<.10	<.10	<.01	<.10	<.01	<.01	<.01	<.01

DATE	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)
JAN 18...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 12...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 18...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 12...	<.01	<.01	<.01	<.01	<1	<.01	<.01	<.01	<.01

08179500 MEDINA LAKE NEAR SAN ANTONIO, TX

LOCATION.--Lat 29°32'24", long 98°56'01", Medina County, Hydrologic Unit 12100302, at gate-operating platform, 576 ft (176 m) from left end of Medina Dam on Medina River, 4.2 mi (6.8 km) upstream from Medina diversion dam, 13 mi (21 km) north of Castroville, 28 mi (45 km) west of San Antonio, and 70.4 mi (113.3 km) upstream from mouth. Water-quality sampling site at the center of low-water bridge 0.6 mi (1.0 km) downstream.

DRAINAGE AREA.--634 mi² (1,642 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1913 to current year. Prior to October 1965, monthend contents only.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Nonrecording gage read once daily if stage changing materially, otherwise intermittently. Datum of gage is 7.80 ft (2.377 m) below National Geodetic Vertical Datum of 1929.

REMARKS.--The lake is formed by a gravity-type concrete dam, 1,580 ft (482 m) long. The dam was completed and storage began May 7, 1913. The uncontrolled emergency spillway is a cut through natural rock 880 ft (268 m) long, with a 3-foot-wide (1 m) cutoff wall, located near right end of dam. The dam and lake are owned by the Bexar-Medina-Atascosa Counties Water Improvement District No. 1, which has a permit from the Texas Department of Water Resources to irrigate 150,000 acres (60,700 hm²) annually. An undetermined amount of water from the lake enters the Edwards and associated limestones in the Balcones Fault Zone, part of which is above and part below the dam. Water is released downstream to Medina Diversion Reservoir where it is diverted into Medina Canal by the Water District. Figures given herein represent total contents. Data regarding the dam and lake are given in the following table:

	Gage height (feet)	Capacity (acre-feet)
Top of dam	1,084.0	-
Crest of spillway	1,072.0	254,000
Water-supply outlet pipes (invert)	966.5	4,780
Lowest gated outlet (invert)	920.0	0

COOPERATION.--Capacity table, based on survey made prior to June 1912, and gage-height record were furnished by the Bexar-Medina-Atascosa Counties Water Improvement District No. 1.

EXTREMES (at 0800) FOR PERIOD OF RECORD.--Maximum contents observed, 288,800 acre-ft (365 hm³) Sept. 16, 1919, gage height, 1,078.0 ft (328.57 m); minimum observed since lake first filled, 780 acre-ft (0.962 hm³) about Apr. 11, 1948, gage height, 944.0 ft (287.73 m).

EXTREMES (at 0800) FOR CURRENT YEAR.--Maximum contents, 265,600 acre-ft (327 hm³) Oct. 14, gage height, 1,074.0 ft (327.36 m); minimum, 206,600 acre-ft (255 hm³) Sept. 30, gage height, 1,062.9 ft (323.97 m).

Capacity table (gage height, in feet, and total contents, in acre-feet)

1,060.0	192,000	1,070.0	242,400
1,065.0	217,200	1,074.0	265,600

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	251700	255200	254000	252900	249400	246500	242400	236400	248200	241400	228300	218200
2	251100	254600	254000	252900	249400	246500	242400	235900	247600	240900	228300	217700
3	250500	254600	254000	252900	249400	245900	241900	235900	247600	240400	227800	217200
4	250500	254600	254000	252900	249400	245900	241900	235400	247600	239900	227300	217200
5	250500	254600	254000	252300	248800	245300	241900	235900	247600	239400	226800	216700
6	250000	254600	254000	252300	248800	245300	241400	236400	247600	238900	226800	216200
7	249400	254600	254000	252300	248800	245300	241400	236400	247100	238400	226300	216200
8	252300	254600	254000	251700	248800	245300	240900	236400	247100	237900	225800	215700
9	255200	254600	254000	251700	248800	244700	240900	236400	247100	237400	225800	215200
10	255200	254600	254000	251700	248200	244700	240900	236400	246500	236900	225300	215200
11	255200	254600	254000	251100	248200	244700	240400	237400	246500	236400	224800	214700
12	255200	254600	254000	251100	248200	244700	240400	237900	245900	235900	224800	214200
13	265000	254600	253400	251100	248200	244700	239900	238400	245900	235400	224300	214200
14	265600	254600	253400	250500	247600	244700	239900	238400	245900	234900	224300	212200
15	264400	254600	253400	250500	247600	244700	239400	238400	245900	234400	223800	211700
16	262700	254600	253400	250500	247600	244200	239400	238400	245300	233900	223300	211200
17	261000	254600	253400	250500	247100	244200	238900	238900	245300	233400	223300	211200
18	259800	254000	253400	250500	247100	244200	238900	239900	245300	232800	222800	210700
19	256900	254000	253400	250000	247100	244200	238400	240900	244700	232300	222300	210200
20	256300	254000	253400	250000	247100	244200	238400	241900	244700	232300	222300	209700
21	256300	254000	253400	250000	246500	244200	238400	242400	244700	231800	221800	209100
22	255700	254000	253400	250000	246500	244200	237900	243600	244200	231800	221200	209100
23	255700	254000	253400	250000	246500	244200	237900	246500	244200	231300	221200	208600
24	255700	254000	253400	249400	246500	244200	237900	247600	243600	231300	221200	208100
25	255700	254000	253400	249400	246500	244200	237400	247600	243600	230800	220700	207600
26	255200	254000	253400	249400	246500	244200	237400	248200	243000	230300	220200	207100
27	255200	254000	253400	249400	246500	243600	236900	248200	243000	230300	220200	207100
28	255200	254000	253400	249400	246500	243600	236900	248200	242400	229800	219700	207600
29	255200	254000	253400	249400	---	243000	236900	248200	241900	229300	219200	207100
30	255200	254000	253400	249400	---	243000	236400	248200	241900	229300	218700	206600
31	255200	---	253400	249400	---	243000	---	248200	---	228800	218700	---
MAX	265600	255200	254000	252900	249400	246500	242400	248200	248200	241400	228300	218200
MIN	249400	254000	253400	249400	246500	243000	236400	235400	241900	228800	218700	206600
(†)	1072.2	1072.0	1071.9	1071.2	1070.7	1070.1	1068.8	1071.0	1069.9	1067.3	1065.3	1062.9
(‡)	+3500	-1200	-600	-4000	-2900	-3500	-6600	+11800	-6300	-13100	-10100	-12100

CAL YR 1981 MAX 265600 MIN 199600 ‡ +53800
WTR YR 1982 MAX 265600 MIN 206600 ‡ -45100

† Elevation, in feet, at end of month.
‡ Change in contents, in acre-feet.

08179500 MEDINA LAKE NEAR SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical analyses: October 1969 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	SPECIFIC CONDUCTANCE (UMHOS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)
APR 02...	1310	405	17.0	200	39	55	15	7.2

DATE	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY FIELD (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)
APR 02...	.2	1.8	160	45	11	.1	9.4	241

08180000 MEDINA CANAL NEAR RIOMEDINA, TX

LOCATION.--Lat 29°30'19", long 98°54'11", Medina County, Hydrologic Unit 12100302, in center of canal, 54 ft (16 m) upstream from center pier of double-barrel flume, 350 ft (107 m) downstream from county highway bridge, 1,900 ft (579 m) downstream from head of canal and diversion dam, 4.6 mi (7.4 km) downstream from Medina Dam, 4.7 mi (7.6 km) north of Riomedina, and 25 mi (40 km) northwest of San Antonio.

PERIOD OF RECORD.--March 1922 to May 1934, July 1957 to current year.

REVISED RECORDS.--WSP 568: 1922. WSP 1712: 1922(M), 1924, 1926.

GAGE.--Water-stage recorder. Altitude of gage is 910 ft (277 m), from topographic map.

REMARKS.--Records good. Station is above all diversions from canal. Canal diverts from right end of Medina Diversion Dam 1,900 ft (579 m) upstream from gage for irrigation downstream near Lacoste and Natalia.

AVERAGE DISCHARGE.--36 years (water years 1923-33, 1958-82), 41.7 ft³/s (1.181 m³/s), 30,210 acre-ft/yr (37.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 216 ft³/s (6.12 m³/s) May 6, 1971; no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	25	33	57	40	12	47	66	88	143	117	107
2	75	25	33	35	45	34	47	.05	115	138	141	116
3	74	28	42	22	49	34	47	30	130	139	126	126
4	73	40	47	26	49	34	47	73	133	139	116	132
5	80	40	47	41	48	33	48	53	147	117	110	124
6	86	40	46	41	47	33	59	12	147	54	111	117
7	26	40	46	38	47	33	58	.00	144	124	114	114
8	.00	40	46	22	47	33	58	.00	144	159	116	106
9	.00	39	46	22	58	33	61	.00	145	150	119	96
10	.00	25	46	22	63	33	64	.00	157	146	126	96
11	.00	25	49	22	62	33	65	24	174	131	118	96
12	7.8	24	35	23	60	33	65	23	174	131	81	95
13	20	24	29	22	59	33	73	.13	175	138	71	91
14	22	25	30	22	58	33	86	27	169	115	87	89
15	21	25	30	22	49	45	111	57	125	129	63	90
16	20	37	30	22	40	50	116	56	84	130	72	79
17	19	46	30	22	46	34	119	25	81	130	91	74
18	18	47	30	27	52	37	118	22	87	131	55	75
19	23	47	30	42	52	45	118	60	88	131	84	76
20	46	47	30	42	50	54	117	37	119	126	89	77
21	29	49	29	42	24	57	88	32	141	115	90	78
22	.14	48	29	41	39	56	80	49	150	112	90	74
23	3.0	46	30	41	57	55	69	49	175	109	91	82
24	2.2	46	30	42	47	54	53	49	185	106	92	97
25	2.2	46	30	42	29	54	41	48	165	104	93	94
26	2.3	47	29	42	.01	53	76	48	163	102	92	92
27	17	47	29	41	.00	52	74	48	161	101	93	89
28	25	46	29	41	.00	51	52	48	160	107	92	88
29	25	48	44	41	---	37	54	49	157	130	91	87
30	25	47	59	41	---	25	69	52	157	134	94	85
31	25	---	58	41	---	31	---	74	---	125	101	---
TOTAL	856.50	1159	1151	1047	1217.01	1234	2180	1111.18	4240	3846	3026	2842
MEAN	27.6	38.6	37.1	33.8	43.5	39.8	72.7	35.8	141	124	97.6	94.7
MAX	86	49	59	57	63	57	119	74	185	159	141	132
MIN	.00	24	29	22	.00	12	41	.00	81	54	55	74
AC-FT	1700	2300	2280	2080	2410	2450	4320	2200	8410	7630	6000	5640

CAL YR 1981 TOTAL 15226.22 MEAN 41.7 MAX 173 MIN .00 AC-FT 30200
WTR YR 1982 TOTAL 23909.69 MEAN 65.5 MAX 185 MIN .00 AC-FT 47420

08181400 HELOTES CREEK AT HELOTES, TX

LOCATION.--Lat 29°34'42", long 98°41'29", Bexar County, Hydrologic Unit 12100302, 42 ft (13 m) left of and 44 ft (13 m) downstream from centerline of bridge on State Highway 16, 0.1 mi (0.2 km) northwest of Helotes, and 8.6 mi (13.8 km) upstream from mouth.

DRAINAGE AREA.--15.0 mi² (38.8 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--June 1968 to current year.

REVISED RECORDS.--WRD TX-73-1: 1972(M).

GAGE.--Water-stage recorder. Datum of gage is 1,014.82 ft (309.317 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records fair. An undetermined amount of flow is diverted for domestic use above the station, and some flow enters the Edwards and associated limestones through the Balcones Fault Zone in the vicinity of the gage. Recording rain gage located at station, with two additional recording rain gages located in watershed.

