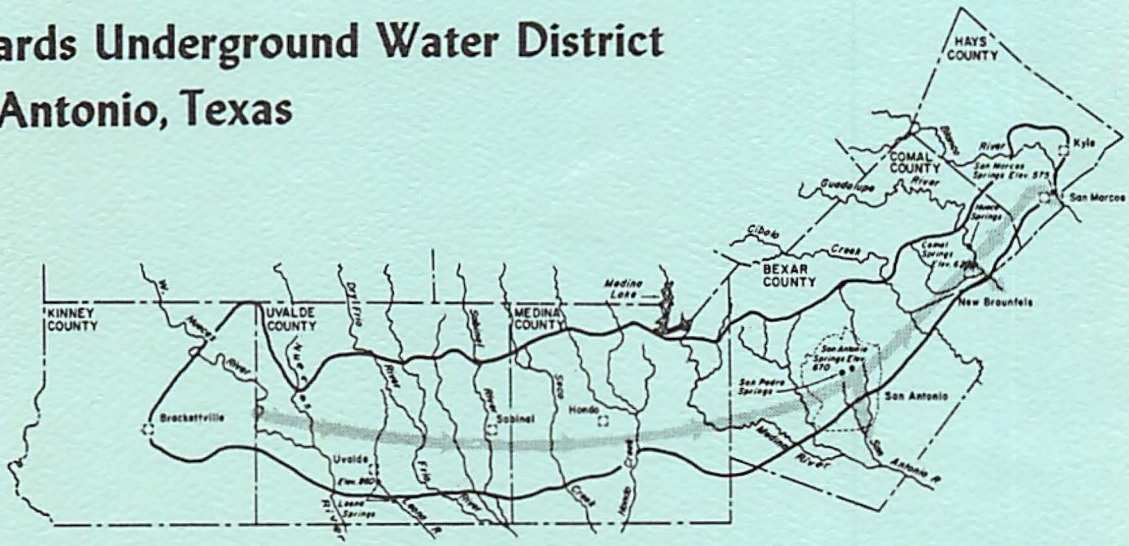
Records of Ground-Water Recharge, Discharge, Water Levels, and Chemical Quality of Water for the Edwards Aquifer in the San Antonio Area, Texas, 1934-80.

Bulletin 40

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

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BULLETIN 40

COMPILATION OF HYDROLOGIC DATA FOR THE EDWARDS AQUIFER, SAN ANTONIO AREA, TEXAS, 1934-80

Compiled by

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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

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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 such 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: the stronger the concentration of detergent, the deeper its shade of blue.

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 content in the water. Commonly, the concentration of dissolved solids (in milligrams per liter) expressed as a percentage of the specific conductance (in micromhos) 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" to refer to State annual basic-data reports.

WRD is used as an abbrevation for "Water Resources Data" 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, 1934-80

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ABSTRACT

The average annual ground-water recharge to the Edwards aquifer in the San Antonio area, Texas, from 1934 through 1980, was 594,800 acre-feet. The recharge during 1980 was 406,400 acre-feet. A maximum annual recharge of 1,711,200 acre-feet occurred during 1958, and a minimum annual recharge of 43,700 acre-feet occurred during 1956.

The estimated annual discharge by wells and springs during 1980 was 819,400 acre-feet. A maximum annual discharge of 960,900 acre-feet occurred during 1977, and a minimum annual discharge of 388,800 acre-feet occurred during 1955. The annual discharge by wells was 491,100 acre-feet during 1980, which is a record high for 1934-80.

Although water levels in many of the wells in the Edwards aquifer fluctuated near the midpoint between record high and low levels during the last 6 months of 1980, the volume of ground water in storage in the aquifer was above average.

Analyses of water samples from 61 wells and 3 springs show that the water is of a significantly better quality than the level established for public water systems.

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 stream-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. Hydrologic features in the San Antonio area are shown in figure 1, and the drainage basins and data-collection sites are shown in figure 2.

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 1980, periodic water-level measurements were made in 18 wells, and continuous water-stage recorders were in operation on 16 wells.

Surface-water data for Texas for the 1980 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.

During 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 from February 1975 to September 1977 were reported by Reeves (1978), and corresponding data for October 1977 to September 1978 and October 1978 to December 1979 were reported by Reeves, Maclay, Grimm, and Davis (1980, 1981).

In related studies, the Geological Survey, in cooperation with the Texas Department of Water Resources, has collected data since 1969 on the quality of urban runoff in San Antonio. Water-quality 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 (1981-82).

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: 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 1977-80 are given in table 1. Annual rainfall during 1979 was above average at most of the stations in the San Antonio area as a result of significant storms during March, April, and June of 1979. Annual rainfall during 1977, 1978, and 1980 was below average at most of the stations. Rainfall was mostly deficient in the western section of the area where the major part of the recharge occurs.

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 (Puente, 1978) during 1934-80 and the average annual recharge for 1934-80 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 during 1934-80 ranged from 43,700 acre-feet in 1956 to 1,711,200 acre-feet in 1958. The average annual recharge for 1934-80 was 594,800 acre-feet. Recharge during 1980 was 406,400 acre-feet, which is the lowest annual recharge since 1963.

GROUND-WATER DISCHARGE

The calculated discharge, by county, from the Edwards aquifer during 1934-80 is given in table 3. The calculated discharge by county and by water use during 1980 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 1980. 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 during 1980 was 819,400 acre-feet (table 4). The discharge from wells was 491,100 acre-feet during 1980, which is a record high for 1934-80. During 1980, about 60 percent of the total discharge was from wells, and approximately 60 percent of this amount was discharge from wells in Bexar County. The discharge from wells during 1980 was 25 percent more than during 1979, while spring flow decreased by about 37 percent. The total discharge from wells and springs during 1980 was about 10 percent less than during 1979 and about 37 percent more than the average discharge for 1934-79.

The relationship between accumulated recharge and discharge for 1934-80 is shown in figure 3.

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 1977-80 are given in table 5. The water levels in observation wells during 1980 are given in table 6. The measured and recorded data show that the water levels during the first 6 months of 1980 were relatively high when compared with historically recorded high and low measurements. However, the data also show that substantial declines occurred during the summer of 1980 and then fluctuated near average conditions for the remainder of the year. During the year, rainfall was slightly below normal and withdrawals were at a record high.

During 1980, 18 wells were measured periodically, and continuous recorders were in operation on 16 wells (fig. 2). 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. The computer printouts 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 are shown in figure 4, which also shows the sites for which data are given in Reeves (1976, 1978). Although some of the wells are 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 61 wells and 3 springs in the Edwards aquifer during 1980 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 8).

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 9. 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 2.

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Table 1.--Annual and long-term average precipitation at selected stations, 1977-80[1]

Station	Precipitation (inches)				Long-term average	
	1977	1978	1979	1980	Inches	Years of record
Brackettville	15.06	19.04	16.34	18.33	20.78	89
Uvalde	19.90	18.48	32.35	23.05	24.73	77
Sabinal	17.06	21.28	31.44	22.67	25.85	57
Hondo	19.40	24.64	28.83	21.27	28.75	74
San Antonio	29.64	35.99	36.64	24.23	28.28	102
Boerne	32.43	35.17	39.97	29.02	33.12	84
New Braunfels	24.83	37.79	36.72	33.69	31.71	85
San Marcos	27.69	33.08	38.74	29.56	33.46	78

[1] Precipitation data from the U.S. Department of Commerce (1977-80).

Table 2.--Calculated annual recharge to the Edwards aquifer by basin, 1934-80
(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
AVERAGE	102.2	105.1	37.5	91.2	59.0	64.0	99.3	36.5	[2]594.8

[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, 1934-80 (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

Table 4.--Calculated discharge from the Edwards aquifer by county and by water use, 1980

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	17.2	5.2	109.8	--	2.4	134.6	150.8
Medina	--	3.9	31.1	--	.6	35.6	39.9
Bexar	6.0	202.6	16.8	10.5	32.2	268.1	300.3
Comal	184.2	9.9	.3	1.7	.6	196.7	220.3
Hays	85.7	7.1	.8	--	2.7	96.3	107.9
Total (million gallons per day)	293.1	228.7	158.8	12.2	38.7	731.5	
Total (thousand acre-feet per year)	328.3	256.2	177.9	13.7	43.3		819.4

Table 5.--Annual high and low water levels in selected observation wells in the Edwards aquifer, 1977-80
(feet above NGVD of 1929)

Well	1977		1978		1979		1980		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.)	886.26	881.36	882.61	875.67	882.00	876.11	879.12	868.05	886.26 May 1977	811.0 Apr. 1957	1929-32 1934-80
TD-68-41-301[1] J-1-82 (Medina Co.)	737.78	715.65	722.36	681.62	728.18	710.25	716.05	666.72	737.78 May 1977	622.3 Aug. 1956	1950-80
AY-68-37-203[1,2] J-17 (Bexar Co.)	695.95	675.63	684.11	650.13	690.52	676.25	680.29	640.76	696.5 Oct. 1973	[3]612.5 Aug. 1956	1932-80[4]
DX-68-23-302[1] G-49 (Comal Co.)	630.15	627.61	628.05	624.52	628.97	627.25	627.49	623.00	630.17 Apr. 1977	613.3 Aug. 1956	1948-79
LR-67-01-304[1] H-23 (Hays Co.)	587.95	567.80	572.00	540.40	584.86	572.95	571.97	551.82	593.8 Mar. 1968	540.4 July 1978	1937-80

[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, 1980
(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 1957-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 5, 1980	29.24	May 12, 1980	42.42	Aug. 26, 1980	58.70	Oct. 28, 1980	48.98
Feb. 29	32.80	June 9	48.23	Sept. 28	50.76	Nov. 30	58.10
Mar. 31	39.60	Aug. 1	71.52				

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 1971-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 29, 1980	193.48	May 9, 1980	195.01	July 29, 1980	195.20	Oct. 28, 1980	193.59
Feb. 26	193.64	June 10	193.70	Aug. 28	194.37	Nov. 30	220.29
Mar. 25	193.80	June 24	194.00	Sept. 30	193.96	Dec. 31	193.67

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 1957-80.

Highest 1980 water level 241.90 ft below lsd on Jan. 25; lowest 1980 water level 262.50 ft below lsd on Oct. 13.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	242.80	242.72	243.86	246.32	249.18	.....	255.95	259.70	.....	261.32	260.55	260.68
10	242.90	243.40	244.34	247.73	249.24	250.94	256.50	258.81	.....	261.84	260.62	261.23
15	242.24	243.27	244.98	248.02	248.45	252.60	257.33	259.78	.....	261.10	260.58	261.67
20	242.25	243.16	245.05	249.74	248.35	252.87	258.69	260.17	.....	260.94	260.49	262.19
25	241.90	243.92	245.95	249.16	248.26	253.80	257.35	260.87	.....	260.75	260.30	262.21
Eom	242.70	243.50	245.84	249.45	249.37	254.53	258.72	.....	261.23	260.56	259.94	262.22

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 1952-80.

Highest 1980 water level 96.40 ft below lsd on Jan. 2; lowest 1980 water level 136.60 ft below lsd on July 18.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	96.98	99.30	103.71	106.64	111.77	110.18	.....	135.25	127.70	117.32	115.12	109.72
10	97.47	99.78	104.59	109.32	111.25	115.12	.....	129.00	120.85	118.40	115.62	109.29
15	98.19	100.54	105.91	108.22	105.50	119.95	.....	125.95	120.43	119.05	115.20	108.89
20	98.50	101.15	106.21	112.34	101.85	125.80	136.14	125.61	120.32	115.80	112.65	109.10
25	98.35	102.55	107.75	113.62	101.04	128.31	133.42	126.90	120.99	115.45	111.65	108.90
Eom	98.99	103.30	106.21	113.60	104.10	.....	134.92	127.10	117.95	114.75	110.00	109.30

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 1964-80.

Highest 1980 water level 106.42 ft below lsd on Jan. 2; lowest 1980 water level 137.65 ft below lsd on Aug. 6.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	106.73	108.34	111.44	113.94	118.30	116.41	135.18	137.35	131.77	124.15	122.04	117.88
10	106.96	108.63	112.15	115.76	118.29	119.85	.....	133.37	127.25	124.73	122.23	117.49
15	107.36	109.13	113.15	115.31	115.35	123.53	136.63	130.97	126.57	125.03	122.04	117.09
20	107.74	109.52	113.43	117.96	112.74	127.86	137.51	130.51	126.57	122.98	120.45	117.17
25	107.64	110.56	114.59	119.30	111.75	129.77	135.93	131.35	127.00	122.45	119.74	116.85
Eom	108.07	111.08	113.69	119.24	112.89	133.17	137.01	131.64	124.71	121.94	118.00	116.77

292845098255401. AY-68-37-203 (J-17)[a/]. 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[b/] below lsd, Aug. 17, 1956. Records available 1932-80[c/].

Highest 1980 water level 50.52 ft below lsd on Jan. 2; lowest 1980 water level 90.05 ft below lsd on July 18.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	50.99	53.27	57.27	59.81	65.13	.....	88.03	88.60	80.63	.....	68.04	62.57
10	51.52	53.55	58.02	62.78	64.43	68.73	88.42	82.15	74.03	71.66	68.46	62.23
15	52.12	54.33	59.43	61.52	60.75	73.71	88.85	78.97	73.46	72.15	68.06	61.74
20	52.33	54.94	59.75	65.63	56.57	d79.15	89.56	78.67	73.35	69.17	65.50	61.92
25	52.26	56.21	61.44	67.85	55.41	81.95	86.97	79.94	74.22	68.45	64.78	61.76
Eom	52.82	56.92	59.54	67.13	.....	86.16	88.56	80.35	70.88	67.71	62.50	61.68

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1980
(Water levels furnished by Edwards Underground Water District)--Continued

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, 1950-80.

Highest 1980 water level 59.24 ft above lsd on Feb. 19; lowest 1980 water level 34.65 ft above lsd on Nov. 14.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	e+43.43
25	.....	.....	.....	.....	.....	.....	.....	.....	e+43.32	.....	.....	.....
Eom	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

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 131.70 ft below lsd, May 25, 1977; lowest 169.56 ft below lsd, Oct. 1, 1956. Records available 1936-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1980	143.86	May 19, 1980	142.56	Aug. 25, 1980	146.86	Nov. 28, 1980	143.27
Feb. 25	145.04	June 23	142.08	Sept. 25	146.40	Dec. 29	145.88
Mar. 24	145.76	July 28	145.90	Oct. 23	146.13		

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 1948-80.

Highest 1980 water level 15.21 ft below lsd on Jan. 1, 2, 6; lowest 1980 water level 19.70 ft below lsd on Aug. 6.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	15.23	15.45	15.89	16.24	16.93	16.54	18.98	19.64	18.97	18.02	17.69	17.23
10	15.25	15.50	15.93	16.42	16.96	16.91	19.15	19.32	18.44	18.06	17.69	17.14
15	15.29	15.54	16.08	16.45	16.55	17.35	19.34	18.96	18.31	18.05	17.69	17.07
20	15.35	15.61	16.09	16.72	16.34	17.87	19.55	18.90	18.32	17.83	17.53	17.10
25	15.35	15.73	16.27	16.89	16.19	18.10	19.41	18.93	18.33	17.79	17.40	17.08
Eom	15.42	15.80	16.19	16.94	16.29	18.58	19.47	19.03	18.02	17.71	17.23	17.03

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; 1937-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1980	29.78	May 19, 1980	34.30	July 28, 1980	51.25	Oct. 24, 1980	41.21
Feb. 25	36.90	June 9	41.44	Aug. 25	51.90	Nov. 28	38.08
Mar. 24	41.55	June 23	43.95	Sept. 25	44.91	Dec. 29	36.83

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, 1955-80.

Highest 1980 water level 128.65 ft below lsd on Jan. 2; lowest 1980 water level 158.85 ft below lsd on Aug. 6.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	128.92	130.43	133.28	135.97	140.30	137.82	156.03	158.74	153.29	146.11	143.85	140.05
10	129.06	130.70	133.95	137.34	140.20	140.98	156.83	.....	149.20	146.51	144.06	139.68
15	129.44	131.16	134.87	137.23	137.84	144.55	157.65	152.87	148.40	146.72	143.85	139.23
20	129.83	131.49	135.20	139.37	135.29	148.39	158.74	152.22	148.42	144.71	142.51	139.32
25	129.76	132.43	136.25	140.75	134.22	150.23	157.30	152.95	148.45	144.32	141.64	138.95
Eom	130.20	132.87	135.64	140.70	135.03	153.42	158.10	153.24	146.53	143.75	140.23	138.91

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, 1971-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1980	219.58	June 9, 1980	210.94	July 28, 1980	214.25	Oct. 23, 1980	217.81
Feb. 25	222.04	June 23	209.18	Aug. 25	218.08	Nov. 28	219.73
Mar. 24	223.24	July 16	210.64	Sept. 25	218.87	Dec. 29	220.13
May 19	218.74						

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1980
(Water levels furnished by Edwards Underground Water District)--Continued

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 1937-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1980	114.66	May 19, 1980	102.70	July 28, 1980	111.46	Oct. 23, 1980	109.58
Feb. 25	117.47	June 9	95.96	Aug. 25	119.36	Nov. 28	110.00
Mar. 24	126.29	June 23	96.24	Sept. 25	119.21	Dec. 29	115.87

295909097523301. LR-67-01-304 (LR-67-02-102) (H-23). Unused artesian well in Edwards aquifer, diam 5 in, depth 372 ft, cased to 340 ft. Lsd 718.0 ft above msl. Highest water level 124.23 ft below lsd, Mar. 29, 1968; lowest 177.60 ft below lsd, July 10, 1978. Records available 1937-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1980	146.03	June 9, 1980	156.04	July 28, 1980	163.50	Oct. 23, 1980	153.94
Feb. 25	148.57	June 23	159.78	Aug. 25	164.97	Nov. 28	151.69
Mar. 24	150.92	July 17	166.18	Sept. 25	159.70	Dec. 29	150.33
May 19	153.00						

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 151.23 ft below lsd, Oct. 29, 1973; lowest 177.15 ft below lsd, Nov. 2, 1972. Records available 1954-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1980	157.88	May 19, 1980	157.45	July 28, 1980	158.30	Oct. 23, 1980	164.46
Feb. 25	158.09	June 9	160.04	Aug. 25	158.76	Nov. 28	161.47
Mar. 24	158.25	June 23	157.88	Sept. 25	166.01	Dec. 29	158.48

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, 1974-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1980	118.87	May 19, 1980	118.62	July 28, 1980	119.79	Oct. 23, 1980	120.64
Feb. 25	119.18	June 9	118.76	Aug. 25	124.80	Nov. 28	121.67
Mar. 24	119.38	June 23	119.00	Sept. 24	119.73	Dec. 29	119.78

295035097585501. LR-67-09-110. 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 1973-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 28, 1980	99.91	May 19, 1980	101.60	July 28, 1980	100.72	Oct. 24, 1980	101.53
Feb. 25	100.18	June 9	99.82	Aug. 25	100.90	Nov. 28	100.84
Mar. 24	100.42	June 23	100.11	Sept. 24	100.91	Dec. 29	100.93

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, 1954-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 1, 1980	124.98	May 9, 1980	143.68	July 29, 1980	164.75	Oct. 28, 1980	144.09
Feb. 29	131.84	May 29	132.66	Aug. 25	156.82	Nov. 30	139.88
Mar. 31	137.07	June 24	167.72	Sept. 28	148.58	Dec. 31	138.30

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 1950-80.

Highest 1980 water level 40.75 ft below lsd on Jan. 2; lowest 1980 water level 90.08 ft below lsd on July 3.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	41.11	45.26	51.22	56.86	63.55	61.98	89.22	84.15	76.80	.....	63.79	58.80
10	41.54	46.46	52.80	59.67	60.30	67.54	87.78	.....	71.28	.....	63.91	58.68
15	42.37	48.84	55.10	58.30	56.47	.....	86.44	75.64	69.39	67.02	63.87	57.98
20	43.28	49.57	55.60	63.58	52.30	.....	86.01	74.55	69.43	65.24	61.96	58.17
25	43.39	50.82	58.00	65.32	50.33	83.97	83.75	75.23	69.65	64.08	61.00	57.74
Eom	44.77	51.03	56.23	64.69	52.95	87.87	83.83	76.59	.....	63.65	59.15	57.57

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1980
(Water levels furnished by Edwards Underground Water District)--Continued

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 1957-80.

Highest 1980 water level 78.84 ft below lsd on Jan. 3; lowest 1980 water level 110.66 ft below lsd on Dec. 30.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	80.14	83.19	86.48	91.00	95.18	97.66	.....	106.76	109.81	104.43	107.08	109.10
10	80.50	83.85	.....	91.75	95.67	98.31	.....	107.30	104.63	104.89	107.40	109.57
15	80.97	84.30	.....	92.40	96.22	98.94	103.75	107.35	103.28	105.29	107.84	109.70
20	81.53	84.75	.....	93.20	.....	99.64	104.48	107.76	103.10	105.58	108.30	110.23
25	81.87	85.62	89.25	93.59	96.44	100.40	105.14	108.41	103.45	106.13	108.65	110.37
Eom	82.68	85.89	90.10	94.35	97.13	101.35	106.13	109.17	103.88	106.70	108.81	110.64

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, 1940-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 3, 1980	160.11	May 9, 1980	189.38	July 30, 1980	268.63	Nov. 30, 1980	232.23
Feb. 1	168.04	May 29	182.84	Aug. 29	229.95	Dec. 30	186.51
Feb. 28	175.89	June 25	255.84	Sept. 28	226.89		

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 1960-80.

Highest 1980 water level 208.05 ft below lsd on Jan. 2; lowest 1980 water level 265.33 ft below lsd on July 3.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	208.33	214.68	221.82	228.35	235.03	238.25	263.28	254.70	247.17	236.94	234.47	230.61
10	208.88	216.67	222.88	230.64	232.23	.....	260.95	250.60	241.46	236.77	234.83	230.61
15	209.82	220.05	225.74	229.14	227.99	.....	258.60	246.06	239.50	236.93	234.90	229.95
20	211.18	220.39	226.92	235.95	223.56	.....	257.50	244.95	239.67	235.44	233.32	230.12
25	211.78	221.29	229.58	236.60	222.05	259.77	255.50	245.45	240.01	234.59	232.51	229.66
Eom	213.70	221.30	227.13	236.46	227.77	262.93	254.57	247.03	238.27	234.29	231.02	229.53

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 1958-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Feb. 1, 1980	124.81	May 29, 1980	134.31	Aug. 26, 1980	157.50	Oct. 26, 1980	145.87
Feb. 29	130.73	July 30	166.36	Sept. 28	150.71	Nov. 30	143.48
May 9	143.15						

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 1957-80.

Highest 1980 water level 52.00 ft[d/] below lsd on Sept. 30; lowest 1980 water level 67.55 ft below lsd on Aug. 9.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	65.78	65.80	65.92	65.89	65.91	65.50	66.85	67.50	65.70	56.25	63.36	64.09
10	65.72	65.83	65.89	65.85	65.95	65.66	66.99	67.47	57.85	58.20	63.70	63.88
15	65.79	65.80	65.87	65.96	65.76	65.80	67.14	63.30	57.71	59.75	63.84	63.26
20	65.77	65.83	65.90	65.98	63.72	65.94	67.26	.....	58.15	58.92	63.69	63.36
25	65.67	65.95	65.95	65.95	64.93	66.15	67.32	60.39	59.33	60.79	64.19	64.08
Eom	65.85	65.81	65.84	65.97	65.16	66.59	67.43	65.00	d52.00	62.48	63.85	64.41

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 327.93 ft below lsd, Sept. 7, 1980. Records available 1974-80.

Highest 1980 water level 289.97 ft below lsd on Jan. 3; lowest 1980 water level 327.93 ft below lsd on Sept. 7.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	290.10	293.45	297.75	303.16	308.25	311.12	316.81	323.53	327.77	326.70	326.36	326.89
10	290.42	294.32	298.69	303.73	308.76	311.77	318.00	324.41	327.36	326.53	326.54	327.15
15	291.08	294.83	299.64	304.71	309.45	312.58	319.10	324.82	326.42	326.18	326.96	326.64
20	291.78	295.43	300.25	305.60	309.90	313.45	320.16	325.46	326.40	326.37	327.25	326.65
25	291.90	296.75	301.31	306.03	309.90	314.53	321.22	326.11	326.56	325.97	327.25	326.52
Eom	293.27	296.94	302.17	306.99	310.57	315.72	322.75	326.92	326.96	326.14	327.02	326.30

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1980
(Water levels furnished by Edwards Underground Water District)--Continued

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 1971-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2, 1980	99.85	May 14, 1980	187.32	July 30, 1980	264.40	Oct. 26, 1980	172.36
Jan. 31	108.01	May 29	165.18	Aug. 29	241.75	Nov. 30	157.20
Feb. 28	142.88	June 26	224.10	Sept. 28	246.71		

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 1956-80.

Highest 1980 water level 152.23 ft below lsd on Jan. 2; lowest 1980 water level 207.32 ft below lsd on July 4.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	152.50	159.94	169.42	175.20	182.05	181.65	205.30	200.04	195.12	185.14	183.39	181.45
10	153.04	161.87	170.38	175.46	180.60	187.40	204.80	198.07	190.22	184.28	183.83	181.50
15	153.78	164.58	171.87	175.28	177.45	.....	203.56	194.58	187.95	184.57	183.82	180.82
20	154.95	165.95	172.70	178.88	174.40	.....	202.67	193.51	188.49	183.28	183.18	180.92
25	155.47	167.80	174.32	181.50	173.50	200.57	200.90	193.70	188.85	182.85	182.65	180.37
Eom	158.53	168.58	173.50	181.53	176.48	205.28	199.90	195.13	187.33	183.12	181.81	180.18

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, 1944-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2, 1980	59.57	Mar. 28, 1980	64.02	July 31, 1980	68.06	Oct. 25, 1980	69.00
Jan. 31	61.87	May 29	48.15	Aug. 28	71.38	Nov. 29	68.87
Feb. 28	63.44	June 26	65.01	Sept. 28	71.26		

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 1956-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2, 1980	43.61	May 14, 1980	51.25	July 31, 1980	56.25	Oct. 26, 1980	54.46
Jan. 31	46.07	May 29	49.81	Aug. 29	54.68	Nov. 29	54.76
Mar. 28	48.90	June 26	53.64	Sept. 27	54.76		

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, 1934-80.

Highest 1980 water level 25.78 ft below lsd on Jan. 1; lowest 1980 water level 36.85 ft below lsd on Aug. 4.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	25.83	27.59	29.57	30.66	32.25	30.73	35.20	36.80	34.95	34.87	34.98	34.49
10	25.95	27.95	29.76	30.85	32.34	30.95	35.82	36.33	34.80	34.91	35.07	34.41
15	26.20	28.35	29.96	30.99	32.11	31.34	36.20	35.50	34.80	35.05	35.10	34.30
20	26.51	28.69	30.16	31.25	31.65	31.80	36.50	35.20	34.95	34.89	34.87	34.26
25	26.78	29.04	30.34	31.60	31.35	32.36	36.67	35.02	35.03	34.82	34.69	34.18
Eom	27.20	29.31	30.52	31.98	30.89	.....	36.68	34.90	34.89	34.86	34.61	34.16

291127099501201. YP-69-50-403 (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, 1961-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2, 1980	45.59	Mar. 28, 1980	50.30	July 31, 1980	53.81	Oct. 25, 1980	52.44
Jan. 31	46.07	May 29	48.54	Aug. 28	52.37	Nov. 29	51.54
Feb. 28	48.85	June 26	56.62				

See footnotes at end of table.

Table 6.--Water levels in observation wells in the Edwards aquifer, 1980
(Water levels furnished by Edwards Underground Water District)--Continued

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, 1966-80.

Highest 1980 water level 28.30 ft below lsd on Jan. 2, 4; lowest 1980 water level 37.99 ft below lsd on July 3.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	28.37	32.15	33.15	31.25	33.27	28.45	37.14	33.63	31.11	30.49	31.82	29.40
10	28.94	32.52	31.86	31.84	31.97	30.22	36.62	32.56	31.70	30.78	32.15	29.34
15	30.33	32.70	31.84	32.18	30.03	32.06	37.14	30.95	31.25	31.03	32.25	29.17
20	30.70	32.87	31.49	32.59	29.39	33.95	36.32	30.50	31.36	30.67	30.77	29.16
25	31.23	33.07	31.60	33.53	29.00	36.18	36.45	30.29	31.28	30.89	30.03	29.49
Eom	32.34	33.65	31.01	34.12	28.51	37.09	34.45	30.60	30.85	31.23	29.61	29.65

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 1957-80.

Highest 1980 water level 41.95 ft below lsd on Oct. 28; lowest 1980 water level 42.53 ft below lsd on Aug. 10.