AVERAGE DISCHARGE.--14 years, 4.38 ft³/s (0.124 m³/s), 3.91 in/yr (99 mm/yr), 3,170 acre-ft/yr (3.91 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,680 ft³/s (217 m³/s) July 16, 1973, gage height, 10.8 ft (3.29 m), from floodmarks, from rating curve extended above 5,000 ft³/s (142 m³/s); no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1923, 13.7 ft (4.18 m) in 1927, from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 140 ft³/s (3.96 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 31	1430	414	11.7	3.05	0.930	May 13	1045	450	12.7	3.12	0.951
May 6	0430	748	21.2	3.68	1.122	May 16	2045	*856	24.2	3.86	1.177

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	5.3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.79	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	1.0	.00	.00	.00	.00	.00	.00	58	.00	.00	.00	.00
7	.53	.00	.00	.00	.00	.00	.00	7.4	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.14	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	64	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	26	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	15	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	76	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	47	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	28	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	15	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	8.4	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	5.7	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.04	4.0	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.02	2.9	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	3.0	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	1.1	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.06	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	1.1	.00	.00	.00	---	.00	.00	.00	2.1	.00	.00	.00
31	34	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	36.63	6.09	.00	.00	.00	.00	.06	361.70	2.10	.00	.00	.03
MEAN	1.18	.20	.000	.000	.000	.000	.002	11.7	.070	.000	.000	.001
MAX	34	5.3	.00	.00	.00	.00	.04	76	2.1	.00	.00	.03
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.08	.01	.000	.000	.000	.000	.000	.78	.005	.000	.000	.000
IN.	.09	.02	.00	.00	.00	.00	.00	.90	.01	.00	.00	.00
AC-FT	73	12	.00	.00	.00	.00	.1	717	4.2	.00	.00	.06

CAL YR 1981 TOTAL 2587.59 MEAN 7.09 MAX 606 MIN .00 CFSM .47 IN 6.42 AC-FT 5130
WTR YR 1982 TOTAL 406.61 MEAN 1.11 MAX 76 MIN .00 CFSM .07 IN 1.01 AC-FT 807

08183900 CIBOLO CREEK NEAR BOERNE, TX

LOCATION.--Lat 29°46'26", long 98°41'50", Kendall County, Hydrologic Unit 12100304, on left bank 0.6 mi (1.0 km) upstream from Southern Pacific Lines bridge, 0.9 mi (1.4 km) downstream from Menger Creek, and 2.5 mi (4.0 km) southeast of Boerne.

DRAINAGE AREA.--68.4 mi² (177.2 km²).

PERIOD OF RECORD.--March 1962 to current year.

REVISED RECORDS.--WRD TX-73-1: 1964-65, 1966(P), 1968-72(P).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,339.61 ft (408.313 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No know diversion above station. Flow is affected at times by discharge from flood-detention pools of four floodwater-retarding structures with a combined detention-capacity of 8,850 acre-ft (10.9 hm³). This structure controls runoff from 34.0 mi² (88.1 km²). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--20 years, 29.3 ft³/s (0.830 m³/s), 5.82 in/yr (148 mm/yr), 21,230 acre-ft/yr (26.2 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,400 ft³/s (1,030 m³/s) Sept. 27, 1964, gage height, 19.15 ft (5.837 m), from floodmark, from rating curve extended above 2,500 ft³/s (70.8 m³/s) on basis of slope-area measurement at 12,000 ft³/s (340 m³/s) and contracted-opening measurement of 36,400 ft³/s (1,030 m³/s); no flow at times in 1962-64, 1966-67, and 1971.
Maximum stage since at least 1892, that of Sept. 27, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.-- Second highest flood in 1952 reached a stage of 16.3 ft (4.97 m), discharge 25,600 ft³/s (725 m³/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,570 ft³/s (72.8 m³/s) May 13, gage height, 5.87 ft (1.789 m), from floodmark, no other peak above base of 900 ft³/s (25.5 m³/s); minimum daily, 0.45 ft³/s (0.013 m³/s) Sept. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	18	7.8	4.2	5.2	4.9	6.0	4.9	10	20	2.5	.62
2	9.4	11	6.6	4.5	4.2	4.9	6.0	4.9	9.8	14	2.1	.68
3	9.4	9.4	6.1	4.9	3.9	4.9	6.0	4.9	11	12	2.1	.65
4	9.4	8.3	5.2	4.1	3.9	5.0	5.6	4.9	10	9.5	2.2	.81
5	9.4	7.8	4.8	4.2	3.9	4.9	5.6	4.9	9.9	9.2	1.8	1.1
6	78	7.8	4.8	4.2	3.9	4.8	4.9	20	9.4	8.6	1.5	1.3
7	91	6.9	5.7	4.5	3.9	4.4	4.9	11	9.0	7.2	1.5	.91
8	36	8.9	5.6	4.7	3.3	3.8	4.9	10	8.1	6.1	1.9	.86
9	24	11	5.7	4.2	3.6	3.6	4.9	8.3	7.9	5.5	4.3	.68
10	17	8.3	5.2	4.0	3.9	3.9	4.9	6.4	8.0	5.2	8.6	.59
11	13	7.8	5.6	3.8	3.6	4.0	4.5	5.2	8.0	4.4	3.9	.45
12	11	8.3	5.6	6.0	3.6	4.4	4.5	4.9	17	4.0	2.2	.61
13	12	7.3	5.2	5.4	3.9	4.5	4.2	1420	16	4.0	1.8	.59
14	15	7.3	6.0	5.5	3.9	4.5	4.2	266	14	3.7	2.2	.83
15	14	7.3	5.6	5.1	3.9	4.3	4.2	75	12	3.6	2.0	.81
16	14	7.3	5.2	4.9	3.9	4.2	4.2	47	12	3.4	1.6	1.3
17	7.7	6.9	4.9	5.2	3.9	4.0	4.2	37	14	3.0	1.5	1.9
18	7.3	6.4	4.4	4.9	3.9	3.8	3.9	29	14	2.8	1.6	1.1
19	6.4	6.0	4.2	4.5	3.7	3.6	3.6	24	15	2.5	1.9	.95
20	5.9	5.2	4.2	4.9	5.2	4.0	3.3	21	14	2.2	2.1	6.0
21	7.0	4.9	4.2	5.2	6.5	4.1	3.3	19	13	2.0	1.8	1.2
22	13	4.2	4.6	5.2	4.2	3.9	9.3	18	24	2.9	1.4	1.1
23	17	4.2	4.9	5.2	3.8	4.5	6.4	17	34	5.6	1.4	.95
24	11	4.2	3.9	5.2	3.5	4.7	6.4	31	17	7.4	1.1	.98
25	9.5	3.9	3.3	5.2	4.2	4.5	6.0	26	13	4.8	.92	1.0
26	9.7	4.2	3.6	4.9	11	4.7	5.6	20	13	3.2	.68	.95
27	8.2	4.5	3.6	4.5	5.9	5.3	5.6	17	15	3.1	.73	.80
28	7.8	5.6	3.6	4.9	5.2	4.9	4.9	15	14	3.0	.76	.70
29	8.3	7.3	3.6	5.2	---	5.2	4.9	14	13	2.9	.94	.69
30	8.9	8.3	3.9	6.0	---	5.9	4.9	13	17	2.5	.65	.71
31	68	---	4.5	6.0	---	6.0	---	12	---	2.3	.58	---
TOTAL	567.7	218.5	152.1	151.2	123.5	140.1	151.8	2211.3	402.1	170.6	60.26	31.82
MEAN	18.3	7.28	4.91	4.88	4.41	4.52	5.06	71.3	13.4	5.50	1.94	1.06
MAX	91	18	7.8	6.0	11	6.0	9.3	1420	34	20	8.6	6.0
MIN	5.9	3.9	3.3	3.8	3.3	3.6	3.3	4.9	7.9	2.0	.58	.45
AC-FT	1130	433	302	300	245	278	301	4390	798	338	120	63

CAL YR 1981 TOTAL 20266.30 MEAN 55.5 MAX 2130 MIN 3.3 AC-FT 40200
WTR YR 1982 TOTAL 4380.98 MEAN 12.0 MAX 1420 MIN .45 AC-FT 8690

08185000 CIBOLO CREEK AT SELMA, TX

LOCATION.--Lat 29°35'38", long 98°18'39", Bexar-Guadalupe County line, Hydrologic Unit 12100304, on right bank 0.6 mi (1.0 km) downstream from Missouri-Kansas-Texas Railroad Co. bridge and 0.9 mi (1.4 km) upstream from bridge on Interstate Highway 35 at Selma.

DRAINAGE AREA.--274 mi² (710 km²).

PERIOD OF RECORD.--March 1946 to current year. Figures for water year 1960 in WSP 1813 are in error and should be disregarded.

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 728.34 ft (221.998 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Small diversion above station. For statement regarding regulation by Soil Conservation Service floodwater-retarding structures, see station 08183900. Considerable flow of Cibolo Creek enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between this station and the one near Boerne (station 08183900). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--36 years, 15.2 ft³/s (0.430 m³/s), 11,010 acre-ft/yr (13.6 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,000 ft³/s (1,840 m³/s) July 16, 1973, gage height, 26.2 ft (7.99 m), from floodmark, from rating curve extended above 16,000 ft³/s (453 m³/s) on basis of field estimate of 54,000 ft³/s (1,530 m³/s) and contracted-opening measurement of 65,000 ft³/s (1,840 m³/s); no flow most of time.
Maximum stage since at least 1869, that of July 16, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of 26 ft (7.9 m) occurred in 1889, but stage for flood in 1913 is unknown, from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 400 ft³/s (11.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Nov. 1	0600	512	14.5	4.99	1.521
May 6	unknown	1,510	42.8	6.36	1.939
May 13	2200	*3,280	92.9	8.00	2.438

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	170	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	1.2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.05	.00	.00	.00	.00	.00	217	.00	.00	.00	.00
7	.00	.01	.00	.00	.00	.00	.00	4.2	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.50	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.18	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.11	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.15	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	427	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	632	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	64	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	6.3	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	1.5	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.70	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.39	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.26	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.19	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.13	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.16	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.10	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.07	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.02	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	190.53	.00	.00	.00	.00	.00	1355.25	.00	.00	.00	.00
MEAN	.000	6.35	.000	.000	.000	.000	.000	43.7	.000	.000	.000	.000
MAX	.00	170	.00	.00	.00	.00	.00	632	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	378	.00	.00	.00	.00	.00	2690	.00	.00	.00	.00

CAL YR 1981 TOTAL 14107.38 MEAN 38.7 MAX 3210 MIN .00 AC-FT 27980
WTR YR 1982 TOTAL 1545.78 MEAN 4.24 MAX 632 MIN .00 AC-FT 3070

NUECES RIVER BASIN

08190000 NUECES RIVER AT LAGUNA, TX

LOCATION.--Lat 29°25'42", long 99°59'49", Uvalde County, Hydrologic Unit 12110101, on right bank 0.5 mi (0.8 km) downstream from Sycamore Creek, 1.0 mi (1.6 km) northeast of Laguna, and at mile 395.4 (636.2 km).

DRAINAGE AREA.--764 mi² (1,979 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to current year.

REVISED RECORDS.--WSP 1562: 1930, 1931(M), 1932, 1939.

GAGE.--Water-stage recorder. Datum of gage is 1,119.72 ft (341.291 m) National Geodetic Vertical Datum of 1929. Prior to Jan. 26, 1925, nonrecording gage at site 2 mi (3 km) downstream at different datum.

REMARKS.--Water-discharge records good. Many small diversions above station for irrigation.

AVERAGE DISCHARGE.--59 years, 150 ft³/s (4.248 m³/s), 2.67 in/yr (68 mm/yr), 108,700 acre-ft/yr (134 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 307,000 ft³/s (8,690 m³/s) Sept. 24, 1955, gage height, 29.95 ft (9.129 m), in gage well, 32.7 ft (9.97 m), from floodmarks, from rating curve extended above 40,000 ft³/s (1,130 m³/s) on basis of float measurement of 110,000 ft³/s (3,120 m³/s) and slope-area measurements of 213,000 and 307,000 ft³/s (6,030 and 8,690 m³/s); minimum, 2.6 ft³/s (0.074 m³/s) Mar. 14-16, 1957.
Maximum stage since at least 1866, that of Sept. 24, 1955.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1913 reached a stage of about 29 ft (8.8 m), discharge 210,000 ft³/s (5,950 m³/s); flood of Sept. 21, 1923, reached a stage of about 26.5 ft (8.08 m), discharge 160,000 ft³/s (4,530 m³/s); from information by local residents. Discharges based on rating curve mentioned above.

EXTREMES FOR CURRENT YEAR.--Peak discharge above base of 700 ft³/s (19.8 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 11	1330	36,000	1,020	16.2	4.94
Oct. 13	1830	*62,700	1,780	19.5	5.94
May 16	2330	5,150	146	7.85	2.393

Minimum daily discharge, 41 ft³/s (1.16 m³/s) Sept. 2, 5-11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	142	370	219	162	131	156	122	102	154	126	69	42
2	138	360	216	161	131	150	120	100	156	123	68	41
3	133	350	209	159	130	149	119	97	157	120	66	43
4	128	339	208	157	130	147	118	95	153	118	65	42
5	124	332	206	157	130	144	117	96	153	127	63	41
6	141	324	207	157	129	143	116	110	151	122	63	41
7	368	319	204	155	130	141	117	108	152	115	62	41
8	433	315	202	154	129	140	115	104	153	112	62	41
9	331	307	202	154	129	138	113	103	148	109	61	41
10	291	300	198	152	129	138	112	102	147	106	60	41
11	7640	296	197	151	128	136	112	107	143	104	59	41
12	987	294	197	155	127	135	111	128	150	102	59	42
13	12000	288	194	153	126	135	109	199	147	99	58	43
14	4210	283	192	151	126	135	108	182	142	97	57	42
15	1500	278	192	151	126	135	108	159	138	96	56	42
16	1030	271	188	148	126	133	108	529	135	95	55	42
17	843	267	185	148	126	132	106	385	135	94	54	44
18	727	263	183	145	125	132	104	170	131	91	53	45
19	640	256	183	144	127	132	104	156	132	89	53	46
20	587	252	179	144	135	132	104	147	184	87	52	54
21	546	249	177	143	140	131	105	142	167	86	51	50
22	547	246	175	142	134	132	105	140	147	84	50	51
23	539	243	172	141	129	132	104	139	136	84	49	53
24	498	238	172	140	127	131	105	204	131	84	48	53
25	471	238	171	138	158	129	103	201	146	83	47	53
26	450	232	171	138	179	129	101	163	145	80	47	51
27	433	232	170	135	169	129	98	153	136	78	46	51
28	416	227	167	135	161	126	98	150	130	76	45	50
29	407	226	166	134	---	126	97	149	126	75	44	50
30	394	225	166	133	---	125	103	148	124	73	43	50
31	383	---	164	132	---	123	---	149	---	71	42	---
TOTAL	37477	8420	5832	4569	3767	4196	3262	4917	4349	3006	1707	1367
MEAN	1209	281	188	147	135	135	109	159	145	97.0	55.1	45.6
MAX	12000	370	219	162	179	156	122	529	184	127	69	54
MIN	124	225	164	132	125	123	97	95	124	71	42	41
CFSM	1.58	.37	.25	.19	.18	.18	.14	.21	.19	.13	.07	.06
IN.	1.82	.41	.28	.22	.18	.20	.16	.24	.21	.15	.08	.07
AC-FT	74340	16700	11570	9060	7470	8320	6470	9750	8630	5960	3390	2710

CAL YR 1981	TOTAL	133250	MEAN 365	MAX 12000	MIN 45	CFSM .48	IN 6.49	AC-FT	264300	
WTR YR 1982	TOTAL	82869	MEAN 227	MAX 12000	MIN 41	CFSM .30	IN 4.03	AC-FT	164400	

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)
JAN 20...	1229	144	424	7.9	17.0	0	.40	9.6	102	.6	K14
MAY 14...	1002	183	397	8.1	20.0	5	.70	8.4	95	.6	53
JUL 15...	0920	98	407	7.4	25.5	<1	.90	7.0	88	2.6	20

DATE	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)
JAN 20...	22	210	23	62	14	8.0	.3	.8	190	15	10
MAY 14...	85	190	14	58	12	7.5	.2	1.1	180	10	12
JUL 15...	K100	200	8	56	14	8.2	.3	1.1	190	12	13

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN 20...	.1	10	234	0	0	<.020	1.7	<.070	.58	<.010	1.7
MAY 14...	.2	11	220	4	4	<.020	1.2	<.060	1.00	<.010	1.7
JUL 15...	.1	13	232	<2	<2	<.020	1.0	<.060	.50	<.010	.8

08190000 NUECES RIVER AT LAGUNA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN 20...	1229	1	38	<1	<10	1	<10
JUL 15...	0920	1	42	<1	<10	<1	<3

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 20...	<1	<1	<.1	<1	<1	<3
JUL 15...	<1	<1	<.1	<1	<1	6

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)
JAN 20...	1229	.00	.00	.00	.00	.00	.00	.00	.00
JUL 15...	0920	<.10	<.10	<.01	<.10	<.01	<.01	<.01	<.01

DATE	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)
JAN 20...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 15...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 20...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 15...	<.01	<.01	<.01	<.01	<1	<.01	<.01	<.01	<.01

08190500 WEST NUECES RIVER NEAR BRACKETTVILLE, TX

LOCATION.--Lat 29°28'21", long 100°14'10", Kinney County, Hydrologic Unit 12110102, at Wilson Ranch on Farm Road 3199, 1.3 mi (2.1 km) upstream from Miguel Canyon, 16.0 mi (25.7 km) northeast of Brackettville, and 40.2 mi (64.7 km) upstream from mouth.

DRAINAGE AREA.--700 mi² (1,800 km²).

PERIOD OF RECORD.--September 1939 to September 1950, April 1956 to current year.

REVISED RECORDS.--WSP 1312: 1949(M).

GAGE.--Water-stage recorder. Datum of gage is 1,326.79 ft (404.406 m) National Geodetic Vertical Datum of 1929. Prior to Mar. 14, 1940, nonrecording gage at same site and datum.

REMARKS.--Records good except those below 1 ft³/s (0.028 m³/s), which are fair. In ordinary years, a large part of streamflow from basin is lost by seepage into the Balcones Fault Zone of the Edwards and associated limestones above station. No known diversion above station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--37 years (water years 1940-50, 1957-82), 37.4 ft³/s (1.059 m³/s), 27,100 acre-ft/yr (33.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 246,000 ft³/s (6,970 m³/s) Sept. 20, 1964, gage height, 31.3 ft (9.54 m), from floodmark, from rating curve extended above 4,500 ft³/s (127 m³/s) on basis of slope-area measurements of 10,000, 51,000, 150,000, and 246,000 ft³/s (283, 1,440, 4,250, and 6,970 m³/s); no flow most of time.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1879, about 40 ft (12.2 m) June 14, 1935, discharge 550,000 ft³/s (15,600 m³/s), based on slope-area measurements of 580,000 ft³/s (16,400 m³/s) at site 33 mi (53 km) upstream from gage and 536,000 ft³/s (15,200 m³/s) at site 24 mi (39 km) downstream from gage, present site and datum, from gage-height relation of 1935 and 1955 flood peaks at site 0.6 mi (1.0 km) upstream. Flood in 1900 reached a stage of about 34 ft (10.4 m), and flood of Sept. 24, 1955, reached a stage of 27.1 ft (8.26 m), from floodmark at present site, discharge 150,000 ft³/s (4,250 m³/s), by slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 7	--	15,200	430	unknown	---
Oct. 11	--	29,700	841	unknown	---
Oct. 13	unknown	*39,000	1,100	a19.22	5.858

a From inside floodmark.

Minimum daily discharge, 0.01 ft³/s (0.0003 m³/s), Aug. 28 to Sept. 7, 10-12, 15, 16.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.2	47	5.0	1.5	.64	7.4	.53	.24	3.9	1.5	.08	.01
2	2.7	44	4.8	1.5	.69	6.4	.48	.20	3.7	1.4	.07	.01
3	2.3	40	4.7	1.3	.64	5.1	.44	.18	3.3	1.2	.06	.01
4	2.0	36	4.6	1.0	.64	4.0	.41	.16	3.1	1.1	.05	.01
5	1.6	33	4.3	.80	.64	2.9	.38	.19	2.9	1.2	.05	.01
6	1000	31	4.2	.69	.64	2.0	.34	.52	2.9	1.0	.04	.01
7	5050	28	4.1	.58	.64	2.0	.34	.55	2.7	.97	.04	.01
8	470	25	3.9	.53	.64	1.8	.34	.83	2.5	.90	.09	.02
9	183	21	3.8	.54	.60	1.6	.30	.77	2.4	.76	.15	.02
10	114	20	3.6	.52	.58	1.5	.30	.65	2.2	.69	.09	.01
11	10300	18	3.5	.47	.53	1.3	.30	.93	2.2	.61	.07	.01
12	2420	17	3.4	.47	.53	1.3	.30	1.4	2.4	.48	.05	.01
13	10200	15	3.2	.45	.53	1.2	.30	103	1.9	.46	.05	.02
14	2070	14	3.0	.42	.53	.98	.30	104	1.8	.46	.04	.02
15	494	13	3.0	.43	.53	.63	.30	73	1.7	.42	.04	.01
16	308	12	2.8	.40	.53	.53	.29	56	1.5	.39	.03	.01
17	248	11	2.7	.43	.51	.53	.27	36	1.4	.34	.03	.02
18	215	10	2.5	.39	.47	.66	.27	21	1.4	.31	.04	.07
19	193	8.9	2.4	.43	.47	.74	.32	14	1.7	.30	.04	.09
20	172	8.3	2.3	.43	.79	.54	.28	11	3.1	.27	.03	.14
21	152	7.9	2.1	.47	1.0	.53	.25	10	6.0	.26	.03	.13
22	142	7.5	1.9	.47	.64	.53	.34	9.2	6.1	.23	.03	.08
23	126	7.2	2.1	.49	.64	.56	.54	8.2	4.8	.22	.02	.06
24	113	6.8	2.0	.47	.64	.48	.55	7.6	3.5	.20	.02	.05
25	104	6.8	2.0	.53	1.9	.33	.49	6.8	2.7	.18	.02	.05
26	93	6.4	1.9	.53	3.4	.19	.39	6.8	2.3	.16	.02	.04
27	82	6.3	1.9	.58	6.6	.23	.25	6.4	2.0	.15	.02	.03
28	73	6.1	1.8	.58	7.7	.30	.24	5.7	1.9	.12	.01	.03
29	66	6.1	1.7	.64	---	.53	.21	5.1	1.7	.10	.01	.03
30	60	5.5	1.6	.59	---	.58	.30	4.6	1.5	.10	.01	.02
31	54	---	1.5	.64	---	.56	---	4.0	---	.09	.01	---
TOTAL	34513.8	518.8	92.3	19.27	34.29	47.93	10.35	499.02	81.2	16.57	1.34	1.04
MEAN	1113	17.3	2.98	.62	1.22	1.55	.35	16.1	2.71	.53	.043	.035
MAX	10300	47	5.0	1.5	7.7	7.4	.55	104	6.1	1.5	.15	.14
MIN	1.6	5.5	1.5	.39	.47	.19	.21	.16	1.4	.09	.01	.01
AC-FT	68460	1030	183	38	68	95	21	990	161	33	2.7	2.1

CAL YR 1981	TOTAL	65484.96	MEAN	179	MAX	10300	MIN	.00	AC-FT 129900
WTR YR 1982	TOTAL	35835.91	MEAN	98.2	MAX	10300	MIN	.01	AC-FT 71080

08192000 NUECES RIVER BELOW UVALDE, TX

LOCATION.--Lat 29°07'25", long 99°53'40", Uvalde County, Hydrologic Unit 12110103, on right bank at McDaniel Ranch, 5.7 mi (9.2 km) upstream from bridge on U.S. Highway 83, 8.8 mi (14.2 km) southwest of Uvalde, 18.2 mi (29.3 km) downstream from West Nueces River, and at mile 366.0 (588.9 km).

DRAINAGE AREA.--1,947 mi² (5,043 km²).

PERIOD OF RECORD.--April 1939 to current year. October 1927 to April 1939, published as "near Uvalde"; records equivalent only during periods of floodflow.

REVISED RECORDS.--WSP 1732: 1956(M).

GAGE.--Water-stage recorder. Datum of gage is 796.12 ft (242.657 m) National Geodetic Vertical Datum of 1929. Oct. 4, 1927, to Apr. 30, 1939, water-stage recorder at site 6.2 mi (10.0 km) upstream at different datum.