Highest water level for the day, from recorder graph, 1980

Day	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
5	42.34	42.32	42.35	42.31	42.31	42.30	42.23	42.42	42.36	42.27	42.35	42.35
10	42.33	42.32	42.35	42.31	42.33	42.24	42.26	42.53	42.18	42.32	42.36	42.35
15	42.34	42.33	42.32	42.31	42.29	42.25	42.30	42.38	42.31	42.33	42.36	42.33
20	42.35	42.34	41.97	42.32	42.27	42.28	42.35	42.40	42.35	42.35	42.34	42.34
25	42.32	42.35	42.28	42.32	42.31	42.23	42.36	42.42	42.37	42.36	42.36	42.34
Eom	42.33	42.34	42.29	42.33	42.29	42.09	42.30	42.34	42.37	42.30	42.35	42.34

291412100033001. YP-70-56-201 (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 1937-80.

Date	Water level	Date	Water level	Date	Water level	Date	Water level
Jan. 2, 1980	51.47	Mar. 28, 1980	53.20	July 31, 1980	67.00	Oct. 25, 1980	53.00
Jan. 31	52.10	May 29	50.88	Aug. 28	53.56	Nov. 29	55.44
Feb. 28	65.82	June 26	52.75	Sept. 28	67.02		

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

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980
BEXAR COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
AY-68-21-804	80-04-16	1030	60	275	5.0	563	7.1	23.5	<1	<1
AY-68-27-302	80-07-16	1000	30	517	10	507	7.1	23.0	<1	<1
AY-68-27-303	80-04-10	1400	60	554	15	517	7.0	22.5	<1	<1
AY-68-27-305	80-04-16	1345	60	253	3.0	530	7.0	22.0	160	<1
AY-68-27-503	80-04-22	1100	22	435	275	514	7.2	21.5	<1	<1
	80-07-17	1130	60	435	275	531	7.0	22.0	<1	<1
AY-68-27-504	80-07-17	1400	60	508	525	579	7.0	22.0	--	--
AY-68-27-506	80-04-15	1300	60	603	15	527	7.1	22.5	<1	<1
AY-68-28-202	80-07-23	1000	120	457	125	505	7.0	23.0	<1	<1
AY-68-28-203	80-07-23	1400	300	435	350	497	6.9	24.0	<1	<1
AY-68-28-501	80-07-23	1120	300	468	100	527	6.8	23.0	<1	<1
AY-68-28-502	80-04-22	1315	240	506	110	548	7.0	23.0	<1	<1
	80-07-23	1210	250	506	110	556	--	23.5	<1	<1
AY-68-28-508	80-07-25	1340	1440	396	150	431	7.1	24.0	--	--
AY-68-28-512	80-04-07	1100	60	400	7.0	519	7.1	23.0	<1	<1
AY-68-28-608	80-04-07	1315	60	500	15	533	7.0	22.0	<1	<1
AY-68-28-903	80-07-23	1030	210	762	3500	704	6.9	22.0	--	--
AY-68-29-109	80-04-08	1200	1440	460	450	616	7.0	22.5	<1	<1
	80-07-22	1015	145	460	450	610	6.9	23.0	<1	<1
AY-68-29-205	80-04-16	1400	60	266	10	540	7.0	23.5	<1	<1
AY-68-29-209	80-04-16	1420	60	315	10	505	6.9	23.0	<1	<1
AY-68-29-303	80-07-28	1045	--	527	150	511	7.0	23.0	<1	<1
AY-68-29-401	80-07-22	1100	240	517	600	560	6.9	23.5	<1	<1
AY-68-29-702	80-08-04	0930	90	672	3000	569	7.2	22.5	--	--
AY-68-29-804	80-08-04	1245	45	761	2100	538	7.1	23.0	--	--
AY-68-35-102	80-08-05	1340	30	796	1875	545	--	22.5	--	--
AY-68-36-102	80-08-04	1215	240	786	9000	550	7.2	22.5	--	--
AY-68-36-502	80-08-05	1015	120	1224	7600	471	--	24.5	--	--
AY-68-37-101	80-08-05	1030	150	1005	7700	538	7.3	23.0	--	--
	80-09-02	1420	480	1805	7700	534	7.0	23.0	--	--
AY-68-37-404	80-08-06	0900	60	1326	13800	475	7.2	25.0	--	--
AY-68-37-506	80-08-06	1020	120	1407	7600	475	7.2	27.5	--	--
AY-68-37-705	80-08-05	1245	300	1798	6500	478	--	27.0	--	--
	80-09-02	1230	1440	1798	5000	479	7.2	27.0	--	--
AY-68-37-715	80-08-04	1030	1440	1052	300	466	7.2	26.5	--	--
	80-09-02	1130	1440	1052	300	463	7.3	26.5	--	--
AY-68-43-608	80-07-30	1400	1440	1663	1539	508	--	27.0	--	--

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, MF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE FET-FLD (MG/L AS HCO3) (00440)
AY-68-21-A04	80-04-16	<1	260	13	110	2.3	3.2	.1	.7	330
AY-68-27-302	80-07-16	<1	250	16	82	12	5.6	.2	.8	290
AY-68-27-303	80-04-10	<1	260	9	90	7.3	4.9	.1	.7	310
AY-68-27-305	80-04-10	<1	260	17	91	8.8	5.4	.1	.7	300
AY-68-27-503	80-04-22	<1	260	19	78	15	7.1	.2	.9	290
	80-07-17	<1	260	21	79	17	7.2	.2	.9	290
AY-68-27-504	80-07-17	--	240	26	89	10	6.3	.2	1.0	320
AY-68-27-606	80-04-15	<1	250	6	85	7.7	6.1	.2	1.1	300
AY-68-28-202	80-07-23	<1	250	7	85	10	5.8	.2	1.2	300
AY-68-28-203	80-07-23	<1	250	12	82	11	5.1	.1	1.0	290
AY-68-28-501	80-07-23	<1	260	16	97	4.4	6.4	.2	1.0	300
AY-68-28-502	80-04-22	<1	240	6	95	4.5	5.4	.2	1.1	330
	80-07-23	<1	260	6	95	4.6	5.4	.2	1.1	330
AY-68-28-506	80-07-25	--	210	30	63	13	5.5	.2	.9	220
AY-68-28-512	80-04-07	<1	260	32	97	8.8	5.7	.1	.9	300
AY-68-28-608	80-04-07	<1	270	17	100	5.3	7.0	.2	1.1	310
AY-68-28-903	80-07-23	--	320	21	110	12	20	.5	1.5	370
AY-68-29-109	80-04-08	<1	320	29	110	10	11	.3	.7	350
	80-07-22	<1	320	21	110	10	8.9	.2	.7	360
AY-68-29-208	80-04-16	<1	260	0	100	2.8	5.2	.1	.9	330
AY-68-29-209	80-04-16	<1	250	0	96	2.6	4.5	.1	.7	310
AY-68-29-303	80-07-28	<1	260	13	89	8.9	4.7	.1	.9	300
AY-68-29-401	80-07-22	<1	260	7	85	10	6.3	.2	.9	330
AY-68-29-702	80-08-04	--	240	21	92	13	6.1	.2	1.1	320
AY-68-29-804	80-08-04	--	260	17	79	16	8.3	.2	1.3	300
AY-68-35-102	80-08-05	--	270	45	77	18	7.7	.2	1.3	270
AY-68-36-102	80-08-04	--	270	35	83	16	9.4	.2	1.4	250
AY-68-36-502	80-08-05	--	230	22	66	15	7.7	.2	1.1	250
AY-68-37-101	80-08-05	--	260	33	77	17	9.0	.2	1.3	280
	80-09-02	--	260	42	77	17	8.8	.2	1.4	270
AY-68-37-404	80-08-06	--	220	19	65	15	8.5	.2	1.1	250
AY-68-37-506	80-08-06	--	230	24	64	16	9.1	.3	1.3	240
AY-68-37-705	80-08-05	--	230	24	64	16	8.8	.3	1.1	240
	80-09-02	--	230	24	64	16	9.0	.3	1.2	240
AY-68-37-715	80-08-04	--	220	22	63	15	8.2	.2	1.0	240
	80-09-02	--	220	22	63	15	8.2	.2	1.1	240
AY-68-43-608	80-07-30	--	240	41	67	17	10	.3	1.3	240

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	CARBONATE FET-FLD (MG/L AS CO3) (00445)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SiO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)
AY-68-21-804	80-04-16	0	1.7	12	.1	10	303	4.3	.010	.000
AY-68-27-302	80-07-16	0	9.7	11	.4	11	278	1.7	.010	.000
AY-68-27-303	80-04-10	0	6.0	11	.1	11	280	.14	.040	.370
AY-68-27-305	80-04-10	0	9.8	12	.1	11	287	1.9	.050	.060
AY-68-27-503	80-04-22	0	19	14	.2	11	298	1.6	.000	.000
	80-07-17	0	17	14	.1	11	287	1.7	.000	.050
AY-68-27-504	80-07-17	0	20	14	.2	11	324	1.2	.000	.050
AY-68-27-606	80-04-15	0	9.8	12	.2	10	282	2.3	.010	.000
AY-68-28-202	80-07-23	0	14	10	--	12	288	.87	.000	.010
AY-68-28-203	80-07-23	0	9.5	8.8	.3	12	273	.77	.010	.010
AY-68-28-501	80-07-23	0	9.5	13	.1	13	289	.84	.000	.010
AY-68-28-502	80-04-22	0	8.5	8.8	.2	13	301	.78	.000	.000
	80-07-23	0	8.0	13	.3	13	309	.77	.000	.010
AY-68-28-508	80-07-25	0	14	10	.2	11	231	2.1	.010	.010
AY-68-28-512	80-04-07	0	22	11	.1	12	305	1.4	.000	.020
AY-68-28-608	80-04-07	0	13	13	.1	14	306	1.0	.000	.020
AY-68-28-903	80-07-23	0	21	21	.2	15	383	1.8	.000	.010
AY-68-29-109	80-04-08	0	11	21	.1	14	350	1.5	.000	.020
	80-07-22	0	8.6	17	.1	13	344	1.6	.000	.060
AY-68-29-206	80-04-16	0	1.7	10	.1	10	293	1.2	.010	.000
AY-68-29-209	80-04-16	0	1.0	7.8	.1	10	276	1.1	.000	.000
AY-68-29-303	80-07-28	0	4.7	8.3	.3	11	276	1.8	.010	.030
AY-68-29-401	80-07-22	0	7.5	11	.3	13	303	.95	.010	.010
AY-68-29-702	80-08-04	0	25	14	.3	11	322	1.6	.010	.040
AY-68-29-804	80-08-04	0	25	14	.2	12	304	1.6	.010	.050
AY-68-35-102	80-08-05	0	42	14	.3	12	306	1.6	.010	.050
AY-68-36-102	80-08-04	0	28	19	.2	12	312	2.4	.030	.080
AY-68-36-502	80-08-05	0	16	16	.2	13	258	1.8	.010	.030
AY-68-37-101	80-08-05	0	31	15	.2	13	302	1.8	.010	.060
	80-09-02	0	31	13	.3	12	293	1.7	.000	.000
AY-68-37-404	80-08-06	0	16	17	.2	12	258	2.0	.010	.030
AY-68-37-506	80-08-06	0	23	18	.3	12	262	1.6	.010	.060
AY-68-37-705	80-08-05	0	22	17	.3	12	280	1.6	.010	.030
	80-09-02	0	17	15	.5	12	253	1.4	.000	.030
AY-68-37-715	80-08-04	0	17	16	.3	12	251	1.8	.010	.050
	80-09-02	0	9.8	14	.3	12	242	1.6	.000	.000
AY-68-43-608	80-07-30	0	27	18	.4	12	271	1.3	.010	.030

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)	METHYLENE BLUE ACTIVE SUBSTANCE (MG/L) (38260)
AY-AB-21-804	80-04-16	.49	.49	4.8	.020	3.4	--
AY-AB-27-302	80-07-16	.45	.45	2.2	.000	1.9	--
AY-AB-27-303	80-04-10	.20	.57	.75	.020	5.5	--
AY-AB-27-305	80-04-10	.21	.87	2.8	.010	11	--
AY-AB-27-503	80-04-22	.35	.35	2.0	.010	1.9	--
	80-07-17	.57	.62	2.3	.010	10	--
AY-AB-27-504	80-07-17	.95	1.00	2.2	.050	6.1	--
AY-AB-27-606	80-04-15	1.0	1.00	3.3	.010	7.7	--
AY-AB-28-202	80-07-23	.56	.59	1.5	.030	2.4	--
AY-AB-28-203	80-07-23	.52	.53	1.3	.010	3.5	--
AY-AB-28-501	80-07-23	.61	.62	1.5	.010	1.9	--
AY-AB-28-502	80-04-22	1.3	1.30	2.1	.010	2.4	--
	80-07-23	.38	.39	1.2	.020	16	--
AY-AB-28-508	80-07-25	.39	.40	2.5	.010	6.7	--
AY-AB-28-512	80-04-07	.39	.41	1.8	.050	.0	--
AY-AB-28-606	80-04-07	.31	.33	1.3	.010	.0	--
AY-AB-28-903	80-07-23	.45	.46	2.3	.020	2.7	--
AY-AB-29-109	80-04-08	.28	.30	1.6	.010	.0	--
	80-07-22	.52	.58	2.2	.040	3.7	--
AY-AB-29-208	80-04-16	1.0	1.00	2.2	.020	2.0	--
AY-AB-29-209	80-04-16	.50	.50	1.6	.020	2.4	--
AY-AB-29-303	80-07-20	.30	.33	2.1	.010	6.6	--
AY-AB-29-401	80-07-22	.73	.76	1.7	.020	1.6	--
AY-AB-29-702	80-08-04	.96	1.00	2.6	.010	17	--
AY-AB-29-804	80-08-04	.60	.65	2.5	.010	9.5	--
AY-AB-35-102	80-08-05	1.1	1.10	2.7	.010	11	--
AY-AB-36-102	80-08-04	.59	.67	3.1	.010	9.3	--
AY-AB-36-502	80-08-05	.47	.50	2.3	.010	1.1	--
AY-AB-37-101	80-08-05	.48	.54	2.3	.010	4.4	--
	80-09-02	.25	.25	2.0	.010	4.5	--
AY-AB-37-404	80-08-06	.48	.51	2.5	.010	4.1	--
AY-AB-37-506	80-08-06	.43	.49	2.1	.010	--	--
AY-AB-37-705	80-08-05	.41	.44	2.0	.010	8.0	--
	80-09-02	.15	.18	1.6	.010	.0	--
AY-AB-37-715	80-08-04	.67	.72	2.5	.010	--	--
	80-09-02	.63	.63	2.2	.010	5.7	--
AY-AB-43-608	80-07-30	.37	.40	1.7	.000	2.8	--

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, DISSOLVED (UG/L AS CU) (01040)
AY-68-21-804	80-04-16	1030	279	60	5.0	--	--	--	--	--
AY-68-27-302	80-07-16	1000	517	30	10	1	30	3	10	3
AY-68-27-303	80-04-10	1400	354	60	15	--	--	--	--	--
AY-68-27-305	80-04-10	1345	253	60	3.0	--	--	--	--	--
AY-68-27-503	80-04-22	1100	435	22	275	0	30	<1	0	4
	80-07-17	1130	435	60	275	0	30	<1	10	1
AY-68-27-504	80-07-17	1400	508	60	525	1	30	<1	0	2
AY-68-27-606	80-04-15	1300	603	60	15	0	30	1	0	0
AY-68-28-202	80-07-23	1000	457	120	125	1	30	<1	10	2
AY-68-28-203	80-07-23	1400	435	360	350	1	30	<1	0	2
AY-68-28-501	80-07-23	1120	466	100	100	1	40	<1	10	1
AY-68-28-502	80-04-22	1315	506	240	110	1	30	<1	0	2
	80-07-23	1210	506	250	110	1	30	<1	0	1
AY-68-28-508	80-07-25	1340	346	1440	150	1	30	<1	10	2
AY-68-28-512	80-04-07	1100	400	60	7.0	--	--	--	--	--
AY-68-28-606	80-04-07	1315	500	60	15	--	--	--	--	--
AY-68-28-903	80-07-23	1030	762	210	3500	1	50	<1	0	0
AY-68-29-109	80-04-08	1200	460	1440	450	0	50	<1	0	5
	80-07-22	1015	460	145	450	1	40	<1	10	5
AY-68-29-708	80-04-16	1400	266	60	10	--	--	--	--	--
AY-68-29-209	80-04-16	1420	315	60	10	--	--	--	--	--
AY-68-29-303	80-07-28	1045	527	--	150	1	30	<1	10	0
AY-68-29-401	80-07-22	1100	517	240	600	1	30	<1	10	1
AY-68-29-702	80-08-04	0930	672	90	3000	0	30	2	10	4
AY-68-29-804	80-08-04	1245	761	45	2100	1	30	<1	0	1
AY-68-35-102	80-08-05	1340	796	30	1875	1	30	1	10	6
AY-68-36-104	80-08-04	1215	748	240	4000	1	30	<1	0	1
AY-68-36-502	80-08-05	1015	1224	120	7600	1	50	2	10	0
AY-68-37-101	80-08-05	1030	1005	150	7700	0	40	2	10	2
	80-09-02	1420	1005	480	7700	0	40	<1	10	1
AY-68-37-404	80-08-06	0900	1326	60	13000	1	50	1	10	2
AY-68-37-506	80-08-06	1020	1407	120	7600	1	100	<1	10	0
AY-68-37-705	80-08-05	1245	1798	300	8500	1	100	1	10	1
	80-09-02	1230	1798	1440	9000	1	100	<1	10	0
AY-68-37-715	80-08-04	1030	1052	1440	300	1	80	<1	0	1
	80-09-02	1130	1052	1440	300	1	80	<1	10	0
AY-68-43-608	80-07-30	1400	1883	1440	1534	1	100	<1	0	1

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
BEXAR COUNTY--Continued

LOCAL IDENT-IFIER	DATE OF SAMPLE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
AY-6R-21-804	80-04-16	--	2	--	--	--	--	--
AY-6M-27-302	80-07-16	30	0	<1	.1	0	0	310
AY-6R-27-303	80-04-10	--	3	--	--	--	--	--
AY-6M-27-305	80-04-10	--	5	--	--	--	--	--
AY-6M-27-503	80-04-22	<10	2	<1	.4	0	0	4
	80-07-17	<10	1	<1	.3	0	0	<3
AY-6M-27-504	80-07-17	<10	1	<1	.4	1	0	<3
AY-6R-27-606	80-04-15	<10	9	<1	.1	0	0	410
AY-6M-28-202	80-07-23	<10	2	<1	.0	0	0	<3
AY-6R-28-203	80-07-23	<10	2	<1	.0	0	0	9
AY-6M-28-501	80-07-23	30	2	<1	.0	0	0	20
AY-6M-28-502	80-04-22	<10	2	<1	.4	0	0	8
	80-07-23	<10	2	<1	.0	0	0	7
AY-6R-28-508	80-07-25	<10	0	<1	.2	0	0	<3
AY-6R-28-512	80-04-07	--	1	--	--	--	--	--
AY-6M-28-608	80-04-07	--	3	--	--	--	--	--
AY-6R-28-903	80-07-23	<10	0	<1	.4	0	0	10
AY-6M-29-109	80-04-08	<10	2	<1	.5	0	0	10
	80-07-22	<10	2	<1	.3	0	0	20
AY-6R-29-208	80-04-16	--	2	--	--	--	--	--
AY-6M-29-209	80-04-16	--	7	--	--	--	--	--
AY-6R-29-303	80-07-28	<10	0	<1	.4	0	0	<3
AY-6M-29-401	80-07-22	10	1	<1	.4	0	0	4
AY-6R-29-702	80-08-04	<10	4	<1	.2	0	0	<3
AY-6R-29-804	80-08-04	<10	0	<1	.3	0	0	<3
AY-6R-36-102	80-08-05	130	4	<1	.2	0	0	5
AY-6M-36-102	80-08-04	<10	0	<1	.2	1	0	<3
AY-6R-36-502	80-08-05	<10	0	<1	.2	0	0	<3
AY-6R-37-101	80-08-05	<10	1	<1	.2	0	0	<3
	80-09-02	<10	1	<1	.2	0	0	5
AY-6R-37-404	80-08-06	<10	4	<1	.3	0	0	4
AY-6R-37-506	80-08-06	<10	0	<1	.1	1	0	3
AY-6R-37-705	80-08-05	<10	1	<1	.2	0	0	4
	80-09-02	<10	2	<1	.1	0	0	5
AY-6M-37-715	80-08-04	<10	1	1	.2	0	0	<3
	80-09-02	<10	1	<1	.1	0	0	<3
AY-6R-43-608	80-07-30	<10	0	<1	.3	1	0	8

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
BEXAR COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	PCB, TOTAL (UG/L) (39516)	NAPH-THALENES, POLYCHLOR, TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLORDANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)
AY-68-27-504	80-07-17	1400	508	60	525	.00	.00	.00	.00	.00
AY-68-28-903	80-07-23	1030	762	210	3500	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DIAZINON, TOTAL (UG/L) (39570)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)
AY-68-27-504	80-07-17	.00	.00	.00	.00	.00	.00	.00	.00	.00
AY-68-28-903	80-07-23	.00	.00	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	LINDANE TOTAL (UG/L) (39340)	MALATHION, TOTAL (UG/L) (39530)	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHYL PARATHION, TOTAL (UG/L) (39600)	METHYL TRITHION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARATHION, TOTAL (UG/L) (39540)	PERTHANE TOTAL (UG/L) (39034)	TOXAPHENE, TOTAL (UG/L) (39400)
AY-68-27-504	80-07-17	.00	.00	.00	.00	.00	.00	.00	.00	0
AY-68-28-903	80-07-23	.00	.00	.00	.00	.00	.00	.00	.00	0

LOCAL IDENTIFIER	DATE OF SAMPLE	TOTAL TRITHION (UG/L) (39786)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)
AY-68-27-504	80-07-17	.00	--	--	--
AY-68-28-903	80-07-23	.00	.00	.00	.00

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued

COMAL COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
DX-68-15-901	80-07-28	1245	--	--	--	576	--	22.5	--	--
DX-68-16-502	80-08-11	1130	30	230	300	564	7.1	23.5	<1	<1
DX-68-22-901	80-05-15	1320	20	255	1350	512	7.1	22.5	<1	<1
	80-08-08	0900	30	255	1350	500	7.0	23.0	<1	<1
DX-68-22-902	80-08-01	0855	120	240	750	520	7.0	22.5	<1	--
DX-68-23-301	80-04-28	1300	--	--	--	547	7.2	23.0	<1	<1
	80-07-28	1430	--	--	--	534	7.0	23.5	<1	<1
DX-68-23-303	80-05-08	1320	30	1045	4700	547	7.1	23.5	--	--
	80-08-08	1030	10	1045	4700	542	7.1	24.5	--	--
DX-68-23-316	80-04-17	1230	60	350	10	552	7.1	22.5	--	--
DX-68-23-601	80-08-08	1050	10	365	2100	533	7.2	24.5	--	--
DX-68-23-602	80-05-08	1400	30	790	2750	544	7.3	22.5	--	--
	80-08-08	1110	10	790	2750	533	7.1	23.5	--	--

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE FET-FLD (MG/L AS HCO3) (00440)
DX-68-15-901	80-07-28	--	290	18	91	15	7.8	.2	1.4	330
DX-68-16-502	80-08-11	<1	270	9	84	15	8.0	.2	.9	320
DX-68-22-901	80-05-15	<1	260	12	85	11	5.9	.2	3.6	300
	80-08-08	<1	250	0	80	11	5.3	.1	.8	300
DX-68-22-902	80-08-01	<1	260	18	86	12	6.1	.2	1.0	300
DX-68-23-301	80-04-28	<1	270	33	82	16	9.4	.2	1.3	290
	80-07-28	<1	260	25	79	16	8.9	.2	1.4	290
DX-68-23-303	80-05-08	--	270	29	79	17	9.8	.3	1.3	290
	80-08-08	--	250	15	75	16	9.7	.3	1.7	290
DX-68-23-316	80-04-17	--	270	0	87	13	5.4	.1	.9	330
DX-68-23-601	80-08-08	--	260	19	78	15	8.3	.2	1.2	290
DX-68-23-602	80-05-08	--	270	25	84	15	7.6	.2	1.2	300
	80-08-08	--	250	7	80	13	6.8	.2	1.2	300

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
COMAL COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	CARBONATE FET-FLD (MG/L AS CO3) (00445)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)
DA-68-15-401	80-07-28	0	14	11	.4	12	315	1.7	.010	.030
DA-68-16-502	80-08-11	0	18	13	.2	12	309	1.9	.000	.050
DA-68-22-901	80-05-15	0	14	8.4	.1	12	288	1.8	.010	.010
	80-08-08	0	9.7	9.8	.1	11	276	1.9	.000	.000
DA-68-22-902	80-08-01	0	12	10	.3	11	396	1.9	.010	.000
DA-68-23-301	80-04-28	0	23	19	.2	13	307	1.8	.000	.000
	80-07-28	0	20	13	.4	12	294	2.0	.010	.040
DA-68-23-303	80-05-08	0	30	16	.3	13	309	1.6	.000	.000
	80-08-08	0	28	15	.2	12	301	2.0	.010	.000
DA-68-23-316	80-04-17	0	9.1	9.9	.2	10	299	1.5	.010	.000
DA-68-23-601	80-08-08	0	21	14	.2	12	293	1.9	.000	.000
DA-68-23-602	80-05-08	0	16	12	.2	12	296	1.8	.000	.000
	80-08-08	0	15	12	.2	12	288	2.0	.000	.000

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)
DA-68-15-901	80-07-28	.56	.59	2.3	.010	--
DA-68-16-502	80-08-11	1.2	1.20	3.1	.020	3.1
DA-68-22-901	80-05-15	.40	.41	2.2	.010	9.4
	80-08-08	.37	.37	2.3	.020	4.3
DA-68-22-902	80-08-01	.88	.88	2.8	.010	5.5
DA-68-23-301	80-04-28	.42	.42	2.2	.010	4.0
	80-07-28	.40	.44	2.4	.010	11
DA-68-23-303	80-05-08	1.5	1.50	3.1	.010	.7
	80-08-08	.31	.31	2.3	.040	3.5
DA-68-23-316	80-04-17	.39	.39	1.9	.020	2.3
DA-68-23-601	80-08-08	.45	.45	2.4	.020	11
DA-68-23-602	80-05-08	1.6	1.60	3.4	.040	3.6
	80-08-08	.30	.30	2.3	.010	5.5

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
COMAL COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, DISSOLVED (UG/L AS CU) (01040)
DX-68-15-901	80-07-28	1245	--	--	--	1	30	<1	10	0
DX-68-16-502	80-08-11	1130	230	30	300	0	40	2	10	0
DX-68-22-901	80-05-15	1320	255	20	1350	0	30	<1	0	0
	80-08-08	0900	255	30	1350	0	30	1	10	3
DX-68-22-902	80-08-01	0855	240	120	750	1	30	<1	0	0
DX-68-23-301	80-04-28	1300	--	--	--	1	50	1	0	0
	80-07-28	1430	--	--	--	1	50	<1	0	0
DX-68-23-303	80-05-08	1320	1045	30	4700	1	50	<1	0	0
	80-08-08	1030	1045	10	4700	0	50	2	10	1
DX-68-23-316	80-04-17	1230	350	60	10	0	30	2	0	0
DX-68-23-601	80-08-08	1050	365	10	2100	1	40	2	0	2
DX-68-23-602	80-05-08	1400	790	30	2750	0	40	<1	0	2
	80-08-08	1110	790	10	2750	1	40	2	0	3

LOCAL IDENTIFIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
DX-68-15-901	80-07-28	<10	0	<1	.4	1	0	<3
DX-68-16-502	80-08-11	<10	0	<1	.1	1	0	<3
DX-68-22-901	80-05-15	<10	1	<1	.5	0	0	6
	80-08-08	<10	4	<1	.2	0	0	8
DX-68-22-902	80-08-01	<10	0	<1	.1	0	0	<3
DX-68-23-301	80-04-28	<10	0	<1	.1	0	0	5
	80-07-28	<10	0	<1	.4	1	0	<3
DX-68-23-303	80-05-08	<10	0	<1	.4	1	0	3
	80-08-08	<10	2	<1	.2	1	0	<3
DX-68-23-316	80-04-17	<10	12	<1	.4	0	0	620
DX-68-23-601	80-08-08	<10	1	<1	.1	0	0	<3
DX-68-23-602	80-05-08	<10	0	<1	.4	0	0	4
	80-08-08	<10	1	<1	.2	0	0	<3

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued

HAYS COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	COLIFORM, TOTAL, IMMED. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
LM-58-58-403	80-08-01	1315	30	390	800	583	7.1	22.5	--	--
LM-67-01-302	80-08-01	1140	240	360	800	695	7.2	25.0	<1	--
LM-67-01-308	80-08-01	1115	180	765	400	696	7.1	25.0	<1	--
LM-67-01-801	80-05-14	1330	--	--	--	580	7.1	21.5	6	3
	80-07-31	1315	--	--	--	564	7.0	22.0	14	3
LM-67-01-806	80-07-31	1430	480	128	2700	604	7.1	23.0	<1	<1
LM-67-09-105	80-05-14	1145	1440	330	1500	609	7.1	23.0	<1	<1
	80-07-31	1100	1440	330	1500	618	7.0	23.0	<1	<1
LM-67-09-111	80-08-11	1245	240	264	1000	580	7.1	23.0	<1	<1

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L AS CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE FET-FLD (MG/L AS HCO3) (00440)
LM-58-58-403	80-08-01	--	280	12	76	25	6.1	.2	1.2	330
LM-67-01-302	80-08-01	<1	320	140	86	40	9.1	.2	2.2	220
LM-67-01-308	80-08-01	<1	320	86	82	39	12	.3	2.3	280
LM-67-01-801	80-05-14	7	280	30	84	16	11	.3	1.4	310
	80-07-31	<1	280	25	82	16	11	.3	1.6	310
LM-67-01-806	80-07-31	<1	290	28	90	16	11	.3	1.5	330
LM-67-09-105	80-05-14	<1	290	32	90	17	14	.4	1.5	320
	80-07-31	<1	290	32	90	17	13	.3	1.6	320
LM-67-09-111	80-08-11	<1	270	12	85	15	9.6	.3	1.2	320

LOCAL IDENTIFIER	DATE OF SAMPLE	CARBONATE FET-FLD (MG/L AS CO3) (00445)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)
LM-58-58-403	80-08-01	0	22	9.6	.8	11	311	1.6	.010	.040
LM-67-01-302	80-08-01	0	130	10	3.1	14	378	.00	.000	.090
LM-67-01-308	80-08-01	0	120	11	3.1	13	401	.00	.010	.080
LM-67-01-801	80-05-14	0	24	16	.2	11	318	1.1	.010	.010
	80-07-31	0	20	16	.4	11	315	1.4	.010	.090
LM-67-01-806	80-07-31	0	20	14	.3	12	332	1.9	.010	.010
LM-67-09-105	80-05-14	0	30	27	.3	12	350	1.5	.010	.010
	80-07-31	0	23	22	.4	12	337	1.9	.010	.030
LM-67-09-111	80-08-11	0	23	19	.3	12	323	1.7	.000	.000

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DISSOLVED (MG/L AS C) (00681)
LM-58-58-403	80-08-01	.65	.69	2.3	.010	14
LM-67-01-302	80-08-01	1.0	1.10	1.1	.010	14
LM-67-01-308	80-08-01	.43	.51	.52	.010	7.7
LM-67-01-801	80-05-14	.49	.50	1.6	.010	7.5
	80-07-31	.44	.53	1.9	.000	4.3
LM-67-01-806	80-07-31	.57	.58	2.5	.010	7.8
LM-67-09-105	80-05-14	.42	.43	1.9	.010	2.5
	80-07-31	.27	.30	2.2	.000	11
LM-67-09-111	80-08-11	.64	.64	2.3	.010	7.6

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
HAYS COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	ARSENIC DISSOLVED (UG/L AS AS) (01000)	BARIUM, DISSOLVED (UG/L AS BA) (01005)	CADMIUM DISSOLVED (UG/L AS CD) (01025)	CHROMIUM, DISSOLVED (UG/L AS CR) (01030)	COPPER, DISSOLVED (UG/L AS CU) (01040)
LR-58-58-403	80-08-01	1315	390	30	600	1	100	<1	10	2
LR-67-01-302	80-08-01	1140	360	240	800	0	50	<1	10	0
LR-67-01-308	80-08-01	1115	765	180	400	0	50	<1	0	1
LR-67-01-801	80-05-14	1330	--	--	--	0	30	<1	0	1
	80-07-31	1315	--	--	--	1	30	<1	0	0
LR-67-01-806	80-07-31	1430	120	480	2700	1	40	<1	10	0
LR-67-09-105	80-05-14	1145	330	1440	1500	0	40	<1	0	0
	80-07-31	1100	330	1440	1500	1	40	<1	10	1
LR-67-09-111	80-08-11	1245	264	240	1000	1	40	2	0	3

LOCAL IDENTIFIER	DATE OF SAMPLE	IRON, DISSOLVED (UG/L AS FE) (01046)	LEAD, DISSOLVED (UG/L AS PB) (01049)	MANGANESE, DISSOLVED (UG/L AS MN) (01056)	MERCURY DISSOLVED (UG/L AS HG) (71890)	SELENIUM, DISSOLVED (UG/L AS SE) (01145)	SILVER, DISSOLVED (UG/L AS AG) (01075)	ZINC, DISSOLVED (UG/L AS ZN) (01090)
LR-58-58-403	80-08-01	<10	0	<1	.0	0	0	3
LR-67-01-302	80-08-01	<10	0	<1	.2	0	0	<3
LR-67-01-308	80-08-01	<10	0	<1	.2	0	0	<3
LR-67-01-801	80-05-14	<10	0	<1	.4	0	0	<3
	80-07-31	30	0	<1	.3	0	0	8
LR-67-01-806	80-07-31	<10	0	<1	.0	1	0	3
LR-67-09-105	80-05-14	20	0	<1	.4	1	0	<3
	80-07-31	<10	0	<1	.3	1	0	<3
LR-67-09-111	80-08-11	<10	0	<1	.1	1	0	<3