REMARKS.--Records good. Part of flow of Nueces River enters Edwards and associated limestones in the Balcones Fault Zone which crosses basin downstream from Laguna (station 08190000) and upstream from this station. At low stage, most of headwater flow enters this formation. Many small diversions above station for irrigation. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--43 years, 123 ft³/s (3.483 m³/s), 89,110 acre-ft/yr (110 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 189,000 ft³/s (5,350 m³/s) Sept. 24, 1955, gage height, 24.61 ft (7.501 m), from floodmark, from rating curve extended above 34,000 ft³/s (963 m³/s) on basis of conveyance study and slope-area measurement of peak flow; no flow at times in 1951-57.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1836, 40.4 ft (12.31 m) June 14, 1935, from floodmark discharge at former site, 616,000 ft³/s (17,400 m³/s), by slope-area measurement. Large floods also occurred in 1901 and 1913, stages unknown.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 250 ft³/s (7.08 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 7	1630	8,450	239	9.88	3.011	May 12	0730	8,220	233	9.77	2.978
Oct. 12	0130	46,900	1,330	15.1	4.60	May 17	0630	10,200	289	10.62	3.237
Oct. 14	0500	*58,500	1,660	a15.2	4.63	May 25	1430	354	10.0	4.41	1.344
Feb. 26	0530	264	7.48	4.22	1.286	June 19	2400	385	10.9	4.47	1.362
May 6	1600	523	14.8	4.62	1.408						

a From floodmark.

Minimum daily discharge, 30 ft³/s (0.85 m³/s) Sept. 18, 19, 26-30.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	361	189	129	90	149	91	60	199	133	52	33
2	83	354	185	127	88	141	89	59	198	127	51	32
3	83	346	180	125	87	130	86	60	197	118	51	32
4	79	338	172	122	86	126	85	60	194	127	49	32
5	77	331	172	120	85	123	80	61	187	118	48	32
6	79	318	168	119	82	117	79	202	183	121	48	33
7	2640	312	168	116	82	112	79	176	172	115	48	32
8	2360	306	164	115	82	109	77	112	168	106	49	32
9	795	293	161	115	82	104	77	98	164	101	48	32
10	428	287	161	111	81	103	75	90	157	96	46	32
11	4710	287	157	108	81	103	75	88	150	92	46	31
12	17900	282	157	114	78	103	71	2480	155	88	44	31
13	7970	276	154	116	77	105	71	395	157	86	44	32
14	26300	270	154	112	77	104	70	316	154	79	43	31
15	4160	264	154	108	77	103	70	277	146	77	42	31
16	1980	256	154	108	77	101	69	243	140	75	42	31
17	1310	253	150	106	76	100	68	2980	133	73	42	31
18	1050	248	146	106	74	100	66	610	124	69	40	30
19	906	237	143	106	74	99	65	387	137	66	40	30
20	825	232	143	106	78	99	62	319	194	64	39	32
21	748	227	143	106	79	99	60	287	167	62	39	32
22	738	222	141	105	87	96	60	266	185	63	39	31
23	687	217	138	102	89	96	60	253	154	61	37	31
24	629	212	135	100	86	96	61	241	140	60	36	31
25	576	208	134	99	101	95	58	303	127	59	36	31
26	503	203	133	97	196	94	58	306	133	58	36	30
27	474	198	133	95	181	94	58	270	140	57	35	30
28	437	198	132	94	162	92	59	248	130	55	35	30
29	411	194	129	94	---	90	59	230	124	54	35	30
30	385	189	129	90	---	92	65	218	118	53	34	30
31	377	---	130	90	---	92	---	208	---	53	33	---
TOTAL	79785	7919	4709	3361	2595	3267	2103	11903	4727	2566	1307	938
MEAN	2574	264	152	108	92.7	105	70.1	384	158	82.8	42.2	31.3
MAX	26300	361	189	129	196	149	91	2980	199	133	52	33
MIN	77	189	129	90	74	90	58	59	118	53	33	30
AC-FT	158300	15710	9340	6670	5150	6480	4170	23610	9380	5090	2590	1860

CAL YR 1981 TOTAL 182063.6 MEAN 499 MAX 26300 MIN 8.8 AC-FT 361100
WTR YR 1982 TOTAL 125180.0 MEAN 343 MAX 26300 MIN 30 AC-FT 248300

08195000 FRIO RIVER AT CONCAN, TX

LOCATION.--Lat 29°29'18", long 99°42'16", Uvalde County, Hydrologic Unit 12110106, on left bank 0.7 mi (1.1 km) southeast of Concan Post Office, 15 mi (24 km) upstream from Dry Frio River, and 224.1 mi (360.6 km) upstream from mouth.

DRAINAGE AREA.--405 mi² (1,049 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1923 to September 1929, October 1930 to current year.

REVISED RECORDS.--WSP 1342: Drainage area. WSP 1512: 1926, 1931-32, 1934(M), 1935-36. WSP 1712: 1958. WSP 1923: 1954(M), 1957(M).

GAGE.--Water-stage recorder. Datum of gage is 1,203.71 ft (366.891 m) National Geodetic Vertical Datum of 1929. Oct. 26, 1923, to July 28, 1924, nonrecording gage at site 86 ft (26 m) upstream at datum 5.08 ft (1.548 m) lower. July 29, 1924, to Oct. 3, 1930, nonrecording gage, and Oct. 4, 1930, to May 18, 1939, water-stage recorder, at site 130 ft (40 m) downstream at present datum.

REMARKS.--Water-discharge records good. Many small diversions for irrigation above station.

AVERAGE DISCHARGE.--57 years (water years 1925-29, 1931-82), 114 ft³/s (3.228 m³/s), 3.83 in/yr (97 mm/yr), 82,590 acre-ft/yr (102 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 162,000 ft³/s (4,590 m³/s) July 1, 1932, gage height, 34.44 ft (10.497 m), from floodmarks, from rating curve extended above 44,000 ft³/s (1,250 m³/s) on basis of flow-over-dam measurement of 56,600 ft³/s (1,600 m³/s) and slope-area measurement of 162,000 ft³/s (4,590 m³/s); no flow Aug. 5, 1956, to Jan 6, 1957.
Maximum stage since at least 1869, that of July 1, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 7	1300	1,170	33.1	5.46	1.664	May 17	--	1,100	31.2	unknown	---
Oct. 13	1700	*30,600	867	a16.8	5.121	May 24	1000	1,460	41.3	5.64	1.719
May 13	1400	14,100	399	a11.38	3.469						

a From floodmark.

Minimum daily discharge, 37 ft³/s (1.05 m³/s) Sept. 11, 12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	241	162	131	114	138	103	95	150	101	60	39
2	98	235	159	130	113	132	103	92	148	98	57	39
3	94	231	158	128	111	128	102	89	144	95	57	43
4	92	227	156	125	112	126	99	88	141	91	56	44
5	90	224	154	126	114	122	98	90	137	123	55	40
6	101	219	153	124	109	118	96	118	135	107	54	41
7	542	215	147	127	108	118	97	104	133	101	52	40
8	395	213	145	126	108	118	96	98	130	96	57	40
9	262	209	146	126	106	117	95	98	128	93	63	38
10	216	204	145	126	106	115	95	99	125	91	60	38
11	195	200	143	125	105	115	96	103	122	90	58	37
12	181	199	142	135	105	115	95	108	130	87	56	37
13	6520	195	142	125	105	115	94	2640	128	85	55	91
14	1550	193	142	124	104	113	93	640	121	84	51	124
15	672	192	139	122	102	111	93	370	117	82	51	69
16	502	189	142	120	102	111	94	280	115	80	49	61
17	440	186	140	118	99	111	92	390	116	78	48	53
18	397	184	138	122	101	111	92	220	111	77	48	52
19	366	178	137	118	103	109	89	200	111	74	50	52
20	347	176	136	118	113	109	87	187	167	74	48	54
21	335	174	136	119	109	109	91	180	118	70	48	56
22	336	173	132	118	107	106	94	173	113	70	47	54
23	327	176	133	115	104	107	97	166	108	71	46	52
24	305	173	133	115	102	107	96	447	105	73	45	52
25	294	172	131	115	128	105	94	208	105	73	44	51
26	284	170	129	115	152	105	92	177	104	69	42	51
27	275	168	136	115	163	106	91	170	101	67	41	50
28	267	167	133	112	149	105	90	167	99	65	40	50
29	261	170	133	116	---	106	89	164	98	64	40	49
30	255	165	134	113	---	106	98	160	99	63	40	49
31	251	---	133	112	---	104	---	156	---	61	39	---
TOTAL	16351	5818	4389	3761	3154	3518	2841	8277	3659	2553	1557	1546
MEAN	527	194	142	121	113	113	94.7	267	122	82.4	50.2	51.5
MAX	6520	241	162	135	163	138	103	2640	167	123	63	124
MIN	90	165	129	112	99	104	87	88	98	61	39	37
CFSM	1.30	.48	.35	.30	.28	.28	.23	.66	.30	.20	.12	.13
IN.	1.50	.53	.40	.35	.29	.32	.26	.76	.34	.23	.14	.14
AC-FT	32430	11540	8710	7460	6260	6980	5640	16420	7260	5060	3090	3070

CAL YR 1981	TOTAL	131405	MEAN 360	MAX 12900	MIN 72	CFSM .89	IN 12.07	AC-FT	260600	
WTR YR 1982	TOTAL	57424	MEAN 157	MAX 6520	MIN 37	CFSM .39	IN 5.27	AC-FT	113900	

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEC C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
20...	0932	118	415	7.9	14.0	0	.30	9.8	98	.9	37	160
MAY												
14...	1445	553	346	8.1	21.5	10	5.3	8.5	99	.8	1000	1800
JUL												
14...	1100	88	387	7.5	26.5	<1	1.2	7.4	95	1.0	36	550

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN											
20...	210	23	62	14	6.9	.2	.8	190	11	13	.1
MAY											
14...	170	14	53	10	4.7	.2	1.9	160	9.0	8.3	.2
JUL											
14...	190	13	54	14	7.7	.3	1.0	180	15	12	.1

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
20...	10	232	5	0	<.020	1.5	<.070	--	.81	<.010	1.2
MAY											
14...	10	193	11	3	<.020	1.8	.190	.60	.79	<.010	4.5
JUL											
14...	12	224	<2	<2	<.020	.64	<.060	--	.40	<.010	.9

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN 20...	0932	1	31	<1	<10	<1	<10
JUL 14...	1100	<1	35	1	<10	1	7

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 20...	<1	<1	<.1	<1	<1	<3
JUL 14...	1	2	<.1	<1	<1	12

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)
JAN 20...	0932	.00	.00	.00	.00	.00	.00	.00	.00
JUL 14...	1100	<.10	<.10	<.01	<.10	<.01	<.01	<.01	<.01

DATE	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)
JAN 20...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 14...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 20...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 14...	<.01	<.01	<.01	<.01	<1	<.01	<.01	<.01	<.01

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX

LOCATION.--Lat 29°30'16", long 99°46'52", Uvalde County, Hydrologic Unit 12110106, on right bank 2.3 mi (3.7 km) upstream from bridge on U.S. Highway 83, 3.1 mi (5.0 km) upstream from Rocky Creek, and 4.3 mi (6.9 km) southeast of Reagan Wells.

DRAINAGE AREA.--117 mi² (303 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--September 1952 to current year.

REVISED RECORDS.--WSP 1712: 1953. WSP 1923: 1955(M).

GAGE.--Water-stage recorder. Datum of gage is 1,335.2 ft (406.97 m) State Department of Highways and Public Transportation datum.

REMARKS.--Water-discharge records good. Several small diversions above station.

AVERAGE DISCHARGE.--30 years, 35.2 ft³/s (0.997 m³/s), 4.09 in/yr (104 mm/yr), 25,500 acre-ft/yr (31.4 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 123,000 ft³/s (3,480 m³/s) Aug. 13, 1966, gage height, 27.6 ft (8.41 m), from floodmark, from rating curve extended above 900 ft³/s (25.5 m³/s) on basis of slope-area measurements of 11,400, 30,700, 64,700, and 123,000 ft³/s (323, 869, 1,830, and 3,480 m³/s); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875 occurred in 1880, about 33 ft (10.1 m). Flood of June 14, 1935, reached a stage of 26.0 ft (7.92 m), discharge at site 2.6 mi (4.2 km) upstream, 64,700 ft³/s (1,830 m³/s), and that of July 1, 1932, reached a stage of 23 ft (7.0 m), discharge at site 2.0 mi (3.2 km) upstream, 30,700 ft³/s (869 m³/s), from information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 200 ft³/s (5.66 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)	Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 13	1200	*10,300	292	13.60	4.145	May 17	0200	1,700	48.1	5.59	1.704
May 13	1200	980	27.8	4.30	1.311	May 24	0800	2,250	63.7	6.47	1.972

Minimum daily discharge, 4.9 ft³/s (0.14 m³/s) Sept. 11.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	33	22	18	13	19	14	14	60	31	9.4	5.5
2	13	31	22	18	14	19	14	12	56	30	8.8	5.4
3	12	31	22	16	14	18	13	11	57	29	8.1	5.5
4	13	30	20	17	13	18	12	11	57	30	7.9	5.5
5	12	30	20	17	14	17	12	12	50	62	7.4	5.2
6	14	29	20	17	14	17	12	23	46	54	7.2	5.3
7	34	28	20	17	14	16	11	18	43	42	7.1	5.1
8	48	28	20	17	14	16	12	16	39	36	8.9	5.2
9	36	27	20	17	14	16	12	14	36	33	9.1	5.2
10	30	27	20	16	14	17	11	15	34	28	9.1	5.1
11	28	26	20	16	14	17	11	16	31	25	8.6	4.9
12	26	26	20	17	14	16	11	30	31	23	7.8	5.0
13	1830	26	20	18	14	16	11	300	30	21	7.3	9.7
14	329	26	20	18	13	16	11	103	28	20	7.0	15
15	155	26	20	17	14	16	11	56	26	18	6.9	18
16	122	25	20	17	13	16	11	42	24	17	6.4	16
17	103	25	19	16	13	16	10	389	24	16	6.6	15
18	66	25	19	16	13	16	10	95	21	15	6.9	13
19	56	24	19	16	14	16	11	65	21	14	6.6	13
20	52	24	19	16	16	16	11	54	72	13	6.0	15
21	49	24	19	16	16	16	10	48	80	13	6.3	14
22	49	23	19	16	16	16	11	43	57	13	6.3	12
23	48	23	19	15	15	16	12	39	46	15	6.7	12
24	44	23	19	15	15	16	11	515	40	15	6.4	12
25	42	23	19	14	18	15	11	164	37	14	6.5	11
26	40	23	19	14	24	14	11	111	36	12	6.5	10
27	38	23	18	15	22	15	11	96	34	11	6.5	9.2
28	37	23	17	14	21	14	11	86	32	11	6.4	8.2
29	36	23	18	15	---	14	10	77	31	11	6.3	7.6
30	35	23	18	15	---	14	13	69	32	11	5.9	7.3
31	35	---	19	14	---	14	---	64	---	9.8	5.7	---
TOTAL	3445	778	606	502	423	498	342	2608	1211	692.8	222.6	280.9
MEAN	111	25.9	19.5	16.2	15.1	16.1	11.4	84.1	40.4	22.3	7.18	9.36
MAX	1830	33	22	18	24	19	14	515	80	62	9.4	18
MIN	12	23	17	14	13	14	10	11	21	9.8	5.7	4.9
CFSM	.95	.22	.17	.14	.13	.14	.10	.72	.35	.19	.06	.08
IN.	1.10	.25	.19	.16	.13	.16	.11	.83	.39	.22	.07	.09
AC-FT	6830	1540	1200	996	839	988	678	5170	2400	1370	442	557

CAL YR 1981 TOTAL 29398.0 MEAN 80.5 MAX 3130 MIN 12 CFSM .69 IN 9.35 AC-FT 58310
WTR YR 1982 TOTAL 11609.3 MEAN 31.8 MAX 1830 MIN 4.9 CFSM .27 IN 3.69 AC-FT 23030

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN 20...	1046	16	380	7.8	12.0	0	.30	10.0	95	1.1	K16	34
MAY 14...	1232	96	344	8.1	22.0	10	.50	8.3	99	.7	240	380
JUL 14...	1415	20	349	7.5	30.5	<1	1.1	7.6	104	.8	K9	89

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN 20...	190	14	58	12	6.1	.2	.5	180	14	14	.1
MAY 14...	180	16	54	9.9	4.7	.2	1.0	160	15	7.6	.1
JUL 14...	180	19	52	12	6.6	.2	.8	160	15	11	.1

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN 20...	7.9	221	6	0	<.020	1.6	.070	.50	.57	.010	.9
MAY 14...	9.3	198	14	4	<.020	1.0	.190	.68	.87	<.010	3.6
JUL 14...	12	206	<2	<2	<.020	.46	<.060	--	.40	.030	1.2

08196000 DRY FRIO RIVER NEAR REAGAN WELLS, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN 20...	1046	<1	32	<1	<10	<1	<10
JUL 14...	1415	<1	37	<1	<10	<1	5

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 20...	<1	<1	<.1	<1	<1	<3
JUL 14...	5	<1	<.1	<1	<1	6

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)
JAN 20...	1046	.00	.00	.00	.00	.00	.00	.00	.00
JUL 14...	1415	<.10	<.10	<.01	<.10	<.01	<.01	<.01	<.01

DATE	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)
JAN 20...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 14...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 20...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 14...	<.01	<.01	<.01	<.01	<1	<.01	<.01	<.01	<.01

08197500 FRIO RIVER BELOW DRY FRIO RIVER NEAR UVALDE, TX

LOCATION.--Lat 29°14'44", long 99°40'27", Uvalde County, Hydrologic Unit 12110106, on right bank 1.1 mi (1.8 km) upstream from Farm Road 1023, 5.7 mi (9.2 km) downstream from Dry Frio River, 6.3 mi (10.1 km) downstream from bridge on U.S. Highway 90, and 7.2 mi (11.6 km) northeast of Uvalde.

DRAINAGE AREA.--661 mi² (1,712 km²).

PERIOD OF RECORD.--September 1952 to current year. Sum of records published as Frio River at Knippa and Dry Frio River at Knippa for period September 1952 to September 1953 is equivalent to record for this station.

GAGE.--Water-stage recorder. Datum of gage is 882.47 ft (268.977 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Part of flow of Frio River enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Concan (station 08195000) and this station. Most of low flow enters this formation. Many diversions for irrigation above station. An observation of water temperature was made during the year.

AVERAGE DISCHARGE.--30 years, 30.3 ft³/s (0.858 m³/s), 21,950 acre-ft/yr (27.1 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 88,500 ft³/s (2,510 m³/s) Aug. 13, 1966, gage height, 23.88 ft (7.279 m), from floodmark, from rating curve extended above 12,000 ft³/s (340 m³/s) on basis of slope-area measurements of 24,400, 53,000, and 88,500 ft³/s (691, 1,500, and 2,510 m³/s); no flow most of time each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1887, about 35 ft (10.7 m) in 1894. Flood of July 1, 1932, reached a stage of about 30 ft (9.1 m). A higher flood than that of 1894 occurred prior to 1887. Above information by local residents.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 13	2230	*21,700	615	13.93	4.246
May 13	--	7,620	216	9.68	2.950

Minimum discharge, no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	1.1	.00	.00	.00	.00	.00	.00	2.3	.00	.00	.00
2	.00	.95	.00	.00	.00	.00	.00	.00	1.2	.00	.00	.00
3	.00	.83	.00	.00	.00	.00	.00	.00	.54	.00	.00	.00
4	.00	.73	.00	.00	.00	.00	.00	.00	.18	.00	.00	.00
5	.00	.72	.00	.00	.00	.00	.00	.00	.04	.00	.00	.00
6	.00	.64	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	65	.60	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	48	.53	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	5.5	.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	2.0	.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.53	.45	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	4040	.39	.00	.00	.00	.00	.00	1100	.00	.00	.00	.00
14	3160	.35	.00	.00	.00	.00	.00	580	.00	.00	.00	.00
15	531	.26	.00	.00	.00	.00	.00	160	.00	.00	.00	.00
16	267	.20	.00	.00	.00	.00	.00	98	.00	.00	.00	.00
17	175	.15	.00	.00	.00	.00	.00	200	.00	.00	.00	.00
18	122	.12	.00	.00	.00	.00	.00	110	.00	.00	.00	.00
19	89	.10	.00	.00	.00	.00	.00	83	.00	.00	.00	.00
20	71	.06	.00	.00	.00	.00	.00	62	.00	.00	.00	.00
21	57	.01	.00	.00	.00	.00	.00	46	.00	.00	.00	.00
22	61	.00	.00	.00	.00	.00	.00	35	.00	.00	.00	.00
23	50	.00	.00	.00	.00	.00	.00	26	.00	.00	.00	.00
24	37	.00	.00	.00	.00	.00	.00	150	.00	.00	.00	.00
25	26	.00	.00	.00	.00	.00	.00	95	.00	.00	.00	.00
26	16	.00	.00	.00	.00	.00	.00	49	.00	.00	.00	.00
27	9.1	.00	.00	.00	.00	.00	.00	31	.00	.00	.00	.00
28	5.4	.00	.00	.00	.00	.00	.00	19	.00	.00	.00	.00
29	3.5	.00	.00	.00	---	.00	.00	11	.00	.00	.00	.00
30	2.3	.00	.00	.00	---	.00	.00	6.4	.00	.00	.00	.00
31	1.6	---	.00	.00	---	.00	---	3.9	---	.00	.00	---
TOTAL	8844.93	9.69	.00	.00	.00	.00	.00	2865.30	4.26	.00	.00	.00
MEAN	285	.32	.000	.000	.000	.000	.000	92.4	.14	.000	.000	.000
MAX	4040	1.1	.00	.00	.00	.00	.00	1100	2.3	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	17540	19	.00	.00	.00	.00	.00	5680	8.4	.00	.00	.00

CAL YR 1981	TOTAL	64795.64	MEAN	178	MAX	13000	MIN	.00	AC-FT 128500
WTR YR 1982	TOTAL	11724.18	MEAN	32.1	MAX	4040	MIN	.00	AC-FT 23250

08198000 SABINAL RIVER NEAR SABINAL, TX

LOCATION.--Lat 29°29'35", long 99°29'49", Uvalde County, Hydrologic Unit 12110106, on right bank 108 ft (33 m) upstream from concrete dam, 2.3 mi (3.7 km) downstream from mouth of Onion Creek, and 12.5 mi (20.1 km) north of Sabinal.

DRAINAGE AREA.--206 mi² (534 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WSP 1312: 1943(M), 1944(M), 1947(M).

GAGE.--Water-stage recorder. Datum of gage is 1,131.20 ft (344.790 m) National Geodetic Vertical Datum of 1929. Prior to Apr. 9, 1971, at site 0.3 mi (0.5 km) downstream at same datum.

REMARKS.--Water-discharge records good. Several small diversions above station for irrigation.

AVERAGE DISCHARGE.--40 years, 57.0 ft³/s (1.614 m³/s), 3.76 in/yr (96 mm/yr), 41,300 acre-ft/yr (50.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,200 ft³/s (1,560 m³/s) June 17, 1958, gage height, 28.3 ft (8.63 m), from floodmark at present site, from rating curve extended above 6,900 ft³/s (195 m³/s) on basis of slope-area measurement of 55,200 ft³/s (1,560 m³/s); no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1892, about 33 ft (10.1 m) July 2, 1932, from information by local residents. There is a legend that a flood in the middle 1800's reached a stage of nearly 63 ft (19.2 m), see flood history for station 08198500.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 1,000 ft³/s (28.3 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 13	1330	*18,600	527	a17.2	5.24
May 13	1230	7,720	219	10.61	3.234

a From floodmark.