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
HAYS COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	PCB, TOTAL (UG/L) (39516)	NAPHTHALENES, POLYCHLOR, TOTAL (UG/L) (39750)	ALDRIN, TOTAL (UG/L) (39330)	CHLORDANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)
LM-67-01-801	80-07-31	1315	--	--	--	.00	.00	.00	.00	.00
LM-67-09-105	80-07-31	1100	330	1440	1500	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DIAZINON, TOTAL (UG/L) (39570)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)
LM-67-01-801	80-07-31	.00	.00	.00	.00	.00	.00	.00	.00	.00
LM-67-09-105	80-07-31	.00	.00	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	LINDANE TOTAL (UG/L) (39340)	MALATHION, TOTAL (UG/L) (39530)	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHYL PARATHION, TOTAL (UG/L) (39600)	METHYL TRITHION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARATHION, TOTAL (UG/L) (39540)	PERTHANE TOTAL (UG/L) (39034)	TOXAPHENE, TOTAL (UG/L) (39400)
LM-67-01-801	80-07-31	.00	.00	.00	.00	.00	.00	.00	.00	0
LM-67-09-105	80-07-31	.00	.00	.00	.00	.00	.00	.00	.00	0

LOCAL IDENTIFIER	DATE OF SAMPLE	TOTAL TRITHION (UG/L) (39786)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)
LM-67-01-801	80-07-31	.00	.00	.00	.00
LM-67-09-105	80-07-31	.00	.00	.00	.00

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued

MEDINA COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	COLIFORM, TOTAL, MEMBR. (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
TD-68-26-701	80-07-11	1015	30	750	500	540	7.2	24.0	--	--
TD-68-33-202	80-08-07	1300	30	--	10	408	7.0	22.5	<1	<1
TD-68-33-701	80-07-07	1100	180	1247	800	477	7.2	24.0	--	--
TD-68-41-303	80-05-12	1430	30	717	380	483	7.2	23.5	<1	<1
	80-07-08	0930	90	717	380	481	7.3	23.5	--	--
	80-08-04	1400	480	717	390	480	7.2	24.0	<1	<1
TD-68-42-503	80-05-19	1130	15	1373	375	459	--	25.5	1	1
	80-07-07	1330	300	1373	400	465	7.2	23.5	--	--
	80-09-04	1100	10	1373	400	460	7.0	26.0	--	--
TD-69-38-905	80-07-14	1300	240	997	1500	445	7.2	25.0	--	--
TD-69-40-403	80-07-08	1100	90	918	1000	454	7.2	23.0	--	--
TD-69-46-601	80-07-15	1330	--	1289	350	475	7.3	23.0	--	--
TD-69-47-303	80-05-16	1300	10	1803	1150	466	--	24.0	--	--
	80-07-15	1130	--	1803	1150	465	7.2	24.5	--	--
	80-09-03	1300	15	1803	1150	467	7.1	24.0	--	--

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, KF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE FET-FLD (MG/L AS HCO3) (00440)
TD-68-26-701	80-07-11	--	260	60	73	20	8.2	.6	1.4	250
TD-68-33-202	80-08-07	<1	220	27	71	9.4	8.2	.2	.9	230
TD-68-33-701	80-07-07	--	230	18	71	13	7.2	.2	1.1	260
TD-68-41-303	80-05-12	<1	230	27	68	15	8.8	.2	1.0	250
	80-07-08	--	230	29	69	15	8.5	.2	1.2	250
	80-08-04	<1	230	22	66	14	8.5	.2	1.1	250
TD-68-42-503	80-05-19	<1	230	24	64	16	7.8	.2	1.0	240
	80-07-07	--	220	26	63	16	7.8	.2	1.1	240
	80-09-04	--	220	29	63	15	7.8	.2	1.1	230
TD-69-38-905	80-07-14	--	220	17	66	14	8.8	.2	1.4	250
TD-69-40-403	80-07-08	--	230	5	75	9.6	9.3	.2	1.0	270
TD-69-46-601	80-07-15	--	230	17	69	14	7.5	.2	1.1	260
TD-69-47-303	80-05-16	--	230	21	64	16	7.1	.2	1.1	250
	80-07-15	--	230	30	66	17	7.5	.2	1.1	250
	80-09-03	--	230	22	66	15	7.4	.2	1.1	250

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
MEDINA COUNTY--Continued

LOCAL IDENTI-FIER	DATE OF SAMPLE	CARBONATE FET-FLD (MG/L AS CO3) (00445)	SULFATE DIS-SOLVED (MG/L AS SO4) (00945)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUO-RIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L) (70301)	NITRO-GEN, NITRATE TOTAL (MG/L AS N) (00620)	NITRO-GEN, NITRITE TOTAL (MG/L AS N) (00615)	NITRO-GEN, AMMONIA TOTAL (MG/L AS N) (00610)
TD-68-26-701	80-07-11	0	51	14	.3	16	303	1.3	.010	.020
TD-68-33-202	80-08-07	0	27	13	.1	16	<253	.05	.000	.000
TD-68-33-701	80-07-07	0	15	12	.3	16	<250	1.5	.000	.000
TD-68-41-303	80-05-12	0	13	21	.2	13	<243	.77	.000	.000
	80-07-08	0	14	19	.3	12	<251	1.4	.000	.000
	80-08-04	0	16	16	.2	16	<251	<.3	.010	.060
TD-68-42-503	80-05-19	0	12	16	.2	16	<247	1.6	.000	.010
	80-07-07	0	13	16	.4	16	<248	1.5	.000	.000
	80-09-04	0	16	14	.3	16	<244	1.6	.010	.000
TD-69-38-905	80-07-14	0	14	16	.1	13	<250	.75	.010	.010
TD-69-40-403	80-07-08	0	8.2	10	.3	12	<255	1.0	.000	.000
TD-69-46-601	80-07-15	0	17	14	.3	16	<263	1.8	.010	.010
TD-69-47-303	80-05-16	0	17	14	.2	12	<255	1.3	.010	.010
	80-07-15	0	17	14	.2	13	<250	1.7	.010	.010
	80-09-03	0	7.7	12	.3	16	<243	1.7	.000	.000

LOCAL IDENT-I-FIER	DATE OF SAMPLE	NITRO-GEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO-GEN, TOTAL (MG/L AS N) (00600)	PHOS-PHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC DIS-SOLVED (MG/L AS C) (00681)
TD-68-26-701	80-07-11	.36	.38	1.7	.030	--
TD-68-33-202	80-08-07	.36	.36	1.4	.010	4.4
TD-68-33-701	80-07-07	.40	.40	1.9	.010	1.7
TD-68-41-303	80-05-12	.36	.36	1.1	.050	3.9
	80-07-08	.43	.43	2.3	.010	3.7
	80-08-04	.75	.81	3.1	.010	7.1
TD-68-42-503	80-05-19	.69	.70	2.3	.010	1.9
	80-07-07	.21	.21	1.7	.010	1.1
	80-09-04	.67	.67	2.3	.010	4.0
TD-69-38-905	80-07-14	.58	.59	1.9	.020	1.4
TD-69-40-403	80-07-08	.24	.26	1.3	.010	1.7
TD-69-46-601	80-07-15	.68	.69	2.5	.010	1.0
TD-69-47-303	80-05-16	.67	.68	2.2	.010	2.0
	80-07-15	.67	.68	2.4	.010	1.0
	80-09-03	1.1	1.10	2.8	.080	1*

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
MEDINA COUNTY--Continued

Local iden-ti-fier	Date of sample	Time	Depth of well, total (feet) (72008)	Major or flow period to sample (min) (72004)	Flow rate, instantaneous (gpm) (00059)	Arsenic dis-solved (ug/L as As) (01000)	Barium, dis-solved (ug/L as Ba) (01005)	Cadmium dis-solved (ug/L as Cd) (01025)	Chromium, dis-solved (ug/L as Cr) (01030)	Copper, dis-solved (ug/L as Cu) (01040)
[illegible]	80-07-11	1015	750	30	500	1	30	<1	10	1
[illegible]	80-08-07	1300	--	30	10	1	30	2	10	2
[illegible]	80-07-07	1100	1247	180	400	1	40	<1	10	1
[illegible]	80-05-12	1430	717	30	340	0	50	<1	0	3
	80-07-08	0930	717	90	340	1	50	<1	0	3
	80-08-04	1400	717	400	340	1	50	1	10	3
[illegible]	80-05-14	1130	1373	15	375	0	70	<1	0	1
	80-07-07	1330	1373	100	400	1	70	<1	0	2
	80-04-04	1100	1373	10	400	1	70	<1	10	3
[illegible]	80-07-14	1300	997	240	1500	1	40	<1	0	0
[illegible]	80-07-08	1100	918	90	1000	1	30	<1	0	2
[illegible]	80-07-15	1330	1249	--	150	1	40	<1	10	0
[illegible]	80-05-16	1300	1003	10	1150	1	40	<1	0	0
	80-07-15	1130	1003	--	1150	1	50	<1	0	0
	80-04-03	1300	1003	15	1150	1	40	<1	10	1

Local iden-ti-fier	Date of sample	Iron, dis-solved (ug/L as Fe) (01046)	Lead, dis-solved (ug/L as Pb) (01049)	Manganese, dis-solved (ug/L as Mn) (01056)	Mercury dis-solved (ug/L as Hg) (71890)	Selenium, dis-solved (ug/L as Se) (01145)	Silver, dis-solved (ug/L as Ag) (01075)	Zinc, dis-solved (ug/L as Zn) (01090)
[illegible]	80-07-11	<10	0	<1	.0	0	0	0
[illegible]	80-08-07	<10	0	<1	.1	0	0	<10
[illegible]	80-07-07	<10	2	<1	.2	0	0	<3
[illegible]	80-05-12	<10	0	<1	.0	0	0	<3
	80-07-08	<10	2	<1	.2	1	0	7
	80-08-04	<10	2	<1	.2	0	0	<3
[illegible]	80-05-14	<10	0	<1	<.5	0	0	*
	80-07-07	<10	0	<1	.2	0	0	*
	80-05-04	<10	0	<1	.6	0	0	<3
[illegible]	80-07-14	<10	0	<1	.3	0	0	5
[illegible]	80-07-08	<10	2	<1	.2	0	0	<3
[illegible]	80-07-15	<10	0	<1	.0	0	1	<3
[illegible]	80-05-16	<10	1	<1	.2	0	0	4
	80-07-15	<10	0	<1	.0	1	0	9
	80-04-03	<10	0	<1	.0	0	0	9

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued

UVALDE COUNTY

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72008)	DEPTH OF WELL, TOTAL (FEET) (72008)	FLOW RATE, INSTANTANEOUS (GPM) (00054)	SPECIFIC CONDUCTANCE (UMHOS) (00095)	PH (UNITS) (00400)	TEMPERATURE (DEG C) (00010)	COLIFORM, TOTAL, 4-MEM. PCN (COLS. PER 100 ML) (31501)	COLIFORM, FECAL, 0.7 UM-MF (COLS./ 100 ML) (31625)
YP-69-36-702	80-07-29	1215	60	55	1250	440	--	23.0	3	1
YP-69-42-606	80-06-10	1100	120	565	1200	691	7.1	23.0	--	--
YP-69-42-803	80-07-23	1530	450	540	665	462	7.1	23.5	--	--
YP-69-43-606	80-07-24	1000	30	694	550	531	7.1	24.0	--	--
	80-09-03	1200	10	694	450	535	7.1	23.5	--	--
YP-69-45-404	80-07-24	1230	240	1493	250	710	7.2	23.0	--	--
YP-69-45-405	80-07-29	1500	--	1211	1000	444	--	23.0	<1	<1
YP-69-50-203	80-06-10	1200	240	565	1400	579	7.1	23.0	--	--
	80-09-03	1240	240	565	1300	578	7.0	23.0	--	--
YP-69-50-506	80-07-23	1730	480	565	480	570	7.2	23.5	--	--

LOCAL IDENTIFIER	DATE OF SAMPLE	STREPTOCOCCI FECAL, AF AGAR (COLS. PER 100 ML) (31673)	HARDNESS (MG/L AS CACO3) (00900)	HARDNESS, NONCARBONATE (MG/L AS CACO3) (00902)	CALCIUM DISSOLVED (MG/L AS CA) (00915)	MAGNESIUM, DISSOLVED (MG/L AS MG) (00925)	SODIUM, DISSOLVED (MG/L AS NA) (00930)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DISSOLVED (MG/L AS K) (00935)	BICARBONATE (MG/L AS HCO3) (00440)
YP-69-36-702	80-07-29	<1	220	35	63	18	5.4	.2	1.1	230
YP-69-42-606	80-06-10	--	280	58	90	9.3	10	.5	1.1	280
YP-69-42-803	80-07-23	--	220	19	72	8.7	8.2	.2	1.0	240
YP-69-43-606	80-07-24	--	240	33	79	10	12	.3	1.1	230
	80-09-03	--	240	35	80	9.1	12	.3	1.1	230
YP-69-45-404	80-07-24	--	310	98	85	24	29	.8	3.2	280
YP-69-45-405	80-07-29	<1	240	26	72	14	7.4	.2	1.1	280
YP-69-50-203	80-06-10	--	280	45	87	17	14	.4	1.1	280
	80-09-03	--	280	47	89	16	13	.4	1.2	280
YP-69-50-506	80-07-23	--	230	40	88	8.1	15	.4	1.1	280

LOCAL IDENTIFIER	DATE OF SAMPLE	CARBONATE (MG/L AS CO3) (00445)	SULFATE DISSOLVED (MG/L AS SO4) (00945)	CHLORIDE, DISSOLVED (MG/L AS CL) (00940)	FLUORIDE, DISSOLVED (MG/L AS F) (00950)	SILICA, DISSOLVED (MG/L AS SIO2) (00955)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L) (70301)	NITROGEN, NITRATE TOTAL (MG/L AS N) (00620)	NITROGEN, NITRITE TOTAL (MG/L AS N) (00615)	NITROGEN, AMMONIA TOTAL (MG/L AS N) (00610)
YP-69-36-702	80-07-29	0	10	24	.3	16	290	2.2	.010	.030
YP-69-42-606	80-06-10	0	10	49	.1	12	324	2.7	.010	.040
YP-69-42-803	80-07-23	0	7.6	10	.1	16	294	1.8	.010	.030
YP-69-43-606	80-07-24	0	10	24	.3	16	271	2.8	.000	.010
	80-09-03	0	13	30	.1	12	281	3.2	.010	.000
YP-69-45-404	80-07-24	0	120	22	.3	13	421	2.8	.010	.000
YP-69-45-405	80-07-29	0	16	13	.7	13	265	1.9	.010	.030
YP-69-50-203	80-06-10	0	16	42	.1	16	310	2.7	.010	.040
	80-09-03	0	16	40	.1	13	312	3.0	.010	.000
YP-69-50-506	80-07-23	0	21	34	.3	13	300	2.2	.000	.030

LOCAL IDENTIFIER	DATE OF SAMPLE	NITROGEN, ORGANIC TOTAL (MG/L AS N) (00605)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITROGEN, TOTAL (MG/L AS N) (00600)	PHOSPHORUS, TOTAL (MG/L AS P) (00665)	CARBON, ORGANIC, DISSOLVED (MG/L AS C) (00681)
YP-69-36-702	80-07-29	.84	.87	3.1	.030	3.7
YP-69-42-606	80-06-10	.12	.18	2.9	.010	5.3
YP-69-42-803	80-07-23	.81	.84	2.2	.010	5.0
YP-69-43-606	80-07-24	3.3	3.30	5.1	.020	.8
	80-09-03	1.4	1.40	4.6	.010	1.4
YP-69-45-404	80-07-24	.72	.72	2.1	.040	2.0
YP-69-45-405	80-07-29	.53	.56	2.5	.000	3.6
YP-69-50-203	80-06-10	.42	.46	3.2	.010	1.4
	80-09-03	.30	.30	3.3	.000	2.2
YP-69-50-506	80-07-23	.97	1.00	3.2	.010	3.0

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
UVALDE COUNTY--Continued

LOCAL IDENTI-FIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	ARSENIC DIS-SOLVED (UG/L AS AS) (01000)	BARIUM, DIS-SOLVED (UG/L AS BA) (01005)	CADMIUM DIS-SOLVED (UG/L AS CD) (01025)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR) (01030)	COPPER, DIS-SOLVED (UG/L AS CU) (01040)
YP-69-36-702	80-07-29	1215	538	60	1250	1	40	<1	10	1
YP-69-42-803	80-07-23	1530	540	450	625	1	40	<1	0	0
YP-69-43-606	80-07-24	1000	696	30	550	1	50	<1	0	2
	80-09-03	1200	696	10	450	1	50	<1	0	3
YP-69-45-405	80-07-29	1300	1211	--	1000	1	40	<1	10	0
YP-69-50-203	80-06-10	1200	525	240	1400	1	50	<1	0	2
	80-09-03	1240	525	240	1300	1	50	<1	0	1
YP-69-50-506	80-07-23	1730	525	480	480	1	50	<1	0	3

LOCAL IDENTI-FIER	DATE OF SAMPLE	IRON, DIS-SOLVED (UG/L AS FE) (01046)	LEAD, DIS-SOLVED (UG/L AS PB) (01049)	MANGA-NESE, DIS-SOLVED (UG/L AS MN) (01056)	MERCURY DIS-SOLVED (UG/L AS HG) (71890)	SELE-NIUM, DIS-SOLVED (UG/L AS SE) (01145)	SILVER, DIS-SOLVED (UG/L AS AG) (01075)	ZINC, DIS-SOLVED (UG/L AS ZN) (01090)
YP-69-36-702	80-07-29	<10	0	<1	.1	1	0	5
YP-69-42-803	80-07-23	<10	1	<1	.0	0	0	<3
YP-69-43-606	80-07-24	<10	0	<1	.0	1	0	<3
	80-09-03	<10	0	<1	.2	1	0	<3
YP-69-45-405	80-07-29	<10	0	<1	.2	1	0	<3
YP-69-50-203	80-06-10	<10	0	<1	.4	0	0	<3
	80-09-03	<10	0	<1	.4	1	0	<3
YP-69-50-506	80-07-23	<10	1	<1	.1	1	0	<3

GUADALUPE RIVER BASIN

08168000 HUECO SPRINGS NEAR NEW BRAUNFELS, TX

LOCATION.--Lat 29°45'34", long 98°08'24", Comal County, Hydrologic Unit 121002-02, 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 1979 TO SEPTEMBER 1980

Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
Oct. 2, 1979	62	Feb. 4, 1980	21	June 9, 1980	27
Nov. 14	41	Mar. 3	14	July 18	16
Dec. 21	29	Apr. 28	15	Aug. 29	14

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); 18 years (water year 1963-80) regulated, 485 ft³/s (13.74 m³/s), 351,400 acre-ft/yr (433 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, 1,770 ft³/s (50.1 m³/s) June 21 at 0900 hours, gage height, 3.66 ft (1.116 m); minimum, 70 ft³/s (1.982 m³/s) Aug. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	305	157	137	137	121	198	208	198	402	345	77	76
2	296	154	138	134	124	193	208	198	395	345	78	76
3	207	153	138	130	122	198	206	198	392	345	78	76
4	183	151	139	130	121	198	203	197	387	345	77	76
5	179	149	140	130	124	198	203	193	387	345	78	75
6	176	151	141	130	124	198	203	193	385	345	79	90
7	176	149	139	130	127	203	203	202	382	327	86	244
8	175	149	138	130	127	203	200	202	379	246	81	210
9	179	149	139	130	124	203	200	201	373	240	79	188
10	174	148	141	130	124	203	202	202	376	168	97	173
11	173	146	141	130	127	203	203	203	376	154	103	209
12	172	145	147	127	127	203	203	205	373	149	88	545
13	170	145	152	127	127	203	207	255	373	145	83	543
14	171	145	139	130	127	198	203	480	373	142	82	528
15	174	145	137	130	179	203	194	345	373	126	81	519
16	172	145	137	130	198	203	207	358	364	120	79	514
17	171	145	134	137	193	198	212	333	358	117	82	510
18	170	145	135	130	198	198	204	316	358	118	81	510
19	170	145	137	130	198	188	193	308	358	117	84	515
20	170	145	137	130	198	203	200	296	358	115	78	519
21	170	148	137	130	193	203	196	306	731	115	78	511
22	168	144	137	134	193	203	201	317	399	98	77	503
23	164	143	141	127	198	206	203	446	382	85	76	260
24	161	142	137	127	198	202	203	442	372	83	78	245
25	158	145	134	127	198	202	225	436	365	82	81	246
26	157	142	134	124	198	203	203	426	365	83	77	251
27	157	141	137	124	198	224	202	421	358	81	76	251
28	157	141	161	124	198	221	199	417	352	79	75	253
29	157	138	166	124	198	212	198	410	351	80	75	247
30	158	137	141	124	---	208	198	413	347	80	75	255
31	158	---	137	121	---	208	---	408	---	78	75	---
TOTAL	5528	4382	4348	3998	4682	6287	6090	9525	11544	5298	2494	9218
MEAN	178	146	140	129	161	203	203	307	385	171	80.5	307
MAX	305	157	166	137	198	224	225	480	731	345	103	545
MIN	157	137	134	121	121	188	193	193	347	78	75	75
AC-FT	10960	8690	8620	7930	9290	12470	12080	18890	22900	10510	4950	18280

CAL YR 1979 TOTAL 356267 MEAN 976 MAX 5810 MIN 134 AC-FT 706700
WTR YR 1980 TOTAL 73394 MEAN 201 MAX 731 MIN 75 AC-FT 145600

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.--48 years (water years 1933-80), 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 contracted-opening 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 Rennert 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.--Maximum discharge, 983 ft³/s (27.8 m³/s) Sept. 7 at 0400 hours gage height, 5.48 ft (1.670 m), no peak above base of 1,100 ft³/s (31.2 m³/s); minimum daily, 184 ft³/s (5.21 m³/s) Aug. 1, 4-7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	396	350	345	365	355	335	322	290	322	222	184	215
2	386	350	345	365	355	330	317	286	317	222	191	229
3	385	350	345	365	355	330	317	282	308	222	187	219
4	385	350	345	365	355	330	322	290	299	219	184	219
5	380	350	345	365	355	330	312	290	304	222	184	204
6	380	350	345	365	355	330	317	286	294	219	184	251
7	380	345	345	365	350	330	322	290	304	215	184	398
8	380	340	345	365	355	330	312	290	299	204	187	266
9	375	345	345	365	355	330	308	286	299	201	194	252
10	380	345	350	365	350	330	308	294	299	208	215	242
11	370	340	345	365	350	330	308	294	299	204	208	242
12	370	345	355	360	350	330	299	299	294	204	204	234
13	375	345	355	360	350	322	317	340	286	208	215	242
14	375	338	350	360	350	322	312	345	290	201	219	246
15	370	345	350	360	355	322	312	345	290	191	215	246
16	370	345	350	365	355	330	299	326	278	194	222	242
17	370	345	350	360	355	322	299	322	274	190	226	246
18	365	345	350	360	355	322	299	322	266	187	226	242
19	360	345	345	360	350	322	299	326	266	191	222	238
20	370	345	350	370	350	317	299	317	262	191	222	242
21	360	345	355	360	345	322	294	322	360	191	222	246
22	365	345	355	396	345	317	294	317	282	187	215	242
23	365	345	365	370	345	317	294	312	270	194	219	242
24	355	350	360	365	340	321	290	317	258	194	219	238
25	355	350	360	365	340	317	308	322	254	194	219	242
26	360	345	360	365	330	322	286	317	254	197	208	242
27	355	345	360	365	340	330	290	322	242	197	211	250
28	360	345	446	365	340	322	295	317	246	191	219	250
29	350	345	385	360	340	317	286	317	246	191	211	250
30	355	345	370	360	---	322	286	312	238	187	219	278
31	355	---	365	355	---	317	---	317	---	187	222	---
TOTAL	11457	10373	11036	11296	10125	10068	9123	9612	8500	6225	6457	7395
MEAN	370	346	356	364	349	325	304	310	283	201	208	247
MAX	396	350	446	396	355	335	322	345	360	222	226	398
MIN	350	338	345	355	330	317	286	282	238	187	184	204
AC-FT	22720	20570	21890	22410	20080	19970	18100	19070	16860	12350	12810	14670

CAL YR 1979 TOTAL 147589 MEAN 404 MAX 766 MIN 338 AC-FT 292700
WTR YR 1980 TOTAL 111667 MEAN 305 MAX 446 MIN 184 AC-FT 221500

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.--53 years (water years 1928-80), 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 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	396	350	345	365	355	335	322	290	322	222	184	215
2	386	350	345	365	355	330	317	286	317	222	191	221
3	385	350	345	365	355	330	317	282	308	222	187	219
4	385	350	345	365	355	330	322	290	299	219	184	219
5	380	350	345	365	355	330	312	290	304	222	184	204
6	380	350	345	365	355	330	317	286	294	219	184	226
7	380	345	345	365	350	330	322	290	304	215	184	286
8	380	340	345	365	355	330	312	290	299	204	187	266
9	375	345	345	365	355	330	308	285	299	201	194	242
10	380	345	350	365	350	330	308	294	299	208	204	242
11	370	340	345	365	350	330	308	294	299	204	208	242
12	370	345	355	360	350	330	299	299	294	204	204	234
13	375	345	355	360	350	322	317	312	286	208	215	242
14	375	338	350	360	350	322	312	345	290	201	219	246
15	370	345	350	360	355	322	312	335	290	191	215	246
16	370	345	350	365	355	330	299	326	278	194	222	242
17	370	345	350	360	355	322	299	322	274	190	226	246
18	365	345	350	360	355	322	299	322	266	187	226	242
19	360	345	345	360	350	322	299	326	266	191	222	238
20	370	345	350	370	350	317	299	317	262	191	222	242
21	360	345	355	360	345	322	294	322	274	191	222	246
22	365	345	355	396	345	317	294	317	282	187	215	242
23	365	345	365	370	345	317	294	312	270	194	219	242
24	355	350	360	365	340	321	290	317	258	194	219	238
25	355	350	360	365	340	317	308	322	254	194	219	238
26	360	345	360	365	330	322	286	317	254	197	208	242
27	355	345	360	365	340	330	290	322	242	197	211	246
28	360	345	385	365	340	322	295	317	246	191	219	250
29	350	345	385	360	340	317	286	317	246	191	211	250
30	355	345	370	360	--	322	286	312	238	187	219	266
31	355	--	365	355	--	317	--	317	--	187	222	--
TOTAL	11457	10373	10975	11296	10125	10068	9123	9574	8414	6225	6446	7220
MEAN	370	346	354	364	349	325	304	309	280	201	208	241
MAX	396	350	385	396	355	335	322	345	322	222	226	286
MIN	350	338	345	355	330	317	286	282	238	187	184	204
AC-FT	22720	20570	21770	22410	20080	19970	18100	18990	16690	12350	12790	14320

CAL YR 1979 TOTAL 145060 MEAN 398 MAX 434 MIN 346 AC-FT 287700
WTR YR 1980 TOTAL 111296 MEAN 304 MAX 396 MIN 184 AC-FT 220800

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.--24 years (water years 1957-80), 168 ft³/s (4.758 m³/s), 121,700 acre-ft/yr (150 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily spring discharge, 316 ft³/s (8.95 m³/s) June 12, 1975; 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, 169 ft³/s (4.79 m³/s) Oct. 20; maximum gage height, 7.95 ft (2.423 m) May 13 at 2000 hours (flood runoff); minimum daily spring discharge, 111 ft³/s (3.14 m³/s) May 1, 2, 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	165	152	143	140	134	133	119	111	152	143	129	121
2	165	152	147	140	135	133	119	111	152	144	131	122
3	163	151	149	141	134	134	119	113	151	143	131	121
4	163	151	146	139	135	135	117	113	151	139	132	120
5	166	151	144	139	134	134	115	111	151	139	132	117
6	168	147	143	140	133	134	116	111	151	141	131	119
7	166	147	140	138	132	134	116	113	152	142	132	127
8	166	145	136	138	132	132	116	114	151	141	132	133
9	165	146	136	138	133	132	118	114	149	140	133	135
10	166	144	141	138	133	130	118	117	150	137	135	138
11	168	143	146	138	132	130	118	117	149	136	135	140
12	168	141	144	138	131	130	118	118	148	138	135	140
13	168	140	144	140	131	129	118	118	147	136	135	137
14	168	138	140	136	133	128	117	121	147	138	135	135
15	168	140	142	136	132	127	117	138	147	138	136	135
16	166	143	141	136	135	127	117	151	147	138	135	135
17	165	149	135	137	136	127	116	152	146	137	135	133
18	165	154	138	139	136	126	114	150	144	134	135	134
19	166	154	138	139	136	126	114	150	145	135	130	135
20	169	152	136	140	136	124	113	146	143	133	129	137
21	168	149	136	138	136	122	112	147	147	133	131	138
22	166	147	135	138	136	121	112	151	151	132	129	136
23	163	147	136	136	138	122	113	157	154	133	127	135
24	160	143	136	136	138	120	114	160	152	132	127	135
25	159	144	136	137	137	120	114	162	148	132	128	135
26	162	145	136	137	136	120	116	160	146	133	128	135
27	161	146	137	135	138	121	118	157	146	132	125	136
28	160	143	138	135	140	122	116	155	147	131	125	138
29	157	142	138	135	138	119	114	152	149	131	126	138
30	155	143	139	135	---	121	112	152	146	129	127	138
31	152	---	140	132	---	120	---	154	---	130	126	---
TOTAL	5087	4389	4336	4264	3910	3933	3476	4196	4459	4220	4057	3978
MEAN	164	146	140	138	135	127	116	135	149	136	131	133
MAX	169	154	149	141	140	135	119	162	154	144	136	140
MIN	152	138	135	132	131	119	112	111	143	129	125	117
AC-FT	10090	8710	8600	8460	7760	7800	6890	8320	8840	8370	8050	7890

CAL YR 1979 TOTAL 73069 MEAN 200 MAX 277 MIN 135 AC-FT 144900
WTR YR 1980 TOTAL 50305 MEAN 137 MAX 169 MIN 111 AC-FT 99780

GUADALUPE RIVER BASIN

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.