Minimum daily discharge, 6.6 ft³/s (0.19 m³/s) Aug. 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	90	60	50	37	47	29	29	58	28	8.8	7.2
2	49	88	58	50	37	43	27	31	58	27	8.6	9.5
3	48	87	58	49	37	41	26	25	56	26	7.9	9.6
4	46	85	60	45	35	39	26	24	55	24	8.0	9.6
5	45	83	58	46	36	38	26	23	53	29	7.4	9.6
6	56	81	58	44	37	37	24	58	52	28	7.3	9.6
7	221	79	58	44	37	35	24	48	51	25	6.6	8.8
8	178	79	57	42	39	35	25	39	49	23	29	8.8
9	116	78	56	43	38	35	25	33	47	22	33	9.9
10	94	75	56	48	34	35	24	30	46	20	22	11
11	83	75	56	44	34	35	24	31	44	20	21	11
12	76	75	52	54	36	34	23	36	47	18	17	9.6
13	3260	73	52	51	36	34	24	1250	49	18	14	10
14	518	73	54	48	35	33	23	259	45	18	13	19
15	301	71	54	46	35	32	22	132	42	17	12	23
16	220	70	54	46	35	31	22	101	41	16	12	19
17	179	67	52	44	34	32	21	88	38	15	10	18
18	156	67	52	44	31	32	22	81	37	14	10	14
19	142	66	50	44	32	30	22	77	36	14	10	13
20	135	63	52	44	39	29	22	73	38	14	10	54
21	127	63	53	44	40	29	23	71	38	14	9.6	36
22	130	63	53	44	37	29	25	71	36	13	9.6	27
23	125	63	48	42	34	29	29	68	33	15	8.9	22
24	115	63	48	42	32	30	30	74	31	15	8.7	19
25	112	62	48	40	37	30	29	70	30	13	8.0	19
26	107	61	48	40	60	29	27	67	30	13	7.4	18
27	102	60	48	39	62	29	24	67	29	12	7.8	17
28	100	60	48	40	52	29	23	67	29	11	7.4	14
29	97	63	48	40	---	29	22	65	27	10	7.3	13
30	97	63	50	40	---	30	25	63	26	9.6	6.7	13
31	95	---	50	38	---	30	---	60	---	9.5	6.7	---
TOTAL	7178	2146	1649	1375	1068	1030	736	3211	1251	551.1	355.7	482.2
MEAN	232	71.5	53.2	44.4	38.1	33.2	24.6	104	41.7	17.8	11.5	16.1
MAX	3260	90	60	54	62	47	30	1250	58	29	33	54
MIN	45	60	48	38	31	29	21	23	26	9.5	6.6	7.2
CFSM	1.13	.35	.26	.22	.19	.16	.12	.51	.20	.09	.06	.08
IN.	1.30	.39	.30	.25	.19	.19	.13	.58	.23	.10	.06	.09
AC-FT	14240	4260	3270	2730	2120	2040	1460	6370	2480	1090	706	956

CAL YR 1981	TOTAL	75010.0	MEAN	206	MAX	3780	MIN	24	CFSM	1.00	IN 13.55	AC-FT	148800
WTR YR 1982	TOTAL	21035.0	MEAN	57.6	MAX	3260	MIN	6.6	CFSM	.28	IN 3.80	AC-FT	41720

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
19...	1236	44	455	8.0	10.5	0	.40	11.5	106	1.2	20	49
MAY												
12...	1340	37	428	8.1	21.5	5	.60	8.3	98	.6	220	380
JUL												
13...	1400	18	403	7.6	28.5	<1	.70	7.8	103	1.1	K9	75

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN											
19...	240	28	74	13	7.6	.2	.9	210	28	12	.1
MAY											
12...	210	23	64	13	7.4	.2	1.2	190	28	12	.2
JUL											
13...	200	17	59	12	8.2	.3	1.2	180	24	12	.2

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
19...	11	273	0	0	<.020	.99	.100	.42	.52	<.010	.9
MAY											
12...	10	250	<2	3	<.020	.47	.180	1.9	2.10	<.010	1.5
JUL											
13...	13	238	<2	<2	<.020	.33	<.060	--	.50	.040	1.0

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN 19...	1236	<1	31	<1	<10	1	<10
JUL 13...	1400	<1	32	<1	10	<1	<3

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 19...	1	<1	<.1	<1	<1	4
JUL 13...	<1	1	<.1	<1	<1	13

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)
JAN 19...	1236	.00	.00	.00	.00	.00	.00	.00	.00
JUL 13...	1400	<.10	<.10	<.01	<.10	<.01	<.01	<.01	<.01

DATE	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)
JAN 19...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 13...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 19...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 13...	<.01	<.01	<.01	<.01	<1	<.01	<.01	<.01	<.01

08198500 SABINAL RIVER AT SABINAL, TX

LOCATION.--Lat 29°18'47", long 99°28'46", Uvalde County, Hydrologic Unit 12110106, on left bank 80 ft (24 m) downstream from bridge on U.S. Highway 90, 1,100 ft (335 m) downstream from Southern Pacific Lines railroad bridge, 0.8 mi (1.3 km) west of Sabinal, and 5.8 mi (9.3 km) upstream from Ranchero Creek.

DRAINAGE AREA.--247 mi² (640 km²).

PERIOD OF RECORD.--September 1952 to current year.

GAGE.--Water-stage recorder. Datum of gage is 882.17 ft (268.885 m) National Geodetic Vertical Datum of 1929. Prior to July 29, 1958, nonrecording gage, and July 29, 1958, to Mar. 19, 1964, water-stage recorder at site 80 ft (24 m) upstream at same datum.

REMARKS.--Records good except those below 5.0 ft³/s (0.142 m³/s), which are fair. Several small diversions for irrigation above station. Most of low flow of the Sabinal River enters the Edwards and associated limestones in the Balcones Fault Zone, which crosses basin upstream from this station and downstream from Sabinal River near Sabinal (station 08198000). Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--30 years, 33.0 ft³/s (0.935 m³/s), 23,910 acre-ft/yr (29.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 73,300 ft³/s (2,080 m³/s) June 17, 1958, gage height, 33.3 ft (10.15 m); no flow at times most years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 40 ft (12.2 m) Aug. 24, 1919, from information by local residents. Flood of July 2, 1932, reached a stage of 31 ft (9.4 m), discharge 60,000 ft³/s (1,700 m³/s), from information by Southern Pacific Lines. There is a legend that a flood in 1858 covered the townsite of Sabinal. The stage would have been 70 to 80 ft (21.3 to 24.4 m), which seems unlikely. However, it is possible that a flood occurred in 1858 that covered part of the townsite and was higher than any flood since that date.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 100 ft³/s (2.83 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 13	1900	*19,100	541	a21.14	6.443
May 13	1700	2,020	57.2	9.85	3.002

a From floodmark.

Minimum daily discharge, 0.77 ft³/s (0.022 m³/s) Sept. 25.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	21	5.3	5.0	2.5	1.9	1.8	1.5	4.2	2.9	1.4	1.5
2	5.0	19	5.0	4.9	2.5	1.8	1.8	1.3	4.2	2.9	1.4	1.3
3	4.9	19	4.8	4.7	2.5	1.8	2.0	1.3	4.0	2.7	1.2	1.4
4	4.7	18	4.5	4.5	2.5	1.8	2.1	1.3	3.9	2.7	1.2	2.0
5	4.3	17	4.5	4.3	2.4	1.8	2.0	1.3	3.7	2.7	1.2	1.9
6	14	15	4.3	4.1	2.4	1.6	1.9	5.9	3.6	2.6	1.0	2.3
7	18	14	4.3	3.9	2.2	1.6	2.1	1.7	3.6	2.6	1.0	2.7
8	6.4	13	4.2	3.8	2.1	1.6	2.1	1.8	3.6	2.5	1.1	2.8
9	6.2	12	4.0	3.6	2.1	1.5	2.0	1.7	3.4	2.5	1.6	2.8
10	6.2	12	3.7	3.5	2.0	1.5	2.0	1.8	3.3	2.4	1.5	2.6
11	6.1	11	3.7	3.3	2.0	1.5	1.8	2.5	3.0	2.2	1.2	2.6
12	5.8	11	3.5	3.8	2.0	1.5	1.8	3.6	3.3	2.2	1.1	2.6
13	2020	11	3.4	3.6	2.0	1.5	1.5	398	3.0	2.1	1.0	2.3
14	816	11	3.2	3.5	1.9	1.5	1.5	380	3.0	2.1	1.0	1.9
15	210	10	3.0	3.3	1.9	1.7	1.4	81	3.0	2.1	.92	1.4
16	118	9.8	2.9	3.2	1.9	1.8	1.0	40	3.0	2.1	.92	1.2
17	81	9.2	2.8	3.1	1.9	1.8	1.3	31	2.6	2.1	.92	1.1
18	60	8.8	2.5	3.1	1.9	1.8	2.3	20	2.6	2.0	.92	1.0
19	50	8.2	2.5	3.0	1.9	1.9	2.0	13	2.5	1.9	1.2	.93
20	45	7.9	3.0	2.9	2.3	2.4	2.3	9.2	2.7	1.5	.92	2.3
21	41	7.2	4.2	2.9	1.9	2.2	2.6	7.1	2.4	1.3	1.0	.93
22	47	6.8	5.3	2.8	1.9	2.0	2.8	6.4	2.4	1.3	1.1	.85
23	43	6.3	4.6	2.8	1.9	2.0	2.6	5.6	2.4	1.6	1.2	.78
24	38	6.0	4.6	2.7	1.9	2.0	2.4	5.3	2.5	2.2	1.2	.78
25	35	5.6	4.7	2.7	2.4	1.9	2.3	5.3	2.4	2.1	1.2	.77
26	32	5.5	4.8	2.7	2.3	2.0	1.8	5.3	2.3	2.2	1.2	.78
27	30	5.3	5.0	2.6	1.9	2.3	1.7	5.3	2.5	1.8	1.1	.79
28	28	5.3	5.0	2.6	1.9	2.2	1.7	5.0	2.6	2.0	1.0	.78
29	26	5.1	4.8	2.6	---	2.2	1.6	4.6	2.6	1.9	1.1	.82
30	25	5.3	5.0	2.5	---	2.2	1.9	4.3	3.7	1.7	1.3	.90
31	23	---	4.9	2.5	---	2.0	---	4.3	---	1.5	1.6	---
TOTAL	3854.7	316.3	128.0	104.5	59.0	57.3	58.1	1056.4	92.0	66.4	35.70	46.81
MEAN	124	10.5	4.13	3.37	2.11	1.85	1.94	34.1	3.07	2.14	1.15	1.56
MAX	2020	21	5.3	5.0	2.5	2.4	2.8	398	4.2	2.9	1.6	2.8
MIN	4.3	5.1	2.5	2.5	1.9	1.5	1.0	1.3	2.3	1.3	.92	.77
AC-FT	7650	627	254	207	117	114	115	2100	182	132	71	93

CAL YR 1981	TOTAL	45451.12	MEAN	125	MAX	4340	MIN	.95	AC-FT 90150
WTR YR 1982	TOTAL	5875.21	MEAN	16.1	MAX	2020	MIN	.77	AC-FT 11650

08200000 HONDO CREEK NEAR TARPLEY, TX

LOCATION.--Lat 29°34'10", long 99°14'47", Medina County, Hydrologic Unit 12110107, on left bank 460 ft (140 m) downstream from bridge on Ranch Road 462, 6.3 mi (10.1 km) southeast of Tarpley, and 16.6 mi (26.7 km) northwest of Hondo.

DRAINAGE AREA.--86.2 mi² (223.3 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1952 to current year.

REVISED RECORDS.--WSP 1712: 1957.

GAGE.--Water-stage recorder. Datum of gage is 1,169.1 ft (356.34 m) Magnolia Oil Co. datum.

REMARKS.--Water-discharge records good. Several small diversions for irrigation above station.