AVERAGE DISCHARGE.--54 years (water years 1925-26, 1929-80), 123 ft³/s (3.483 m³/s), 4.71 in/yr (120 mm/yr), 89,110 acre-ft/yr (110 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.--Maximum discharge, 1,260 (35.7 m³/s) May 21 at 1630 hours, gage height, 5.89 ft (1.795 m), no peak above base of 1,800 ft³/s (51.0 m³/s); minimum daily, 18 ft³/s (0.510 m³/s) Aug. 31, Sept. 1.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	52	47	44	37	37	74	54	114	45	28	18
2	76	53	48	45	40	32	68	52	108	44	29	19
3	76	54	49	45	39	34	67	49	105	44	27	19
4	70	55	50	43	38	35	62	48	99	46	24	19
5	66	53	50	41	40	34	63	48	94	49	26	21
6	71	52	51	41	43	31	63	47	94	50	24	28
7	67	52	50	41	47	33	65	51	91	49	24	79
8	67	52	49	41	49	32	60	50	89	44	23	67
9	67	54	46	41	44	32	59	45	89	45	25	53
10	65	50	47	41	40	31	60	48	86	46	35	43
11	68	50	48	39	40	32	60	52	81	47	37	44
12	71	48	53	38	40	39	55	58	79	47	26	40
13	66	48	54	38	41	33	62	90	77	45	26	36
14	61	48	46	40	43	31	68	167	73	43	25	33
15	59	48	44	38	42	33	68	164	70	41	24	32
16	59	48	43	41	46	33	64	150	65	41	24	31
17	57	50	38	47	35	34	61	134	62	43	23	31
18	56	52	36	42	37	31	57	124	60	39	23	28
19	56	51	38	39	37	31	54	137	59	37	20	160
20	56	53	39	39	38	33	52	140	58	33	20	58
21	56	52	39	37	39	31	52	610	62	34	20	45
22	54	47	43	42	41	32	51	378	112	36	20	40
23	52	49	43	43	41	32	52	250	72	39	19	38
24	53	50	43	39	50	32	50	208	68	41	20	37
25	54	53	42	40	56	31	77	185	66	45	21	37
26	55	52	41	40	47	31	60	167	63	49	21	36
27	55	51	40	39	43	92	56	152	62	41	20	39
28	56	47	46	39	43	120	57	142	57	32	20	35
29	55	45	53	39	42	97	54	134	51	32	19	36
30	59	46	44	39	---	91	54	128	48	31	19	44
31	54	---	44	37	---	82	---	122	---	31	18	---
TOTAL	1911	1515	1404	1258	1218	1332	1805	4184	2314	1289	730	1246
MEAN	61.6	50.5	45.3	40.6	42.0	43.0	60.2	135	77.1	41.6	23.5	41.5
MAX	76	55	54	47	56	120	77	610	114	50	37	160
MIN	52	45	36	37	35	31	50	45	48	31	18	18
CFSM	.17	.14	.13	.11	.12	.12	.17	.38	.22	.12	.07	.12
IN.	.20	.16	.15	.13	.13	.14	.19	.44	.24	.14	.08	.13
AC-FT	3790	3010	2780	2500	2420	2640	3580	8300	4590	2560	1450	2470

CAL YR 1979	TOTAL	93584	MEAN	256	MAX	3080	MIN 36	CFSM .72	IN 9.81	AC-FT	185600	
WTR YR 1980	TOTAL	20206	MEAN	55.2	MAX	610	MIN 18	CFSM .16	IN 2.12	AC-FT	40080	

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.--24 years (water years 1957-80), 152 ft³/s (4.305 m³/s), 5.01 in/yr (127 mm/yr), 110,100 acre-ft/yr (136 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.--Maximum discharge, 1,140 ft³/s (32.3 m³/s) May 21 at 2100 hours, gage height, 8.54 ft (2.603 m), no peak above base of 2,500 ft³/s (70.8 m³/s); minimum, 2.8 ft³/s (0.079 m³/s) Sept. 5, 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	29	30	31	27	27	50	32	99	29	7.7	3.1
2	36	28	30	31	27	22	50	32	92	28	7.1	3.3
3	35	28	31	31	28	21	44	30	89	27	6.7	3.2
4	34	28	31	30	27	22	39	29	84	25	6.7	3.1
5	33	28	30	30	27	22	35	29	78	24	6.5	3.0
6	33	28	30	30	27	21	34	28	76	23	6.9	4.6
7	33	28	30	30	26	21	34	33	73	23	6.8	74
8	33	28	30	30	32	21	32	34	70	22	8.0	66
9	33	28	29	30	30	20	30	33	67	21	7.3	44
10	30	27	28	30	30	20	30	29	66	20	9.7	42
11	30	27	29	30	29	19	30	34	61	19	24	31
12	31	27	34	29	29	21	31	38	57	18	16	24
13	33	27	42	29	28	23	33	67	55	17	9.5	21
14	32	27	35	28	28	19	38	166	51	16	8.5	16
15	31	27	32	28	28	18	39	174	50	15	7.9	14
16	31	27	31	29	31	19	37	173	48	15	7.3	12
17	31	27	29	33	31	20	34	152	46	14	7.0	9.6
18	30	29	29	35	29	18	32	125	42	12	7.6	7.7
19	30	29	29	30	29	17	30	130	41	12	6.3	66
20	30	30	28	31	28	18	29	133	40	12	5.4	37
21	29	35	29	32	27	17	28	504	46	12	4.9	26
22	29	32	29	34	26	17	28	509	67	13	4.4	20
23	27	30	33	33	25	17	28	255	57	13	3.9	17
24	26	31	35	30	24	18	28	205	45	11	3.6	15
25	27	34	30	29	24	17	47	179	43	10	4.3	14
26	27	33	29	28	26	17	44	162	40	9.9	4.5	15
27	28	33	29	28	25	30	36	142	38	9.6	3.9	28
28	28	32	32	28	24	99	34	130	36	9.0	3.6	30
29	28	31	47	28	24	66	35	121	33	10	3.6	25
30	31	30	35	28	---	60	32	110	31	11	3.6	41
31	35	---	32	28	---	57	---	104	---	8.6	3.1	---
TOTAL	962	878	977	931	796	824	1051	3922	1721	509.1	216.3	715.6
MEAN	31.0	29.3	31.5	30.0	27.4	26.6	35.0	127	57.4	16.4	6.98	23.9
MAX	38	35	47	35	32	99	50	509	99	29	24	74
MIN	26	27	28	28	24	17	28	28	31	8.6	3.1	3.0
CFSM	.08	.07	.08	.07	.07	.07	.09	.31	.14	.04	.02	.06
IN.	.09	.08	.09	.08	.07	.07	.09	.35	.16	.05	.02	.06
AC-FT	1910	1740	1940	1850	1580	1630	2080	7780	3410	1010	429	1420

CAL YR 1979	TOTAL	92959.0	MEAN	255	MAX	3260	MIN	26	CFSM	.62	IN	8.39	AC-FT	184400
WTR YR 1980	TOTAL	13503.0	MEAN	36.9	MAX	509	MIN	3.0	CFSM	.09	IN	1.22	AC-FT	26780

GUADALUPE RIVER BASIN

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.--21 years, 47.6 ft³/s (1.348 m³/s), 34,490 acre-ft/yr (42.5 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.--Maximum discharge, 2,690 ft³/s (76.2 m³/s) May 21 at 1430 hours, gage height, 15.08 ft (4.596 m), no other peak above base of 2,000 ft³/s (56.6 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.03	2.1	8.7	.00	12	.00	.00	.00
2	.00	.00	.00	.00	.03	1.7	5.3	.00	10	.00	.00	.00
3	.00	.00	.00	.00	.03	5.4	2.2	.00	7.5	.00	.00	.00
4	.00	.00	.00	.00	.01	5.5	1.5	.00	5.4	.00	.00	.00
5	.00	.00	.00	.00	.00	3.6	2.0	.00	4.2	.00	.00	.00
6	.00	.00	.00	.00	.00	1.9	2.0	.00	3.5	.00	.00	.00
7	.00	.00	.00	.00	.03	.37	.98	.00	2.7	.00	.00	.00
8	.00	.00	.00	.00	.07	.00	.40	.00	2.1	.00	.00	.00
9	.00	.00	.00	.00	.11	.00	.06	.00	1.3	.00	.00	.00
10	.00	.00	.00	.00	4.8	.11	.00	.00	.96	.00	.00	.14
11	.00	.00	.00	.00	4.8	.20	.00	.00	.60	.00	.00	.02
12	.00	.00	.00	.00	3.1	1.8	.00	.00	.27	.00	.00	.00
13	.00	.00	.00	.00	1.5	.10	.01	27	.05	.00	.00	.00
14	.00	.00	.00	.00	1.0	.00	.00	644	.00	.00	.00	.00
15	.00	.00	.00	.00	.69	.00	.00	415	.00	.00	.00	.00
16	.00	.00	.00	.00	1.1	.02	.00	335	.00	.00	.00	.00
17	.00	.00	.00	.00	9.9	.34	.00	241	.00	.00	.00	.00
18	.00	.00	.00	.00	11	.00	.00	126	.00	.00	.00	.00
19	.00	.00	.00	.00	7.9	.00	.00	88	.00	.00	.00	.00
20	.00	.00	.00	.00	4.9	.00	.00	67	.00	.00	.00	.00
21	.00	.00	.00	.00	3.3	.00	.00	1430	38	.00	.00	.00
22	.00	.00	.00	4.3	2.2	.00	.00	334	48	.00	.00	.00
23	.00	.00	.00	.12	1.1	.00	.00	186	36	.00	.00	.00
24	.00	.00	.00	.00	.60	.00	.00	105	23	.00	.00	.00
25	.00	.00	.00	1.4	.32	.00	.00	77	13	.00	.00	.00
26	.00	.00	.00	1.5	.00	.00	.00	59	6.3	.00	.00	.00
27	.00	.00	.00	.47	.00	18	.00	46	3.2	.00	.00	.00
28	.00	.00	.00	.46	.00	75	.00	36	1.4	.00	.00	.00
29	.00	.00	.00	.17	.08	35	.00	27	.50	.00	.00	.00
30	.00	.00	.00	.09	---	28	.00	20	.06	.00	.00	.00
31	.00	---	.00	.06	---	16	---	16	---	.00	.00	---
TOTAL	.00	.00	.00	8.57	58.60	195.14	23.15	4279.00	220.04	.00	.00	.16
MEAN	.000	.000	.000	.28	2.02	6.29	.77	138	7.33	.000	.000	.005
MAX	.00	.00	.00	4.3	11	75	8.7	1430	48	.00	.00	.14
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	17	116	387	46	8490	436	.00	.00	.3

CAL YR 1979	TOTAL	16943.32	MEAN 46.4	MAX 940	MIN .00	AC-FT 33610			
WTR YR 1980	TOTAL	4784.66	MEAN 13.1	MAX 1430	MIN .00	AC-FT 9490			

GUADALUPE RIVER BASIN

08177600 OLMOS CREEK TRIBUTARY AT FARM ROAD 1535, SHAVANO PARK, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°34'35", long 98°32'45", Bexar County, Hydrologic Unit 121003-01, at culvert on Farm Road 1535 at Shavano Park and 1.9 mi (3.1 km) southeast of intersection of Farm Roads 1535 and 1604.

DRAINAGE AREA.--0.33 mi^2 (0.85 km^2).

WATER-DISCHARGE RECORDS

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

GAGE.--Digital recorders (stage and rainfall) and crest-stage gages. Datum of gage is 907.92 ft (276.734 m) National Geodetic Vertical Datum of 1929, San Antonio supplementary adjustments of 1951 and 1953.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 303 ft^3/s (8.58 m^3/s) Sept. 26, 1973, gage height, 6.26 ft (1.908 m).

EXTRMES FOR CURRENT YEAR.--Maximum discharge, 43 ft^3/s (1.22 m^3/s) Dec. 28, gage height, 3.09 ft (0.942 m), no peak above base of 50 ft^3/s (1.42 m^3/s).

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: May 1970 to current year. Water temperatures: May 1970 to current year. Bacteria analyses: April 1976 to current year.

REMARKS.--No samples obtained during current year.

GUADALUPE RIVER BASIN

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX

LOCATION.--Lat 29°29'56", long 98°30'36", Bexar County, Hydrologic Unit 12100301, on right bank 30 ft (9 m) downstream from low-water bridge on Dresden Drive at San Antonio, 0.15 mi (0.24 km) west of intersection of Blanco Road and Dresden Drive, and 4.0 mi (6.4 km) upstream from Olmos Dam.

DRAINAGE AREA.--21.2 mi² (54.9 km²).

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 726.10 ft (221.315 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Water-discharge records good. Recording rain gage located at station, with three additional recording rain gages located in watershed. City of San Antonio rain gage and gage-height telemeters at station.

AVERAGE DISCHARGE.--12 years, 4.38 ft³/s (0.124 m³/s), 2.81 in/yr (71 mm/yr), 3,170 acre-ft/yr (3.91 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,450 ft³/s (211 m³/s) Sept. 13, 1978, gage height, 14.82 ft (4.517 m), from floodmark; no flow at times.
Maximum stage since 1935, that of Sept. 13, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods in September and November 1947 reached a stage of 8.5 ft (2.59 m), from information by local resident.

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)
a Dec. 28	1800	*553	15.7	6.23	1.899
Sept. 7	1745	479	13.6	6.01	1.832

a Water-quality samples were obtained during this runoff event.

Minimum discharge, no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.08	.06	.08	.33	.15	.09	.30	10	.02	.08	.00	.26
2	.40	.06	.08	.15	.31	.09	.27	4.9	.02	.10	.01	.00
3	.08	.06	.08	.25	.17	.14	.30	.82	.01	.12	.12	.00
4	.03	.08	.08	.11	.15	.19	.24	.54	.01	.12	.08	.02
5	.03	.19	.08	.11	.15	.21	.23	.52	.00	.15	.06	.02
6	.03	.06	.15	.13	.15	.18	.20	.45	.01	.15	.17	14
7	.04	.06	.15	.10	.15	.22	.22	.50	.01	.16	.06	103
8	.05	.06	.13	.08	.25	.20	.18	11	.00	.20	.10	7.8
9	.04	.06	.14	.10	.16	.14	.22	1.4	.00	.20	1.9	.88
10	.02	.06	.22	.13	.11	.16	.15	.72	.00	.23	58	.54
11	.03	.06	.15	.11	.11	.09	.17	.79	.02	.23	15	.31
12	.05	.06	.66	.13	.11	.10	.66	.71	.02	.20	.19	.32
13	.05	.06	4.8	.16	.11	.14	1.1	19	.02	.19	.17	.30
14	.08	.06	.40	.15	.15	.13	.25	46	.02	.18	.15	.34
15	.08	.06	.33	.15	.11	.09	.25	61	.02	.14	.13	.34
16	.08	.05	.22	.15	3.3	.11	.25	21	.03	.17	.22	.34
17	.06	.05	.20	.42	.09	.13	.24	14	.04	.15	.06	.38
18	.06	.83	.25	.22	.08	.16	.23	8.6	.03	.15	.04	.28
19	.06	.08	.25	.20	.08	.23	.25	22	.03	.18	.05	28
20	.06	.08	.25	.41	.08	.40	.29	.31	.04	.15	.03	1.3
21	.06	.83	.25	.18	.08	.11	.25	20	.44	.15	.09	.49
22	.06	.09	.25	1.6	.08	.11	.28	.62	.07	31	.02	.44
23	.06	.08	.95	.28	.09	.15	.31	.12	.04	2.1	.05	.38
24	.06	.51	.27	.24	.08	.17	.31	1.1	.04	.30	.03	.32
25	.06	.54	.25	.23	.10	.15	15	.07	.06	.15	.03	.33
26	.06	.20	.25	.20	.11	.30	.82	.06	.06	.15	.02	1.6
27	.23	.15	.25	.16	.12	3.9	.43	.06	.06	.11	.02	11
28	.20	.11	86	.15	.11	1.5	.38	.05	.06	.11	.02	1.8
29	.08	.08	12	.15	.12	.26	.41	.04	.04	.10	.03	.48
30	.08	.08	.31	.15	---	.21	.39	.03	.05	.04	.00	3.1
31	.08	---	.25	.15	---	.20	---	.03	---	.02	.10	---
TOTAL	2.44	4.81	109.73	7.08	6.86	10.26	24.58	246.44	1.27	37.48	76.95	178.37
MEAN	.079	.16	3.54	.23	.24	.33	.82	7.95	.042	1.21	2.48	5.95
MAX	.40	.83	86	1.6	3.3	3.9	15	61	.44	31	58	103
MIN	.02	.05	.08	.08	.08	.09	.15	.03	.00	.02	.00	.00
CFSM	.004	.008	.17	.01	.01	.02	.04	.38	.002	.06	.12	.28
IN.	.00	.01	.19	.01	.01	.02	.04	.43	.00	.07	.14	.31
AC-FT	4.8	9.5	218	14	14	20	49	489	2.5	74	153	354
(††)	.06	.61	2.68	.48	.79	1.12	1.85	7.58	.16	.74	2.78	6.29

CAL YR 1979 TOTAL 1470.67 MEAN 4.03 MAX 243 MIN .00 CFSM .19 IN 2.58 AC-FT 2920 †† 29.40
WTR YR 1980 TOTAL 706.27 MEAN 1.93 MAX 103 MIN .00 CFSM .09 IN 1.24 AC-FT 1400 †† 25

†† Weighted-mean rainfall, in inches.

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: November 1968 to current year. Sediment analyses: October 1972 to September 1973. Water temperatures: November 1968 to current year. Bacteria analyses: April 1976 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)
DEC										
28...	1608	37	290	7.9	16.0	5	160	9.0	92	8.5
28...	1812	507	99	8.4	14.5	80	1100	9.6	95	6.7
28...	2020	236	111	8.5	13.5	100	500	9.7	94	7.6
31...	1108	.25	572	7.2	9.5	10	4.3	10.1	89	1.7

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
DEC									
28...	110000	50000	56000	160	25	56	3.9	17	.6
28...	K140000	K24000	112000	40	4	14	1.2	3.1	.2
28...	K72000	K17000	72000	42	0	16	.4	3.8	.3
31...	8000	K3400	4800	230	43	84	5.4	27	.8

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
DEC									
28...	3.4	160	0	30	14	.2	9.3	213	230
28...	3.4	42	1	6.6	3.4	.1	3.0	57	1610
28...	3.7	52	<1	7.9	4.3	.1	3.9	66	628
31...	4.0	230	0	60	30	.3	15	339	6

DATE	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)
DEC									
28...	39	.24	.020	.26	.110	1.9	2.0	.250	21
28...	198	.39	.140	.53	.400	2.1	2.5	1.100	52
28...	84	.40	.120	.52	.430	1.4	1.8	.760	22
31...	4	.60	.030	.63	.020	.72	.74	.060	7.8

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)
DEC							
28...	1608	1	50	<1	0	0	320
28...	1812	1	20	<1	0	0	40
28...	2020	1	10	<1	0	0	30

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)
DEC						
28...	24	40	.0	0	0	20
28...	4	3	.0	0	0	<3
28...	4	4	.1	0	0	20

08177700 OLMOS CREEK AT DRESDEN DRIVE, SAN ANTONIO, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
DEC									
28...	1608	.00	.00	.00	.0	.00	.00	.00	.04
28...	1812	.00	.00	.00	.1	.00	.00	.01	.36

DATE	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)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)
DEC									
28...	.00	.00	.00	.00	.01	.00	.00	.00	.00
28...	.00	.00	.00	.00	.02	.00	.00	.01	.00

DATE	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
DEC									
28...	.00	.00	.00	.00	0	.00	.01	.01	.01
28...	.01	.00	.00	.00	0	.00	.01	.01	.00

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 mi² (6.35 km²).

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 1929.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 335 ft³/s (9.49 m³/s) Sept. 28 1976, gage height, 4.30 ft (1.311 m); maximum gage height, 4.48 ft (1.366 m) May 15, 1980.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 327 ft³/s (9.26 m³/s) May 15 at 1107 hours, gage height, 4.48 ft (1.366 m), no other peak discharges above base of 100 ft³/s (2.83 m³/s); water-quality samples were made on this date; 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 DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNIMMIB 5 DAY (MG/L)
MAY										
15...	1010	226	86	9.1	21.0	300	1700	9.2	104	5.8
15...	1030	174	86	8.3	21.0	210	480	9.0	102	6.4
15...	1145	132	120	7.9	21.5	100	63	9.2	106	3.9
15...	1230	49	136	6.7	22.0	80	42	9.0	105	3.9
15...	1533	42	141	8.2	24.0	80	42	8.2	99	2.7

DATE	COLI-FORM, TOTAL, INCUB. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
MAY									
15...	110000	K37000	26000	37	1	14	.5	.7	.1
15...	100000	23000	27000	37	2	14	.6	.6	.0
15...	220000	43000	41000	59	3	22	.9	.9	.1
15...	73000	66000	80000	64	1	24	.9	1.2	.1
15...	K80000	K12000	16000	66	0	25	.9	1.1	.1

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
MAY									
15...	3.0	38	3	2.4	2.3	.1	6.3	51	776
15...	3.2	43	0	2.0	3.8	.1	7.0	53	239
15...	3.2	68	0	2.4	1.9	.1	8.7	74	117
15...	3.6	76	0	1.9	2.7	.1	9.4	81	124
15...	3.3	89	0	2.0	1.8	.1	11	89	58

DATE	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)
MAY									
15...	480	.38	.010	.39	.090	61	61	.530	120
15...	82	.40	.010	.41	.130	3.2	3.3	.320	40
15...	20	.26	.010	.27	.040	1.7	1.7	.160	16
15...	25	.25	.010	.26	.040	1.4	1.4	.160	15
15...	24	.18	.010	.19	.030	.97	1.0	.090	13

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC SUS-PENDED TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM SUS-PENDED RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)
MAY											
15...	1010	--	--	1	5	--	--	<1	--	--	0
15...	1030	6	5	1	0	1	0	1	20	20	0
15...	1145	--	--	1	8	--	--	<1	--	--	0
15...	1230	--	--	1	9	--	--	<1	--	--	0

DATE	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)
MAY											
15...	--	--	4	--	--	160	--	--	2	--	--
15...	19	17	2	19000	19000	290	39	39	0	700	690
15...	--	--	4	--	--	100	--	--	0	--	--
15...	--	--	4	--	--	50	--	--	0	--	--

DATE	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, SUS-PENDED RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY											
15...	4	--	--	.0	--	--	0	0	--	--	<3
15...	10	.6	.6	.0	0	0	0	0	80	70	10
15...	3	--	--	.1	--	--	0	0	--	--	<3
15...	2	--	--	.1	--	--	0	0	--	--	3

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)
MAY									
15...	1010	.00	.00	.00	.0	.00	.00	.01	.00
15...	1030	.00	.00	.00	.0	.00	.00	.01	.00

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)
MAY									
15...	.00	.00	.00	.00	.00	.00	.00	.00	.00
15...	.00	.00	.00	.00	.00	.00	.00	.00	.00

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)
MAY									
15...	.00	.00	.00	.00	0	.00	.00	.00	.00
15...	.00	.00	.00	.00	0	.00	.00	.00	.00

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 West Elm Creek, 2.4 mi (3.9 km) upstream from Farm Road 1604, and 6.9 mi (11.1 km) north of San Antonio International Airport.

DRAINAGE AREA.--2.33 mi² (6.03 km²).

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, 310 ft³/s (8.78 m³/s) May 7, 1976, gage height, 6.78 ft (2.067 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 106 ft³/s (3.00 m³/s) May 5 at 1150, gage height, 4.93 ft (1.503 m), no other peak discharge above base of 100 ft³/s (2.83 m³/s); water-quality samples were made on this date; 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 DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNIMHIB 5 DAY (MG/L)
MAY										
15...	1139	44	76	8.0	20.5	100	54	8.0	91	5.1
15...	1151	103	73	7.9	20.5	80	48	9.1	103	4.3
15...	1225	72	82	7.8	20.5	80	29	9.0	102	3.4
15...	1357	32	102	8.0	20.5	80	14	8.2	93	2.8
15...	1707	16	108	7.9	20.5	100	21	8.3	94	3.0

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
MAY									
15...	76000	K66000	60000	27	0	10	.6	.3	.0
15...	61000	54000	33000	33	0	12	.8	.6	.0
15...	K30000	28000	28000	35	0	13	.6	.7	.1
15...	K30000	21000	27000	46	0	17	.9	.8	.1
15...	>26000	26000	11000	49	0	18	.9	.8	.1

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
MAY									
15...	4.8	37	0	1.9	1.3	.0	8.7	46	137
15...	4.2	43	0	2.0	1.0	.1	8.6	51	99
15...	4.0	48	0	1.0	3.1	.0	9.0	55	44
15...	3.9	57	0	1.5	2.9	.0	10	65	17
15...	4.2	60	0	2.2	1.9	.1	14	72	18

DATE	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, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	CARBON, ORGANIC TOTAL (MG/L AS C)
MAY									
15...	39	.28	.010	.29	.100	2.9	3.0	.150	24
15...	30	.25	.010	.26	.090	1.3	1.4	.130	19
15...	16	.22	.010	.23	.060	1.0	1.1	.100	14
15...	13	.33	.010	.34	.060	.85	.91	.070	16
15...	11	.11	.010	.12	.060	.87	.93	.070	14

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	ARSENIC TOTAL (UG/L AS AS)	ARSENIC DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	CADMIUM TOTAL RECOV-ERABLE (UG/L AS CD)	CADMIUM DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, TOTAL RECOV-ERABLE (UG/L AS CR)	CHRO-MIUM, SUS-PENDED RECOV. (UG/L AS CR)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COPPER, TOTAL RECOV-ERABLE (UG/L AS CU)
MAY										
15...	1139	--	0	4	--	<1	--	--	0	--
15...	1151	ND	0	5	0	<1	10	10	0	1
15...	1225	--	0	5	--	<1	--	--	0	--

DATE	COPPER, SUS-PENDED RECOV-ERABLE (UG/L AS CU)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, TOTAL RECOV-ERABLE (UG/L AS FE)	IRON, SUS-PENDED RECOV-ERABLE (UG/L AS FE)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, TOTAL RECOV-ERABLE (UG/L AS PB)	LEAD, SUS-PENDED RECOV-ERABLE (UG/L AS PB)	LEAD, DIS-SOLVED (UG/L AS PB)	MANGA-NESE, TOTAL RECOV-ERABLE (UG/L AS MN)	MANGA-NESE, SUS-PENDED RECOV. (UG/L AS MN)
MAY										
15...	--	1	--	--	60	--	--	1	--	--
15...	0	14	2000	2000	50	7	6	1	60	60
15...	--	3	--	--	50	--	--	2	--	--

DATE	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY TOTAL RECOV-ERABLE (UG/L AS HG)	MERCURY SUS-PENDED RECOV-ERABLE (UG/L AS HG)	MERCURY DIS-SOLVED (UG/L AS HG)	SELE-NIUM, TOTAL (UG/L AS SE)	SELE-NIUM, SUS-PENDED TOTAL (UG/L AS SE)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	ZINC, TOTAL RECOV-ERABLE (UG/L AS ZN)	ZINC, DIS-SOLVED (UG/L AS ZN)
MAY										
15...	2	--	--	.1	--	--	0	0	--	<3
15...	2	.6	.5	.1	0	0	0	0	20	<3
15...	2	--	--	.1	--	--	0	0	--	9

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)
MAY									
15...	1139	.00	.00	.00	.0	.00	.00	.00	.00
15...	1151	.00	.00	.00	.0	.00	.00	.00	.00

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)
MAY									
15...	.00	.00	.00	.00	.00	.00	.00	.00	.00
15...	.00	.00	.00	.00	.00	.00	.00	.00	.00

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)
MAY									
15...	.00	.00	.00	.00	0	.00	.00	.00	.00
15...	.00	.00	.00	.00	0	.00	.00	.00	.00

GUADALUPE RIVER BASIN

08178690 SALADO CREEK TRIBUTARY AT BITTERS ROAD, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°31'36", long 98°26'25", Bexar County, Hydrologic Unit 121003-01, at culvert on Bitters Road immediately east of MacArthur High School in San Antonio.

DRAINAGE AREA.--0.26 mi^2 (0.67 km^2).

WATER-DISCHARGE RECORDS

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

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

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 253 ft^3/s (7.16 m^3/s) May 7, 1972, elevation, 7.88 ft (2.402 m).

EXTREMES FOR CURRENT YEAR.--Peak discharges above base of 50 ft^3/s (1.42 m^3/s).

Date	Time	Discharge (ft^3/s)	Discharge (m^3/s)	Elevation (ft)	Elevation (m)
Dec. 28	1740	52	1.47	4.02	1.225
May 1	1800	111	3.14	5.22	1.591
May 15	0940	50	1.42	3.98	1.213
May 18	2300	51	1.44	4.00	1.219
Sept. 6	1535	70	1.98	4.40	1.341
Sept. 7	1800	75	2.12	4.50	1.372

Minimum discharge, no flow most of time.

WATER-QUALITY RECORDS

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

REMARKS.--No samples obtained during current year.

GUADALUPE RIVER BASIN

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

LOCATION.--Lat 29°30'57", long 98°25'51", Bexar County, Hydrologic Unit 12100301, on upstream side of upstream bridge of two bridges 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).

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.--Records poor. 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 nine floodwater-retarding structures with combined detention capacity of 24,460 acre-ft (30.2 hm³). These structures control runoff from 67.7 mi² (175.3 km²) above this station.

AVERAGE DISCHARGE.--20 years, 9.94 ft³/s (0.282 m³/s), 0.98 in/yr (25 mm/yr), 7,200 acre-ft/yr (8.88 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 highest since 1899.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 232 ft³/s (6.57 m³/s) Sept. 6, time unknown, gage height, 4.36 ft (1.329 m), from floodmark, no peak above base of 250 ft³/s (7.08 m³/s); no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	.40	.10	3.1	1.6	.20	4.8	30	.70	.30	.20	.20
2	1.1	.40	.10	3.0	1.5	.20	2.4	5.0	.60	.20	.20	.20
3	2.0	.30	.10	2.9	1.4	.20	2.2	3.7	.60	.10	.20	.10
4	4.7	.30	.10	2.9	1.4	.20	2.1	3.5	.50	.10	.20	.10
5	2.8	.30	.10	2.8	1.3	.20	2.0	3.4	.50	.10	.20	.10
6	.43	.20	.10	2.8	1.2	.20	2.0	3.3	.40	.00	2.6	50
7	.40	.20	.10	2.7	1.1	.20	1.9	3.2	.40	.00	1.0	15
8	.41	.20	.10	2.7	1.0	.20	1.8	3.2	.40	.00	.60	5.0
9	.36	.20	.10	2.6	.90	.20	1.8	3.1	.40	.00	3.0	2.6
10	.15	.20	.10	2.6	.90	.20	1.8	3.0	.40	.00	20	2.0
11	1.2	.20	.10	2.5	.80	.20	3.0	3.0	.30	.00	10	1.2
12	.50	.20	14	2.4	.80	.20	5.0	3.2	.30	.00	5.0	.80
13	.40	.20	8.0	2.4	.70	.20	3.5	100	.30	.00	2.5	.40
14	.40	.10	5.0	2.4	.70	.20	2.5	90	.30	.00	1.6	.30
15	1.2	.10	3.9	2.3	.60	.20	2.0	65	.20	.00	.60	.20
16	.60	.10	3.7	2.3	.50	7.0	1.7	55	.20	.00	.40	.10
17	.50	4.0	3.6	2.2	.40	3.2	1.6	50	.20	.00	.30	.10
18	.40	10	3.5	2.2	.40	3.0	1.5	140	.20	.00	.20	.00
19	.40	2.3	3.4	2.2	.40	2.8	1.4	40	.10	.00	.10	.00
20	.40	6.0	3.4	2.1	.30	2.7	1.3	20	.10	.00	.00	.00
21	.40	12	3.3	2.1	.30	2.6	1.3	50	10	.00	.00	.00
22	.30	8.0	3.3	4.0	.30	2.5	1.2	9.0	2.5	3.0	.00	.00
23	.30	2.0	3.4	2.7	.30	2.5	1.2	5.0	2.0	2.4	.00	.00
24	.20	5.0	3.3	2.1	.30	2.4	1.2	3.2	1.6	1.6	.00	.00
25	.20	3.3	3.1	2.0	.20	2.4	20	2.5	1.2	1.0	.00	.00
26	.20	1.4	3.0	2.0	.20	2.3	8.0	2.2	1.0	.80	2.0	2.0
27	.20	.40	3.0	1.9	.20	5.4	4.5	2.0	.80	.60	.80	7.0
28	.20	.20	30	1.8	.20	3.6	4.0	1.4	.60	.50	.50	4.0
29	.40	.10	8.0	1.8	.20	2.4	3.9	1.2	.50	.40	.40	2.7
30	1.0	.10	3.5	1.7	---	2.2	3.7	1.0	.40	.30	.30	6.0
31	.40	---	3.2	1.6	---	2.1	---	.80	---	.20	.20	---
TOTAL	23.45	58.40	116.70	74.8	20.10	52.10	95.3	705.90	27.70	11.60	53.10	100.10
MEAN	.76	1.95	3.76	2.41	.69	1.68	3.18	22.8	.92	.37	1.71	3.34
MAX	4.7	12	30	4.0	1.6	7.0	20	140	10	3.0	20	50
MIN	.15	.10	.10	1.6	.20	.20	1.2	.80	.10	.00	.00	.00
CFSM	.006	.01	.03	.02	.005	.01	.02	.17	.007	.003	.01	.02
IN.	.01	.02	.03	.02	.01	.01	.03	.19	.01	.00	.01	.03
AC-FT	47	116	231	148	40	103	189	1400	55	23	105	199
(††)	.02	1.69	1.88	.66	.77	1.97	1.27	6.38	1.12	.08	2.31	6.44

CAL YR 1979 TOTAL 4377.14 MEAN 12.0 MAX 1210 MIN .00 CFSM .09 IN 1.19 AC-FT 8680 †† 39.74
WTR YR 1980 TOTAL 1339.25 MEAN 3.66 MAX 140 MIN .00 CFSM .03 IN .36 AC-FT 2660 †† 24.59

†† Weighted-mean rainfall, in inches.

Table 7.--Water-quality data for wells and springs in the Edwards aquifer, 1980--Continued
UVALDE COUNTY--Continued

LOCAL IDENTIFIER	DATE OF SAMPLE	TIME	DEPTH OF WELL, TOTAL (FEET) (72008)	PUMP OR FLOW PERIOD PRIOR TO SAMPLING (MIN) (72004)	FLOW RATE, INSTANTANEOUS (GPM) (00059)	PCB, TOTAL (UG/L) (39516)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L) (39250)	ALDRIN, TOTAL (UG/L) (39330)	CHLORDANE, TOTAL (UG/L) (39350)	DDD, TOTAL (UG/L) (39360)
YP-69-42-803	80-07-23	1530	340	450	625	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	DDE, TOTAL (UG/L) (39365)	DDT, TOTAL (UG/L) (39370)	DIAZINON, TOTAL (UG/L) (39570)	DIELDRIN TOTAL (UG/L) (39380)	ENDOSULFAN, TOTAL (UG/L) (39388)	ENDRIN, TOTAL (UG/L) (39390)	ETHION, TOTAL (UG/L) (39398)	HEPTACHLOR, TOTAL (UG/L) (39410)	HEPTACHLOR EPOXIDE TOTAL (UG/L) (39420)
YP-69-42-803	80-07-23	.00	.00	.00	.00	.00	.00	.00	.00	.00

LOCAL IDENTIFIER	DATE OF SAMPLE	LINDANE TOTAL (UG/L) (39340)	MALATHION, TOTAL (UG/L) (39530)	METHOXYCHLOR, TOTAL (UG/L) (39480)	METHYL PARATHION, TOTAL (UG/L) (39600)	METHYL TRITHION, TOTAL (UG/L) (39790)	MIREX, TOTAL (UG/L) (39755)	PARATHION, TOTAL (UG/L) (39540)	PERTHANE TOTAL (UG/L) (39034)	TOXAPHENE, TOTAL (UG/L) (39400)
YP-69-42-803	80-07-23	.00	.00	.00	.00	.00	.00	.00	.00	0

LOCAL IDENTIFIER	DATE OF SAMPLE	TOTAL TRITHION (UG/L) (39780)	2,4-D, TOTAL (UG/L) (39730)	2,4,5-T TOTAL (UG/L) (39740)	SILVEX, TOTAL (UG/L) (39760)
YP-69-42-803	80-07-23	.00	.00	.00	.00

Table 8.--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 constumption, 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 (1977a) 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 (1977b) 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 9.--Streamflow, spring flow, reservoir contents, and water-quality data for streams, October 1979 to September 1980

08167000 GUADALUPE RIVER AT COMFORT, TX

LOCATION (revised).--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). Station relocated 0.4 mi (0.6 km) downstream on June 3, 1980.

DRAINAGE AREA (revised).--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 (revised).--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. Corps of Engineers gage-height telemeter at station.

AVERAGE DISCHARGE.--41 years (water years 1940-80), 180 ft³/s (5.098 m³/s), 130,400 acre-ft/yr (161 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)
Sept. 7	2230	*12,000	340	12.72	3.877
Sept. 29	2030	11,700	331	12.52	3.816

Minimum discharge, 12 ft³/s (0.34 m³/s) Aug. 16-18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	122	114	117	146	132	111	121	107	88	59	14	24
2	124	109	115	143	131	105	117	101	89	38	15	28
3	129	109	115	140	128	103	117	97	86	34	17	28
4	122	112	114	137	127	103	112	96	83	33	16	28
5	117	112	112	136	126	102	108	98	82	33	17	29
6	114	114	112	136	126	101	105	98	77	33	17	30
7	112	114	112	136	126	102	105	109	76	32	18	2500
8	109	113	112	136	130	103	104	133	80	31	19	4030
9	108	117	112	132	130	103	100	127	76	29	19	1140
10	106	114	114	134	127	104	101	118	70	30	21	524
11	105	114	115	135	126	103	100	115	73	30	28	357
12	107	114	135	132	126	109	103	111	73	30	27	288
13	107	116	162	131	123	108	107	105	68	29	17	246
14	109	118	145	131	124	102	109	110	63	28	13	207
15	109	119	134	130	126	101	106	112	59	27	15	182
16	109	116	129	128	135	104	103	436	57	26	13	170
17	109	113	126	128	134	107	101	232	55	24	12	158
18	112	154	123	131	131	102	99	170	52	21	12	147
19	109	127	123	130	129	99	96	211	52	20	91	134
20	109	119	127	131	128	101	94	152	49	27	78	124
21	109	153	133	133	127	100	93	161	50	25	63	124
22	109	174	135	146	124	99	92	136	48	28	51	124
23	109	156	141	139	123	91	92	123	47	32	43	120
24	109	150	151	134	119	99	90	114	44	29	42	114
25	109	162	144	129	112	102	139	113	42	26	42	110
26	112	156	141	127	109	107	143	108	45	30	39	134
27	112	151	138	126	108	162	120	104	44	28	37	199
28	112	144	141	127	107	173	109	97	40	27	36	202
29	114	126	187	135	107	155	106	95	38	28	36	2590
30	116	120	164	136	---	134	110	90	37	19	35	1540
31	116	---	154	136	---	126	---	84	---	14	29	---
TOTAL	3475	3830	4083	4151	3601	3421	3202	4063	1843	900	932	15631
MEAN	112	128	132	134	124	110	107	131	61.4	29.0	30.1	521
MAX	129	174	187	146	135	173	143	436	89	59	91	4030
MIN	105	109	112	126	107	91	90	84	37	14	12	24
AC-FT	6890	7600	8100	8230	7140	6790	6350	8060	3660	1790	1850	31000

CAL YR 1979 TOTAL 125864 MEAN 345 MAX 3990 MIN 105 AC-FT 249700
WTR YR 1980 TOTAL 49132 MEAN 134 MAX 4030 MIN 12 AC-FT 97450

08167500 GUADALUPE RIVER NEAR SPRING BRANCH, TX

LOCATION.--Lat 29°51'38", long 98°22'58", Comal County, Hydrologic Unit 12100201, on right bank at downstream side of bridge on county road, 226 ft (69 m), downstream from 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).

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 946.10 ft (288.981 m) National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Several small diversions above station for irrigation. Several observations of water temperature were made during the year. Guadalupe-Blanco River Authority gage-height telemeter located at station.

AVERAGE DISCHARGE.--58 years, 305 ft³/s (8.638 m³/s), 221,000 acre-ft (272 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 slope-area 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)
Sept. 8	2000	*8,370	237	12.32	3.755
Sept. 30	1600	6,990	198	11.06	3.371

Minimum discharge, 23 ft³/s (0.65 m³/s) Aug. 17, 18.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	180	160	173	194	168	137	187	140	200	63	38	42
2	178	153	173	188	165	132	183	144	179	59	33	39
3	179	150	173	179	162	136	183	135	176	72	27	37
4	170	145	176	173	159	135	170	132	170	64	27	36
5	164	148	176	173	159	133	161	126	161	58	26	36
6	164	148	176	173	156	131	156	128	154	55	28	38
7	163	147	173	168	153	134	150	129	151	51	35	107
8	165	150	173	165	156	135	143	141	140	50	33	3220
9	166	154	173	162	162	135	135	201	135	49	30	3570
10	160	152	173	162	162	133	134	195	139	48	31	1430
11	159	154	173	162	156	134	134	167	131	46	45	825
12	159	152	174	162	153	139	134	163	127	46	45	541
13	161	152	182	159	153	141	142	173	127	46	40	400
14	161	152	203	156	153	139	142	206	125	45	42	326
15	160	152	200	156	156	138	148	199	119	44	40	274
16	166	152	187	162	159	137	142	199	113	42	36	232
17	166	154	176	162	159	134	138	542	108	42	30	208
18	163	181	173	162	168	130	131	386	104	41	27	188
19	162	188	173	168	165	133	130	597	100	39	30	179
20	160	198	169	173	162	128	128	529	97	39	31	159
21	157	184	165	179	156	125	128	513	146	37	47	148
22	155	182	173	185	155	126	128	515	125	35	75	140
23	150	212	176	188	150	126	128	386	104	39	64	138
24	150	189	174	188	145	125	128	355	92	39	58	133
25	149	182	181	182	140	125	140	333	84	42	48	128
26	152	182	176	179	139	127	161	271	78	43	47	128
27	153	188	176	170	139	186	200	256	75	41	45	130
28	152	181	176	168	139	460	173	242	73	40	45	211
29	155	173	176	168	140	295	154	228	73	41	41	259
30	159	173	213	168	---	227	143	217	67	40	40	2730
31	157	---	207	168	---	205	---	211	---	38	59	---
TOTAL	4995	4988	5542	5302	4489	4821	4454	8159	3673	1434	1243	16032
MEAN	161	166	179	171	155	156	148	263	122	46.3	40.1	534
MAX	180	212	213	194	168	460	200	597	200	72	75	3570
MIN	149	145	165	156	139	125	128	126	67	35	26	36
AC-FT	9910	9890	10990	10520	8900	9560	8830	16180	7290	2840	2470	31800

CAL YR 1979 TOTAL 279322 MEAN 765 MAX 6380 MIN 145 AC-FT 554000
WTR YR 1980 TOTAL 65132 MEAN 178 MAX 3570 MIN 26 AC-FT 129200

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. Corps of Engineers gage-height telemeter at station.

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. 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 contents, 369,100 acre-ft (455 hm³) May 26 at 0300 hours, elevation, 907.41 ft (276.579 m); minimum, 338,600 acre-ft (417 hm³) Sept. 5, elevation, 903.54 ft (275.399 m).

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

903.0	334,500	906.0	357,800
904.0	342,200	907.0	365,800
905.0	349,900	908.0	373,800

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS AT 2400

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	347800	348100	349900	355800	360700	361900	362300	360800	367000	353100	343200	339200
2	347700	348000	350000	356100	360700	361600	362600	360800	366800	352400	342900	339000
3	347800	348000	350000	356200	360800	361500	362600	360700	366500	352000	342600	338900
4	347700	347900	350000	356200	361000	361500	362400	360700	366100	351100	342300	338800
5	347600	348000	350000	356300	361200	361300	362300	360600	365700	350400	342000	338600
6	347600	348000	350300	356600	361300	361300	362400	360300	365400	349800	341900	339600
7	347600	348000	350400	356600	361500	361200	362400	360500	365000	349200	341800	341900
8	347700	348000	350500	356700	362100	361200	362200	360800	364600	348800	341600	346200
9	347600	348000	350600	356800	362000	361100	362100	360800	364100	348400	341600	352400
10	347400	348000	350800	357000	362000	361100	361900	360800	363600	348100	341900	354600
11	347400	347900	351000	357000	362200	361100	362000	361000	363100	347800	341900	355400
12	347400	348000	351700	357200	362200	361100	361900	361000	362700	347600	341800	355300
13	347500	347900	352000	357200	362300	360800	361500	362400	362100	347300	341700	355000
14	347500	347900	352100	357400	362500	360700	361400	363000	361500	346900	341600	354600
15	347600	347900	352300	357600	362700	360700	361300	363800	361100	346600	341400	354200
16	347700	348000	352400	358100	362800	361000	361300	364300	360500	346400	341200	353600
17	347800	348200	352400	358500	362700	360600	361100	365000	360000	346200	341100	353000
18	347900	348400	352400	358700	362600	360300	361200	365800	359500	345900	340900	352400
19	348000	348600	352600	358900	362700	360300	361000	366600	359100	345600	340800	352600
20	348100	349000	352800	359200	362700	360300	361000	367100	358400	345400	340600	352000
21	348100	349500	353100	359400	362700	360000	360700	368200	359000	345300	340600	351100
22	347900	349500	353400	359700	362700	359900	360700	368800	358600	345100	340500	350500
23	347800	349300	353900	359800	362700	360000	360600	368900	358000	345000	340400	350300
24	347700	349600	353900	359900	362700	359800	360500	369000	357400	344900	340600	350100
25	347700	349700	353900	360000	362500	359600	361400	369000	356900	344600	340400	350300
26	347700	349800	354100	360100	362400	359900	361100	368800	356300	344400	340200	350200
27	347700	349900	354200	360300	362400	360800	361100	368700	355700	344300	340000	350200
28	347800	349900	355100	360300	362200	361600	361100	368600	355000	344100	339900	350200
29	347900	349900	355400	360500	362200	362000	360900	368300	354300	343900	339700	350300
30	348200	349900	355400	360700	---	362100	360900	368000	353600	343700	339600	354100
31	348100	---	355700	360600	---	362200	---	367600	---	343500	339300	---
MAX	348200	349900	355700	360700	362800	362200	362600	369000	367000	353100	343200	355400
MIN	347400	347900	349900	355800	360700	359600	360500	360300	353600	343500	339300	338600
(†)	904.77	904.99	905.73	906.35	906.56	906.55	906.39	907.23	905.47	904.17	903.63	905.53
(‡)	+100	+1800	+5800	+4900	+1600	0	-1300	+6700	-14000	-10100	-4200	+14800

CAL YR 1979 MAX 412600 MIN 347400 ‡ -42300
WTR YR 1980 MAX 369000 MIN 338600 ‡ +6100

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

08167700 CANYON LAKE NEAR NEW BRAUNFELS, TX--Continued

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE, WATER (DEG C)	OXYGEN, DISSOLVED (MG/L)	OXYGEN, DISSOLVED (PERCENT SATURATION)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)
APR 29...	1335	415	8.2	12.5	10.1	95	200	20	49	19

DATE	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	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 29...	10	.3	1.8	220	0	23	18	.2	11	240

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.

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.--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. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--17 years (water years 1962-80) since regulation began at Canyon Lake, 391 ft³/s (11.07 m³/s), 283,300 acre-ft/yr (349 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, 476 ft³/s (13.5 m³/s) Sept. 19, gage height, 5.51 ft (1.679 m); minimum, 45 ft³/s (1.27 m³/s) Aug. 31.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	218	93	90	92	92	159	162	157	313	322	52	50
2	140	93	90	92	92	159	159	157	313	322	52	48
3	92	93	90	92	92	159	159	157	313	322	52	48
4	92	93	90	92	91	159	159	157	313	322	52	48
5	92	93	90	92	90	159	159	157	313	322	52	48
6	92	93	90	92	90	159	159	157	313	322	52	51
7	92	95	90	92	90	159	159	157	313	256	52	60
8	92	95	90	92	90	159	159	157	313	206	52	53
9	92	95	90	92	90	159	159	157	313	157	52	52
10	93	95	90	92	90	159	159	157	313	110	52	52
11	93	95	90	92	90	159	159	157	313	104	52	284
12	93	95	90	92	90	161	159	157	313	104	52	470
13	93	95	90	92	90	162	159	166	313	104	52	470
14	93	95	90	92	111	162	154	158	313	93	52	470
15	93	93	90	92	161	162	141	158	313	79	52	470
16	93	90	90	92	162	162	169	157	313	79	52	470
17	93	90	90	92	162	162	162	157	313	79	51	470
18	93	90	90	92	162	148	155	157	313	79	51	470
19	93	90	90	92	162	157	156	157	313	79	51	476
20	93	90	90	92	162	159	155	159	313	79	51	476
21	93	90	90	92	162	159	154	162	329	66	51	476
22	93	90	90	92	162	159	157	242	319	53	51	376
23	93	90	91	92	162	159	157	313	318	53	51	197
24	95	90	92	92	162	159	157	313	318	53	51	197
25	95	90	92	92	162	159	158	313	318	53	51	198
26	95	90	92	92	162	159	157	313	318	53	51	198
27	95	90	92	92	162	162	157	313	318	53	51	197
28	95	90	93	92	162	162	157	313	318	53	51	197
29	95	90	92	92	159	162	157	313	322	52	51	197
30	95	90	92	92	---	162	157	313	322	52	51	197
31	93	---	92	92	---	162	---	313	---	52	51	---
TOTAL	3062	2761	2808	2852	3714	4948	4730	6374	9460	4133	1597	7466
MEAN	98.8	92.0	90.6	92.0	128	160	158	206	315	133	51.5	249
MAX	218	95	93	92	162	162	169	313	329	322	52	476
MIN	92	90	90	92	90	148	141	157	313	52	51	48
AC-FT	6070	5480	5570	5660	7370	9810	9380	12640	18760	8200	3170	14810

CAL YR 1979 TOTAL 295102 MEAN 808 MAX 5490 MIN 88 AC-FT 585300
WTR YR 1980 TOTAL 53905 MEAN 147 MAX 476 MIN 48 AC-FT 106900

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. Small diversion above station.

AVERAGE DISCHARGE.--40 years (water years 1923-34, 1953-80), 140 ft³/s (3.965 m³/s), 4.01 in/yr (102 mm/yr), 101,400 acre-ft/yr (125 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)
May 19	0230	2,860	81.0	7.17	2.185
Sept. 8-9	unknown	a*15,000	425	unknown	-
Sept. 29	1400	10,600	300	13.34	4.066

a Estimated.

Minimum daily discharge, 14 ft³/s (0.40 m³/s) Aug. 6, 8, 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	53	53	63	54	41	60	46	39	25	16	19
2	60	53	52	62	54	41	60	53	39	23	16	19
3	60	53	53	59	54	43	59	51	37	23	15	19
4	59	51	51	59	51	45	56	49	37	22	15	19
5	57	51	52	58	51	44	55	48	36	21	15	19
6	56	51	52	57	50	43	55	46	36	21	14	19
7	57	51	51	56	50	44	54	43	38	20	15	900
8	57	51	51	54	50	45	51	49	41	20	14	6600
9	57	51	51	53	50	46	50	50	39	20	14	850
10	55	51	51	53	49	45	49	46	38	20	16	361
11	55	51	53	54	49	44	49	46	38	20	19	248
12	55	51	59	54	49	44	49	44	37	20	21	192
13	56	51	66	52	49	44	49	43	37	19	23	154
14	56	51	62	51	49	44	50	51	35	19	23	131
15	56	51	63	51	48	43	51	55	34	18	22	115
16	56	51	62	52	47	45	50	57	33	18	22	102
17	56	54	59	55	47	43	49	68	32	18	23	96
18	56	79	58	55	47	41	48	74	31	18	23	91
19	55	69	57	55	48	41	47	572	31	17	23	87
20	55	59	57	56	48	42	46	82	30	17	25	83
21	54	63	57	58	46	43	45	68	29	17	27	80
22	52	62	57	67	44	42	44	61	28	17	28	76
23	50	60	57	67	43	43	44	57	28	17	29	71
24	51	59	55	64	42	43	44	53	27	18	26	67
25	51	59	55	62	42	42	49	51	26	18	25	64
26	53	59	55	60	41	42	48	49	26	17	24	67
27	54	58	55	58	42	99	48	47	25	17	24	114
28	54	56	57	56	42	98	49	46	25	17	22	124
29	53	53	63	56	43	80	47	42	25	17	22	2380
30	54	53	65	55	---	73	46	40	25	17	21	936
31	53	---	65	55	---	66	---	38	---	17	20	---
TOTAL	1714	1665	1754	1767	1379	1539	1501	2125	982	588	642	14103
MEAN	55.3	55.5	56.6	57.0	47.6	49.6	50.0	68.5	32.7	19.0	20.7	470
MAX	61	79	66	67	54	99	60	572	41	25	29	6600
MIN	50	51	51	51	41	41	44	38	25	17	14	19
CFSM	.12	.12	.12	.12	.10	.11	.11	.15	.07	.04	.04	.99
IN.	.13	.13	.14	.14	.11	.12	.12	.17	.08	.05	.05	1.11
AC-FT	3400	3300	3480	3500	2740	3050	2980	4210	1950	1170	1270	27970

CAL YR 1979	TOTAL	98596	MEAN	270	MAX	2710	MIN 50	CFSM .57	IN 7.74	AC-FT	195600	
WTR YR 1980	TOTAL	29759	MEAN	81.3	MAX	6600	MIN 14	CFSM .17	IN 2.34	AC-FT	59030	

NOTE.--No gage-height record Sept. 7-9.

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH FIELD (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNIINHIB 5 DAY (MG/L)
JAN 07...	1322	56	530	8.1	12.0	5	.20	11.2	107	1.8
MAY 15...	1104	54	519	7.6	22.0	0	5.6	7.9	95	1.8
JUL 29...	1320	14	550	8.1	29.5	0	2.0	9.8	132	1.1

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
JAN 07...	>16	K16	K8	270	77	75	19	8.3	.2
MAY 15...	600	220	110	250	74	69	20	8.8	.2
JUL 29...	>41	41	40	250	73	67	21	11	.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
JAN 07...	1.3	230	0	76	13	.3	8.6	315	7
MAY 15...	1.5	220	0	79	15	.3	12	314	23
JUL 29...	2.1	220	0	78	16	.4	15	319	1

DATE	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)
JAN 07...	6	.46	.020	.48	.010	.35	.36	.010	3.0
MAY 15...	6	.40	.010	.41	.040	.38	.42	.010	1.7
JUL 29...	3	.67	.020	.69	.060	1.5	1.6	.010	5.3

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 07...	1322	0	30	<1	0	0	<10
JUL 29...	1320	1	40	<1	0	2	<10

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 07...	3	2	.1	0	0	4
JUL 29...	0	4	.1	0	0	<3

08179000 MEDINA RIVER NEAR PIPE CREEK, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
JAN 07...	1322	.00	.0	.00	.0	.00	.00	.00	.03
JUL 29...	1320	.00	.0	.00	.0	.00	.00	.00	.00

DATE	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)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)
JAN 07...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 29...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 07...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 29...	.00	.00	.00	.00	0	.00	.00	.00	.00

08179100 RED BLUFF CREEK NEAR PIPE CREEK, TX

LOCATION.--Lat 29°40'51", long 98°57'19", Bandera County, Hydrologic Unit 12100302, on left bank 0.8 mi (1.3 km) upstream from bridge on Farm Road 1283, 1.8 mi (2.9 km) downstream from Pipe Creek, 1.9 mi (3.1 km) upstream from mouth, and 3.2 mi (5.1 km) south of Pipe Creek.

DRAINAGE AREA.--56.3 mi² (145.8 km²).

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

REVISED RECORDS.--WSP 1923: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,107.2 ft (337.475 m) Corps of Engineers datum.

REMARKS.--Records good. Small dams on upstream tributaries affect flow during time of storm runoff. No known diversion. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--24 years (water years 1957-80), 11.8 ft³/s (0.334 m³/s), 2.85 in/yr (72 mm/yr), 8,550 acre-ft/yr (10.5 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 46,900 ft³/s (1,330 m³/s) Sept. 27, 1964, gage height, 22.64 ft (6.901 m), from rating curve extended above 2,000 ft³/s (56.6 m³/s) on basis of slope-area measurement of peak flow; no flow for many days each year.
Maximum stage since at least 1905, that of Sept. 27, 1964.

EXTREMES OUTSIDE PERIOD OF RECORD.--A stage of about 17 ft (5.2 m) was reached in July 1937. Flood in October 1953 reached a stage of 13.8 ft (4.21 m).

EXTREMES FOR CURRENT YEAR.--No flow for year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
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	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.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	.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	.00	.00	.00	.00	.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00

CAL YR 1979	TOTAL	5494.21	MEAN	15.1	MAX	336	MIN	.00	CFSM	.27	IN	3.63	AC-FT	10900
WTR YR 1980	TOTAL	0.00	MEAN	.000	MAX	.00	MIN	.00	CFSM	.000	IN	.00	AC-FT	0

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, 247,600 acre-ft (305 hm³) Oct. 1, gage height, 1,070.9 ft (326.41 m); minimum, 167,200 acre-ft (206 hm³) Sept. 6, gage height, 1,054.1 ft (321.29 m).

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

1,054.0	166,800	1,065.0	217,200
1,055.0	171,000	1,070.0	242,400
1,060.0	192,000	1,071.0	248,200

CONTENTS, IN ACRE-FEET, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
INSTANTANEOUS OBSERVATIONS AT 0800

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	247600	238400	233400	230800	227800	223800	215700	207500	207200	192000	177300	168900
2	247100	238400	233400	230300	227300	223300	215700	207400	207100	191200	176900	168500
3	247100	237900	232800	230300	227300	223300	215600	207200	207100	190700	176400	168000
4	246500	237900	232800	230300	227300	223300	215400	207100	206600	189900	176000	167600
5	245900	237400	232800	230300	227300	222800	215200	206600	206100	189500	175600	167600
6	245900	237400	232300	230300	227300	222800	214700	206100	205600	189100	174800	167200
7	245900	236900	232300	230300	226800	222300	214700	206100	205100	188200	174300	169300
8	245300	236900	232300	230300	226800	222300	214600	205800	204600	187800	173900	182700
9	245300	236400	232300	230300	226800	222300	214400	205600	204100	187400	173800	183600
10	244700	236400	232300	230300	226800	221800	214200	205600	203600	187000	173600	184400
11	244700	235900	231800	229800	226300	221800	213700	205100	203100	187000	173500	184900
12	244200	235900	231800	229800	226300	221200	213500	205100	202600	186100	173500	185300
13	243600	235400	231300	229300	226300	220700	213200	205600	202100	185700	173100	185700
14	243000	235400	231300	229300	225800	220700	213000	205600	201600	185300	173100	185700
15	243000	234900	231300	229300	225800	220200	212700	205600	201100	184900	173100	185700
16	242400	234900	231300	229300	225300	219700	212200	206100	200600	184400	172700	185300
17	241900	234400	231300	229300	225300	219200	212000	206600	200100	183600	172700	185300
18	241900	235400	231300	228800	225300	219200	211700	207100	199600	183200	172700	185300
19	241400	234900	230800	228800	225300	218700	211200	207100	199100	182700	172700	185300
20	241400	234900	230800	228800	225300	218700	211200	207100	198600	181900	172200	185300
21	240900	234900	230800	228800	225300	218200	210700	208100	198100	181900	171800	185300
22	240900	234400	230800	228800	224800	217700	210200	208100	197500	181100	171400	184900
23	240400	234400	230800	228300	224800	217700	209700	208100	197000	180600	171400	184900
24	240400	234400	230800	228300	224800	217200	209100	208100	196000	180200	171000	184900
25	240400	234400	230800	228300	224800	217200	209000	208100	195000	179800	171000	184900
26	239900	233900	230800	228300	224800	216700	208800	208100	195000	179400	171000	184900
27	239400	233900	230800	227800	224300	216700	208600	208100	194500	179400	170600	184900
28	239400	233900	230800	227800	224300	216700	208100	207600	194000	178500	170100	184900
29	239400	233400	230800	227800	223800	216700	208100	207600	193000	178500	169700	184900
30	238900	233400	230800	227800	---	216200	207600	207600	192500	178100	169300	191600
31	238900	---	230800	227800	---	216200	---	207600	---	177700	169300	---
MAX	247600	238400	233400	230800	227800	223800	215700	208100	207200	192000	177300	191600
MIN	238900	233400	230800	227800	223800	216200	207600	205100	192500	177700	169300	167200
(†)	1069.3	1068.2	1067.7	1067.1	1066.3	1064.8	1063.1	1063.1	1060.1	1056.6	1054.6	1059.9
(‡)	-9300	-5500	-2600	-3000	-4000	-7600	-8600	0	-15100	-14800	-8400	-22300

CAL YR 1979 MAX 261500 MIN 230800
WTR YR 1980 MAX 247600 MIN 167200

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

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	SPECIFIC CONDUCTANCE (MICROMHOS)	TEMPERATURE, WATER (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)	SODIUM ADSORPTION RATIO
JAN 11...	1105	420	15.0	190	45	54	14	7.2	.2

DATE	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)	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)
JAN 11...	1.7	180	0	42	15	.2	9.9	233

GUADALUPE RIVER BASIN

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. Several observations of water temperatures were made during the year.

AVERAGE DISCHARGE.--34 years (water years 1923-33, 1958-80), 41.0 ft^3/s (1.161 m^3/s), 29,700 acre-ft/yr (36.6 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 216 ft^3/s (6.12 m^3/s) May 6, 1971; no flow at times.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	83	57	19	6.1	41	47	54	111	70	167	125	70
2	83	74	19	6.1	24	38	46	111	97	166	137	35
3	84	78	27	6.1	39	43	82	111	96	166	137	43
4	85	76	38	9.5	47	54	73	101	169	166	137	70
5	86	64	33	24	43	55	63	96	161	164	137	63
6	87	58	22	24	26	81	62	96	175	164	137	57
7	87	58	27	24	27	88	73	91	170	166	130	28
8	87	58	32	24	27	72	98	47	166	166	91	.00
9	88	58	32	24	20	68	91	4.7	158	166	73	.00
10	87	57	32	24	16	74	86	27	159	166	38	.00
11	87	57	31	24	45	85	98	26	162	167	.00	.00
12	86	57	21	9.7	23	94	98	19	171	167	.00	5.5
13	87	49	5.6	4.9	22	111	69	7.3	165	166	.00	18
14	85	36	.00	40	37	117	92	.00	161	167	.00	17
15	75	50	.00	50	37	114	96	.00	158	166	2.5	35
16	63	64	.00	36	28	115	98	.01	159	164	9.0	50
17	51	48	.00	28	18	89	110	.00	162	156	13	62
18	62	49	.00	25	18	99	115	.02	171	121	21	58
19	82	49	.00	12	31	112	116	.00	170	175	24	47
20	89	31	.00	12	34	118	115	.00	169	171	35	37
21	88	22	.00	12	42	120	113	.00	169	169	36	37
22	79	22	.00	1.3	40	111	114	.00	168	163	25	46
23	69	35	.00	.00	33	116	118	.00	168	142	21	54
24	70	33	9.6	39	28	120	116	.00	167	112	21	54
25	72	33	21	56	37	115	112	.00	167	110	32	59
26	72	27	34	31	46	95	102	5.1	167	125	54	54
27	73	19	25	33	37	71	103	7.6	167	122	54	20
28	73	19	16	32	43	69	104	.00	167	117	55	21
29	73	19	11	32	50	75	109	22	167	111	67	38
30	58	19	6.4	31	---	74	112	44	167	112	68	54
31	48	---	6.1	43	---	65	---	55	---	112	71	---
TOTAL	2399	1376	467.70	723.70	959	2705	2838	981.73	4743	4672	1750.50	1132.50
MEAN	77.4	45.9	15.1	23.3	33.1	87.3	94.6	31.7	158	151	56.5	37.8
MAX	89	78	38	56	50	120	118	111	175	175	137	70
MIN	48	19	.00	.00	16	38	46	.00	70	110	.00	.00
AC-FT	4760	2730	928	1440	1900	5370	5630	1950	9410	9270	3470	2250

CAL YR 1979 TOTAL 14960.59 MEAN 41.0 MAX 190 MIN .00 AC-FT 29670
WTR YR 1980 TOTAL 24748.13 MEAN 67.6 MAX 175 MIN .00 AC-FT 49090

GUADALUPE RIVER BASIN

08181000 LEON CREEK TRIBUTARY AT FARM ROAD 1604, SAN ANTONIO, TX
(Flood-hydrograph partial-record station)

LOCATION.--Lat 29°35'14", long 98°37'40", Bexar County, Hydrologic Unit 121003-01, 97 ft (30 m) upstream from culvert on Farm Road 1604 at San Antonio and 1.5 mi (2.4 km) west of bridge on Leon Creek.