AVERAGE DISCHARGE.--30 years, 39.5 ft³/s (1.119 m³/s), 6.22 in/yr (158 mm/yr), 8,620 acre-ft/yr (35.3 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 69,800 ft³/s (1,980 m³/s) June 17, 1958, gage height, 28.2 ft (8.60 m), from floodmark, from rating curve extended above 2,600 ft³/s (73.6 m³/s) on basis of slope-area measurements of 18,600 and 69,800 ft³/s (527 and 1,980 m³/s); no flow at times in 1952-57, 1962-64, 1967, and 1971.
Maximum stage since at least 1907, that of June 17, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in July 1932 reached a stage of about 26 ft (7.9 m), discharge 58,500 ft³/s (1,660 m³/s), from information by local resident.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 500 ft³/s (14.2 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 13	1600	1,610	45.6	4.71	1.436
May 13	0930	*2,420	68.5	5.39	1.643

Minimum discharge, 1.3 ft³/s (0.037 m³/s) Sept. 10-12.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	29	14	9.6	7.2	6.8	5.3	7.2	43	12	4.1	2.1
2	12	26	14	9.6	7.2	6.8	5.3	4.7	42	14	4.4	2.1
3	12	26	13	9.0	6.5	6.5	4.7	6.9	41	14	4.1	2.1
4	11	24	13	6.8	6.5	6.5	4.4	6.5	39	12	4.1	1.9
5	11	24	13	8.2	6.8	6.2	4.7	5.9	37	13	3.8	1.9
6	28	24	13	8.2	6.3	5.9	3.8	37	35	12	3.8	1.7
7	91	23	13	7.9	6.5	5.6	4.4	14	34	12	3.5	1.5
8	33	27	13	7.6	6.5	8.9	4.7	11	33	11	13	1.7
9	28	24	13	7.6	6.2	5.9	4.1	10	31	10	12	1.5
10	26	23	13	7.6	5.9	5.6	4.1	12	31	9.9	8.5	1.4
11	24	21	13	7.4	6.2	5.6	3.8	13	30	11	6.5	1.4
12	23	21	12	11	6.2	5.9	4.1	14	58	9.6	5.6	1.3
13	202	21	12	9.6	5.6	5.9	4.1	379	36	9.3	4.7	6.2
14	69	21	13	9.1	5.6	5.9	3.8	74	31	9.0	4.4	6.1
15	53	20	12	9.3	5.9	5.6	4.1	55	29	8.6	4.1	3.1
16	50	20	12	9.0	5.6	5.6	4.4	49	28	7.9	4.4	2.7
17	48	20	11	8.2	5.3	5.6	4.1	69	27	7.6	4.1	2.7
18	42	19	11	8.6	4.7	5.3	3.5	50	26	7.6	4.4	2.7
19	39	18	11	8.6	5.6	5.3	4.4	46	22	7.6	3.8	3.1
20	33	17	11	8.6	8.4	5.3	4.1	44	25	7.2	3.5	5.2
21	32	16	11	8.6	6.8	5.6	3.5	37	23	7.2	5.2	4.4
22	42	16	11	9.0	6.5	5.6	5.9	42	21	12	3.5	2.9
23	38	16	10	8.2	5.9	5.6	6.3	49	20	10	3.3	2.5
24	33	16	10	7.9	5.6	5.9	5.3	75	19	6.1	2.9	2.3
25	32	16	10	7.6	6.9	5.3	4.7	56	18	4.7	2.7	2.3
26	29	16	10	7.2	11	4.7	4.1	52	18	4.7	2.7	1.9
27	28	15	9.6	7.6	7.6	5.6	3.8	53	18	4.4	2.7	1.5
28	28	15	9.6	7.6	7.2	5.0	3.8	54	16	4.4	2.5	1.4
29	27	16	10	7.9	---	5.3	3.5	51	16	4.4	2.3	1.4
30	27	16	10	8.6	---	5.9	5.3	48	14	4.1	2.3	1.4
31	39	---	10	7.2	---	5.3	---	45	---	4.1	2.1	---
TOTAL	1202	606	361.2	258.9	182.2	180.5	132.1	1470.2	861	271.4	139.0	74.4
MEAN	38.8	20.2	11.7	8.35	6.51	5.82	4.40	47.4	28.7	8.75	4.48	2.48
MAX	202	29	14	11	11	8.9	6.3	379	58	14	13	6.2
MIN	11	15	9.6	6.8	4.7	4.7	3.5	4.7	14	4.1	2.1	1.3
CFSM	.45	.23	.14	.10	.08	.07	.05	.55	.33	.10	.05	.03
IN.	.52	.26	.16	.11	.08	.08	.06	.63	.37	.12	.06	.03
AC-FT	2380	1200	716	514	361	358	262	2920	1710	538	276	148

CAL YR 1981	TOTAL	33366.2	MEAN 91.4	MAX 2110	MIN 9.6	CFSM 1.06	IN 14.40	AC-FT 66180		
WTR YR 1982	TOTAL	5738.9	MEAN 15.7	MAX 379	MIN 1.3	CFSM .18	IN 2.48	AC-FT 11380		

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
18...	1602	8.6	420	8.1	9.5	0	.50	12.0	109	.4	K2	K10
MAY												
11...	1606	14	362	8.2	22.0	5	.70	8.8	105	.5	--	64
JUL												
12...	1600	9.6	339	7.8	32.0	<1	1.5	8.6	121	1.1	K2000	37

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN											
18...	220	43	71	11	7.1	.2	1.0	180	38	11	.2
MAY											
11...	180	36	54	10	6.5	.2	1.3	140	41	9.7	.3
JUL											
12...	170	36	50	10	7.4	.3	1.3	130	38	10	.2

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
18...	10	258	18	13	<.020	.47	.110	.32	.43	<.010	1.1
MAY											
11...	8.8	216	4	4	<.020	.13	.180	.50	.68	<.010	1.9
JUL											
12...	14	209	<2	<2	<.020	.10	<.060	--	.60	.070	1.3

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN 18...	1602	<1	29	<1	<10	<1	<10
JUL 12...	1600	1	25	1	10	1	7

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 18...	<1	<1	<.1	<1	<1	3
JUL 12...	3	2	.1	<1	<1	16

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)
JAN 18...	1602	.00	.00	.00	.00	.00	.00	.00	.00
JUL 12...	1600	<.10	<.10	<.01	<.10	<.01	<.01	<.01	<.01

DATE	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)
JAN 18...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 12...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 18...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 12...	<.01	<.01	<.01	<.01	<1	<.01	<.01	<.01	<.01

08200700 HONDO CREEK AT KING WATERHOLE NEAR HONDO, TX

LOCATION.--Lat 29°23'26", long 99°09'04", Medina County, Hydrologic Unit 12110107, on left bank 0.3 mi (0.5 km) downstream from county road low-water crossing, 3.1 mi (5.0 km) north of Hondo, and 7.8 mi (12.6 km) upstream from Verde Creek.

DRAINAGE AREA.--142 mi² (368 km²).

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 897.87 ft (273.671 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Most of the low flow of Hondo Creek enters Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Tarpley (station 08200000) and this station. Small diversions above station for irrigation, amounts unknown.

AVERAGE DISCHARGE.--22 years, 14.5 ft³/s (0.411 m³/s), 10,500 acre-ft/yr (12.9 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,900 ft³/s (1,330 m³/s) July 15, 1973, gage height, 16.4 ft (5.00 m), from floodmark, from rating curve extended above 9,800 ft³/s (278 m³/s) on basis of contracted-opening measurement of peak flow; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1875, 21 ft (6.4 m) in September 1919, from information by local resident. Other floods occurred in July 1932, stage 18 ft (5.5 m) and June 17, 1958, stage 17 ft (5.2 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 86 ft³/s (2.44 m³/s) May 13 at 2100 hours, gage height, 2.15 ft (0.655 m), no peak above base of 500 ft³/s (14.2 m³/s); no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.94	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	12	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	9.4	.00	.00	.00	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	22.34	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.72	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	12	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	44	.00	.00	.00	.00

CAL YR 1981	TOTAL	9687.64	MEAN 26.5	MAX 2350	MIN .00	AC-FT	19220	
WTR YR 1982	TOTAL	22.34	MEAN .061	MAX 12	MIN .00	AC-FT	44	

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX

LOCATION.--Lat 29°34'23", long 99°24'10", Medina County, Hydrologic Unit 12110107, on right bank 200 ft (61 m) upstream from county road crossing, 4.5 mi (7.2 km) downstream from Cascade Creek, and 7.9 mi (12.7 km) southeast of Utopia.

DRAINAGE AREA.--43.1 mi² (111.6 km²).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1961 to current year.

GAGE.--Water-stage recorder, crest-stage gages, and concrete control. Datum of gage is 1,265.8 ft (385.82 m) Magnolia Oil Co. datum, adjustment unknown.

REMARKS.--Water-discharge records good. No known diversion above station.

AVERAGE DISCHARGE.--21 years, 19.0 ft³/s (0.538 m³/s), 5.99 in/yr (152 mm/yr), 13,770 acre-ft/yr (17.0 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft³/s (1,090 m³/s) July 15, 1973, gage height, 14.4 ft (4.39 m), from floodmark, from rating curve extended above 910 ft³/s (25.8 m³/s) on basis of field estimate of flow over and around end of dam, 14,100 ft³/s (399 m³/s), and slope-area measurement of 52,600 ft³/s (1,490 m³/s); no flow for many days in 1963-64.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1901, 16.4 ft (5.00 m) June 17, 1958, from floodmarks, discharge 52,600 ft³/s (1,490 m³/s), by slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 600 ft³/s (17.0 m³/s) and maximum (*):

Date	Time	Discharge (ft³/s)	Discharge (m³/s)	Gage height (ft)	Gage height (m)
Oct. 13	1130	*8,970	254	7.81	2.380
May 13	0800	1,210	34.3	3.89	1.186
Aug. 8	1700	1,130	32.0	3.82	1.164

Minimum daily discharge, 0.97 ft³/s (0.027 m³/s) Mar. 17.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.3	11	5.7	3.6	2.5	3.1	2.2	4.6	21	6.3	2.0	3.4
2	5.3	11	5.7	3.6	2.6	3.0	2.2	3.7	21	5.3	1.8	3.4
3	4.9	11	5.7	3.5	2.4	2.8	2.2	2.7	20	5.2	1.7	3.4
4	4.6	10	5.7	2.8	2.4	2.8	2.2	2.6	20	4.9	1.7	3.4
5	4.4	10	5.7	2.7	2.5	2.8	2.3	2.4	18	6.0	1.7	3.1
6	14	10	5.3	3.0	2.6	2.6	2.0	25	17	5.2	1.7	3.1
7	36	10	5.3	3.3	2.4	2.6	2.1	7.2	17	4.6	1.8	3.0
8	15	11	4.9	2.9	2.4	2.6	2.5	5.4	16	4.3	105	2.8
9	10	9.6	4.9	2.8	2.5	2.6	2.3	4.9	15	3.9	58	2.8
10	9.4	9.6	4.9	3.0	2.6	2.6	2.3	4.9	14	3.9	23	2.6
11	8.5	9.1	4.9	2.6	2.4	2.6	2.3	5.0	13	3.8	14	2.6
12	8.3	9.0	4.6	4.8	2.4	2.6	2.2	6.4	16	3.6	12	2.6
13	467	9.0	4.6	3.9	2.4	2.6	2.2	210	14	3.6	10	8.3
14	60	9.0	5.1	3.5	2.4	2.5	2.1	53	12	3.6	9.6	4.1
15	36	8.9	4.6	3.7	2.4	1.4	1.9	41	11	3.4	9.0	3.0
16	29	8.1	4.6	3.3	2.4	1.2	2.1	37	11	3.4	7.9	2.9
17	24	7.2	4.2	2.9	2.4	.97	2.2	80	10	3.1	7.4	2.6
18	20	7.4	3.9	2.9	2.2	1.9	1.9	48	10	3.1	7.0	2.4
19	19	6.8	3.9	3.1	2.4	2.2	2.0	40	9.0	3.1	6.5	2.4
20	18	2.7	3.9	3.1	4.2	2.3	2.2	36	10	3.1	6.1	2.7
21	17	6.1	3.9	3.1	9.0	2.6	2.3	35	9.4	3.1	5.7	2.3
22	20	7.0	3.8	3.1	3.3	2.4	2.9	33	8.8	2.8	5.3	2.0
23	16	7.1	3.3	2.9	2.6	2.2	4.1	30	7.4	2.8	5.3	2.0
24	15	6.6	3.4	2.8	2.4	2.2	3.1	61	7.0	2.8	4.9	1.9
25	14	6.5	3.4	2.9	3.5	2.2	3.0	40	7.0	2.8	4.6	1.8
26	13	6.5	3.4	2.5	6.8	2.0	2.5	35	6.9	2.6	4.6	1.7
27	13	6.5	3.4	2.4	3.6	2.4	2.3	33	6.1	2.4	4.6	1.5
28	15	6.5	3.4	2.5	3.1	2.4	2.1	33	6.1	2.4	3.9	1.4
29	13	7.0	3.4	2.6	---	2.3	2.2	30	6.1	2.2	3.9	1.4
30	13	6.7	3.5	3.0	---	2.4	3.6	27	6.2	2.2	3.6	1.4
31	13	---	3.6	2.4	---	2.4	---	25	---	2.0	3.6	---
TOTAL	960.7	246.9	136.6	95.2	84.8	73.27	71.5	1001.8	366.0	111.5	337.9	82.0
MEAN	31.0	8.23	4.41	3.07	3.03	2.36	2.38	32.3	12.2	3.60	10.9	2.73
MAX	467	11	5.7	4.8	9.0	3.1	4.1	210	21	6.3	105	8.3
MIN	4.4	2.7	3.3	2.4	2.2	.97	1.9	2.4	6.1	2.0	1.7	1.4
CFSM	.72	.19	.10	.07	.07	.06	.06	.75	.28	.08	.25	.06
IN.	.83	.21	.12	.08	.07	.06	.06	.86	.32	.10	.29	.07
AC-FT	1910	490	271	189	168	145	142	1990	726	221	670	163