DRAINAGE AREA.--5.57 mi^2 (14.43 km^2).

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1968 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, 1,790 ft^3/s (50.7 m^3/s) July 16, 1973, elevation, 10.91 ft (3.325 m).

EXTREMES FOR CURRENT YEAR.--No flow during the year.

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Chemical, biochemical, and pesticide analyses: May 1970 to September 1980 (discontinued). Sediment analyses: May 1972 to June 1973. Water temperatures: May 1970 to September 1980 (discontinued). Bacteria analyses: April 1976 to September 1980 (discontinued).

REMARKS.--No samples collected during current year.

GUADALUPE RIVER BASIN

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).

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.--Records good. 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.--12 years, 4.44 ft³/s (0.126 m³/s), 4.02 in/yr (102 mm/yr), 3,220 acre-ft/yr (3.97 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.--Maximum discharge, 18 ft³/s (0.51 m³/s) Nov. 17 at 2300 hours, gage height, 1.91 ft (0.582 m), no peak above base of 140 ft³/s (3.96 m³/s); no flow for many days.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	.00	.00	.27	.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	.03
7	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.45
8	.00	.00	.00	.00	.00	.00	.00	.20	.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	.18	.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	.39	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.12	.00	.00	.00	.00
15	.00	.00	.00	.00	.06	.00	.00	.13	.00	.00	.00	.00
16	.00	.00	.00	.00	.04	.00	.00	.08	.00	.00	.00	.00
17	.00	.34	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
18	.00	.03	.00	.00	.00	.00	.00	.11	.00	.00	.00	.00
19	.00	.00	.00	.00	.00	.00	.00	.01	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
21	.00	.04	.00	.00	.00	.00	.00	.22	.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	.18	.00	.00	.00	.00	.00
26	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
27	.00	.00	.00	.00	.00	.18	.00	.00	.00	.00	.00	.12
28	.00	.00	.29	.00	.00	.00	.00	.00	.00	.00	.00	.20
29	.00	.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	.41	.29	.00	.10	.18	.18	1.53	.00	.00	.18	.80
MEAN	.000	.014	.009	.000	.003	.006	.006	.049	.000	.000	.006	.027
MAX	.00	.34	.29	.00	.06	.18	.18	.39	.00	.00	.18	.45
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
CFSM	.000	.001	.001	.000	.000	.000	.000	.003	.000	.000	.000	.002
IN.	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.8	.6	.00	.2	.4	.4	3.0	.00	.00	.4	1.6
(††)	.00	3.59	1.89	.87	.94	1.55	1.71	6.45	.21	.07	2.69	8.29

CAL YR 1979 TOTAL 2537.68 MEAN 6.95 MAX 219 MIN .00 CFSM .46 IN 6.29 AC-FT 5030 †† 36.13
WTR YR 1980 TOTAL 3.67 MEAN .010 MAX .45 MIN .00 CFSM .001 IN .01 AC-FT 7.3 †† 28.26

†† Weighted-mean rainfall, in inches.

08183900 CIBOLO CREEK 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.--18 years, 28.8 ft³/s (0.816 m³/s), 5.72 in/yr (145 mm/yr), 20,866 acre-ft/yr (25.7 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 (81,030 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, 428 ft³/s (12.1 m³/s) May 18 at 2330 hours, gage height, 3.58 ft (1.091 m), no peak above base of 900 ft³/s (25.5 m³/s); minimum, 0.04 ft³/s (0.001 m³/s) Sept. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.2	3.6	5.2	4.5	3.9	3.6	4.5	2.8	4.3	1.1	.12	.29
2	4.9	3.9	5.2	4.5	3.9	3.6	4.2	3.0	4.4	1.1	.05	.22
3	4.5	4.2	5.2	4.9	3.6	3.3	4.0	3.1	4.5	.99	.08	.22
4	3.9	4.2	5.2	4.9	3.6	3.3	3.8	2.7	4.7	1.1	.13	.12
5	4.0	4.5	5.3	5.1	3.6	3.3	3.6	2.4	4.3	.98	.19	.06
6	4.2	5.2	5.5	4.9	3.6	3.3	3.9	2.3	4.2	.96	.37	.10
7	4.2	5.6	5.3	5.2	3.9	3.3	4.8	3.9	3.9	1.0	.48	5.3
8	4.3	5.6	5.2	5.6	3.9	3.3	4.5	4.3	3.8	1.2	.28	2.0
9	4.8	5.8	5.2	5.6	3.9	3.3	4.0	3.8	3.8	1.1	.16	13
10	4.9	6.0	5.6	5.8	3.6	3.3	3.7	2.7	4.6	1.1	1.2	6.0
11	4.6	6.0	5.8	6.0	3.6	3.3	3.9	2.6	4.1	1.1	1.5	1.7
12	4.5	6.0	10	5.3	3.6	3.3	9.3	3.5	3.5	1.1	.96	.89
13	4.7	5.7	9.3	5.3	3.6	3.3	6.1	16	3.1	1.3	.59	.64
14	5.0	5.6	5.8	5.6	3.6	3.3	4.1	16	3.0	1.3	.51	.71
15	5.2	5.6	5.4	5.9	3.6	3.3	4.0	6.6	2.7	1.1	.62	.65
16	5.4	6.1	4.9	6.6	3.6	3.6	4.2	10	3.0	.92	.68	.65
17	5.2	10	4.2	6.9	3.6	3.9	3.9	5.2	2.7	.81	.72	.79
18	4.9	12	4.2	6.2	3.6	3.9	3.4	18	2.7	.73	.94	.78
19	4.4	5.7	4.2	5.6	3.6	3.9	3.5	47	2.5	.72	.69	.65
20	3.9	6.0	4.3	5.6	3.6	3.9	3.0	5.5	2.5	.81	.68	.78
21	3.9	5.7	4.6	5.6	3.6	3.9	2.8	8.0	2.7	.95	.62	.68
22	4.3	5.0	5.7	5.6	3.6	3.6	2.8	4.8	3.0	.78	.51	.61
23	4.6	4.9	6.7	5.2	3.6	3.6	2.8	4.4	2.9	.70	.57	.55
24	4.6	5.2	6.1	5.2	3.6	3.3	2.8	4.2	2.3	.35	.55	.80
25	4.0	6.3	5.3	5.2	3.6	3.3	6.9	4.2	1.8	.25	.38	1.0
26	3.9	5.3	5.2	5.2	3.6	4.5	3.6	4.3	1.7	.39	.37	19
27	3.9	5.2	5.1	5.2	3.6	6.9	2.9	4.8	1.7	.71	.31	21
28	3.8	5.2	5.4	4.5	3.6	7.3	2.8	5.2	1.3	.68	.30	38
29	3.6	5.2	5.8	3.9	3.6	4.9	2.8	5.1	1.4	.56	.39	7.4
30	4.7	5.2	5.2	3.9	---	4.1	2.8	4.7	1.4	.84	.48	6.3
31	4.1	---	4.8	3.9	---	4.8	---	4.4	---	.50	.33	---
TOTAL	138.1	170.5	170.9	163.4	105.9	119.9	119.4	215.5	92.5	27.23	15.76	130.89
MEAN	4.45	5.68	5.51	5.27	3.65	3.87	3.98	6.95	3.08	.88	.51	4.36
MAX	5.4	12	10	6.9	3.9	7.3	9.3	47	4.7	1.3	1.5	38
MIN	3.6	3.6	4.2	3.9	3.6	3.3	2.8	2.3	1.3	.25	.05	.06
CFSM	.07	.08	.08	.08	.05	.06	.06	.10	.05	.01	.007	.06
IN.	.08	.09	.09	.09	.06	.07	.06	.12	.05	.01	.01	.07
AC-FT	274	338	339	324	210	238	237	427	183	54	31	260

CAL YR 1979	TOTAL	20464.90	MEAN	56.1	MAX	1060	MIN	3.6	CFSM	.82	IN	11.13	AC-FT	40590
WTR YR 1980	TOTAL	1469.98	MEAN	4.02	MAX	47	MIN	.05	CFSM	.06	IN	.80	AC-FT	2920

NOTE.--No gage-height record Jan. 20 to Mar. 28.

GUADALUPE RIVER BASIN

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).

AVERAGE DISCHARGE.--34 years, 14.8 ft³/s (0.419 m³/s), 10,720 acre-ft/yr (13.2 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.--Maximum discharge, 7.7 ft³/s (0.22 m³/s) Sept. 7 at 1400 hours, gage height, 3.13 ft (0.954 m), no peak above base of 400 ft³/s (11.3 m³/s); no flow most of time.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
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	1.8
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.32
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	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.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	.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	.00	.00	.00	.00	2.12
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.071
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.8
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4.2

CAL YR 1979	TOTAL	5825.29	MEAN	16.0	MAX	1640	MIN	.00	AC-FT 11550
WTR YR 1980	TOTAL	2.12	MEAN	.006	MAX	1.8	MIN	.00	AC-FT 4

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.--57 years, 147 ft³/s (4.163 m³/s), 2.61 in/yr (66 mm/yr), 106,500 acre-ft/yr (131 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.--Maximum discharge, 1,000 ft³/s (28.3 m³/s) Sept. 7 at 2400 hours, gage height, 6.40 ft (1.951 m), no other peak above base of 700 ft³/s (19.8 m³/s); minimum daily, 14 ft³/s (0.40 m³/s) Aug. 28 to Sept. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	32	30	43	53	60	48	57	38	55	22	17	14
2	32	30	43	53	59	50	55	36	53	21	16	14
3	31	30	43	52	59	48	53	38	51	21	16	14
4	30	30	43	53	59	49	52	40	50	20	16	14
5	31	31	44	53	58	48	50	38	48	20	16	14
6	30	31	43	53	57	48	50	38	46	20	16	14
7	31	31	44	52	57	48	49	39	45	20	16	50
8	31	31	44	53	57	49	48	41	43	20	15	336
9	30	31	45	53	56	50	48	39	44	20	15	96
10	30	32	46	53	57	49	47	39	44	20	20	53
11	31	32	46	53	55	49	47	38	42	19	50	41
12	30	32	47	53	54	49	48	37	39	19	37	35
13	30	32	47	53	53	46	47	42	38	19	30	32
14	30	33	47	53	53	47	45	52	37	18	28	31
15	30	33	48	53	53	49	44	256	37	18	27	28
16	30	34	48	53	53	49	44	163	36	17	25	27
17	30	39	48	53	53	47	43	109	35	17	25	26
18	30	38	48	54	53	49	43	92	34	17	24	25
19	30	37	48	58	53	50	42	82	33	17	22	24
20	29	37	48	58	52	49	42	73	32	17	20	23
21	29	38	49	57	51	48	41	69	31	16	20	23
22	29	38	49	56	50	48	41	64	30	16	19	23
23	29	39	50	56	50	48	40	61	29	21	18	23
24	29	42	50	57	48	47	40	59	28	20	17	23
25	29	42	50	57	48	48	42	57	27	17	17	23
26	29	41	50	59	48	48	39	61	26	16	16	23
27	29	41	50	60	50	66	38	83	25	16	15	26
28	31	41	51	61	50	63	38	62	24	16	14	26
29	31	42	50	62	50	61	37	60	24	25	14	31
30	30	42	52	63	---	60	38	59	23	18	14	28
31	30	---	53	61	---	58	---	57	---	17	14	---
TOTAL	933	1060	1467	1718	1556	1566	1348	2022	1109	580	629	1160
MEAN	30.1	35.3	47.3	55.4	53.7	50.5	44.9	65.2	37.0	18.7	20.3	38.7
MAX	32	42	53	63	60	66	57	256	55	25	50	336
MIN	29	30	43	52	48	46	37	36	23	16	14	14
CFSM	.04	.05	.06	.07	.07	.07	.06	.09	.05	.02	.03	.05
IN.	.05	.05	.07	.08	.08	.08	.07	.10	.05	.03	.03	.06
AC-FT	1850	2100	2910	3410	3090	3110	2670	4010	2200	1150	1250	2300

CAL YR 1979 TOTAL 32156 MEAN 88.1 MAX 684 MIN 29 CFSM .12 IN 1.57 AC-FT 63780
WTR YR 1980 TOTAL 15148 MEAN 41.4 MAX 336 MIN 14 CFSM .05 IN .74 AC-FT 30050

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)
JAN										
10...	1107	51	406	8.0	15.0	0	.20	8.3	85	.5
MAY										
12...	1431	39	387	8.2	26.5	0	.80	8.8	104	1.0
JUL										
30...	0956	31	416	7.9	28.0	0	.70	6.9	90	1.4

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
JAN									
10...	K120	32	30	190	13	56	13	8.2	.3
MAY									
12...	K40	K1	K1	190	20	54	14	8.7	.3
JUL									
30...	K76	30	K8	190	8	54	13	7.9	.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
JAN									
10...	.9	220	0	13	14	.2	11	225	7
MAY									
12...	.9	210	0	20	14	.1	12	227	13
JUL									
30...	1.1	220	0	12	14	.3	14	225	8

DATE	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)
JAN									
10...	7	.77	.02	.79	.01	.29	.30	.010	3.6
MAY									
12...	7	.57	.01	.58	.04	.37	.41	.010	1.9
JUL									
30...	2	.64	.01	.65	.06	.71	.77	.010	5.2

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							
10...	1107	0	40	<1	0	0	<10
JUL							
30...	0956	1	40	<1	0	0	<10

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						
10...	2	<1	.1	1	0	<3
JUL						
30...	0	<1	.0	0	0	<3

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
JAN 10...	1107	.0	.00	.00	.0	.00	.00	.00	.00
JUL 30...	0956	.0	.00	.00	.0	.00	.00	.00	.00

DATE	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)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)
JAN 10...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 30...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 10...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 30...	.00	.00	.00	.00	0	.00	.00	.00	.00

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 fair. In ordinary years, a large part of streamflow from basis is lost by seepage into the Balcones Fault Zone of the Edwards and associated limestones above station. No known diversion above station.

AVERAGE DISCHARGE.--35 years (water years 1940-50, 1957-80), 34.4 ft³/s (0.974 m³/s), 24,920 acre-ft/yr (30.7 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.--Maximum discharge, 0.64 ft³/s (0.018 m³/s) Aug. 14 at 0730 hours, gage height, 2.38 ft (0.725 m), no peak above base of 1,000 ft³/s (28.3 m³/s); no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
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	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.07	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.58	.00
15	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.26	.00
16	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.03	.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	.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	.00	.00	.00	.94	.00
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.030	.000
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.58	.00
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1.9	.00

CAL YR 1979	TOTAL	2036.09	MEAN	5.58	MAX	1080	MIN	.00	AC-FT 4040
WTR YR 1980	TOTAL	0.94	MEAN	.003	MAX	.58	MIN	.00	AC-FT 1.9

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.--41 years, 114 ft³/s (3.228 m³/s), 82,590 acre-ft/yr (102 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.--Maximum discharge, 189 ft³/s (5.35 m³/s) May 15 at 0430 hours, gage height, 4.30 ft (1.311 m), no peak above base of 250 ft³/s (7.08 m³/s); minimum daily, 7.4 ft³/s (0.21 m³/s) Aug. 6, 7.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	23	23	22	22	19	17	16	16	12	7.4	12
2	29	23	23	22	22	19	17	16	16	12	8.3	12
3	29	22	23	22	22	20	17	17	15	11	8.1	13
4	28	22	23	23	22	19	17	24	15	9.7	7.5	13
5	28	22	23	23	22	18	17	17	15	9.8	7.7	14
6	28	22	23	23	22	18	17	16	15	9.7	7.4	14
7	29	22	23	23	22	19	17	15	15	9.2	7.4	14
8	28	23	23	23	22	18	17	16	15	9.1	7.5	13
9	28	22	23	23	21	18	16	17	15	9.5	7.6	14
10	27	22	23	23	21	18	17	16	15	9.5	12	14
11	27	22	23	22	21	19	17	16	15	9.5	22	14
12	27	22	23	22	22	18	17	15	14	9.5	14	14
13	28	22	23	22	22	17	16	16	14	9.3	12	15
14	28	21	23	22	22	16	16	26	14	8.5	11	14
15	27	21	23	22	22	18	17	61	14	8.4	11	15
16	27	21	22	22	22	18	17	32	14	8.4	11	15
17	27	26	22	23	21	17	17	23	13	8.3	10	14
18	26	25	23	23	22	18	17	18	13	8.1	10	14
19	26	23	23	23	21	18	17	17	13	8.2	10	14
20	26	23	23	23	21	17	17	16	13	8.1	11	14
21	25	23	23	23	21	17	17	15	13	8.1	11	14
22	24	23	23	22	21	17	17	15	12	8.2	11	14
23	24	23	22	22	21	17	16	15	12	8.4	11	14
24	24	24	22	22	21	16	16	15	12	8.4	11	14
25	24	24	22	22	21	17	15	15	12	8.4	11	14
26	24	23	23	22	20	18	15	15	12	8.4	11	14
27	24	23	23	22	20	18	15	46	12	8.3	11	14
28	23	23	23	22	20	18	16	23	12	7.9	12	14
29	24	23	22	23	20	16	16	18	12	7.6	12	15
30	22	23	22	23	---	16	16	17	12	7.6	12	15
31	22	---	22	22	---	17	---	16	---	7.5	13	---
TOTAL	812	681	705	696	619	551	496	620	410	276.6	328.9	418
MEAN	26.2	22.7	22.7	22.5	21.3	17.8	16.5	20.0	13.7	8.92	10.6	13.9
MAX	29	26	23	23	22	20	17	61	16	12	22	15
MIN	22	21	22	22	20	16	15	15	12	7.5	7.4	12
AC-FT	1610	1350	1400	1380	1230	1090	984	1230	813	549	652	829

CAL YR 1979	TOTAL	25698.0	MEAN 70.4	MAX 2030	MIN 21	AC-FT	50970		
WTR YR 1980	TOTAL	6613.5	MEAN 18.1	MAX 61	MIN 7.4	AC-FT	13120		

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.--55 years (water years 1925-29, 1931-80), 109 ft³/s (3.087 m³/s), 3.65 in/yr (93 mm/yr), 78,970 acre-ft/yr (97.4 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)
Sept. 7	1800	23,800	674	14.62	4.456
Sept. 29	1200	*28,100	796	16.02	4.883

Minimum discharge, 11 ft³/s (0.31 m³/s) Aug. 5.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	47	56	63	66	53	52	38	52	25	13	21
2	54	48	57	63	67	55	52	47	49	25	13	20
3	53	47	58	62	65	56	51	49	49	25	13	18
4	52	44	58	63	65	53	50	48	47	26	14	18
5	52	44	58	63	65	53	50	43	45	25	12	17
6	52	47	58	63	65	54	49	41	45	25	13	16
7	51	47	58	63	66	54	50	40	45	25	13	4870
8	52	48	58	63	65	54	49	42	44	25	13	1230
9	51	47	58	63	63	54	47	38	43	23	13	342
10	50	47	60	63	64	53	47	36	46	21	17	229
11	50	46	60	63	65	51	45	37	43	19	116	203
12	51	48	62	63	64	52	44	37	42	18	42	174
13	50	49	63	62	63	52	47	54	40	18	29	161
14	52	48	63	62	63	52	48	45	39	16	27	148
15	51	48	63	63	63	52	47	82	38	16	27	137
16	51	49	61	63	63	52	44	96	38	16	27	129
17	51	66	60	75	63	49	43	70	35	15	32	121
18	51	71	60	68	63	49	41	62	33	15	203	114
19	50	58	60	67	63	50	39	68	31	14	85	110
20	50	57	60	66	60	47	40	59	31	15	60	105
21	49	60	60	66	58	48	41	61	30	17	49	102
22	48	54	60	69	58	48	39	61	30	16	41	98
23	48	54	62	67	59	48	40	55	31	18	37	95
24	49	55	63	67	58	44	40	55	31	16	32	92
25	49	58	64	67	58	48	48	53	30	15	31	89
26	50	58	63	65	56	48	43	52	30	15	30	87
27	49	58	63	66	54	60	43	59	25	15	27	97
28	49	60	63	67	54	63	42	53	26	18	27	101
29	48	58	63	67	57	57	37	52	25	23	24	6270
30	47	57	63	67	---	54	35	51	27	18	24	694
31	46	---	64	66	---	52	---	50	---	14	22	---
TOTAL	1560	1578	1879	2015	1793	1615	1343	1634	1120	592	1126	15908
MEAN	50.3	52.6	60.6	65.0	61.8	52.1	44.8	52.7	37.3	19.1	36.3	530
MAX	54	71	64	75	67	63	52	96	52	26	203	6270
MIN	46	44	56	62	54	44	35	36	25	14	12	16
CFSM	.12	.13	.15	.16	.15	.13	.11	.13	.09	.05	.09	1.31
IN.	.14	.14	.17	.19	.16	.15	.12	.15	.10	.05	.10	1.46
AC-FT	3090	3130	3730	4000	3560	3200	2660	3240	2220	1170	2230	31550

CAL YR 1979	TOTAL	46882	MEAN	128	MAX	2770	MIN 44	CFSM .32	IN 4.31	AC-FT	92990	
WTR YR 1980	TOTAL	32163	MEAN	87.9	MAX	6270	MIN 12	CFSM .22	IN 2.95	AC-FT	63800	

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)
JAN										
09...	1116	60	404	8.2	11.5	0	.20	10.4	98	.3
MAY										
13...	1310	37	377	8.0	25.0	0	.60	8.1	103	1.2
JUL										
30...	1550	17	362	8.1	32.0	0	1.0	10.0	141	1.9

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
JAN									
09...	K32	K6	K9	200	15	55	14	6.8	.2
MAY									
13...	>65	K65	31	180	16	49	14	7.3	.2
JUL									
30...	>140	140	K15	160	5	43	13	7.7	.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
JAN									
09...	.8	220	0	11	12	.2	9.7	218	6
MAY									
13...	.9	200	0	15	13	.1	11	209	15
JUL									
30...	1.1	190	0	14	14	.2	14	201	1

DATE	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)
JAN									
09...	6	.69	.02	.71	.01	.36	.37	.010	4.7
MAY									
13...	2	.29	.01	.30	.01	.39	.40	.030	1.7
JUL									
30...	0	.28	.01	.29	.08	.79	.87	.010	12

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							
09...	1116	1	30	<1	0	0	<10
JUL							
30...	1550	1	30	<1	10	0	10

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						
09...	0	<1	.1	0	0	<3
JUL						
30...	0	<1	.0	0	0	<3

08195000 FRIO RIVER AT CONCAN, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR, TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
JAN 09...	1116	.0	.00	.00	.0	.00	.00	.00	.00
JUL 30...	1550	.0	.00	.00	.0	.00	.00	.00	.00

DATE	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)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)
JAN 09...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 30...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 09...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 30...	.00	.00	.00	.00	0	.00	.00	.05	.00

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.

REVISIONS.--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.--28 years, 34.1 ft³/s (0.966 m³/s), 3.96 in/yr (101 mm/yr), 24,710 acre-ft/yr (30.5 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)
May 15	1530	373	10.6	3.26	0.994
Aug. 11	0400	259	7.33	3.02	.920
Sept. 7	1930	*5,070	144	9.65	2.941

Minimum discharge, 0.80 ft³/s (0.023 m³/s) Aug. 9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.1	6.0	7.3	8.6	8.3	6.6	9.4	3.7	8.5	2.5	1.8	3.3
2	5.1	6.3	7.5	8.6	8.2	6.4	9.4	3.9	6.7	2.4	1.8	3.0
3	4.8	6.3	7.5	8.6	8.2	6.3	9.1	6.8	4.7	2.4	1.6	2.9
4	5.4	6.4	7.5	8.7	8.1	6.5	8.3	8.6	4.5	2.3	1.7	2.8
5	5.2	6.6	7.3	8.6	8.2	6.6	7.8	7.2	4.1	2.3	1.5	2.8
6	5.4	6.8	7.2	8.8	7.9	6.8	7.4	6.3	3.7	2.3	1.2	2.8
7	5.8	6.9	7.5	8.7	7.9	6.9	7.0	5.8	4.3	2.3	1.2	538
8	5.6	6.9	7.4	8.6	8.1	6.9	6.5	6.2	5.1	2.3	1.2	258
9	5.5	7.1	7.5	8.6	8.0	6.8	6.2	6.0	5.1	2.2	1.0	25
10	5.4	7.2	7.6	8.5	7.9	7.0	6.0	5.5	5.0	2.1	1.1	9.2
11	5.3	7.4	7.9	8.6	7.9	6.9	6.1	5.5	4.0	2.1	67	7.4
12	5.3	7.5	8.5	8.4	8.2	6.9	6.3	5.6	4.1	2.1	8.6	7.1
13	5.3	7.5	8.6	8.1	8.2	6.5	6.5	6.8	4.8	1.9	6.5	7.3
14	5.4	7.5	8.4	8.0	8.2	6.9	6.3	9.7	4.3	1.1	5.7	6.9
15	5.6	7.5	8.2	8.0	8.3	6.9	6.0	95	3.7	1.0	5.5	7.1
16	5.6	7.7	8.2	8.2	8.5	7.1	5.9	58	3.7	1.0	5.5	6.8
17	5.6	11	8.2	9.8	8.2	7.3	5.9	23	2.8	.98	5.4	6.6
18	5.5	12	8.2	12	8.1	7.2	5.7	17	2.3	.94	5.1	6.6
19	5.3	9.0	8.2	10	8.0	6.9	5.5	16	2.4	1.2	4.9	6.5
20	5.0	7.8	8.0	10	7.9	7.1	5.5	13	2.7	1.5	4.7	6.5
21	4.9	8.4	8.2	10	7.6	6.7	5.4	11	3.1	1.5	4.5	6.6
22	4.9	7.9	8.4	11	7.2	6.9	5.4	9.5	2.7	1.6	4.4	6.5
23	4.8	7.9	8.9	10	6.9	7.4	5.5	8.8	2.7	1.4	4.5	6.5
24	4.8	8.1	8.7	9.7	6.9	7.1	5.0	8.5	2.6	1.5	4.4	6.5
25	4.9	7.9	8.6	9.4	6.4	7.3	5.6	8.2	2.5	1.5	4.2	6.6
26	5.1	7.7	8.4	9.2	6.3	7.2	5.0	8.6	2.0	1.5	3.9	6.7
27	5.2	7.3	8.6	9.0	6.6	9.9	4.3	19	1.6	1.5	3.8	7.6
28	5.3	7.3	9.0	9.0	6.6	12	3.9	11	1.5	1.7	3.7	8.0
29	5.6	7.2	9.3	9.4	6.6	10	3.7	9.1	1.9	1.7	3.6	10
30	5.7	7.2	9.0	9.1	---	9.7	3.4	8.6	2.5	1.7	3.6	10
31	6.0	---	8.6	8.9	---	9.4	---	8.9	---	1.8	3.6	---
TOTAL	164.4	228.3	252.4	282.1	223.4	230.1	184.0	420.8	109.6	54.32	177.2	991.6
MEAN	5.30	7.61	8.14	9.10	7.70	7.42	6.13	13.6	3.65	1.75	5.72	33.1
MAX	6.0	12	9.3	12	8.5	12	9.4	95	8.5	2.5	67	538
MIN	4.8	6.0	7.2	8.0	6.3	6.3	3.4	3.7	1.5	.94	1.0	2.8
CFSM	.05	.07	.07	.08	.07	.06	.05	.12	.03	.02	.05	.28
IN.	.05	.07	.08	.09	.07	.07	.06	.13	.03	.02	.06	.32
AC-FT	326	453	501	560	443	456	365	835	217	108	351	1970

CAL YR 1979	TOTAL	14326.60	MEAN	39.3	MAX	1480	MIN	4.8	CFSM	.34	IN	4.56	AC-FT	28420
WTR YR 1980	TOTAL	3318.22	MEAN	9.07	MAX	538	MIN	.94	CFSM	.08	IN	1.06	AC-FT	6580

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)
JAN										
09...	1343	8.5	377	8.1	13.0	0	.10	10.4	102	.3
MAY										
13...	0953	5.2	377	7.7	22.5	0	.50	7.7	93	1.5
JUL										
30...	1412	1.7	392	8.2	33.5	0	1.4	10.0	144	1.0

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
JAN									
09...	K20	K13	K8	180	18	53	12	6.5	.2
MAY									
13...	1500	K280	230	180	15	52	12	6.6	.2
JUL									
30...	>36	36	K9	180	10	53	12	6.7	.2

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
JAN									
09...	.5	200	0	15	11	.1	7.9	205	3
MAY									
13...	.6	200	0	16	15	.1	9.5	210	29
JUL									
30...	.7	210	0	12	12	.2	12	212	0

DATE	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)
JAN									
09...	3	.86	.02	.88	.03	.40	.43	.000	3.5
MAY									
13...	0	.27	.01	.28	.01	.30	.31	.010	1.2
JUL									
30...	0	.12	.01	.13	.06	1.5	1.6	.010	9.3

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							
09...	1343	0	30	<1	0	0	<10
JUL							
30...	1412	1	40	<1	0	0	<10

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						
09...	0	<1	.2	0	0	<3
JUL						
30...	0	3	.0	0	0	<3

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

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 09...	1343	.0	.00	.00	.0	.00	.00	.00	.00
JUL 30...	1412	.0	.00	.00	.0	.00	.00	.00	.00

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 09...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 30...	.00	.00	.00	.00	.00	.00	.00	.00	.00

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 09...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 30...	.00	.00	.00	.00	0	.00	.00	.00	.00

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 good. 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. Two observations of water temperature were made during the year.

AVERAGE DISCHARGE.--28 years, 25.7 ft³/s (0.728 m³/s), 18,620 acre-ft/yr (23.0 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)
Sept. 8	0330	12,600	357	11.49	3.502
Sept. 29	1830	*16,500	467	12.60	3.840

Minimum discharge, no flow most of time.

DISCHARGED IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
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	3120
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	273
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	44
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	2.1
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.27
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.05
14	.00	.00	.00	.00	.00	.00	.00	.00	.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	3500
30	.00	.00	.00	.00	---	.00	.00	.00	.00	.00	.00	4900
31	.00	---	.00	.00	---	.00	---	.00	---	.00	.00	---
TOTAL	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	11839.42
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	395
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	4900
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	23480

CAL YR 1979	TOTAL	8248.24	MEAN	22.6	MAX	4720	MIN	.00	AC-FT 16360
WTR YR 1980	TOTAL	11839.42	MEAN	32.3	MAX	4900	MIN	.00	AC-FT 23480

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 except those for period of no gage-height record Aug. 22 to Sept. 17, which are fair. Several small diversions above station for irrigation.

AVERAGE DISCHARGE.--38 years, 53.6 ft³/s (1.518 m³/s), 3.53 in/yr (90 mm/yr), 38,830 acre-ft/yr (47.9 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)
Sept. 7	unknown	*18,000	510	16.9	5.15
Sept. 29	0700	14,600	413	14.90	4.542

Minimum daily discharge, 1.1 ft³/s (0.031 m³/s) Sept. 6.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	18	23	19	18	15	22	11	18	3.6	2.4	1.7
2	27	19	23	19	18	14	21	19	18	3.4	1.8	1.5
3	27	20	23	19	18	16	19	13	17	3.4	1.8	1.4
4	25	19	23	19	18	18	19	13	16	3.3	1.6	1.3
5	26	19	23	19	18	17	18	13	14	3.0	1.6	1.2
6	26	19	23	19	18	16	17	13	13	3.0	1.3	1.1
7	26	20	23	18	18	16	16	11	12	2.7	1.3	4000
8	25	20	23	18	17	16	14	14	11	2.7	1.3	1400
9	24	20	22	18	17	16	14	13	10	2.7	1.3	400
10	22	20	22	18	17	16	14	12	10	2.7	2.1	100
11	22	20	22	18	18	16	14	12	10	2.6	23	85
12	23	20	23	18	18	16	14	11	10	2.1	13	75
13	23	20	25	18	18	16	13	13	9.5	1.8	8.2	69
14	23	20	26	18	18	16	13	36	8.7	1.8	6.1	63
15	22	20	26	18	18	16	13	29	8.0	1.8	5.6	58
16	22	20	25	18	18	16	13	45	7.4	1.8	5.6	54
17	22	25	23	19	18	15	13	39	7.3	2.3	5.6	51
18	22	38	20	18	18	14	13	33	6.7	2.4	5.6	48
19	21	29	20	18	18	13	13	45	6.1	2.1	6.5	47
20	20	26	20	19	18	13	12	39	5.6	2.1	7.4	46
21	20	24	20	19	18	13	12	45	5.6	2.1	7.0	44
22	20	24	20	19	18	13	11	35	5.6	2.0	5.8	44
23	19	24	20	20	18	12	10	30	5.6	4.9	4.6	42
24	19	24	20	20	18	13	10	27	5.6	4.5	3.8	42
25	19	26	20	20	17	13	12	25	5.5	4.5	3.3	43
26	19	24	19	20	17	13	11	22	5.0	4.1	3.0	43
27	19	24	19	19	16	22	10	22	4.5	3.7	2.8	52
28	19	24	19	19	16	27	10	22	4.1	3.4	2.5	58
29	19	23	19	19	17	26	9.5	20	4.1	3.4	2.3	2120
30	19	23	19	19	---	23	8.8	19	3.7	3.0	2.1	188
31	18	---	19	19	---	22	---	19	---	2.7	1.9	---
TOTAL	685	672	672	581	512	508	409.3	720	267.6	89.6	142.2	9180.2
MEAN	22.1	22.4	21.7	18.7	17.7	16.4	13.6	23.2	8.92	2.89	4.59	306
MAX	27	38	26	20	18	27	22	45	18	4.9	23	4000
MIN	18	18	19	18	16	12	8.8	11	3.7	1.8	1.3	1.1
CFSM	.11	.11	.11	.09	.09	.08	.07	.11	.04	.01	.02	1.49
IN.	.12	.12	.12	.10	.09	.09	.07	.13	.05	.02	.03	1.66
AC-FT	1360	1330	1330	1150	1020	1010	812	1430	531	178	282	18210

CAL YR 1979	TOTAL	37632.0	MEAN	103	MAX	1860	MIN	18	CFSM	.50	IN	6.80	AC-FT	74640
WTR YR 1980	TOTAL	14438.9	MEAN	39.5	MAX	4000	MIN	1.1	CFSM	.19	IN	2.61	AC-FT	28640

NOTE.--No gage-height record Aug. 22 to Sept. 17.

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)
JAN										
08...	1532	18	453	8.1	13.0	5	.10	10.6	104	.4
MAY										
14...	1017	32	442	8.0	22.0	0	1.4	8.0	95	1.7
JUL										
31...	1053	2.4	451	7.6	26.5	0	1.4	6.9	88	1.8

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
JAN									
08...	>28	28	55	220	24	67	13	7.9	.2
MAY									
14...	830	540	560	220	29	64	14	8.6	.3
JUL									
31...	K95	57	20	210	33	64	13	9.3	.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
JAN									
08...	.9	240	0	27	13	.2	11	258	9
MAY									
14...	1.1	230	0	27	16	.2	12	256	24
JUL									
31...	1.3	220	0	31	17	.5	16	261	2

DATE	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)
JAN									
08...	7	.65	.02	.67	.01	.41	.42	.010	2.1
MAY									
14...	1	.23	.01	.24	.03	.64	.67	.010	1.5
JUL									
31...	0	.00	.00	.00	.05	.62	.67	.010	5.8

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							
08...	1532	0	30	<1	0	0	<10
JUL							
31...	1053	1	40	<1	0	0	10

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						
08...	0	<1	.1	1	0	<3
JUL						
31...	0	6	.1	0	0	<3

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
JAN 08...	1532	.0	.00	.00	.0	.00	.00	.00	.00
JUL 31...	1053	.0	.00	.00	.0	.00	.00	.00	.00

DATE	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)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)
JAN 08...	.00	.00	.00	.00	.00	.00	.00	.00	.00
JUL 31...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 08...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 31...	.00	.00	.00	.00	0	.00	.00	.00	.00

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. 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.--28 years, 30.7 ft³/s (0.869 m³/s), 22,240 acre-ft/yr (27.4 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)
Sept. 7	2200	*17,500	496	a20.56	6.267
Sept. 8	1400	1,610	45.6	9.15	2.789
Sept. 29	1300	5,830	165	a13.88	4.231

a From floodmark.

Minimum discharge, 0.18 ft³/s (0.005 m³/s) Apr. 29.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.3	1.9	2.2	1.9	1.1	1.2	.85	.45	.65	.47	.60	.82
2	2.2	1.8	2.2	1.9	1.2	1.3	.85	.60	.60	.45	.60	.72
3	2.1	1.9	2.1	1.9	1.2	1.2	.92	.62	.59	.55	.60	.72
4	2.1	1.9	2.1	1.8	1.2	1.2	.85	.78	.55	.59	.60	.72
5	2.1	1.7	2.1	1.8	1.3	1.3	.92	.83	.54	.55	.60	.71
6	2.2	1.6	2.0	1.7	1.3	1.2	1.1	.77	.49	.60	.60	.67
7	2.2	1.6	1.9	1.7	1.5	1.3	1.1	.72	.55	.60	.61	1750
8	2.1	1.6	1.8	1.5	1.4	1.4	.92	1.2	.55	.60	.66	1540
9	2.0	1.6	1.8	1.5	1.4	1.5	.92	.59	.55	.59	.61	301
10	2.0	1.7	1.8	1.5	1.3	1.4	.99	.52	.55	.55	1.3	91
11	2.0	1.8	1.7	1.5	1.3	1.4	1.1	.55	.57	.55	15	52
12	2.1	1.6	1.8	1.3	1.3	1.3	1.2	.52	.60	.53	.96	29
13	2.1	1.5	1.7	1.2	1.3	1.4	1.3	.54	.60	.49	.78	15
14	2.2	1.4	1.5	1.3	1.2	1.2	1.1	.82	.60	.49	.78	9.4
15	2.0	1.4	1.6	1.2	1.2	1.4	1.1	.91	.64	.55	.78	7.0
16	1.9	1.5	1.5	1.6	1.3	1.5	1.1	.92	.58	.54	.87	5.8
17	1.9	11	1.9	1.3	1.2	1.1	1.1	.77	.60	.49	.98	5.3
18	1.9	6.0	1.9	1.2	1.2	1.1	.99	.72	.60	.49	1.1	5.0
19	1.8	3.0	1.9	1.2	1.2	1.2	1.1	.72	.60	.49	1.1	4.7
20	2.0	3.0	2.0	1.2	1.2	1.1	1.1	.71	.55	.49	1.1	4.6
21	2.1	3.0	2.0	1.3	1.1	1.1	1.2	.72	.60	.52	1.1	4.5
22	1.9	3.0	1.9	1.2	1.2	1.2	1.1	.72	.59	.60	1.1	4.2
23	1.9	2.9	2.0	1.1	1.2	1.2	.92	.72	.54	.72	1.1	3.9
24	1.9	2.9	2.4	1.1	1.3	.81	.99	.70	.55	.72	1.1	3.9
25	1.8	3.0	2.4	1.1	1.3	.82	1.2	.67	.55	.71	1.1	3.7
26	2.0	2.8	2.3	1.1	1.3	.87	.99	.76	.55	.60	1.0	3.6
27	2.0	2.8	2.2	1.1	1.3	.66	1.1	.82	.57	.59	.99	3.6
28	2.1	2.6	2.4	1.2	1.3	.92	1.1	.78	.55	.53	.99	3.5
29	1.9	2.4	2.3	1.2	1.3	.99	.92	.83	.48	.49	.92	1320
30	1.9	2.3	2.2	1.2	---	.99	.49	.77	.48	.49	.92	405
31	1.9	---	2.0	1.2	---	.99	---	.71	---	.57	.85	---
TOTAL	62.6	77.2	61.6	43.0	36.6	36.25	30.62	22.46	17.02	17.20	41.40	5580.06
MEAN	2.02	2.57	1.99	1.39	1.26	1.17	1.02	.72	.57	.55	1.34	186
MAX	2.3	11	2.4	1.9	1.5	1.5	1.3	1.2	.65	.72	15	1750
MIN	1.8	1.4	1.5	1.1	1.1	.66	.49	.45	.48	.45	.60	.67
AC-FT	124	153	122	85	73	72	61	45	34	34	82	11070

CAL YR 1979	TOTAL	21302.47	MEAN 58.4	MAX 2190	MIN .28	AC-FT	42250	
WTR YR 1980	TOTAL	6026.01	MEAN 16.5	MAX 1750	MIN .45	AC-FT	11950	

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.--28 years, 38.4 ft³/s (1.087 m³/s), 6.05 in/yr (154 mm/yr), 27,820 acre-ft/yr (34.3 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)
May 18	2300	2,680	75.9	5.60	1.707
Sept. 7	0700	*12,100	343	12.22	3.725

Minimum discharge, 0.60 ft³/s (0.017 m³/s) Aug. 7-9.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.6	4.1	5.0	5.6	5.3	3.3	5.5	3.3	10	2.6	.90	1.5
2	7.2	4.1	4.7	5.6	5.3	2.9	5.6	5.3	10	2.3	.80	1.4
3	6.8	4.1	4.7	5.3	5.3	3.5	5.3	3.8	9.6	2.7	.70	1.3
4	6.5	3.8	4.7	5.0	5.0	3.5	5.0	4.1	9.3	1.7	.70	1.2
5	6.2	3.8	4.7	5.0	5.3	3.5	4.7	3.3	9.0	1.9	.70	1.2
6	6.2	3.8	4.4	5.0	5.0	3.3	4.4	5.2	9.0	2.5	.70	1.3
7	6.2	3.8	4.1	5.0	5.0	3.5	4.4	3.1	9.0	1.5	.60	1900
8	6.2	3.8	4.1	5.0	5.3	3.5	3.8	3.5	8.6	1.9	.60	136
9	5.9	3.8	3.8	5.0	5.0	3.1	3.5	4.1	8.2	1.9	.60	91
10	5.6	3.3	4.4	5.0	4.4	2.9	3.5	2.7	8.2	1.7	3.8	70
11	5.6	3.5	5.0	5.0	4.4	2.5	4.1	2.7	8.2	1.4	13	56
12	5.6	3.8	8.2	4.1	4.4	3.5	4.4	2.9	7.9	1.4	4.4	46
13	5.6	3.5	6.8	4.4	4.4	2.7	4.7	3.5	6.5	1.3	2.9	43
14	5.6	3.5	5.9	4.4	5.0	2.7	4.1	6.8	6.6	1.1	2.5	41
15	5.6	3.5	5.9	4.4	5.0	2.7	3.8	9.6	6.5	1.1	1.9	39
16	5.6	3.5	5.3	4.4	5.9	3.3	3.5	16	6.5	1.3	1.7	34
17	5.3	7.1	4.4	7.8	4.7	2.9	3.5	16	6.2	1.0	12	35
18	5.0	23	4.7	6.2	5.0	2.7	3.3	110	5.6	.90	5.6	32
19	5.0	9.3	5.0	6.5	4.4	2.7	3.1	189	5.3	.80	3.8	31
20	4.7	8.6	5.0	6.8	4.1	2.7	3.1	18	5.0	.70	3.3	31
21	4.4	10	5.0	7.6	4.1	2.7	6.2	25	4.7	.70	2.9	31
22	5.0	7.6	5.0	7.6	3.5	2.5	5.0	18	4.4	2.3	2.5	31
23	4.1	7.2	5.3	6.8	3.5	2.7	3.3	16	4.4	3.1	2.3	31
24	4.1	7.2	5.0	6.5	3.5	2.7	2.9	16	3.8	1.4	2.1	31
25	4.1	8.2	4.1	6.2	7.0	2.7	7.3	14	3.8	1.0	1.7	31
26	4.1	6.5	4.4	5.9	6.2	2.9	3.3	14	3.5	.90	1.5	31
27	4.1	6.2	4.7	5.3	3.8	17	2.5	15	3.3	.80	1.5	31
28	4.1	5.0	6.2	5.9	3.8	9.8	2.7	13	3.1	1.5	1.5	31
29	4.1	5.0	6.2	6.2	3.8	7.6	4.7	12	2.9	5.6	1.5	31
30	5.3	5.0	5.6	5.9	---	5.9	3.8	11	2.7	1.4	1.5	31
31	4.4	---	5.9	5.6	---	5.6	---	10	---	1.0	1.5	---
TOTAL	165.8	175.6	158.2	175.0	137.4	123.5	125.0	576.9	192.0	51.40	81.70	2902.9
MEAN	5.35	5.85	5.10	5.65	4.74	3.98	4.17	18.6	6.40	1.66	2.64	96.8
MAX	7.6	23	8.2	7.8	7.0	17	7.3	189	10	5.6	13	1900
MIN	4.1	3.3	3.8	4.1	3.5	2.5	2.5	2.7	2.7	.70	.60	1.2
CFSM	.06	.07	.06	.07	.06	.05	.05	.22	.07	.02	.03	1.12
IN.	.07	.08	.07	.08	.06	.05	.05	.25	.08	.02	.04	1.25
AC-FT	329	348	314	347	273	245	248	1140	381	102	162	5760

CAL YR 1979	TOTAL	27149.70	MEAN	74.4	MAX	1200	MIN	3.3	CFSM	.86	IN	11.72	AC-FT	53850
WTR YR 1980	TOTAL	4865.40	MEAN	13.3	MAX	1900	MIN	.60	CFSM	.15	IN	2.10	AC-FT	9650

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)
JAN										
08...	1004	5.0	404	8.1	9.5	0	.20	10.3	93	.5
MAY										
14...	1238	5.6	364	7.9	20.0	0	1.0	--	--	1.0
JUL										
29...	1636	3.3	393	8.2	32.5	0	1.6	9.5	135	1.3

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
JAN									
08...	80	50	16	200	34	61	11	7.7	.2
MAY									
14...	1000	500	580	170	37	51	10	7.9	.3
JUL									
29...	220	56	24	170	61	49	11	9.0	.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
JAN									
08...	1.0	200	0	41	12	.2	9.4	242	6
MAY									
14...	1.2	160	0	38	13	.2	11	211	--
JUL									
29...	1.7	130	0	66	14	.4	14	229	1

DATE	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)
JAN									
08...	6	.34	.00	.34	.01	.21	.22	.020	3.1
MAY									
14...	--	.16	.01	.17	.04	.37	.41	.010	1.9
JUL									
29...	6	.21	.02	.23	.06	1.0	1.1	.010	5.9

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							
08...	1004	0	30	<1	0	0	<10
JUL							
29...	1636	1	30	<1	0	0	10

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						
08...	0	<1	.2	1	0	<3
JUL						
29...	0	2	.1	0	0	<3

08200000 HONDO CREEK NEAR TARPLEY, TX--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
JAN 08...	1004	--	--	--	--	--	--	--	--
JUL 29...	1636	.0	.00	.00	.0	.00	.00	.00	.00

DATE	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)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)
JAN 08...	--	--	--	--	--	--	--	--	--
JUL 29...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 08...	--	--	--	--	--	--	.00	.00	.00
JUL 29...	.00	.00	.00	.00	0	.00	.00	.00	.00

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.--20 years, 14.6 ft³/s (0.413 m³/s), 10,580 acre-ft/yr (13.0 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, 25,500 ft³/s (722 m³/s) Sept. 7 at 1000 hours, gage height, 12.39 ft (3.776 m), no other 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 1979 TO SEPTEMBER 1980
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	4350
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	131
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	30
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	12
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	6.0	4.0
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.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	79	.00	.00	.00	.00
20	.00	.00	.00	.00	.00	.00	.00	7.5	.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	.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	86.50	.00	.00	6.00	4527.00
MEAN	.000	.000	.000	.000	.000	.000	.000	2.79	.000	.000	.19	151
MAX	.00	.00	.00	.00	.00	.00	.00	79	.00	.00	6.0	4350
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	172	.00	.00	12	8980

CAL YR 1979 TOTAL 10723.23 MEAN 29.4 MAX 2470 MIN .00 AC-FT 21270
WTR YR 1980 TOTAL 4619.50 MEAN 12.6 MAX 4350 MIN .00 AC-FT 9160

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 mi^2 (111.6 km^2).

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.--19 years, 18.1 ft^3/s (0.513 m^3/s), 5.70 in/yr (145 mm/yr), 13,110 acre-ft/yr (16.2 hm^3/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,500 ft^3/s (1,090 m^3/s) July 15, 1973, gage height, 14.4 ft (4.39 m), from floodmark, from rating curve extended above 910 ft^3/s (25.8 m^3/s) on basis of field estimate of flow over and around end of dam, 14,100 ft^3/s (399 m^3/s), and slope-area measurement of 52,600 ft^3/s (1,490 m^3/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 ft^3/s (1,490 m^3/s), by slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 676 ft^3/s (19.1 m^3/s) May 18 at 2200 hours, gage height, 3.34 ft (1.018 m), no other peak above base of 600 ft^3/s (17.0 m^3/s); minimum daily, 0.08 ft^3/s (0.002 m^3/s) July 18, 21.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	1.7	1.8	2.6	2.0	1.8	1.8	1.8	1.8	.23	.25	.29
2	2.6	1.7	1.8	2.6	2.0	1.5	2.2	2.0	1.5	.15	.19	.29
3	2.6	1.7	1.8	2.6	2.0	1.5	2.2	1.6	1.5	.15	.16	.29
4	2.2	1.7	2.0	2.4	2.0	1.5	2.1	1.7	1.4	.14	.14	.23
5	2.0	1.7	2.0	2.4	2.0	1.5	1.9	1.6	1.3	.11	.11	.23
6	2.0	1.7	2.0	2.4	2.0	1.5	1.8	1.3	1.2	.11	.11	.36
7	2.0	1.5	1.8	2.4	2.0	1.6	1.9	1.2	1.1	.09	.09	33
8	2.0	1.5	2.0	2.4	2.2	1.7	1.9	1.9	1.1	.09	.09	15
9	2.0	1.5	2.0	2.4	1.9	1.7	1.8	2.1	.92	.09	.09	14
10	2.0	1.5	2.2	2.4	1.8	1.7	1.7	1.4	.92	.11	4.4	13
11	2.0	1.5	2.2	2.6	1.8	1.7	1.7	1.3	.79	.11	17	12
12	2.0	1.5	3.1	2.4	1.8	1.8	1.8	1.3	.79	.11	5.3	11
13	2.0	1.5	3.1	2.4	1.8	1.8	2.2	3.0	.79	.09	3.6	9.6
14	2.0	1.5	2.8	2.4	1.9	1.6	1.9	5.2	.68	.09	2.4	8.4
15	2.0	1.5	2.6	2.4	2.1	1.4	1.7	10	.68	.09	2.2	7.4
16	2.0	1.5	2.6	2.4	2.6	1.5	1.7	6.0	.58	.09	1.6	7.0
17	2.0	5.4	2.2	4.2	1.9	1.6	1.7	6.2	.58	.09	1.4	6.1
18	2.0	14	2.2	3.6	1.8	1.6	1.7	38	.58	.08	1.4	5.7
19	2.0	4.4	2.2	2.8	1.8	1.4	1.6	20	.50	.09	1.4	5.7
20	2.0	3.3	2.2	3.1	1.8	1.4	1.5	9.6	.50	.09	1.4	5.3
21	1.8	3.6	2.2	3.1	1.8	1.4	1.5	9.7	.42	.08	1.2	4.9
22	1.9	2.7	2.2	3.1	1.7	1.4	1.5	6.4	.42	.11	.79	4.3
23	1.9	2.4	2.4	2.7	1.7	1.4	1.5	4.9	.37	1.0	.68	3.9
24	1.7	2.6	2.6	2.6	1.7	1.5	1.5	4.5	.40	.97	.58	3.9
25	1.7	3.3	2.2	2.6	1.7	1.5	2.6	3.9	.40	.73	.50	3.9
26	1.7	2.4	2.2	2.6	1.7	1.5	1.7	3.4	.36	.48	.42	6.1
27	1.7	2.3	2.2	2.6	1.7	9.7	1.5	3.4	.36	.24	.42	6.1
28	1.7	2.0	2.4	2.6	1.7	3.8	1.4	2.8	.29	.67	.36	9.6
29	1.7	2.0	3.6	2.8	1.7	2.3	1.4	2.4	.29	.66	.29	7.0
30	1.9	1.8	2.8	2.4	---	2.0	1.3	2.1	.23	.61	.29	6.1
31	1.7	---	2.8	2.3	---	1.8	---	1.9	---	.38	.29	---
TOTAL	61.4	77.4	72.2	82.3	54.6	60.1	52.7	162.6	22.75	8.13	49.15	210.69
MEAN	1.98	2.58	2.33	2.65	1.88	1.94	1.76	5.25	.76	.26	1.59	7.02
MAX	2.6	14	3.6	4.2	2.6	9.7	2.6	38	1.8	1.0	17	33
MIN	1.7	1.5	1.8	2.3	1.7	1.4	1.3	1.2	.23	.08	.09	.23
CFSM	.05	.06	.05	.06	.04	.05	.04	.12	.02	.006	.04	.16
IN.	.05	.07	.06	.07	.05	.05	.05	.14	.02	.01	.04	.18
AC-FT	122	154	143	163	108	119	105	323	45	16	97	418

CAL YR 1979 TOTAL 9750.70 MEAN 26.7 MAX 462 MIN 1.5 CFSM .62 IN 8.42 AC-FT 19340
WTR YR 1980 TOTAL 914.02 MEAN 2.50 MAX 38 MIN .08 CFSM .06 IN .79 AC-FT 1810

WATER-QUALITY RECORDS

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

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	STREAM-FLOW, INSTAN-TANEOUS (CFS)	SPE-CIFIC CON-DUCT-ANCE (MICRO-MHOS)	PH (UNITS)	TEMPER-ATURE, WATER (DEG C)	COLOR (PLAT-INUM COBALT UNITS)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	OXYGEN DEMAND, BIOCHEM UNINHIB 5 DAY (MG/L)
JAN										
08...	1135	2.6	417	8.5	12.0	0	.20	10.2	98	.8
MAY										
14...	1155	3.6	381	8.2	20.5	0	2.5	8.0	92	1.4
JUL										
31...	1327	.29	397	8.5	34.5	0	1.7	9.0	131	1.3

DATE	COLI-FORM, TOTAL, IMMED. (COLS. PER 100 ML)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	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
JAN									
08...	>34	34	33	190	50	58	12	7.3	.2
MAY									
14...	1500	K330	250	180	60	52	11	7.0	.2
JUL									
31...	0	K450	30	170	86	47	13	9.6	.3

DATE	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	BICAR-BONATE (MG/L AS HCO3)	CAR-BONATE (MG/L AS CO3)	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)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, RESIDUE AT 105 DEG. C, SUS-PENDED (MG/L)
JAN									
08...	.9	170	3	52	13	.3	9.3	240	4
MAY									
14...	1.2	140	0	61	12	.2	10	223	8
JUL									
31...	1.6	100	2	76	17	.4	13	229	<1

DATE	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)
JAN									
08...	3	.59	.02	.61	.01	.40	.41	.000	2.5
MAY									
14...	2	71	.01	71	.03	.51	.54	.010	1.6
JUL									
31...	0	.20	.01	.21	.05	.85	.90	.010	4.7

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							
08...	1135	0	20	<1	0	0	<10
JUL							
31...	1327	1	30	<1	0	0	<10

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						
08...	0	<1	.2	1	0	<3
JUL						
31...	1	2	.0	0	0	<3

WATER QUALITY DATA, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980

DATE	TIME	PCB, TOTAL (UG/L)	NAPHTHALENES, POLYCHLOR. TOTAL (UG/L)	ALDRIN, TOTAL (UG/L)	CHLORDANE, TOTAL (UG/L)	DDD, TOTAL (UG/L)	DDE, TOTAL (UG/L)	DDT, TOTAL (UG/L)	DIAZINON, TOTAL (UG/L)
JAN 08...	1135	.0	.00	.00	.0	.00	.00	.00	.00
JUL 31...	1327	.0	.00	.00	.0	.00	.00	.00	.00

DATE	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)	LINDANE TOTAL (UG/L)	MALATHION, TOTAL (UG/L)	METHOXYCHLOR, TOTAL (UG/L)
JAN 08...	.00	.00	.00	.00	--	.00	.00	.00	.00
JUL 31...	.00	.00	.00	.00	.00	.00	.00	.00	.00

DATE	METHYL PARATHION, TOTAL (UG/L)	METHYL TRITHION, TOTAL (UG/L)	MIREX, TOTAL (UG/L)	PARATHION, TOTAL (UG/L)	TOXAPHENE, TOTAL (UG/L)	TOTAL TRITHION (UG/L)	2,4-D, TOTAL (UG/L)	2,4,5-T TOTAL (UG/L)	SILVEX, TOTAL (UG/L)
JAN 08...	.00	.00	.00	.00	0	.00	.00	.00	.00
JUL 31...	.00	.00	.00	.00	0	.00	.00	.00	.00

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 mi² (435 km²).

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. An observation of water temperature was made during the year.

AVERAGE DISCHARGE.--19 years (water years 1962-80), 8.88 ft³/s (0.251 m³/s), 6,430 acre-ft/yr (7.93 hm³/yr).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,500 ft³/s (864 m³/s) July 15, 1973, gage height, 26.0 ft (7.92 m), from floodmark, from rating curve extended above 16,000 ft³/s (453 m³/s) on the basis of slope-area measurement of 35,800 ft³/s (1,010 m³/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 ft³/s (1,010 m³/s), by slope-area measurement; June 17, 1958, 32.4 ft (9.88 m).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,400 ft³/s (351 m³/s) Sept. 7, gage height, 17.72 ft (5.401 m), from floodmark, no other peak above base of 600 ft³/s (17.0 m³/s); no flow most of year.