CAL YR 1981 TOTAL 17209.10 MEAN 47.1 MAX 818 MIN 2.7 CFSM 1.09 IN 14.85 AC-FT 34130
WTR YR 1982 TOTAL 3568.17 MEAN 9.78 MAX 467 MIN .97 CFSM .23 IN 3.08 AC-FT 7080

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: January 1974 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (UMHOS)	PH (UNITS)	TEMPER-ATURE (DEG C)	COLOR (PLAT-INUM-COBALT UNITS)	TUR-BID-ITY (FTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIO-CHEM-ICAL, 5 DAY (MG/L)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP-TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)
JAN												
19...	0948	3.1	428	8.2	9.0	0	.50	11.2	100	.6	23	23
MAY												
12...	1032	6.1	378	8.2	23.0	5	.60	8.9	109	.6	K1800	580
JUL												
13...	1017	3.7	356	7.6	28.0	5	1.0	8.1	107	1.3	K15	160

DATE	HARD-NESS (MG/L AS CACO3)	HARD-NESS, NONCAR-BONATE (MG/L CACO3)	CALCIUM DIS-SOLVED (MG/L AS CA)	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY FIELD (MG/L AS CACO3)	SULFATE DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)
JAN											
19...	220	62	69	12	7.0	.2	.9	160	53	12	.1
MAY											
12...	190	58	57	11	6.2	.2	1.5	130	48	10	.2
JUL											
13...	170	40	50	11	7.4	.3	1.2	130	38	12	.2

DATE	SILICA, DIS-SOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)	SOLIDS, VOLA-TILE, SUS-PENDED (MG/L)	NITRO-GEN, NITRITE TOTAL (MG/L AS N)	NITRO-GEN, NO2+NO3 TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N)	NITRO-GEN, ORGANIC TOTAL (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
JAN											
19...	10	260	2	2	<.020	.69	.120	.33	.45	<.010	1.1
MAY											
12...	9.2	221	23	3	<.020	.42	.190	1.1	1.30	<.010	2.0
JUL											
13...	14	212	<2	<2	<.020	.14	<.060	--	.40	.030	1.0

08201500 SECO CREEK AT MILLER RANCH NEAR UTOPIA, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

DATE	TIME	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
JAN 19...	0948	<1	25	1	<10	<1	<10
JUL 13...	1017	<1	26	<1	10	<1	<3

DATE	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, DIS-SOLVED (UG/L AS ZN)
JAN 19...	1	<1	<.1	<1	<1	<3
JUL 13...	1	2	<.1	<1	<1	17

DATE	TIME	PCB, TOTAL (UG/L)	NAPH-THA-LENES, POLY-CHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLOR-DANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DI-AZINON, TOTAL (UG/L)
JAN 19...	0948	.00	.00	.00	.00	.00	.00	.00	.00
JUL 13...	1017	<.10	<.10	<.01	<.10	<.01	<.01	<.01	<.01

DATE	DI-ELDRIN TOTAL (UG/L)	ENDO-SULFAN, TOTAL (UG/L)	ENDRIN, TOTAL (UG/L)	ETHION, TOTAL (UG/L)	HEPTA-CHLOR, TOTAL (UG/L)	HEPTA-CHLOR EPOXIDE TOTAL (UG/L)	LINDANE TOTAL (UG/L)	MALA-THION, TOTAL (UG/L)	METH-OXY-CHLOR, TOTAL (UG/L)
JAN 19...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 13...	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01	<.01

DATE	METHYL PARA-THION, TOTAL (UG/L)	METHYL TRI-THION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARA-THION, TOTAL (UG/L)	TOX-APHENE, TOTAL (UG/L)	TOTAL TRI-THION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 19...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 13...	<.01	<.01	<.01	<.01	<1	<.01	<.01	<.01	<.01

08202700 SECO CREEK AT ROWE RANCH NEAR D'HANIS, TX

LOCATION.--Lat 29°21'43", long 99°17'05", Medina County, Hydrologic Unit 12110107, on left bank 2.9 mi (4.7 km) north of D'Hanis and 8.0 mi (12.9 km) downstream from Rocky Creek.

DRAINAGE AREA.--168 mi^2 (435 km^2).

PERIOD OF RECORD.--November 1960 to current year.

GAGE.--Water-stage recorder. Datum of gage is 900.88 ft (274.588 m) National Geodetic Vertical Datum of 1929. Prior to October 1970, published as "at Crook Ranch, near D'Hanis".

REMARKS.--Records good. All of low flow of Seco Creek enters Edwards and associated limestones in the Balcones Fault Zone, which crosses basin between Miller Ranch (station 08201500) and this station. No known diversion above station.

AVERAGE DISCHARGE.--21 years (water years 1962-82), 8.84 ft^3/s (0.250 m^3/s), 6,400 acre-ft/yr (7.89 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,500 ft^3/s (864 m^3/s) July 15, 1973, gage height, 26.0 ft (7.92 m), from floodmark, from rating curve extended above 16,000 ft^3/s (453 m^3/s) on the basis of slope-area measurement of 35,800 ft^3/s (1,010 m^3/s); no flow most of time each year.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1852, 35.7 ft (10.88 m) May 31, 1935, from information by local resident. Other floods occurred Aug. 31, 1894, 33 ft (10.1 m); September 1919, 28 ft (8.5 m); July 2, 1932, 28.2 ft (8.60 m), discharge 35,800 ft^3/s (1,010 m^3/s), by slope-area measurement; June 17, 1958, 32.4 ft (9.88 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 440 ft^3/s (12.5 m^3/s) Oct. 13 at 1930 hours, gage height, 9.21 ft (2.807 m), no peak above base of 600 ft^3/s (17.0 m^3/s); no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
2	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
3	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
4	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
5	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
6	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	65	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	40	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
15	.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
17	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
22	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
23	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
24	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
25	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
28	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
29	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	.00
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	105.27	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MEAN	3.40	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	65	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	209	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1981	TOTAL	6325.44	MEAN	17.3	MAX	2150	MIN	.00	AC-FT	12550
WTR YR 1982	TOTAL	105.27	MEAN	.29	MAX	65	MIN	.00	AC-FT	209

08204000 LEONA RIVER SPRING FLOW NEAR UVALDE, TX

LOCATION.--Lat 29°09'15", long 99°44'35", Uvalde County, Hydrologic Unit 12110106 at old road crossing on White's Ranch, 2.0 mi (3.2 km) downstream from Cooks Slough, and 4.7 mi (7.6 km) southeast of Uvalde.

DRAINAGE AREA.--Not applicable. Normal flow of river comes from springs.

PERIOD OF RECORD.--1939 to current year. Occasional discharge measurements 1925-39 in connection with seepage investigations. Operated as continuous record station from January 1939 to September 1965. Occasional discharge measurements since September 1965.

GAGE.--Nonrecording. Datum of gage is 838.39 ft (255.541 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Discharge represents flow from several springs that enter river above station and below Uvalde. Surface runoff from precipitation is excluded. No known diversion above station.

AVERAGE DISCHARGE.--26 years (during period of continuous record, water years 1940-65), 9.72 ft^3/s (0.275 m^3/s), 7,040 acre-ft/yr (8.68 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--(1939 to current year) Maximum measured spring discharge, 82 ft^3/s (2.32 m^3/s) May 25, 1977; no flow at times in 1948-49, 1951-59, 1964-68.

DISCHARGE MEASUREMENTS, IN CUBIC FEET PER SECOND
WATER YEAR OCTOBER 1981 TO SEPTEMBER 1982

Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
Oct. 8, 1981	33	Feb. 3, 1982	37	June 9, 1982	33
Nov. 12	44	Mar. 24	44	July 19	30
Dec. 21	49	Apr. 29	36	Aug. 31	24

Note: Large-format version of the original plate is on the following page.

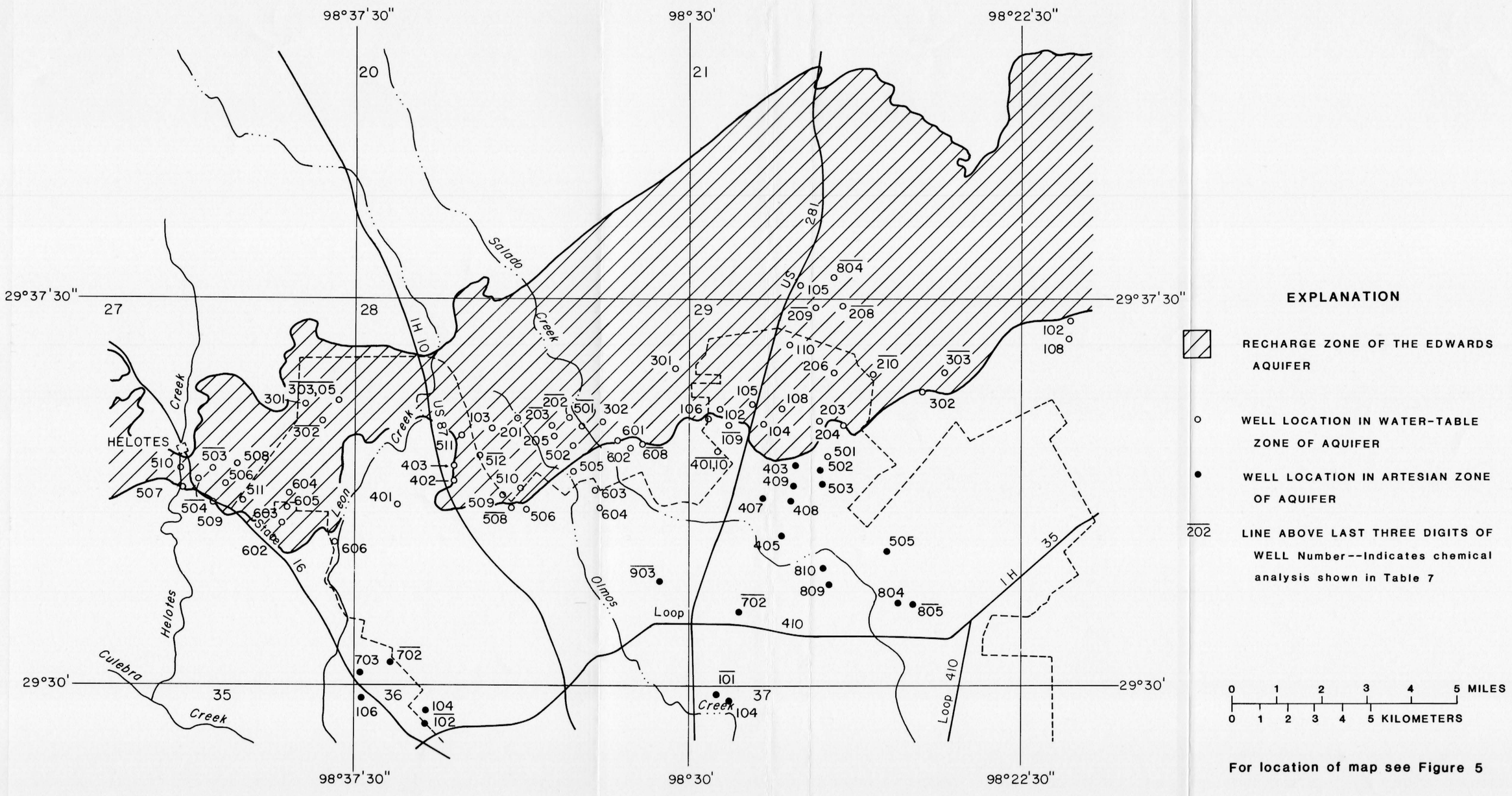

Figure 6.-Location of water-quality data-collection sites for wells and springs in the San Antonio area