DISCHARGE, IN CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1979 TO SEPTEMBER 1980
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	1740
8	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	13
9	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.60
10	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.28
11	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.09
12	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.01
13	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
14	.00	.00	.00	.00	.00	.00	.00	.00	.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	.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	.00	.00	.00	.00	1753.98
MEAN	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	58.5
MAX	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	1740
MIN	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
AC-FT	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00	3480

CAL YR 1979	TOTAL	6491.35	MEAN	17.8	MAX	3190	MIN	.00	AC-FT 12880
WTR YR 1980	TOTAL	1753.98	MEAN	4.79	MAX	1740	MIN	.00	AC-FT 3480

08204000 LEONA RIVER SPRING FLOW NEAR UVALDE, TX

LOCATION.--Lat 29°09'15", long 99°44'35", Uvalde County, Hydrologic Unit 1211-0106 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 1979 TO SEPTEMBER 1980

Date	Discharge (cfs)	Date	Discharge (cfs)	Date	Discharge (cfs)
Oct. 18, 1979	34	Feb. 22, 1980	18	July 3, 1980	3.7
Nov. 29	38	Apr. 3	18	Aug. 7	1.5
Jan. 10, 1980	44	May 14	13	Sept. 17	9.6

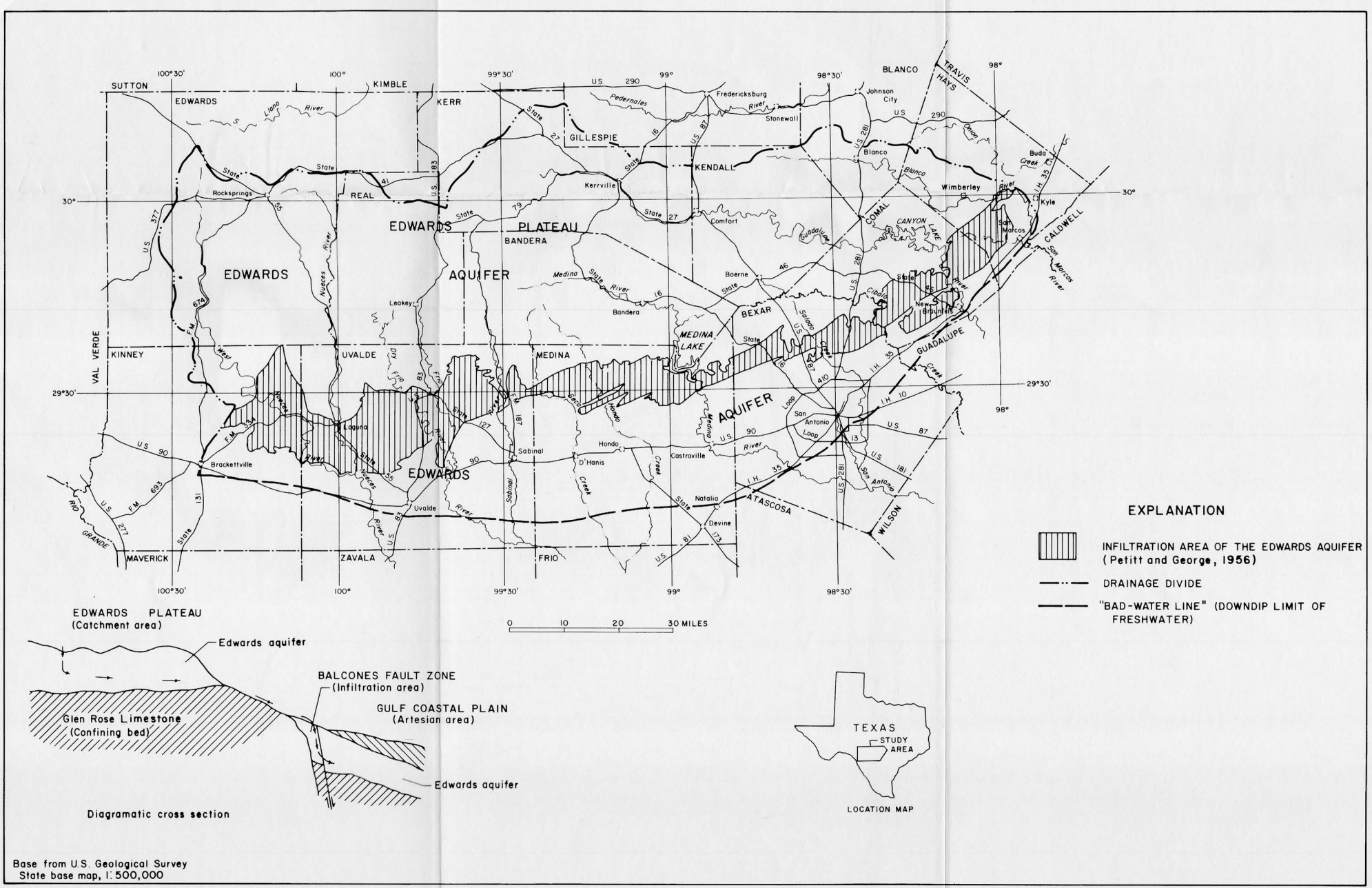
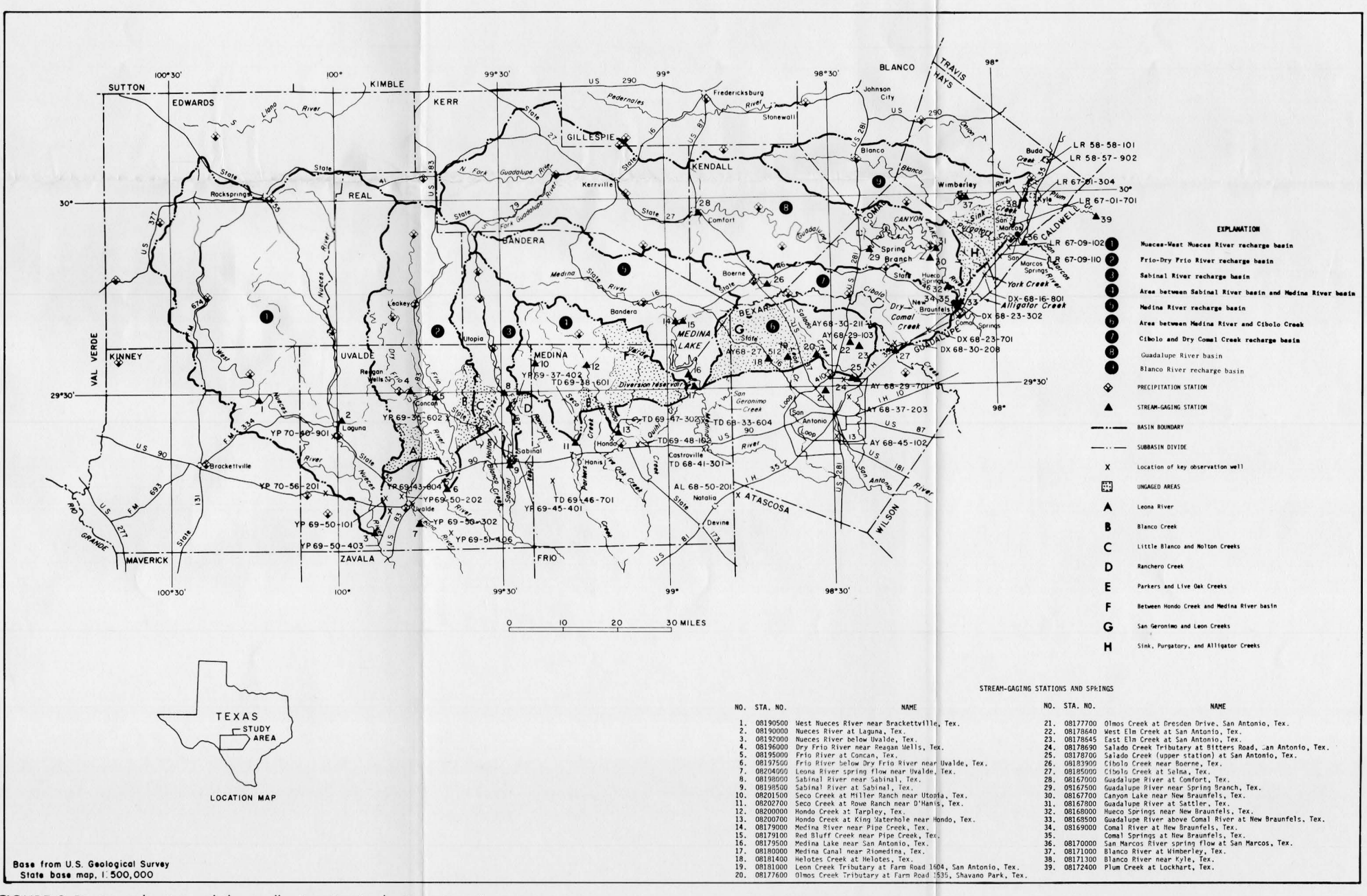


FIGURE 1.-Hydrologic features in the San Antonio area



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.	08196000	Dry Frio River near Reagan Wells, Tex.
5.	08195000	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.	08198000	Sabinal River near Sabinal, Tex.
9.	08198500	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 at Tarpley, Tex.
13.	08200700	Hondo Creek at King Waterhole near Hondo, Tex.
14.	08179000	Medina River near Pipe Creek, Tex.
15.	08179100	Red Bluff Creek near Pipe Creek, Tex.
16.	08179500	Medina Lake near San Antonio, Tex.
17.	08180000	Medina Canal near Riomedina, Tex.
18.	08181400	Helotes Creek at Helotes, Tex.
19.	08181000	Leon Creek Tributary at Farm Road 1604, San Antonio, Tex.
20.	08177600	Olmos Creek Tributary at Farm Road 1535, Shavano Park, Tex.
21.	08177700	Olmos Creek at Dresden Drive, San Antonio, Tex.
22.	08178640	West Elm Creek at San Antonio, Tex.
23.	08178645	East Elm Creek at San Antonio, Tex.
24.	08178690	Salado Creek Tributary at Bitters Road, San Antonio, Tex.
25.	08178700	Salado Creek (upper station) at San Antonio, Tex.
26.	08183900	Cibolo Creek near Boerne, Tex.
27.	08185000	Cibolo Creek at Selma, Tex.
28.	08167000	Guadalupe River at Comfort, Tex.
29.	08167500	Guadalupe River near Spring Branch, Tex.
30.	08167700	Canyon Lake near New Braunfels, Tex.
31.	08167800	Guadalupe River at Sattler, Tex.
32.	08168000	Hueco Springs near New Braunfels, Tex.
33.	08168500	Guadalupe River above Comal River at New Braunfels, Tex.
34.	08169000	Comal River at New Braunfels, Tex.
35.		Comal Springs at New Braunfels, Tex.
36.	08170000	San Marcos River spring flow at San Marcos, Tex.
37.	08171000	Blanco River at Wimberley, Tex.
38.	08171300	Blanco River near Kyle, Tex.
39.	08172400	Plum Creek at Lockhart, Tex.

FIGURE 2.-Drainage basins and data-collection sites in the San Antonio area

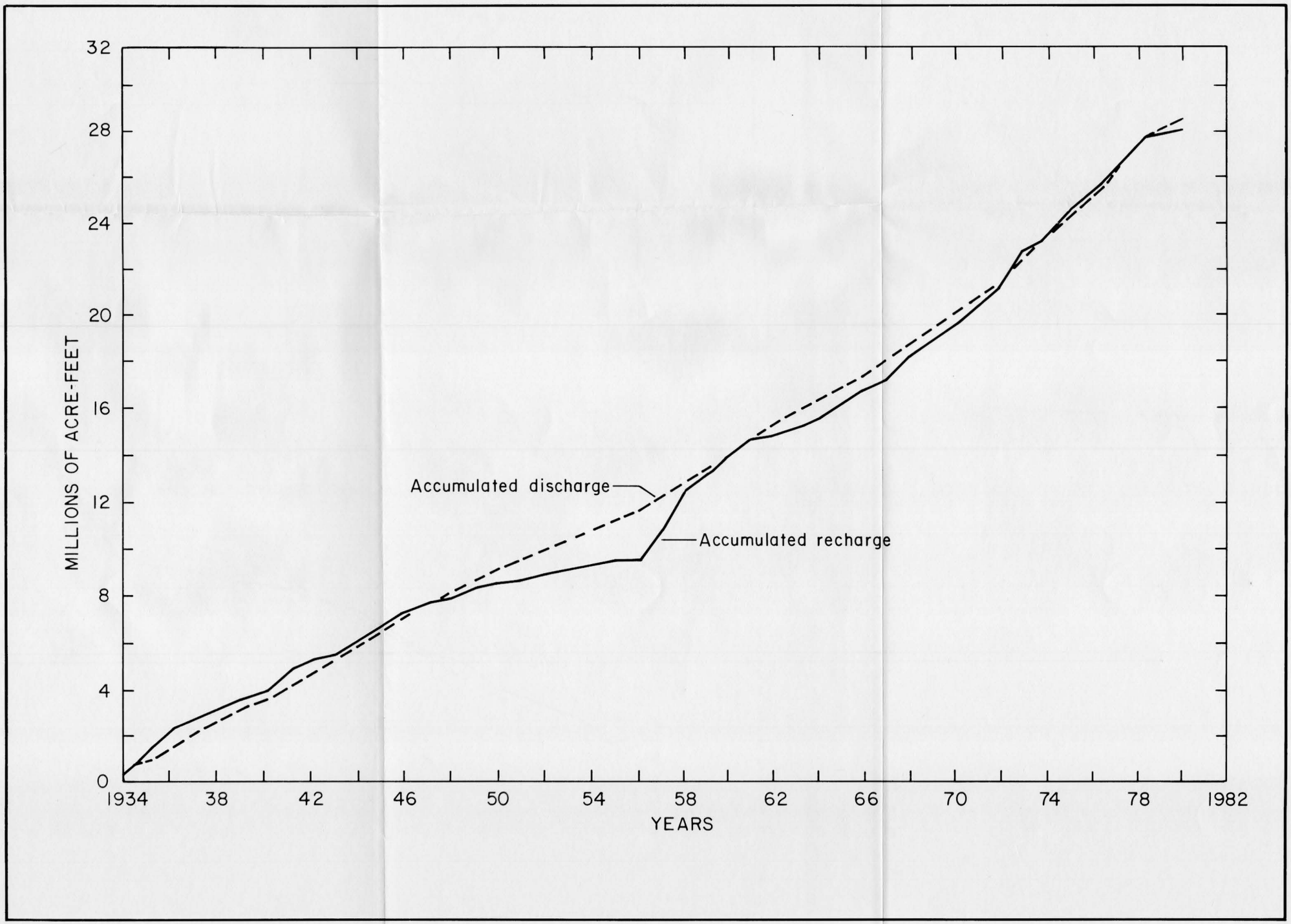
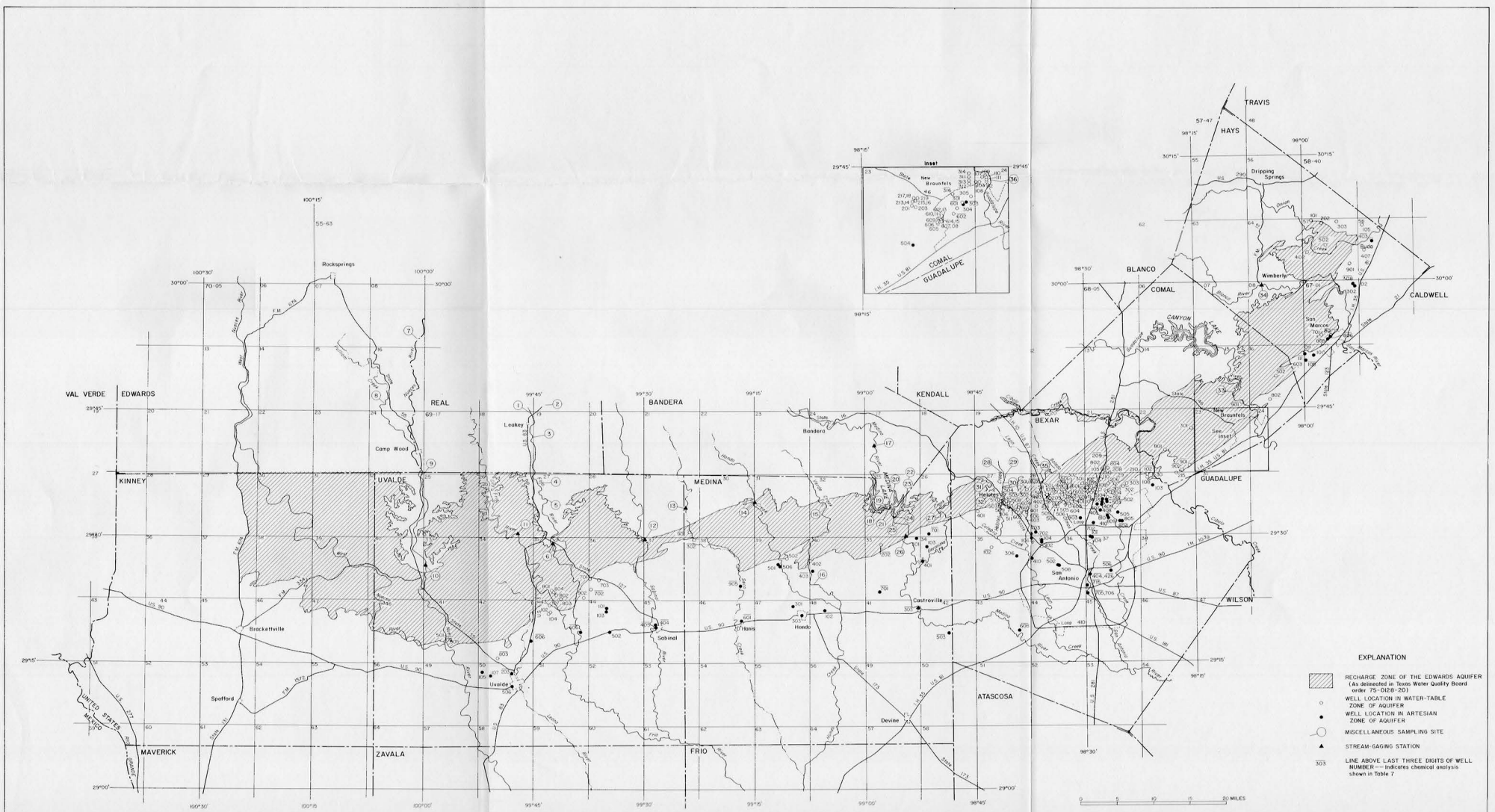


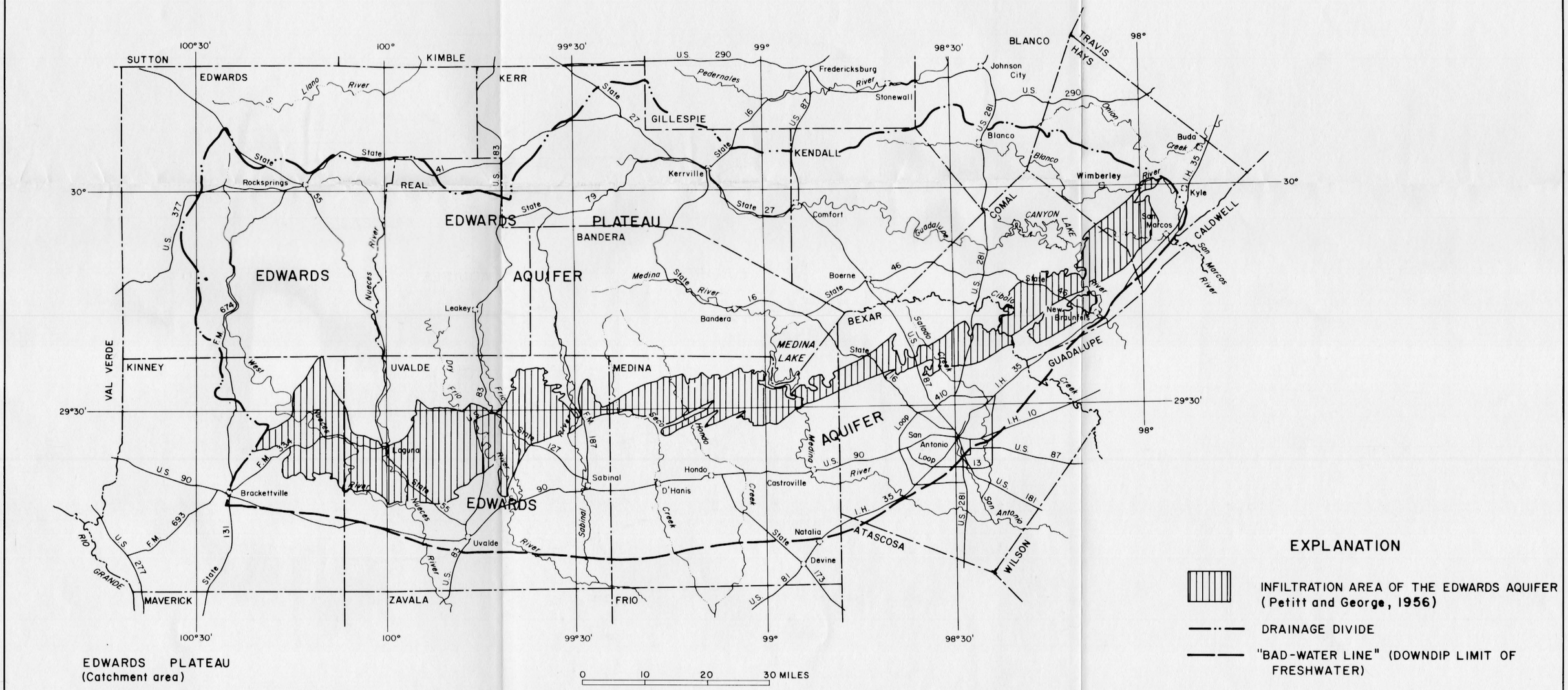
FIGURE 3.-Accumulated recharge and discharge, 1934-80



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

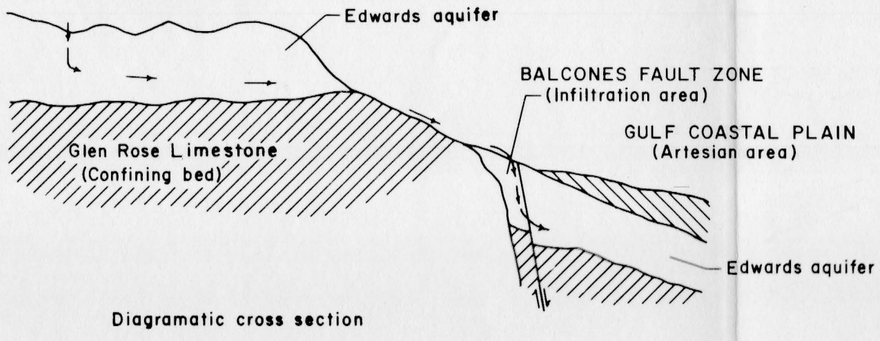
FIGURE 4.-Locations of water-quality data-collection sites for wells and springs in the San Antonio area

Note: Large-format versions of the original plates are on the following pages.

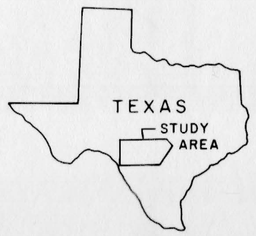


EXPLANATION

- INFILTRATION AREA OF THE EDWARDS AQUIFER (Petitt and George, 1956)
- DRAINAGE DIVIDE
- "BAD-WATER LINE" (DOWNDIP LIMIT OF FRESHWATER)



Diagramatic cross section



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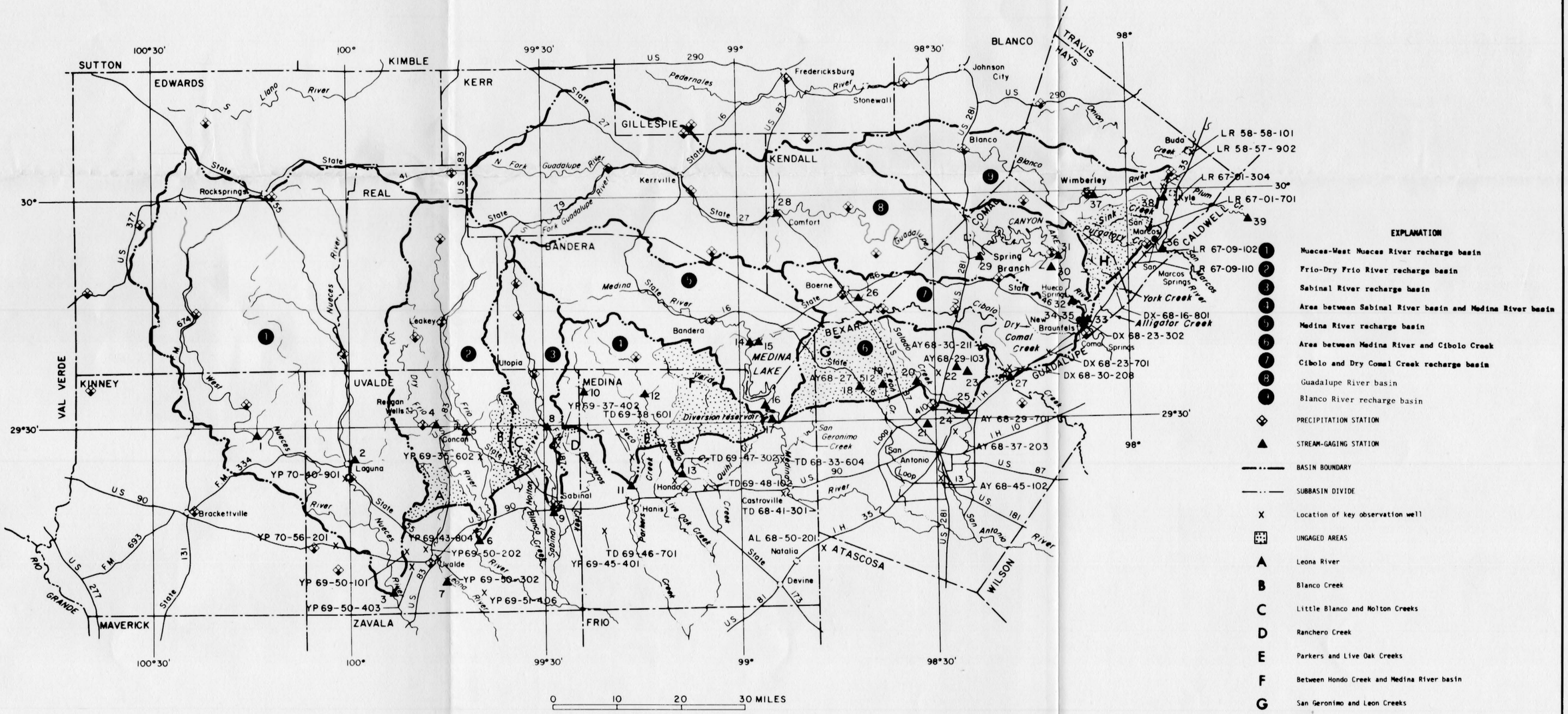
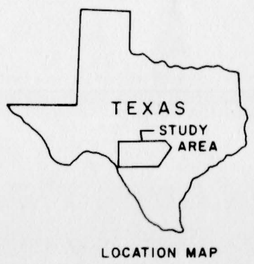


EXPLANATION

- 1 Nueces-West Nueces River recharge basin
- 2 Frio-Dry Frio River recharge basin
- 3 Sabinal River recharge basin
- 4 Area between Sabinal River basin and Medina River basin
- 5 Medina River recharge basin
- 6 Area between Medina River and Cibolo Creek
- 7 Cibolo and Dry Comal Creek recharge basin
- 8 Guadalupe River basin
- 9 Blanco River recharge basin
- ◇ PRECIPITATION STATION
- ▲ STREAM-GAGING STATION
- BASIN BOUNDARY
- SUBBASIN DIVIDE
- X Location of key observation well
- UNGAGED AREAS
- A Leona River
- B Blanco Creek
- C Little Blanco and Molton Creeks
- D Ranchero Creek
- E Parkers and Live Oak Creeks
- F Between Hondo Creek and Medina River basin
- G San Geronimo and Leon Creeks
- H Sink, Purgatory, and Alligator Creeks



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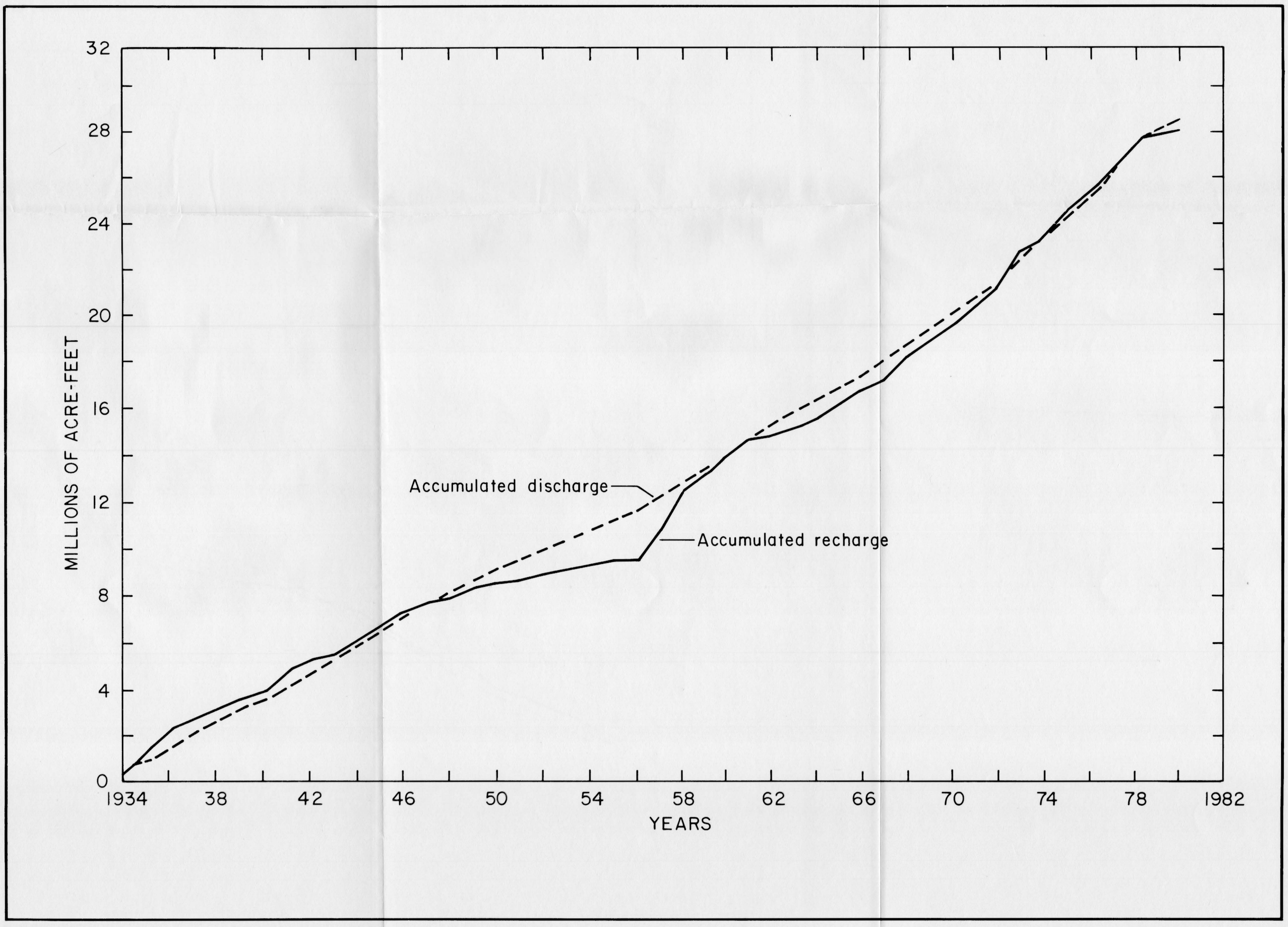

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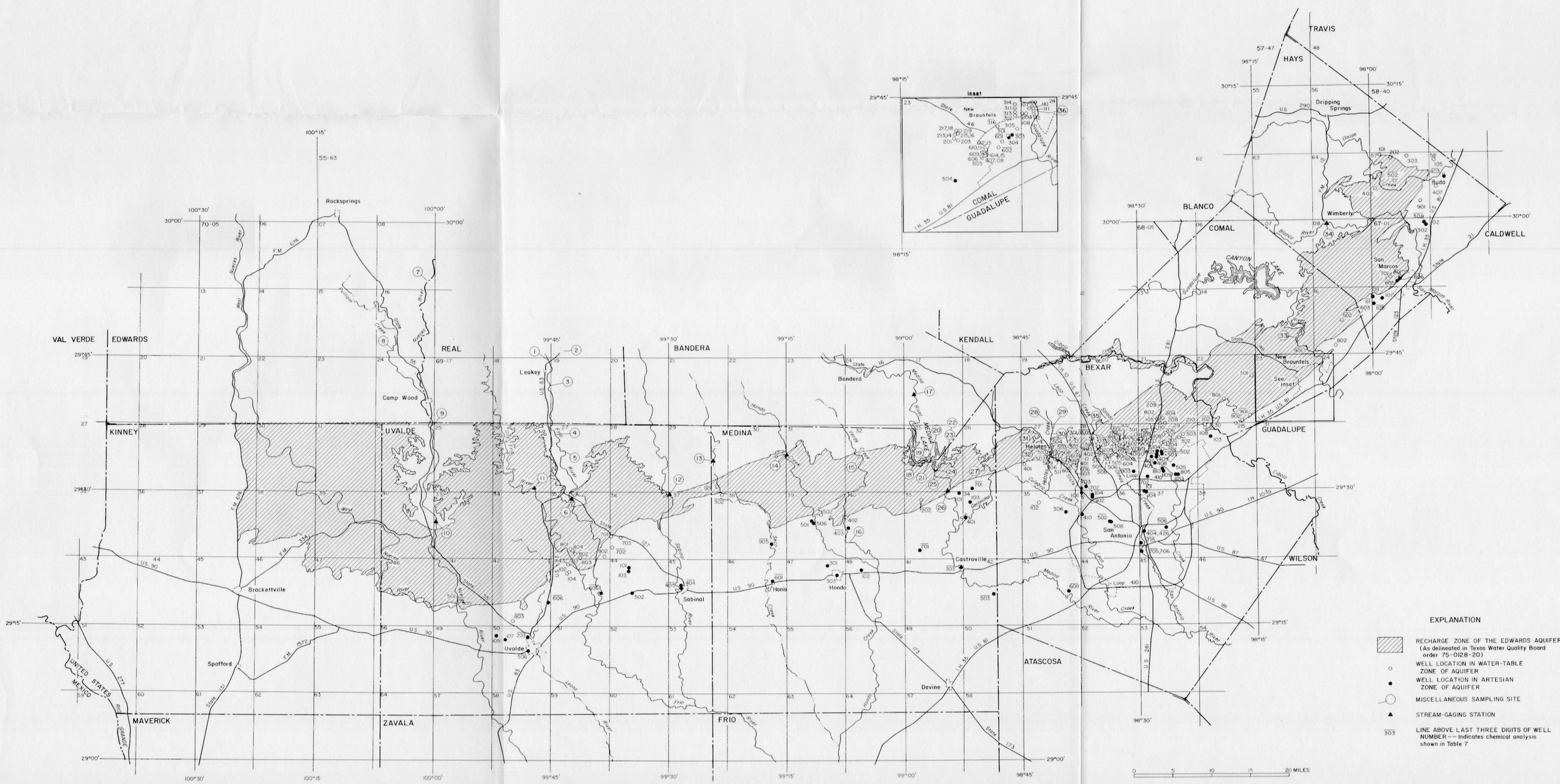

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